Appendix 9.1-A

Ajax Project: Archaeological Baseline Report





Prepared for:

KGHM

AJAX PROJECT

Archaeological Baseline Report

May 2015

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ERM

KGHM Ajax Mining Inc.

AJAX PROJECT
Archaeological Baseline Report

May 2015

Project #0241224-0003

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EXECUTIVE SUMMARY

This archaeology baseline report summarizes the results of the archaeological studies conducted for the proposed Ajax Project. This report is not an interim or final Heritage Inspection Permit report and is intended to be available to the public. As such, information is presented in this report in a manner consistent with the requirements for confidentiality of archaeological site data in the British Columbia *Heritage Conservation Act* (HCA; 1996). A greater level of detail can be found in the final reports for Heritage Inspection Permits 2009-0349 and 2014-0171 (ERM Forthcoming a; Morin 2014). The archaeological studies focussed on archaeological resources predating 1846 AD (ERM Forthcoming a; Morin 2014). In addition to this archaeological baseline report, other studies for the Ajax Project focusing on heritage resources (historic features and historic cultural material post-dating 1846 AD) and paleontological resources have been conducted (ERM Forthcoming b; ERM 2015).

The Ajax Project is a proposed open pit mine located in the south-central interior of British Columbia, approximately 2.5 km south of the town of Kamloops within NTS mapsheet 92 I/09. Access is via truck from Kamloops along the Coquihalla Highway, Lac Le Jeune, and/or Goose Lake Roads.

ERM Consultants Canada Ltd. (ERM) was retained by KGHM Ajax Mining Inc. (KAM) to conduct an Archaeological Impact Assessment (AIA) for revised portions of the proposed Ajax Project (the Project). The AIA was conducted in accordance with Heritage Inspection Permit 2014-0171, issued by the Archaeology Branch of the British Columbia Ministry of Forests, Lands and Natural Resource Operations. The majority of the Ajax Project footprint was subject to a previous AIA under Heritage Inspection Permit 2009-0349 by Terra Archaeology Ltd. The focus of ERM's AIA was to complete the AIA of the revised Project footprint, conduct AIAs for priority assessment areas, such as drill pads, and address any potential archaeological chance finds.

During the AIA under permit 2014-0171, 5,156 shovel tests were conducted at 201 locations and 13 new archaeological sites were recorded. During the AIA under permit 2009-0349, 23,506 shovel tests at 305 locations and 28 archaeological sites were recorded. A total of 36 archaeological sites are within 50 m of the Project footprint and could be impacted by the Project. The vast majority of the archaeological sites are lithic scatters or single lithic finds. Other types of sites recorded include: EdRc-25, a possible hunting blind site; EdRc-61, the location where the St. Peter's Anglican Church and cemetery was situated; and EdRc-62, a modified ungulate tooth recovered from a shovel test.

AIAs covering the entire Project footprint have now been completed under permits 2014-0171 and 2009-0349, with a few exceptions where small areas of outstanding assessment are scheduled to be completed in 2015. All areas of the proposed Project infrastructure that were not assessed by Terra were assessed by ERM and all Areas of Archaeological Potential identified by Terra Archaeology Ltd. within proposed Project infrastructure were assessed by ERM.

In addition to the sites protected under the HCA listed above, historical and recent land use features interpreted as related to twentieth century ranching and mining, such as cabins, fencing material, and historic cultural material, were also frequently identified during the AIA. As these features post-date 1846, they are not protected by the HCA and are not discussed in the archaeology baseline

report; however, they will be described in a separate baseline report on heritage resources. Numerous rock piles were recorded during the AIAs conducted under permits 2009-0349 and 2014-0171. Based on in-field observations by Terra Archaeology Ltd. and ERM, the majority of these are interpreted as historic features related to homesteading activities. Although no concerns regarding these features were raised by the Stk'emlupsemc te Secwepemc Nation (SSN) to Terra Archaeology Ltd. from 2009 to 2014, when the majority of these features were recorded, the SSN is now investigating whether some of these may be burial cairns. At this time, none of the rock piles are recorded as archaeological sites; however, further research and discussion with the SSN is ongoing and the interpretation and protection status of these rock pile features may be revisited if new data become available. ERM archaeologists were present when the SSN conducted Ground Penetrating Radar (GPR) on some of the cairns; however, to date the SSN has not provided the results of the GPR. Field inspection of some of the rock piles by ERM indicates that they were likely associated with historical fence lines.

ACKNOWLEDGEMENTS

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AJAX PROJECT

Archaeological Baseline Report

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GLOSSARY AND ABBREVIATIONS

Terminology used in this document is defined where it is first used. The following list will assist readers who may choose to review only portions of the document.

AAP	Areas of Archaeological Potential
Ajax South General Arrangement	The current Ajax Project footprint.
AIA	Archaeological Impact Assessment
AOA	Archaeological Overview Assessment
Application	Application for an Environmental Assessment Certificate
BC	British Columbia
Borden Number	The Canada-wide alphanumeric convention for naming archaeological sites.
BP	Before Present
CE	Common Era
CMT	Culturally Modified Tree
ERM	ERM Consultants Canada Ltd.
Existing pipeline corridor	Existing Trans Mountain Pipeline Corridor
GIS	Geographic Information System
GPR	Ground Penetrating Radar
GPS	Global Positioning System
HCA	British Columbia's *Heritage Conservation Act* (1996)
Heritage Inspection Permit 2009-0349	The permit issued to Terra Archaeology Ltd. authorizing an Archaeological Impact Assessment of the Ajax Project.
Heritage Inspection Permit 2014-0171	The permit issued to ERM authorizing an Archaeological Impact Assessment of the Ajax Project.
In situ	Found in its original position.
KAM	KGHM Ajax Mining Inc. (the Proponent)

km	Kilometre(s)
kV	Kilovolt(s)
Legacy Site	An archaeological site is designated as a Legacy Site by the Archaeology Branch when it no longer requires protection under the *Heritage Conservation Act*.
LSA	Local Study Area
m	Metre(s)
MRSF	Mine Rock Storage Facility
Petroform	Arrangements of rocks made by people.
Project	Ajax Project
Proponent	KGHM Ajax Mining Inc.
Relocation corridor	Proposed Trans Mountain Pipeline Relocation Corridor
RSA	Regional Study Area
SSN	Stk'emlupsemc te Secwepemc Nation
Study area	The permitted study area, defined in Heritage Inspection Permit 2014-0171.
t	Metric tonne(s)
Terra	Terra Archaeology Ltd.
TSF	Tailings Storage Facility

1. INTRODUCTION

KGHM Ajax Mining Inc. (KAM) proposes to develop the Ajax Project (the Project), an open-pit copper-gold mine at the historical Afton Mining Camp, south of the City of Kamloops, British Columbia (BC). The Project is located in the south-central interior of BC, southeast of the junction of the Trans-Canada Highway and the Coquihalla Highway (Highway 5), within the Thompson-Nicola Regional District (Figure 1-1).

The Project lies in the traditional territory of the Secwepemc Nation. Within the Secwepemc Nation, the Tk'emlúps te Secwepemc and the Skeetchestn Indian Band are the Aboriginal groups in closest proximity to the Project. In a cooperative effort, the Tk'emlúps te Secwepemc and Skeetchestn Indian Bands have formed the Stk'emlupsemc te Secwepemc Nation (SSN), as a division of the greater Secwepemc Nation. The Ashcroft Indian Band and Lower Nicola Indian Band, whose members are part of the Nlaka'pamux Nation, also assert their Aboriginal rights to the Project area— an area of common interest with the SSN.

The Ajax property includes two historical pits: the Ajax West Pit and the Ajax East Pit. Both pits were formerly mined in the 1980s and 1990s. As many as 25 rock types have been recognized in the Project area, some of which are "hybrid" units resulting from the intermixing of multiple rock types.

Key Project facilities include the Tailings Storage Facility (TSF), which is planned as a conventional tailings storage facility; water management ponds; Peterson Creek diversion and the tailings embankments, which will be constructed using mine rock; and four mine rock storage facilities (MRSFs). The four MRSFs include:

- the South MRSF;
- the East MRSF;
- WMRSF; and
- the In-Pit MRSF.

Several facilities that will be part of the operation phase but not remain after Project closure include the:

- plant facilities and administration buildings;
- reclamation stockpiles;
- explosives facility;
- truck stop and fuel storage;
- water lines;
- power lines; and
- access roads.

The mine plan for the Project predicts an operation based on a mill throughput of 65,000 tonnes (t) of ore per day from the Ajax Pit with up to a 23-year mine life. The construction phase of the Project will be approximately 2.5 years, and following the 23-year operation the decommissioning and closure phase is expected to take up to 5 years. Over the mine life the Project will produce approximately 140 million pounds of copper and 130,000 ounces of gold annually with the concentrate shipped by truck to Port Metro Vancouver.

This report presents the results of the archaeological studies conducted for the proposed Project. This report is intended to be available to the public and as such the level of information is presented in a manner consistent with the requirements for confidentiality of archaeological site data in the BC *Heritage Conservation Act* (HCA; 1996). A greater level of detail can be found in the final reports for Heritage Inspection Permits 2009-0349 and 2014-0171 (ERM Forthcoming a; Morin 2014). The archaeological studies focussed on archaeological resources predating 1846 AD. In addition to this archaeological baseline report, other studies for the Project focusing on heritage resources (historic features and historic cultural material post-dating 1846 AD) and paleontological resources have been conducted (ERM Forthcoming b; ERM 2015).

ERM Consultants Canada Ltd. (ERM) was retained by KAM to conduct an Archaeological Impact Assessment (AIA) for revised portions of the proposed Project. The AIA was conducted in accordance with Heritage Inspection Permit 2014-0171, issued by the Archaeology Branch of the British Columbia Ministry of Forests, Lands and Natural Resource Operations. The majority of the Project footprint was subject to a previous AIA under Heritage Inspection Permit 2009-0349 by Terra Archaeology Ltd. (Terra). The focus of ERM's AIA was to complete the AIA of the Project footprint; conduct AIAs for priority assessment areas, such as drill pads; and address any potential archaeological chance finds that were reported (Figure 1-2).

1.1 REPORT STRUCTURE

The main body of the report is structured as follows:

- Section 1 describes the proposed Project, the study objectives and duration, relevant legislation, and First Nations communications;
- Section 2 summarizes the Project setting, including the paleoenvironment, biogeoclimatic zones, ethnographic background, historic background, and previous archaeological research;
- Section 3 describes the permit methodology used for this study;
- Section 4 describes the results of the archaeological assessments conducted;
- Section 5 describes identified heritage concerns; and
- Section 6 provides a discussion and conclusions of the study.

Supplementary data provided in the report appendices are as follows:

- Appendix A contains photo documentation from the assessments;
- Appendix B contains a copy of the Project's Archaeological Chance Find Procedure.

