



KUDZ ZE KAYAH PROJECT

HERITAGE RESOURCE PROTECTION PLAN

REV 04

June 2026

BMC MINERALS LTD.

This Management Plan has been developed to meet the appropriate subject objectives based on existing regulatory requirements, current or planned site activities, existing and expected site conditions, and designed outcomes at the time of writing. Operational processes/practices for achievement of licence terms and conditions may be updated from time to time as appropriate due to changes to relevant legislation and regulations, changes to site activities or conditions, differences from expected objective outcomes, or improvement of management practices. All rates, capacities, dimensions, weights, volumes and durations in text or figures are based on current feasibility level designs and are subject to change based on final design, licence conditions or site conditions encountered. Updates will be resubmitted to government authorities and/or stakeholders as required.

LIST OF REVISIONS

Issue Date	Revision Number	Description of Revision
August 21, 2020	Rev 00	For Issue to Agencies
December 10, 2020	Rev 01	Updated with commitments and Final Screening Report Recommendations
July 18, 2022	Rev 02	Updated with final edits from BMC review
December 21, 2023	Rev 03	Updated in response to Phase 2/3 IR from EMR dated May 5, 2023
June 1, 2026	Rev 04	Administrative updates in response to EMR Completeness check, and minor updates to reflect the 2026 Decision Document.

SUMMARY OF REVISIONS

Information Request/Intervention	Document	Exhibit	Section	Revision
Revision 03				
EMR Phase 2/3 IR A concordance table is missing from the plan. BMC is to provide a concordance table that demonstrates how all applicable decision document terms and conditions and proponent commitments have been addressed. This concordance table should also indicate where revisions have been made based upon the information requests outlined in this table.	Heritage Resource Protection Plan	n/a	n/a	Added Table of Revisions and Table of Concordance
EMR Phase 2/3 IR Section 4: Table 4-1 Heritage Resources Contact Information The table has outdated and incomplete contact information. BMC to update this table with current contact information. For Energy Mines and Resources the contact should be the Major Mines Licensing Unit at emr-qml@yukon.ca, (867) 667-3432.	Heritage Resource Protection Plan	n/a	4.2	Table has been updated
EMR Phase 2/3 IR Section 3: Heritage Resource Assessments The section of the plan identifies the various heritage assessments that have taken place in the project area. YG's Plan Requirement Guidance for Quartz Mining Projects suggests adding these assessments to the plan as appendices. Add all heritage assessments to the HRP plan as an appendix.	Heritage Resource Protection Plan	n/a	n/a	All HRIA assessments have been added as appendices to the Plan (Appendix B1 through B6)

LIST OF ACRONYMS AND ABBREVIATIONS

BMC	BMC Minerals Ltd.
Ecofor	Ecofor Natural and Cultural Resources Consultants
HRIA	Heritage Resources Impact Assessment
HRPP	Heritage Resource Protection Plan
HRU	Heritage Resources Unit
Kaska	Kaska First Nation
KZK	Kudz Ze Kayah
LFN	Liard First Nation
RRDC	Ross River Dena Council
TK	Traditional Knowledge
TLU	Traditional Land Use
YESAB	Yukon Environmental and Socio-economic Assessment Board

GLOSSARY

Archaeological Object: Is the product of human art, workmanship, or use, and it includes plant and animal remains that have been modified by or deposited in consequence of human activities. Is of value for its archaeological significance and is or has been discovered on or beneath land in the Yukon. Is or has been submerged or partially submerged beneath the surface of any watercourse or permanent body of water (YG, 2002).

Archaeological or Prehistoric Sites: Represents an area used before European contact where artifacts may be found on or under the ground surface. These sites may include the remains of ancient camps including hearths, animal bone, stone tools or debris. In this usage, an Archaeological Site and a Prehistoric Site includes all sites that predate written history. However, in heritage resource management context, archaeological resources are those found beneath the ground surface.

Ethnographic Objects: Means an item of material culture relating to the history and traditional culture of an ethnic group.

Heritage (or Historic) Resource: Abandoned sites and objects greater than 45 years in antiquity. Cabins, caches, graves, brush camps, and other man-made structures, features or objects are the most readily recognized. The term “heritage resources” is a universal reference that includes Archaeological and Prehistoric Sites, Paleontological Sites and Historic Sites.

Historic Object: An archaeological object that has been abandoned, or a palaeontological object that has been abandoned.

Historic Sites: Contain heritage resources that are greater than 45 years old that possess significant heritage value. Historic sites date back to the period for which written records are available. In this case, the historic period begins with the arrival of the Hudson’s Bay Company in the early-mid 19th century. Historic sites may include cabins, caches, camps, brush camps, and any other human-made structures, features, or objects that date between about 1960 and 1830.

Human Remains: Human remains are referred to here as non-fossilized remains of human bodies that are found outside a recognized cemetery or burial site.

Palaeontology: Scientific study of life of the geologic past that involves the analysis of plant and animal fossils preserved in rocks.

Palaeontological Object: The remains or a fossil or other object that indicates the existence of extinct or prehistoric plants or animals and that is of value for its historic significance.

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1 INTRODUCTION AND PURPOSE

BMC Minerals Ltd. (BMC) is the owner of the Kudz Ze Kayah (KZK) Project (the Project). Since acquiring the project in 2015, BMC has actively engaged in assessing historical work, optimizing design, resource drilling, economic assessment, baseline environmental studies, and First Nations and community engagement as well as the successful completion of the Executive Committee Screening by the Yukon Environmental and Social-Economic Assessment Board.

Kaska have traveled through, hunted on, and gathered food within the Project footprint for centuries. Due to historical use of the area, development of the Project has the potential to disturb heritage resources if present. This Heritage Resource Protection Plan (HRPP) is intended to provide site management with strategies to protect and manage heritage resources during all phases of the Project. To ensure the protection of all known and unknown heritage resources BMC will:

- Ensure heritage assessments have been completed before ground disturbance activities occur in new areas;
- Ensure all known sites are clearly flagged in the field prior to construction activities occurring;
- Review and implement site-by-site management recommendations; and
- Train all site management, Construction, and Operations personnel on the communication protocols to manage future ground disturbances and chance finds of heritage resources.

1.1 REGULATORY CONTEXT

Heritage resources in Yukon are protected under the Yukon *Historic Resources Act* (Yukon Government, 2002), and protected and managed under provisions of the Yukon First Nations Umbrella Final Agreement (Council of Yukon First Nations, 1993). Specifically, the provisions are included in Chapter 13 of the Umbrella Final Agreement. The following legislation serves to protect and manage heritage resources, including chance finds:

- The *Historic Resources Act* (YG, 2002)– specifically s. 64 (Destruction of historic objects or human remains) and Section 71 (Report of Findings);
- The *Quartz Mining Regulation* (YOIC, 2003/64) – under the *Quartz Mining Act* (Yukon Government, 2016) specifically Schedule 1 Operating Conditions, Section E regarding historic objects and burial grounds;
- The *Land Use Regulation* under the *Territorial Lands (Yukon) Act* – specifically Section 9 (Prohibitions) (Yukon Government, 2014); and
- The *Archaeological Sites Regulation* (O.I.C. 2003-73) under the *Historic Resources Act* – specifically Section 4, regarding historic resources.

Other guidelines and policies that apply to the management of heritage resources include the Operational Policy for Heritage Resources Management on Yukon Lands, which communicates the

Yukon Government's position on ownership and management of heritage resources (Yukon Government, 2010), and the guidelines for Respecting the Discovery of Human Remains and First Nation Burial Sites in the Yukon (Yukon Government, 1999).

1.2 PLAN REVIEW AND EXECUTION

BMC has had extensive engagement with Ross River Dena Council (RRDC) including community meetings in Ross River, Elders Oversight Committee Meetings, meetings with Chief and Council and engagement with RRDC's wholly owned environmental consultancy, Dena Cho Environmental and Remediation Inc. (Dena Cho). As part of this ongoing engagement, prior to this Plan being finalized Dean Cho conducted a detailed independent review of the draft plan. Issues raised during the Dena Cho review were addressed collaboratively through a number of workshops and where appropriate this plan was amended and additional commitments added.

BMC and Ross River Dena Council (in its role as lead community for the Kaska Nations, including Liard First Nation) are parties to an existing Socio-Economic Participation Agreement (SEPA) for the KZK Project. In 2019, BMC and RRDC signed a Letter of Intent committing the parties to a modernization process for the existing SEPA. In March 2021, BMC tabled a proposed modernized SEPA with all Kaska leadership. The proposed SEPA includes provision for establishment of a Kaska/BMC Environmental Management Advisory Committee (EMAC). Under the current proposal before Kaska, this committee will be tasked with, among other things, reviewing and providing input into environmental management plans, reporting on implementation of those plans, reviewing monitoring plans/results, and reviewing incident reports and reporting back to Kaska members.

2 HERITAGE RESOURCE PROTECTION POLICY

BMC operates under a Business Integrity Framework which all Company policies support. The purpose of the Framework is to ensure that BMC meets several important objectives so that it:

- Complies with Relevant Legislation. Conducts its business with the level of integrity and ethics that would be expected by business partners, employees, investors, finance providers, regulators, lawmakers and the people and communities impacted by BMC's activities;
- Ensure that all management and supervisors at the Project are knowledgeable of this Plan;
- Defines responsibilities of BMC's personnel; and
- Defines a control and reporting framework to ensure compliance is properly monitored and associated risks are managed.

To ensure that this framework is upheld, BMC has a number of Corporate Policies that have been adopted for the Project. One of these policies is the Heritage Policy. The Heritage Policy is included as Appendix A to this HRPP.

3 HERITAGE RESOURCE ASSESSMENTS

The Project footprint includes the Project site (i.e., ABM open pit, Process Plant Facility, Class A, B, and C Storage Facilities, Overburden Stockpile, topsoil stockpiles, camp, water management ponds, workshop, diversion ditches, storage areas, construction laydown areas, and other ancillary facilities) and the Access Road from the Mine site to the Robert Campbell Highway. These areas have been the subject of Heritage Resources Impact Assessments (HRIA). The results of the HRIAs are summarized in Table 3-1 while the entire reports are included in Appendix B.

Four subsurface lithic archaeological sites have been identified by Ecofor Natural and Cultural Resources Consultants (Ecofor). Ecofor have subsequently provided BMC with recommendations in relation to the management of each site. The results of the HRIAs were used as the basis of this HRPP. Recommendations included avoidance of each site and where avoidance was not possible (due to Project design) then systematic data recovery excavations were conducted. Any activity that requires ground disturbance outside of the areas already assessed will require a heritage impact assessment to be completed to the satisfaction of the Government of Yukon.

All known heritage resources have been clearly marked with 1-inch wide “*No Work Zone*” yellow flagging tape to ensure all field crews are aware of the sensitive site. Flagging tape (or alternative markers) will be inspected annually to confirm flagging is still in place and visible.

All HRIA reports have been provided to Yukon Government’s Heritage Resources Unit, Ross River Dena Council (RRDC) and Liard First Nation (LFN). All future assessments (if needed will also be provided to these groups).

Table 3-1: Summary of Heritage Resource Impact Assessments

Year of Assessment	Assessment Results	Issued Report
1995	No cultural materials or features were identified during a heritage study conducted with RRDC. However, Kaska oral history indicates that the area was used for subsistence hunting, trapping, and fishing, and for accessing the North Lakes. Therefore, there is a high potential for heritage resources to be found in the Project footprint.	Rutherford, 1995a and 1995b
1996	No cultural materials were identified in the heritage resource study conducted at the previously proposed airstrip (i.e. the airstrip proposed by Cominco in the 1990s) near the Robert Campbell Highway.	Rutherford, 1996
2015	Eight sites were sampled for archaeological materials. Prehistoric subsurface lithic scatter was identified at sites that were labelled as JiTp-1 and JjTp-1. No archaeological materials were found at the other six sites. The Project will not impact JjTp-1. However, JiTp-1 is located in the footprint of the Class B Storage Facility and Mooney and Bennett (2016) recommended that mitigative data recovery excavations be conducted.	Mooney and Bennett, 2016
2016	JiTp-1 was re-evaluated due to the proposed impact to the site. Under permit 15-10ASR, 232 negative and 8 positive shovel tests were conducted. In total, 77 lithic artifacts were recovered, 52 of which were obsidian. Under permit 16-04ASR, 43 additional shovel tests and two block excavations (4 m ² and 2 m ²) were conducted around the 2015 positive shovel tests. A single lithic flake was found in three of the 43 shovel tests, and 88 lithic flakes were found in the excavated material. No further assessments were recommended for site JiTp-1.	Bennett, 2017
2017	Heritage assessments were conducted at 18 proposed borrow pits along the existing KZK Tote Road (which is proposed to be upgraded to an Access Road), the existing Finlayson Lake Airstrip, and near Borrow OEL-1. A total of 133 shovel tests were conducted at eight sites. Fragments of lithic flakes were found in two of shovel tests. These two areas were subsequently identified as JjTp-2 (Borrow OEL-54) and JjTt-3 (Borrow OEL-63). Bennett (2018) recommended that additional investigations be conducted at JjTp-2 and JjTp-3 before disturbance works occur. A modern campsite was located at Borrow OEL-50, but due to its age it was determined to not be a heritage resource concern.	Bennett, 2018
2018	Systematic data recovery excavations were conducted at JjTp-2 and JjTp-3 in June 2018. At JjTp-2, 41 lithic artifacts and 4 pieces of faunal material were recovered from 10 shovel tests and 10 m ² of excavation. At JjTp-3, no archeological artifacts were recovered from 7 shovel tests and 1 m ² of excavation. No further assessments were recommended for JjTp-2 and JjTp-3.	Bennett, 2019

4 HERITAGE RESOURCE PROTECTION PLAN

4.1 HERITAGE RESOURCE FIELD GUIDELINES

All heritage resources on non-Settlement Lands (except for sites identified in First Nation Final Agreements and ethnographic objects) are managed by the Yukon Government and considered the property of all Yukoners. All heritage resources on First Nation Settlement Lands are owned and managed by the First Nation. The Project footprint and the Access Road are not in any First Nation Settlement Lands or interim Settlement Lands. The southern boundary of the KZK claims adjoins Interim Protected Land (RRDC-R15A), but no Project activities are planned near this area. Although the Project does not overlap with First Nation Settlement Lands, RRDC and Liard First Nation exercise Kaska Title and Rights within the Project Area. RRDC (as the lead Kaska Nation for the Project) have agreed that all heritage resources recovered from the Project area be stored by Yukon Government until such a time that RRDC has an appropriate storage facility at which point the resources would be stored by RRDC.

Any archaeological materials or objects found on the Project site will be collected, catalogued, and stored in accordance with the *Historic Resources Act* and the *Archaeological Sites Regulations*. Qualified heritage contractors and Kaska members will conduct all heritage assessments, prepare artifact catalogs, label artifacts, prepare and pack artifacts for long-term curation, and prepare all necessary reports as required by heritage permits.

Any newly identified heritage resource sites will be clearly marked with flagging in the field and work activities will avoid the area as soon as is practicable. If the site cannot be avoided BMC will consult with RRDC, LFN, and the Heritage Resources Unit (HRU) of the Yukon Department of Tourism and Culture to develop a mitigation and management plan for the area prior to any disturbance of the site. All flagging will be removed at the end of the Project to protect the heritage resources from disturbance.

4.2 HERITAGE RESOURCE PROTECTION PLAN TASKS

The HRPP action items and communication protocols presented below incorporate communications between BMC, the HRU, and Kaska. These actions and protocols will be updated, as required, and are intended to be used through all phases of the Project (Construction, Operations and Closure).

4.2.1 Action Item 1: Heritage Resources Review of any Newly Proposed Ground Disturbing Activities

Prior to the start of construction, Site Management and the Environmental Department will review previous heritage impact assessments to ensure construction activities do not have the potential to affect any known heritage resources. No land-altering activities will occur within 30 m of a known heritage resource, or within 50 m of known human remains, unless authorized by Yukon Government. If construction is going to occur within these buffer zones, the Environmental Department will tour the area with the construction crew to ensure they are aware of the “No Work

Zone” and to provide site specific heritage resources training. BMC will maintain a GIS database to incorporate known heritage resources into site design and planning.

Any Site personnel conducting ground disturbing work in the vicinity of any known heritage resource sites will be informed of their location and work restrictions around these locations during morning toolbox/safety meetings and weekly management meetings.

If heritage resources are encountered during ground disturbance activities, the chance find procedure will be followed (Section 4.3.3).

4.2.2 Action Item 2: Ensure Buffer Zones are in Good Condition and Clearly Visible to all Site Personnel

Four prehistoric sites have been discovered in the Project footprint and Access Road alignment and “No Work Zone” yellow flagging tape (or alternative markers) has been used to clearly mark a 30 m buffer zone around the four sites. However, flagging tape is not permanent and can be damaged by exposure to weather or animals. The Environmental Department will routinely check on the condition of all buffer zones and reflag or implement a more permanent flagging system (i.e. posts) as necessary to ensure each site is clearly visible to all workers.

The locations of these sites have been provided to Yukon Government’s Heritage Resources Unit, RRDC and LFN, but are not presented in this HRPP due to confidentiality concerns. However, the locations have been mapped on BMC’s “sensitive areas” map which will be used as a key reference for all personnel and contractors during construction and operations.

4.2.3 Action Item 3: Site by Site Management Efforts

Project archaeologists (Ecofor) have provided BMC with specific management recommendations for each of the known heritage resources. Impacts to these sites will be avoided, but when this is not possible mitigation measures are required before construction activities begin. For example, site JiTp-1 will need to be destroyed when the Project is developed due to its overlap with the Class B storage facility, while JjTp-2 and JjTp-3 have the potential to be destroyed if these areas are required as borrow sources along the Access Road. At each of these three sites Ecofor recommended that systematic data recovery be conducted at each site prior to the start of construction (Mooney and Bennett, 2016 and Bennett, 2017). Based on these recommendations BMC contracted Ecofor to conduct follow up shovel tests and excavation surveys at each of the three sites. After the completion of the follow up surveys Ecofor determined that the sites require no additional recovery works and are fully managed and mitigated (Bennett, 2017 and Bennett, 2018). BMC is committed to following the recommendations provided by Ecofor for the remaining heritage site (JjTp-1) if there is a potential for Project development to impact it.

4.2.4 Action Item 4: Identification of New Heritage Sites

Heritage impact assessments have been completed for the Project footprint and Access Road (including all potential borrow areas). However, there is the potential for prehistoric or historic

resources to be discovered in unexpected areas. If archaeological resources are located during Construction or Operations the chance find protocol (Section 4.3.2) will be followed.

4.3 COMMUNICATIONS AND REPORTING REQUIREMENTS

4.3.1 Ground Disturbing Activities

All ground disturbance activities will be communicated to the site Environmental Department prior to any disturbance activities. Ground disturbance activities include, but are not limited to:

- Infrastructure foundation clearing;
- New (and expansion) road construction (including clearing to access borrow areas);
- Open pit stripping; and
- Clearing for the management facilities.

The Site Environmental Department will review previous HRIAs to ensure the activity will not affect known heritage resources (i.e. JjTp-1). If the disturbance is within 100 m of an identified heritage site the Site Environmental Department will show the crew the exact location of the resources, ensure the 30 m buffer is clearly marked, and provide the crew with site specific training including a review of the chance find procedure.

Heritage impact assessments have been completed for the proposed Project footprint and the Access Road. However, there is the potential that some features or buildings may be relocated as design plans are finalised. The Site Environmental Department will be notified prior to any ground disturbance activities outside of the proposed Project footprint. The Site Environmental Department and a qualified archaeological consultant will determine the need for a HRIA in the proposed area prior to the commencement of any ground disturbance.

4.3.2 Chance Finds

While HIRAs have been completed for the proposed Project footprint and Access Road, it is possible that other historical resources are present in the Project area. To ensure the protection of these potential historical resources and to minimize disruption of the Project schedule BMC has developed the Chance Find Procedure outlined below.

A “chance find” refers to the unexpected discovery of either disturbed or intact archaeological materials, historic, paleontological, or human remains during development or other site activities. This procedure applies to situations where archaeological sites or resources are found in areas where they were not expected during Construction, Operations, baseline environmental programs, or other ground disturbing activities.

Archaeological materials may range in size from small flakes and chips of lithic debitage remaining from stone tool manufacturing, to large historic structures such as cabins and workshops. Other chance finds may include paleontological resources, culturally modified trees, fire-cracked rock,

historic adits, cache pits, house pits, paleontological remains, isolated prehistoric tools of wood, bone, antler, or other isolated historic items.

If any additional heritage resources are identified, all work in the immediate area will cease. The resources will be left in place, recorded with the Chance Find Report Form (Appendix C), and the area will be protected from further impacts with a clearly marked buffer zone of 30 m (for all finds not related to human remains). All finds related to human remains a 50 m buffer will be implemented, if encountered. The field supervisor will immediately notify the Site Environmental Department and Site Senior Executive and of the type, amount, and location of the find.

4.3.3 Chance Find Procedures

The following procedures are mandatory for all employees and contractors working at the Project in the event of a chance find:

- 1. STOP work in the area immediately;**
- 2. DO NOT disturb any archeological remains you may encounter;**
- 3. MARK the area with flagging tape;**
- 4. NOTIFY your supervisor; and**
- 5. AVOID area until further notice.**

The Site Environmental Department will collect the following information:

- GPS location;
- Date and time of identification;
- Approximate area of the find;
- Type of materials found;
- Site description;
- Access to the site; and
- Photographs of the materials encountered and the surrounding area.

The Site Environmental Department will contact the HRU, Kaska (RRDC and LFN), and archaeological consultant to discuss management options. The area will be protected until a site-specific management plan is created.

4.3.4 Archaeological Find

If you find an archaeological site, contact the Yukon Archaeology Program, HRU.

Brian Groves – Senior Manager Heritage Resources Unit, Department of Tourism and Culture
Phone: 867-667-3660
Fax: 867-667-6456
E-mail: Brian.Groves@yukon.ca

Also contact the RRDC Lands Office:

Amber Etzel
Phone: 1-867-689-2452
E-mail: landsdirector@rrdc.ca

Also contact the LFN Lands Office:

Travis Stewart
Phone: 1-867-536-7901
E-mail: travis.stewart@liardfirstnation.ca

The contact information for RRDC and LFN will be updated on an annual basis or at their request.

In addition to contacting the relevant individuals within the RRDC and LFN lands departments, both chiefs and councils will also be notified.

IMPORTANT - It is against the law to remove an artifact from an archaeological or historical site without a permit. An artifact is an abandoned object of archaeological or historical interest that's more than 45 years old. The Government of Yukon keeps all archaeological and non-First Nation artifacts in public trust unless they are found within First Nations lands or national parks.

As part of the ongoing efforts to increase awareness of heritage resources that have or may be found in the Project area, BMC will make copies of the booklet *Handbook for the Identification of Heritage Sites and Features* (Gotthardt and Thomas, 2005), the Chance Find Procedure (above) and Chance Find Report Form (Appendix C) available to all Project personnel.

4.3.5 Paleontology Find

If the chance find includes paleontological remains, BMC will contact Yukon Government Paleontologist.

Dr. Grant Zazula
Yukon paleontologist
Email: grant.zazula@yukon.ca
Phone: 867-667-8089 or toll free 1-800-661-0408 ext. 8089.
Cellphone: 867-332-8980

Also contact the RRDC Lands Office:

Amber Etzel
Phone: 1-867-332-6817
E-mail: landsdirector@rrdc.ca

Also contact the LFN Lands Office:

Travis Stewart

Phone: 1-867-536-7901

E-mail: travis.stewart@liardfirstnation.ca

The contact information for RRDC and LFN will be updated on an annual basis or at their request.

In addition to contacting the relevant individuals within the RRDC and LFN lands departments, both chiefs and councils will also be notified.

4.3.6 Human Remains

If human remains are identified the RCMP will be notified immediately, and the site will be protected as described above. If the RCMP and coroner determine that the remains are from a historic burial, Kaska and HRU will be notified following the *Guidelines Respecting the Discovery of Human Remains and First Nation Burial Sites in the Yukon* (Yukon Government, 1999).

4.3.7 Planned Impact of Known Sites

Four heritage sites have been identified in the Project site to date (JiTp-1, JjTp-1, JjTp-2, and JjTp-3). Only JiTp-1 is currently planned to be impacted by the development of the Project and two have the potential to be impacted (JjTp-2, and JjTp-3). These three sites were re-evaluated based on the recommendations outlined by the Project archaeologists. If Construction or Operations activities are planned to impact JiTp-1, a management plan will be developed in consultation with Kaska and a qualified archaeological consultant and submitted to HRU for approval. No data recovery or impacts to the site will occur until HRU and Kaska have approved the management plan. After approval, qualified archaeologists will prepare artifact catalogs, label artifacts, prepare and pack artifacts for long-term curation, and prepare all necessary reports. The site will remain a “No Work Zone” until the management plan has been fully implemented and HRU issues approval for the site to be impacted.

The level of mitigation required for any site will depend on the resource(s) present. For example, prehistoric sites will likely require block excavations, while historic resources will require more detailed photographic and ethnographic information and archival research. Additionally, some management recommendations may require ongoing construction monitoring after initial mitigation efforts have been completed.

4.3.8 Prompt Communication with Kaska and the Heritage Resources Unit

BMC is committed to notifying the HRU and Kaska within 24-hours of the discovery of new heritage resources in the Project footprint. Contact information is provided in Table 4-1. Additionally, the results from all heritage assessments and mitigation efforts will be promptly shared with HRU and Kaska.

Table 4-1: Heritage Resources Contact Information

Kaska Nation (Ross River Dena Council)	
Heritage Contact	Phone: 1-867-689-2452 E-mail: landsdirector@rrdc.ca
Kaska Nation (Liard First Nation)	
Heritage Contact	Phone: 867-536-7901 E-mail: travis.stewart@liardfirstnation.ca
Energy, Mines and Resources	
Major Mines Licensing Unit	Phone: 867-667-3432 E-mail: emr-qml@yukon.ca
Yukon Paleontology Program	
Dr. Grant Zazula Yukon palaeontologist, Yukon Palaeontology Program	Phone: 867-667-8089 Cell: 867-332-8980 E-mail: grant.zazula@yukon.ca
Yukon Archaeology Program	
Brian Groves – Senior Manager Heritage Resources Unit, Department of Tourism and Culture	Phone: 867-667-3660 Fax: 867-667-6456 E-mail: Brian.Groves@yukon.ca
RCMP (if human remains are suspected/discovered)	
Ross River RCMP Detachment	Phone: 867-969-2677 Fax: 867-390-2613

5 EMPLOYEE AND CONTRACTOR AWARENESS AND TRAINING

All BMC staff, consultants and contractors will be trained on management of known heritage resources and on protocols to follow if new heritage resources are identified. If construction activities are planned to occur near known heritage resources, as part of BMC's ground disturbance program sign off, Line Supervisors will require the Environmental Department's sign off that heritage and traditional knowledge are identified and appropriately managed and protected. BMC will continue to inform the HRU, RRDC and LFN if new heritage resource sites are identified or if there are any impacts to known sites. All mitigation measures surrounding heritage resource sites will remain in place until the HRU agrees that the site is fully managed and mitigated.

6 TRADITIONAL KNOWLEDGE

The heritage assessment approach has been developed in consultation with Kaska to incorporate their Traditional Knowledge (TK) whenever possible. BMC has had funding agreements with RRDC and LFN to conduct TK studies over the Project area. This HRPP will be updated, in consultation with RRDC and LFN and the HRU, as new information becomes available.

6.1 TRADITIONAL KNOWLEDGE REPORTS

Baseline environmental and socio-economic studies for the Project were originally completed in 1994-1995 to support the Initial Environmental Evaluation under the *Canadian Environmental Assessment Act*. To support that assessment, a heritage study was conducted in collaboration with RRDC (Rutherford, 1995b). The heritage study included TK interviews with local Kaska elders. The interviewees identified camps, cabins, and trails; and none of the sites identified overlapped with the proposed Project infrastructure.

RRDC has indicated that between 1995 and 2015 additional Kaska TK studies were completed to support the development of their Land Use Plan (of which some of the work was specific to the Project area). TK provisions contained in the bilateral Socio-economic Participation Agreement between BMC and Kaska commit the parties to a cooperative approach to include TK in Project design and operations. In addition, BMC has entered into a TK Protocol with RRDC for the collection of additional TK information over the Project area. To date, where RRDC deemed it to be appropriate, BMC has provided capacity funding and supported RRDC in compiling existing TK and collecting new TK for the Project. This TK compilation and collections by RRDC is ongoing and this HRPP will be updated, should new information become available.

To further support the Environmental and Socio-economic Assessment of BMC's Proposed Project (BMC, 2017), the Company retained Dialectic Research Ltd (Dialectic) of Vancouver who specialize in the integration of TK information in the environmental assessment of mining projects, including the determination of Valued Components.

Dialectic's report, *Kaska Ethnographic Overview of the Kudz Ze Kayah Project*, is a desk-top review of publicly available ethnographic information. This is not to be confused with the TK and Traditional Land Use (TLU) information that has been provided by RRDC directly to BMC. The Dialectic report and information provided by RRDC were used to select the Valued Components, to aid in determining potential impacts on those Valued Components, and mitigation measures that might be employed to avoid or minimise those impacts (BMC, 2017).

During the Environmental and Socio-economic Assessment of the Proposed Project the Yukon Environmental and Socio-economic Assessment Board (YESAB) requested additional TLU information be provided. The request was for BMC to not only to provide additional information but also to differentiate the potential impacts on each of RRDC and LFN based on their respective TLU information. The following sections summarize BMC's response to YESAB's request.

6.1.1 Ross River Dena Council

Although YESAB requested site specific and detailed RRDC TK to be provided by BMC, this would have breached BMC's confidentiality agreements with RRDC (which are described in the TK protocol between the Parties). However, to sufficiently respond to YESAB and to directly address YESAB's request, BMC commissioned a comprehensive independent study of RRDC Traditional Land Use (Iceton, 2019a). The content of this report further confirmed 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, 2017) and in BMC's Response Report No.4 (BMC, 2018).

The information provided in Iceton (2019a) and Dialectic (2016) was not intended to replace or otherwise diminish TK and TLU provided directly by RRDC. 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.

6.1.2 Liard First Nation

To obtain the level of detailed TLU information from LFN (as requested by YESAB), BMC entered into a capacity funding agreement with LFN. The agreement was for both technical assessment work and culturally appropriate gathering of TLU information that would be used by LFN for all assessment and permitting activities for the Project. At the time of preparing the responses to YESAB and at the time of preparing this HRPP, TLU information from LFN had not been shared directly with BMC. Ultimately, BMC intends to use this information, if it is shared, to help inform detailed Project management plans and site operations over the life of the Project. BMC has used what TLU information was shared to YESAB by LFN to help inform management plans. To fulfill YESAB's request during environmental assessment process, BMC commissioned a comprehensive Independent Study on Liard First Nation Traditional Land Use from an independent and well credentialed researcher (Iceton, 2019b).

This report does not replace or diminish Traditional Knowledge that might otherwise be obtained through direct engagement with LFN. Rather, it was an attempt to capture information that is publicly available and helped to address any concerns raised through the assessment process. It was designed to provide independent support for the basis of Valued Component selection in relation to TLU in the BMC Project Proposal. The content of this report supplemented and further confirmed BMC's assessment of potential effects on LFN's Traditional Land Use, which was provided in the Project Proposal (BMC, 2017) and in BMC's Response Report No.4 (BMC, 2018). BMC will continue to work with LFN to gather TLU information for inclusion in the Project planning and development.

6.2 TRADITIONAL KNOWLEDGE PROTOCOL

The TK agreement with RRDC states that RRDC is the owner of the TK and if RRDC shares their TK with BMC (to inform the Mine design, operation or additional mitigation measures), BMC is to keep it confidential and not to share it with other parties. TK provided by RRDC 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.

Although BMC does not currently have a TK specific agreement with LFN, the capacity funding agreement between the parties included the provision for the parties to enter into a TK protocol. It also included provision for LFN to provide a non-confidential TK summary to YESAB during the environmental assessment process which LFN did throughout that process. To date LFN has not entered into a formal TK protocol agreement with BMC.

6.3 FIRST NATIONS INVOLVEMENT

If any new heritage resources in the Project area are identified by RRDC, as per the TK Protocol, 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. In such a case it is likely that an HRIA would be conducted. Qualified heritage contractors and Kaska members would conduct the heritage assessments, prepare artifact catalogs, label artifacts, prepare and pack artifacts for long-term curation, and prepare all necessary reports as required by heritage permits. BMC anticipates that a similar process will be developed through the TK protocol with LFN.

Any activity that requires ground disturbance outside of the areas already assessed will require a heritage impact assessment before site works can begin. As per the previous HRIAs, RRDC and LFN will be included in the planning and participation of the assessment. Upon completion of the assessment a draft report will be provided to the respective RRDC and LFN lands departments and Chiefs and Councils for review and comment prior to the final report being issued to the Heritage Branch.

If authorization is given by Yukon Government for construction to occur within 30 m of a known heritage resource site or within 50 m of human remains, the Environmental Department will tour the area with the construction crew to ensure they are aware of the “*No Work Zone*” and to provide site specific heritage resources training. Further, prior to construction BMC will consult with Kaska and if deemed warranted a Kaska environmental monitor will be present during the specific construction activity.

As noted above, although the Project does not overlap with First Nation Settlement Lands as defined under the Umbrella Final Agreement, RRDC and LFN exercise Aboriginal Rights and Title within the Project Area. RRDC (as the lead Kaska First Nation for the Project) have agreed that all heritage resources recovered from the Project area be stored by Yukon Government until such a time that RRDC has an appropriate storage facility at which point the resources would be stored by RRDC.

6.4 REPORTING REQUIREMENTS

BMC is committed to notifying Kaska (RRDC and LFN) within 24-hours of the discovery of new heritage resources in the Project footprint. Contact information is provided in Table 4-1. All future HRIAs will also continue to be provided to RRDC and LFN.

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APPENDIX A: HERITAGE POLICY



BMC Minerals (No.1) Ltd

Heritage Policy

BMC Minerals (No.1) Ltd ("BMC" or the "Company") recognises that there is a fundamental requirement to conduct the Company's activities in an environmentally responsible and ethical manner with due regard to traditional knowledge and heritage.

BMC recognizes the value that heritage resources have for the Kaska and residents of the Yukon Territory. BMC is committed to protecting Yukon heritage and will comply with the *Yukon Historic Resource Act*, the *Yukon Archaeological Sites Regulation*, and agreements with the Kaska.

BMC is committed to building awareness and respect for heritage resources. To accomplish these objectives BMC will:

- Develop a heritage resource protection plan
- Incorporate Kaska views and traditional knowledge in planning, development and operations
- Incorporate heritage resource protection into all activities
- Deliver heritage and cultural awareness training to our employees and contractors
- Maintain the confidentiality of Kaska traditional knowledge and heritage sites

This policy shall be supported by appropriate standards, procedures and programmes that are designed to achieve the policy objectives.

A handwritten signature in black ink that reads 'George'.

George Smith

Date: February 2019

Director

APPENDIX B: HERITAGE RESOURCE ASSESSMENTS

APPENDIX B1



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Preliminary Report of the Archaeological Reconnaissance of the Kudz Ze Kayah Project, Central Yukon

Phase 1

Prepared by

Douglas Rutherford

for

Norecol, Dames & Moore, Inc., Vancouver, BC

Ross River Dena Council, Ross River, YT

Heritage Branch, Government of Yukon, Whitehorse, YT

May 1995

Introduction

Cominco Ltd. is assessing the potential of developing a mine and support facilities at the Kudz Ze Kayah (KZK) site located approximately 110 km southeast of Ross River, Yukon. The mine is to be located at the headwaters of Finlayson Creek. To advance the exploration, construction of a tote road is proposed for late May or early June, dependent upon weather. The road will be approximately 22 km in length and run from the Robert Campbell Highway near Finlayson Lake to the KZK site.

Construction of the tote road is part of the Advanced Exploration Project proposed by Cominco. The AEP has been submitted for Level 1 screening under the Federal Environmental Assessment and Review Process Guidelines and, as part of its submission, Cominco has committed to conduct a heritage resource assessment of the tote road corridor in advance of construction. Additional heritage assessment will be required for the mine area, including the pit, potential waste rock and tailings sites and the mill site. This assessment will be used for aiding mine planning and to form the basis for a later heritage impact assessment for the mine area.

Little is known about the archaeological resources in the area but it is assumed to be high. The project area lies within the range of the Finlayson caribou herd, which uses the general area during the spring calving and fall rutting periods. The Finlayson caribou herd is the second largest in the Yukon and the area has a long history of supporting subsistence hunting. A helicopter survey in 1994 failed to locate caribou fences (Norelco, Dames & Moore 1995).

The heritage resource assessment is to be conducted in three phases. Phase 1 is the resource assessment of the proposed tote road from the Robert Campbell Highway to the Kudz Ze Kayah mine site. Phase 2 is the assessment of the mine area itself. Phase 3 requires a complete impact assessment of the mine area. It is presently planned to conduct Phase 3 only if the exploration work at the mine suggests proceeding with the project to the permitting stage.

This preliminary report concerns the findings of Phase 1, which was conducted during the period of May 4-17, 1995. During this time, the author and one field assistant conducted an archaeological reconnaissance of the proposed road alignment to determine the location, size, age, and importance of potential archaeological resources. Concurrently, an oral history project was

conducted to determine traditional land use within the project area by an elder of the Ross River Dena Council. Seven elders were interviewed during the project.

This preliminary report will discuss the project area, methodology used during Phase 1, areas tested, and results of the archaeological reconnaissance of the road alignment. The oral history interviews are still in the process of being translated from Kaska and these will be included in the final report.

Methodology

The study used two approaches for determining potential archaeological resources within the proposed road corridor: a community study of traditional land use within the area and an archaeological survey of the route.

The interviews with elders were conducted during the period of May 4-13, 1995 by Doris Bob, an elder of the Ross River Dena Council. All informants were briefed regarding the aims of the project and the project area involved. Each was also informed that, should they choose, they could withdraw from participating in the project up until the completion of the project report. They were also given the option of having the interview tape recorded or to have written notes made of the interview. With one exception, all interviews were taped.

Further, informants were given the option of having copies deposited at the Yukon Archives in Whitehorse and at the Ross River Dena Council for the benefit of future research, and of receiving a copy of the interview themselves. All of the informants chose all of the above options.

With the exception of the informant who would not permit tape recording, the interview material was largely conducted in Kaska. The tapes have been submitted for translation. The material from the informant who wished only written notes has already been translated into English.

Informant donor sheets were filled out and signed by each participant in the oral history component of Phase 1. These outline the various options available and explain the project's aims

as well as functioning as a consent form for participating in the project. A sample donor form used for Phase 1 is attached as Appendix A.

The field reconnaissance was conducted during the period of May 15-17, 1995 by the author and Johnnie Ladue, a member of the Ross River Dena Council. The reconnaissance was performed in stages. The first was a survey of known resources in the area. To date, no archaeological work had been conducted in the project area. This was followed by a topographical map survey performed using NTS 1:50,000 scale maps of the region (Energy, Mines and Resources 1973, 1984). The topographic map survey was augmented by an examination of 1:40,000 scale air photos of the region in question held by Forestry Branch, Department of Indian and Northern Affairs, Whitehorse. Several areas of medium to high potential were identified for intensive testing.

On May 14, 1995 the author met with Olav Naas, the engineer responsible for the route determination for the access road, in Faro. He had foot surveyed several areas of the route the previous day with Donald MacLeod, a member of the Ross River Dena Council. The purpose of the meeting was to discuss route changes made since the alignment was originally established (Skeena Project Services, 1995a-f).

The next component of Phase 1 was a helicopter over-flight of the road alignment to identify areas of medium to high potential for subsurface testing. Particular attention was paid to those areas identified during the map and air photo survey of the region. In total, two complete flights were made over the proposed road alignment and two portions of the route received two additional low level flights.

The second stage comprised testing these areas by excavating test units measuring approximately 50 x 50 cm in size. Units were excavated using shovel and trowel and details of each were recorded using test pit forms. A sample test pit form is attached as Appendix B. All tested areas were described in relation to surface geology, reasons for requiring subsurface testing, vegetation, and stratigraphy. A total of 15 areas were selected for subsurface testing.

Further, over half of the proposed route was foot surveyed by the author and field assistant. Attention was paid to topographical features and to potential artifacts eroding from an existing winter road which coincides with a substantial portion of the proposed route.

Project Area

The proposed road alignment extends from the Robert Campbell Highway near the east end of Finlayson Lake in a southerly direction along the route of Finlayson Creek. The route crosses Finlayson Creek with a flat deck rail car bridge as a permanent crossing (Norecol, Dames & Moore, Inc. 1995) near UTM grid reference E41455 N682035, grid zone 9V, square identifier VU (Energy, Mines and Resources 1973). The road then parallels the route of Geona Creek to the Kudz Ze Kayah mine area at UTM grid reference E415 N6815 N682035, grid zone 9V, square identifier VU (Energy, Mines and Resources 1984).

The route elevation ranges from 1033 m above sea level at its starting point to a high of approximately 1412m above sea level (Skeena Project Services 1995a-f). Much of the route lies upon side hill slopes, as the general trend of the landscape is to slope downwards towards Finlayson and Geona Creeks along the route.

Vegetation throughout much of the route is principally white spruce (*Picea mariana*) in varying degrees of density. Some poplar (*Populus*) were also observed along the route. The understory is principally moss and lichen (*Cladonia*) with small shrubs such as dwarf willow and Labrador tea. No concentrations of berry bushes were observed during the Phase 1 testing.

The project area lies within the zone of discontinuous permafrost. Permafrost conditions were identified along much of the route (Skeena Project Services 1995a-f) and through subsurface testing. The result of this situation was that a substantial portion of the project route was very swampy and wet. The ground was similar to muskeg and walking conditions for the field crew were difficult. This has led the project engineer to route much of the alignment along eskers whenever possible (Olav Naas, personal communication 1995). These are frequently narrow at their tops (e.g. the esker running between chainage 2+000 to approximately 4+200 varies in width between 3-6 m at the top).

Some local wildlife resources in the vicinity were observed during the course of Phase 1 testing. These included large animals such as woodland caribou (*Rangifer tarandus*), tracks and droppings of moose (*Alces alces*), black bear (*Ursus americanus*), and sightings of stone sheep (*Ovis*

stonei) in the North Lakes valley. Smaller wildlife observed included red squirrel (*Tamiascurus hudsonicus*) and spruce grouse (*Canachites canadensis*).

Tested Areas

No cultural material was observed during Phase 1 testing. A total of 15 areas received subsurface testing. These were selected based upon their potential for archaeological resources. Emphasis was placed upon geographical factors such as proximity to water (including consideration of landscape change over time), drainage, and level surfaces. Areas were eliminated where slope precluded comfortable living conditions.