Figure 1-1
Ajax Project

ERM

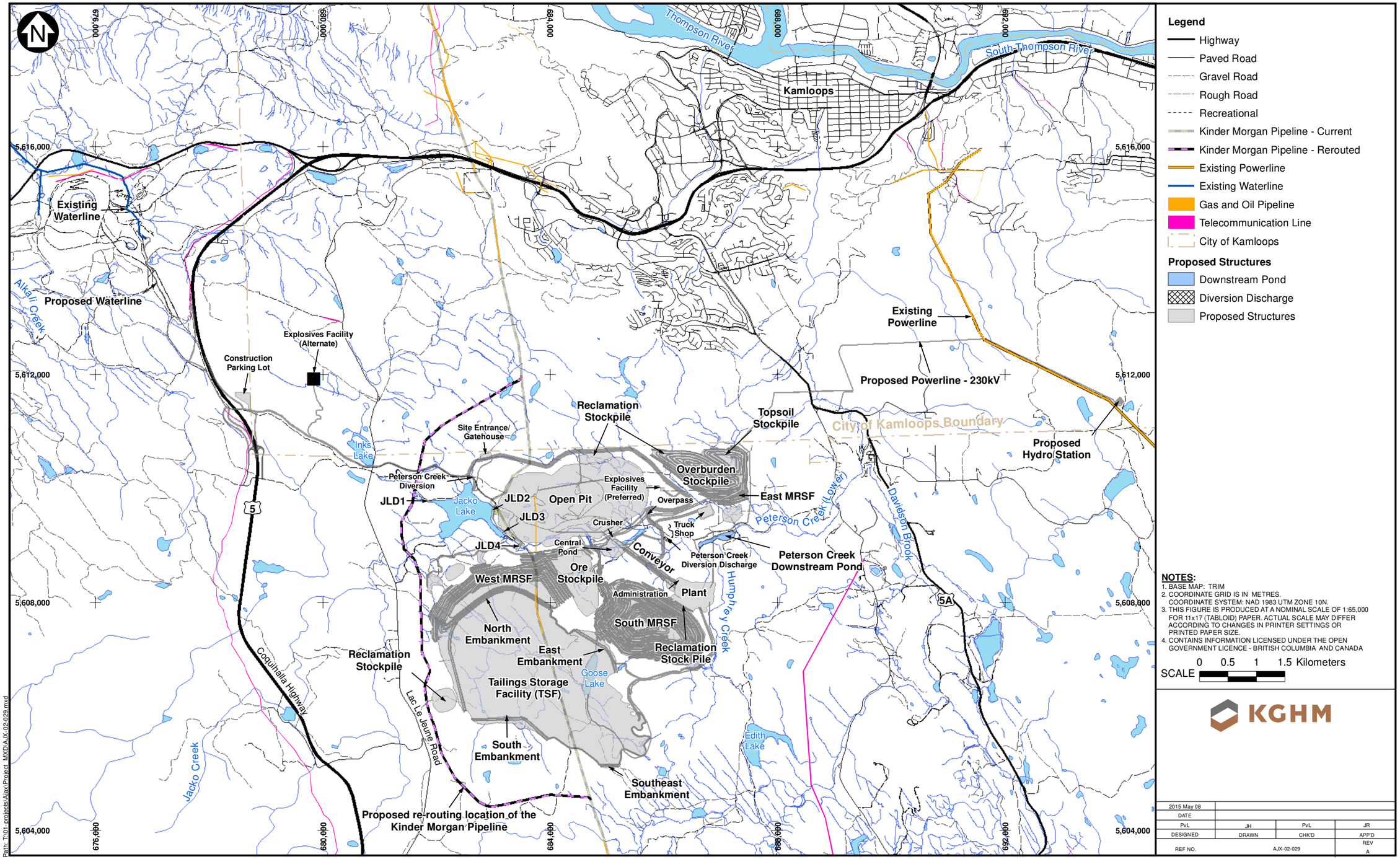

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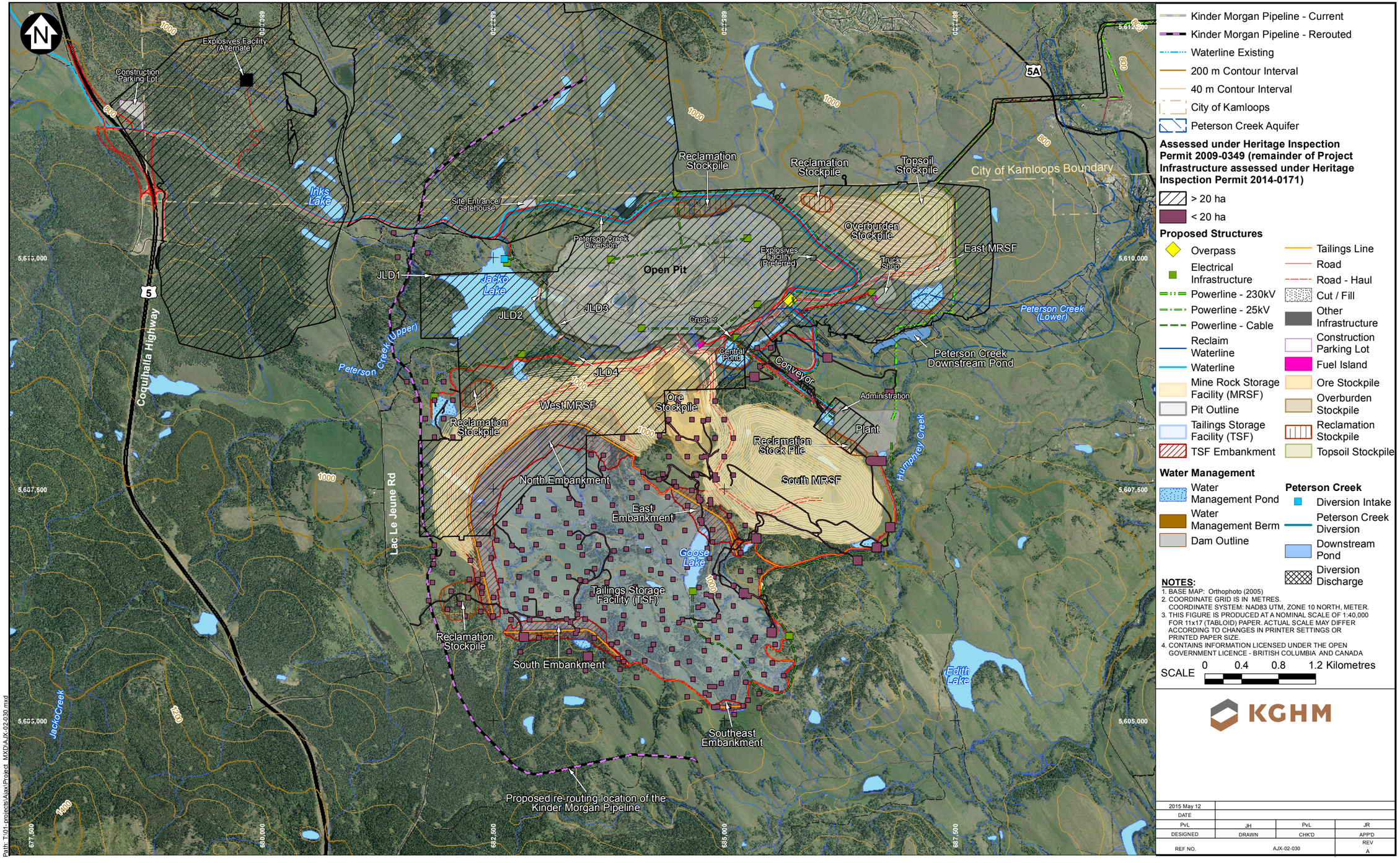
Figure 1-2
Ajax Project Infrastructure and AIA Coverage



- Kinder Morgan Pipeline - Current
- Kinder Morgan Pipeline - Rerouted
- Waterline Existing
- 200 m Contour Interval
- 40 m Contour Interval
- City of Kamloops
- Peterson Creek Aquifer

Assessed under Heritage Inspection Permit 2009-0349 (remainder of Project Infrastructure assessed under Heritage Inspection Permit 2014-0171)

- > 20 ha
- < 20 ha

Proposed Structures

- Overpass
- Electrical Infrastructure
- Powerline - 230kV
- Powerline - 25kV
- Powerline - Cable
- Reclaim Waterline
- Waterline
- Mine Rock Storage Facility (MRSF)
- Pit Outline
- Tailings Storage Facility (TSF)
- TSF Embankment
- Tailings Line
- Road
- Road - Haul
- Cut / Fill
- Other Infrastructure
- Construction Parking Lot
- Fuel Island
- Ore Stockpile
- Overburden Stockpile
- Reclamation Stockpile
- Topsoil Stockpile

Water Management

- Water Management Pond
- Water Management Berm
- Dam Outline

Peterson Creek

- Diversion Intake
- Peterson Creek Diversion
- Downstream Pond
- Diversion Discharge

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1.2 RELEVANT LEGISLATION

In BC, the HCA protects all archaeological sites which predate 1846 Common Era (CE) which are located on Crown or private land. The Archaeology Branch is responsible for maintaining a database of known archaeological sites and for administering the HCA by issuing permits for archaeological site inspections and alterations. Should alterations be proposed within the boundaries of a previously recorded site, a Section 12 Site Alteration Permit is required prior to any disturbance. As such, the Project proponent and archaeologists to whom the Site Alteration Permit is issued must adhere to the conditions set out in the permit.

Developments which involve the movement, excavation, or disturbance of soils may impact archaeological sites, if present. In addition, certain types of archaeological sites, such as culturally modified trees (CMTs), can be impacted by logging or clearing of vegetation. It is anticipated that the earth moving (e.g., blasting, road building, landscaping) and logging will be the principal types of disturbance of concern. As such, any archaeological sites that are present within or adjacent to the proposed Project footprint could be at risk of adverse effects.

1.3 FIRST NATIONS COMMUNICATIONS

The application for HCA Heritage Inspection Permit 2014-0171 was referred to the following First Nations by the Archaeology Branch for review and comment: Adams Lake Indian Band, Ashcroft Indian Band, Boston Bar First Nation, Coldwater Indian Band, Cook's Ferry Indian Band, Esh-kn-am Cultural Resources Management Services, Neskonlith Indian Band, Nooaitch Indian Band, Skeetchestn Indian Band, Tk'emlúps te Secwe̓pemc (Kamloops Indian Band), Nicola Tribal Association, Nlaka'pamux Nation Tribal Council, Lower Nicola Indian Band, Lytton First Nation, and Oregon Jack Creek Band.

Members of the Tk'emlúps te Secwe̓pemc (Kamloops Indian Band) and Skeetchestn Indian Band participated in field assessments under permits 2009-0349 and 2014-0171.

Areas of Cultural Importance to the Stk'emlupsemc te Secwepemc Nation

The SSN raised several topics of cultural heritage importance related to the Project during the comment period on the draft Application Information Requirements and in the SSN Cultural Heritage Study (Ignace et al. 2014). These are: archaeological site EdRc-25 (possible hunting blind complex), Jacko Lake, Peterson Creek, and rock piles that the SSN are investigating as possible burial cairns. These topics and the SSN Cultural Heritage Study (Ignace et al. 2014) were considered during the AIA investigations and discussed in Section 6.

2. PROJECT SETTING

This section summarizes the results of this research including an overview of the geological and ecological processes that formed the current landscape, the cultural and historical setting, and the archaeological background.

2.1 NATURAL SETTING

The Project is located in the Thompson Okanagan Plateau of the southern interior of BC. It falls within three biogeoclimatic zones: the Bunchgrass, Ponderosa Pine, and Interior Douglas Fir zones (BC MOF n.d. 1998, 1999). The Project area is characterized by low rolling hills on a plateau above Kamloops Lake situated to the north. Vegetation is primarily grassland though small stands of trees can be found in sheltered areas provided by low hills and incised drainages.

2.1.1 Paleoenvironment

The current ecological environment began to take shape following the Wisconsinan Glaciation of the Late Pleistocene epoch. During the glacial maximum the Cordilleran ice sheet grew to be 2 km thick. As the climate warmed in the early Holocene, deglaciation began and resulted in a redeposition of the materials previously collected by the glaciers as they scoured the landscape. The southern interior plateau was completely ice free by 10,000 Before Present (BP; Clague and James 2002).

Since the retreat of the ice sheet, the environment of the interior plateau has gone through several major changes in climate and vegetation regimes. As early as 13,000 BP there were ice-free areas in the southern plateau region that were vegetated with pioneering grasslands followed by lodgepole pine forests between 12,000 and 10,000 BP (Hebda 1995). After 10,000 BP, with summer temperatures averaging 2 to 4°C warmer than those today, forests gave way to open grasslands that were part of an open plant ecology that stretched from the valley bottoms to the mountain tops (Hebda 1995; Walker and Pellatt 2001; Whitlock 1992). Following this warm dry period there was another gradual cooling trend, known as the neoglacial period (3,500 BP), that allowed forests to re-establish and confined grasslands to the lower regions of the valleys (Walker and Pellatt 2001; Hebda 1995). Between 3,000 BP and 2,500 BP temperatures rose again and modern climates and vegetation patterns were established. Grasslands with some pine stands re-established themselves in the region and persist today (Hebda 1995; Whitlock 1992).

2.1.2 Biogeoclimatic Zones

There are three biogeoclimatic zones within the Project area: the Bunchgrass Zone, Ponderosa Pine Zone, and Interior Douglas Fir Zone.

The Bunchgrass Zone

The Bunchgrass Zone has a dry and mild climate with hot dry summers and mild cold winters. This zone supports a wide range of plant and animal species including a variety of birds, reptiles, amphibians, and small mammals. Larger mammals including elk, sheep, and deer overwinter in the

area as the dry mild climate results in a lower snowpack than in the surrounding ecosystems, although neither elk nor sheep have been observed in the RSA. Early thaws in this zone provide important staging areas for migrating waterfowl (BC MOF 1999).

The Ponderosa Pine Zone

The Ponderosa Pine Zone, while slightly cooler than the Bunchgrass Zone, is still relatively hot and dry in comparison to many other zones in BC. It is the driest forest zone in BC. The forests in this zone are dominated by the ponderosa pine. Due to the dry conditions, forest fires in the area are common and result in open stands of pine with little underbrush. Recent fire suppression activity in the zone has resulted in forests with dense understories. Like the Bunchgrass Zone, the mild climate makes it an ideal home or migratory stopover for a large number of animals (BC MOF 1998).

Interior Douglas Fir Zone

The Interior Douglas Fir Zone contains dry grasslands and open forests. The forests are dominated by Douglas fir, though in hotter dryer areas of the zone Ponderosa Pine forests are found. Grasslands within the zone contain bluebunch wheatgrass, junegrass, and fescues. The low snowpack in this zone and the abundant shrubs in the Douglas fir forests create ideal habitat for overwintering ungulates including elk, deer, and sheep. Migratory birds also travel through the area taking advantage of the warmer climate (BC MOF n.d.).

2.2 ETHNOGRAPHIC BACKGROUND

The Project is situated within the asserted territories of the Adams Lake Indian Band, Ashcroft Indian Band, Boston Bar First Nation, Coldwater Indian Band, Cook's Ferry Indian Band, Esh-kn-am Cultural Resources Management Services, Neskonlith Indian Band, Nooaitch Indian Band, Skeetchestn Indian Band, Tk'emlúps te Secwe̓pemc (Kamloops Indian Band), Nicola Tribal Association, Nlaka'pamux Nation Tribal Council, Lower Nicola Indian Band, Lytton First Nation, and Oregon Jack Creek Band.

For information on Aboriginal interests in the Project area refer to Section 12 of the EA Application (KAM Forthcoming). The following section is based primarily on ethnographic and historic research conducted for the Project in the *SSN Cultural Heritage Study* (Ignace et al. 2014), as well as accounts of traditional lifeways found in the following sources: Boas (1891), Boelscher-Ignace (1998), Dawson (1891), Ray (1939), Stryd and Rousseau (1996), and Teit (1909).

Ethnographically hunting was an important activity in upland areas like the Project area, with harvest primarily focused on large game such as elk, moose, and deer, although small species such as grouse, hare, and marmot would also be taken (Ignace et al. 2014). Late summer and early fall were the primary times of the year when large game hunting would be conducted. Trapping of bear, beaver, and other fur-bearing mammals was also undertaken to provide material for clothing. Fishing was an important activity and took advantage of the numerous fish species and locations through the region. Jacko Lake provided an important spring trout fishery, and salmon harvested in the late fall from the Thompson Rivers system were a crucial foodstuff. Plants were harvested during the spring, summer, and fall, adding nuts, roots, and berries to the diet, and were also used

medicinally and for creating functional items such as tools and dwellings. Starting in the early 1800s trading furs for western goods at the trading post in Kamloops became increasingly important.

2.3 ARCHAEOLOGICAL RESEARCH

Within the Regional Study Area (RSA) delineated in Figure 2.3-1, there are currently 164 known archaeological sites (ERM Forthcoming a). Archaeological research has been undertaken around Kamloops, BC since the late 19th century when Harlan I. Smith visited the area as part of the Jesup North Pacific Expedition (Smith 1900, 1901). Other regional studies included two Archaeological Overview Assessments (AOAs) carried out in the 1990s: *AOA of the Kamloops Forest District* (Arcas 1994) and *AOA of the Northern Secwepemc Traditional Territory* (I.R. Wilson Consultants 1998).

The first archaeological study carried out within the Project area was undertaken in 1971 during an archaeological resources inventory for proposed Provincial Parks and Reserves in south-central BC. During the study, archaeological assessment was carried out for the western side of Jacko Lake which was used for fishing and recreation (Plate 2.3-1; Condrashoff 1971; permit 1971-0030). No further archaeological work under permit was conducted within or adjacent to the Project area until the 1980s, despite the construction of the Historic Afton Mine which went into operations in the mid-1970s. Archaeological work near the Project area began again with a study conducted for the expansion of the Coquihalla Highway (Highway 5a; Brolly and Calancie 1982; permit 1982-0017). Subsequent studies carried out for expansions of the Afton Mine, including two open pits (the Ajax Pits), were carried out by Jean Bussey in the late 1980s (Bussey 1988a, 1988b; permit 1988-0028). Other work conducted in the immediate area included work around Jacko Lake and the Afton Mine Parcels (Rousseau and Kaltenrieder 2002; permit 2002-0114), and work carried out for the New Afton Mine Project (Seip et al. 2008; permit 2007-0045). The vast majority of the sites found during these studies consist of small lithic scatters (both surface and subsurface), some with small faunal assemblages (archaeologically recovered animal bones), typically located on flat terraces or knolls in proximity to existing or relict water sources.

Plate 2.3-1. Historic photograph of the recreation area at Jacko Lake (photo courtesy of David Piggin).

2.4 HISTORICAL BACKGROUND

European exploration of the region began in the early 1800s. David Stuart of the Pacific Fur Company visited the Kamloops area in 1811 and established the first trading post in Kamloops in 1812 at the confluence of the North and South Thompson rivers on its south side. That same year the North West Company established their Thompson River Post, located on the east bank of the North Thompson River just north of its confluence with the South Thompson River. The presence of the Pacific Fur Company didn't last long, however, as it was purchased by the North West Company in 1813. The North West Company and the Hudson's Bay Company (HBC) amalgamated in 1821; the fort was later renamed Fort Kamloops (Wade 1912; Carlson 2006). By 1841 it had fallen into disrepair and rather than being rebuilt, a new fort was built on the west bank of the North Thompson River. In 1862 the post was moved south of the Thompson River to take advantage of the trade with the miners and cattle drivers who travelled the trails to the south of the river (Carlson 2006).