The locations of tested areas include UTM grid references. All references are from Zone 9, grid square identifier VU. The route is found on two NTS map sheets, 106G/10 and 105G/7 (Energy, Mines and Resources 1973, 1984). Detailed maps will be included in the final report.

Area 1

Area 1 was located in a potential borrow pit, identified by the route drawings (Skeena Project Services 1995a). It is located at grid reference E4183 N68357. Vegetation was predominately spruce with moss, lichen and small shrubs. The soil was poorly developed with only a thin (c. 5 cm) B horizon of brown or grey/brown sand and gravel over a C horizon of tan gravel and sand. Both the B and C horizons had substantial amounts of cracked and broken till. The ash layer showed some charcoal staining at the E to B horizon interface. The A horizon was approximately 5 cm in thickness and comprised light brown humus. Three units (TP1-TP3) were placed in Area 1, 10 m apart and approximately 15 m west of the road alignment.

Area 2

Area 2 was on a raised point, probably situated on a fossil drainage. It was located at grid reference E4181 N68351. Vegetation was spruce with some willow, moss and shrubs as ground cover. Soil development was also poor here. The A horizon was dark brown humus, underlain by an E horizon of compacted, plastic grey ash. The B horizon was a brown or red/brown coarse

gravel and sand mixture. The C horizon was brown gravel and cracked and broken till. Three units (TP4-TP6) were placed here 10 m apart, perpendicular to the road alignment.

Area 3

Area 3 was relatively flat and overlooked a small depression to the east. This may have overlooked a fossil drainage. Area 3 is located at grid reference E4174 N68332. Vegetation was spruce with small shrubs and moss and lichen as ground cover. Four units (TP7-10) were placed on the east side of the road alignment, approximately 10 m apart. The A horizon was dark brown humus, overlying an E horizon of compressed grey ash (the ash level was absent in TP7). The B horizon was red/brown sand while the C horizon was tan sand and gravel. Both the B and C horizons contained substantial amounts of till and digging in these levels was difficult.

Area 4

Area 4 was situated along a stream approximately 1 m in width. This was located at grid reference E4174 N68325. The vegetation was spruce with some dwarf willow and moss and small shrubs as understory. Two units were placed along the stream (TP11-TP12). However, in both cases, these were excavated to the bottom of the A horizon of dark brown humus. The underlying levels were frozen. The next level was a grey material, but it was impossible to determine if this was the E, B or C horizon due to the permafrost.

Area 5

Permafrost was also a problem in the vicinity of Area 5. This was situated on a rise looking east toward Finlayson Creek. Area 5 was located at grid reference E4173 N68322. Vegetation was scrub spruce with moss and small shrubs. Four units were placed along the area, approximately 5 m apart (TP13-TP16). Three of these units could only be excavated to the bottom of the A₂ horizon of dark brown humus. Underlying this was a level of grey frozen material. One unit, TP15, had thawed sufficiently to allow the determination of this to be grey sand and gravel comprising the probable C horizon. It is not known whether this is the same for the remaining units in this area.

Area 6

Area 6 was situated along a terrace overlooking a small pond to the west. The area is located at grid reference E4171 N68315. Vegetation was sparse spruce and willow with small shrubs. Five units (TP17-TP21) were placed on the east side of the road parallel to the alignment, spaced approximately 5 m apart. Stratigraphy was well defined with a thin A horizon of light brown humus overlying the E horizon. The character of the ash lay did vary, ranging from a plastic clay-like consistency to a sandy one. It is possible that some podsol formation has taken place here, but this was not determined. The B horizon was a grey plastic sand or silty sand with charcoal staining at the interface with the E horizon. In two units, TP18 and TP21, permafrost prevented excavation beyond the B horizon. The C horizon in the remaining units was comprised of a tan platy sand.

Area 7

Area 7 was located on a ridge on the south end of the same pond discussed in Area 6. Testing was conducted at grid reference E4168 N68314. This was also located on a terrace overlooking the pond. Several game trails were also located in this area. Vegetation was sparse spruce with moss and shrubs. Four units (TP22-25) were placed approximately 5 m apart on the ridge near the road alignment. The A horizon was thin (c. 3-5 cm) and comprised brown to dark brown humus. Stratigraphy varied in the remaining levels (i.e. in one example, TP23, there was no ash layer. TP24 and TP25 had not B horizon, with the ash layer situated directly above a C horizon of dark grey clayey silt with cracked and broken till.)

Area 8

Area 8 was located on the bank of a swiftly flowing small creek. The area was situated on the east side of the road alignment at grid reference E4160 N68311. Vegetation was thin spruce with moss and small bushes as ground cover. Two units (TP26-TP27) were placed here. Both units were frozen in the A horizon of dark brown humus and roots. Permafrost prevented excavating the units to a greater depth. Because the ground was frozen, no further units were placed in this area.

Area 9

Area 9 was a raised knob east of the winter road. This was located at grid reference E4171 N68297. The vegetation in the area was spruce with small shrubs and moss and lichen. Three units (TP28-TP30) were placed here. Soil development was poor here. A thin A horizon (c. 3 cm) of dark and red/brown humus overlay a grey sandy ash layer in several of the pits. One unit (TP30) had the C horizon directly under the A. The B horizon was a grey sand, while the C was principally grey platy sand with till.

Area 10

Area 10 was located on a ridge overlooking a small stream flowing easterly to Finlayson Creek, approximately 500 m away. Area 10 is situated at grid reference E4168 N68291. Two units were placed here but both were frozen in the A horizon of dark brown humus (TP31-32). Underlying this was a level of frozen grey material. It was not possible to determine if this was the E, B or C horizon.

Area 11

Area 11 was an area of high archaeological potential. This was situated on a small raised terrace on the west bank of Finlayson Creek and offered a commanding view both up and down stream. The flat surface of the terrace would have made a comfortable, dry camp site. Area 11 was located at grid reference E4171 N68272. Vegetation comprised a few spruce trees with lichen, moss and small shrubs as the principal ground cover. Four units (TP33-36) were placed along the length of the level terrace surface, parallel to the road and spaced approximately 5 m apart. The A horizon was a layer of dark brown humus, with a layer of grey sandy ash underlaying it. The B horizon varied. TP33 had a B horizon of red/brown coarse sand. In TP34, a B₁ horizon of dark brown clayey sand was observed over a B₂ horizon of orange/brown coarse sand with till. A B horizon of dark brown silty sand with charcoal staining was observed at TP 35. TP36 had a B horizon of red/brown sand with charcoal staining. The C horizon was a grey or grey/brown coarse sand with till with the exception of TP36. Here, the C horizon was frozen and its constituents could not be determined.

staining near the E interface. The remaining units had a B₁ horizon of brown/grey sand and a B₂ horizon of red/brown sand. The C horizon was red/brown or orange gravel with till.

Area 15

Area 15 was located upon a terrace on the west bank of Geona Creek, grid reference E4151 N68169. Vegetation was sparse spruce with moss, lichen and a few small shrubs. Nine units (TP52-TP60) were placed along the level surface of the terrace, five units on the west of the road and four units on the east. The A horizon for all units was dark brown humus with an E horizon of grey or grey/brown ash. On the west side of the road, the B horizon was grey or grey/brown sand with charcoal staining. On the east side of the road, the B horizon was red/brown or grey/brown sand. The C horizon was orange/brown or red/brown sand with gravel and till.

Conclusions

No evidence of cultural material or features was observed during the Phase 1 portion of the project. More than half of the route was foot surveyed by the author and field assistant and the remaining portions of the route received a total of four helicopter overflights at low level to identify areas with sufficient potential to warrant subsurface testing.

The greatest portion of the proposed route runs along the side of a slope in areas of permafrost or muskeg. It is presumed that First Peoples may have passed through this area into more comfortable areas for the purposes of hunting caribou and sheep, trapping, or berry picking. However, no evidence was discovered to suggest such use was intensive enough to produce a substantial archaeological record. It is the recommendation of the principal investigator that road construction be approved in relation to heritage concerns.

References Cited

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1984 Grass Lakes. NTS Map Series 105G/7, Edition 1. . Ottawa: Energy, Mines and Resource Canada.

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Skeena Project Services

1995a Cominco Ltd. Kuz Ze Kayah Project, Proposed Access Road Sta. 0+000 to 4+000.
Unpublished drawing, Terrace, BC.

1995b Cominco Ltd. Kuz Ze Kayah Project, Proposed Access Road Sta. 4+000 to 8+000.
Unpublished drawing, Terrace, BC.

1995c Cominco Ltd. Kuz Ze Kayah Project, Proposed Access Road Sta. 8+000 to 12+000.
Unpublished drawing, Terrace, BC.

1995d Cominco Ltd. Kuz Ze Kayah Project, Proposed Access Road Sta. 12+000 to 16+000.
Unpublished drawing, Terrace, BC.

1995e Cominco Ltd. Kuz Ze Kayah Project, Proposed Access Road Sta. 16+000 to 20+000.
Unpublished drawing, Terrace, BC.

1995f Cominco Ltd. Kuz Ze Kayah Project, Proposed Access Road Sta. 20+000 to 23+000.
Unpublished drawing, Terrace, BC.

Appendix A

ORAL HISTORY INTERVIEW RELEASE FORM

Project: Kudz Ze Kayah Mine Site, Archaeological Assessment

Date: _____

I give permission to conduct an interview to be used to provide information for the project named above. I understand the project is being conducted to :

- determine what possible archaeological sites may be located in the area of the mine and the access road being constructed to the site; and
- determine what must be done to protect any archaeological materials discovered during the project.

I understand the the aims of the oral history interview are to:

- assist in locating possible archaeological sites in the mine area and access road by using traditional knowledge about the area to predict site locations; and
- give the project staff a better idea of traditional practices in the region.

I am also aware that I may withdraw from the project or may edit responses at any time up to the date of the project completion, June 15th, 1995.

- ☐ I give permission for the interview to be tape recorded.
- ☐ I give permission for written notes to be kept for the interview.
- ☐ I would like a copy of the interview/written notes to be deposited at Yukon Archives to benefit future researchers.
- ☐ I would like a copy of the interview/written notes to be deposited with Ross River Dena Council to benefit future researchers.
- ☐ I would like a copy of the interview tape/written notes for myself.

Name (please print): _____

Address: _____

Signature: _____

Date: _____

Interviewer: _____

Appendix B

Project: Kudz Ze Kayah Access Road Test Pit: _____

Date: _____

Soil Descriptions:	
	0
	10
	20
	30
	40
	50
	60
	70
	80
	90
	Cm

Artifacts, Features Discovered:

APPENDIX B2



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Archaeological Reconnaissance of the Kudz Ze Kayah Project, Central Yukon

Phases 1 and 2

Prepared by

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for

Norecol, Dames & Moore, Inc., Vancouver, BC

Ross River Dena Council, Ross River, YT

Heritage Branch, Government of Yukon, Whitehorse, YT

June 1995

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Introduction

Cominco Ltd. is assessing the potential of developing a mine and support facilities at the Kudz Ze Kayah (KZK) site located approximately 110 km southeast of Ross River, Yukon. The mine is to be located at the headwaters of Finlayson Creek. To advance the exploration, construction of a tote road was proposed for late May or early June, 1995 dependent upon weather. The road is approximately 24 km in length and runs from the Robert Campbell Highway near the east end Finalyson Lake to the KZK site.

Construction of the tote road is part of the Advanced Exploration Project proposed by Cominco. The AEP has been submitted for Level 1 screening under the Federal Environmental Assessment and Review Process Guidelines and, as part of its submission, Cominco committed to conduct a heritage resource assessment of the tote road corridor in advance of construction. Additional heritage assessment was required for the mine area, including the pit, potential waste rock and tailings sites and the mill site.

Little is known about the archaeological resources in the area but it was assumed to be high. The project area lies within the range of the Finlayson caribou herd, which uses the general area during the spring calving and fall rutting periods. The Finlayson caribou herd is the second largest in the Yukon and the area has a long history of supporting subsistence hunting. A helicopter survey in 1994 failed to locate caribou fences (Norecol, Dames & Moore 1995).

The heritage resource assessment was conducted in two phases. Phase 1 is the resource assessment of the proposed tote road from the Robert Campbell Highway to the Kudz Ze Kayah mine site. Phase 2 is the assessment of the mine area itself.

This report concerns the findings of Phase 1 and Phase 2, which was conducted during the period of May 4-24, 1995. During this time, the author and one field assistant conducted an archaeological reconnaissance of the proposed road alignment and mine area to determine the location, size, age, and importance of potential archaeological resources. Concurrently, an oral history project was conducted to determine traditional land use within the project area by an elder of the Ross River Dena Council. Seven elders were interviewed during the project.

This report will discuss the project area and its environmental context, methodology used during Phase 1 and Phase 2, traditional land use, areas tested, and results of the archaeological reconnaissance.

Project Area and Environmental Context

The proposed road alignment extends from the Robert Campbell Highway near the east end of Finlayson Lake in a southerly direction along the route of Finlayson Creek. The route crosses Finlayson Creek with a flat deck rail car bridge as a permanent crossing (Norecol, Dames & Moore, Inc. 1995) near UTM grid reference E41455 N682035, grid zone 9V, square identifier VU (Energy, Mines and Resources 1973). The road then parallels the route of Geona Creek to the Kudz Ze Kayah mine area at UTM grid reference E415 N6815 N682035, grid zone 9V, square identifier VU (Energy, Mines and Resources 1984).

The route elevation ranges from 1033 m above sea level at its starting point to a high of approximately 1412m above sea level (Skeena Project Services 1995a-f). Much of the route lies upon side hill slopes, as the general trend of the landscape is to slope downwards towards Finlayson and Geona Creeks along the route.



Figure 1. Spruce forest along the proposed access road to the Kudz Ze Kayah Mine site.

Vegetation throughout much of the route is principally white spruce (*Picea mariana*) in varying degrees of density (Figure 1). Some poplar (*Populus*) was also observed along the route. The understory (Figure 2) is principally moss and lichen (*Cladonia*) with small shrubs such as dwarf willow and Labrador tea. No concentrations of berry bushes were observed during the Phase 1 testing and in only one area in Phase 2.



Figure 2. Typical understory within the project area.

The area lies within the Tintina trench with the Tintina fault found north of the mine site and access road. The bedrock is primarily composed of Proterozoic age schist and gneisses and Mesozoic age granitic rocks (Templeman-Kluit 1972).

The project area lies within the zone of discontinuous permafrost. Permafrost conditions were identified along much of the route (Skeena Project Services 1995a-f) and through subsurface testing. The result of this situation was that a substantial portion of the project route was very swampy and wet (Figure 3). The ground was similar to muskeg and walking conditions for the field crew were difficult. This has led the project engineer to route much of the

alignment along eskers whenever possible (Olav Naas, personal communication 1995). These are frequently narrow at their tops (e.g. the esker running between chainage 2+000 to approximately 4+200 varies in width between 3-6 m at the top).

Wildlife resources include a number of mammals species, both large and small, available for exploitation. Table 1 lists the known mammal species found within the project area. These include the primary food species for the Kaska, caribou (*Rangifer tarandus*) and moose (*Alces alces*) (McDonnell 1975). Other species include red squirrel (*Tamiasciurus hudsonicus*), ground squirrel (*Spermophilus parrii*), fox (*Vulpes vulpes*), beaver (*Castor canadensis*), lynx (*Felis canadensis*), porcupine (*Erethizon dorsatum*), muskrat (*Ondatra zibethicus*), marten (*Martes americanus*), ermine (*Mustela erminea*), least weasel (*Mustela nivellus*), mink (*Mustela vison*), wolverine (*Gulo gulo*), otter (*Lutra canadensis*), black bear (*Ursus*

americanus) and grizzly bear (*Ursus arctos*) (Youngman 1975). These mammals provided fur and, in many cases, food resources for prehistoric inhabitants of this region (McDonnell 1975).

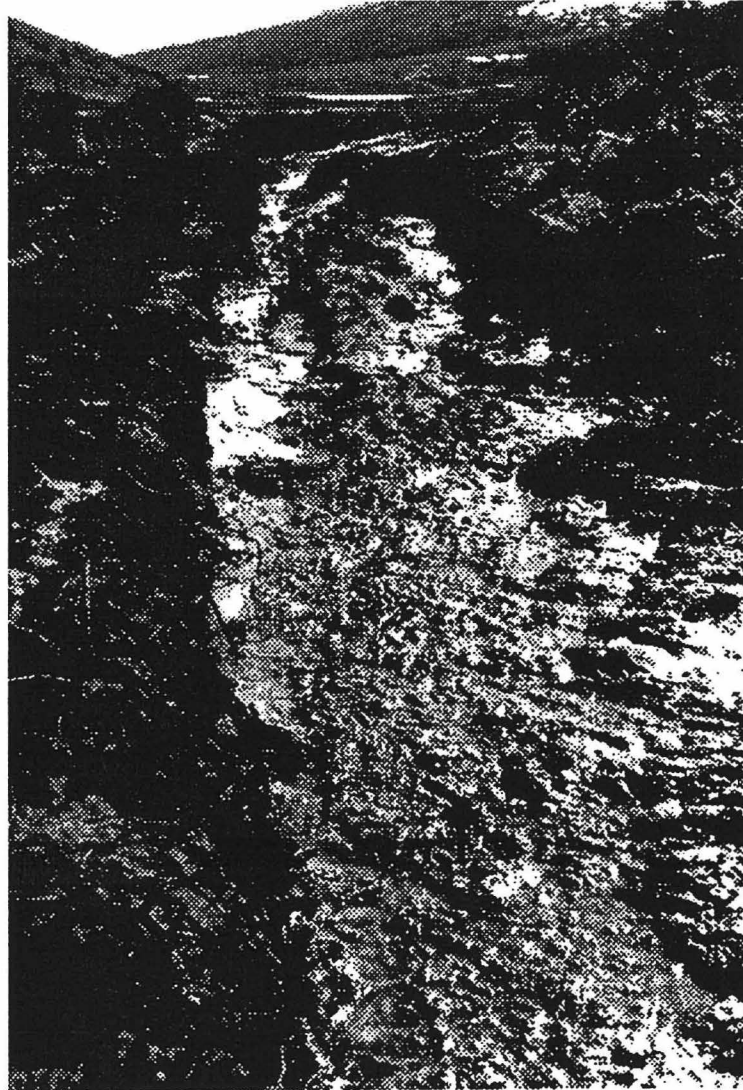


Figure 3. Muskeg conditions, probably a result of permafrost, observed along the proposed access road to the mine site.

Mammals found in the KZK Mine Region	
<i>Sorex cinerus</i>	Masked shrew
<i>Sorex tundrensis</i>	Arctic shrew
<i>Sorex obscurus</i>	Dusky shrew
<i>Sorex palustris</i>	Water shrew
<i>Microsorex hoyi</i>	Pygmy shrew
<i>Myotis lucifuges</i>	Little brown bat
<i>Ochotona princeps</i>	Pika
<i>Lepus americanus</i>	Hare
<i>Eutamias minimus</i>	Least chipmunk
<i>Marmota caligata</i>	Hoary marmot
<i>Spermophilus parryi</i>	Arctic ground squirrel
<i>Tamiasciurus hudsonicus</i>	Red squirrel
<i>Galucromys sabrinus</i>	Northern flying squirrel
<i>Castor canadensis</i>	Beaver
<i>Peromyscus maniculatus</i>	Deer mouse
<i>Noetoma cinerea</i>	Bushy tailed wood rat
<i>Clethrionomys rutilus</i>	Red backed vole
<i>Microtus pennsylvanicus</i>	Meadow vole
<i>Microtus oeconomus</i>	Northern vole
<i>Microtus longicaudus</i>	Long tailed vole
<i>Ondatra zibethicus</i>	Muskrat
<i>Lemmus sibiricus</i>	Siberian lemming
<i>Synaptomys borealis</i>	Northern bog lemming
<i>Erethizon dorsatum</i>	Porcupine
<i>Canis latrans</i>	Coyote
<i>Canis lupus</i>	Wolf
<i>Vulpes vulpes</i>	Red fox
<i>Ursus americanus</i>	Black bear
<i>Ursus arctos</i>	Grizzly bear
<i>Martes americanus</i>	Marten
<i>Mustela erminea</i>	Ermine
<i>Mustela nivulus</i>	Least weasel
<i>Mustela vison</i>	Mink
<i>Gulo gulo</i>	Wolverine
<i>Lutra canadensis</i>	Otter
<i>Felis canadensis</i>	Lynx
<i>Alces alces</i>	Moose
<i>Rangifer tarandus</i>	Caribou
<i>Ovis dalli stonei</i>	Stone sheep

Table 1. Mammals found within the area of the Kudzu Ze Kayah Mine (after Youngman 1975).

The creeks, lakes and rivers in the vicinity provide resources as well.

Fish species present include arctic grayling (*Thymallus arcticus*), whitefish (*Prosopium cylindraceum*) and lake trout (*Salvelinus namaycush*) (Kindle 1946).

A broad number of avian species, both migratory and year round residents, were also available for exploitation (Rand 1946). Prominent wetland species include the common loon (*Gavia immer*), arctic loon (*Gavia arctica*), red-throated loon (*Gavia stellata*), red-necked grebe (*Colymbus gresenga*), horned grebe (*Colymbus auritus*), whistling swan (*Cygnus columbianus*), Canada goose (*Branta canadensis*), common mallard (*Anas platyrhynchos*), green-winged teal (*Anas carolinensis*), American pintail (*Anas acuta*), American widgeon (*Mareca americana*), shoveller duck (*Spatula clypeata*), lesser scaup (*Aythya affinis*), barrow golden-eye (*Glaucionetta islandica*), buffle-head (*Glaucionetta albeola*), white-winged scoter (*Melanitta*

fusca), surf scoter (*Melanitta perspicillata*), and common merganser (*Mergus merganser*). Terrestrial birds present include the blue grouse (*Dendragapus obscurus*), spruce grouse (*Canachites canadensis*),

ruffed grouse (*Bonasa umbellus*), sharp-tailed grouse (*Pedioecetes phasianellus*), willow ptarmigan (*Lagopus lagopus*), rock ptarmigan (*Lagopus mutus*), white-tailed ptarmigan (*Lagopus mutus*), and a variety of smaller songbirds.

The climate of the region is typical for much of the North American subarctic with a long winter and short summer. The average annual temperature for Ross River, the closest community is -5.3°C . The average January mean temperature is -29.3°C , while that of July is 13.1°C . The area is dry, with an average annual precipitation of 267.5 cm, of which 157.5 cm fall as rain and 110.0 cm fall as snow. The prevailing wind is easterly, averaging 8 km/hr. There are an average of 25 frost free days per year, with the last spring frost ending July 1 and the first fall frost starting on July 27 (Government of Yukon 1983).

Methodology

The study used two approaches for determining potential archaeological resources within the proposed road corridor and mine site: a community study of traditional land use within the area and an archaeological survey of the project area.

The interviews with elders were conducted during the period of May 4-13, 1995 by Doris Bob, an elder of the Ross River Dena Council. All informants were briefed regarding the aims of the project and the project area involved. Each was also informed that, should they choose, they could withdraw from participating in the project up until the completion of the project report. They were also given the option of having the interview tape recorded or to have written notes made of the interview. With one exception, all interviews were taped.

Further, informants were given the option of having copies deposited at the Yukon Archives in Whitehorse and at the Ross River Dena Council for the benefit of future research, and of receiving a copy of the interview themselves. All of the informants chose all of the above options.

Except for the informant who would not permit tape recording, the interview material was largely conducted in Kaska. The tapes have been submitted for translation. The material from the informant who wished only written notes has already been translated into English.

Informant donor sheets were filled out and signed by each participant in the oral history component of Phase 1. These outline the various options available and explain the project's aims as well as functioning as a consent form for participating in the project. A sample donor form used for Phase 1 is attached as Appendix A.

The field reconnaissance for Phase 1 was conducted during the period of May 15-17, 1995 by the author and Johnnie Ladue, a member of the Ross River Dena Council. Fieldwork for Phase 2 was conducted over May 23 and May 24, 1995. The reconnaissance was performed in stages. The first was a survey of known resources in the area. To date, no archaeological work had been conducted in the project area. This was followed by a topographical map survey performed using NTS 1:50,000 scale maps of the region (Energy, Mines and Resources 1973, 1984). The topographic map survey was augmented by an examination of 1:40,000 scale air photos of the

region in question held by Forestry Branch, Department of Indian and Northern Affairs, Whitehorse. Several areas of medium to high potential were identified for intensive testing.

On May 14, 1995 the author met with Olav Naas, the engineer responsible for the route determination for the access road, in Faro. He had foot surveyed several areas of the route the previous day with Donald MacLeod, a member of the Ross River Dena Council. The purpose of the meeting was to discuss route changes made since the alignment was originally established (Skeena Project Services, 1995a-f).

The next component was a helicopter over-flight of the road alignment and mine area to identify areas of medium to high potential for subsurface testing. Particular attention was paid to those areas identified during the map and air photo survey of the region. In total, two complete flights were made over the proposed road alignment and two portions of the route received two additional low level flights. Two additional overflights of the mine area were conducted during Phase 2.

The second stage comprised testing these areas by excavating test units measuring approximately 50 x 50 cm in size. Units were excavated using shovel and trowel and details of each were recorded using test pit forms. A sample test pit form is attached as Appendix B. All tested areas were described in relation to surface geology, reasons for requiring subsurface testing, vegetation, and stratigraphy. A total of 21 areas were selected for subsurface testing.

Further, over half of the proposed route was foot surveyed by the author and field assistant. Attention was paid to topographical features and to potential artifacts eroding from an existing winter road that coincides with a substantial portion of the proposed route.

Traditional Land Use

The oral history interviews were collected by Doris Bob, an elder of the Ross River Dena Council. Translations were conducted by Patrick Moore of the Native Language Centre, Yukon College, Whitehorse. The interview transcripts are attached as Appendices C-G.

The interviews presented an overview of much of the subsistence activities conducted in the area south of Finlayson Lake and to the east at Frances Lake. However, little traditional use within the project area was discussed.

Of prime reference to the project were several descriptions of activities conducted within the North Lakes area (see Energy, Mines and Resources 1984). References were made to the hunting of moose, caribou and sheep and the known presence of several species of fish in North Lake. Wolverine Lake, located east of the project area, is identified as a summer hunting location. Finlayson Lake is also known for its traditional usage as a caribou hunting area.

No definite references were included in routes of travel to the North Lakes region. However, the Finlayson Creek route into the North Lakes area does represent a likely method for entry into the valley from the north. Alternatively, travel to Wolverine Lake would also suggest and westward method of entry to the North Lakes. It is assumable that some traditional travel took place along the proposed road route and mine location. The intensity of such use, however, may not have resulted in significant archaeological deposits.

Tested Areas

No cultural material was observed during Phase 1 testing. A total of 15 areas received subsurface testing. These were selected based upon their potential for archaeological resources. Emphasis was placed upon geographical factors such as proximity to water (including consideration of landscape change over time), drainage, and level surfaces. Areas were eliminated where slope precluded comfortable living conditions.

The locations of tested areas include UTM grid references. All references are from Zone 9, grid square identifier VU. The route is found on two NTS map sheets, 106G/10 and 105G/7 (Energy, Mines and Resources 1973, 1984). Detailed maps will be included in the final report.

Area 1

Area 1 was located in a potential borrow pit, identified by the route drawings (Skeena Project Services 1995a). It is located at grid reference E4183 N68357. Vegetation was predominately spruce with moss, lichen and small shrubs. The soil was poorly developed with only a thin (c. 5 cm) B horizon of brown or grey/brown sand and gravel over a C horizon of tan gravel and sand. Both the B and C horizons had substantial amounts of cracked and broken till. The ash layer showed some charcoal staining at the E to B horizon interface. The A horizon was approximately 5 cm in thickness and comprised light brown humus. Three units (TP1-TP3) were placed in Area 1, 10 m apart and approximately 15 m west of the road alignment.

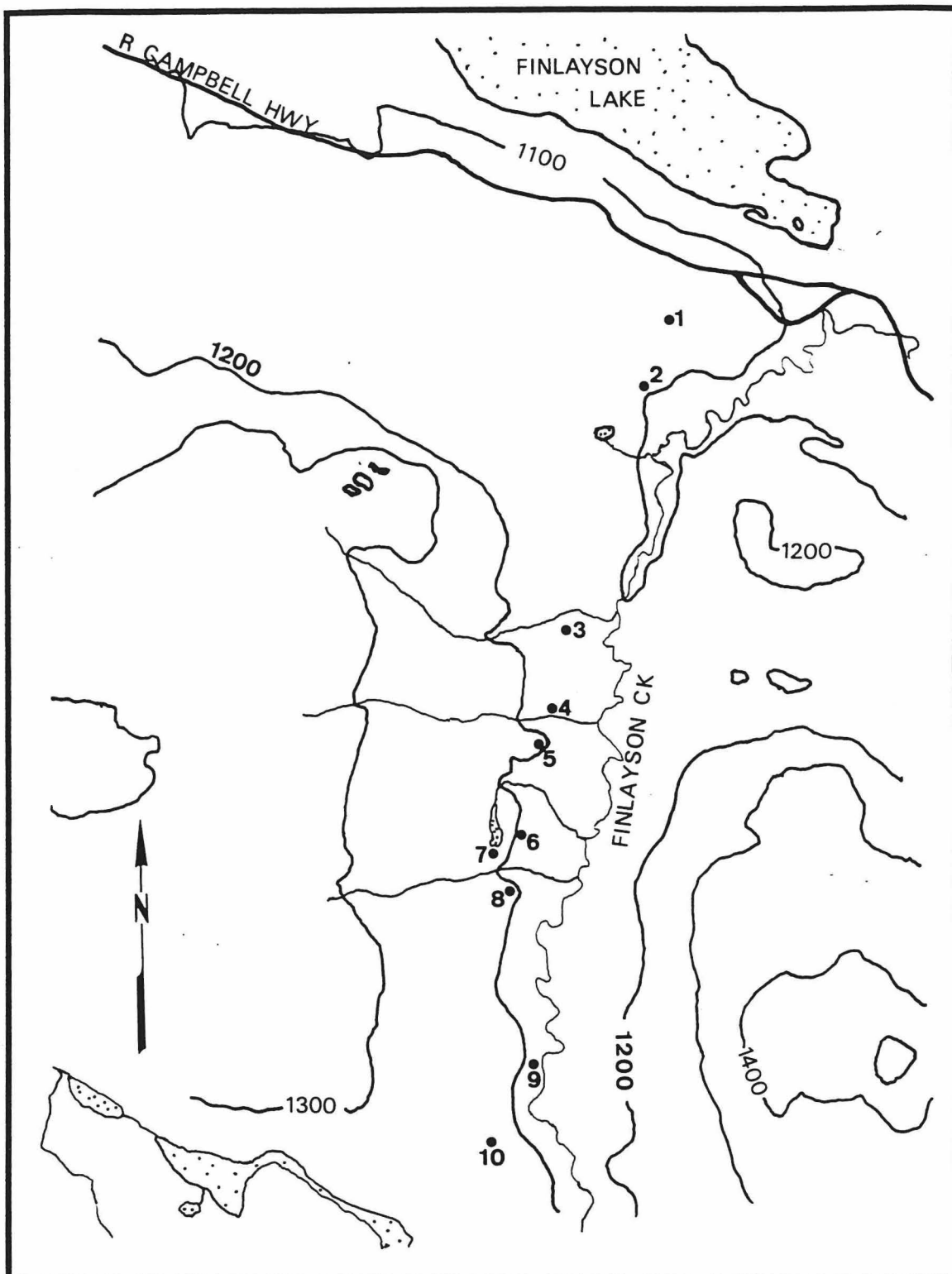
Area 2

Area 2 was on a raised point, probably situated on a fossil drainage. It was located at grid reference E4181 N68351. Vegetation was spruce with some willow, moss and shrubs as ground cover. Soil development was also poor here. The A horizon was dark brown humus, underlain by an E horizon of compacted, plastic grey ash. The B horizon was a brown or red/brown coarse gravel and sand mixture. The C horizon was brown gravel and cracked and broken till. Three units (TP4-TP6) were placed here 10 m apart, perpendicular to the road alignment.

Area 3

Area 3 was relatively flat and overlooked a small depression to the east. This may have overlooked a fossil drainage. Area 3 is located at grid reference E4174 N68332. Vegetation was spruce with small shrubs and moss and lichen as ground cover. Four units (TP7-TP-10) were

Figure 4. (facing page) Map showing tested areas along the proposed road alignment . Figure 5 map is directly south.



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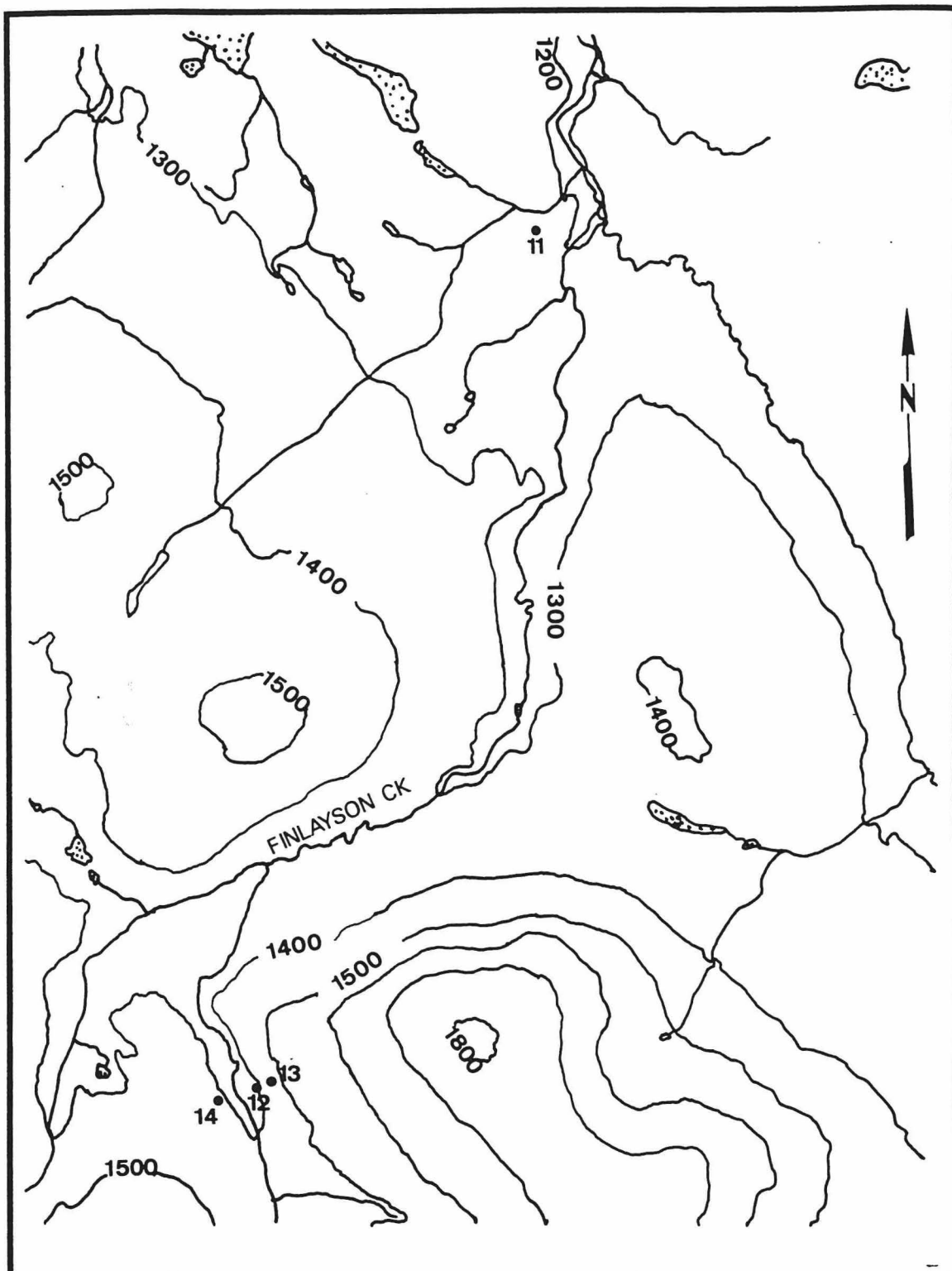
**Kudz Ze Kayah Archaeological
 Assessment, Phase 1 Testing**

Drawing
 95-1

Date
 June 5/95

Scale
 1:50,000

Figure 5. (facing page) Map showing tested areas along the proposed road alignment . Figure 6 map is directly south . Figure 4 map is directly north.



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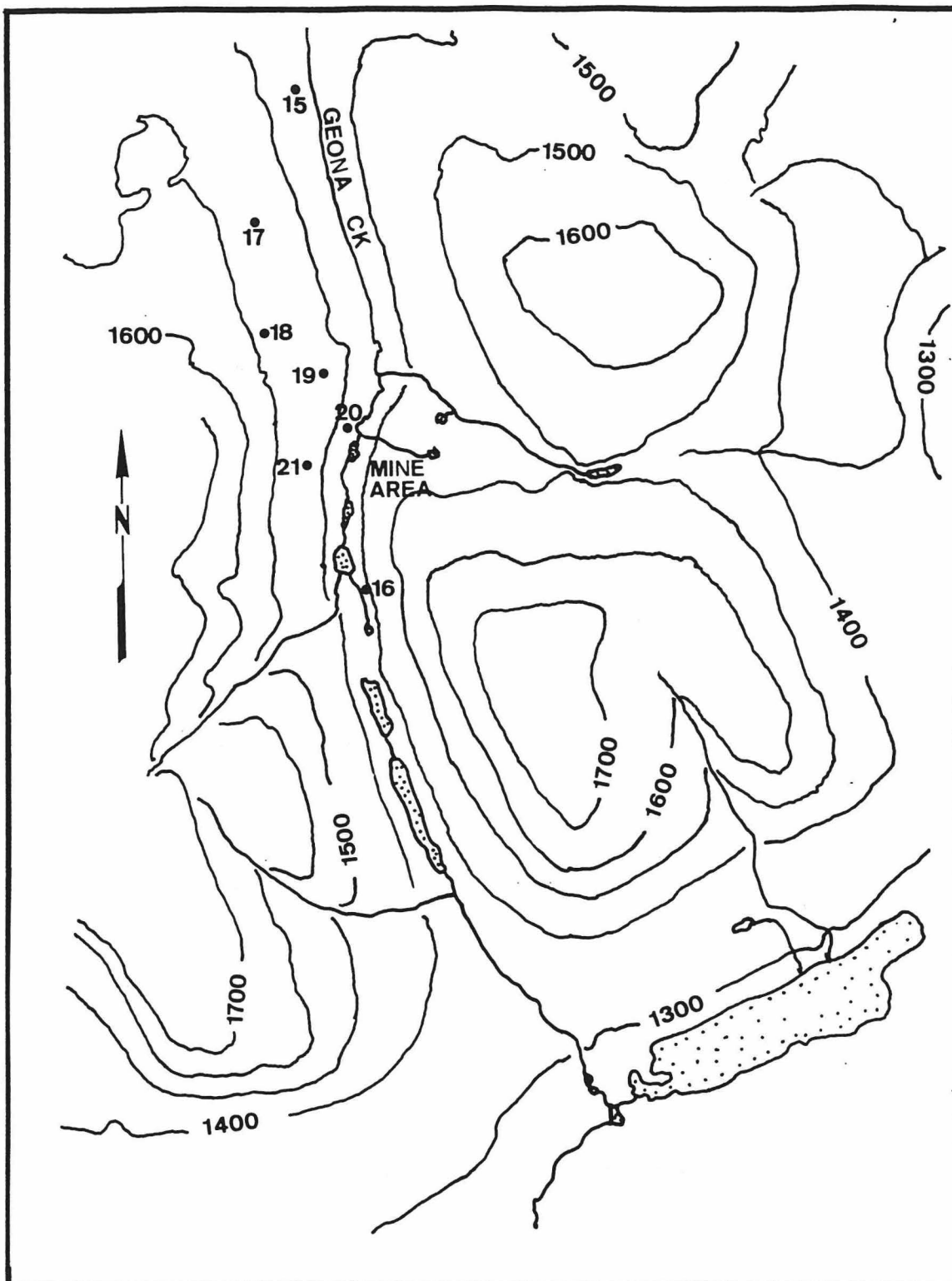
**Kudz Ze Kayah Archaeological
 Assessment, Phase 1 Testing**

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 95-2

Date
 June 5/95

Scale
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Figure 6. (facing page) Map showing tested areas along the proposed road alignment . Figure 5 map is directly north.



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**Kudz Ze Kayah Archaeological
 Assessment, Phase 1/2 Testing**

Drawing
 95-3

Date
 June 16/95

Scale
 1:50,000

placed on the east side of the road alignment, approximately 10 m apart. The A horizon was dark brown humus, overlying an E horizon of compressed grey ash (the ash level was absent in TP7). The B horizon was red/brown sand while the C horizon was tan sand and gravel. Both the B and C horizons contained substantial amounts of till and digging in these levels was difficult.

Area 4

Area 4 was situated along a stream approximately 1 m in width. This was located at grid reference E4174 N68325. The vegetation was spruce with some dwarf willow and moss and small shrubs as understory. Two units were placed along the stream (TP11-TP12). However, in both cases, these were excavated to the bottom of the A horizon of dark brown humus. The underlying levels were frozen. The next level was a grey material, but it was impossible to determine if this was the E, B or C horizon due to the permafrost.

Area 5

Permafrost was also a problem in the vicinity of Area 5. This was situated on a rise looking east toward Finlayson Creek. Area 5 was located at grid reference E4173 N68322. Vegetation was scrub spruce with moss and small shrubs. Four units were placed along the area, approximately 5 m apart (TP13-TP16). Three of these units could only be excavated to the bottom of the A₂ horizon of dark brown humus. Underlying this was a level of grey frozen material. One unit, TP15, had thawed sufficiently to allow the determination of this to be grey sand and gravel comprising the probable C horizon. It is not known whether this is the same for the remaining units in this area.

Area 6

Area 6 was situated along a terrace overlooking a small pond to the west. The area is located at grid reference E4171 N68315. Vegetation was sparse spruce and willow with small shrubs. Five units (TP17-TP21) were placed on the east side of the road parallel to the alignment, spaced approximately 5 m apart. Stratigraphy was well defined with a thin A horizon of light brown humus overlying the E horizon. The character of the ash lay did vary, ranging from a plastic clay-like consistency to a sandy one. It is possible that some podsol formation has taken place here, but this was not determined. The B horizon was a grey plastic sand or silty sand with

charcoal staining at the interface with the E horizon. In two units, TP18 and TP21, permafrost prevented excavation beyond the B horizon. The C horizon in the remaining units was comprised of a tan platy sand.

Area 7

Area 7 was located on a ridge on the south end of the same pond discussed in Area 6. Testing was conducted at grid reference E4168 N68314. This was also located on a terrace overlooking the pond. Several game trails were also located in this area. Vegetation was sparse spruce with moss and shrubs. Four units (TP22-TP25) were placed approximately 5 m apart on the ridge near the road alignment. The A horizon was thin (c. 3-5 cm) and comprised brown to dark brown humus. Stratigraphy varied in the remaining levels (i.e. in one example, TP23, there was no ash layer. TP24 and TP25 had no B horizon, with the ash layer situated directly above a C horizon of dark grey clayey silt with cracked and broken till.)

Area 8

Area 8 was located on the bank of a swiftly flowing small creek. The area was situated on the east side of the road alignment at grid reference E4160 N68311. Vegetation was thin spruce with moss and small bushes as ground cover. Two units (TP26-TP27) were placed here. Both units were frozen in the A horizon of dark brown humus and roots. Permafrost prevented excavating the units to a greater depth. Because the ground was frozen, no further units were placed in this area.

Area 9

Area 9 was a raised knob east of the winter road. This was located at grid reference E4171 N68297. The vegetation in the area was spruce with small shrubs and moss and lichen. Three units (TP28-TP30) were placed here. Soil development was poor here. A thin A horizon (c. 3 cm) of dark and red/brown humus overlay a grey sandy ash layer in several of the pits. One unit (TP30) had the C horizon directly under the A. The B horizon was a grey sand, while the C was principally grey platy sand with till.

Area 10

Area 10 was located on a ridge overlooking a small stream flowing easterly to Finlayson Creek, approximately 500 m away. Area 10 is situated at grid reference E4168 N68291. Two units were placed here but both were frozen in the A horizon of dark brown humus (TP31-32).

Underlying this was a level of frozen grey material. It was not possible to determine if this was the E, B or C horizon.

Area 11

Area 11 was an area of high archaeological potential. This was situated on a small raised terrace on the west bank of Finlayson Creek and offered a commanding view both up and down stream. The flat surface of the terrace would have made a comfortable, dry camp site. Area 11 was located at grid reference E4171 N68272. Vegetation comprised a few spruce trees with lichen, moss and small shrubs as the principal ground cover. Four units (TP33-TP36) were placed along the length of the level terrace surface, parallel to the road and spaced approximately 5 m apart. The A horizon was a layer of dark brown humus, with a layer of grey sandy ash underlying it. The B horizon varied. TP33 had a B horizon of red/brown coarse sand. In TP34, a B₁ horizon of dark brown clayey sand was observed over a B₂ horizon of orange/brown coarse sand with till. A B horizon of dark brown silty sand with charcoal staining was observed at TP35. TP36 had a B horizon of red/brown sand with charcoal staining. The C horizon was a grey or grey/brown coarse sand with till with the exception of TP36. Here, the C horizon was frozen and its constituents could not be determined.

Area 12

Area 12 is situated on a sloping terrace where the permanent crossing of Finlayson Creek is to be placed. This area is on the east bank and is located at grid reference E4147 N68203. Vegetation was moss, lichen and small shrubs with a few spruce trees. A number of game trails were observed in this area. Seven units were placed approximately 5 m apart along the slope in the area of the crossing (TP37-TP43). Soil development was generally poor, although two units (TP40 and TP41) had a B horizon comprised of black peat. The A horizon was thin brown humus with an E horizon of grey ash, frequently with charcoal staining. The B horizon, with the exception of the two units with peat, was grey/brown sand or silty sand with till. The C horizon was tan sand with till.

Area 13

Area 13 was situated further up the slope from Area 12 on the east bank of Finlayson Creek, at grid reference E4148 N68205. Vegetation was similar to that of Area 12. Two units

were placed in this area (TP44-TP45) but both of these were frozen and contained standing water in the A horizon.

Area 14

Area 14 was located on the west bank of Finlayson Creek at grid reference E4144 N68203. This area was wet and contained a number of game trails. Vegetation was moss, lichen and small shrubs with sparse gnarled and misshapen spruce trees. Three units (TP46-TP48) were placed on the centreline of the proposed road alignment. TP46 was frozen in the A horizon of dark brown humus. The remaining two units has an A horizon of dark brown humus over an E horizon of grey ash. This was underlain by a black peat horizon over the C horizon of orange/brown coarse gravel and large rocks or grey/brown sand with till.

Immediately east was a small terrace with a level top. Because of its proximity to the previously tested area, this was not defined as a separate testing area. Three units were placed in the terrace spaced approximately 5 m apart (TP49-TP51). Here, the A horizon was brown or dark brown humus with an E horizon of grey ash. TP49 had a B horizon of grey sand with charcoal staining near the E interface. The remaining units had a B₁ horizon of brown/grey sand and a B₂ horizon of red/brown sand. The C horizon was red/brown or orange gravel with till.

Area 15

Area 15 was located upon a terrace on the west bank of Geona Creek, grid reference E4151 N68169. Vegetation was sparse spruce with moss, lichen and a few small shrubs. Nine units (TP52-TP60) were placed along the level surface of the terrace, five units on the west of the road and four units on the east. The A horizon for all units was dark brown humus with an E horizon of grey or grey/brown ash. On the west side of the road, the B horizon was grey or grey/brown sand with charcoal staining. On the east side of the road, the B horizon was red/brown or grey/brown sand. The C horizon was orange/brown or red/brown sand with gravel and till.

Area 16

Area 16 was located in a marshy area east across Geona Creek from the Kudz Ze Kayah mine camp. The area sloped westerly and vegetation comprised small bushes and grass. Game trails were present in the location. The surface was hummock swamp and wet. The area was sited

at grid reference E4153 N68147. All three units (TP61-TP63) were frozen at the A-B horizon interface. The stream course north from Area 16 was foot surveyed for a distance of c. 2 km and attempts to place test units along this route yielded frozen ground.

Area 17

Area 17 was a level area east of the winter road route, covered with moss and small shrubs. This overlooked Geona Creek. Five units (TP64-TP68) were placed in the area at 5 m intervals. The area is located at grid reference E4144 N68177. Soil development was poor with an A horizon of brown humus, an E horizon of grey ash, underlain by a thin B horizon of dark grey sand or dark grey sand with charcoal staining (TP67-TP68). The C horizon was red brown gravel with till and large rocks.

Area 18

Area 18 was a relatively flat spot at grid reference E4145 N68168. Vegetation was moss, small shrubs and sparse spruce. Six units (TP69-TP74) were placed in Area 18. The soil development was poor here. Predominantly, the B horizon comprised dark grey sand, although some charcoal staining was observed in TP69. There was no B horizon in TP72, with the E horizon directly overlaying the C horizon of red/brown coarse sand, gravel and till.

Area 19

Area 19 was a terrace located overlooking Geona Creek to the east and the North Lakes valley to the south. The area is located at grid reference E4149 N68165. Ten test units (TP75-TP84) were placed at 10 m intervals in two parallel lines, 10 m apart. The surface vegetation was moss and small shrubs. The A horizon was dark brown humus with an E horizon of grey ash. TP75 and TP76 had a B horizon of re/brown sand. The B horizon of TP77-TP82 was grey sand. These overlay a C horizon of red/brown or tan sand and till. TP83 and TP84 had the E horizon directly over the C horizon.

Area 20

Area 20 was another terrace, located southeast of Area 19 at grid reference E4151 N68161. The vegetation was moss and small shrubs. Four test units (TP85-TP88) were placed along the top of the terrace. The A horizon was dark brown humus with an ash layer underneath. The B

Area 21

Area 21 was a high terrace located at grid reference E4148 N68158. Vegetation was a few berry bushes, moss and small shrubs. The terrace offered a commanding view of the valley and south into the North Lakes valley. Eleven test units (TP89-TP99) were randomly sited on the terrace top at intervals of 10-15 m. Stratigraphy was similar for all of the units with an A horizon of dark brown humus, a B horizon of grey/brown sand and a C horizon of red/brown sand and till. The ash layer was absent on the knoll; however, it is quite exposed and winds may have blown the ash from the surface at the time of deposition.

Conclusions

No evidence of cultural material or features was observed during the archaeological assessment of the Kudz Ze Kayah mine project. More than half of the route of the proposed road alignment was foot surveyed by the author and field assistant and the remaining portions of the route received a total of four helicopter overflights at low level to identify areas with sufficient potential to warrant subsurface testing.

The greatest portion of the proposed route runs along the side of a slope in areas of permafrost or muskeg. It is presumed that First Peoples may have passed through this area into more comfortable areas for the purposes of hunting caribou and sheep, trapping, or berry picking. However, no evidence was discovered to suggest such use was intensive enough to produce a substantial archaeological record. Further, the area was not identified as commonly used in a traditional land use survey. Other areas, more accessible yet yielding similar resources, probably received more intensive usage.

One factor which may have resulted in the absence of cultural materials in the study area is the route of the access road. It rarely comes in close proximity to the actual bed of Finalyson Creek, a natural corridor to the North Lakes. As the reconnaissance was restricted to the road alignment and immediate environs, the actual area of usage may lay outside the impact zone of the project. This does not explain the absence of sites along Geona Creek; however, the mine area's proximity to North Lakes may have made it an unlikely stopping point. The fact that the destination of any travels into the area was so close may have made the mine area an unattractive locale, particularly when one considers the swampy nature of the area.

Given the lack of cultural materials discovered during Phase 1 and Phase 2 testing of the Kudz Ze Kayah mine project, it is the recommendation of the author that the heritage resources requirements of development permits be approved. Note that the study area did not include the North Lakes valley, an area of high archaeological potential whose traditional use was described by several of the informants. Expansion of the mine into this area should be preceded by further impact assessment.

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Appendix A

ORAL HISTORY INTERVIEW RELEASE FORM

Project: Kudz Ze Kayah Mine Site, Archaeological Assessment

Date: _____

I give permission to conduct an interview to be used to provide information for the project named above. I understand the project is being conducted to :

- determine what possible archaeological sites may be located in the area of the mine and the access road being constructed to the site; and
- determine what must be done to protect any archaeological materials discovered during the project.

I understand the aims of the oral history interview are to:

- assist in locating possible archaeological sites in the mine area and access road by using traditional knowledge about the area to predict site locations; and
- give the project staff a better idea of traditional practices in the region.

I am also aware that I may withdraw from the project or may edit responses at any time up to the date of the project completion, June 15th, 1995.

- ☐ I give permission for the interview to be tape recorded.
- ☐ I give permission for written notes to be kept for the interview.
- ☐ I would like a copy of the interview/written notes to be deposited at Yukon Archives to benefit future researchers.
- ☐ I would like a copy of the interview/written notes to be deposited with Ross River Dena Council to benefit future researchers.
- ☐ I would like a copy of the interview tape/written notes for myself.

Name (please print): _____

Address: _____

Signature: _____

Date: _____

Interviewer: _____

Appendix B

Project: Kudz Ze Kayah Access Road Test Pit: _____

Date: _____

	0	Soil Descriptions:
	10	
	20	_____
	30	
	40	_____
	50	_____
	60	_____
	70	
	80	_____
	90	_____
	Cm	

Artifacts, Features Discovered:

Appendix C

Mary Charlie Interview

Interviewed by Doris Bob

D.B. You ever visit that mining site up here and that road?

M.C. Before or after the mine are they talking about?

D.B. I think so, I don't know. Ya, must be.

M.C. I think it must be before they are talking about. Go around up there. We go around every place. That mountain Indian way they call it *Guchā Dedié*. They put that name right there. We call that mountain *Guchā Dedié Hés*. That's a better way.

Other place that whole mountain they call it *Tset'ú'ú* they call it. And two names it has Indian way, *Tsé Néhtsat* too. Sheep mountain they call it. Three place now *Guchā Dedié Hés* and the other one. I know about the whole area, *Néghá Mené* ["Wolverine Lake"] too. That Wolverine Lake they call it. And Indian way they call it *Néghá Mené*. See that *Néghá*, that's a wolverine. And lake is *men*. And the other one *Ihts'i Bá Mené'*. I don't know they call it *Ihts'i Bá Mené'* ["North Wind Lake"] it must be. Wind Lake.

D.B. Cold Wind Lake.

M.C. This way. From Wolverine Lake this way towards Pelly Bank, that lake, big lake. Close to that Wolverine Lake. And the other one, you know close to that *Tset'u-u- He;s* and right this side. That lake, you call 'em *Elés Mené*. That's from way back. First start they call 'em Trout Lake, and then they call 'em that *elés* 'lick' [moose lick etc.]

D.B. What kind of lick?

M.C. That's the one I tell you. Trout Lake.

D.B. Trout Lake oh.

M.C. Past that Wolverine Lake, over that way. From that mountain, little ways down there. You see that moose lick right here, and sheep lick right here, caribou lick right here. Three place, three different kind of lick. That's from way back, first start you know. First start this world, that's the

kind. From there that lick on they said. From way back people they know. They call 'em *elés* 'lick' *Elés Mené* ['Lick Lake'] they call it. Lots of place I know around there. Not the only place.

D.B. Did you visit the area regularly?

M.C. Where?

D.B. Around there. You visit every time.

M.C. Not too long ago that before Stanley [Tom] gone we been there. We tried to put that stake on too you know, but we drop 'em again. I was going to start it again but ...

D.B. Where? Up here.

M.C. *Tset'ú'ú*. That *Tset'ú'ú Hés.* Down below. We were going to start it again, but Stanley [Tom] die and then after we don't go up there. And then we were going to try somebody tell us. Gee I should tell Franklin [Charlie] eh? Well I'm going to tell Franklin.

D.B. That's about three years ago huh?

M.C. Ya.

D.B. Did your friends ever visit the area? Your friends or your family like?

M.C. He visit 'em ya. Way up that Campbell River too. We go up that Campbell River til the end. And two place you know like that, from Cabin Lake we go up the river, Campbell River and you know both sides rock like that? And this end at back and go down below. And then two creek like that. I think right there that's the one they bury somebody. On top of bank we see it.

D.B. Not close to the mining though, the road.

M.C. No. Far away, put cross on top of the bank. We go up there.

D.B. Up Campbell River you say.

M.C. Ya. Close to camp that's the place I guess. And then from there go down [up] past that Fire Lake they call it. Past that one I guess. Around there someplace I guess. Somebody bury 'em too. Two little kids they said and one big man, and two little babies beside. That's a long time, not too long ago, I guess in Pelly Bank. Before Pelly Banks close down, that store, we stayed there, around there all the time, stay there, Well that's our country. Whole thing right there you know. That's Pelly Bank people.

They talk about this mining. All the people go around right there all the time. Just like our home. Just like our own home.

D.B. Do you know any of the stories? Stories about up there? Story?

M.C. Ya. Story.. That's what I tell you daddy [Little Jimmy] tell me story. He call that mountain everything. And then I know which one I go around there too. So I really know good.

D.B. Did you stop going up there for any reason?

M.C. We go to Wolverine Lake all the time.

D.B. All the time?

M.C. Uh huh. We go with plane one time to there, one time.

D.B. How about up here? On it?

M.C. Up here on the mountain. Franklin been there all the time, and I want to go up there, but I never go up there yet. Not too long ago we been there all the time. Daddy come around with us too. We go around there. Before dad [Little Jimmy] died he's getting old, but he come with us. That high mountain the call it *Tset'u'u*? He go around there. He 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 live right there. You just like out home. And them people, those white people they talk about land, no good you know to us. Us Pelly Bank Indian. We live on right there. All over the place around Pelly Bank. Every place. You see from way back our own, our older people they're growing up and get something to eat everything, moose, caribou, sheep, anything. Any kind. Chicken [grouse] like that and fish, on top of the lake, below in the lake like that. That's why we're growing up and all the people you know. They know all the time moose lick together. Three different kind. Just like white man house you smell something up there. You smell it? It's like that you know funny. You go up there, you come up there, you could smell moose and sheep, caribou. Just like *itíá t '??'*

D.B. Just like a farm.

M.C. Yes. That's funny. You should sometime go up there.

D.B. Any groundhog on the mountain?

M.C. You know and first start this world, and no tree, nothing, they said. Start a growing. You know that draw like that? Little short one growing this long they said. Like that, like that little bit longer. Then those people they go up there. Just open he said. They know that lick and they cut off that tree or willow, any kind poplar tree, any kind of things growing. Little bit growing longer they cut it. They cut it down lots. They put 'em together like that. They pack it down to that lick. They pack it down and they line it up they said. Little tree they line it up like that, up alongside

the mountain. From that moose lick. I don't know how many mile, two mile I guess. They said they pack it down someplace they find it where they find it. They cut it, they pack it to there. And then they line it up like that. And then you know moss like that they pack it too he said. They put 'em just like that both side. Like that. Just like people I guess. And keep on they do that, keep on. And then start growing and everything growing you know. And then he start like that. That's little thing they pack it together, put 'em up and getting big. That time daddy came and walk around with us I tell you, and just about same big this one, house. It's growing. You know moose lick close to moose lick at one end. The next way up there they start put it again. They put those things on and then next one too. About this far I guess, for moose. They open it like that, and then next one it's growing, just getting big.

Sheep trail on top. Sheep trail to the mountain. You should take picture right there you know. I wish I go up there take picture. Long time ago you know where that tree is. Right close to the mountain too, other side. This side that's all long ways, little bit. To that mountain, that's sheep on it that mountain. From there sheep come down, to that lick way down. And then we climb up that hill. Like that other side see, like that, and bushy, and someplace open. Right to the top we come up there. We see somebody long time ago cut a tree down. Gee how long ago that lick. They can't let it go I guess eh? Just trail like that [animal trail to licks]. On top of that sheep lick, just muddy, just white. Just like milk. And this water this deep. Whole thing on top of that mud. Water come down, just sheep tracks like that. From there that sheep lick and there moose and here sheep and then other side like that bank close to right there, that caribou. You could smell it. Gee, I think about it how long. You can't throw it away. That's from first start that why you can't throw it away. That's from first start that why you can't throw it away right? Kept on come down there. What do they say first start?

D.B. What about mom [Mack Bob] and them? They go up there?

M.C. Even up there they go for meat. That Wolverine Lake. From that lake, close to mountain right there we walk around. Long time ago daddy said right here we stay right here, he said, long time ago. People they stay together right there they make dry meat fall time, I guess. And long time you know. Just about over growing, but you could still show off that meat pole, everything. Camp just those willow, you know those willows, what they call 'em that *kuhsáze* [buck brush] he [it] growing over. But still you could know where people stay. Daddy tell us about it. They make dry fish everything. This lake right here, Which one? What you call that lake? *Tset'ú'ú Mené*.

D.B. I don't know where is it? Must be right here.

M.C. And what they call 'em now? Nurse Lake?

D.B. There's no name for this lake.

M.C. How come?

D.B. I don't know.

M.C. Beside it El'és Tué "Lick Creek" [Money Creek] flows. They call it Money Creek.

D.B. It's way back, ya.

M.C. Way back it flows among the mountains. Close to that Nurse Lake. It flows down to Wolverine Lake I guess. I don't know sometime I go other way. They call it El'és Tué, Money Creek.

D.B. Did you find any old camp?

M.C. Ya. I tell you lots of place. We go up that way. Other rest of the people which way they want to go up they make dry meat for winter time. And they go up there and lots of people. They go just lined up like that. And they sometimes ...

D.B. They go all over the place.

M.C. Uh huh. They see somebody fire on top of the mountain and then they go there they say. Ya, I know we got that ground hog everything. Gopher, dry it for wintertime like that. It's really good up there. And fish.

D.B. Up that Finlayson Creek. How about up this way, Finlayson Creek? Any fish?

M.C. Ya lots of fish. Indian way they call it *Lúge Destie Tué* ["Fish Creek"] *Tú destsie lá*["The water is .]. *Tú Destsie* they call it, you know that creek come down. That's the one, *Tú Destsie Tué*.

D.B. What kind of fish?

M.C. Grayling. The other one, you know *El'és Tué*? 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 I guess. People go around there.

D.B. How about these lakes? You know these lakes? It's right by the road.

M.C. Close to the road?

D.B. You know that tote road going up to that camp up this way the road goes eh? Road goes up this way? to the camp? And there's lake right here.

M.C. *Tú Destsie Mené* it must be.

D.B. Ya. I think so.

M.C. Lots of lakes you know. They call it Indian way. Even creek Indian way. Whiteman way everything. Up top of mountain people make dry meat all time. From way back they teach kids and they know how too, these kids, because his olders do things, make moose skin for wintertime, moccasins, mitts, everything. And babiche, they make babiche, caribou skin. And sheep skin too, like that sometime. That's what they say. My sister and them they tell me about it. Caribou skin I do and sometime moose skin, make babiche for snowshoe. Ya, people they live on this, right here.

D.B. They come up from Pelly Bank eh?

M.C. Ya, go down to Pelly Banks. Campbell River right?

D.B. When was the last time you been up there? Not too long ago you say?

M.C. Ya, not too long ago. Joe Charlie that time small you know. That's the time we been up there. I think after that we been there too. I think three time we went there, make trip up that way. With daddy came around with us. You know like that lake in *Tù Destsie Mené* we go around there too, you know. Daddy came with us, too that time. Springtime like that for beaver look around, but we couldn't find nothing. This time now every place, beaver. Everybody gone and then lots of beaver. And we still we came to Pelly Banks, just like our own house. And when we came up there, I feel happy about it.

It's still that trail go around yet; you know that some of those people they go. They got a trail up the mountain, everything. From Pelly Bank way back in the bush. They go up the mountain, they make dry meat. Still trail go around. There's still our older people still living. I like to follow that trail you know. Up Campbell River way, *Tánidzi* ['In the Middle'] up that way too. People come fall time around August they go in the bush, for dry meat. That's the place they go. And Frances Lake way. Up Pelly Lake way. Anyplace, just they go in the bush like that. What do you say? Is that it?

D.B. That's it.

M.C. You can't find it, but you could find it. That's the kind of place I tell you daddy said, "we stay right here." Just overgrown it became, even so. That's what daddy said. We find a fireplace and everything, ? part burned. that's the kind we find it and meat pole still there, but go down. Some of them show off. And every place we go right there, we find lots of place you know, people camp, old time. Right here that's a long time ago people old camp. We see it, we feel bad about it too. Long time ago like that people go anyplace.

We follow this creek too one time. Not too long ago, me and Robertson [Dick]. And we found lots of place and people camp, til that Wind Lake. We came there. Lots of place you know. White people they don't know I guess, They can't find it. Indian could find it easy. Even you know overgrown, just on top I tell you that lake, mountain *Tset'ú'ú* they call it, Indian way. They call it *Tsé Nahts'at* too. And right there, down a draw, like that you know. And balsam tree [alpine fir] just growing. Just bushy, but daddy tell us about it. That camp too. We see that pole just bushy place, but pole, we see that pole. We see how growing, but we find it. The creek come down from that mountain. Lots of place like that you know.

D.B. Is this the mountain you call it *Tset'ú'ú* ?

M.C. Uh ha.

D.B. *Tsetsú'ú* (mispronunciation) what's that *Tsetsú'ú*?

M.C. I don't know they call it a long time Indian way.

D.B. Oh.

M.C. And then they call 'em *Tsé Nahtsat* too. Just like they go around for sheep.

D.B. This mountain right?

M.C. It has two names, one mountain, Indian way. This daddy they call it, from way down people [*Tsets'ú'ú*] and then they call it *Tsé Nahtsat* Pelly Bank way I guess, ya. Two places they name it. And a little way down is that moose lick. They call it *elés* ['lick'].

D.B. How far you think the camp? Right here camp. That moose lick, how far?

M.C. To that *Tsé Nahtsat*?

D.B. Camp right here, ya. How far you think that moose lick?

M.C. It must not be too far. This one that's a mountain I guess huh? Ya, that's a high mountain I guess, that one. This side *Guchá Dedie Hés*. Close to that moose lick it is, this one. Right here. From there that little creek go down this way right? I think to that lick, I guess. And you think it go down that way?

D.B. The creek come down this way too?

M.C. The lick, I think this moose lick it is. I'm talking about the lick. It's closer to that mountain you know, down there.

D.B. Ya, it's right under [below] the mountain.

M.C. Ya, I think there trout there.

D.B. It's between these two mountain. One on this side, and one on this side.

M.C. Ya, right close to the lake it is this one, mountain. High one. On top it's just flat, like up at the border. And then this one I tell you *Tset'ú'ú* ? Right there too, like that. Just open place, you climb up mountain, you could see long ways down, see moose walk around, anything, caribou.

Lots of things you know, just like border. It's up there they're going to make that road. It's too far to go to the border right? Right there is closer. Anything lots you know. There is everything, marmots, everything. Up there across, you go over that mountain, you could see sheep too. Down there beside the draw. You go down there you going to shoot. Other side, you know daddy tell us. And somebody go down there. Go down this way and then these guys they wait other side, daddy said on top of mountain. And then that sheep run up that way. They kill 'em They kill some. Not kill them all. They save some I guess. And then lots of people they want to get some more, get lots I guess. That's the place he said, "good!" he said, daddy. They got nothing to eat, people go hunt there. And then they find sheep, sometime fish, they dry fish like that. They set fishnet under the ice. That's the way they feed their family, those people long time ago.

D.B. Winter time they go up there?

M.C. Uh huh.

D.B. Up this area, they go winter time?

M.C. Uh huh. Every place. They live beside the water. To the Wind Lake too we go there, all the way. We camp little ways like that. And then we come to that mountain. I tell you that high mountain. We come there. And there were lots of caribou. We walk around. They say from Pelly Banks, lots of people we go up there all the time. Some other place they go too. 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. Those people they got caribou sometime, moose and then those other bunch go there, they give meat to people. They not only them that's all they keep it. You gotta give some to people you know. This time people they don't do it.

D.B. Share meat eh?

M.C. Ya, Pelly Bank people they good you know. Somebody they got nothing to eat, they got something to give to people, give them something to eat. They feel happy about it. And then they go other way. And they make dry meat too. "If you starve you come over." they tell 'em each other you know. And they stay on top of the mountain like that. Where the draw is. They stay in that kind of place. "If you starve come see me," they tell 'em eh. And who they don't get [kill] nothing then they go there see 'em they give 'em something to eat. They give 'em lots of meat sometime, and like that. They teach kids that way. It's good you know. Anything, even they cook moose head. They cut it little piece, little bit like that, lots of people right there they stay and they cut it little piece, they give 'em. That's what they do, ya. This time people can't do it. Even they kill beaver, they got nothing to eat, those people, they cut it little piece. They give 'em away. Even they eat one time, and then the next morning they go hunt. Before sun come out and then they go hunt. Sometime they get something. Get moose like that, get caribou. They got to give 'em little piece eh.

Lots of people one time like that. Tommy, you know, I don't know Tommy [Louie Tommy's dad]. He tell story. He said lots of people together, he said. I think one year I guess. From Fort Norman people and from way down by Watson Lake, Lower Post people. Anyplace

from there people come together, lots of people he say. And then they kill one moose. Just like nothing. Little piece this big they going to give something, one. Zone family he left out they give 'em moose skin. And then he cut that meat off they cook it, they eat it they say. Rabbits, that time lots of rabbits. And they shoot it with .22. And they made a big fire they said.

Appendix D

Amos Dick Interview

Amos Dick interviewed by Doris Bob at his home in Ross River, Yukon

D.B. Finlayson, the road goes up this way. They got a camp right here.

A.D. Oh yeah. Where's that Wind Lake? This one is Wind Lake. There's a mountain right here. I was here up on this mountain by Wolverine Lake.

D.B. When were you up on this mountain?

A.D. Not long ago. People used to live around there all the time. Daddy [George Dick] had a cabin around there. Where they call it *Tl'óge Chó* ['Big Meadow'].

D.B. Down this way?

A.D. It's called *Tl'óge Chó*.

D.B. Nothing [meaning name not indicated on map].

A.D. *Tl'óge Chó* someplace. Daddy got cabin too. That Wolverine Lake got cabin too. Right there someplace.

D.B. Over here someplace?

A.D. Ya. Up high, way high eh.

D.B. Cabin?

A.D. Cabin ya.

D.B. Way up on the mountain side?

A.D. Right on the side of the mountain.

D.B. Right here I guess on the bottom [of the map sheet]. Beside this creek. How about this creek?

A.D. Franklin [Charlie's] cabin right? Beside where the creek is flowing.

D.B. You got cabin right here.

A.D. Ya. About one mile from the lake eh?

D.B. Uh huh it's right here.

A.D. Johnson Jules got cabin too; daddy got a cabin. They lived there a long time ago. Now they got a house too, someplace.

D.B. That's right on top of the mountain.

A.D. Yes, *Tl'óge Chó*. On the mountain.

D.B. That's mountain right here. Right here too mountain., mountain, mountain.

A.D. Which way come down to Pelly Bank?

D.B. This way I think, Pelly Bank. This is Finlayson Lake up here.

A.D. Cabin Lake, where is Cabin Lake.

D.B. There's no Cabin Lake [on the map]. Did you go up here?

A.D. I just go up someplace and go back down that time we were living at Pelly Lakes.

D.B. One time.

A.D. Yes, one time.

D.B. Long time ago eh?

A.D. I went up there from Pelly Banks. There was a trail up there to *Tl'óge Chó*.

D.B. This is Finlayson Creek. You ever live along here? Was there trail along here?

A.D. No. Only at Pelly Banks, *Etsene Tu'*, [name for Mink Creek] you know Mink Creek? There's a trail by Tom's house. Two trails to *Tl'óge Chó*. That's uncle John Dickson's country now. *Tsé Detl'ise* ['Blue/Green Rock' place name] around there. Old Konia [personal name?] lick, around there. We lived up there when I was small. I was really young that time. I go with those guys, I kill moose, everything. Daddy had a house on the side of the mountain.

D.B. Are there marmots on this mountain?

A.D. There are lots of marmots. Just fat like that. Is that where the mine is going to be?

D.B. Right there.

A.D. We used to dry marmots on the mountain. There were lots of us there, Sedigede {personal name}, MacGeorge, Pete Charlie, Sid Atkinson, Allen[?] McLeod, Biscuit Boy. They hunted for marmots, sheep, whatever. Got lots of animals.

D.B. They ask if there is a lick there?

A.D. Yes, across from Franklin's house.

D.B. This is where they are talking about.

A.D. Around here? Which one?

D.B. Wind Lake.

A.D. This is WInd Lake, this one?

D.B. That's what they said.

A.D. Where is ?? [can't make out the English name] Lake? Nothing eh?

D.B. Nothing. Just back here, way back.

A.D. Camp here, maybe it's a Wind Lake this one here. How small it is. It must be Wolverine Lake this one. Not far away, Wind Lake, it's pretty close. I don't know about that lake. Over that way eh? We went up on the mountain one time from Pelly Bank, up this way.

D.B. Did you all dry meat?

A.D. Ya. We dried meat, daddy made lots of dried meat. We used to sell it to the store, then in the winter time you would buy it back. Dry meat. This time people aren't like that.

D.B. What time you walk around up there?

A.D. Since Pelly Lakes store close I never go up there. That time I had to go to school eh? First time go to school. We lived up there in the summer time. Robertson [Dick] was small too. Same time as Robertson went to school. We were around on that big mountain. That's right where the mining camp is now eh? We lived there a long time [ago]. There is a cabin there. Should look for it eh?

D.B. Ya. By this lake?

A.D. Wolverine Lake. Franklin's cabin is here about two miles from here, close. I know where.

D.B. Wolverine Lake. I don't know what kind of lakes is this.

A.D. No name on it?

D.B. No name on it.

A.D. They say they lived there a long time ago. They said there was a cabin there. Dad [George Dick] had a trap line around there. They only had cabins that time they were up by Sheldon Lake store. They built three cabins. They lived up there, but they couldn't make it.

D.B. Why don't you go around up there any more.

A.D. Well we moved. They moved from there. After that we lived in Watson Lake. Fifteen years I stayed down there, Watson Lake. After that we would go trapping around Wolverine Lake and Frances Lake with dog team.

D.B. Were there lots of campsites?

A.D. Yes campsites from long ago.

D.B. All over?

A.D. Yes.

D.B. Were there campsites all over the whole area?

A.D. At Wolverine Lake, Tsá'Tú', ['Beaver Creek'] little creek, flowing down from Wind Lakes. It's just full of sucker fish this time of year. 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].

D.B. Wolverine Lake, is that between that mountain?

A.D. Ya. Other side mountain, this side mountain too.

D.B. Right here.

A.D. Ya. I think that's the one.

D.B. How come Gordon say that's Wind Lake and Fire Lake?

A.D. No, this one Fire Lake?

D.B. That's what I think he said.

A.D. I think Fire Lake.

D.B. Ya.

A.D. I think this one Wind Lake. I know Wind Lake. Clifford [McLeod] tell me Wind Lake is there. That's where we were living when Robertson was little.

D.B. Right here by this lake?

A.D. Ya. Just stay up on top of the mountain. We shoot game up there. They say this summer white people can't go hunt up there anymore. It would be good for marmots up there.
Your daddy [Pete Bob] had a house down here by Finlayson Lake someplace.

D.B. They say down here someplace.

A.D. You don't know where eh?

D.B. They say it was on the other side.

A.D. It wasn't far from that little lake. I know that little lake right there.

D.B. That's where they were living.

A.D. They also lived up at Pelly Lakes

D.B. Who all was living up at Pelly Lakes?

A.D. Allan McLeod, Sid Atkinson when he first got married, MacGeorge, Pete Charlie, Jenny Caesar, Dad, Uncle Thomas, all of them all camp. They go with dogs with dog packs. All the way up to Pelly Lakes.

D.B. Long ways eh?

A.D. Long ways. There was a trail up there from Pelly Banks. Good trail yet. That *Tl'óge Chó* is a high mountain. That's real marmot country. Around there they call it *Tseli Hés* ['Gopher Mountain']. Up there I forget they found gold, maybe that's the one. Somebody find gold. They say they were up there for gophers and they found gold.

D.B. Who?

A.D. I don't remember, my dad told me about it.

D.B. You look around for it?

A.D. Ya, when we were living up there. There was snow though. I forget, but somebody went up there for gophers and found gold. There were five gopher holes they were living up there somewhere. We lived up in that country twice ourselves. I traveled around with the whole bunch from Pelly Lakes. We went down to Slate Rapids on this side they call it Fish Creek. You know Fish Creek.

D.B. Yes.

A.D. There is a good trail up to Pelly Lakes. We lived up there before I went to school. There must be a cabin up there still. We should look around eh? It's not too far from Franklin's house [by Wolverine Lake].

D.B. Down this way, by this road, no nothing?

A.D. Nothing, no, nothing.

D.B. No cabin?

A.D. No cabin.

D.B. Beside where that mine is on the mountain, nothing?

A.D. Nothing. Just only Daddy and Johnson [Jules] got a house. Your dad too, Finlayson Lake. Where Wolverine Creek goes down there is a cabin. There is an old house by the creek.

D.B. On Van Bibber creek?

A.D. Ya. You know the house?

D.B. Ya. I see it.

A.D. It must be the cabin. Somebody say [that's] Old Bob's house.

D.B. It must be.

A.D. It's a white man's house anyway, maybe it's white man. That was the last time I went up in that country.

D.B. You don't still go around there?

A.D. Two of my siblings died when we were up there, the two that were older than Robertson.

D.B. Two?

A.D. My sister too. My brother that was older than Robertson drowned.

Jim knows the country all over the place. They know about the whole country around in the mountains. They know about Old Konia. He was a white man, Old Koni.

I have to check on the truck - Gary.

D.B. Is that all you have to tell about?

A.D. Yes.

D.B. Are you going to tell some more.

A.D. That's all I know about. I went up there twice. Last time Hoole MacLeod, Sam was with us. We went over to Wind Lake, around there someplace. I haven't been back since. First time we went up to Wolverine Lake, Mom call someone First *Dene*, 'First Person'. He killed bull caribou, marmots. Francis Jules said that. They call Wolverine Creek *Néghá Tú* ['Wolverine Creek']. There is big ling cod in there [Wolverine Lake?]. One night it took hook, big one, they pull it out and killed it. Lots of trout there. Nine time they throw out line, nine time they got trout. Like that spring time. They throw nine time, that big trout, small one.

D.B. Where is that? On that Wolverine Lake?

A.D. Ya. Wolverine Lake, ya. Not far from Franklin [Charlie's] house. One time on the other side from Franklin's house there were six cow moose and two bull moose. I shot two. There are sheep up there too, and caribou in the fall time.

That's it.

D.B. O.K. then.

Appendix E

Sid Atkinson Interview

Sid Atkinson interviewed at his home in Ross River by Doris Bob.

D.B. Finlayson Lake right there and the road goes up this way to the mining up here. They want to know if you ever walk around up here. Up this way, long time ago.

S.A. This is the new road go up?

D.B. Ya.

S.A. This is Moose Lake they call it.

D.B. Up here is Fire Lake. I don't know where's that, and this little lake too, between the mountain.

S.A. Ya.

D.B. That too is right by the mining. You walk around up there?

S.A. Ya. I know all this mountain on this side here. Fox Lake, I think so.

D.B. I don't know where's that Fox Lake. Maybe back this way too. Fox Lake is in the mountain too?

S.A. Which one is Wolverine [Lake]?

D.B. Wolverine Lake must be one of these, I don't know, maybe it's way out here.

S.A. This is it, no. Wind Lake they call it.

D.B. Ya.

S.A. It's close to Wind Lake.

D.B. Uh huh.

S.A. It's not this one, that's North Lake.

D.B. How about these two right here? Quite big.

S.A. Long too, eh? What you call it this one?

D.B. ? Creek. You guys hunt caribou, moose?

S.A. Caribou, moose.

D.B. Sheep?

S.A. We shot sheep on the side of North Lake right there.

D.B. Groundhog too?

S.A. Groundhog, oh lots, oodles. This mountain on this side. Grass Lake there.

D.B. Is it?

S.A. I think so. Finlayson [Lake]

D.B. Finlayson.

S.A. Finlayson Creek, that little one.

D.B. [Road] right up to the camp.

S.A. We went up here not too long ago. Harry and the whole works, right up to here. The creek flows down this way from the mountain, we went up there.

D.B. You don't know what year eh?

S.A. No. Not too long ago. It's over six years anyway. Five or six years

D.B. You guys were up here.

S.A. Harry didn't have any baby that time. How big is his daughter now?

D.B. Fifteen years, it must be fourteen years.

S.A. We go up this mountain, we could see a lot of country on this side too. Good country there, all this side. Sure big mountain too.

D.B. How you walk around up there?

S.A. Dog packs. We walk around up there with dogs and packs. Last time too, me and Harry we used dog packs.

D.B. You haven't gone around up there since? Why did you quit going up there?

S.A. We used to go up with dog team too, right up to Fire Lake. Couple time., with Esau [Dick] you know. Esau [Dick], Amos [Dick], Johnson Jules, all those boys. This is Cabin Lake I mentioned, cabin there long time ago.

D.B. Where is that Cabin Lake? There's cabin somewhere on this lake?

S.A. I don't know, should be now eh? This one here is *Tsá Mené* ['Beaver Lake'].

D.B. I don't know. No name for this lake. East Creek it say.

S.A. It come from this lake.

D.B. Uh huh.

S.A. Must be leads up to Finlayson Creek anyway. That's way up. Some kind of lake. We live up here a long time ago when we first got married.

D.B. Ya, that's what somebody say. First when you were married you were on this mountain eh?

S.A. Ya. We lived at Pelly lakes. Summer hunt how far we go.

D.B. Long ways walk.

S.A. Long to cross to the end of the lake someplace. Up to here.

D.B. That's Fortin Lake.

S.A. They call it Mud Lake. Next Fortin Lake.

D.B. You know any old camps along this road? Are there old camps beside the road? Like camps where they lived?

S.A. They got camp someplace. Where is Fire [Lake?]. Right here?

D.B. Right here. They got any camps.

S.A. They got old camps along here someplace.

D.B. On the other side right?

S.A. This side of Finlayson Creek. Camp anyplace I guess.

D.B. Ya.

S.A. Sometime on the mountain. Here is where the mine is?

D.B. Yes.

S.A. They should have camp there too. Moose lick they say too. No, sheep lick.

D.B. Ya.

S.A. They should have camp here. I think it's on the other side. There's a camp. This side below the mountain.

D.B. On these mountain too should be lots of camp eh?

S.A. Ya should be.

D.B. People travel around hunting. They go all over all this mountain.

S.A. Should be. They go up one way come back different.

D.B. Different creek.

S.A. Ya different creek. Frances [Lake map], Finlayson [Lake map], you got that whole Yukon map? You ever been up there?

D.B. No I never been up there. I think long time ago I went to some kind of lake over here. Wind Lake I think they call it. It's right between the mountain.

S.A. We went up there with dog team. You go up here Wolf Canyon, Pelly Lakes? Birch Lake?

D.B. Ya, I know up there real good. Do you know story about up here? Tell about it. People they get hungry up here. Can you tell about that? How they get meat? How they go hunting? Can you tell story about that?

S.A. There's ground hog up here. Right here too they dried groundhog. Where the two rivers flow together they had a camp. They used to go hunting and make dry meat there. When you get a lot of dry meat you make cache. You move camp, right to straight across eh? To the end of the lake. From here they take shortcut to all the way from Pelly Lake to Fortin Lake. Hit Fortin Lake, got boat there. Go to Pelly Lakes, go around travel eh?

D.B. Ya, it is a long way.

S.A. If you camp, you camp two nights, one night.

D.B. You hunt eh, up this area?

S.A. Ya.

D.B. Who you trap with?

S.A. Oh a lot of people. Johnson, Johnson Jules.

D.B. How about Grandpa Hoole McLeod? He go up here?

S.A. Ya, he trap too. Grandpa McLeod, Sam. Look for marten. No marten around here that time. Not too much eh? All the way to Fire Lake, something there. Good money too, marten that time. We went up here to ?? camp. We all go hunt this side someplace. We come back all the way from Fox Lake again.

D.B. Down to Finlayson?

S.A. Ya, Finlayson Lake. There is a trail there. You know Cabin Lake, right to Pelly Banks eh.

That's all.

Appendix F

Tilly Smith Interview

Tilly Smith interviewed at her home in Ross River by Doris Bob.

D.B. From down here by Finlayson Lake they made a road to the mining camp. This is Wolverine Lake and this might be Fire Lake. This is Fire Lake isn't it? Tell me about when you walked around up here. You know long ago. People hunting and all. Drying meat and all. Is this what they call *Tsé Néhtsedi Hés*?

T.S. *Tsé Néhtsedi* .

D.B. That's how they call it some people.

T.S. *Tsé Néhtsat*.. This must be Seven Mile Lake right here. This one is Black Lake. Where is *Tsé Néhtsat*?

D.B. They say it's right here.

T.S. They hunt around up there. They were living around on *Tsé Néhtsat*. 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.

D.B. Marmots too?

T.S. 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 *Tsé Néhtsat* . They shot sheep, everything, moose. There is a little lake up there. On top.

D.B. Right on top, that's where the camp is. Right on top that's where the camp is, there are two little lakes near there.

T.S. Two little lakes, the water is really clear, just blue. From up on top of the mountain. I don't know what white people call it now. In Kaska people call it *Detel Tsedle* they call it. *Detel Tsedle*. This one they call *Gutú Mené*.