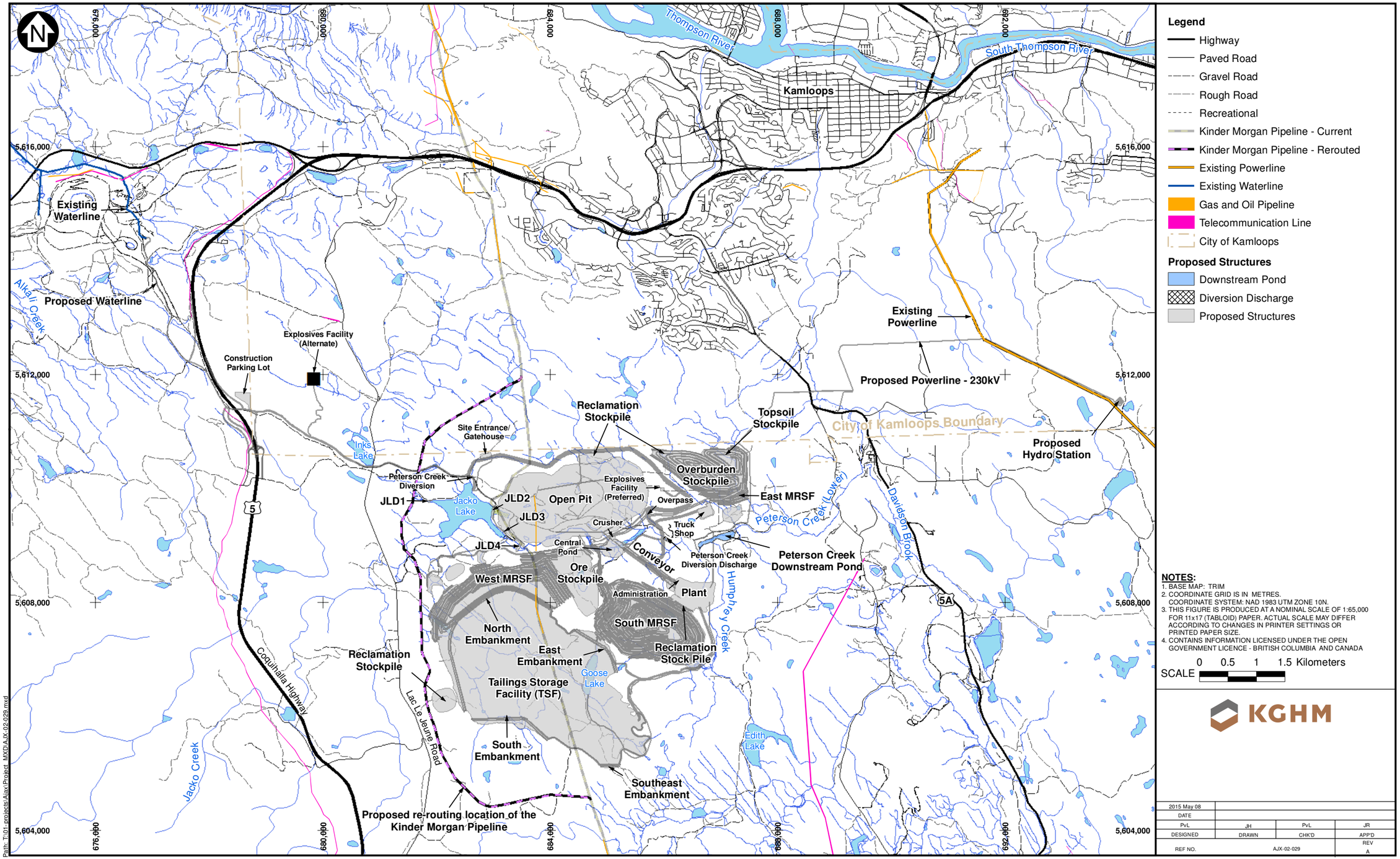
The start of European settlement in the area was brought about in the 1840s to 1850s when gold was discovered in the Thompson River Valley. The discovery brought gold seekers as well as settlers and cattle herders. The well-established fur brigade trails were used as primary travel routes by those moving into the area. The first cattle drive into the region took place in 1846 when cattle were moved along the Brigade Trail from Oregon to Fort Vancouver, then on to Fort Kamloops and Fort Alexandria. Small herds were kept for beef and dairy at Fort Kamloops (McLean 1982). It was also during this period that the HBC's exclusive licence to trade with First Nations was cancelled, in 1858, which saw company men take up lands in the area (Weir 1955). The population in the area continued to increase, railways arrived in the city in the 1880s, and the city of Kamloops was incorporated in 1893. By this time there was an established Main Street, grist and saw mills, a brickyard, blacksmith shops, as well as several stores and residences (Favrholdt 1983; Hagan 1882).

Early travel routes through the area affected the trend of later settlement, including the Brigade Trail, a branch of which ran south from Fort Kamloops past Stump and Nicola lakes. During the early years of settlement, individual ranches and settlements were distributed along the few roads and trails that passed through the region which could serve the needs of passing miners and packers heading to the goldfields. Later settlement patterns conformed less to the established travel routes with a focus more toward choice grazing lands (Weir 1955).

With the establishment of the Dominion Homestead Act of 1892, surveys of potential agricultural lands began in earnest across Canada. While Kamloops was not ideally suited to agriculture, early surveys treated the area as prairie lands with 160-acre parcels of land being surveyed. Several townships were established south of Kamloops to Stump Lake, stretching from northwest to southeast across the rolling landscape. In all, approximately 334 quarter-sections were homesteaded in the Railway Belt south of Kamloops up to the year 1915 (Favrholdt 1999). The Project area was one of the earliest areas of south-central BC to be pre-empted and fenced and saw intensive farming operations and cattle ranching take place in the early 1860s (Ignace et al. 2014).

Figure 1-1
Ajax Project

ERM



NOTES:
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KGHM

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HBC employee Alexander Jacko took up residence and homesteaded in the area in the early 1850s. Of Metis decent, he came into the area in the 1830s working as a packer for HBC and died in 1862. Historic records indicate that he kept horses around Jacko Lake; the lake and creek were subsequently named after him (Balf 1969; Ignace et al. 2014). The homestead was taken over by his son Philip Jacko who pre-empted the family horse range in 1866 extending to Jacko Lake and built a house near the mouth of Jacko Creek (Balf 1969; Ignace et al. 2014).

John Peterson moved to the area in 1862 and began a pack train operation between Lillooet and the Cariboo. When the CPR Survey started up in the area in 1871, Peterson sold his pack train to the government and continued on as the survey's boss packer. In 1868 he settled in Kamloops, pre-empting land near Jacko Creek; a portion of the drainage, Peterson Creek, carries his name. Peterson built a large house and stables, purchasing more land from Philip Jacko at the creek mouth and from William Jones, making him the owner of much of the present area of Kamloops (Balf n.d.).

Historic records also indicate a church, St. Peter's Anglican Church, and associated cemetery were located within the Project footprint. An Anglican minister, Canon Akehurst, was instrumental in building the church on Goose Lake Road (Heritage Committee 1984). It was built in 1915 on land that had been donated and deeded to the church by Theodore "Teddy" Swanton. In its early years it was a busy place but during the 1920s many of the church families moved away and the church fell into disuse. The church was eventually dismantled. The St. Peter's Anglican Church, and cemetery have been assigned Borden Number EdRc-61 and additional information is available in Sections 4.11 and 5.

There is a long history of mineral exploration and mining in the region initially starting with the Cariboo gold rush of the 1850s, as noted above. By the late 1800s, there were over 200 mineral claims documented in the Kamloops area. Larger operations began to appear in the late 1890s, including the Iron Mask Mine which was first staked in 1869 and was located approximately 8 km from Kamloops (Plates 2.4-1 and 2.4-2). The Iron Mask Mine was later operated under the names Kamloops Mines Ltd. and the Kamloops Copper Company with mining operations sporadically starting and stopping between 1920 and 1928 (Bond 1988).

Work within the Ajax claim area was reported in 1898 by the Wheal Tamar claim group. Between 1904 and 1910 trenching was carried out and additional underground extraction occurred through the 1920s. In 1928, the Consolidated Mining and Smelting Company of Canada Ltd. (Cominco) optioned 13 claims within and adjacent to the current Project area. Further exploration and mining continued through the 1970s and 1980s by Afton Mines Ltd. and Cominco. Within the central part of the current Project, the east and west open pits were being developed by 1988 along with the construction of a haul road to the Afton Mill. By 1997, production had ceased for both the east and west pits of the Ajax mine (Bond 1988).

Plate 2.4-1. Historic photograph of what is thought to be the Iron Mask Mine (photo courtesy of David Piggin).

Plate 2.4-2. Historic photograph of the mining operation at what is thought to be the Iron Mask Mine (photo courtesy of David Piggin).

3. METHODOLOGY

The methodologies employed for the AIAs for the Project were consistent with those outlined in the applications for Heritage Inspection Permits 2009-0349 and 2014-0171. Both methodologies were reviewed and approved by the Archaeology Branch, and were subject to a 30-day referral period for First Nations to review and comment on the Application.

The general methodology used by ERM and Terra is described below. A greater level of detail can be found in the final reports for Heritage Inspection Permits 2009-0349 and 2014-0171 and the applications for permits 2009-0349 and 2014-0171.

Both AIAs included background research, evaluation of archaeological potential, field investigations, analysis, and reporting. A review of published information for the Project area and surrounding region was conducted prior to conducting fieldwork. The review included ethnographic, historic, archaeological, and environmental literature. In addition, a search of the BC Archaeological Site Inventory database using the Remote Access to Archaeological Data application was carried out. First Nations land use and knowledge reports were also reviewed, including the *SSN Cultural Heritage Study* (Ignace et al. 2014) and previous internal drafts of that report, as they became available. Environmental data from baseline studies carried out for the Project also helped to inform this study.

The archaeological field survey methods were used to identify archaeological resources within the proposed development footprint. This consisted of pedestrian survey and subsurface testing in areas identified as having potential for buried archaeological material. Archaeological sites identified during the AIA were recorded, photographed, and mapped, and UTM coordinates were taken by GPS. All archaeological sites have been recorded on BC Archaeological Site Inventory Forms and submitted to the Archaeology Branch. Site boundaries for archaeological sites identified during this AIA were defined on the basis of natural, observed, and/or arbitrary limits. Artifacts, including surface finds, and any other cultural materials encountered in shovel tests were collected.

All collected artifacts have been catalogued, described, and compared to existing regional typologies. All formed tools encountered have been described as to shape, raw material, and manufacturing attributes. Appropriate metric attributes of artifacts have also been recorded. Lithic debitage (waste material produced during the production of stone tools) has been quantified and classified according to raw material, stage of manufacture, and technological attributes. Faunal remains encountered were analyzed by a qualified professional with access to a comparative collection and/or appropriate material. All artifacts and associated data collected during the AIAs will be sent to the Royal British Columbia Museum, the designated repository, for curation.

Significance evaluations for sites recorded during this AIA were determined using the criteria for site evaluation outlined in the *British Columbia Archaeological Impact Assessment Guidelines, Appendix D* (Archaeology Branch 1998). The scientific, public, ethnic, economic, and historic (if applicable) significance of each identified site was addressed when possible.

The potential impact of the proposed development on archaeological sites has been assessed in reference to Appendix F of the *British Columbia Archaeological Impact Assessment Guidelines* (Archaeology Branch 1998).

4. RESULTS

The results of the AIAs conducted by Terra under permit 2009-0349 and ERM under permit 2014-0171 for the Project footprint are summarized below, with sections divided by the following major development components: the Ajax Mine Pit, East MRSF, TSF, South MRSF, ore stockpiles, plant and conveyor and tailings line areas, linear features (powerline and substation, water line, access and haul roads, Peterson Creek diversion), water management ponds, and the Trans Mountain Pipeline relocation corridor (Sections 4.1 to 4.9 and illustrated in Figure 1-2). Smaller development components situated in proximity to the major components are reported on under the nearest major component. Monitoring conducted by ERM during geophysical investigations commissioned by the SSN is described in Section 4.10. The results of research and field investigation into the historic St. Peter's Anglican Church and Cemetery (EdRc-61), situated in the TSF, are described in Section 4.11.