D.B. Right here. Two lake right here.

T.S. This must be *Dzahkadle* isn't it? This one is *Tsé Néhtsat*.. People were always living around up there. They tell about it. They really tell about it. They go up there from Pelly Bank. Finlayson Lake is across. They were living across. Where that mine is, people were living up

there. My uncle McLeod was living up there. My grandmother also lived up there. My daddy, *Dadehdéle*, my grandmother, and *Dás Éndi*. They pull around toboggan through that country.

D.B. Every summer they go up there?

T.S. Uh huh. They go up in the mountain.

D.B. How about in the winter time.

T.S. No they don't go up there in the winter time. Only in the summer time.

D.B. Do you know of any old campsites along the road? Up by that mine are there old camp sites?

T.S. Yes all over there are poles from old camps, where they dried meat.

D.B. Are there fish in the lakes?

T.S. Lots of fish. What they call *Tustles Mené*. There are lots of fish there and in Fire Lake. There are trout in Fire Lake.

D.B. Why don't you go up there this time?

T.S. Long time ago, that's the time we lived up there. The Lakes That's all I know.

D.B. What about this lake?

T.S. I don't know.

D.B. This is where the mining camp is. Right here.

T.S. Right there. There is a little lake up there. They lived up there, hunting for sheep and for moose. They were up there a couple nights. They shot moose there. There are old camps up there where they went hunting.

D.B. Around here they were talking about? The lake too, right here.

T.S. Not far to *Tustles Mené*.

D.B. They say there is a sheep lick some place. Do you know about it?

T.S. Yes, they stayed by a sheep lick.

D.B. It's around here some place. There's a caribou lick too.

T.S. People lived around up there. They used to dry meat. There were lots of caribou. It just smelled of caribou there were so many.

D.B. That's what Mary Charlie said.
Did they live on all these mountains?

T.S. Ya. People use to live all over the place long ago. They lived up there and dried meat. I remember my mother and dad when we were up there. I can barely remember grandma. They used to go around on what they call Gucha- Dedie;\. They hunted around up there when I was a child. They used to find some kind of rock.

D.B. Ya Lots of people say they find something. Charlie Dick too, that's what he say.
Now that they start mining what is going to happen to the animals. Maybe nothing because of the pollution.

T.S. Ya. Now some places there is nothing.

D.B. That pollution might get into the water and affect the fish too.

T.S. There are lots [of fish] in those lakes now. That *Tustles Mené* ,and *Tustles Tué*.

D.B. Lots of fish?

T.S. Really lots of fish. Small little lake too.

D.B. Right there two little lake. Is that it, the end?

T.S. Yes.

(This entire tape is difficult to hear because there is a loud background noise from the tape recorder and Tilly speaks softly and is too far from the tape recorder. A more fluent speaker could make out more of what she has to say from the fainter portions of the tape. There is some additional discussion of activities when they used to live up in the mountains.)

Appendix G

Tom Smith Interview

Tom Smith interviewed at his home in Ross River by Doris Bob.

T.S. How many mine? More mines!

D.B. You walk around up here? Beside the road?

T.S. There was no road a long time ago. What are you talking about? This is where the camp is? Where the mine is?

D.B. Ya, mining. By two little lakes.

T.S. That's North Lake.

D.B. Ya, North Lake look like it, ya.

T.S. North Lake.

D.B. I've been there a long time ago.

T.S. I went up there with a hunting party. North Lake. Lots of trout. Hunt anything. That's Fire Lake eh?

D.B. I think so, ya.

T.S. My wife knows about trail up there. Where is Seven Mile Lake, right here?

D.B. Right here it must be, I don't know. Did you go up that way all the time long ago?

T.S. All the time. All the time. Here's the big mountain I was talking about. They used to dry caribou up there. I remember going up here when I was a kid.

D.B. How about not too long ago, you ever been up there?

T.S. Not too long ago we been up there. All the time. Big meadow right here it must be. This must be Finlayson Lake.

D.B. Finlayson [Lake].

T.S. The other way, Frances Lake. There is a trail down there.

D.B. You go around up there now? Who live around there?

T.S. John MacKay. I was real sick, can't walk that far. Now we live along the highway. Your mom and Tilly's mother used to walk around down there. We always go around there.

D.B. Why don't you go around there any more.

T.S. It got too easy [lifestyle]. Now I've got truck. We used to travel around with dogs, lots of times. All the way to Wind Lake. Walk all the way from Frances Lake. Now too much easy living, can't even walk around. I'm going to get back in those mountains.

D.B. There is going to be claims staked pretty soon all over.

T.S. Up Hoole River someplace.

D.B. There's fish in every lake?

T.S. Every lake, ya, fish.

D.B. If they put in a mine there will be pollution.

T.S. It might come down to Finlayson [Lake].

D.B. This is Finlayson Creek, go right up to the camp. Look there's two little lake. There's fish up there?

T.S. There's grayling they say. That lake, they see a lot of grayling they said. Both sides there they are going to put dam they said.

D.B. Dam?

T.S. Dam, ya.

D.B. What about marmots?

T.S. There are marmots, gophers too, fish. Nice there, looking after good. And then it comes down this way eh? They are going to use some dam they said I don't know, right here someplace below the lake. So fish they can't go over eh? Fish they can't go up there. Well lots they looking after good, Ketz looking after good see come down. Sometime we can't drink that water too eh? Now he's looking after good so everything is OK. Never do it to shut it down the mine. That's what they say.

D.B. There is sheep lick, caribou lick and everything over here, people [say]. I don't know where. Do you know about it?

T.S. Sheep lick, that's what I was talking about.

D.B. This around here some place? I think that's what they said.

T.S. That must be Wolverine Lake.

D.B. Must be.

T.S. Up that mountain there. When I was a kid we used to up there all the time from Pelly Banks.

D.B. You know any story about this area?

T.S. I don't know where it was there were bones around. Tilly might know. There are lots of fish in every lake. This one too, fish I guess.

D.B. Right there too.

T.S. Ya, a lot of fish. This one, this one, North Lake. Fire Lake, North Lake for fish. Hunting party one time we had camp right here. They were fishing where the creek flows in. We pulled in three big lake trout that big. *Tú Destsié'* they call it.

D.B. Where is that?

T.S. There is a big rock there. Up Big Campbell [River].

D.B. Maybe right here

T.S. *Gucha- Dedié'*.

D.B. That's how they say it right here, *Gucha- Dedié'*.

T.S. Where?

D.B. On this mountain.

T.S. Ya. Grass Lake.

D.B. They got different name for it too. What do they call it? *Tsé Néhtsedi*, or I don't know.

T.S. *Tsé Néhtsedi*, some place around here. *Tsé Néhtsedi. Picou Tsi'* [??], do you know where that is? Just for nothing I go hunt up there. I lost moose all the time up there. I was up there with a hunting party. There was a big bull moose up there we saw on the side of the hill. We got a big bear too. That man [I guided for] pay me good, 900 bucks, four days, five days, one week eh?

D.B. Is that it? You know any old camp up here? Have you ever found old camp there?

T.S. There are camps all over.

D.B. Where they are making the road.

T.S. There must be camps up there. What they call *T_ Destsié'* up around here.

D.B. There's no names for these lakes eh? This Finlayson Creek flows a long ways.

T.S. Daddy had a cabin up here by Finlayson Lake. Grandpa John [Dickson?] up here, Grandpa Pelly Smith, Grandpa [John?] Dickson.

D.B. How come I tell him to talk he don't want to.

T.S. No, he said I'm not going to talk.
Up here there is lots of game all the time. Sheep, everything.

D.B. Right now it's like that?

T.S. Ya. Right now lot of sheep. Caribou, moose.

D.B. Is that it? Is that as far as you know?

T.S. Ya. When I was a child I used to walk around up there. I would get afraid of gopher, I didn't know.

I'm going to go prospecting. I know lots about rocks. People are really poor this time.

D.B. Is that it?

T.S. Ya.

APPENDIX B3



ECOFOR

natural and cultural resource consultants

Heritage Resource Impact Assessment: Proposed BMC Minerals Kude Ze Kayah Mine

(To Be Included in YESAB Materials – All Sensitive Site Data Removed)

Permit 15-10ASR

Prepared for:

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March 23, 2016

Heritage Resource Impact Assessment: Proposed BMC Minerals Kude Ze Kayah Mine

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Report also submitted to:

Ross River Dena Council
Liard First Nation

EXECUTIVE SUMMARY

At the request of BMC Minerals (No. 1) Ltd. (BMC), Ecofor Consulting Ltd. conducted a Heritage Resource Impact Assessment (HRIA) for the proposed BMC Minerals Kude Ze Kayah Mine. This HRIA assessed the potential mine site and associated developments, including the proposed pit, western waste rock storage, main waste rock storage, organic storage areas, mill site, accommodations area, explosive area, 2015 exploration targets, and reviewed the existing tote road for likely road improvement areas. **Note: All specific geographic references to heritage site locations, photographs, and some site details have been removed from this YESAB ready version of this report so that it can be issued publicly while protecting sensitive site data.**

Eight landforms were identified as possessing elevated potential for buried cultural materials and were shovel tested. Two of these landforms were found to contain prehistoric lithic sites: JiTp-1 (the Alistair Site) and JjTp-1 (the Fat Lip Site). In addition to subsurface testing at the eight landforms discussed above, surficial survey was conducted at high elevation exploration zones, resulting in the recovery/documentation of heritage resources at three localities (Ice Patch #1, #2, and #3).

Additional data recovery work is recommended for JiTp-1. BMC Minerals has agreed to conduct additional work at this site in 2016. This work will consist of additional shovel testing and test unit excavation. Additional work should include approximately 30 to 40 additional shovel tests and approximately 6 to 8 test units to further sample and mitigate the proposed impacts to the site.

Avoidance is recommended for JjTp-1. At this time there are no specific proposed impacts to the site area. However, if the site will be impacted in the future due to changes in the proposed development plan then it is recommended that 10 to 15 additional shovel tests and 3 to 5 test units be excavated to further sample and mitigate the impacts to the site.

No further work is recommended in relation to the Ice Patch #1, #2, and #3 finds associated with the 2015 high elevation exploration targets. If any additional high elevation exploration targets are proposed they should be assessed before ground disturbing activities are allowed to commence.

No built structures, cambium stripped trees, or additional buried cultural materials were identified within the survey footprint, including along the existing tote road where future road improvements might be made. As such, **no further work is recommended in relation to known tote road improvements. However, if any cultural materials are identified during activities related to road improvements, or any other development activities at the BMC Minerals Kude**

Ze Kayah Mine, then work in the area should stop, the materials should be protected from further disturbance, and the BMC chance finds protocol should be implemented.

CREDITS

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1. INTRODUCTION

At the request of BMC Minerals (No. 1) Ltd. (BMC), Ecofor Consulting Ltd. conducted a Heritage Resource Impact Assessment (HRIA) for the proposed BMC Minerals Kude Ze Kayah Mine (Figure 1). The Kudz Ze Kayah (KZK) project is located approximately 260 km northwest of Watson Lake, 110 km southeast of Ross River and 24 km south west of the Robert Campbell Highway near Finlayson Lake. The project components are located within NTS mapsheets 105G/07, 105G/08, 105G/09 and 105G/10, and are located within the traditional territory of the Ross River Dena Council (RRDC) and the Liard First Nation (LFN) which are both members of the Kaska Nation. The north end of the tote road, represents the lowest elevation, while exploration drilling represents the highest elevation in the south. The study area covers approximately 325 ha. **Note: All specific geographic references to heritage site locations, photographs, and some site details have been removed from this YESAB ready version of this report so that it can be issued publicly while protecting sensitive site data.**

1.1 Project Overview

This HRIA assessed the proposed mine site and associated developments, including the proposed pit, western waste rock storage area, main waste rock dump, organic storage areas, mill site, accommodations area, explosive area, 2015 exploration targets, and reviewed the existing tote road for likely road improvement areas. In particular, attention was focused on possible high elevation exploration targets that might have the potential to impact ice patch related heritage resources. Previous heritage impact assessment studies were conducted in relation to an earlier but similar project in 1995 and 1996 and no cultural materials were identified. The rationale for the current assessment was based on differences in past assessed areas and current project components including the high elevation drill targets.

Eight landforms were evaluated in the field as containing potential for heritage resources. The eight landforms were tested with hand excavated subsurface shovel testing. The amount of subsurface testing at these eight shovel test locations (STLs) ranged from five shovel tests up to 240 shovel tests, for a total of 346 tests. Two of these STLs were found to contain prehistoric lithic materials, resulting in the recording of two new archaeological sites: JiTp-1 (the Alistair Site) and JjTp-1 (the Fat Lip Site). In addition, wooden artifacts were identified on the surface at three high elevation ice patch edge locations. These sites have not been assigned Borden numbers and are reported here as Ice Patch 1, 2, and 3.

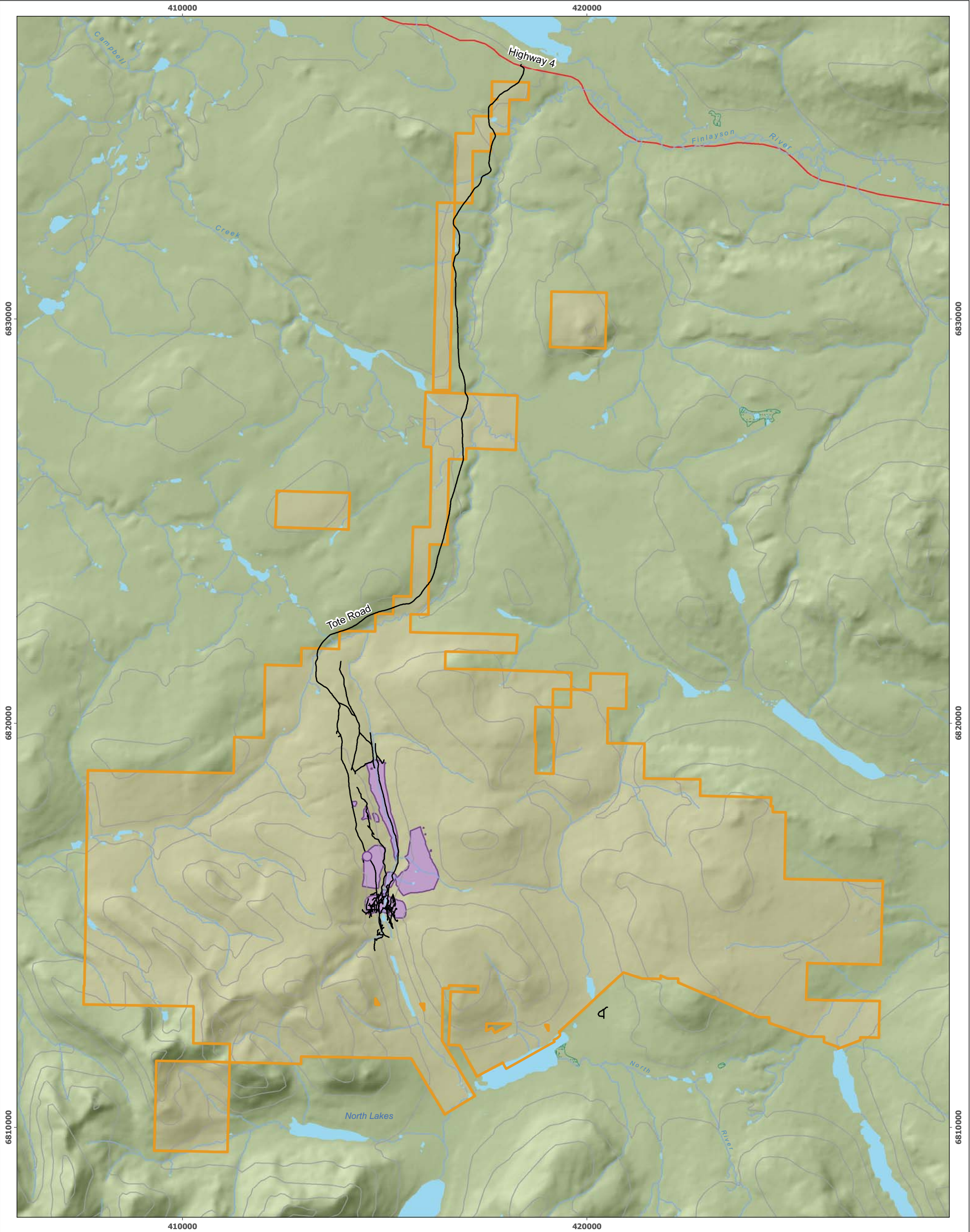
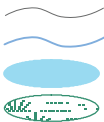


FIGURE 1
KUDE ZE KAYAH PROPERTY OVERVIEW MAP



Base Features

- Contour (500 ft)
- Watercourse
- Waterbody
- Wetland



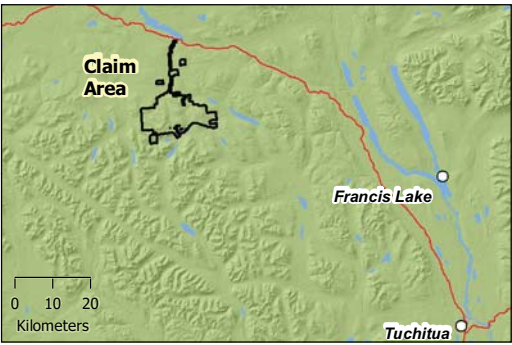
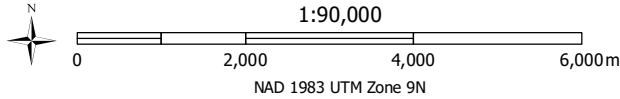
Access

- Highway
- Tote Road



Assessment Features

- Kude Ze Kayah Claim Area
- Potential Mine Infrastructure



Disclaimer:
This product is for informational purposes only and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. The base data layers have been obtained from the National Topographic Database (NTDB), and GeoYukon.

1.2 Personnel

In August of 2015, Ecofor staff consisting of James Mooney and Ben Vickers-Redhead and one RRDC participant, Kiefer Sterriah, completed these HRIA field efforts.

1.3 Report Format

Following this introduction in Section 1.0, Section 2.0 provides a discussion of the environmental setting that the study area is located within, Section 3.0 discusses the culture history of the area in which the proposed development is located, Section 4.0 details the methodologies employed in completing this work; Section 5.0 presents the results of this HRIA and the recommendations that stemmed from them, Section 6.0 provides a summary and offers concluding remarks, and Section 7.0 closes the report with a listing of references cited.

Five appendices are included at the end of this report¹. Appendix A shows project mapping; Appendix B provides project photographs; Appendix C contains the site form for newly recorded archaeological sites JiTp-1 and JjTp-1; Appendix D contains the artifact catalogues from JiTp-1 and JjTp-1; and Appendix E contains a copy of the field notes.

¹ Note: These appendices have been removed from this YESAB ready version of this report so that it can be issued publicly while protecting sensitive site data.

2. ENVIRONMENTAL SETTING

The study area fall within the Yukon Plateau – North Ecoregion which is part of the Boreal Cordillera Ecozone (Smith et al. 2004).

2.1 The Yukon Plateau – North Ecoregion

The Yukon Plateau – North Ecoregion is the largest ecoregion entirely inside the Yukon and contains a large portion of the Tintina Trench. The ecoregion generally consists of relatively rolling highlands with an east-west orientation.

The mean annual temperature in the Yukon Plateau – North Ecoregion is near -5°C. Mean temperatures for January range from below -30°C in the lower valleys to above -20°C in higher terrain. This is drastically different by July as mean temperatures in the lower valleys are 15°C and close to 8°C in higher terrain. Frost can occur at any time of the year, but is less likely from mid-June to late July.

Precipitation is moderate with an increase in higher elevation sections in the eastern part of the ecozone. Annual precipitation ranges from approximately 300 to 600 mm. The winter months have mean precipitation of 20 to 30 mm while the summer months can expect 40 to 80 mm of rainfall (Smith et al. 2004). Winds are generally light, however they may increase to moderate/high during unusually active weather systems or thunderstorms.

The vegetation of the Yukon Plateau – North ranges from boreal to alpine. Northern boreal forest exists at elevations up to 1500 m (Smith et al. 2004). Open black spruce with a moist moss, or drier lichen understory is the dominant forest type in the boreal zone. Shrub and lichen tundra dominate the higher elevations. The alpine vegetation is characterized by low ericaceous shrubs, prostrate willows, and lichens. In the subalpine areas, shrub birch, with scattered pine, white spruce, subalpine fir and a lichen understory, is extensive. Extensive shrub lands exist at mid-elevations and on valley bottoms that are subject to cold air drainage. Black spruce is the dominate tree type in the ecoregion, however white spruce, occasionally with aspen or lodgepole pine, occur in warmer, better-drained areas and in forest fire burn areas.

The Yukon Plateau–North Ecoregion supports wildlife populations typical of Yukon’s boreal forest. Moose, woodland caribou, Stone sheep, Dall sheep, grizzly bear, black bear, wolverine, and marten are all abundant. This ecoregion supports the greatest proportion of brown-coloured black bears in the Yukon, occurring between the Stewart and Pelly rivers. Lynx, beaver, chestnut cheeked vole, mule deer, coyotes, and red fox are also present in some sections of the Yukon

Plateau – North (Smith et al. 2004). Of interest in the larger area are the Tay River Caribou herd, and an overlap of Stone and Dall Sheep, while Mountain goats are uncommon. The local project area overlaps with the Finlayson Caribou herd but does not overlap with either species of sheep.

The glacial history of the Yukon Plateau – North Ecoregion was dominated by the actions of the Cordilleran ice sheet and local glaciers. More recent glaciations were less extensive. Most current glacial features are remnants from the McConnell glaciation (Smith et al. 2004), however some older features and glacial erratics are present from the older Reid and pre-Reid glaciations. Some uplands and valley floors were extensively eroded into "whalebacks" or rock drumlins by the glacial flow. The western edge of the ecoregion was approximately the terminus for the ice sheet of the McConnell glaciation. As the ice retreated through regional stagnation and wasting it left behind kame and kettle topography and glacial lake deposits in many valleys (Smith et al. 2004).

Soils in the valleys of this ecoregion tend to be underlain by glacial parent materials. Soil development also reflects the presence of extensive discontinuous permafrost and a strong continental climate (Smith et al. 2004). Of interest is the presence of the Wounded Moose and the Diversion Creek palaeosols. These two palaeosols are buried soils formed a great deal of time before the current environmental conditions and may reflect past stable ground surfaces. The Wounded Moose palaeosol developed on glacial surfaces of pre-Reid age and the Diversion Creek palaeosol developed between the Reid and the McConnell glaciations. Both of these palaeosols would predate the known cultural history in the Yukon.

The bedrock geology of this ecoregion includes sections of two geological provinces of metamorphosed sedimentary rock. In the northern half of the ecoregion, variably deformed sedimentary rocks have been deposited on the outer continental shelf of ancestral North America, the Selwyn Basin. The bedrock geology in the southeast part of the ecoregion includes siliceous sedimentary and volcanic rocks of the Yukon-Tanana terrane and metabasaltic flows of the Slide Mountain terrane. The origin of these materials is not well-known due to deformation before and during transportation onto the Selwyn Basin strata (Smith et al. 2004). The southeast section of the ecoregion between Faro and Ross River also includes exposed river and stream cut banks along the Tintina Trench (a 450 km fault) that contains rhyolite and olivine basalt which may have provided materials for prehistoric stone tool making. Also of interest in the northern Anvil Range are jet-black or gun steel-blue weathering siliceous siltstone and conglomerate containing chert pebbles. These materials may also have been used for making stone tools.

3. CULTURAL HISTORY

The following is an overview of the culture history for the broader region surrounding the study area including south-central and southwestern Yukon, and northern BC. Many researchers have reviewed the cultural history of this broader area and have presented the information using a variety of terms and temporal ranges (Clark 1981; West 1996; Workman 1978; Wright 1995, 1999). Temporal ranges begin with years before present abbreviated BP.

3.1 Prehistoric Period (>11000 BP to ca. AD 1700s)

The earliest prehistoric occupation, which dates to early post-glacial times, is known as the Northern Cordilleran tradition (Clark 1983; Hare 1995). The earliest Northern Cordilleran tradition occupation known at present is a site located near Beaver Creek, dated to 10670 radiocarbon years before present (BP)(Heffner 2002). The majority of sites in this period appear to date older than 7000 to 8000 BP. The Northern Cordilleran tradition, with some overlap, predates the introduction of microlithic technology from Alaska into the interior of the central and southern Yukon (Clark 1983; Hare 1995).

The Little Arm phase dates from 7000 to approximately 4500 BP (Clark and Gotthardt 1999; Workman 1978) and can be defined by the use of microlithic technologies. After about 4500 BP, there is less evidence of microblade use in the Yukon, and an increase in the use of notched projectile points and a variety of scraping and carving tools. This is labeled the Taye Lake phase in southwest Yukon, or more broadly in Yukon and Alaska, the Northern Archaic tradition (Hare 1995; Workman 1978). The most recent archaeological culture of southern Yukon is that of the Aishihik phase (Workman 1978). This phase is thought to be a cultural development from the earlier Taye Lake culture, although there are some significant differences in technology. The most notable is the introduction of the bow and arrow, replacing a type of throwing spear known as an atlatl (Hare et al. 2004). These Aishihik phase sites are found above the White River Volcanic ash layer (also known as Tephra) that is dated to about 1250 BP (Clague et al. 1995).

3.2 Athabaskan Period (ca AD 500 to AD 1840s)

In the Athabaskan Period, the project area is thought to have been populated by ancestors of the current Ross River Dena Council which may have been comprised of the Shu-tah Dene, Northern Tutchone, and Kaska. A great deal of information concerning the Northern Tutchone people was recorded in oral traditions passed on through generations and recorded by various researchers (Dobrowolsky 1987, Gotthardt 1987, Legros 1999; McClellan 1981, McClellan et al. 1987). More information regarding the Kaska is presented below.

From a tool kit perspective, the Athabaskan period has been identified as a shift to stemmed projectile points, the increased use of bone and antler projectile points, and the use of the bow and arrow.

This late prehistoric period is defined by those archaeological components dating after the fall of the White River Tephra (WRT). The Aishihik phase has been evaluated as ranging from approximately AD 750 to AD 1750 and also include the use of native copper tools, stemmed projectile points, and gorges. Also indicative of the Aishihik phase are small stemmed Kavik points, end and side scrapers, and ground adzes (Hare 1995). The poor preservation of organic materials makes the task of diet reconstruction more difficult than at coastal sites, but there is evidence of continued use of a variety of large and small mammals, fish, and birds. In the high elevations of the southern Yukon ice patches, examples of the transition from the older atlatl technology to the bow and arrow use has been clearly documented by recent finds (Hare et al. 2004). The shift to the new technology was a rather abrupt one at roughly AD 750 based on a good sample of dated atlatl dart shafts and bow and arrow remains.

3.3 Proto-historic Period (AD 1700s to ca AD 1840s)

The proto-historic period, as presented here, also overlaps with the late Athabaskan Period and can be defined by the appearance of non-native goods, other early trade items, and foreign (western or eastern) influences, but not the documented accounts of westerners themselves. Other indicators of the proto-historic period are the arrival of the first non-native diseases and oral traditions concerning non-natives. This period spans the time between the first introduction of non-native influences or artifacts, and the recording of first hand or primary written accounts. Unlike other cultural periods with more specific temporal ranges it is difficult and perhaps impossible to determine when the first 'outside' influences of Russian, Asian, European, or other cultures began to impact First Nations people in the Yukon interior.

Some of these far reaching effects may have been passed along from Russian exploration in the early and mid-1700s (Veniaminov 1984) and other Asian and European (Andreev 1944, Quimby 1985) exploration and contact with coastal communities. The Chilkat Tlingit from the Northwest Coast travelled and traded with many interior First Nation peoples throughout this proto-historic period, including the Kaska and the Northern Tutchone from the Dawson and Mayo areas, and occasionally the Mountain Dene people from as far away as Fort Norman on the Mackenzie River. The Tlingit protected and controlled the trading routes into the interior and fiercely defended those routes when they were threatened. News of early non-native explorers and traders would

have travelled inland along with foreign items such as metals, cloths, glass beads, and later tobacco and other goods.

In some of the earliest cases, the impacts of these foreign cultures could have had significant impacts even without the presence of the foreigners themselves. Such is the case for what is called 'drift-iron' whereby metals and other materials from Asian or European shipwreck wash ashore. Historical accounts of shipwrecks were reported in the mid-1700s, but much earlier wrecks were possible. Metals and other foreign trade items have been derived from ship wrecks off what is now British Columbia, southwest Alaska, and perhaps the northwest Alaska as well.

3.4 Historic Period (post AD 1840s)

During the early years of this period the Russians were expanding their exploration and trade network along the Pacific coast and up the major rivers of the Alaskan interior, while the British were exploring eastward into what would become Canada's Northwest and Yukon Territories, as well as Alaska. In the 1840s, representatives of the Hudson's Bay Company (HBC) established trading posts near the study area. Frances Lake Post was established by the narrows of Frances Lake in 1840 while Fort Pelly Banks was constructed in the winter of 1842-43 on the Pelly River at the mouth of Campbell Creek. Fort Yukon was established by John Bell at the confluence of the Yukon and the Porcupine Rivers in 1847. The next year Robert Campbell established Fort Selkirk on the upper Yukon River and then relocated to an improved location in 1851. The Frances Lake post functioned primarily as a meat post and then as a staging post enroute to Fort Selkirk. These posts were plagued by starvation, poor supply and poor trade due to hostilities and feuding.

The location of Fort Selkirk was known to upset the Chilkat Tlingit who controlled the trade routes from the coast to the central Yukon. In 1852, a Chilkat Tlingit raiding party travelled inland and forced Robert Campbell and his crew to leave the trading post, which was consequently burned by the Northern Tutchone (Castillo 2012). The posts at Frances Lake and the Fort at Pelly Banks were abandoned by the Hudson's Bay Company by 1851-1852, while Fort Halkett, on the Upper Liard River near what would become the BC-Yukon border, remained open until 1865.

In 1867, US Secretary of State William Seward was able to focus increasing American interests, and he convinced the United States Senate to purchase Alaska from Russia. Soon after the purchase, the US Army sent Captain Raymond up the Yukon River on the first stern-wheel steamer to reach Fort Yukon (Grauman 1977). Raymond surveyed the location of Fort Yukon and

proved that it was within US territory. The British sold the Fort to the US Government and relocated east across the 141st Meridian.

The inland fur industry continued to drive exploration and settlement into the late 1800s, but mining would shift the focus to the placer gold found in streams and alluvial deposits. Mining in the second half of the 19th century was a risky but often very lucrative enterprise. The impacts of mining would spread quickly and drastically change the larger regional area.

Mineral prospecting and mining efforts in the second half of the 19th century were in some ways very dependent on the existing infrastructure of the fur trading and missionary efforts. As the competition for the inland fur trade grew, so would the number of stern-wheelers on the Yukon River. These steamers could better supply the small number of trading posts along the Yukon and its tributaries and reduce the risk of prospectors running short of supplies. Therefore, more of the fur traders and other explorers turned their attention to search for gold and other minerals. Three key prospectors in the north were L.S. (Jack) McQueston, Al Mayo, and Arthur Harper. They wrote to miners in the United States to encourage them to come north. They also established outposts along the Yukon River, including Fort Reliance, established in 1874 near the confluence of the Klondike River (what would become Dawson City) (Wright 1976).

Harper and another man may have been the first to travel up the Fortymile River in search of gold in 1881 (Buzzell 2003). They collected a very rich sample, but were unable to relocate the exact location of their original find. In 1886, McQueston, Harper, and Mayo built a post on the confluence of the Stewart and Yukon Rivers which provided supplies for additional prospectors. Also in 1886, Howard Franklin made a richer find on the Fortymile River. Others rushed in and these claims along the Fortymile River attracted miners from across central and eastern Alaska, and even southeast Alaska. Forty Mile was the first town to grow to over a thousand people by the mid-1890s (Buzzell 2003), and in 1887 the Stewart River post was deserted. Some prospectors that did not find easy success in Fortymile returned to the Stewart River and continued work in the area. In 1890, Harper re-established a trading post at the site of the old HBC post at Selkirk as interest in the area grew. This was followed by Jack Dalton who developed a series of existing First Nation trails beginning at tide water at Haines Alaska, into Fort Selkirk.

On August 16, 1896, George Carmack, Skookum Jim, and Tagish Charlie discovered a very rich claim on Bonanza Creek, a tributary to the Klondike River near Dawson. This discovery sparked one of the largest gold rushes in history.

It would take almost a year for the news of the Klondike gold fields to spread south, even to places relatively close by in southeast Alaska. Most of the prospectors and traders in the Alaskan and Yukon interior had already converged on the Dawson area during the winter and spring, and supplies ran dangerously low. That would quickly change in the summer of 1897 and spring of 1898 as new towns and supply posts sprang up along the Gold Rush routes to cash in on the increased demand.

The population of Dawson City grew very fast and in 1898 reached a peak of over 30000. However, the boom period did not last long and the vast majority of the population moved on very quickly with the news of other discoveries. The Gold Rush period saw greatly increased steamer traffic on the entire Yukon River drainage basin and across the interior. Just prior to the Gold Rush there were only a few steamers, while at its peak there were hundreds of vessels working the rivers. These shallow draft steamers were supported by a network of wood camps, shipyards, and a large workforce which kept the river traffic moving. This network provided the infrastructure backbone for trading posts, fish camps, missionaries, and mail routes, while meeting the needs of the growing number of prospectors and traders.

As the world's attention was drawn to growing concerns in Europe in 1939, the Canadian Government began building a chain of airfields across the northwest under the Northwest Staging Route Program. Following the bombing of Pearl Harbor there was no doubt that Alaska and the Yukon would play a key role in the war, and a road was required to link Alaska to the contiguous United States. It was quickly decided that the "Prairie Route" would be used, whereby key airfields would be linked from Great Falls, Montana to Fairbanks, Alaska. As part of the agreement Canada agreed to build and improve airstrips along the way, including Watson Lake. In February 1942, the US War Department issued the directive to begin construction. These actions spurred on the building of approximately 2446 km of new road through British Columbia and the Yukon Territory. Following the completion of the Alaska Highway the Canol Pipeline and Canol Road (North and South) were completed to allow the flow of oil from Norman Wells, NWT to Whitehorse in 1944. These two events increased access to the traditional territory of the Ross River Dena Council and were largely responsible for commercial and mining/industrial activities in recent decades, including construction of the Robert Campbell Highway (Tungsten Road) in 1961.

3.5 The Kaska Nation

The project falls within the traditional territories of the Ross River Dena Council (RRDC) and the Liard First Nation (LFN). Both First Nations are part of the Kaska Nation. The Kaska Nation's

traditional territory covers a large area of northwestern BC, southeastern Yukon, and southern NWT. Within the Kaska traditional territory there are five First Nations communities: the Dease River First Nation, the Kwadacha Nation, the Ross River Dena Council, the Liard First Nation and the Daylu Dena Council. Each Kaska First Nation is represented by an elected Chief and Council as well as a Hereditary Chief.

Prior to European contact, traditional subsistence activities typically featured a seasonal round of winter hunting and summer fishing covering vast areas. In summer, families congregated at lakes and rivers, where fish and plants were collected, dried and stored. In late summer, small groups dispersed throughout the uplands and higher valley systems to hunt in clan-owned territories. Temporary camp sites, situated within a variety of ecological zones, were often reoccupied year after year in order to exploit seasonally available resources (Honingmann 1981).

Contact with neighbouring Nations was vital to First Nations' economies. Interior bands traded hides, furs and obsidian to coastal groups for fish oil, dentalium, woodwork and blankets. Trails were an intrinsic part of this economy and traditional subsistence as a whole. The principal ethnographic descriptions of the Kaska Dena are available in Black (1955), Jenness (1937), and Morice (1893, 1903, 1905). Additional information on past lifeways can be found in Honigmann (1981).

Ross River, near the confluence of the Ross and Pelly Rivers, is the modern focal point of the Ross River Dena Council. Originally, First Nations people used the area as a seasonal camp and gathering place. By 1903, a trading post was established nearby and later when the American army completed the Canol Pipeline and Canol Road in 1944, they connected Ross River by road to the rest of the Yukon (Cohen 1992). In 1962, Ross River was relocated to its current site close to the Campbell Highway (Yukon Community Profiles 2012).

Watson Lake, Upper Liard and the adjoining settlements are home to the Liard First Nation. The amount of activity near Watson Lake was greatly increased when its airfield was established in 1939. This was part of the Canadian government's construction of a chain of airports across northeastern British Columbia and the Yukon as part of the lend-lease program. The new community was soon after used as a supply centre for the construction of the Alaska Highway in 1942.

3.6 Previous Heritage Investigations

In 1995, a heritage impact study was conducted in collaboration with the RRDC as part of the Initial Environmental Evaluation of the proposed KZK Mine. The study identified no cultural materials or features (Rutherford 1995a); however, a review of the oral history provided by Kaska members indicates that the project area was used for subsistence hunting, trapping and fishing, and as an access route to the North Lakes (Rutherford 1995b). In 1996, an additional study for cultural materials was undertaken at a proposed airstrip location near the Robert Campbell Highway (Rutherford 1996). No cultural materials were identified in this follow-up study. No archaeological sites were known for this area prior to the current 2015 heritage study.

4. METHODOLOGY

Field efforts were separated into two main tasks consisting of pedestrian transect survey to assess in-field potential and subsurface testing where potential for buried heritage resources was determined to be moderate to high.

Due to the relatively small size of the assessment areas, each proposed target area was walked in relatively tight transect intervals of approximately 5 to 15 m apart. When areas or landforms were assessed in the field to possess moderate to high potential, shovel tests were excavated. Shovel tests were located approximately 5 to 10 m apart. Shovel tests were a minimum of approximately 35 by 35 cm and were excavated with shovel and trowel as needed into sterile sub soils. All soil matrix were screened through ¼" mesh. Artifacts identified were collected and bagged according to the shovel test unit and stratum, or arbitrary 5 cm vertical interval. The profile of positive shovel tests were recorded by depth below surface and natural and cultural soil strata. All shovel tests were backfilled and returned to as close to natural conditions as possible. If surface finds or subsurface cultural materials were identified additional shovel testing was conducted to assess the vertical and horizontal limits of the site, and to recover a sample of the cultural material to assist in the assessment of the site use and cultural affiliation. All sites, isolates, and heritage resources were photographed and the site location recorded using a hand-held GPS unit. Sketch maps were prepared in the field for all sites. Additional site data included setting, access, vegetation, water system information, elevation, soils data including number of cultural strata, features present, and other comments. This information was submitted to Yukon Heritage Branch for site inventory and return of Borden Site number. The condition of sites was also assessed based on the amount of disturbance, ranging from relatively intact to destroyed. Historic and prehistoric sites were flagged in the field as needed. A buffer area of 30 m around known historic and prehistoric sites was flagged with yellow "no work zone" ribbon as well as flagging at the centre of the site. Field work was completed by crews of three to four individuals (principal investigator, archaeological field technician, and First Nation Participant).

Interim and final reports, site forms, and artifact curation preparations met the Yukon Archaeological Sites Regulations Guidelines for Permit Holders.

If mummified or skeletal palaeontological remains were exposed, Yukon Palaeontology would have been contacted before disturbing them further.

If human remains were identified during operations, all work would have ceased in the area immediately and the R.C.M.P, First Nations, and Yukon Heritage Resources would have been notified.

4.1 Curation of Materials Collected

The Yukon Heritage Resources Unit will serve as the repository for the materials collected. Contact information of the Heritage Resources Unit is provided below.

Heritage Resources Unit
Department of Tourism and Culture
Government of Yukon
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4.2 Resource Definitions

A Site is an area, place or parcel of land which contains heritage resources or objects.

Historic Sites contain heritage resources that are greater than 45 years in age and possess significant heritage value. By convention, historic sites date to the period for which written records are available; in this case, the historic period commences with the arrival of the Hudson's Bay Company in the early to mid-19th century. Historic sites may include cabins, caches, camps, brush camps, and any other man-made structures, features or objects that date between the 1830s to 1850s and the 1960s.

Proto-historic Sites can be viewed as prehistoric sites from a time period which includes the effects of foreign historic cultures but lacks the first hand written descriptions of that area. For example, in the Yukon the proto-historic period ends with the appearance of the first hand written descriptions in the mid-1800s. However the proto-historic time period extends back through time when foreign materials such as "drift-iron" from ship wrecks on the west coast, or foreign trade items, were carried into the Yukon. Examples of foreign historic materials which predate the mid-1800s found in prehistoric contexts usually represent this proto-historic period.

Archaeological or Prehistoric Sites generally represent use before European contact and are found on or under the ground surface, and may consist of the remains of ancient camps, including

hearths, animal bone and stone tools and debris. In this usage, an Archaeological Site equates to a Prehistoric Site (a site that dates to the period before written history). Note, however, that in heritage resource management usage, archaeological resources are viewed as resources that are in subsurface context (buried) and may also include historic period objects and features.

5.0 RESULTS

Field assessment during this HRIA focused on potential locations of the mine pit, main waste rock storage area, western waste rock storage area, organic storage areas, mill site, accommodations area, explosive area, and 2015 exploration targets. The tote road ROW was also reviewed for likely road improvement areas. Special attention was focused on possible high elevation exploration targets that might have the potential to impact ice patch related resources.

As a result of this assessment, eight landforms were identified as having high potential for heritage resources (see Appendix A). Subsurface testing was conducted at all eight high potential areas. The amount of subsurface testing at these eight shovel test locations (STLs) ranged from five shovel tests up to 240 shovel tests, for a total of 346 tests (see Table 1). Two of these STLs were found to contain prehistoric lithic materials, resulting in the recording of two new archaeological sites: JiTp-1 (the Alistair Site) and JjTp-1 (the Fat Lip Site). In addition, wooden artifacts were recovered from the surface at three high elevation ice patch edge locations. These ice patch sites have not been assigned Borden numbers and are reported here as Ice Patch #1, #2, and #3.

Locality	Borden # and Common Name	Total (+) Tests	Total (-) Tests	Landform	Landform Size (m)	Site Type & Recommendation	Overall Site Size (m)
STL-J1	JiTp-1/Alistair Site	8	232	Large bench	190 x 70	lithic scatter, avoidance or further testing	35 x 55
STL-J2	n/a	0	16	Small terrace	50 x 5	n/a	n/a
STL-J3	n/a	0	14	Two benches	15 x 5; 30 x 5	n/a	n/a
STL-J4	n/a	0	13	Ridge	25 x 8	n/a	n/a
STL-J5	n/a	0	5	Knoll	5 x 8	n/a	n/a
STL-J6	n/a	0	18	Terrace	50 x 5	n/a	n/a
STL-J7	JjTp-1/Fat Lip Site	2	27	Break in slope	30 x 15	lithic scatter, avoidance or further testing	20 x 5
STL-J8	n/a	0	11	Break in slope	25 x 5	n/a	n/a
Ice Patch 1	n/a	na	na	Ice patch edge	n/a	wood isolate, no further work	5 x 5
Ice Patch 2	n/a	na	na	Ice patch edge	n/a	wood isolate, no further work	5 x 5
Ice Patch 3	n/a	na	na	Ice patch edge	n/a	wood & wire isolate, avoidance or collection	5 x 5

Table 1: Subsurface and ice patch test locations.

No built structures, cambium stripped, or culturally modified trees (CMTs) were identified during this HRIA.

Details of these newly recorded sites are presented below.

5.1 JiTp-1 – the Alistair Site

JiTp-1 (Appendix A-D) is a large low density lithic scatter site located on a large gently sloping north to south oriented "whale's back" landform. This landform is south of the exploration camp near km 23, and rises above the west side of the valley floor providing good vistas in 360 degrees. The best views are to the north, east, and south, overlooking the valley lakes and streams. Vegetation includes scrub birch, grasses, and berries growing in thin soils. The landform is roughly battleship shaped, and measures approximately 190 m north to south and 70 m at the widest in the mid-section. The north and east sides of the landform are cut on the side slope by the exploration camp road and the north end has a vertical cobble cairn marker on the east side of the road adjacent to a small borrow area. The north end of the landform has been partially impacted by the borrow pit operations.

In total, 240 shovel tests were excavated at JiTp-1, eight of which were positive for heritage resources in the form of lithic artifacts. Sediment profiles encountered consisted of black organic duff from 0-5 cm, followed by black organic silty loam from 5-10 cm, a grey E-horizon (possibly White River Tephra; WRT) from 10-15 cm, reddish brown silty loam with ~25% gravel and cobbles from 15-25 cm, then light olive brown silty loam with ~40% cobbles and gravel from 25-30 cm below surface (see Appendix B). Minor bioturbation was noted in some shovel tests. In addition to shovel testing, a 1 x 1 m test unit was opened over the richest shovel test (stp 1). This test unit was excavated in arbitrary 10 cm levels, with stp 1 located in its northeastern corner. Sediment profiles for this unit are illustrated in Appendix B.

The lithic scatter was identified in the central and southern part of the landform. The lithic scatter measures approximately 35 m east to west and roughly 7 m north to south. An isolated tested chert cobble was also recovered from a shovel test excavated approximately 50 m south of the main scatter. In total, 77 lithic artifacts were recovered, with 45 being recovered from the 1 x 1 m test unit (see Appendix D). Details of the artifact types recovered are presented in Table 2. Artifacts were recovered from throughout the first 20 cm below surface; above, below, and within the possible WRT layer. No culturally/temporally diagnostic artifacts or formed tools were recovered, however some temporal inferences can possibly be made if the observed E-horizon is in fact WRT. Of particular interest in this assemblage is the proportionately large percentage of

obsidian (n=52; 67.5%) recovered (see Table 3). A representative sample of these obsidian artifacts has been submitted for sourcing analysis (results pending).

JiTp-1 was flagged in the field with a 30 m diameter buffer of 1" wide yellow flagging tape, with the words "No Work Zone" printed in black. **It is recommended that JiTp-1, be the subject of additional testing and excavation to mitigate development related impacts to heritage resources at JiTp-1. Further work at this site is planned to be conducted in 2016.**

Lithic Type	n=
Debitage	28
Flake Fragment	1
Interior Flake	23
Interior Flake Fragment	15
Primary Flake	1
Retouched Flake	1
Secondary Flake	2
Shatter	5
Utilized Shatter	1
Grand Total	77

Table 2: Lithic artifact types at JiTp-1.

Raw Material	n=
Chert	16
Obsidian	52
Obsidian/Chert	3
Quartz	6
Grand Total	77

Table 3: Lithic raw materials at JiTp-1.

5.2 JjTp-1 – the Fat Lip Site

JjTp-1 (Appendix A-D) is a small low density lithic scatter site located on a southeast facing break in slope, above the west side of Finlayson Creek. It is located roughly 10 km south of the Robert Campbell Highway on the KZK tote road. The existing tote road cuts through the west side of this raised landform, but no cultural materials were identified in exposed soils along the road

cut. The landform overlooks the larger valley to the northeast, east, and southeast. Vegetation includes scattered spruce, scrub birch, grasses, and mosses. The level area in the centre of the landform between the road cut and break in slope has been disturbed by cat tracks and what appears to be a 1990s heavy equipment test pit approximately 2.5 m x 6 m. The entire break in slope edge is approximately 35 m long running in a southwest to northeast direction.

In total, 28 shovel tests were excavated at JjTp-1, two of which were positive for heritage resources in the form of lithic artifacts (see Appendix A). Sediment profiles encountered consisted of dark brown organic leaf litter/moss from 0-9 cm, followed by a grey E-horizon (possible WRT) from 9-14 cm, fine grey sandy loam from 14-18 cm, fine reddish brown sandy loam from 18-21 cm, coarse brown sandy loam from 21-30 cm, then coarse olive brown sands with ~25% cobbles and gravel to 40 cm below surface (see Appendix B).

Two artifacts were recovered from separate shovel tests, including one utilized/retouched basalt flake and one piece of multi-coloured chert shatter (see Appendix D). No culturally/temporally diagnostic artifacts or formed tools were recovered, however both artifacts were recovered from below the possible WRT E-horizon, some temporal inferences can be made if the observed strata is indeed WRT.

JjTp-1 was flagged in the field with a 30 m diameter buffer of 1" wide yellow flagging tape, with the words "No Work Zone" printed in black. **It is recommended that JjTp-1, and its buffer zone, be avoided during development to prevent any impacts to the site. If avoidance is not feasible, then further testing and excavation are recommended to mitigate development related impacts to heritage resources at JjTp-1.**

5.3 Ice Patch Sites

High elevation mineral exploration target areas were inspected for ice patch related heritage resources (see Appendix A and B) as required in BMC Minerals exploration permit. This high elevation inspection of existing ice patch edges and remnant ice patch scars, revealed two wood fragments above the tree line that appear to have been modified and/or carried into the alpine by people. These two wood fragments were recorded as ice patch (IP) #1 and #2, and submitted to the Yukon Heritage Resources Unit for care and curation. A third ice patch related wood item (IP #3) was found with an attached wire segment, similar to a snare pole, and was left in place as it was not threatened by any proposed impacts. **No further work is recommended for the ice patch edges and remnant scars associated with the 2015 high elevation exploration targets.**

6.0 SUMMARY AND RECOMMENDATIONS

At the request of BMC Minerals (No. 1) Ltd. (BMC), Ecofor Consulting Ltd. conducted a Heritage Resource Impact Assessment (HRIA) for the proposed BMC Minerals Kude Ze Kayah Mine. This HRIA assessed the potential mine site and associated developments, including the proposed pit, western waste rock dump, main waste rock dump, organic storage areas, mill site, accommodations area, explosive area, 2015 exploration targets, and reviewed the existing tote road for likely road improvement areas. In particular, attention was focused on possible high elevation exploration targets that might have the potential to impact ice patch related heritage resources.

Eight landforms were identified as possessing elevated potential for buried cultural materials and were shovel tested. Two of these landforms were found to contain prehistoric lithic sites: JiTp-1 (the Alistair Site) and JjTp-1 (the Fat Lip Site). Both sites were flagged in the field with a 30 m diameter buffer of 1" wide yellow flagging tape, with the words "No Work Zone" printed in black. In addition to subsurface testing at the eight landforms discussed above, surficial survey was conducted at high elevation exploration zones. This high elevation inspection resulted in the recovery/ documentation of heritage resources at three localities (Ice Patch #1, #2, and #3).

Avoidance is recommended for JiTp-1. However, the site is located on a large landform which will be impacted by a waste rock storage area under the current development plan. As such additional shovel testing and test unit excavation will be completed in 2016. Additional work is recommended to include 30 to 40 additional shovel tests and approximately 6 to 8 test units to further sample and mitigate the proposed impacts to the site.

Avoidance is also recommended for JjTp-1. At this time there are no specific proposed impacts to the site area. However, if the site will be impacted in the future due to changes in the proposed development plan then it is recommended that 10 to 15 additional shovels and 3 to 5 test units be excavated to further sample and mitigate the impacts to the site.

No further work is recommended in relation to the Ice Patch #1, #2, and #3 finds associated with the 2015 high elevation exploration targets. If any additional high elevation exploration targets are proposed they should be assessed before ground disturbing activities are allowed to commence.

No built structures, cambium stripped trees, or additional buried cultural materials were identified within the survey footprint, including along the existing tote road where future road improvements might be made. As such, **no further work is recommended in relation to known**

tote road improvements. However, if any cultural materials are identified during activities related to road improvements, or any other development activities at the BMC Minerals Kude Ze Kayah Mine, then work in the area should stop, the materials should be protected from further disturbance, and the BMC chance finds protocol should be implemented.

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APPENDIX A: Project Mapping – NOT INCLUDED IN YESSB READY/PUBLIC VERSION OF REPORT

APPENDIX B: Photographs – NOT INCLUDED IN YESSB READY/PUBLIC VERSION OF REPORT

APPENDIX C: Site Forms – NOT INCLUDED IN YESSB READY/PUBLIC VERSION OF REPORT

APPENDIX D: Artifact Catalogs – NOT INCLUDED IN YESSB READY/PUBLIC VERSION OF REPORT

APPENDIX E: Field Notes – NOT INCLUDED IN YESSB READY/PUBLIC VERSION OF REPORT

APPENDIX B4



ECOFOR

natural and cultural resource consultants

Heritage Resource Impact Assessment: BMC Minerals Proposed Kudz Ze Kayah Mine 2017 (16-04ASR)

(To Be Included in YESAA Materials – No Sensitive Site Data)

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Ross River Dena Council

February 8, 2017

EXECUTIVE SUMMARY

On behalf of BMC Minerals (No. 1) Ltd., Ecofor Consulting Ltd. (Ecofor) conducted a Heritage Resource Impact Assessment (HRIA) for the proposed BMC Minerals Kudz Ze Kayah Mine. This study was undertaken to: 1) conduct follow-up assessment at archaeological site JiTp-1 based on recommendations made during a previous phase of assessment conducted under permit 15-10ASR (see Mooney and Bennett 2016), and 2) to assess for the first time revised components of the BMC Kudz Ze Kayah Mine project footprint. The results of x-ray fluorescence (XRF) analysis conducted on obsidian artifacts recovered under permit 15-10ASR aimed at determining the quarry source of the obsidian used in stone tool manufacture are also presented in this report. **Note: All specific geographic references to heritage site locations, photographs, and some site details have been removed from this YESAA ready version of this report so that it can be issued publicly while protecting sensitive site data.**

Follow-up work at JiTp-1 included additional shovel testing (n=43) and 6 m² of excavation divided between two blocks (4 m² and 2 m²) centered on positive shovel tests. Three of the 43 shovel tests excavated in 2016 were positive for heritage resources (each containing a single lithic flake), and the excavation blocks yielded 88 lithic artifacts. All recovered artifacts were associated with areas where finds were made during a previous phase of HRIA work conducted under permit 15-10ASR, and were all in keeping with the nature of artifacts recovered during that previous work. As such, it is maintained that the site is well understood at this point and that a representative sample of artifacts has been recovered and analysed. Based on these results, **no further heritage resource work is recommended at JiTp-1 prior to the commencement of development activities.**

Assessments of revised components of the BMC Kudz Ze Kayah Mine project footprint began with pedestrian survey aimed at identifying areas of elevated potential for heritage resources, then moved on to shovel testing in identified areas of elevated potential. Areas surveyed included those associated with access roads, ditching, revised overburden stockpile areas, Class A, B, and C storage facilities, open pits, topsoil stockpiles, drill holes, a mill site, potential construction laydown areas, a water management pond, and a settling pond. The pedestrian survey led to the identification of five additional areas of elevated heritage resource potential that were subsequently shovel tested. These shovel test location (STLs) are referred to in this report as Dirty Rock STL, Split Rock STL, Small Whale STL, Caribou Antler STL, and Beaver Lodge STL. In total, 186 shovel tests were excavated at these STLs, but all were negative for heritage resources. Based on these results, **no further heritage resource work is recommended in these localities.**

If any additional development areas are added to the project, then those new areas should also be reviewed for possible impacts to heritage resources. This follow-up heritage review may be conducted through desktop overview and/or field study.

CREDITS

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Figure 1: Proposed BMC Minerals Kudz Ze Kayah Mine project area overview. 2

1.0 INTRODUCTION

On behalf of BMC Minerals (No. 1) Ltd., Ecofor Consulting Ltd. (Ecofor) conducted a Heritage Resource Impact Assessment (HRIA) for the proposed BMC Minerals Kudz Ze Kayah Mine (Figure 1). The Kudz Ze Kayah project is located approximately 260 km northwest of Watson Lake, 110 km southeast of Ross River and 24 km south west of the Robert Campbell Highway near Finlayson Lake. The project components are located within NTS mapsheets 105G/07, 105G/08, 105G/09 and 105G/10, and are located within the traditional territory of the Liard First Nation (LFN) and the Ross River Dena Council (RRDC), which are both members of the Kaska Nation. The north end of the access road, represents the lowest elevation, while proposed exploration drilling represents the highest elevation in the south. **Note: All specific geographic references to heritage site locations, photographs, and some site details have been removed from this YESAA ready version of this report so that it can be issued publicly while protecting sensitive site data.**

1.1 Project Overview

The project proposes to develop an open pit mine and ancillary components including waste rock dumps, organic storage areas, tailings facility, mill, accommodations, and improvements to road access. Impacts to heritage resources could include ground disturbances such as earth moving, heavy equipment operation, infrastructure, erosion, and other activities. At this time, project planning includes a waste rock dump area that would impact JiTp-1.

This study was undertaken to: 1) conduct follow-up assessment at archaeological site JiTp-1 based on recommendations made during a previous phase of assessment conducted under permit 15-10ASR (see Bennett and Mooney 2016), and 2) to assess for the first time revised components of the BMC Kudz Ze Kayah Mine project footprint. The results of x-ray fluorescence (XRF) analysis conducted on obsidian artifacts recovered under permit 15-10ASR aimed at determining the quarry source of the obsidian used in stone tool manufacture are also presented in this report.

1.2 Personnel

The project area was assessed by Ecofor employees Tim Bennett (permit holder), James Mooney, and Alex Gunn. Sheila Caesar from the LFN and BMC employee Terry Ollie from the RRDC also participated in the fieldwork.

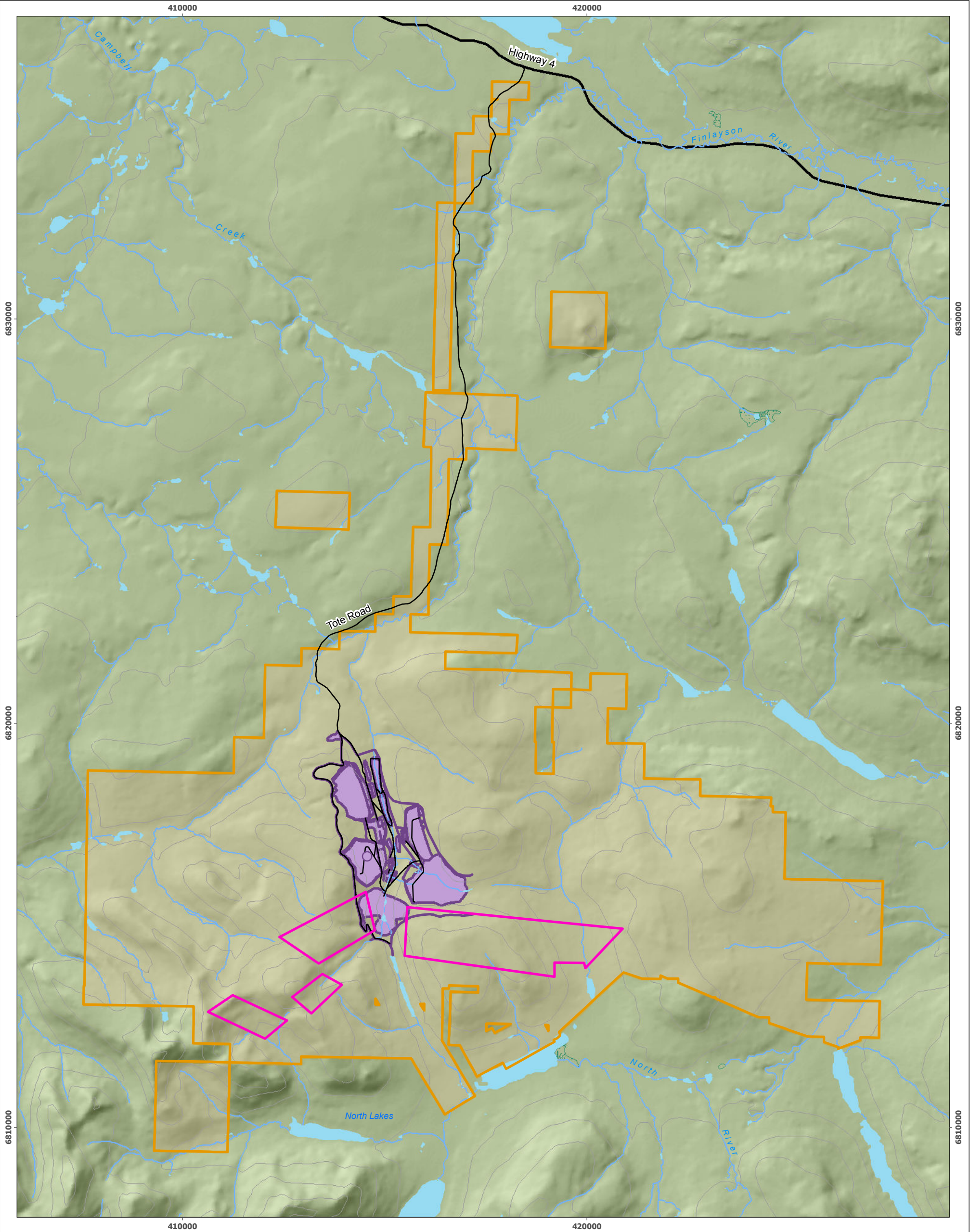


FIGURE 1
KUDE ZE KAYAH PROPERTY OVERVIEW MAP



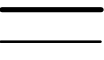
Base Features

- Contour (500 ft)
- Watercourse
- Waterbody
- Wetland



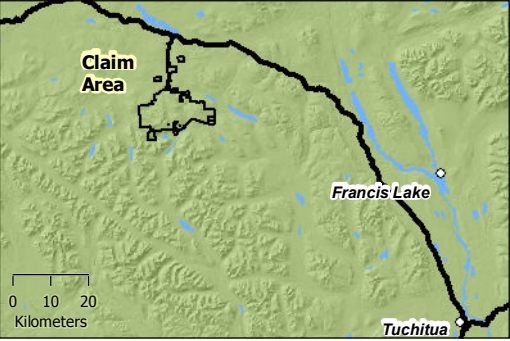
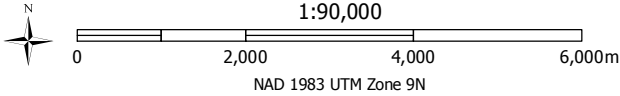
Access

- Highway
- Road



Assessment Features

- Kude Ze Kayah Claim Area
- 2016 Drilling Areas
- 2016 Proposed Footprint



Disclaimer:
This product is for informational purposes only and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. The base data layers have been obtained from the National Topographic Database (NTDB), and GeoYukon.

1.3 Report Format

Following this introduction in Section 1.0, Section 2.0 provides a discussion of the environmental setting that the study area is located within, Section 3.0 discusses the culture history of the area in which the proposed development is located, Section 4.0 details the methodologies employed in completing this work, Section 5.0 presents the results of this HRIA, Section 6.0 provides a summary and recommendations for the ongoing management of heritage resources within the assessed project area, and Section 7.0 closes the report with a listing of references cited. Seven appendices are included at the end of this report¹. Appendix A shows project mapping, Appendix B provides project photographs, Appendix C contains a Yukon Archaeological Site Record form for JiTp-1, Appendix D illustrates the excavation blocks and artifact distributions at JiTp-1, Appendix E provides the artifact catalog for JiTp-1, Appendix F presents the results of the XRF analysis conducted on obsidian artifacts recovered during the 2015 phase of the BMC Minerals Kudz Ze Kayah Mine under permit 15-10ASR, and Appendix G includes the project field notes.

¹ Note: These appendices have been removed from this YESAA ready version of this report so that it can be issued publicly while protecting sensitive site data.

2.0 ENVIRONMENTAL SETTING

The study area is located within Boreal Cordillera Ecozone in the Yukon Plateau – North Ecoregion (see Smith et al. 2004 for full discussion). The Boreal Cordillera Ecozone is characterized by mountain ranges, high peaks and extensive plateaus, separated by wide valleys, lakes, and lowlands. Further detail regarding the Yukon Plateau – North Ecoregion is presented below.

2.1 The Yukon Plateau – North Ecoregion

The Yukon Plateau – North Ecoregion is the largest ecoregion entirely inside the Yukon and contains a large portion of the Tintina Trench. The ecoregion generally consists of relatively rolling highlands with an east-west orientation. It includes the Stewart Plateau, the Macmillan Highland, and the Ross Lowland (Matthews 1986). Terrain ranges from 320 m a.s.l. to 2,160 m a.s.l., with an average elevation of 995 m a.s.l. (Smith et al. 2004). Rivers within the ecoregion include the Pelly, Ross, Macmillan, Stewart, Hess, McQuesten and Klondike (Smith et al. 2004).

The mean annual temperature in the Yukon Plateau – North Ecoregion is near -5°C, but seasonal variability is pronounced (Smith et al. 2004). Mean temperatures for January range from below -30°C in the lower valleys to above -20°C in higher terrain (Smith et al. 2004). This is drastically different by July as mean temperatures in the lower valleys are 15°C and close to 8°C in higher terrain (Smith et al. 2004). Frost can occur at any time of the year, but is less likely from mid-June to late July (Smith et al. 2004). Precipitation is moderate with an increase in higher elevation sections in the eastern part of the ecozone. Annual precipitation ranges from 300 to 600 mm (Smith et al. 2004). The winter months have mean precipitation of 20 to 30 mm while the summer months can expect 40 to 80 mm of rainfall (Smith et al. 2004). Winds are generally light, however they may increase to moderate/high during unusually active weather systems or thunderstorms (Smith et al. 2004).

The bedrock geology of this ecoregion includes sections of two geological provinces of metamorphosed sedimentary rock. In the northern half of the ecoregion, variably deformed sedimentary rocks have been deposited on the outer continental shelf of ancestral North America, the Selwyn Basin. The bedrock geology in the southeast part of the ecoregion includes siliceous sedimentary and volcanic rocks of the Yukon-Tanana terrane and metabasaltic flows of the Slide Mountain terrane. The origin of these materials is not well-known due to deformation before and during transportation onto the Selwyn Basin strata (Smith et al. 2004). The southeast section of the ecoregion between Faro and Ross River also includes exposed river and stream cut banks along the Tintina Trench (a 450 km fault) that contains rhyolite and olivine basalt which may have provided materials for prehistoric stone tool making. Also of interest in the northern

Anvil Range are jet-black or gun steel-blue weathering siliceous siltstone and conglomerate containing chert pebbles. These materials may also have been used for making stone tools.

Soils in the valleys of this ecoregion tend to be underlain by glacial parent materials. Soil development also reflects the presence of extensive discontinuous permafrost and a strong continental climate (Smith et al. 2004). Of interest is the presence of the Wounded Moose and the Diversion Creek palaeosols. These two palaeosols are buried soils formed a great deal of time before the current environmental conditions and may reflect past stable ground surfaces. The Wounded Moose palaeosol developed on glacial surfaces of pre-Reid age and the Diversion Creek palaeosol developed between the Reid and the McConnell glaciations. Both of these palaeosols would predate the known cultural history in the Yukon.

The glacial history of the Yukon Plateau – North Ecoregion was dominated by the actions of the Cordilleran ice sheet and local glaciers. More recent glaciations were less extensive. Most current glacial features are remnants from the McConnell glaciation (Smith et al. 2004), however some older features and glacial erratics are present from the older Reid and pre-Reid glaciations. Some uplands and valley floors were extensively eroded into "whalebacks" or rock drumlins by the glacial flow. The western edge of the ecoregion was approximately the terminus for the ice sheet of the McConnell glaciation. As the ice retreated through regional stagnation and wasting it left behind kame and kettle topography and glacial lake deposits in many valleys (Smith et al. 2004).

The vegetation of the Yukon Plateau – North ranges from boreal to alpine. Northern boreal forest exists at elevations up to 1500 m a.s.l. (Smith et al. 2004). Open black spruce with a moist moss, or drier lichen understory is the dominant forest type in the boreal zone (Smith et al. 2004). Shrub and lichen tundra dominate the higher elevations (Smith et al. 2004). The alpine vegetation is characterized by low ericaceous shrubs, prostrate willows, and lichens. In the subalpine areas, shrub birch, with scattered pine, white spruce, subalpine fir, and a lichen understory is extensive (Smith et al. 2004). Extensive shrub lands exist at mid-elevations and on valley bottoms that are subject to cold air drainage. Black spruce is the dominate tree type in the ecoregion, however white spruce, occasionally with aspen or lodgepole pine, occur in warmer, better-drained areas and in forest fire burn areas (Smith et al. 2004).

The Yukon Plateau–North Ecoregion supports wildlife populations typical of Yukon's boreal forest. Moose, woodland caribou, Stone sheep, Dall sheep, grizzly bear, black bear, wolverine, and marten are all abundant. This ecoregion supports the greatest proportion of brown-coloured

black bears in the Yukon, occurring between the Stewart and Pelly rivers (Yukon Department of Renewable Resources 1988). Lynx, beaver, chestnut cheeked vole, mule deer, coyotes, and red fox are also present in some sections of the Yukon Plateau – North (Smith et al. 2004). Of particular interest in the larger area are the Tay River Caribou herd, and an overlap of Stone and Dall Sheep, while mountain goats are uncommon. The Tintina Trench forms an important part of a migration corridor for Sandhill Crane and waterfowl (Smith et al. 2004). Wetlands provide habitat for Pacific, Red-throated and Common Loons, Trumpeter Swan, Canada Goose, American Widgeon, Green-winged Teal, scaup, and scoters (Dennington et al. 1983; Dennington 1985; McKelvey and Hawkings 1990). Osprey and Bald Eagle also breed around lakes (Dennington et al. 1983). Forested areas host Ruffed, Blue, and Sharptailed Grouse, Common Nighthawk, Yellow-bellied Sapsucker, Hairy Woodpecker, Western Wood-Pewee, Hermit Thrush, Townsend's Warbler, Spruce Grouse, Great Horned Owl, Three-toed Woodpecker, Black-capped and Boreal Chickadees, Gray Jay, Common Raven, Red-tailed Hawk, Northern Flicker, Olive-sided Flycatcher, Ruby-Crowned Kinglet, Swainson's Thrush, Varied Thrush, Yellow-Rumped Warbler, Blackpoll Warbler, and Dark-eyed Junco (W. H. Osgood 1909; Rand 1946; Johnston and McEwen 1983; Frisch 1987). And finally, in alpine areas Gyrfalcon, Rock and White-tailed Ptarmigan, Wandering Tattler, Gray-Crowned Rosy Finch, American Pipits, Willow Ptarmigan, Wilson's Warbler, American Tree Sparrow, and Golden-Crowned Sparrow can be found (W. H. Osgood 1909; Beckel 1975).

3.0 CULTURAL HISTORY

The following is an overview of the culture history for the broader region surrounding the study area including south-central and southwestern Yukon, and northern British Columbia. Many researchers have reviewed the cultural history of this broader area and have presented the information using a variety of terms and temporal ranges (Clark 1981; West 1996; Workman 1978; J. V. Wright 1995, 1999).

3.1 Precontact Period (ca. 11,000 BP to ca. AD1700s)

The earliest Precontact occupation, which dates to early post-glacial times, is known as the Northern Cordilleran Tradition (Clark 1983; Hare 1995). The earliest Northern Cordilleran Tradition occupation known at present is a site located near Beaver Creek, dated to 10,670 radiocarbon years before present (BP) (Heffner 2002). The majority of sites associated with this tradition appear to date older than 7,000 to 8,000 BP. The Northern Cordilleran Tradition, with some overlap, predates the introduction of microlithic technology from Alaska into the interior of the central and southern Yukon (Clark 1983; Hare 1995).

The Northern Cordilleran Tradition is followed by the Little Arm Phase which dates from approximately 7,000 BP to 4,500 BP (Clark and Gotthardt 1999; Workman 1978), and can be defined by the use of microlithic technologies. After about 4,500 BP, there is less evidence of microblade use in the Yukon, and an increase in the use of notched projectile points, and a variety of scraping and carving tools, labeled the Taye Lake Phase in southwest Yukon, or more broadly in Yukon and Alaska, the Northern Archaic Tradition (Hare 1995; Workman 1978).

The most recent archaeological culture of southern Yukon is that of the Aishihik Phase (Workman 1978). This phase is thought to be a cultural development from the earlier Taye Lake culture, although there are some significant differences in technology. Key amongst these technological innovations are native copper tools, small stemmed Kavik points, end- and sidescrapers, and ground adzes (Hare 1995), but perhaps most notable is the introduction of the bow and arrow which replaced a type of throwing spear known as an atlatl as the primary hunting weapon (Hare et al. 2004). This transition from atlatl to bow and arrow technology has been clearly documented by recent finds from high elevation ice patches in the southern Yukon (Hare et al. 2004). These Aishihik Phase sites are found above the White River Volcanic ash layer (also known as Tephra) that is dated to about 1,250 radiocarbon years BP (Clague et al. 1995), and are correlated with the appearance of Athabaskan peoples who are thought to be the direct ancestors of the current Liard First Nation and Ross River Dena Council peoples (see Section 3.4 below).

3.2 Protohistoric Period (ca. AD1700s to ca AD1840s)

The Protohistoric Period overlaps with late Precontact Period. It is defined by the appearance of non-native goods, other early trade items, and foreign (western or eastern) influences, but not the documented accounts of contact between indigenous North American peoples and European/Russian/Asian peoples themselves. Other indicators of the Protohistoric Period are the arrival of the first non-native diseases and information concerning non-natives. This period spans the time between the first introduction of non-native influences or artifacts, and the recording of first hand or primary written accounts. Unlike other cultural periods with more specific temporal ranges it is difficult and perhaps impossible to determine when the first ‘outside’ influences of European, Russian, Asian, or other cultures began to impact First Nations people in the Yukon interior.

Some of these far reaching effects may have been passed along from Russian exploration in the early and mid-1700s (Veniaminov 1984) and other Asian and European (Andreev 1944, Quimby 1985) exploration and contact with coastal communities. The Chilkat Tlingit from the Northwest Coast travelled and traded with many interior First Nation peoples throughout this Protohistoric Period including the Kaska and the Northern Tutchone from the Dawson and Mayo areas, and occasionally the Mountain Dene people from as far away as Fort Norman on the Mackenzie River. The Tlingit protected and controlled the trading routes into the interior and fiercely defended those routes when they were threatened. News of early non-native explorers and traders would have travelled inland along with foreign items such as metals, cloths, glass beads, and later tobacco and other goods.

In some of the earliest cases, the impacts of these foreign cultures could have had significant impacts even without the presence of the foreigners themselves. Such is the case for what is called ‘drift-iron’ whereby metals and other materials from Asian or European shipwreck wash ashore. Historical accounts of shipwrecks have been reported in the mid-1700s, but much earlier wrecks were possible. Metals and other foreign trade items have been derived from shipwrecks off what is now British Columbia, Southeast Alaska, and perhaps the Northwest Alaska as well.

3.3 Historic Period (post ca. AD1840s)

During the early years of this period the Russians were expanding their exploration and trade network along the Pacific coast and up the major rivers of the Alaskan interior, while the British were exploring eastward into what would become Canada’s Northwest and Yukon Territories, as well as Alaska. In the 1840s, representatives of the Hudson’s Bay Company (HBC) established trading posts near the study area. Frances Lake Post was established by the narrows of Frances

Lake in 1840 while Fort Pelly Banks was constructed in the winter of 1842-43 on the Pelly River at the mouth of Campbell Creek. Fort Yukon was established by John Bell at the confluence of the Yukon and the Porcupine Rivers in 1847. The next year Robert Campbell established Fort Selkirk on the upper Yukon River and then relocated to an improved location in 1851. The Frances Lake post functioned primarily as a meat post and then as a staging post enroute to Fort Selkirk. These posts were plagued by starvation, poor supply, and poor trade due to hostilities and feuding.

The location of Fort Selkirk was known to upset the Chilkat Tlingit who controlled the trade routes from the coast to the central Yukon. In 1852, a Chilkat Tlingit raiding party travelled inland and forced Robert Campbell and his crew to leave the trading post, which was consequently burned by the Northern Tutchone (Castillo 2012). The posts at Frances Lake and the Fort at Pelly Banks were abandoned by the Hudson's Bay Company by 1851-1852, while Fort Halkett, on the Upper Liard River near what would become the BC-Yukon border, remained open until 1865.

In 1867, US Secretary of State William Seward was able to focus increasing American interests, and he convinced the United States Senate to purchase Alaska from Russia. Soon after the purchase, the US Army sent Captain Raymond up the Yukon River on the first stern-wheel steamer to reach Fort Yukon (Grauman 1977). Raymond surveyed the location of Fort Yukon and proved that it was within US territory. The British sold the Fort to the US Government and relocated east across the 141st Meridian.

The inland fur industry continued to drive exploration and settlement into the late 1800s, but mining would shift the focus to the placer gold found in streams and alluvial deposits. Mining in the second half of the 19th century was a risky but often very lucrative enterprise. The impacts of mining would spread quickly and drastically change the project area.

Mineral prospecting and mining efforts in the second half of the 19th century were largely dependent on the existing infrastructure of the fur trading and missionary efforts. As the competition for the inland fur trade grew, so would the number of stern-wheelers on the Yukon River. These steamers could better supply the small number of trading posts along the Yukon and its tributaries and reduce the risk of prospectors running short of supplies. Therefore, more of the fur traders and other explorers turned their attention to search for gold and other minerals. Three key prospectors in the north were L.S. (Jack) McQuesten, Al Mayo, and Arthur Harper. They wrote to miners in the United States to encourage them to come north. They also

established outposts along the Yukon River, including Fort Reliance, established in 1874 near the confluence of the Klondike River (what would become Dawson City) (A. A. Wright 1976).

Harper and another man may have been the first to travel up the Fortymile in search of gold in 1881 (Buzzell 2003). They collected a very rich sample, but were unable to relocate the exact location of their original find. In 1886, McQuesten, Harper, and Mayo built a post on the confluence of the Stewart and Yukon Rivers which provided supplies for additional prospectors. Also in 1886, Howard Franklin made a richer find on the Fortymile River. Others rushed in and these claims along the Fortymile River attracted miners from across central and eastern Alaska, and even southeast Alaska. Fortymile was the first town to grow to over a thousand people by the mid-1890s (Buzzell 2003), and in 1887 the Stewart River post was deserted. Some prospectors that did not find easy success in Fortymile returned to the Stewart River and continued work in the area. In 1890, Harper re-established a trading post at the site of the old HBC post at Selkirk as interest in the area grew. This was followed by Jack Dalton who developed a series of existing First Nation trails beginning at tide water at Haines Alaska, into Fort Selkirk.

On August 16, 1896, George Carmack, Skookum Jim, and Tagish Charlie discovered a very rich claim on Bonanza Creek, a tributary to the Klondike River near Dawson. This discovery sparked one of the largest gold rushes in history. It would take almost a year for the news of the Klondike gold fields to spread south, even to places relatively close by in southeast Alaska. Most of the prospectors and traders in the Alaskan and Yukon interior had already converged on the Dawson area during the winter and spring, and supplies ran dangerously low. That would quickly change in the summer of 1897 and spring of 1898 as new towns and supply posts sprang up along the Gold Rush routes to cash in on the increased demand.

The population of Dawson City grew very fast and in 1898 reached a peak of over 30000. However, the boom period did not last long and the vast majority of the population moved on very quickly with the news of other discoveries. The Gold Rush period saw greatly increased steamer traffic on the entire Yukon River drainage basin and across the interior. Just prior to the Gold Rush there were only a few steamers, while at its peak there were hundreds of vessels working the rivers. These shallow draft steamers were supported by a network of wood camps, shipyards, and a large workforce which kept the river traffic moving. This network provided the infrastructure backbone for trading posts, fish camps, missionaries, and mail routes, while meeting the needs of the growing number of prospectors and traders.

As the world's attention was drawn to growing concerns in Europe in 1939, the Canadian Government began building a chain of airfields across the northwest under the Northwest Staging Route Program. Following the bombing of Pearl Harbor there was no doubt that Alaska and the Yukon would play a key role in the war, and a road was required to link Alaska to the contiguous United States. It was quickly decided that the "Prairie Route" would be used, whereby key airfields would be linked from Great Falls, Montana to Fairbanks, Alaska. As part of the agreement Canada agreed to build and improve airstrips along the way, including Watson Lake. In February 1942, the US War Department issued the directive to begin construction. These actions spurred on the building of approximately 2446 km of new road through British Columbia and the Yukon Territory. Following the completion of the Alaska Highway the Canol Pipeline and Canol Road (North and South) were completed to allow the flow of oil from Norman Wells, NWT to Whitehorse in 1944. These two events increased access to the Traditional Territory of the Ross River Dena Council and were largely responsible for commercial and mining/industrial activities in recent decades, including construction of the Robert Campbell Highway (Tungsten Road) in 1961.

3.4 Modern First Nations

The project falls within the traditional territories of the Liard First Nation (LFN) and Ross River Dena Council (RRDC). Both First Nations are part of the larger Kaska Nation. The Kaska Nation's traditional territory covers a large area of northwestern British Columbia, southeastern Yukon, and southern Northwest Territory. Within the Kaska traditional territory there are five First Nations communities: the Dease River First Nation, the Kwadacha Nation, the Ross River Dena Council, the Liard First Nation, and the Daylu Dena Council. Each Kaska First Nation is represented by an elected Chief and Council, as well as a Hereditary Chief.

Prior to European contact, traditional subsistence activities typically featured a seasonal round of winter hunting and summer fishing covering vast areas. In summer, families congregated at lakes and rivers, where fish and plants were collected, dried and stored. In late summer, small groups dispersed throughout the uplands and higher valley systems to hunt in clan-owned territories. Temporary camp sites, situated within a variety of ecological zones, were often reoccupied year after year in order to exploit seasonally available resources (Honingmann 1981).

Contact with neighbouring Nations was vital to First Nations' economies. Interior bands traded hides, furs, and obsidian to coastal groups for fish oil, dentalium, woodwork and blankets. Trails were an intrinsic part of this economy and traditional subsistence as a whole. The principal ethnographic descriptions of the Kaska Dena are available in Black (1955), Jenness (1937), and

Morice (1893, 1903, 1905). Additional information on past lifeways can be found in Honigmann (1981).

Watson Lake, Upper Liard, and the adjoining settlements are home to the Liard First Nation. The amount of activity near Watson Lake was greatly increased when its airfield was established in 1939. This was part of the Canadian government's construction of a chain of airports across northeastern British Columbia and the Yukon as part of the lend-lease program. The new community was soon after used as a supply centre for the construction of the Alaska Highway in 1942.

Ross River, near the confluence of the Ross and Pelly Rivers, is the modern focal point of the Ross River Dena Council. Originally, First Nations people used the area as a seasonal camp and gathering place. By 1903, a trading post was established nearby and later when the American army completed the Canol Pipeline and Canol Road in 1944, they connected Ross River by road to the rest of the Yukon (Cohen 1992). In 1962, Ross River was relocated to its current site close to the Campbell Highway (Yukon Community Profiles 2012).

3.5 Previous Heritage Investigations

In 1995, a heritage impact study was conducted in collaboration with the RRDC as part of the Initial Environmental Evaluation of the proposed BMC Minerals Kudz Ze Kayah Mine. That study identified no cultural materials or features (Rutherford, 1995a). However, a review of the oral history provided by Kaska Nation members indicates that the project area was used for subsistence hunting, trapping and fishing, and as an access route to the North Lakes (Rutherford, 1995b). In 1996, an additional study for cultural materials was undertaken at a proposed airstrip location near the Robert Campbell Highway (Rutherford 1996), but again no heritage resource sites were identified.

Most recently, the proposed mine area was assessed again under permit 15-10ASR to facilitate the development of a number of mine features, including the proposed pit, main waste rock dump, western waste rock dump, organic storage areas, mill site, accommodations area, explosive area, access roads, 2015 exploration targets, and improvements to an existing access road (see Bennett and Mooney 2016). This HRIA led to the identification of subsurface archaeological sites JiTp-1 and JjTp-1 and two wooden artifacts recovered from the surface at three high elevation ice patch edge locations. Obsidian samples recovered from JiTp-1 were submitted for X-Ray Fluorescence analysis aimed at determining the quarry source of the obsidian used in obsidian stone tool manufacture at the site. The results of this analysis were

not available by the time that the 15-10ASR final report was submitted. As such, they are being included in this report for the 2016 HRIA work at the proposed BMC Minerals Kudz Ze Kayah Mine.

4.0 METHODOLOGY

4.1 Field Methodology

Field efforts were separated into three phases. The first phase included preliminary field reconnaissance (PFR) within previously unassessed portions of the project area. During the PFR areas of high and moderate potential were recorded with photographs and GPS waypoints so they could be returned to for further testing. The second phase included returning to these high and moderate potential areas to conduct shovel testing. The third phase, conducted concurrently with phases 1 and 2, included additional shovel testing and small scale excavation at the previously identified archaeological site JiTp-1.

Areas of elevated potential along the proposed exploration and development footprints were transected at intervals of 5 to 15 m apart. Areas deemed to have potential for subsurface heritage resources were shovel tested, with approximately 3-10 m test spacing. Shovel tests measured approximately 35 by 35 cm and were excavated with shovel and trowel into sterile sub soils. All excavated sediments were screened through ¼" mesh. Artifacts identified were collected and bagged according to the shovel test unit and stratum, or arbitrary 10 cm vertical interval. The profile of positive shovel tests was recorded by depth below surface and natural and cultural soil strata. All shovel tests were backfilled and returned to as close to natural conditions as possible. When cultural materials were encountered, additional shovel testing was conducted to assess the vertical and horizontal limits of the site, and to recover a sample of the material culture to assist in the assessment of the site use and cultural affiliation. All sites, isolates, and heritage resources were photographed, the site location will be recorded using a hand-held GPS unit, and a sketch map were prepared in the field.

Excavation units dug at JiTp-1 were excavated by 50 cm quads and in arbitrary 10 cm vertical levels. As with shovel tests, all excavated sediments were screened through ¼" mesh, and all artifacts were bagged according to the provenience in which they were found. Excavation continued downward until two sterile levels were encountered. Upon completion of these units, stratigraphic wall profiles were recorded and the finished excavation blocks were photographed before being backfilled.