During the AIA under permit 2014-0171, 5,156 shovel tests were conducted at 201 locations and 13 new archaeological sites were recorded. During the AIA under permit 2009-0349, 23,506 shovel tests at 305 locations and 28 archaeological sites were recorded; however, as the proposed Project footprint significantly changed in spring 2014, some of the work done by Terra falls outside of the current Project footprint. Based on the results of the AIAs there are 36 recorded archaeological sites that could be impacted by the Project. Note that historic features and historic cultural material post-dating 1846 AD within the Project footprint will be described in a separate baseline report on heritage resources (ERM Forthcoming b).

For detailed results of the AIAs for the Project refer to the final AIA reports for permit 2009-0349 (Morin 2014) and permit 2014-0171 (ERM Forthcoming a).

4.1 AJAX MINE PIT

The proposed Ajax Mine Pit is approximately 299 ha in size, and situated east of Jacko Lake, north of Peterson Creek (Figure 1-2). The majority of this proposed Mine Pit area (including the Reclamation Stockpile, Magazine, Administration and Central Dry, and associated linear Project components) was assessed by Terra under permit 2009-0349 as shown in in Figure 1-2. Previous impacts to the area include prior open pits and site access roads (Plate 4.1-1).

In 2014, under permit 2014-0171, ERM assessed two portions of the Mine Pit. The first is a small revised portion of the Mine Pit that falls outside (west) of Terra's assessed area (Figure 1-2). This revised area was surveyed and assessed to have low archaeological potential due to generally south-sloping terrain, and previous disturbance from the Trans Mountain pipeline and road construction. No cultural materials or features were observed during the survey. Due to the low archaeological potential, no shovel testing was conducted in this revised area.

The second portion of the Mine Pit that ERM assessed is at site EdRc-52, a chance find identified by an SSN monitor during monitoring of nearby drilling activity within an area previously assessed by Terra. ERM conducted 29 shovel tests at shovel test location R12-STL1 to determine the site

boundaries of EdRc-52. In total, there are six archaeological sites recorded within the Mine Pit (Figure 1-2, Table 4.1-1, and Section 5).

Plate 4.1-1. View north toward the Mine Pit (in background) with previous open pit disturbance visible.

Table 4.1-1. Archaeological Sites in the Ajax Mine Pit Area

Borden Number	Antiquity	Site Type	Permit #
EdRc-5	Prehistoric	Lithic Scatter	1988-0028
EdRc-7	Prehistoric	Lithic Scatter	1988-0028
EdRc-21	Prehistoric	Lithic Scatter	2009-0349
EdRc-21	Prehistoric	Lithic Scatter	2009-0349
EdRc-25	Prehistoric	Petroform	2009-0349
EdRc-40	Prehistoric	Lithic Scatter	2009-0349
EdRc-52	Prehistoric	Lithic Isolated Find	2014-0171

4.2 EAST MINE ROCK STORAGE FACILITY

The proposed East MRSF is situated east of the Mine Pit and north of Peterson Creek (Figure 1-2). The East MRSF area (including the Reclamation Pile, Topsoil Stockpile, Overburden Stockpile, Truck Shop, water management infrastructure and associated linear project components) was completely assessed by Terra under permit 2009-0349 as shown in Figure 1-2. ERM did not conduct any additional assessment in the East MRSF area.

One archaeological site (EdRc-30) has been recorded within the East MRSF area (Figure 1-2, Table 4.2-1, and Section 5).

Table 4.2-1. Archaeological Sites within the East Mine Rock Storage Facility Area

Borden Number	Antiquity	Site Type	Permit #
EdRc-30	Prehistoric	Lithic Scatter	2009-0349

4.3 TAILINGS STORAGE FACILITY

The proposed TSF is approximately 612 ha. It is situated south of Jacko Lake and Peterson Creek and east of the Lac Le Jeune Road, and encompasses Goose Lake (Figure 1-2). The TSF (including the Embankments, and associated Reclamation Stockpiles to the northwest and west) was assessed by Terra under permit 2009-0349 and ERM under permit 2014-0171 (Figure 1-2). There are currently two families living within the TSF area with established ranching operations. Other previous disturbances in the area are associated with mineral exploration activity, construction and maintenance of Goose Lake Road, and the Trans Mountain pipeline.

In 2014, ERM assessed the majority of the TSF and associated infrastructure to the southeast of Terra's previously assessed areas, as well as AAPs identified by Terra which were not previously tested (Figure 1-2). The area surveyed by ERM was assessed to have terrain features with moderate to high archaeological potential. Shovel testing focused on distinct topographic features around Goose Lake and relatively level areas along the drainages that cross the area. ERM conducted a total of 2,538 shovel tests at 98 shovel test locations within the TSF and associated infrastructure (Plate 4.3-1). Five archaeological sites were identified within the TSF and associated infrastructure (Figure 1-2, Table 4.3-1, and Section 5).

Plate 4.3-1. View east over Goose Lake within the Tailings Storage Facility.

Table 4.3-1. Archaeological Sites within the Tailings Storage Facility Area

Borden Number	Antiquity	Site Type	Permit #
EdRc-48	Prehistoric	Lithic Scatter	2009-0349
EdRc-49	Prehistoric	Lithic Scatter	2009-0349
EdRc-51	Prehistoric	Lithic Scatter	2014-0171
EdRc-53	Prehistoric	Lithic Isolated Find	2014-0171
EdRc-61	Historic - European	Burial, Church Site	2014-0171

4.4 SOUTH MINE ROCK STORAGE FACILITY

The proposed South MRSF is approximately 214 ha and situated northeast of Goose Lake and south of Peterson Creek. A small northern section of the South MRSF was assessed by Terra under permit 2009-0349 with the majority of the area assessed by ERM under permit 2014-0171 (Figure 1-2). Previous disturbances in the area include the Goose Lake Road, access roads associated with ranching activity, and mineral exploration.

Shovel testing focused on a prominent hill and on relatively level areas along the drainages that cross the area (Plate 4.4-1). A total of 891 shovel tests were conducted at 30 shovel test locations within the South MRSF and associated infrastructure. Two archaeological sites (EdRc-40 and EdRc-56) were identified within the South MRSF (Figure 1-2, Table 4.4-1, and Section 5).

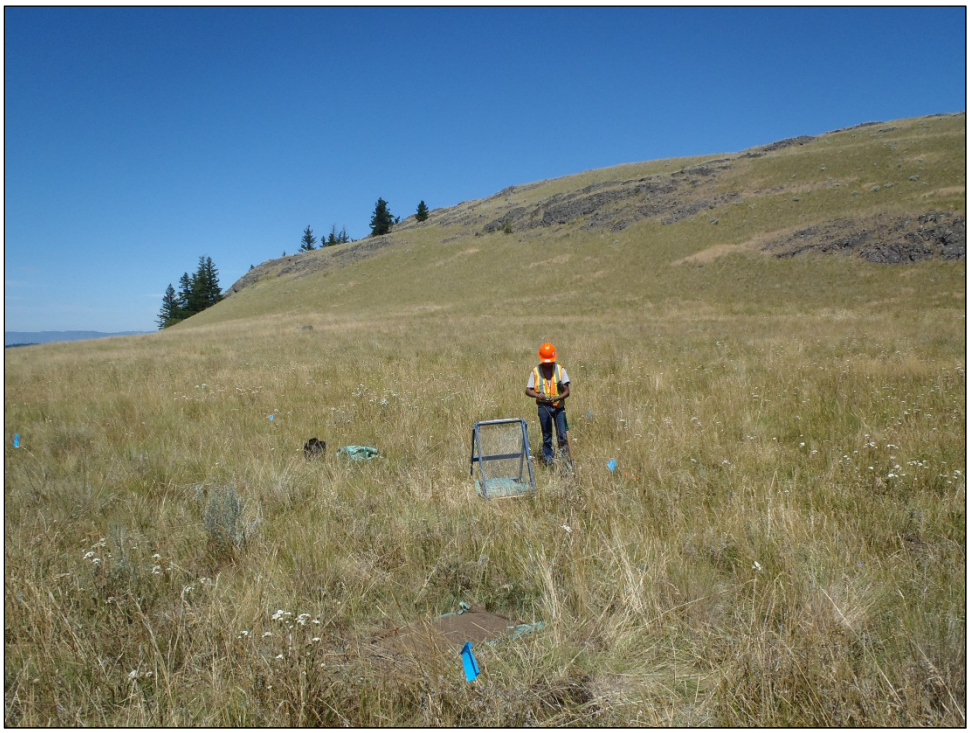

Plate 4.4-1. Shovel testing on a level terrace within the South Mine Rock Storage Facility. View northwest towards the prominent hill in the area.

Table 4.4-1. Archaeological Sites within the South Mine Rock Storage Facility

Borden Number	Antiquity	Site Type	Permit #
EdRc-40	Prehistoric	Lithic Scatter	2009-0349
EdRc-56	Prehistoric	Lithic Isolated Find	2014-0171

4.5 ORE STOCKPILES

The proposed ore stockpile is divided into two parts, north and south, for the purposes of reporting. The north area is approximately 20.5 ha and the south area is approximately 32 ha. They are located southeast of Jacko Lake, north of Goose Lake, and south of Peterson Creek. The north area of the stockpile is located entirely within a previously disturbed area assessed by Terra under permit 2009-0349. The majority of the southern area of the stockpile was assessed by ERM under permit 2014-0171 (Figure 1-2). The northwestern portion of the southern area has been previously disturbed by waste rock storage associated with the development of the historic Ajax east and west pits. The terrain in the area consists of a gentle slope down to a small pond with a ridge to the east and the slope of a large hill to the west. A total of 167 shovel tests were conducted at three undisturbed areas with moderate to high archaeological potential. One archaeological site, EdRc-50, was identified within the ore stockpile (Figure 1-2, Table 4.5-1, Section 5).

Table 4.5-1. Archaeological Sites within the Ore Stockpile

Borden Number	Antiquity	Site Type	Permit #
EdRc-50	Prehistoric	Lithic Isolated Find	2014-0171

4.6 PLANT, CONVEYOR, AND TAILINGS LINE AREAS

The proposed plant site is approximately 29 ha and is located to the west of Humphrey Creek and south of Peterson Creek. Much of the western edge of the development was assessed by Terra under permit 2009-0349. The eastern portion of the area consists of gently sloping grassland pasture with isolated tree patches (Plate 4.6-1). Shovel testing focused on relatively flat terrain along Humphrey Creek and an unnamed tributary drainage that runs east into Humphrey Creek. ERM conducted 101 shovel tests at seven shovel test locations. No archaeological sites were located within the proposed plant site.

The proposed conveyor runs southeast from the crusher to the plant site. The route crosses Peterson Creek as well as two smaller unnamed drainages to the south. Shovel testing focused on areas of relatively flat, dry terrain overlooking Peterson Creek and the smaller drainages. A total of 167 shovel tests were conducted at five shovel test locations along the conveyor line. No archaeological sites were identified along the conveyor development component.

The proposed tailings line runs south from the plant site along the west and north side of Humphrey Creek to the TSF. The terrain to the south of the plant site consists of gently sloping pasture and grassland. Once the tailings line turns west towards the TSF it passes through rolling forested terrain. A total of 119 shovel tests were conducted at eight locations along the route. Archaeological

site EdRc-62 was located along the tailings line and approximately 80 m to the south of the plant site (Figure 1-2, Table 4.6-1, and Section 5).

Plate 4.6-1. Gently sloping terrain within the plant site at shovel test location CG-03 (view northeast).

Table 4.6-1. Archaeological Sites within the Plant Site, Conveyor, and Tailings Line

Borden Number	Antiquity	Site Type	Permit #
EdRc-62	Prehistoric	Modified Faunal	2014-0171

4.7 LINEAR FEATURES

4.7.1 Powerline and Substation

The proposed powerlines and substation are largely located within or alongside the footprints of other development components and within areas previously assessed by Terra under permit 2009-0349. The power demand of the Project will be accessed from the BC Hydro grid. A 9-km, 230-kilovolt (kV) overhead powerline will be constructed from the BC Hydro transmission line 2L265 to the east of the Project area near the community of Knutsford.

The main 230-kV powerline would commence at the tie-in location to the Plant along the eastern boundary of the Project. Terra conducted a Preliminary Field Reconnaissance of the majority of the powerline route under permit 2009-0349, during which they identified six AAPs within the powerline that required additional assessment (AAP 01 to 06). In 2014, ERM completed the majority of the assessment of the powerline and substation, including testing at four of the AAPs (AAP 01 to 04), as well as additional testing at a fifth location in the substation tie-in location. A total of

85 shovel tests were conducted at these five shovel test locations. The testing at AAP 05 and AAP 06 has not been completed and is planned for 2015. Three archaeological sites (EdRc-28, EdRc-32, and EdRc-34) were located along the 230-kV corridor (Figure 1-2, Table 4.7-1, and Section 5).

At the Project's main substation, adjacent to the processing plant, power supply will be stepped down to 25 kV for distribution to Project infrastructure including the Mine Pit, TSF, administration offices, mine rock and ore handling areas, and the water management network. Seven archaeological sites (EdRc-5, EdRc-6, EdRc-7, EdRc-8, EdRc-41, EdRc-44, and EdRc-55) are within or adjacent to the 25-kV powerline (Figure 1-2, Table 4.7-1, and Section 5).

4.7.2 Waterline

The proposed waterline runs west from Inks Lake and follows the Inks Lake and Sugarloaf roads to New Gold Inc.'s New Afton Mine property (Figure 1-2). The Inks Lake and Sugarloaf roads are established, 10-m-wide industrial and ranch roads. Owing to the 30- to 50-m-wide disturbance corridor associated with these roads, the archaeological potential of the waterline is assessed as low. However, site EdRc-59, a single artifact find along Sugarloaf Road, indicates that re-deposited cultural material could be encountered (Figure 1-2, Table 4.7-1, and Section 5).

Table 4.7-1. Archaeological Sites within the Linear Features

Borden Number	Antiquity	Site Type	Permit #
EdRc-5	Prehistoric	Lithic Scatter	1988-0028
EdRc-6	Prehistoric	Lithic Scatter	1988-0028
EdRc-7	Prehistoric	Lithic Scatter	1988-0028
EdRc-8	Prehistoric	Lithic Scatter	1988-0028
EdRc-10	Prehistoric	Lithic Scatter	1988-0028
EdRc-23	Prehistoric	Lithic Scatter	2009-0349
EdRc-27	Prehistoric	Lithic Scatter	2009-0349
EdRc-28	Prehistoric	Lithic Scatter	2009-0349
EdRc-32	Prehistoric	Lithic Scatter	2009-0349
EdRc-34	Prehistoric	Lithic Scatter	2009-0349
EdRc-41	Prehistoric	Lithic Scatter	2009-0349
EdRc-44	Prehistoric	Lithic Scatter	2009-0349
EdRc-55	Prehistoric	Lithic Scatter	2014-0171
EdRc-59	Prehistoric	Lithic Isolated Find	2014-0171
EdRc-62	Prehistoric	Modified ungulate tooth	2014-0171

4.7.3 Access and Haul Roads

The proposed mine access is via the Inks Lake Interchange off Highway 5 and then along service roads to the plant site's main access road (a historical haul road from the old Afton Mine). Access to the plant site main access road from the Lac Le Jeune Road. Access roads will also be constructed to connect the various on-site buildings. Within the Mine Site, access roads typically follow the same corridors as other linear features including the powerlines and waterlines, and fall within areas

assessed by ERM and Terra. Haul roads are designed for traffic within the pit and between the pit and ore crusher, rock storage facilities, overburden stockpiles, construction areas, and truck shop. The roads are proposed as cut-and-fill balance inside the ultimate pit limit and as mainly fill roads outside the ultimate pit limits.

There are five previously recorded archaeological sites (EdRc-10, EdRc-23, EdRc-27, EdRc-41, and EdRc-62) that will be impacted primarily by access and haul road construction. In addition, previously recorded archaeological site EdRc-27 will be impacted by an access road and the Peterson Creek Diversion (Figure 1-2, Table 4.7-1, and Section 5).

4.7.4 Peterson Creek Diversion

Water from Jacko Lake will be diverted from discharging to Peterson Creek using a mechanical pump and pipeline along the north side of the Mine Pit. Discharge from the pipe will be to Peterson Creek and will be in an area between the East MRSF and the plant site. This route follows the main utilities and access road corridor around the north side of the open pit and will affect previously recorded archaeological sites EdRc-27 and EdRc-41 (Figure 1-2, Table 4.7-1, and Section 5).

4.8 WATER MANAGEMENT PONDS

There are nine water management ponds located throughout the Project area. Eight of the nine water management ponds are located in low-lying areas with low archaeological potential. The exception is the water management pond located on Peterson Creek to the south of the Mine Pit to the north of the South MRSF and immediately southwest of the crusher pad (Figure 1-2). This area was assessed by ERM under permit 2014-0171 and consists of ridges, terraces, and hills of grassland and pasture overlooking Peterson Creek (Plate 4.8-1).

Plate 4.8-1. The terrain within the water management pond overlooking Peterson Creek (view south).

A total of 157 shovel tests were conducted at seven shovel test locations. Three archaeological sites (EdRc-54, EdRc-55, and EdRc-62) were identified in the area (Figure 1-2, Table 4.8-1, and Section 5). An AIA of the newly proposed Peterson Creek Downstream Pond is scheduled for 2015.

Table 4.8-1. Archaeological Sites within the Water Management Ponds

Borden Number	Antiquity	Site Type	Permit #
EdRc-54	Prehistoric	Lithic Isolated Find	2014-0171
EdRc-55	Prehistoric	Lithic Scatter	2014-0171
EdRc-62	Prehistoric	Modified ungulate tooth	2014-0171

4.9 TRANS MOUNTAIN PIPELINE RELOCATION CORRIDOR

ERM assessed two corridors related to the potential relocation of Kinder Morgan Canada's Trans Mountain Pipeline around the Project, both partially within areas previously assessed by Terra. The first is a proposed Trans Mountain Pipeline relocation corridor, a 10.86-km-long potential reroute of the Trans Mountain Pipeline around the Project, generally situated to the west of Project infrastructure (Figure 1-2). The corridor width was variable but was generally 150 m. The second corridor that was assessed is the segment of the existing Trans Mountain Pipeline that passes through the Project and would be relocated. The segment of the existing pipeline that was assessed is approximately 8 km long with a 150-m-wide corridor (75 m either side of the pipeline centre line). ERM's assessment of both corridors started where the relocation corridor would diverge from the existing pipeline corridor, north of Jacko Lake, and ended where the relocation corridor would rejoin the existing pipeline south of Goose Lake.

A total of 804 shovel tests were conducted at 25 shovel test areas within the relocation corridor by ERM and Terra. Archaeological sites EdRc-29 and EdRc-57 were identified within the relocation corridor. A total of 847 shovel tests were conducted at 13 shovel test areas within the existing pipeline corridor by ERM and Terra. In total there are seven archaeological sites in conflict with the two corridors. All of the sites are low density surface/subsurface lithic scatters. One of these sites (EdRc-57) was recorded by ERM in October 2014 as part of the AIA of the relocation corridor (Section 5), while the remaining six sites (EdRc-5, EdRc-6, EdRc-9, EdRc-29, EdRc-33, and EdRc-44) were previously recorded by Morin (2014) or Bussey (1988a; Section 2.3). These seven sites are summarized in Table 4.9-1 (also see Section 5).

Table 4.9-1. Archaeological Sites within the Existing and Proposed Trans Mountain Pipeline Corridors

Borden Number	Antiquity	Site Type	Permit #
EdRc-5	Prehistoric	Lithic Scatter	1988-0028
EdRc-6	Prehistoric	Lithic Scatter	1988-0028
EdRc-9	Prehistoric	Lithic Scatter	1988-0028
EdRc-29	Prehistoric	Lithic Scatter	2009-0349
EdRc-33	Prehistoric	Lithic Isolated Find	2009-0349
EdRc-44	Prehistoric	Lithic Isolated Find	2009-0349
EdRc-57	Prehistoric	Lithic Scatter	2014-0171

In addition to the seven archaeological sites noted in Table 4.9-1, there are two AAPs within the existing Trans Mountain Pipeline corridor where additional testing is recommended. These two areas, AAP 13-16 and AAP 13-116, are in close proximity to sites EdRc-9 and EdRc-33, respectively. Testing will be carried out in these areas in 2015.

4.10 MONITORING STK'EMLUPSEMC TE SECWEPEMC NATION GROUND PENETRATING RADAR INVESTIGATIONS

On October 17 and November 5, 2014, the SSN conducted geophysical investigations at two locations where there were clusters of rock piles (Plate 4.10-1). ERM archaeologists monitored the geophysical investigations on both days. The locations that were investigated are both outside of the Project footprint and will not be impacted by the Project.

Plate 4.10-1. Ground Penetrating Radar investigations at a rock pile on November 5, 2014.

Numerous rock piles were recorded during the AIAs conducted under permits 2009-0349 and 2014-0171. Based on in-field observations by Terra and ERM, the majority of these are interpreted as historical features related to homesteading or mining activities (e.g., fencing supports, field clearing, and claim posts). No concerns regarding these features were raised by the SSN to Terra between 2009 and 2014, when the majority of these features were recorded.