4.2 Artifact Analysis

All artifacts recovered were analyzed by Ecofor archaeologists in our Whitehorse laboratory. Only lithic artifacts were recovered during this HRIA. All artifacts were washed, counted, labeled,

and a detailed set of quantitative and qualitative observations were made and documented in an artifact catalog (see Appendix E).

4.3 X-Ray Fluorescence Analysis of Obsidian Artifacts Recovered During 2015 HRIA (15-10ASR)

Non-destructive x-ray fluorescence (XRF) analyses were conducted by Jeff Rasic at the National Park Service Fairbanks Administrative Facility using a portable Bruker Tracer III-V portable XRF analyzer (serial #510) equipped with a rhodium tube and a SiPIN detector with a resolution of ca. 170 eV FWHM for 5.9 keV X-rays (at 1000 counts per second) in an area of 7 mm². Methods follow those described by Phillips and Speakman (2009). Analyses are conducted at 40 keV, 15 µA, using a 0.076-mm copper filter and 0.0305 aluminum filter in the X-ray path for a 200 second live-time count. Ten elements are measured: Potassium (K), Manganese (Mn), Iron (Fe), Gallium (Ga), Thorium (Th), Rubidium (Rb), Strontium (Sr), Yttrium (Y), Zirconium (Zr), and Niobium (Nb). Peak intensities for these elements are calculated as ratios to the Compton peak of rhodium, and converted to elemental concentrations using linear regressions derived from the analysis of 15 well-characterized obsidian samples analyzed by NAA and/or XRF and are reported in parts-per-million (ppm). Source assignments are made by comparing the composition of analyzed samples to a catalog of source samples. Correlations between artifacts and source signatures were considered meaningful when key elements fall within two standard deviations of mean source values (Hughes 1998).

5.0 RESULTS

Work conducted for the 2016 HRIA of the BMC Minerals Kudz Ze Kayah mine included further assessment of previously recorded archaeological site JiTp-1 and PFR in new areas related to proposed access roads, ditching, revised overburden stockpile areas, Class A, B, and C storage facilities, open pits, topsoil stockpiles, drill holes, a mill site, potential construction laydown areas, a water management pond, and a settling pond. This PFR work resulted in the identification of five additional areas of elevated heritage resource potential that were subsequently shovel tested. These shovel test locations (STLs) are referred to in this report as Dirty Rock STL, Split Rock STL, Small Whale STL, Caribou Antler STL, and Beaver Lodge STL. The details of this work are presented below.

5.1 Further Assessment at JiTp-1

Work at JiTp-1 during the 2016 HRIA efforts focused on additional shovel testing in areas with positive shovel tests identified during the 2015 HRIA (see Bennett and Mooney 2016) and excavating evaluative units centered on the richest concentrations of positive shovel tests (Appendix A – Figure 2 and Figure 3). Under permit 16-04ASR, 43 new shovel tests (40 negative, 3 positive) were added to the 240 shovel tests (232 negative, 8 positive) that were excavated on the JiTp-1 landform under permit 15-10ASR. Sediment profiles observed in these tests consisted of organic soils with lichen and roots from 0-5 cm, grey White River Tephra deposits from 5-12 cm, then orange sandy silt with pebbles and cobbles from 15-40 cm below surface (Photo 1). The three positive shovel tests resulting from this testing program each yielded a single milky quartz flake (note: one flake from a shovel test was lost in the field, making the total reported in the catalog two flakes from shovel tests).

Upon the completion of the shovel testing program, 6 m² of evaluative excavation units were opened at JiTp-1. These units were focused in two blocks (see Appendix A and Appendix D). Block 1 consisted of 4 m² of excavation, and expanded on an evaluative 1 x 1 m excavation unit dug under permit 15-10ASR (Photo 2; see Bennett and Mooney 2016). The sediment profile observed in the excavation walls was consistent with that described for the shovel tests above, but had a few larger cobbles beyond 20 cm below surface (Photo 3). In total, 88 artifacts, all unmodified obsidian debitage, were recovered from Block 1 (Photo 4). The block layout and distribution of these artifacts is detailed in Appendix D.

Block 2 is a 2 x 1 m excavation block that incorporates positive shovel tests s/t 5 and s/t 8 from the previous HRIA work under permit 15-10ASR (Photo 5; see Bennett and Mooney 2016). The sediment profile observed in the excavation walls was generally consistent with that described

for the shovel tests above, but had a few larger cobbles beyond 20 cm below surface (Photo 5). Only one artifact, a grey chert flake, was recovered from Block 2. The block layout and distribution of these artifacts is detailed in Appendix D.

5.2 New STLs identified during 2016 HRIA

5.2.1 Dirty Rock STL

The Dirty Rock STL is named for blackened rocks on the surface near the testing area (see Appendix A – Figure 2 and Figure 4). It consists of three flat benches on a slope above the main road through the BMC Kudz Ze Kayah claim (Photo 6). In total, 40 shovel tests were excavated here; 11 on the highest bench, 17 on the middle bench, and 12 on the lower bench. Typical sediment profiles observed in shovel tests consisted of organic soils with roots and lichen from 0-5 cm, followed by grey silt (possible White River Tephra) from 5-12 cm, brown silt from 12-25 cm, then platy degraded bedrock in a brown silty matrix from 25-40 cm below surface (Photo 7). Some shovel tests, especially upslope on the highest bench, reached bedrock and/or large cobbles immediately below the surface (Photo 8). All shovel tests were negative for heritage resources.

5.2.2 Split Rock STL

The Split Rock STL is named for a large split boulder near the testing area (Photo 9; see Appendix A – Figure 2 and Figure 5). It consists of two flat benches high up on the slope above the main road through the BMC Kudz Ze Kayah claim (Photo 10). In total, 32 shovel tests were excavated here; 18 on the higher bench, and 14 on the lower bench. Typical sediment profiles observed in shovel tests on the upper bench consisted of organic soils with roots and lichen from 0-5 cm, followed by brown/grey silts with degraded bedrock pebbles from 5-22 cm, then tabular degraded bedrock cobbles in a silty matrix beyond 22 cm below surface (Photo 11). A few shovel tests in this area were considerably shallower, with bedrock appearing immediately below the surface (Photo 12). The majority of shovel tests on the lower bench showed similar sediment profiles, although some located on a small mount in the lower portion of the STL had a much thicker organic layer (Photo 13), and some near the break in slope down to the road had bedrock immediately below the surface (Photo 14). All shovel tests were negative for heritage resources.

5.2.3 Small Whale STL

The Small Whale STL is named for the shape of the landform it is located upon which resembles a “whale’s back” (similar geomorphology to the landform upon which JiTp-1 was identified; Photo

15; see Appendix A – Figure 2 and Figure 6). In total, 51 shovel tests were excavated on the flat area atop the Small Whale STL landform, however all were negative for heritage resources.

5.2.4 Caribou Antler STL

The Caribou Antler STL is named for a caribou antler that was found near the testing area (Photo 16; see Appendix A – Figure 2 and Figure 7). It consists of an elevated landform that rises above a small pond/wetland (Photo 17 and Photo 18). In total, 59 shovel tests were excavated here. Typical sediment profiles observed in shovel tests on the upper bench consisted of organic soils with roots and lichen from 0-5 cm, followed by silt that grades from light brown to medium brown to olive with depth (Photo 19). All shovel tests were negative for heritage resources.

5.2.5 Beaver Lodge STL

The Beaver Lodge STL is so named because it is located on the edge of a small pond/wetland and looks like an old overgrown beaver lodge (only a visual affinity; not an actual old beaver lodge; Photo 20; see Appendix A – Figure 2 and Figure 8). In total, four shovel tests were excavated here. Typical sediment profiles observed in shovel tests on the upper bench consisted of organic soils with roots and lichen from 0-5 cm, followed by a well defined White River Tephra layer from 5-10 cm, then brown silt that becomes darker and has greater pebble content with depth from 10-35 cm below surface (Photo 21). All shovel tests were negative for heritage resources.

5.3 X-Ray Fluorescence Results from 2015 HRIA Obsidian Samples

Two obsidian samples from JiTp-1, recovered during the 2015 phase of the BMC Minerals Kudz Ze Kayah Mine HRIA under permit 15-10ASR, were submitted to the National Park Service Fairbanks Administrative Facility for XRF analysis on behalf of Ecofor by Greg Hare of the Yukon Government Heritage Resource Unit to determine the provenance of the source from which the raw materials used in stone tool production at the site. The results returned showed that the obsidian in both samples originated from Mount Edziza (Group E) in British Columbia, approximately 425 km south of JiTp-1. The presence of obsidian from such a distant source provides further evidence that long distance trade networks were operating between Precontact First Nations people at the time the site was occupied.

The full results of this analysis are presented in Appendix F.

6.0 SUMMARY AND RECOMMENDATIONS

On behalf of BMC Minerals (No. 1) Ltd., Ecofor Consulting Ltd. conducted a Heritage Resource Impact Assessment (HRIA) for the proposed BMC Minerals Kudz Ze Kayah Mine. Work conducted for the 2016 HRIA of the BMC Minerals Kudz Ze Kayah mine included further assessment of previously recorded archaeological site JiTp-1 and PFR in new areas related to proposed access roads, ditching, revised overburden stockpile areas, Class A, B, and C storage facilities, open pits, topsoil stockpiles, drill holes, a mill site, potential construction laydown areas, a water management pond, and a settling pond.

Work at JiTp-1, including the excavation of 43 new shovel tests and 6 m² of evaluative test units, resulted in the recovery of 91 pieces of lithic debitage (obsidian, n=88; milky quartz, n=3; no formal tools), all of which were associated with areas where finds were made during a previous phase of HRIA work conducted under permit 15-10ASR, and were all in keeping with the nature of artifacts recovered during that previous work. As such, it is maintained that the site is well understood at this point and that a representative sample of artifacts has been recovered and analysed. **No further heritage resource work is recommended at JiTp-1 prior to the commencement of development activities.**

PFR throughout the newly added development areas led to the identification of five areas deemed to have potential for heritage resources: Dirty Rock STL, Split Rock STL, Small Whale STL, Caribou Antler STL, and Beaver Lodge STL. In total, 186 shovel tests were excavated at these STLs, but all were negative for heritage resources. As such, **no further heritage resource work is recommended in these localities.**

If any additional development areas are added to the project, then those new areas should also be reviewed for possible impacts to heritage resources. This follow-up heritage review may be conducted through desktop overview and/or field study.

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APPENDIX A: Project Mapping – NOT INCLUDED IN YESSA READY/PUBLIC VERSION OF REPORT

APPENDIX B: Photographs – NOT INCLUDED IN YESSA READY/PUBLIC VERSION OF REPORT

APPENDIX C: Archaeological Site Data – NOT INCLUDED IN YESSA READY/PUBLIC VERSION OF REPORT

**APPENDIX D: JiTp-1 Excavation Blocks and Artifact Distribution – NOT INCLUDED IN YESSA
READY/PUBLIC VERSION OF REPORT**

APPENDIX E: Artifact Catalog – NOT INCLUDED IN YESSA READY/PUBLIC VERSION OF REPORT

APPENDIX F: X-Ray Fluorescence Analysis of Obsidian Artifacts Recovered During 2015 HRIA (15-10ASR) – NOT INCLUDED IN YESSA READY/PUBLIC VERSION OF REPORT

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APPENDIX B5



ECOFOR

natural and cultural resource consultants

**Heritage Resource Impact Assessment:
BMC Minerals Kudz Ze Kayah 2017 – Proposed Tote
Road Borrow Areas and Finlayson Lake
Airstrip Improvements (17-12ASR)**

(May Be Included in YESAB Materials – No Sensitive Site Data)

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Liard First Nation

Ross River Dena Council

January 30, 2018

EXECUTIVE SUMMARY

On behalf of BMC Minerals (No. 1) Ltd., Ecofor Consulting Ltd. has conducted a Heritage Resource Impact Assessment (HRIA) for the BMC Minerals Kudz Ze Kayah 2017 – Proposed Tote Road Borrow Areas and Finlayson Lake Airstrip Improvements project. Proposed development activities include the development of several proposed borrow locations and improvements to the Finlayson Lake airstrip. This work falls within the traditional territories of the Liard First Nation and Ross River Dena Council, and builds on previous heritage resource assessment work conducted by Ecofor for the BMC Minerals Kudz Ze Kayah project in 2015 and 2016 by assessing new areas of proposed development. **Note: All specific geographic references to heritage site locations, photographs, and some site details have been removed from this YESAA ready version of this report so that it can be issued publicly while protecting sensitive site data.**

Field assessment focused on 18 proposed borrow area locations along the existing BMC Minerals Kudz Ze Kayah Tote Road, an area at the Finlayson Lake Airstrip into which it is proposed that the existing runway be extended, and a previously unassessed section of proposed Tote Road alignment modification south of Borrow OEL-1. In total, 133 shovel tests were excavated at eight shovel test locations (STLs). Two of these shovel tests, at Borrow OEL-54 and OEL-63, were positive of heritage resources, resulting in the identification of two new archaeological sites at two of the proposed borrow areas (JjTp-2 at Borrow OEL-54 and JjTp-3 at Borrow OEL-63). A modern campsite was also observed at Borrow OEL-50, but it is considered to be relatively recent and is not a heritage resource concern. No heritage resource concerns were found at all other proposed borrow areas, proposed Finlayson Lake Airstrip improvements area, and previously unassessed section of proposed Tote Road alignment modification south of Borrow OEL-1. Previously recorded archaeological sites JiTp-1 and JjTp-1 were also revisited during this HRIA. Both sites were found to be in good condition. The original 30 m buffer flagging at JjTp-1 was found to still be in place. Flagging at JiTp-1 was largely missing, so the site was reflagged to clearly mark the 30 m avoidance buffer.

Based on these results, **avoidance is recommended for the newly recorded archaeological sites JjTp-2 and JjTp-3 (including their 30 m buffer zones). Continued avoidance of JiTp-1 and JjTp-1 is also recommended. If avoidance is not feasible at these sites (including the 30 m buffer zones), further assessment is recommended. Recommended further work includes:**

JjTp-2

- **Additional shovel testing**
 - **Approximately 20-30 shovel tests (could be fewer depending on slope; need to clear some large deadfall to get access to surface throughout landform)**

- **Evaluative Units (EUs)**
 - **One 1 x 1 EU over 2017 positive test to 50 cm**
 - **Keep 3-5 m² in reserve in case a concentration is encountered in first EU or additional positive shovel tests are found**

JjTp-3

- **Additional shovel testing**
 - **Approximately 15-20 shovel tests (could be fewer depending on slope)**
- **EUs**
 - **One 1 x 1 EU over 2017 positive test to 40 cm**
 - **Keep 3-5 m² in reserve in case a concentration is encountered in first EU or additional positive shovel tests are found**

No further work is recommended for proposed Borrows OEL-1, OEL-2, OEL-4/OEL-5, OEL-6, OEL-21, OEL-30, OEL-50, OEL-51, OEL-55, OEL-56, OEL-57/OEL-58, OEL-59, OEL-61, OEL-62, OEL-64-1, and OEL-64-2, the proposed Finlayson Lake Airstrip Improvement Area, and the alignment of the proposed reroute of the Tote Road south of Borrow OEL-1; however, future work within these areas should adhere to the chance finds policy already followed by BMC Minerals.

If any additional development areas are added to the project, then those new areas should also be reviewed for possible impacts to heritage resources. This follow-up heritage review maybe conducted though desktop overview and/or field study.

These recommendations are subject to review, revision, and approval by the Yukon Heritage Resource Unit, Liard First Nation, and Ross River Dena Council.

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1.0 INTRODUCTION

On behalf of BMC Minerals (No. 1) Ltd., Ecofor Consulting Ltd. has conducted a Heritage Resource Impact Assessment (HRIA) for the Kudz Ze Kayah 2017 – Proposed Tote Road Borrows and Finlayson Lake Airstrip Improvements project (Figure 1, Figure 1a). The Kudz Ze Kayah project is located approximately 260 km northwest of Watson Lake, 115 km southeast of Ross River and 24 km south west of the Robert Campbell Highway near Finlayson Lake. The study areas are located on NTS mapsheets 105G/07 and 105G/10, and fall within the traditional territories of the Liard First Nation and Ross River Dena Council. **Note: All specific geographic references to heritage site locations, photographs, and some site details have been removed from this YESAA ready version of this report so that it can be issued publicly while protecting sensitive site data.**

1.1 Project Overview

With the Kudz Ze Kayah project, BMC is proposing construction, mining, and mineral processing activities for the ABM Deposit, of which there are two zones; the ABM Zone and the Krakatoa Zone. The ABM Deposit is a polymetallic volcanogenic massive sulphide deposit containing economic concentrations of copper, lead, zinc, gold, and silver. Mining is planned to be conducted utilizing both Open Pit and Underground mining methods, with ore processed into separate copper, lead, and zinc concentrates via sequential flotation through a processing plant with a nominal design capacity of 2 Mt per annum. Tailings will be deposited in a purpose built dry stack tailings Storage Facility on the western slope of the Geona Creek valley, while waste rock will be classified according to acid generating and metal leaching potential and stored in purpose built waste storage facilities. Strongly acid generating material will be co-disposed with the tailings or alternatively stored as cemented paste backfill or waste rock fill in the mined out underground workings. Other waste rock material will be placed within the surface storage facilities noted above. Impacts to heritage resources could include ground disturbances such as earth moving, heavy equipment operation, infrastructure, erosion, and other activities.

The 2017 HRIA program ran from July 31, 2017 to August 8, 2017 and focused on 18 proposed borrow area locations along the existing Kudz Ze Kayah Tote Road, an area at the Finlayson Lake Airstrip into which it is proposed that the existing runway be extended, and a previously unassessed section of proposed Tote Road alignment modification south of Borrow OEL-1 (see Figure 1 and Appendix A – Figure 2 Mapsheet 4 of 4). This work builds on previous heritage resource assessment work conducted by Ecofor for the Kudz Ze Kayah project in 2015 and 2016 (permits 15-10ASR and 16-04ASR; see Mooney and Bennett 2016 and Bennett 2017) by assessing new areas of proposed development.

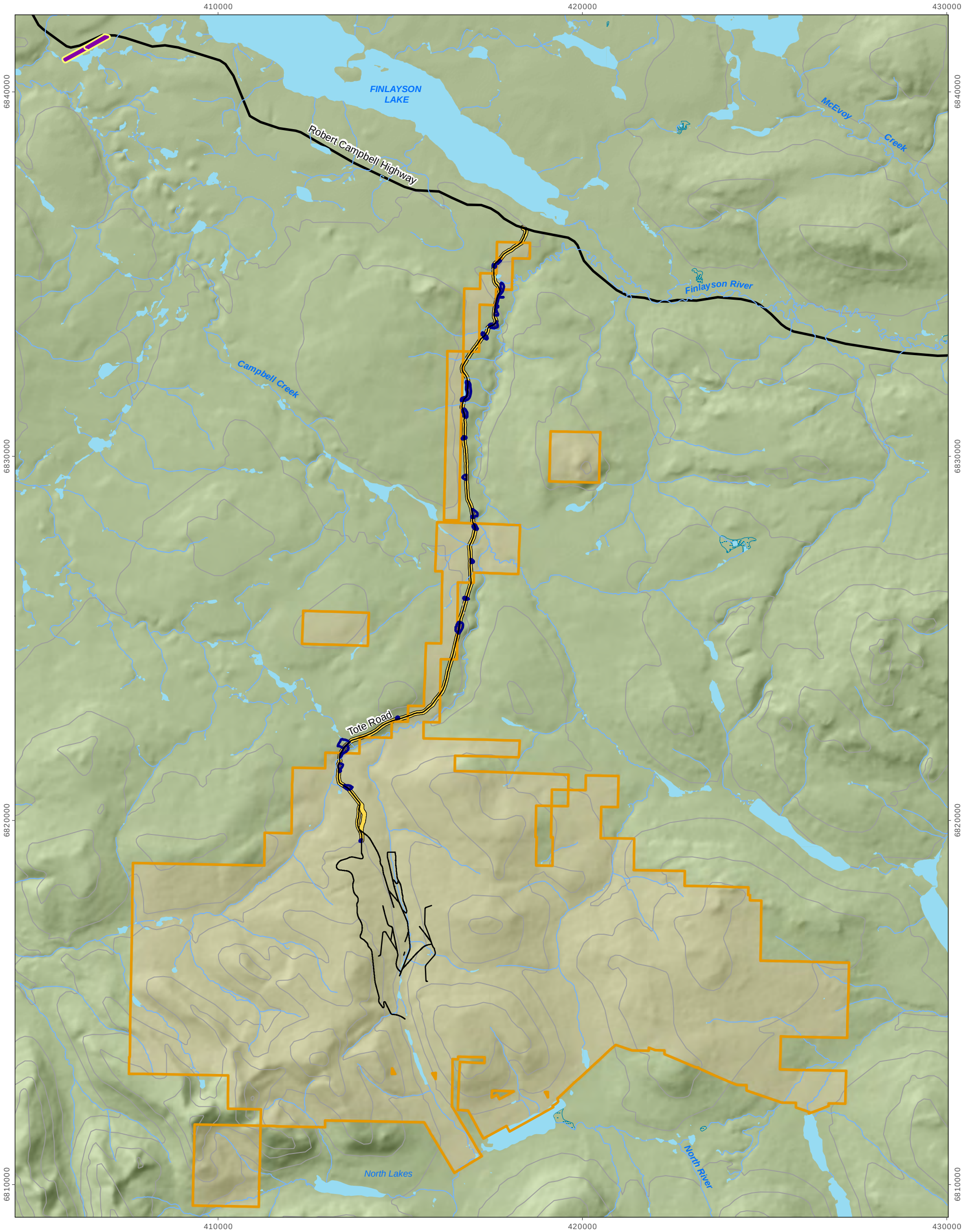


FIGURE 1
KUDE ZE KAYAH PROPERTY OVERVIEW MAP



Base Features

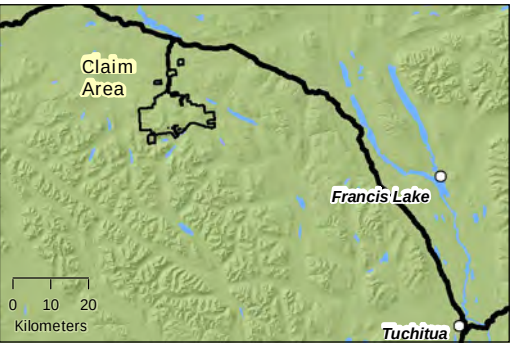
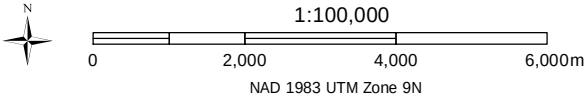
- Contour (500 ft)
- Watercourse
- Waterbody
- Wetland

Access

- Highway
- Road

Assessment Features

- Kude Ze Kayah Claim Area
- 2017 Right of Way
- Proposed Borrow Area
- 2017 Finlayson Airstrip Area



Disclaimer:
This product is for informational purposes only and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. The base data layers have been obtained from the National Topographic Database (NTDB), and GeoYukon.

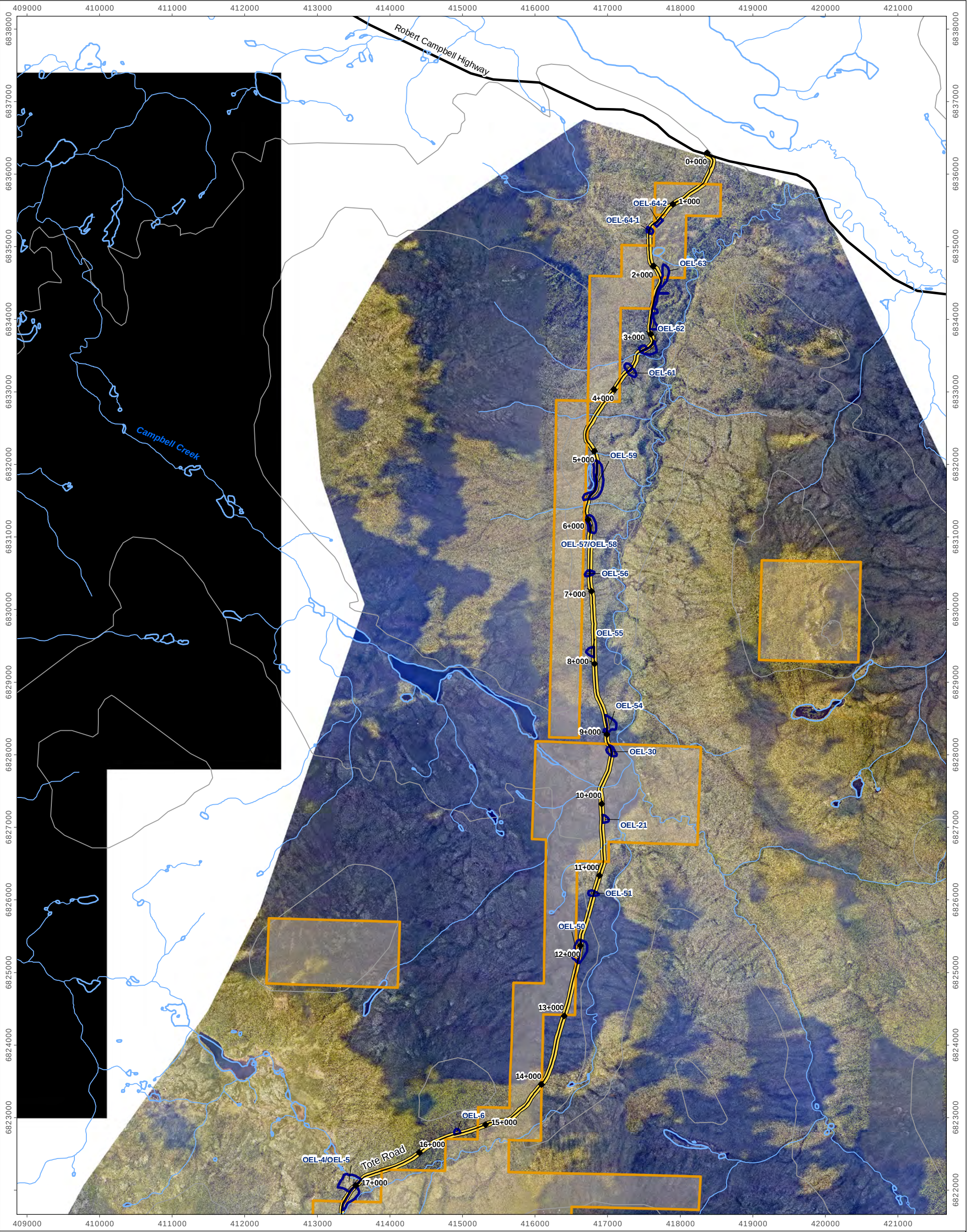


FIGURE 1A
KUDE ZE KAYAH PROPERTY DETAIL OVERVIEW MAP 1 OF 2



Base Features

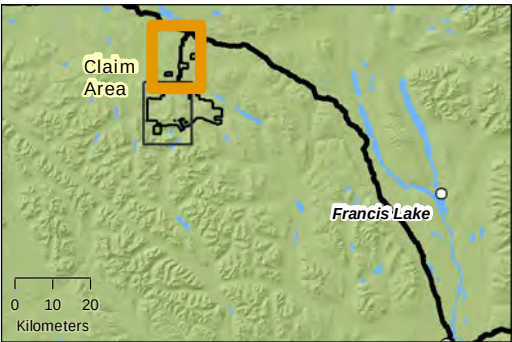
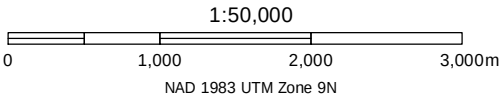
- Contour (500 ft)
- Watercourse
- Waterbody
- Wetland

Access

- Highway
- Road

Assessment Features

- Marker
- Kude Ze Kayah Claim Area
- 2017 Right of Way
- Proposed Borrow Area
- 2017 Finlayson Airstrip Area



Disclaimer:
This product is for informational purposes only and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. The base data layers have been obtained from the National Topographic Database (NTDB), and GeoYukon.

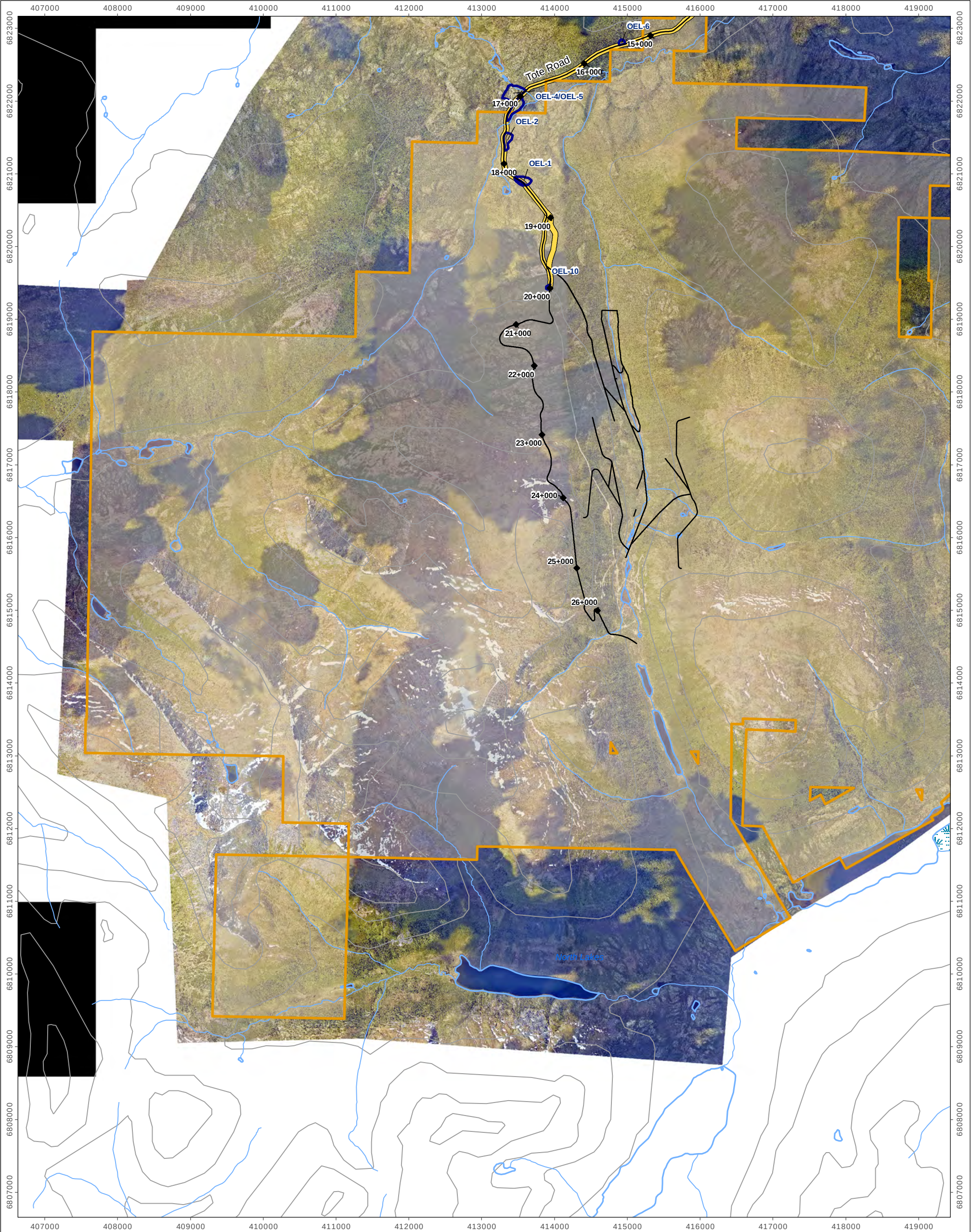
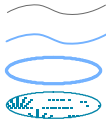


FIGURE 1A
KUDE ZE KAYAH PROPERTY DETAIL OVERVIEW MAP 2 OF 2



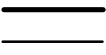
Base Features

- Contour (500 ft)
- Watercourse
- Waterbody
- Wetland



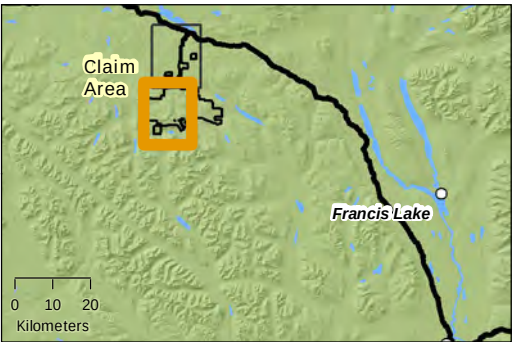
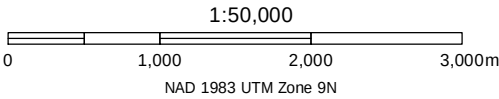
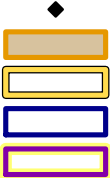
Access

- Highway
- Road



Assessment Features

- Marker
- Kude Ze Kayah Claim Area
- 2017 Right of Way
- Proposed Borrow Area
- 2017 Finlayson Airstrip Area



Disclaimer:
This product is for informational purposes only and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. The base data layers have been obtained from the National Topographic Database (NTDB), and GeoYukon.

1.2 Personnel

The project area was assessed by Ecofor archaeologist Tim Bennett (permit holder), and BMC employees Jody Inkster (RRDC) and Riley Charlie (RRDC).

1.3 Report Format

Following this introduction in Section 1.0:

- Section 2.0 provides a discussion of the environmental setting that the proposed project is located within
- Section 3.0 discusses the culture history of the area in which the proposed project is located
- Section 4.0 details the methodologies employed in completing this work
- Section 5.0 presents the results of this HRIA
- Section 6.0 provides a summary and recommendations for the ongoing management of heritage resources within the assessed project area
- Section 7.0 closes the report with a listing of references cited.

Five appendices are included at the end of this report¹. Appendix A shows project mapping, Appendix B provides project photographs, Appendix C provides site data for newly recorded archaeological site JjTp-2, Appendix D provides site data for newly recorded archaeological site JjTp-3, and Appendix E includes the project field notes.

¹ Note: These appendices have been removed from this YESAB ready version of this report so that it can be issued publicly while protecting sensitive site data.

2.0 ENVIRONMENTAL SETTING

The study area is located within Boreal Cordillera Ecozone in the Yukon Plateau – North Ecoregion (see Smith et al. 2004 for full discussion). The Boreal Cordillera Ecozone is characterized by mountain ranges, high peaks, and extensive plateaus, separated by wide valleys, lakes, and lowlands. Further detail regarding the Yukon Plateau – North Ecoregion is presented below.

2.1 The Yukon Plateau – North Ecoregion

The Yukon Plateau – North Ecoregion is the largest ecoregion entirely inside the Yukon and contains a large portion of the Tintina Trench. The ecoregion generally consists of relatively rolling highlands with an east-west orientation. It includes the Stewart Plateau, the Macmillan Highland, and the Ross Lowland (Matthews 1986). Terrain ranges from 320 m a.s.l. to 2,160 m a.s.l., with an average elevation of 995 m a.s.l. (Smith et al. 2004). Rivers within the ecoregion include the Pelly, Ross, Macmillan, Stewart, Hess, McQuesten and Klondike (Smith et al. 2004).

The mean annual temperature in the Yukon Plateau – North Ecoregion is near -5°C, but seasonal variability is pronounced (Smith et al. 2004). Mean temperatures for January range from below -30°C in the lower valleys to above -20°C in higher terrain (Smith et al. 2004). This is drastically different by July as mean temperatures in the lower valleys are 15°C and close to 8°C in higher terrain (Smith et al. 2004). Frost can occur at any time of the year, but is less likely from mid-June to late July (Smith et al. 2004). Precipitation is moderate with an increase in higher elevation sections in the eastern part of the ecozone. Annual precipitation ranges from 300 to 600 mm (Smith et al. 2004). The winter months have mean precipitation of 20 to 30 mm while the summer months can expect 40 to 80 mm of rainfall (Smith et al. 2004). Winds are generally light, however they may increase to moderate/high during unusually active weather systems or thunderstorms (Smith et al. 2004).

The bedrock geology of this ecoregion includes sections of two geological provinces of metamorphosed sedimentary rock. In the northern half of the ecoregion, variably deformed sedimentary rocks have been deposited on the outer continental shelf of ancestral North America, the Selwyn Basin. The bedrock geology in the southeast part of the ecoregion includes siliceous sedimentary and volcanic rocks of the Yukon-Tanana terrane and metabasaltic flows of the Slide Mountain terrane. The origin of these materials is not well-known due to deformation before and during transportation onto the Selwyn Basin strata (Smith et al. 2004). The southeast section of the ecoregion between Faro and Ross River also includes exposed river and stream cut banks along the Tintina Trench (a 450 km fault) that contains rhyolite and olivine basalt which may have provided materials for prehistoric stone tool making. Also of interest in the northern

Anvil Range are jet-black or gun steel-blue weathering siliceous siltstone and conglomerate containing chert pebbles. These materials may also have been used for making stone tools.

Soils in the valleys of this ecoregion tend to be underlain by glacial parent materials. Soil development also reflects the presence of extensive discontinuous permafrost and a strong continental climate (Smith et al. 2004). Of interest is the presence of the Wounded Moose and the Diversion Creek palaeosols. These two palaeosols are buried soils formed a great deal of time before the current environmental conditions and may reflect past stable ground surfaces. The Wounded Moose palaeosol developed on glacial surfaces of pre-Reid age and the Diversion Creek palaeosol developed between the Reid and the McConnell glaciations. Both of these palaeosols would predate the known cultural history in the Yukon.

The glacial history of the Yukon Plateau – North Ecoregion was dominated by the actions of the Cordilleran ice sheet and local glaciers. More recent glaciations were less extensive. Most current glacial features are remnants from the McConnell glaciation (Smith et al. 2004), however some older features and glacial erratics are present from the older Reid and pre-Reid glaciations. Some uplands and valley floors were extensively eroded into "whalebacks" or rock drumlins by the glacial flow. The western edge of the ecoregion was approximately the terminus for the ice sheet of the McConnell glaciation. As the ice retreated through regional stagnation and wasting it left behind kame and kettle topography and glacial lake deposits in many valleys (Smith et al. 2004).

The vegetation of the Yukon Plateau – North ranges from boreal to alpine. Northern boreal forest exists at elevations up to 1500 m a.s.l. (Smith et al. 2004). Open black spruce with a moist moss, or drier lichen understory is the dominant forest type in the boreal zone (Smith et al. 2004). Shrub and lichen tundra dominate the higher elevations (Smith et al. 2004). The alpine vegetation is characterized by low ericaceous shrubs, prostrate willows, and lichens. In the subalpine areas, shrub birch, with scattered pine, white spruce, subalpine fir, and a lichen understory is extensive (Smith et al. 2004). Extensive shrub lands exist at mid-elevations and on valley bottoms that are subject to cold air drainage. Black spruce is the dominate tree type in the ecoregion, however white spruce, occasionally with aspen or lodgepole pine, occur in warmer, better-drained areas and in forest fire burn areas (Smith et al. 2004).

The Yukon Plateau–North Ecoregion supports wildlife populations typical of Yukon's boreal forest. Moose, woodland caribou, Stone sheep, Dall sheep, grizzly bear, black bear, wolverine, and marten are all abundant. This ecoregion supports the greatest proportion of brown-coloured black bears in the Yukon, occurring between the Stewart and Pelly rivers (Yukon Department of

Renewable Resources 1988). Lynx, beaver, chestnut cheeked vole, mule deer, coyotes, and red fox are also present in some sections of the Yukon Plateau – North (Smith et al. 2004). Of particular interest in the larger area are the Tay River Caribou herd, and an overlap of Stone and Dall Sheep, while mountain goats are uncommon. The Tintina Trench forms an important part of a migration corridor for Sandhill Crane and waterfowl (Smith et al. 2004). Wetlands provide habitat for Pacific, Red-throated and Common Loons, Trumpeter Swan, Canada Goose, American Widgeon, Green-winged Teal, scaup, and scoters (Dennington et al. 1983; Dennington 1985; McKelvey and Hawkings 1990). Osprey and Bald Eagle also breed around lakes (Dennington et al. 1983). Forested areas host Ruffed, Blue, and Sharptailed Grouse, Common Nighthawk, Yellow-bellied Sapsucker, Hairy Woodpecker, Western Wood-Pewee, Hermit Thrush, Townsend's Warbler, Spruce Grouse, Great Horned Owl, Three-toed Woodpecker, Black-capped and Boreal Chickadees, Gray Jay, Common Raven, Red-tailed Hawk, Northern Flicker, Olive-sided Flycatcher, Ruby-Crowned Kinglet, Swainson's Thrush, Varied Thrush, Yellow-Rumped Warbler, Blackpoll Warbler, and Dark-eyed Junco (Osgood 1909; Rand 1946; Johnston and McEwen 1983; Frisch 1987). And finally, in alpine areas Gyrfalcon, Rock and White-tailed Ptarmigan, Wandering Tattler, Gray-Crowned Rosy Finch, American Pipits, Willow Ptarmigan, Wilson's Warbler, American Tree Sparrow, and Golden-Crowned Sparrow can be found (Osgood 1909; Beckel 1975).

3.0 CULTURAL HISTORY

The following is an overview of the culture history for the broader region surrounding the study area including south-central and southwestern Yukon, and northern British Columbia. Many researchers have reviewed the cultural history of this broader area and have presented the information using a variety of terms and temporal ranges (Clark 1981; West 1996; Workman 1978; J. V. Wright 1995, 1999).

3.1 Precontact Period (ca. 11,000 BP to ca. AD1700s)

The earliest Precontact occupation, which dates to early post-glacial times, is known as the Northern Cordilleran Tradition (Clark 1983; Hare 1995). The earliest Northern Cordilleran Tradition occupation known at present is a site located near Beaver Creek, dated to 10,670 radiocarbon years before present (BP) (Heffner 2002). The majority of sites associated with this tradition appear to date older than 7,000 to 8,000 BP. The Northern Cordilleran Tradition, with some overlap, predates the introduction of microlithic technology from Alaska into the interior of the central and southern Yukon (Clark 1983; Hare 1995).

The Northern Cordilleran Tradition is followed by the Little Arm Phase which dates from approximately 7,000 BP to 4,500 BP (Clark and Gotthardt 1999; Workman 1978), and can be defined by the use of microlithic technologies. After about 4,500 BP, there is less evidence of microblade use in the Yukon, and an increase in the use of notched projectile points, and a variety of scraping and carving tools, labeled the Taye Lake Phase in southwest Yukon, or more broadly in Yukon and Alaska, the Northern Archaic Tradition (Hare 1995; Workman 1978).

The most recent archaeological culture of southern Yukon is that of the Aishihik Phase (Workman 1978). This phase is thought to be a cultural development from the earlier Taye Lake culture, although there are some significant differences in technology. Key amongst these technological innovations are native copper tools, small stemmed Kavik points, end- and sidescrapers, and ground adzes (Hare 1995), but perhaps most notable is the introduction of the bow and arrow which replaced a type of throwing spear known as an atlatl as the primary hunting weapon (Hare et al. 2004). This transition from atlatl to bow and arrow technology has been clearly documented by recent finds from high elevation ice patches in the southern Yukon (Hare et al. 2004). These Aishihik Phase sites are found above the White River Tephra ash layer that is dated to about 1,250 radiocarbon years BP (Clague et al. 1995), and are correlated with the appearance of Athabaskan peoples who are thought to be the direct ancestors of the current Liard First Nation and Ross River Dena Council peoples (see Section 3.4 below).

3.2 Protohistoric Period (ca. AD1700s to ca AD1840s)

The Protohistoric Period overlaps with late Precontact Period. It is defined by the appearance of non-native goods, other early trade items, and foreign (western or eastern) influences, but not the documented accounts of contact between indigenous North American peoples and European/Russian/Asian peoples themselves. Other indicators of the Protohistoric Period are the arrival of the first non-native diseases and information concerning non-natives. This period spans the time between the first introduction of non-native influences or artifacts, and the recording of first hand or primary written accounts. Unlike other cultural periods with more specific temporal ranges it is difficult and perhaps impossible to determine when the first ‘outside’ influences of European, Russian, Asian, or other cultures began to impact First Nations people in the Yukon interior.

Some of these far reaching effects may have been passed along from Russian exploration in the early and mid-1700s (Veniaminov 1984) and other Asian and European (Andreev 1944, Quimby 1985) exploration and contact with coastal communities. The Chilkat Tlingit from the Northwest Coast travelled and traded with many interior First Nation peoples throughout this Protohistoric Period including the Kaska and the Northern Tutchone from the Dawson and Mayo areas, and occasionally the Mountain Dene people from as far away as Fort Norman on the Mackenzie River. The Tlingit protected and controlled the trading routes into the interior and fiercely defended those routes when they were threatened. News of early non-native explorers and traders would have travelled inland along with foreign items such as metals, cloths, glass beads, and later tobacco and other goods.

In some of the earliest cases, the impacts of these foreign cultures could have had significant impacts even without the presence of the foreigners themselves. Such is the case for what is called ‘drift-iron’ whereby metals and other materials from Asian or European shipwreck wash ashore. Historical accounts of shipwrecks have been reported in the mid-1700s, but much earlier wrecks were possible. Metals and other foreign trade items have been derived from shipwrecks off what is now British Columbia, Southeast Alaska, and perhaps the Northwest Alaska as well.

3.3 Historic Period (post ca. AD1840s)

During the early years of this period the Russians were expanding their exploration and trade network along the Pacific coast and up the major rivers of the Alaskan interior, while the British were exploring eastward into what would become Canada’s Northwest and Yukon Territories, as well as Alaska. In the 1840s, representatives of the Hudson’s Bay Company (HBC) established trading posts near the study area. Frances Lake Post was established by the narrows of Frances

Lake in 1840 while Fort Pelly Banks was constructed in the winter of 1842-43 on the Pelly River at the mouth of Campbell Creek. Fort Yukon was established by John Bell at the confluence of the Yukon and the Porcupine Rivers in 1847. The next year Robert Campbell established Fort Selkirk on the upper Yukon River and then relocated to an improved location in 1851. The Frances Lake post functioned primarily as a meat post and then as a staging post enroute to Fort Selkirk. These posts were plagued by starvation, poor supply, and poor trade due to hostilities and feuding.

The location of Fort Selkirk was known to upset the Chilkat Tlingit who controlled the trade routes from the coast to the central Yukon. In 1852, a Chilkat Tlingit raiding party travelled inland and forced Robert Campbell and his crew to leave the trading post, which was consequently burned by the Northern Tutchone (Castillo 2012). The posts at Frances Lake and the Fort at Pelly Banks were abandoned by the Hudson's Bay Company by 1851-1852, while Fort Halkett, on the Upper Liard River near what would become the BC-Yukon border, remained open until 1865.

In 1867, US Secretary of State William Seward was able to focus increasing American interests, and he convinced the United States Senate to purchase Alaska from Russia. Soon after the purchase, the US Army sent Captain Raymond up the Yukon River on the first stern-wheel steamer to reach Fort Yukon (Grauman 1977). Raymond surveyed the location of Fort Yukon and proved that it was within US territory. The British sold the Fort to the US Government and relocated east across the 141st Meridian.

The inland fur industry continued to drive exploration and settlement into the late 1800s, but mining would shift the focus to the placer gold found in streams and alluvial deposits. Mining in the second half of the 19th century was a risky but often very lucrative enterprise. The impacts of mining would spread quickly and drastically change the project area.

Mineral prospecting and mining efforts in the second half of the 19th century were largely dependent on the existing infrastructure of the fur trading and missionary efforts. As the competition for the inland fur trade grew, so would the number of stern-wheelers on the Yukon River. These steamers could better supply the small number of trading posts along the Yukon and its tributaries and reduce the risk of prospectors running short of supplies. Therefore, more of the fur traders and other explorers turned their attention to search for gold and other minerals. Three key prospectors in the north were L. S. (Jack) McQuesten, Al Mayo, and Arthur Harper. They wrote to miners in the United States to encourage them to come north. They also established outposts along the Yukon River, including Fort Reliance, established in 1874 near the confluence of the Klondike River (what would become Dawson City) (A. A. Wright 1976).

Harper and another man may have been the first to travel up the Fortymile in search of gold in 1881 (Buzzell 2003). They collected a very rich sample, but were unable to relocate the exact location of their original find. In 1886, McQuesten, Harper, and Mayo built a post on the confluence of the Stewart and Yukon Rivers which provided supplies for additional prospectors. Also in 1886, Howard Franklin made a richer find on the Fortymile River. Others rushed in and these claims along the Fortymile River attracted miners from across central and eastern Alaska, and even southeast Alaska. Fortymile was the first town to grow to over a thousand people by the mid-1890s (Buzzell 2003), and in 1887 the Stewart River post was deserted. Some prospectors that did not find easy success in Fortymile returned to the Stewart River and continued work in the area. In 1890, Harper re-established a trading post at the site of the old HBC post at Selkirk as interest in the area grew. This was followed by Jack Dalton who developed a series of existing First Nation trails beginning at tide water at Haines Alaska, into Fort Selkirk.

On August 16, 1896, George Carmack, Skookum Jim, and Tagish Charlie discovered a very rich claim on Bonanza Creek, a tributary to the Klondike River near Dawson. This discovery sparked one of the largest gold rushes in history. It would take almost a year for the news of the Klondike gold fields to spread south, even to places relatively close by in southeast Alaska. Most of the prospectors and traders in the Alaskan and Yukon interior had already converged on the Dawson area during the winter and spring, and supplies ran dangerously low. That would quickly change in the summer of 1897 and spring of 1898 as new towns and supply posts sprang up along the Gold Rush routes to cash in on the increased demand.

The population of Dawson City grew very fast and in 1898 reached a peak of over 30000. However, the boom period did not last long and the vast majority of the population moved on very quickly with the news of other discoveries. The Gold Rush period saw greatly increased steamer traffic on the entire Yukon River drainage basin and across the interior. Just prior to the Gold Rush there were only a few steamers, while at its peak there were hundreds of vessels working the rivers. These shallow draft steamers were supported by a network of wood camps, shipyards, and a large workforce which kept the river traffic moving. This network provided the infrastructure backbone for trading posts, fish camps, missionaries, and mail routes, while meeting the needs of the growing number of prospectors and traders.

As the world's attention was drawn to growing concerns in Europe in 1939, the Canadian Government began building a chain of airfields across the northwest under the Northwest Staging Route Program. Following the bombing of Pearl Harbor there was no doubt that Alaska and the Yukon would play a key role in the war, and a road was required to link Alaska to the contiguous United States. It was quickly decided that the "Prairie Route" would be used,

whereby key airfields would be linked from Great Falls, Montana to Fairbanks, Alaska. As part of the agreement Canada agreed to build and improve airstrips along the way, including Watson Lake. In February 1942, the US War Department issued the directive to begin construction. These actions spurred on the building of approximately 2446 km of new road through British Columbia and the Yukon Territory. Following the completion of the Alaska Highway the Canol Pipeline and Canol Road (North and South) were completed to allow the flow of oil from Norman Wells, NWT to Whitehorse in 1944. These two events increased access to the Traditional Territory of the Ross River Dena Council and were largely responsible for commercial and mining/industrial activities in recent decades, including construction of the Robert Campbell Highway (Tungsten Road) in 1961.

3.4 Modern First Nations

The project falls within the traditional territories of the Liard First Nation (LFN) and Ross River Dena Council (RRDC). Both First Nations are part of the larger Kaska Nation. The Kaska Nation's traditional territory covers a large area of northwestern British Columbia, southeastern Yukon, and southern Northwest Territory. Within the Kaska traditional territory there are five First Nations communities: the Dease River First Nation, the Kwadacha Nation, the Ross River Dena Council, the Liard First Nation, and the Daylu Dena Council. Each Kaska First Nation is represented by an elected Chief and Council, as well as a Hereditary Chief.

Prior to European contact, traditional subsistence activities typically featured a seasonal round of winter hunting and summer fishing covering vast areas. In summer, families congregated at lakes and rivers, where fish and plants were collected, dried, and stored. In late summer, small groups dispersed throughout the uplands and higher valley systems to hunt in clan-owned territories. Temporary camp sites, situated within a variety of ecological zones, were often reoccupied year after year in order to exploit seasonally available resources (Honigmann 1981).

Contact with neighbouring Nations was vital to First Nations' economies. Interior bands traded hides, furs, and obsidian to coastal groups for fish oil, dentalium, woodwork and blankets. Trails were an intrinsic part of this economy and traditional subsistence as a whole. The principal ethnographic descriptions of the Kaska Dena are available in Black (1955), Jenness (1937), and Morice (1893, 1903, 1905). Additional information on past lifeways can be found in Honigmann (1981).

Watson Lake, Upper Liard, and the adjoining settlements are home to the Liard First Nation. The amount of activity near Watson Lake was greatly increased when its airfield was established in 1939. This was part of the Canadian government's construction of a chain of airports across

northeastern British Columbia and the Yukon as part of the lend-lease program. The new community was soon after used as a supply centre for the construction of the Alaska Highway in 1942.

Ross River, near the confluence of the Ross and Pelly Rivers, is the modern focal point of the Ross River Dena Council. Originally, First Nations people used the area as a seasonal camp and gathering place. By 1903, a trading post was established nearby and later when the American army completed the Canol Pipeline and Canol Road in 1944, they connected Ross River by road to the rest of the Yukon (Cohen 1992). In 1962, Ross River was relocated to its current site close to the Campbell Highway (Yukon Community Profiles 2012).

3.5 Previous Heritage Investigations

In 1995, a heritage impact study was conducted in collaboration with the RRDC as part of the Initial Environmental Evaluation of the proposed Kudz Ze Kayah Mine. That study identified no cultural materials or features (Rutherford 1995a). However, a review of the oral history provided by Kaska Nation members indicates that the project area was used for subsistence hunting, trapping and fishing, and as an access route to the North Lakes (Rutherford 1995b). In 1996, an additional study for cultural materials was undertaken at a proposed airstrip location near the Robert Campbell Highway (Rutherford 1996), but again no heritage resource sites were identified.

The proposed mine area was assessed again under permit 15-10ASR to facilitate the development of a number of mine features (see Bennett and Mooney 2016). That HRIA led to the identification of subsurface archaeological sites JiTp-1 and JjTp-1 and two wooden artifacts recovered from the surface at three high elevation ice patch edge locations. Two obsidian samples from JiTp-1, recovered during the 2015 phase of the Kudz Ze Kayah Mine HRIA under permit 15-10ASR, were submitted to the National Park Service Fairbanks Administrative Facility for X-Ray Fluorescence (XRF) analysis on behalf of Ecofor by Greg Hare of the Yukon Government Heritage Resource Unit to determine the provenance of the source from which the raw materials used in stone tool production at the site. The results returned showed that the obsidian in both samples originated from Mount Edziza (Group E) in British Columbia, approximately 425 km south of JiTp-1 (see Bennett 2017 for full discussion of XRF results).

Additional HRIA work was undertaken in 2016 under permit 16-04ASR to conduct follow-up assessment at archaeological site JiTp-1 based on recommendations stemming from the results obtained under permit 15-10ASR (see Mooney and Bennett 2016) and to assess for the first time revised components of the proposed project footprint. Follow-up work at JiTp-1 included

additional shovel testing (n=43) and 6 m² of excavation divided between two blocks (4 m² and 2 m²) centered on positive shovel tests. Three of the 43 shovel tests excavated in 2016 were positive for heritage resources (each containing a single lithic flake), and the excavation blocks yielded 88 lithic artifacts. All recovered artifacts were associated with areas where finds were made during a previous phase of HRIA work conducted under permit 15-10ASR, and were all in keeping with the nature of artifacts recovered during that previous work.

Assessments of revised components of the proposed project footprint under permit 16-04ASR began with pedestrian survey aimed at identifying areas of elevated potential for heritage resources, then moved on to shovel testing in identified areas of elevated potential. Areas surveyed included those associated with access roads, ditching, revised overburden stockpile areas, Class A, B, and C storage facilities, open pits, topsoil stockpiles, drill holes, a mill site, a water management pond, and a settling pond. The pedestrian survey led to the identification of five additional areas of elevated heritage resource potential that were subsequently shovel tested. These shovel test location (STLs) are referred to in this report as Dirty Rock STL, Split Rock STL, Small Whale STL, Caribou Antler STL, and Beaver Lodge STL. In total, 186 shovel tests were excavated at these STLs, but all were negative for heritage resources.

4.0 METHODOLOGY

Ecofor staff assessed all 18 proposed borrow areas, the Finlayson Airstrip improvements area, and a section of proposed Tote Road alignment modification. These proposed development areas were transected at intervals of 5 m to 15 m with shovel tests being excavated approximately 3 m to 15 m apart in areas deemed to have potential for subsurface heritage resources. Shovel tests measured at least 35 cm by 35 cm, and were excavated with shovel and trowel into sterile sub soils. All excavated sediments were screened through ¼ inch mesh and representative sediment profiles were recorded for each shovel test location (STL). All shovel tests were backfilled and returned to as close to natural conditions as possible.

All heritage resource sites encountered were photographed and the site location was recorded using a hand-held GPS unit. Moreover, all heritage resource sites encountered were recorded, mapped, and flagged with a 30 m buffer (marked with “no work zone” ribbon) in the field. Sites were recorded using temporary site numbers and site data, including site setting, access, vegetation, water system information, elevation, sedimentary and cultural stratigraphy, artifacts recovered, features present, etc. This information has been submitted to the Yukon Heritage Resources Unit for site inventory and return of Borden number.

5.0 RESULTS

Field assessment focused on 18 proposed borrow area locations along the existing Kudz Ze Kayah Tote Road, an area at the Finlayson Lake Airstrip into which it is proposed that the existing runway be extended, and a previously unassessed section of proposed Tote Road alignment modification south of Borrow OEL-1 (see Appendix A for HRIA results mapping). In total, 133 shovel tests were excavated at eight STLs. Two of these shovel tests, at Borrows OEL-54 and OEL-63, were positive of heritage resources, resulting in the identification of two new archaeological sites at two of the proposed borrow areas (JjTp-2 at Borrow OEL-54 and JjTp-3 at Borrow OEL-63). A modern campsite was also observed at Borrow OEL-50, but it is considered to be relatively recent and is not a heritage resource concern. No heritage resource concerns were found at all other proposed borrow areas, proposed Finlayson Lake improvements area, and previously unassessed section of proposed Tote Road alignment modification south of Borrow OEL-1.

Further detail about these new sites and each assessed area is presented below.

5.1 New Archaeological Sites

5.1.1 JjTp-2 – STL 4 at Borrow OEL-54

JjTp-2 is located on a point protruding from a high terrace atop a steep escarpment above Finlayson Creek approximately 130 m east of the Tote Road (Photo 1; see Appendix A – Figure 2, Mapsheet 3 of 4 and Appendix C). The tested area is small, measuring only 15 m x 5 m. Portions of the landform could not be tested due to large deadfall. Vegetation in the tested area is open and grassy, with the surrounding area characterized by dense spruce forest. In total, six shovel tests were excavated, one of which was positive for archaeological materials (see Appendix C – Figure 3). Finds included five lithic flake fragments on blue/grey chert. Sediments in the positive shovel test consisted of root mat/organics from 0-12 cm, followed by White River Tephra from 12-18 cm, then coarse brown sand with small pebbles from 18-55 cm (Photo 2). The artifacts were recovered from between 5-15 cm below surface, placing them most likely above the tephra layer (< ~1200 years old). The JjTp-2 site area was flagged with a 30 m site buffer with yellow "no work zone" flagging tape to ensure that BMC personnel working in the area could easily identify and avoid the site area.

5.1.2 JjTp-3 – STL 1 at Borrow OEL-63

The JjTp-3 Site is located on an esker/esker-like landform approximately 50 m east of the Tote Road (Photo 3; Figure 2 – Mapsheet 2 of 4 and Appendix D). The tested area is approximately 200 m long, and varies in width from approximately 10 m to as narrow as 1 m in places. Two rows of shovel tests were excavated in wider areas, with a single row crossing narrower places.

Vegetation within the tested area is dominated by dense spruce forest with a mossy understory. In total, 36 shovel tests were excavated along the landform, one of which was positive for archaeological materials (see Appendix D – Figure 4). Finds included a single blue/grey chert flake. Sediments encountered in this shovel test consisted of organics (including a rotting log) from 0-10 cm, then coarse brown sand with cobbles and pebbles from 10-30 cm below surface (Photo 4). The flake fragment was recovered from approximately 5-10 cm below surface. No White River Tephra was observed in the stratigraphy. The JTp-3 site area was flagged with a 30 m site buffer with yellow "no work zone" flagging tape to ensure that BMC personnel working in the area could easily identify and avoid the site area.

5.2 Other Proposed Borrow Areas

Borrows OEL-1, OEL-2, OEL-4/OEL-5, OEL-6, OEL-21, OEL-30, OEL-50, OEL-51, OEL-55, OEL-56, OEL-57/OEL-58, OEL-59, OEL-61, OEL-62, OEL-64-1, and OEL-64-2 were assessed through pedestrian survey (see Appendix A – Figure 2). Borrows OEL-1, OEL-4/OEL-5, OEL-61, and OEL-62, were deemed to contain areas of significant potential for buried heritage resource sites after pedestrian survey. Consequently, single STLs were excavated in Borrows OEL-1, OEL-61, and OEL-62, while three spatially distinct STLs were excavated in Borrow OEL-4/OEL-5. Additional detail on these STLs is presented below.

Borrows OEL-2, OEL-6, OEL-21, OEL-30, OEL-50, OEL-51, OEL-55, OEL-56, OEL-57/OEL-58, OEL-59, OEL-64-1, and OEL-64-2 were all found to have no significant potential for heritage resources, and no shovel testing was conducted within them. The interpretations of low heritage resource potential within these borrow areas was typically due to high levels of existing disturbance related to the existing Tote Road (Photo 5, Photo 6, Photo 7, and Photo 8), sloping terrain (Photo 9, Photo 10, Photo 11), and/or poorly-drained ground conditions (Photo 12, Photo 13, and Photo 14).

5.2.1 STL 2 at Borrow OEL-62

The majority of Borrow OEL-62 (see Appendix A – Figure 2, Mapsheet 2 of 4) was found to have low potential for significant heritage resources due to flat, featureless terrain (Photo 15) and previous disturbance (Photo 16). However, a long (approximately 200 m), well-defined terrace, interpreted as possessing significant potential for heritage resources, was observed along the southern boundary of the proposed borrow area (Photo 17). This terrace faces south, and would overlook a small unnamed creek which flows into Finlayson Creek approximately 100 m east of the proposed Borrow OEL-62 area if not for the dense, closed, spruce dominated forest that characterizes the local vegetation. This area was shovel tested and is referred to here as STL 2.

In total, 40 shovel tests were excavated at STL 2. Sediment profiles encountered in the majority of these shovel tests consisted of moss from 0-10 cm, followed by black organic soil from 10-13 cm, White River tephra (WRT) from 13-18 cm, then grey clay with pebbles and cobbles from 18-35 cm below surface (Photo 18). In some shovel tests in the eastern portion of the STL organic sediments in the upper 8 cm of the profile were underlain by coarse brown sand to 35 cm below surface then large cobbles that effectively prevented deeper testing (Photo 19). No heritage resources were observed at STL 2.

5.2.2 STL 3 at Borrow OEL-61

Borrow OEL-61 is centered on a knoll that is cross-cut by the existing Tote Road (Photo 20; see Appendix A – Figure 2, Mapsheet 2 of 4). The break from the flat, featureless knoll top to the slopes below is poorly defined on the west side of the Tote Road cut, and an old, overgrown cat trail runs along the top of this side of the landform (Photo 21). As such, heritage resource potential was interpreted as low on the west side of the existing Tote Road cut. However, the break in slope on the east side of the Tote Road cut is better defined and not impacted by previous cat trails development (Photo 22). This area was interpreted as possessing elevated potential for heritage resources and was tested as STL 3.

Vegetation in STL 3 is characterized by open spruce forest with a thick moss understory. In total, nine shovel tests were excavated at STL 3. Sediment profiles encountered in these tests consisted of organics and roots from 0-10 cm, followed by WRT from 10-14 cm, then grey/green clay with pebbles from 14-30 cm below surface (Photo 23). No heritage resources were observed at STL 3.

5.2.3 STL 5 at Borrow OEL-4/OEL-5

Borrow OEL-4/OEL-5 is a large area with two semi-distinct blocks on either side (east and west) of the existing Tote Road. STL 5 is located within the east block, along a terrace that runs generally southwest to northeast along the west side of the Finlayson Creek channel before climbing and turning westward toward the central portion of the east block in the northern portion of the STL where it becomes a ridge/knoll (Photo 24 and Photo 25; see Appendix A – Figure 2, Mapsheet 4 of 4). Vegetation along the terrace in the southern portion of STL 5 is dominated by young aspens, but becomes more open with buck brush, very young aspens, and scattered mature spruce in the northern portion where the landform turns westward.

In total, 11 shovel tests were excavated at STL 5 under permit 17-12ASR. These tests add to 18 shovel tests that were excavated closer to the existing Tote Road along this terrace in 2015 under

permit 15-10ASR (2015 STL J6; see Bennett and Mooney 2016). Sediments encountered in the southern portion of STL 5 along the terrace edge consisted of organics from 0-5 cm, followed by WRT from 5-10 cm, reddish brown fine sand with pebbles from 10-18 cm, brown coarse sand with pebbles and small cobbles from 18-28 cm, then greenish brown coarse sand with pebbles and small cobbles from 28-35 cm below surface (Photo 26). Further north, along the higher ridge/knoll portion of the landform, sediments encountered consist of organics from 0-8 cm, followed by pebbles and cobbles in a brown sand matrix from 8-20 cm, then pebbles and cobbles in a greenish grey sand matrix from 20-25 cm below surface (Photo 27). No heritage resources were observed at STL 5.

5.2.4 STL 6 at Borrow OEL-4/OEL-5

STL 6 is also located within the east block of Borrow OEL-4/OEL-5, to the north of STL 5 on an elongated northeast to southwest trending knoll (Photo 28; see Appendix A – Figure 2, Mapsheet 4 of 4). This knoll is similar to, but smaller than, the “whaleback” landforms tested during previous phases of the BMC Kudz Ze Kayah HRIA program (see Bennett and Mooney 2016 and Bennett 2017). Vegetation in STL 6 is dominated by buck brush and lichen with very sparse pine and spruce scattered throughout.

In total, 13 shovel tests were excavated at STL 6. Sediment profiles encountered in these tests consisted of lichen and organics from 0-7 cm, followed by WRT from 7-10 cm, an organic palaeosol from 10-12 cm, then cobbles and pebbles in a brown sandy silt matrix from 12-25 cm below surface (Photo 29). No heritage resources were observed at STL 6.

5.2.5 STL 7 at Borrow OEL-4/OEL-5

STL 7 is located in the west block of Borrow OEL-4/OEL-5 on an east facing terrace overlooking the existing Tote Road and rolling terrain leading up the Finlayson Creek valley (Photo 30; see Appendix A – Figure 2, Mapsheet 4 of 4). Vegetation on the slope below the terrace and terrace edge consists of open spruce-dominated forest, but becomes more open with buck brush as you move back from the terrace edge.

In total, six shovel tests were excavated at STL 7. Sediment profiles encountered in these tests consisted of organics and roots from 0-7 cm, followed by WRT from 7-11 cm, then cobbles and pebbles in a brown sandy silt matrix from 11-30 cm below surface (Photo 31). No heritage resources were observed at STL 7.

5.2.6 STL 8 at Borrow OEL-1

STL 8 is located on a high terrace/knoll above the Finlayson Creek valley within Borrow OEL- 1 (Photo 32; see Appendix A – Figure 2, Mapsheet 4 of 4). Vegetation within this STL is quite open with buck brush and reindeer lichen dominating along the terrace edge and high knoll area. Spruce forest develops as you move farther back from the open area near the break in slope to the creek valley below.

In total, 12 shovel tests were excavated in STL 8. These tests add to 13 shovel tests that were excavated closer to the existing Tote Road along this terrace in 2015 under permit 15-10ASR (2015 STL J4; see Bennett and Mooney 2016). Sediment profiles encountered in these tests consisted of organics, roots, and lichen from 0-5 cm, followed by WRT from 5-7 cm, brown sand with subrounded to tabular cobbles and pebbles from 7-25 cm, then greenish grey sand with subrounded to tabular cobbles and pebbles from 25-35 cm below surface (Photo 33). No heritage resources were observed at STL 8.

5.3 Assessment of Finlayson Lake Airstrip Improvement Area

The terrain within the proposed Finlayson Lake Airstrip improvement area was assessed by pedestrian survey and found to be disturbed, flat and featureless, or wet and swampy (Photo 14, Photo 34, and Photo 35; see Appendix A – Figure 2, Mapsheet 1 of 4). No areas of potential for heritage resource sites were observed. No testing was conducted and there are no heritage resource concerns within the proposed Finlayson Lake Airstrip Improvement Area.

5.4 Proposed Reroute of Tote Road Alignment South of Borrow OEL-1

The alignment of the proposed reroute of the Tote Road was assessed by pedestrian survey (see Appendix A – Figure 2, Mapsheet 4 of 4). Terrain within this corridor was found to be entirely sloping, with no benches along the slope (Photo 36). No areas of significant heritage resource potential were observed during this survey. As such, no shovel testing was conducted and there are no heritage resource concerns.

5.5 Previously Recorded Archaeological Site Revisits

5.5.1 JiTp-1 Revisit

JiTp-1 is a large low density lithic site located on a large, gently sloping, north to south oriented "whale's back" landform that provides good vistas in 360 degrees (see Bennett and Mooney 2016 and Bennett 2017 for site mapping and photographs). The landform is roughly battleship shaped and approximately 190 m roughly north to south and approximately 70 m at the widest in the mid-section. Vegetation consists of scrub birch with grasses and berries growing in thin soils.

Under permit 15-10ASR, 232 negative and 8 positive shovel tests were excavated. In total, 77 lithic artifacts were recovered, 52 of which were obsidian. Further testing was conducted under permit 16-04ASR, including additional shovel testing (n=43) and 6 m² of excavation divided between two blocks (4 m² and 2 m²) centered on positive shovel tests from the 2015 work. Three of the 43 shovel tests excavated in 2016 were positive for heritage resources (each containing a single quartz flake), and the excavation blocks yielded 88 lithic artifacts (obsidian, n= 87; chert, n=1). X-ray Fluorescence analysis conducted on two samples of this obsidian showed it was sourced from Mount Edziza in British Columbia.

No further testing was conducted at JjTp-1 under permit 17-12ASR, but the site was revisited to check on its condition and ensure that the 30 m avoidance buffer surrounding the site area was clearly marked. The site area was found to be intact and in similar condition to how it was left at the conclusion of the 2016 work conducted under permit 16-04ASR, however much of the buffer flagging was no longer in place. As such, Ecofor archaeologists reflagged the 30 m site buffer with yellow "no work zone" flagging tape to ensure that BMC personnel working in the area could easily identify and avoid the site area.

5.5.2 JjTp-1 Revisit

JjTp-1 is a small, low density lithic scatter located on a southeast facing terrace above the west side of Finlayson Creek that was identified under permit 15-10ASR (see Appendix A – Figure 2, Mapsheet 4 of 4; see Bennett and Mooney 2016 for additional mapping and photographs). The existing Tote Road cuts through the west side of this raised landform. Vegetation consists of scattered spruce, scrub birch, grasses, and mosses. The level area in the center of the landform between the road cut and break in slope has been disturbed by cat tracks and what appears to be a heavy equipment test pit approximately 2.5 m x 6 m. The entire break in slope edge is approximately 35 m long running in a southwest to northeast direction. In total, 28 shovel tests were excavated in the JjTp-1 area under permit 15-10ASR, two of which were positive for heritage resources. Finds included one basalt retouched flake and one piece of chert shatter. Ecofor staff flagged the positive shovel tests and a 30 m buffer zone was flagged out from site boundaries with yellow "no work zone" flagging tape.

No additional testing was conducted at JjTp-1 under permit 17-12ASR, but the site was revisited to check on its condition and ensure that the 30 m avoidance buffer surrounding the site area was clearly marked. The site area was found to be intact and in similar condition to how it was left at the conclusion of the 2015 work conducted under permit 15-10ASR, and the 30 m

avoidance buffer from 2015 was found to be still in place. As such, the area is clearly marked to ensure that BMC personnel working in the area could easily identify and avoid the site area.

5.6 Modern Campsite at Borrow OEL-50

A small scale, modern campsite was observed near the top of a hill within the Borrow OEL-50 area (Photo 37; see Appendix A – Figure 2, mapsheet 3 of 4). Features observed at this campsite include a “work bench” made by nailing sawed logs between two trees (Photo 38 and Photo 39), a fire pit (Photo 40), rusted cans (Photo 41), saw cut logs (Photo 42), and a shallow pit (Photo 43). All materials observed at this campsite are considered to be modern, and as such it does not pose any heritage resource concerns.

6.0 SUMMARY AND RECOMMENDATIONS

Work conducted for the 2017 HRIA of the Kudz Ze Kayah 2017 – Proposed Tote Road Borrow Areas and Finlayson Lake Airstrip Improvements HRIA identified two new archaeological sites (JjTp-2 at Borrow OEL-54 and JjTp-3 at Borrow OEL-63). A modern campsite was also observed at Borrow OEL-50, but it is not considered to be a heritage resource concern. No heritage resource concerns were found at all other borrows, proposed Finlayson Lake improvements area, and alignment of the proposed reroute of the Tote Road south of Borrow OEL-1.

Based on these results, **avoidance is recommended for the newly recorded archaeological sites JjTp-2 and JjTp-3 (including their 30 m buffer zones). Continued avoidance of JiTp-1 and JjTp-1 is also recommended. If avoidance is not feasible at these sites (including the 30 m buffer zones), further assessment is recommended. Recommended further work includes:**

JjTp-2

- **Additional shovel testing**
 - **Approximately 20-30 shovel tests (could be fewer depending on slope; need to clear some large deadfall to get access to surface throughout landform)**
- **Evaluative Units (EUs)**
 - **One 1 x 1 EU over 2017 positive test to 50 cm**
 - **Keep 3-5 m² in reserve in case a concentration is encountered in first EU or additional positive shovel tests are found**

JjTp-3

- **Additional shovel testing**
 - **Approximately 15-20 shovel tests (could be fewer depending on slope)**
- **EUs**
 - **One 1 x 1 EU over 2017 positive test to 40 cm**
 - **Keep 3-5 m² in reserve in case a concentration is encountered in first EU or additional positive shovel tests are found**

No further work is recommended for proposed Borrows OEL-1, OEL-2, OEL-4/OEL-5, OEL-6, OEL-21, OEL-30, OEL-50, OEL-51, OEL-55, OEL-56, OEL-57/OEL-58, OEL-59, OEL-61, OEL-62, OEL-64-1, and OEL-64-2, the proposed Finlayson Lake Airstrip Improvement Area, and the alignment of the proposed reroute of the Tote Road south of Borrow OEL-1; however, future work within these areas should adhere to the chance finds policy already followed by BMC Minerals.

If any additional development areas are added to the project, then those new areas should also be reviewed for possible impacts to heritage resources. This follow-up heritage review maybe conducted though desktop overview and/or field study.

These recommendations are subject to review, revision, and approval by the Yukon Heritage Resource Unit, Liard First Nation, and Ross River Dena Council.

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APPENDIX A: Project Mapping – NOT INCLUDED IN YESSB READY/PUBLIC VERSION OF REPORT

APPENDIX B: HRIA Photographs – NOT INCLUDED IN YESSB READY/PUBLIC VERSION OF REPORT

**APPENDIX C: Newly Recorded Archaeological Site JjTp-2 – NOT INCLUDED IN YESSB
READY/PUBLIC VERSION OF REPORT**

**APPENDIX D: Newly Recorded Archaeological Site JjTp-3 – NOT INCLUDED IN YESSB
READY/PUBLIC VERSION OF REPORT**

APPENDIX E: Project Field Notes – NOT INCLUDED IN YESSB READY/PUBLIC VERSION OF REPORT

APPENDIX B6



ECOFOR

natural and cultural resource consultants

BMC Minerals Kudz Ze Kayah Systematic Data Recovery Excavations at JjTp-2 and JjTp-3 and Heritage Resource Impact Assessment of Exploration Targets K18-T and K18-U Final Report (18-01ASR)

(May Be Included in YESAB Materials – No Sensitive Site Data)

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January 24, 2019

EXECUTIVE SUMMARY

On behalf of BMC Minerals (No. 1) LTD (BMC), Ecofor Consulting Ltd. has conducted systematic data recovery (SDR) excavations at two archaeological sites (JjTp-2 and JjTp-3). These sites were identified in 2017 under permit 17-12ASR at proposed borrow pit locations along the BMC Kudz Ze Kayah Project Tote Road. A Heritage Resource Impact Assessment (HRIA) was also conducted at two previously unassessed exploration target areas. These sites were required for assessment under the BMC quartz mining license for exploration (i.e. they were close to ice patches). **Note: All specific geographic references to heritage site locations, photographs, and some site details have been removed from this YESAA ready version of this report so that it can be issued publicly while protecting sensitive site data.**

The goal of the SDR work was to better define the site boundaries and recover a representative sample of cultural materials from both sites to mitigate any disturbances to the site areas related to the development of the proposed borrow pits. The HRIA work sought to identify any heritage resource impact concerns associated with exploration target areas K18-T and K18-U. This work builds on previous heritage resource assessment work conducted by Ecofor for the BMC Kudz Ze Kayah Project in 2015, 2016, and 2017 (permits 15-10ASR, 16-04ASR, and 17-12ASR; see Bennett and Mooney 2016, Bennett 2017, Bennett 2018).

The SDR work conducted included both additional shovel testing to better define the site boundaries and the excavation of 1 x 1 m excavation units (EUs) at both JjTp-2 and JjTp-3. Work at JjTp-2 included 10 additional shovel tests and 10 m² of EUs arranged in an 8 m² trench covering the richest shovel test area and two spatially discrete 1 x 1 m EUs over outlying positive shovel tests. These excavations yielded 41 lithic artifacts and four pieces of faunal material. Work at JjTp-3 included seven additional shovel tests and one 1 x 1 m EU placed over the positive shovel test excavated in 2017 under permit 17-12ASR. No additional heritage resources were recovered from JjTp-3 as a result of this SDR program.

HRIA work at exploration target areas K18-T and K18-U focused on ice patches and recently exposed ice patch scars. Transects were walked across and between these ice patch areas to search for surface artifacts and any additional landforms with heritage resource potential. No artifacts or additional areas of elevated heritage resource potential were observed.

Based on these results, **no further heritage resource assessment is recommended at archaeological sites JjTp-2 and JjTp-3. Moreover, no further heritage resource assessment is recommended at exploration targets K18-T and K18-U. However, future work within these**

areas should adhere to the chance finds policy already followed by BMC. Moreover, if any additional development areas are added to the Project, then those new areas should also be reviewed for possible impacts to heritage resources. This follow-up heritage review maybe conducted though desktop overview and/or field study.

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1.0 INTRODUCTION

On behalf of BMC Minerals (No. 1) LTD (BMC), Ecofor Consulting Ltd. has conducted systematic data recovery (SDR) excavations at two archaeological sites (JjTp-2 and JjTp-3). These sites were identified in 2017 under permit 17-12ASR at proposed borrow pit locations along the BMC Kudz Ze Kayah Project Tote Road. A Heritage Resource Impact Assessment (HRIA) was also conducted at two previously unassessed exploration target areas (K18-T and K18-U; Figure 1; see Appendix A). The Kudz Ze Kayah Project is located approximately 260 km northwest of Watson Lake, 110 km southeast of Ross River and 24 km southwest of the Robert Campbell Highway near Finlayson Lake. The study areas are located on NTS mapsheet 105G/10 and falls within the traditional territories of the Liard First Nation and Ross River Dena Council. **Note: All specific geographic references to heritage site locations, photographs, and some site details have been removed from this YESAA ready version of this report so that it can be issued publicly while protecting sensitive site data.**

1.1 Project Overview

The goal of the SDR work was to better define the site boundaries and recover a representative sample of cultural materials from both sites to mitigate any disturbances to the site areas related to the development of the proposed borrow pits. The HRIA work sought to identify any heritage resource impact concerns associated with exploration target areas K18-T and K18-U. This work builds on previous heritage resource assessment work conducted by Ecofor for the BMC Kudz Ze Kayah Project in 2015, 2016, and 2017 (permits 15-10ASR, 16-04ASR, and 17-12ASR; see Bennett and Mooney 2016, Bennett 2017, Bennett 2018 respectively).

1.2 Personnel

The SDR work was completed by Ecofor employees Tim Bennett (permit holder), Kali Perr, and Sahara Dove, with assistance from Equity Exploration employees John Etzel (RRDC) and Teaka Lewis- Clark (LFN) from June 19-25, 2018. The HRIA work was conducted by Ecofor archaeologist James Mooney on August 14, 2018 under the direction of the permit holder.

1.3 Report Format

Following this introduction in Section 1.0, Section 2.0 provides a discussion of the environmental setting that the proposed Project is located within, Section 3.0 discusses the culture history of the area in which the proposed Project is located, Section 4.0 details the methodologies employed in completing this work, Section 5.0 presents the results of the SDR and HRIA programs, Section 6.0 provides a summary and recommendations for the ongoing management of heritage resources within the assessed Project areas, and Section 7.0 closes the report with a

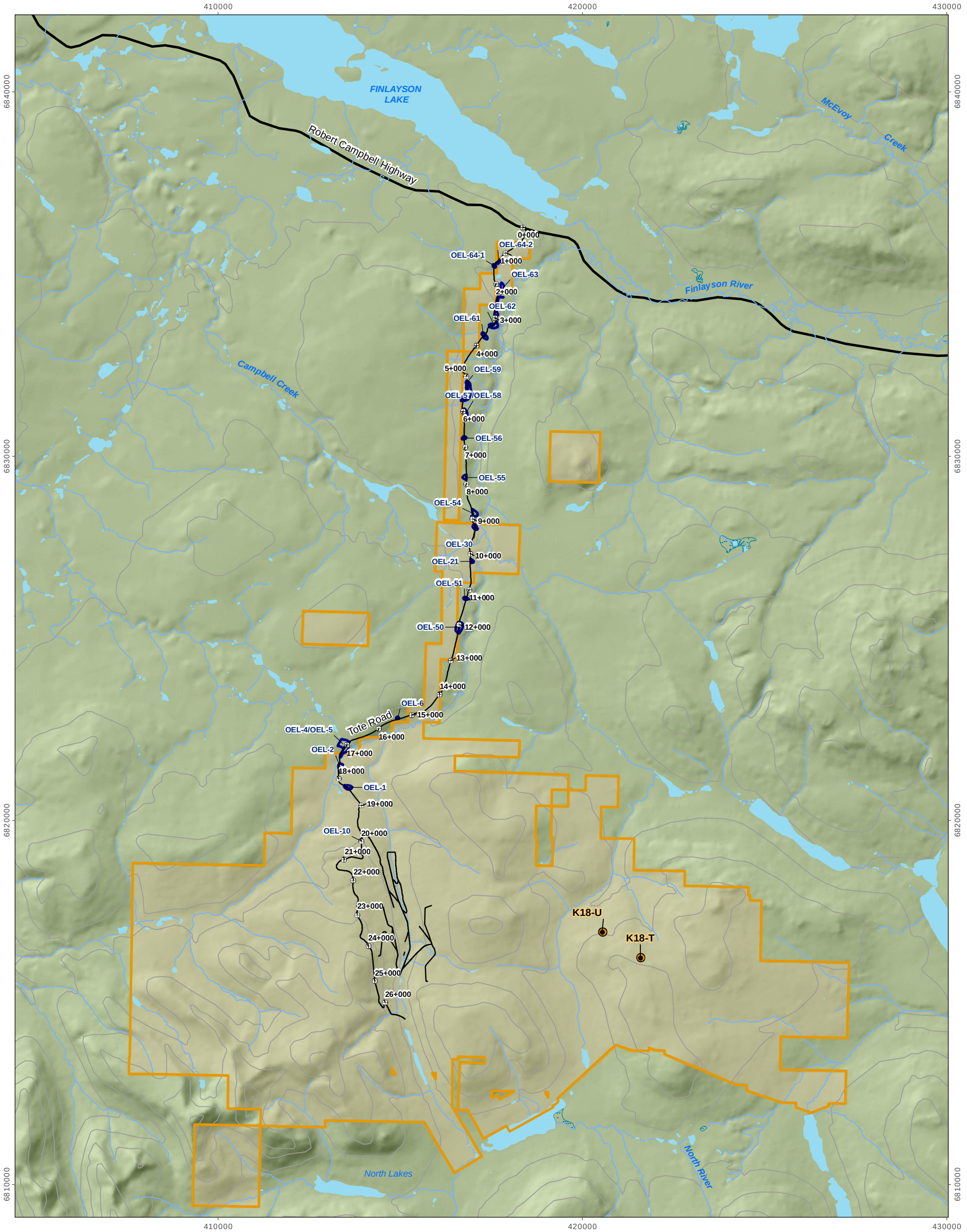


FIGURE 1
KUDZ ZE KAYAH PROPERTY OVERVIEW MAP

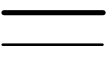
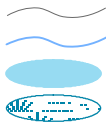


Base Features

- Contour (500 ft)
- Watercourse
- Waterbody
- Wetland

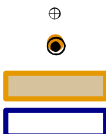
Access

- Highway
- Road

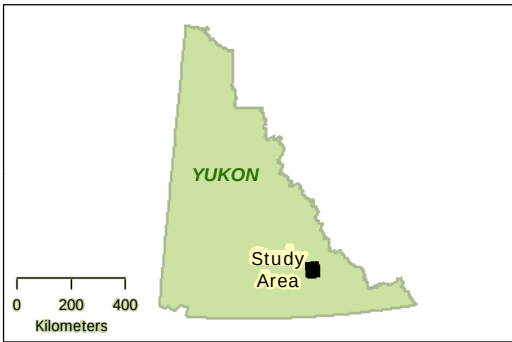
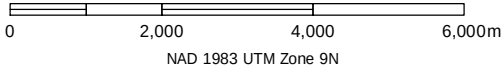


Assessment Features

- Marker
- 2018 Exploration Target
- Kude Ze Kayah Claim Area
- Proposed Borrow Area



1:100,000 (At original document size of 11x17")



Disclaimer:
This product is for informational purposes only and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. The base data layers have been obtained from the National Topographic Database (NTDB), and GeoYukon.

listing of references cited. Three appendices are included at the end of this report¹. Appendix A shows Project mapping, Appendix B provides Project photographs, and Appendix C includes the Project field notes.