In 2014, the SSN commissioned the geophysical investigations to determine whether some of these may be burial cairns. To date the SSN has not provided KAM with the results of the geophysical investigations. Field inspection of these rock piles by ERM archaeologists indicate that they are likely associated with historical fence lines, as some had metal wire running through them and some

had old fence posts lying within or adjacent to them. Currently, none of these rock piles are recorded as archaeological sites and they are outside of the Project footprint. However, further research and discussion with the SSN is ongoing and the interpretation and protection status of these rock pile features may be revisited if new data become available.

4.11 INVESTIGATIONS AT ST. PETER'S ANGLICAN CHURCH AND CEMETERY

In 2014, ERM conducted archival and field investigations to confirm the location of St. Peter's Anglican Church and its associated cemetery in the vicinity of Goose Lake. The church was constructed in 1915 and dismantled in the late 1920s, and there was at least one burial at the cemetery (Heritage Committee 1984; Plate 4.11-1). Prior to the investigations conducted by ERM in 2014, the locations of the church and cemetery were uncertain, and the cemetery was not formally recorded with the Province of British Columbia. As there is no evidence that the burial at the cemetery was ever moved and because the location is not a registered cemetery, the location of St. Peter's Anglican Church and cemetery were registered as archaeological site EdRc-61 to formally record their location.

Plate 4.11-1. View of St. Peter's Anglican Church (EdRc-61) photographed in 1916 (Heritage Committee 1984:22).

There was at least one burial at the cemetery: an infant, Beatrix May Smith-Osborne (died 1915) (Heritage Committee 1984). However, the site was not formally registered as a cemetery with the Province of BC. The grave was originally marked with a wooden cross that was reportedly trampled by cattle, at which time (before 1980) the cross and name plate were removed from the site (Heritage Committee 1984; Little, pers. comm.). At present, there are no visible features of the church or cemetery remaining and it is not clear if there were any additional burials other than that of Ms. Smith-Osborne. The Anglican Church (Anglican Parishes of the Central Interior) was consulted

as part of this study, and they have no documentation of the grave being removed from the site and reinterred elsewhere.

In 2014, ERM used several methods to confirm the church and cemetery's location. A local history book, *Bunch Grass to Barbed Wire* (Heritage Committee 1984), was reviewed which includes a map of the church and cemetery location in relation to historical property boundaries. The Canada Department of Mine & Technology survey map of the Kamloops area, dated 1951, also places the church in this approximate location. Archival research was conducted with the assistance of Melanie Delva, archivist at the Anglican Diocese of New Westminster. A Land Title search was also conducted but it appears that no deed was issued for the church property (D. Johnson, pers. comm.).

Interviews and site visits were conducted with Bishop Barbara Andrews and Dwight Oatway of the Anglican Church (Anglican Parishes of the Central Interior), and George Little, whose family has owned and ranched much of the surrounding land since the early 1900s. Mr. Little has lived on Goose Lake Road since the 1930s, less than a kilometre from the site. Archaeologists from ERM and Mr. Little surveyed the site area and identified two segments of an uncommon, expensive heavy-gauge "woven-wire" type of fencing along the west and south boundaries of the site area. These were interpreted by Mr. Little as being the fencing used around the church and cemetery area and is distinct from the three- to four-row barbed wire fencing that is ubiquitous in the area. Mr. Little recalled previously seeing a wooden cross in this area as a child. Based on the information provided by Mr. Little, the general agreement of this information with historical sources, and the presence of special fencing material at the site, it is believed that the location of the church and cemetery has been correctly identified.

A survey was also conducted by GPR of the site area, conducted by Jason Deleurme of Precision Radar Scanning; however, the GPR results were inconclusive. Other than the unique fencing material, no features or objects associated with the church or cemetery were observed at the site. As there is no evidence that any burial(s) at the cemetery were ever moved and because the location is not a registered cemetery, the St. Peter's Anglican Church and cemetery were registered as archaeological site EdRcc-61.

5. IDENTIFIED ARCHAEOLOGICAL CONCERNS

There are 36 recorded archaeological sites that could be impacted by the Project. These sites are summarized in Table 5-1 and shown in site and artifact photos (Plates 5-1 to 5-7). The level of information is presented in a manner consistent with the HCA's requirements for confidentiality of archaeological site data. A greater level of detail can be found in the final reports for Heritage Inspection Permits 2009-0349 (Morin 2014) and 2014-0171 (ERM Forthcoming a).

The vast majority of the archaeological sites (n=33) are lithic scatters or single lithic finds. The other types of sites recorded are: EdRc-25, a possible hunting blind site; EdRc-61, the location where the St. Peter's Anglican Church and cemetery was situated; and EdRc-62, a modified ungulate tooth recovered from a shovel test.

Plate 5-1. View south of EdRc-5. The site was destroyed during previous road construction activities and would have been located on what is now the road bed.

5.1 ARCHAEOLOGICAL SITE SIGNIFICANCE

This section describes the evaluations of significance for all archaeological sites that could be directly impacted by the Project.

Significance evaluations for sites recorded during this study were determined using the criteria for site evaluation outlined in the *British Columbia Archaeological Impact Assessment Guidelines, Appendix D* (Archaeology Branch 1998). The scientific, public, ethnic, economic, and historic (if applicable) significance of each identified site has been addressed. Further information about the significance assessment can be found in Morin (2014) and ERM (Forthcoming).

Plate 5-2. View southeast towards EdRc-6.

Plate 5-3. View west-northwest towards EdRc-33.

Plate 5-4. View east towards EdRc-54.

Plate 5-5. View south towards EdRc-56.

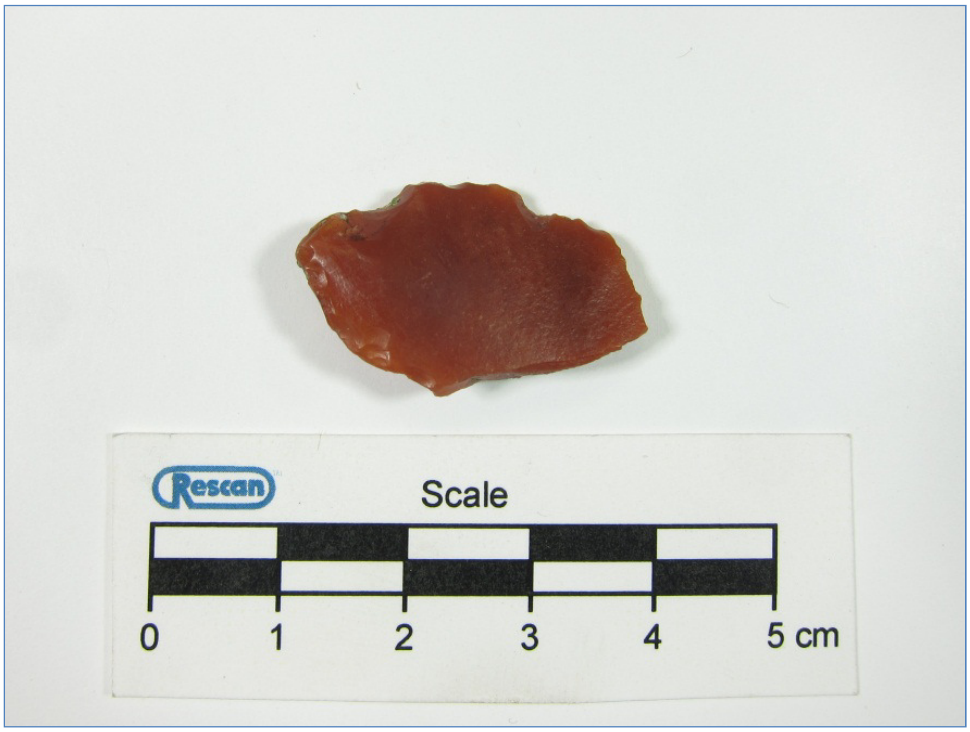

Plate 5-6. Red chert retouched flake recovered from EdRc-60.

Plate 5-7. Lingual view of a modified ungulate incisor recovered from EdRc-62.

Table 5-1. Archaeological Sites that Could be Impacted by the Ajax Project

Borden Number	Site Type	Nearest Project Component	Distance to Nearest Project Component (m)	Antiquity	Description	Permit #
EdRc-5	Lithic Scatter	Mine Pit	0	Prehistoric	This site consists of two grey chert flakes and small faunal fragments. Approximately 10 flakes observed on the surface were left *in situ*. After 1988, the site was destroyed during construction of the Mine Haul Road.	1988-0028
EdRc-6	Lithic Scatter	Trans Mountain Pipeline-Existing	0	Prehistoric	This site consists of a little scatter of one basalt and one green chert flake. Five chert flakes were also observed on the surface and left *in situ*. After 1988, the eastern portion of the site was impacted by construction of the existing Trans Mountain pipeline.	1988-0028
EdRc-7	Lithic Scatter	Mine Pit, Powerline (25 kV)	0	Prehistoric	This site consists of two chert flakes and two basalt core fragments. All were observed on the surface and left *in situ*.	1988-0028
EdRc-8	Lithic Scatter	Powerline (25 kV)	0	Prehistoric	This site consists of four chert flakes, one of which was utilized. All were observed on the surface and left *in situ*. The site is now flooded due to damming on Peterson Creek.	1988-0028
EdRc-9	Lithic Scatter	Trans Mountain Pipeline-Existing	0	Prehistoric	This site consists of five chert flakes. All were observed on the surface and left *in situ*. The site is now flooded due to damming on Peterson Creek.	1988-0028
EdRc-10	Lithic Scatter	MRSF, Road	0	Prehistoric	This site consists of material recovered in 1988 and 2013. Material recovered in 1988 consist of two basalt flakes, one chert flake, and a small calcined bone fragment. In addition, eight chert and basalt flakes were observed on the surface and left *in situ*. Additional material recovered in 2013 consists of three basalt flakes (two of which were collected from the surface). This site was also given Borden Number EdRc-18; this duplicate designation has now been legacied.	1988-0028
EdRc-19	Lithic Scatter	Peterson Creek Diversion	28	Prehistoric	This site consists of an Early Nesikep basalt, projectile point fragment, a basalt projectile point fragment (non-diagnostic), a basalt distal point fragment, a basalt distal point fragment, two basalt unformed unifaces, a chert unformed uniface, and debitage. This site is situated on the shore of Jacko Lake.	2002-0114
EdRc-21	Lithic Scatter	Mine Pit	0	Prehistoric	The site consists of a quartzite core and two pieces of quartzite block shatter collected from a single surface find located on a steep slope east of site EdRc-25.	2009-0349
EdRc-22	Lithic Scatter	Peterson Creek Diversion	15 (40 to centerline)	Prehistoric	This site consists of one basalt biface base fragment and one piece of basalt debitage.	2009-0349
EdRc-23	Lithic Scatter	Haul Road	0	Prehistoric	This site consists of one piece of basalt debitage.	2009-0349
EdRc-25	Petroform	Mine Pit	0	Prehistoric	Three semi-circular petroforms, constructed using cobbles, were identified along a series of gently sloping rocky outcrops.	2009-0349
EdRc-27	Lithic Scatter	Peterson Creek Diversion, Road	0	Prehistoric	This site consists of five pieces of basalt debitage.	2009-0349
EdRc-28	Lithic Scatter	Fortis Gas Line	0	Prehistoric	This site consists of four basalt flakes.	2009-0349
EdRc-29	Lithic Scatter	Trans Mountain Pipeline-Relocation	0	Prehistoric	This site consists of one retouched chert flake.	2009-0349
EdRc-30	Lithic Scatter	East MRSF, Topsoil Stockpile	0	Prehistoric	This site consists of one basalt flake, one mudstone flake, one piece of chert debitage, and one piece of chalcedony debitage.	2009-0349
EdRc-31	Lithic Scatter	Road	50 (80 to centreline)	Prehistoric	This site consists of one banded chert flake.	2009-0349
EdRc-32	Lithic Scatter	Powerline (230 kV)	15 (65 to centreline)	Prehistoric	This site consists of three pieces of chert debitage, and a red-banded chert flake.	2009-0349
EdRc-33	Lithic Scatter	Trans Mountain Pipeline-Existing	0	Prehistoric	This site consists of one basalt flake.	2009-0349
EdRc-34	Lithic Scatter	Peterson Creek Diversion, Powerline (230 kV)	0	Prehistoric	This site consists of one basalt Shuswap Horizon projectile point, one basalt flake, and one chert flake.	2009-0349