¹ Note: These appendices have been removed from this YESAB ready version of this report so that it can be issued publicly while protecting sensitive site data.

2.0 ENVIRONMENTAL SETTING

The study area is located within Boreal Cordillera Ecozone in the Yukon Plateau – North Ecoregion (see Smith et al. 2004 for full discussion). The Boreal Cordillera Ecozone is characterized by mountain ranges, high peaks, and extensive plateaus, separated by wide valleys, lakes, and lowlands. Further detail regarding the Yukon Plateau – North Ecoregion is presented below.

2.1 The Yukon Plateau – North Ecoregion

The Yukon Plateau – North Ecoregion is the largest ecoregion entirely inside the Yukon and contains a large portion of the Tintina Trench. The ecoregion generally consists of relatively rolling highlands with an east-west orientation. It includes the Stewart Plateau, the Macmillan Highland, and the Ross Lowland (Mathews 1986). Terrain ranges from 320 m a.s.l. to 2,160 m a.s.l., with an average elevation of 995 m a.s.l. (Smith et al. 2004). Rivers within the ecoregion include the Pelly, Ross, Macmillan, Stewart, Hess, McQuesten, and Klondike (Smith et al. 2004).

The mean annual temperature in the Yukon Plateau – North Ecoregion is near -5°C, but seasonal variability is pronounced (Smith et al. 2004). Mean temperatures for January range from below -30°C in the lower valleys to above -20°C in higher terrain (Smith et al. 2004). This is drastically different by July as mean temperatures in the lower valleys are 15°C and close to 8°C in higher terrain (Smith et al. 2004). Frost can occur at any time of the year, but is less likely from mid-June to late July (Smith et al. 2004). Precipitation is moderate with an increase in higher elevation sections in the eastern part of the ecozone. Annual precipitation ranges from 300 mm to 600 mm (Smith et al. 2004). The winter months have mean precipitation of 20 mm to 30 mm while the summer months can expect 40 mm to 80 mm of rainfall (Smith et al. 2004). Winds are generally light, however they may increase to moderate/high during unusually active weather systems or thunderstorms (Smith et al. 2004).

The bedrock geology of this ecoregion includes sections of two geological provinces of metamorphosed sedimentary rock. In the northern half of the ecoregion, variably deformed sedimentary rocks have been deposited on the outer continental shelf of ancestral North America, the Selwyn Basin. The bedrock geology in the southeast part of the ecoregion includes siliceous sedimentary and volcanic rocks of the Yukon-Tanana terrane and metabasaltic flows of the Slide Mountain terrane. The origin of these materials is not well-known due to deformation before and during transportation onto the Selwyn Basin strata (Smith et al. 2004). The southeast section of the ecoregion between Faro and Ross River also includes exposed river and stream cut banks along the Tintina Trench (a 450 km fault) that contains rhyolite and olivine basalt which may have provided materials for prehistoric stone tool making. Also of interest in the northern

Anvil Range, are jet-black or gun steel-blue weathering siliceous siltstone and conglomerate containing chert pebbles. These materials may also have been used for making stone tools.

Soils in the valleys of this ecoregion tend to be underlain by glacial parent materials. Soil development also reflects the presence of extensive discontinuous permafrost and a strong continental climate (Smith et al. 2004). Of interest is the presence of the Wounded Moose and the Diversion Creek palaeosols. These two palaeosols are buried soils formed a great deal of time before the current environmental conditions and may reflect past stable ground surfaces. The Wounded Moose palaeosol developed on glacial surfaces of pre-Reid age and the Diversion Creek palaeosol developed between the Reid and the McConnell glaciations. Both of these palaeosols would predate the known cultural history in the Yukon.

The glacial history of the Yukon Plateau – North Ecoregion was dominated by the actions of the Cordilleran ice sheet and local glaciers. More recent glaciations were less extensive. Most current glacial features are remnants from the McConnell glaciation (Smith et al. 2004), however some older features and glacial erratics are present from the older Reid and pre-Reid glaciations. Some uplands and valley floors were extensively eroded into "whalebacks" or rock drumlins by the glacial flow. The western edge of the ecoregion was approximately the terminus for the ice sheet of the McConnell glaciation. As the ice retreated through regional stagnation and wasting it left behind kame and kettle topography and glacial lake deposits in many valleys (Smith et al. 2004).

The vegetation of the Yukon Plateau – North ranges from boreal to alpine. Northern boreal forest exists at elevations up to 1500 m a.s.l. (Smith et al. 2004). Open black spruce with a moist moss, or drier lichen understory is the dominant forest type in the boreal zone (Smith et al. 2004). Shrub and lichen tundra dominate the higher elevations (Smith et al. 2004). The alpine vegetation is characterized by low ericaceous shrubs, prostrate willows, and lichens. In the subalpine areas, shrub birch, with scattered pine, white spruce, subalpine fir, and a lichen understory is extensive (Smith et al. 2004). Extensive shrub lands exist at mid-elevations and on valley bottoms that are subject to cold air drainage. Black spruce is the dominate tree type in the ecoregion, however white spruce, occasionally with aspen or lodgepole pine, occur in warmer, better-drained areas and in forest fire burn areas (Smith et al. 2004).

The Yukon Plateau–North Ecoregion supports wildlife populations typical of Yukon's boreal forest. Moose, woodland caribou, Stone sheep, Dall sheep, grizzly bear, black bear, wolverine, and marten are all abundant. This ecoregion supports the greatest proportion of brown-coloured black bears in the Yukon, occurring between the Stewart and Pelly rivers (Yukon Department of

Renewable Resources 1988). Lynx, beaver, chestnut cheeked vole, mule deer, coyotes, and red fox are also present in some sections of the Yukon Plateau – North (Smith et al. 2004). Of particular interest in the larger area are the Tay River Caribou herd, and an overlap of Stone and Dall Sheep, while mountain goats are uncommon. The Tintina Trench forms an important part of a migration corridor for Sandhill Crane and waterfowl (Smith et al. 2004). Wetlands provide habitat for Pacific, Red-throated and Common Loons, Trumpeter Swan, Canada Goose, American Widgeon, Green-winged Teal, scaup, and scoters (Dennington et al. 1983; Dennington 1985; McKelvey and Hawkings 1990). Osprey and Bald Eagle also breed around lakes (Dennington et al. 1983). Forested areas host Ruffed, Blue, and Sharptailed Grouse, Common Nighthawk, Yellow-bellied Sapsucker, Hairy Woodpecker, Western Wood-Pewee, Hermit Thrush, Townsend's Warbler, Spruce Grouse, Great Horned Owl, Three-toed Woodpecker, Black-capped and Boreal Chickadees, Gray Jay, Common Raven, Red-tailed Hawk, Northern Flicker, Olive-sided Flycatcher, Ruby-Crowned Kinglet, Swainson's Thrush, Varied Thrush, Yellow-Rumped Warbler, Blackpoll Warbler, and Dark-eyed Junco (Osgood 1909; Rand 1946; Johnston and McEwen 1983; Frisch 1987). And finally, in alpine areas Gyrfalcon, Rock and White-tailed Ptarmigan, Wandering Tattler, Gray-Crowned Rosy Finch, American Pipits, Willow Ptarmigan, Wilson's Warbler, American Tree Sparrow, and Golden-Crowned Sparrow can be found (Osgood 1909; Beckel 1975).

3.0 CULTURAL HISTORY

The following is an overview of the culture history for the broader region surrounding the study area including south-central and southwestern Yukon, and northern British Columbia. Many researchers have reviewed the cultural history of this broader area and have presented the information using a variety of terms and temporal ranges (Clark 1981; West 1996; Workman 1978; J. V. Wright 1995, 1999).

3.1 Precontact Period (ca. 11,000 BP to ca. AD1700s)

The earliest Precontact occupation, which dates to early post-glacial times, is known as the Northern Cordilleran Tradition (Clark 1983; Hare 1995). The earliest Northern Cordilleran Tradition occupation known at present is a site located near Beaver Creek, dated to 10,670 radiocarbon years before present (BP) (Heffner 2002). The majority of sites associated with this tradition appear to date older than 7,000 BP to 8,000 BP. The Northern Cordilleran Tradition, with some overlap, predates the introduction of microlithic technology from Alaska into the interior of the central and southern Yukon (Clark 1983; Hare 1995).

The Northern Cordilleran Tradition is followed by the Little Arm Phase which dates from approximately 7,000 BP to 4,500 BP (Clark and Gotthardt 1999; Workman 1978), and can be defined by the use of microlithic technologies. After about 4,500 BP, there is less evidence of microblade use in the Yukon, and an increase in the use of notched projectile points, and a variety of scraping and carving tools, labeled the Taye Lake Phase in southwest Yukon, or more broadly in Yukon and Alaska, the Northern Archaic Tradition (Hare 1995; Workman 1978).

The most recent archaeological culture of southern Yukon is that of the Aishihik Phase (Workman 1978). This phase is thought to be a cultural development from the earlier Taye Lake culture, although there are some significant differences in technology. Key amongst these technological innovations are native copper tools, small stemmed Kavik points, end- and sidescrapers, and ground adzes (Hare 1995), but perhaps most notable is the introduction of the bow and arrow which replaced a type of throwing spear known as an atlatl as the primary hunting weapon (Hare et al. 2004). This transition from atlatl to bow and arrow technology has been clearly documented by recent finds from high elevation ice patches in the southern Yukon (Hare et al. 2004). These Aishihik Phase sites are found above the White River Tephra ash layer that is dated to about 1,250 radiocarbon years BP (Clague et al. 1995), and are correlated with the appearance of Athabaskan peoples who are thought to be the direct ancestors of the current Liard First Nation and Ross River Dena Council peoples (see Section 3.4 below).

3.2 Protohistoric Period (ca. AD1700s to ca AD1840s)

The Protohistoric Period overlaps with late Precontact Period. It is defined by the appearance of non-native goods, other early trade items, and foreign (western or eastern) influences, but not the documented accounts of contact between indigenous North American peoples and European/Russian/Asian peoples themselves. Other indicators of the Protohistoric Period are the arrival of the first non-native diseases and information concerning non-natives. This period spans the time between the first introduction of non-native influences or artifacts, and the recording of first hand or primary written accounts. Unlike other cultural periods with more specific temporal ranges it is difficult and perhaps impossible to determine when the first ‘outside’ influences of European, Russian, Asian, or other cultures began to impact First Nations people in the Yukon interior.

Some of these far-reaching effects may have been passed along from Russian exploration in the early and mid-1700s (Veniaminov 1984) and other Asian and European (Andreev 1944, Quimby 1985) exploration and contact with coastal communities. The Chilkat Tlingit from the Northwest Coast travelled and traded with many interior First Nation peoples throughout this Protohistoric Period including the Kaska and the Northern Tutchone from the Dawson and Mayo areas, and occasionally the Mountain Dene people from as far away as Fort Norman on the Mackenzie River. The Tlingit protected and controlled the trading routes into the interior and fiercely defended those routes when they were threatened. News of early non-native explorers and traders would have travelled inland along with foreign items such as metals, cloths, glass beads, and later tobacco and other goods.

In some of the earliest cases, the impacts of these foreign cultures could have had significant impacts even without the presence of the foreigners themselves. Such is the case for what is called ‘drift-iron’ whereby metals and other materials from Asian or European shipwreck wash ashore. Historical accounts of shipwrecks have been reported in the mid-1700s, but much earlier wrecks were possible. Metals and other foreign trade items have been derived from shipwrecks off what is now British Columbia, Southeast Alaska, and perhaps the Northwest Alaska as well.

3.3 Historic Period (post ca. AD1840s)

During the early years of this period the Russians were expanding their exploration and trade network along the Pacific coast and up the major rivers of the Alaskan interior, while the British were exploring eastward into what would become Canada’s Northwest and Yukon Territories, as well as Alaska. In the 1840s, representatives of the Hudson’s Bay Company (HBC) established trading posts near the study area. Frances Lake Post was established by the narrows of Frances

Lake in 1840 while Fort Pelly Banks was constructed in the winter of 1842-43 on the Pelly River at the mouth of Campbell Creek. Fort Yukon was established by John Bell at the confluence of the Yukon and the Porcupine Rivers in 1847. The next year Robert Campbell established Fort Selkirk on the upper Yukon River and then relocated to an improved location in 1851. The Frances Lake post functioned primarily as a meat post and then as a staging post en route to Fort Selkirk. These posts were plagued by starvation, poor supply, and poor trade due to hostilities and feuding.

The location of Fort Selkirk was known to upset the Chilkat Tlingit who controlled the trade routes from the coast to the central Yukon. In 1852, a Chilkat Tlingit raiding party travelled inland and forced Robert Campbell and his crew to leave the trading post, which was consequently burned by the Northern Tutchone (Castillo 2012). The posts at Frances Lake and the Fort at Pelly Banks were abandoned by the Hudson's Bay Company by 1851-1852, while Fort Halkett, on the Upper Liard River near what would become the BC-Yukon border, remained open until 1865.

In 1867, US Secretary of State William Seward was able to focus increasing American interests, and he convinced the United States Senate to purchase Alaska from Russia. Soon after the purchase, the US Army sent Captain Raymond up the Yukon River on the first stern-wheel steamer to reach Fort Yukon (Grauman 1977). Raymond surveyed the location of Fort Yukon and proved that it was within US territory. The British sold the Fort to the US Government and relocated east across the 141st Meridian.

The inland fur industry continued to drive exploration and settlement into the late 1800s, but mining would shift the focus to the placer gold found in streams and alluvial deposits. Mining in the second half of the 19th century was a risky but often very lucrative enterprise. The impacts of mining would spread quickly and drastically change the project area.

Mineral prospecting and mining efforts in the second half of the 19th century were largely dependent on the existing infrastructure of the fur trading and missionary efforts. As the competition for the inland fur trade grew, so would the number of stern-wheelers on the Yukon River. These steamers could better supply the small number of trading posts along the Yukon and its tributaries and reduce the risk of prospectors running short of supplies. Therefore, more of the fur traders and other explorers turned their attention to search for gold and other minerals. Three key prospectors in the north were L. S. (Jack) McQuesten, Al Mayo, and Arthur Harper. They wrote to miners in the United States to encourage them to come north. They also established outposts along the Yukon River, including Fort Reliance, established in 1874 near the confluence of the Klondike River (what would become Dawson City) (A. A. Wright 1976).

Harper and another man may have been the first to travel up the Fortymile in search of gold in 1881 (Buzzell 2003). They collected a very rich sample, but were unable to relocate the exact location of their original find. In 1886, McQuesten, Harper, and Mayo built a post on the confluence of the Stewart and Yukon Rivers which provided supplies for additional prospectors. Also in 1886, Howard Franklin made a richer find on the Fortymile River. Others rushed in and these claims along the Fortymile River attracted miners from across central and eastern Alaska, and even southeast Alaska. Fortymile was the first town to grow to over a thousand people by the mid-1890s (Buzzell 2003), and in 1887 the Stewart River post was deserted. Some prospectors that did not find easy success in Fortymile returned to the Stewart River and continued work in the area. In 1890, Harper re-established a trading post at the site of the old HBC post at Selkirk as interest in the area grew. This was followed by Jack Dalton who developed a series of existing First Nation trails beginning at tide water at Haines Alaska, into Fort Selkirk.

On August 16, 1896, George Carmack, Skookum Jim, and Tagish Charlie discovered a very rich claim on Bonanza Creek, a tributary to the Klondike River near Dawson. This discovery sparked one of the largest gold rushes in history. It would take almost a year for the news of the Klondike gold fields to spread south, even to places relatively close by in southeast Alaska. Most of the prospectors and traders in the Alaskan and Yukon interior had already converged on the Dawson area during the winter and spring, and supplies ran dangerously low. That would quickly change in the summer of 1897 and spring of 1898 as new towns and supply posts sprang up along the Gold Rush routes to cash in on the increased demand.

The population of Dawson City grew very fast and in 1898 reached a peak of over 30000. However, the boom period did not last long, and the vast majority of the population moved on very quickly with the news of other discoveries. The Gold Rush period saw greatly increased steamer traffic on the entire Yukon River drainage basin and across the interior. Just prior to the Gold Rush there were only a few steamers, while at its peak there were hundreds of vessels working the rivers. These shallow draft steamers were supported by a network of wood camps, shipyards, and a large workforce which kept the river traffic moving. This network provided the infrastructure backbone for trading posts, fish camps, missionaries, and mail routes, while meeting the needs of the growing number of prospectors and traders.

As the world's attention was drawn to growing concerns in Europe in 1939, the Canadian Government began building a chain of airfields across the northwest under the Northwest Staging Route Program. Following the bombing of Pearl Harbor there was no doubt that Alaska and the Yukon would play a key role in the war, and a road was required to link Alaska to the contiguous United States. It was quickly decided that the "Prairie Route" would be used,

whereby key airfields would be linked from Great Falls, Montana to Fairbanks, Alaska. As part of the agreement Canada agreed to build and improve airstrips along the way, including Watson Lake. In February 1942, the US War Department issued the directive to begin construction. These actions spurred on the building of approximately 2446 km of new road through British Columbia and the Yukon Territory. Following the completion of the Alaska Highway the Canol Pipeline and Canol Road (North and South) were completed to allow the flow of oil from Norman Wells, NWT to Whitehorse in 1944. These two events increased access to the Traditional Territory of the Ross River Dena Council and were largely responsible for commercial and mining/industrial activities in recent decades, including construction of the Robert Campbell Highway (Tungsten Road) in 1961.

3.4 Modern First Nations

The project falls within the traditional territories of the Liard First Nation (LFN) and Ross River Dena Council (RRDC). Both First Nations are part of the larger Kaska Nation. The Kaska Nation's traditional territory covers a large area of northwestern British Columbia, southeastern Yukon, and southern Northwest Territory. Within the Kaska traditional territory there are five First Nations communities: the Dease River First Nation, the Kwadacha Nation, the Ross River Dena Council, the Liard First Nation, and the Daylu Dena Council. Each Kaska First Nation is represented by an elected Chief and Council, as well as a Hereditary Chief.

Prior to European contact, traditional subsistence activities typically featured a seasonal round of winter hunting and summer fishing covering vast areas. In summer, families congregated at lakes and rivers, where fish and plants were collected, dried, and stored. In late summer, small groups dispersed throughout the uplands and higher valley systems to hunt in clan-owned territories. Temporary camp sites, situated within a variety of ecological zones, were often reoccupied year after year in order to exploit seasonally available resources (Honigmann 1981).

Contact with neighbouring Nations was vital to First Nations' economies. Interior bands traded hides, furs, and obsidian to coastal groups for fish oil, dentalium, woodwork and blankets. Trails were an intrinsic part of this economy and traditional subsistence as a whole. The principal ethnographic descriptions of the Kaska Dena are available in Black (1955), Jenness (1937), and Morice (1893, 1903, 1905). Additional information on past lifeways can be found in Honigmann (1981).

Watson Lake, Upper Liard, and the adjoining settlements are home to the Liard First Nation. The amount of activity near Watson Lake was greatly increased when its airfield was established in 1939. This was part of the Canadian government's construction of a chain of airports across

northeastern British Columbia and the Yukon as part of the lend-lease program. The new community was soon after used as a supply centre for the construction of the Alaska Highway in 1942.

Ross River, near the confluence of the Ross and Pelly Rivers, is the modern focal point of the Ross River Dena Council. Originally, First Nations people used the area as a seasonal camp and gathering place. By 1903, a trading post was established nearby and later when the American army completed the Canol Pipeline and Canol Road in 1944, they connected Ross River by road to the rest of the Yukon (Cohen 1992). In 1962, Ross River was relocated to its current site close to the Campbell Highway (Yukon Community Profiles 2012).

3.5 Previous Heritage Investigations

In 1995, a heritage study was conducted in collaboration with RRDC as part of the Initial Environmental Evaluation for the Kudz Ze Kayah Project. The study identified no cultural materials or features (Rutherford 1995a); however, a review of the oral history provided by Kaska members indicates that the Project area was used for subsistence hunting, trapping and fishing, and as an access route to the North Lakes (Rutherford 1995b). In 1996, an additional study for cultural materials was undertaken at a proposed airstrip location near the Robert Campbell Highway (Rutherford 1996). No cultural materials were identified in this follow-up study.

In 2015, Ecofor undertook an HRIA of the Kudz Ze Kayah Project area on behalf of BMC (permit 15-10ASR; Bennett and Mooney 2016). Eight areas indicative of archaeological potential were identified and subject to subsurface testing. Out of the eight areas, cultural materials were identified at two, resulting in the identification of archaeological sites, JiTp-1 and JjTp-1, both of which are precontact, subsurface, lithic scatters. These are the first two archaeological sites recorded in the area.

Ecofor returned in 2016 to conduct additional testing and excavation at JiTp-1 and new assessments at the locations of several revised components of the Kudz Ze Kayah Mine Project footprint (permit 16-04ASR; Bennett 2017). Follow-up work at JiTp-1 included additional shovel testing (n=43) and 6 m² of excavation divided between two blocks (4 m² and 2 m²) centered on the positive shovel tests. Three of the 43 shovel tests excavated in 2016 were positive for heritage resources (each containing a single lithic flake), and the excavation blocks yielded 88 lithic artifacts. All recovered artifacts were associated with areas where finds were made during a previous phase of HRIA work conducted under permit 15-10ASR, and were all in keeping with the nature of artifacts recovered during that previous work. Five new areas associated with

revised mine components were also tested, but no new heritage resources were identified at these locations.

Ecofor returned once again in 2017 to assess a number of proposed borrow pits along the Kudz Ze Kayah Tote Road, lands associated with the previously proposed improvements to the Finlayson Lake Airstrip, and a previously unassessed section of proposed Tote Road alignment modification south of Borrow OEL-1 (permit 17-12ASR; see Bennett 2018). These areas had not been assessed during previous studies. In total, 133 shovel tests were excavated at eight shovel test locations. Two of these shovel tests, at Borrows OEL-54 and OEL-63, were positive of heritage resources, resulting in the identification of two new archaeological sites (JjTp-2 at Borrow OEL-54 and JjTp-3 at Borrow OEL-63). A modern campsite was also observed at Borrow OEL-50, but it is considered to be relatively recent and is not a heritage resource concern. No heritage resource concerns were found at all other proposed borrow areas, the Finlayson Lake Airstrip, or at the previously unassessed section of proposed Tote Road alignment modification south of Borrow OEL-1. Previously recorded archaeological sites JiTp-1 and JjTp-1 were also revisited during this HRIA. Both sites were found to be in good condition. The original 30 m buffer flagging at JjTp-1 was found to still be in place. Flagging at JiTp-1 was largely missing, so the site was reflagged to clearly mark the 30 m avoidance buffer.

4.0 METHODOLOGY

Archaeological assessment work included pedestrian survey, shovel testing, and SDR excavations.

Pedestrian survey was conducted within two previously unassessed areas slated for exploration activities. These areas were walked to determine whether they possess heritage resource potential related to high potential landforms and/or perennial ice patches or scars from recently melted ice patches. Surface inspection and/or shovel testing was conducted in all areas of interpreted heritage resource potential.

Shovel tests were placed based on professional judgement in all areas of interpreted heritage resource potential associated with the new exploration areas and within and around the previously established boundaries of JjTp-2 and JjTp-3. Shovel tests were approximately 35 cm by 35 cm and were excavated with shovel and trowel as needed into sterile sub soils. All soil matrix was screened through ¼" mesh. Artifacts identified were collected and bagged according to the shovel test unit and depth. The profile of positive shovel tests was recorded by depth below surface and natural soil strata. All shovel tests were backfilled and returned to as close to natural conditions as possible. Positive shovel tests were used to help guide the placement of excavation units.

Excavation units were oriented to grid north as dictated by the local topography and excavated by quadrant. Excavation depth in EUs at both JjTp-2 and JjTp-3 was controlled by 10 cm arbitrary levels at both sites during the early stages of excavation, but later EUs at JjTp-2 were excavated by natural strata in an attempt to better isolate the main cultural horizon. All excavated sediments were screened through 1/4" mesh to facilitate the recovery of small artifacts. Artifact provenience was recorded by quadrant and level. Excavations continued to three levels past the deepest recovered artifact or until sterile clays were encountered. Wall sediment profiles will be recorded upon the completion of all excavated units prior to backfilling.

Artifacts recovered were analyzed by Ecofor archaeologists in our Whitehorse laboratory. All artifacts were washed, counted, labeled, and a detailed set of quantitative and qualitative observations were made and documented in an artifact catalog. Upon the completion of analysis, all artifacts were turned over to the Yukon Government Heritage Resource Unit for curation.

5.0 RESULTS

This section presents the results of the SDR and HRIA work conducted as part of this study.

5.1 Systematic Data Recovery Excavations

5.1.1 JjTp-2

JjTp-2 was first recorded in 2017 under permit 17-12ASR (see Bennett 2018) on a point protruding from a high terrace atop a steep escarpment above Finlayson Creek approximately 130 m east of the BMC Kudz Ze Kayah Tote Road (Photo 1 and Photo 2; Figure 2). Vegetation in the site area is open and grassy, with the surrounding area characterized by dense spruce forest. The 2017 tested area was small, measuring 15 m x 5 m. Portions of the landform could not be tested at that time due to large deadfall. In total, six shovel tests were excavated in 2017, one of which was positive for archaeological materials. Finds included five lithic flake fragments on blue/grey chert.

The 2018 SDR program at JjTp-2 began with the clearing of the deadfall that limited the testable area in 2017 and the excavation of 10 additional shovel tests (Figure 3). Four of these shovel tests were positive for archaeological materials. The positive shovel tests were used to guide the placement of 10 m² of SDR excavation units arranged in one 8 m² main trench and two spatially discrete 1 x 1 m units (Photo 3; Figure 4). All positive shovel tests were located within the excavated area. Excavation was conducted to a depth of 60 cm in all units. Sediment profiles from these excavation blocks are illustrated in Figure 5 and Photo 4, Photo 5, and Photo 6. Archaeological materials were recovered from seven of the 10 units excavated. Finds include 41 lithic artifacts and four pieces of faunal material. These artifacts are summarized in Table 1. No temporally diagnostic² artifacts were recovered, but the technological approach to stone tool manufacture/maintenance is homogenous throughout the assemblage. Formal tools include one sidescraper formed on a large obsidian flake (Photo 7) and one obsidian microblade fragment (Photo 8). This material culture recovered from JjTp-2 suggests that the site served as a small scale, short-term campsite/lookout.

The main occupation is located near the transition between the White River Tephra (WRT) and underlying red sandy silt. However, some artifacts were recovered from above the WRT, suggesting that two occupations may be represented at JjTp-2. In an attempt to better isolate the vertical provenience of the occupation(s), excavation methodology was revised from digging

² Temporally diagnostic artifacts are those that possess stylistic and/or technological attributes that can be traced to a specific temporal range in the archaeological record.

Artifact Type	n=
Fauna	4
Faunal Fragment	4
Bone	4
Lithic	41
Flake	5
Basalt	1
Chert	1
Obsidian	3
Flake Fragment	33
Basalt	4
Chert	25
Obsidian	4
Microblade	1
Obsidian	1
Sidescraper on Flake	2
Obsidian	2
Grand Total	45

Table 1: JjTp-2 SDR artifact assemblage.

in arbitrary 10 cm levels to levels defined by natural strata after the first 3 m² were completed. This revised methodology showed that the majority of artifacts were located below the WRT, but some continued to be found above (Figure 2). Due to the homogeneity of the assemblage recovered, it is considered to be most likely that only one occupation is represented at JjTp-2, and that this occupation sits below the WRT. Artifacts recovered from above the WRT are interpreted as being in secondary context. This interpretation is also consistent with the microblade technology recovered from the site, which typically predates the WRT. Possible natural agents affecting the site that could have resulted in the observed displacement of artifacts include bioturbation through root action related to the large stump present immediately north of the main trench, rodent activity, and/or cryoturbation through seasonal freeze/thaw cycles.

Based on the observed horizontal artifact distribution, it is considered likely that additional artifacts may be recovered if the main trench is extended to the north. However, it is unlikely that those additional artifacts would significantly alter the current interpretation of JjTp-2.

5.1.2 JjTp-3

JjTp-3 was first recorded in 2017 under permit 17-12ASR (see Bennett 2018) on an esker/esker-

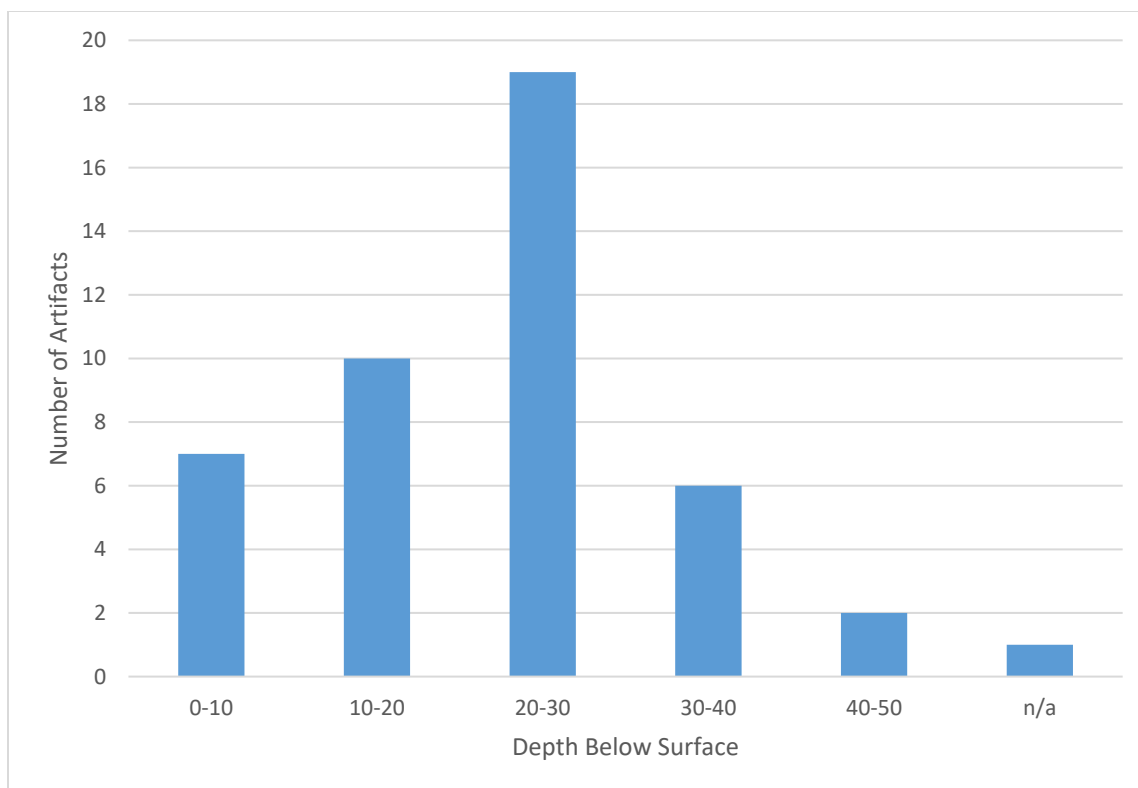


Figure 2: Vertical artifact distribution at JjTp-2.

like landform approximately 50 m east of the Kudz Ze Kayah Tote Road (Photo 9; Figure 2). The 2017 tested area is approximately 200 m long, and varies in width from approximately 10 m to as narrow as 1 m in places. Two rows of shovel tests were excavated in wider areas, with a single row crossing narrower places. Vegetation within the tested area is dominated by dense spruce forest with a mossy understory. In total, 36 shovel tests were excavated along the landform in 2017, one of which was positive for archaeological materials.

The 2018 SDR program at JjTp-3 began with the excavation of seven additional shovel tests in the area surrounding the 2017 positive test (Figure 6). All of which were negative for archaeological materials. As such, SDR work was focused on the positive shovel test from 2017. A 1 x 1 m unit was excavated over the positive test. Excavation was conducted to a depth of 40 cm below surface in 10 cm arbitrary levels, and the sediment profile is illustrated in Figure 7 and Photo 10. No additional artifacts were recovered in this excavation unit, confirming the 2017 interpretation of JjTp-3 as an isolated find.

Based on the fact that no cultural materials were recovered from these additional 2018 shovel tests and SDR excavations, no further work was conducted at JjTp-3.

5.2 Heritage Resource Impact Assessment of Exploration Targets K18-T and K18-U

HRIA work at exploration target areas K18-T and K18-U focused on ice patches and recently exposed ice patch scars. Transects were walked across and between these ice patch areas to search for surface artifacts, cultural features, and any additional landforms with heritage resource potential (Figure 8). Areas at higher elevations are above the tree line and characterized by moss and lichen ground cover with large ice patch scar areas of exposed angular rock (Photo 11 and Photo 12). No current perennial ice patches were present in the surveyed area, but several could be seen on the surrounding hills (Photo 13). Vegetation became thicker and more diverse as survey transects moved downslope to lower elevations. Photo 14 shows the terrain at exploration target K18-T and Photo 15 shows the terrain at exploration target K18-U. No artifacts or additional areas of elevated heritage resource potential were observed within exploration target areas K18-T and K18-U or the surrounding areas.

6.0 SUMMARY AND RECOMMENDATIONS

On behalf of BMC, Ecofor Consulting Ltd. has conducted SDR excavations at two archaeological sites (JjTp-2 and JjTp-3) identified in 2017 under permit 17-12ASR at proposed borrow pit locations along the BMC Minerals Kudz Ze Kayah Project Tote Road and HRIA work at two previously unassessed exploration target areas.

SDR work conducted included both additional shovel testing to better define the site boundaries and the excavation of 1 x 1 m excavation units (EUs) at both JjTp-2 and JjTp-3. Work at JjTp-2 included 10 additional shovel tests and 10 m² of EUs arranged in an 8 m² trench covering the richest shovel test area and two spatially discrete 1 x 1 m EUs over outlying positive shovel tests. These excavations yielded 41 lithic artifacts and four pieces of faunal material. Work at JjTp-3 included seven additional shovel tests and one 1 x 1 m EU placed over the positive shovel test excavated in 2017 under permit 17-12ASR. No additional heritage resources were recovered from JjTp-3 as a result of this SDR program.

HRIA work at exploration target areas K18-T and K18-U focused on ice patches and recently exposed ice patch scars. Transects were walked across and between these ice patch areas to search for surface artifacts and any additional landforms with heritage resource potential. No artifacts or additional areas of elevated heritage resource potential were observed.

Based on these results, **no further heritage resource assessment is recommended at archaeological sites JjTp-2 and JjTp-3. Moreover, no further heritage resource assessment is recommended at exploration targets K18-T and K18-U. However, future work within these areas should adhere to the chance finds policy already followed by BMC. Moreover, if any additional development areas are added to the Project, then those new areas should also be reviewed for possible impacts to heritage resources. This follow-up heritage review may be conducted though desktop overview and/or field study.**

7.0 REFERENCES CITED

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APPENDIX A: Project Mapping – NOT INCLUDED IN YESSB READY/PUBLIC VERSION OF REPORT

APPENDIX B: HRIA Photographs – NOT INCLUDED IN YESSB READY/PUBLIC VERSION OF REPORT

APPENDIX C: Archaeological Site JjTp-2 – NOT INCLUDED IN YESSB READY/PUBLIC VERSION OF REPORT

Site Form

Site Map Showing 2018 Shovel Tests

Site Map Showing Excavation Units

Sediment Stratigraphy

Artifact Catalog

APPENDIX D: Archaeological Site JjTp-3 – NOT INCLUDED IN YESSB READY/PUBLIC VERSION OF REPORT

Site Form

Site Map

Sediment Stratigraphy

APPENDIX E: Project Field Notes – NOT INCLUDED IN YESSB READY/PUBLIC VERSION OF REPORT

APPENDIX C: CHANCE FIND FORM

BMC Minerals LTD

750 – 789 West Pender Street, Vancouver, BC V6C 1H2

HERITAGE CHANCE FIND REPORT FORM

Recorders name:

Date, time of discovery, time work stopped in area:

Location (site name, co-ordinates, depth below surface):

Access (describe how to get to site):

Description of find:

Photographs:

Estimated weight and dimensions:

Who was contacted (i.e. BMC representatives, Archaeology Branch, Kaska Representatives). Record the name, date, time, phone number and details of conversation:

Any protective measures to be taken:

Further action required:

Printed name and signature of the Environmental Manager:

Date submitted:

APPENDIX D: TABLE OF CONCORDANCE

Reference No.	Proponent Commitment / Mitigation	Where addressed
YESAB R4-2	Any additional heritage information at KZK, that is made available by LFN in the future, will be incorporated into BMC's management and operating plans at that time.	Chapter 6 of the Heritage Resource Protection Plan
YESAB R4-2	The Heritage Resource Protection Plan will be updated to include notification to both RRDC and LFN. BMC will work collaboratively with these groups to ensure that any further action needed is taken. This will ensure that impacts to heritage resources and subsequent impacts to the traditional land users are mitigated to the extent practicable.	Chapter 6 of the Heritage Resource Protection Plan
BMC Response to LFN Comments on DSR	Any additional information that LFN provides BMC in the future will be carefully considered and if appropriate incorporated into relevant plans and processes at the site.	Chapter 6 of the Heritage Resource Protection Plan
BMC Response to LFN Comments on DSR	BMC has committed to both LFN and RRDC that when new Traditional Knowledge 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.	Chapter 6 of the Heritage Resource Protection Plan
Project Proposal Chapter 14 (BMC, 2017a)	Implementation of the Heritage Resource Management Plan (Appendix F-2 of the Project Proposal) and then site by site management Plan.	Heritage Resource Protection Plan
Project Proposal Chapter 15 (BMC, 2017a) Response Report #4A (BMC, 2018a)	Implementation of the Heritage Resource Management Plan (Appendix F-2) and then site by site management plan. This plan includes (but is not limited to): - o Effects to known heritage resources will be avoided, and if they cannot be avoided, they will be minimized where possible, or mitigated through systematic data recovery efforts. - o The existing Project chance find procedure and the proposed Heritage Resource Management Plan requires that RRDC be notified of a chance find and that the assessment of potential significance of the materials will be assessed by a qualified archaeologist in collaboration with the YG Archaeology Department and RRDC Representative(s) and mitigative options will be identified. BMC will work with RRDC to ensure that any further action needed is taken. These procedures will be updated to also include LFN representatives. The confidential Traditional Knowledge Protocol with RRDC has provisions for management/mitigations of heritage resources that may be identified during the Traditional Knowledge study. The confidential Traditional Knowledge Protocol with LFN will also contain provisions for heritage resources (currently under negotiation).	Chapter 3 of the Heritage Resource Protection Plan Section 4.3.3 of the Heritage Resource Protection Plan Section 4.3.3 of the Heritage Resource Protection Plan Section 6.2 of Heritage Resource Protection Plan Section 6.2 of Heritage Resource Protection Plan
Decision Document Term #12.	The Proponent shall ensure that LFN and RRDC have opportunities to participate in and influence the development of environmental and socioeconomic management plans and closure objectives developed for the Project to ensure that Kaska can collaboratively design, collect, report, manage and communicate the results of the monitoring programs and adaptive management plans to their community members. The Proponent will make participant funding available to Kaska to support the incorporation of Kaska perspectives on Kaska laws as well as support the inclusion of Kaska members, including Elders and land stewards, in the regulatory process, the monitoring of impacts, the implementation of adaptive management and the Proponent's commitments for the life of the Project (regulatory to reclamation).	Section 1.2 of the Heritage Resource Protection Plan.
Decision Document Term #13	The Proponent shall ensure that LFN has the opportunity to be part of the Proponent-Kaska environmental, cultural and heritage management program.	Section 1.2 of the Heritage Resource Protection Plan.
Decision Document Term #50	The Proponent shall implement an approved Heritage Resource Management Plan, and site-specific management plans where required, which shall include, but not be limited to, the following measures: a) Effects to known heritage resources shall be avoided and if they cannot be avoided, effects shall be minimized where possible, or mitigated through systematic data recovery conducted in accordance	All sections of the Heritage Resource Protection Plan. a) Section 4.2.3 of the Heritage Resource Protection Plan

	with accepted archaeological standards. For greater certainty, this requirement does not apply to heritage resources that have been mitigated to the satisfaction of Government of Yukon. b) If a previously unidentified heritage resource is encountered (a “chance find”), the Proponent shall: i) immediately stop work in the vicinity, mark and protect the site; ii) notify RRDC, LFN, and the Government of Yukon as soon as practicable; and, iii) follow Government of Yukon guidance with respect to the management of chance finds. c) Any materials discovered shall be assessed for potential heritage significance by a qualified archaeologist in consultation with the Government of Yukon and representatives of RRDC and LFN. Based on that assessment, appropriate mitigation measures shall be identified. d) The Proponent shall work collaboratively with the Government of Yukon and representatives of RRDC and LFN to determine and implement actions required in response to a chance find	b) Section 4.3.2 of the Heritage Resource Protection Plan. c) Sections 4.1 and 6.3 of the Heritage Resource Protection Plan. d) Section 4.3 of the Heritage Resource Protection Plan.
Decision Document Term #51	The Proponent shall complete a heritage resource impact assessment prior to undertaking any land-altering activities in areas that have not previously been subject to heritage resource investigations to the satisfaction of the Government of Yukon. Results from HRIAs shall be submitted to the Government of Yukon.	Section 3 of the Heritage Resource Protection Plan
Decision Document Term #52	The Proponent shall not undertake land-altering activities within 30 m of a known heritage resource or within 50 m of known human remains, unless otherwise authorized by the Government of Yukon.	Section 4.2 of the Heritage Resource Protection Plan