(continued)

Table 5-1. Archaeological Sites that could be Impacted by the Ajax Project (completed)

Borden Number	Site Type	Nearest Project Component	Distance to Nearest Project Component (m)	Antiquity	Description	Permit #
EdRc-40	Lithic Scatter	Mine Pit	0	Prehistoric	This site consists of a basalt biface collected from the surface.	2009-0349
EdRc-41	Lithic Scatter	Peterson Creek Diversion, Powerline (25kV), Road	0	Prehistoric	This site consists of one basalt retouched flake and 14 basalt and three chert flakes.	2009-0349
EdRc-44	Lithic Scatter	Trans Mountain Pipeline-Existing	0	Prehistoric	This site consists of a single utilized basalt flake.	2009-0349
EdRc-48	Lithic Scatter	TSF MRSF	0	Prehistoric	The site consists of a basalt non-diagnostic biface fragment.	2009-0349
EdRc-49	Lithic Scatter	TSF	0	Prehistoric	The site consists of a non-diagnostic basalt biface and 21 pieces of basalt debitage.	2009-0349
EdRc-50	Lithic Find	Ore Stockpile	0	Prehistoric	The site consists of an isolated lithic find located on the surface of a prominent bedrock ridge.	2014-0171
EdRc-51	Lithic Scatter	TSF	0	Prehistoric	The site consists a small subsurface lithic scatter (one pink quartzite flake and one white chert flake) located on a bench overlooking Goose Lake.	2014-0171
EdRc-52	Lithic Find	Mine Pit	0	Prehistoric	The site consists of an isolated lithic find (one dark grey basalt flake) located on the surface of a ridge of exposed bedrock.	2014-0171
EdRc-53	Lithic Find	TSF	0	Prehistoric	The site consists of a single black basalt flake recovered from a shovel test on a low terrace overlooking a slough.	2014-0171
EdRc-54	Lithic Find	Water Management Dam/ Embankment	0	Prehistoric	The site consists of one green chert flake collected from a shovel test at the edge of a terrace overlooking Peterson Creek to the north.	2014-0171
EdRc-55	Lithic Scatter	Powerline (25kV), Water Management Dam/ Embankment	0	Prehistoric	The site consists of two black basalt flakes, two rose quartzite flakes, and one beige tuff flake, all recovered from a single shovel test on a narrow ridge overlooking Peterson Creek to the east and south.	2014-0171
EdRc-56	Lithic Find	South MRSF	0	Prehistoric	The site consists of one red chert flake from a shovel test on a terrace above a dry gully to the south.	2014-0171
EdRc-57	Lithic Scatter	Trans Mountain Pipeline-Relocation	0	Prehistoric	The site consists of one red chert flake, one orange chert core fragment, and one dark grey basalt flake recovered from three positive shovel tests on a low ridge overlooking a pond to the east and southeast.	2014-0171
EdRc-58	Lithic Find	Fortis Gas Line	0	Prehistoric	The site consists of dark grey basalt end-scraper that was identified from a surface exposure on a terrace on the northern side of Peterson Creek.	2014-0171
EdRc-59	Lithic Find	Waterline	0	Prehistoric	The site consists of one cream-coloured tuff side-scraper recovered from the gravel roadbed at the junction of Sugarloaf Road and a New Gold Inc. mine site road.	2014-0171
EdRc-61	Church and Cemetery	TSF	0	Historic	The site is the location of St. Peter's Anglican Church and its associated cemetery, which was constructed in 1915 and dismantled in the late 1920s.	2014-0171
EdRc-62	Modified ungulate tooth	Tailings Pipeline, Reclaim Water Pipeline Road	0	Prehistoric	The site consists of a modified right first incisor of a large ungulate, most likely elk, recovered from a shovel test on a gently sloping terrace immediately west of Humphrey Creek. Modifications to the tooth include a groove on the mesial surface at the cemento-enamel junction, where the crown meets the root, and the remnants of a drilled hole visible at the base of the broken root on the distal surface, perpendicular to the long axis of the tooth.	2014-0171

The *British Columbia Archaeological Impact Assessment Guidelines* (Archaeology Branch 1998) define five heritage significance evaluation categories for archaeological sites: scientific, public, ethnic, economic, and historic (where applicable). Sites are assessed and rated as having a high, moderate, or low significance value for each category. The definitions of each type of significance assessment are as follows:

1. Scientific Significance — The potential of a site to provide information that could enhance understanding of BC's heritage resources, particularly its ability to contribute to various scientific disciplines, and its ability to contribute to an understanding of local and regional prehistory. For lithic sites, key considerations are the presence of unique or temporally sensitive artifact types, density and variety of archaeological material, and the potential for multi-components or datable material. Disturbed sites are generally rated as having low scientific significance.
2. Public Significance — The potential a site has to enhance public awareness, interest, understanding, or appreciation of BC's prehistoric or historic past, such as its interpretive, educational, and recreational potential.
3. Ethnic Significance — The importance, significance, or value of a site as perceived by an ethnically distinct community or group.
4. Economic Significance — The potential for a site to generate monetary benefits or employment through its development and use as a public recreational or educational facility.
5. Historic Significance — The degree to which a site represents or relates to important historical individuals or events.

Table 5.1-1 presents the significance assessments of archaeological sites that could by directly impacted by the Project. There are currently no significance rating for sites EdRc-28 and EdRc-34 recorded under permit 2009-0349, as Terra recommended that additional testing be conducted before the significance could be assessed. As it is anticipated that EdRc-28 and EdRc-34 can be avoided, no testing was conducted at these sites under permit 2014-0171; however, if avoidance is not possible, determining site significance through testing would likely form part of any potential mitigation measures determined in consultation with the Archaeology Branch.

Table 5.1-1. Assessment of Archaeological Site Significance

Borden Number	Scientific Significance	Public Significance	Ethnic Significance	Economic Significance	Historic Significance	Overall Rating
EdRc-5	Low	Low	High	Low	N/A	Low
EdRc-6	Low	Low	High	Low	N/A	Low
EdRc-7	Low	Low	High	Low	N/A	Low
EdRc-8	Low	Low	High	Low	N/A	Low
EdRc-9	Low	Low	High	Low	N/A	Low
EdRc-10	Low	Low	High	Low	N/A	Low
EdRc-19	High	Moderate	High	Low	N/A	Moderate-High

(continued)

Table 5.1-1. Assessment of Archaeological Site Significance (completed)

Borden Number	Scientific Significance	Public Significance	Ethnic Significance	Economic Significance	Historic Significance	Overall Rating
EdRc-21	Low	Low	High	Low	N/A	Low
EdRc-22	Low	Low	High	Low	N/A	Low
EdRc-23	Low	Low	High	Low	N/A	Low
EdRc-25	High	Moderate	High	Moderate	N/A	Moderate-High
EdRc-27	Low	Low	High	Low	N/A	Low
EdRc-28	n/a	n/a	High	n/a	N/A	n/a
EdRc-29	Low	Low	High	Low	N/A	Low
EdRc-30	Low	Low	High	Low	N/A	Low
EdRc-31	Low	Low	High	Low	N/A	Low
EdRc-32	Low	Low	High	Low	N/A	Low
EdRc-33	Low	Low	High	Low	N/A	Low
EdRc-34	n/a	n/a	High	n/a	N/A	n/a
EdRc-40	Low	Low	High	Low	N/A	Low
EdRc-41	Low	Low	High	Low	N/A	Low
EdRc-44	Low	Low	High	Low	N/A	Low
EdRc-48	Low	Low	High	Low	N/A	Low
EdRc-49	Low	Low	High	Low	N/A	Low
EdRc-50	Low	Low	High	Low	N/A	Low
EdRc-51	Low	Low	High	Low	N/A	Low
EdRc-52	Low	Low	High	Low	N/A	Low
EdRc-53	Low	Low	High	Low	N/A	Low
EdRc-54	Low	Low	High	Low	N/A	Low
EdRc-55	Low	Low	High	Low	N/A	Low
EdRc-56	Low	Low	High	Low	N/A	Low
EdRc-57	Low	Low	High	Low	N/A	Low
EdRc-58	Low	Low	High	Low	N/A	Low
EdRc-59	Low	Low	High	Low	N/A	Low
EdRc-60	Low	Low	High	Low	N/A	Low
EdRc-61	High	High	High	Low	High	High
EdRc-62	Moderate	Low	High	Low	N/A	Moderate

6. DISCUSSION

The field methods employed during this study are described in the applications for permits 2009-0349 and 2014-0171. These methods were approved by the Archaeology Branch after 30-day referral periods for First Nations to review and comment on the methodology. The methods included pedestrian survey, shovel testing, and visual inspection of ground surface exposures and tree throws in areas assessed to have archaeological potential. Shovel testing was implemented as a site discovery technique in areas assessed to have potential for buried deposits.

During the AIA under permit 2014-0171, 5,156 shovel tests were conducted at 201 locations and 13 new archaeological sites were recorded. During the AIA under permit 2009-0349, 23,506 shovel tests at 305 locations and 28 archaeological sites were recorded.

There are 36 archaeological sites that could be impacted by the Project. Thirty-four of these sites are lithic scatters or single lithic finds. Other types of sites recorded include: EdRc-25, a possible hunting blind site; EdRc-61, the location where the St. Peter's Anglican Church and cemetery was situated; and EdRc-62, a modified ungulate tooth recovered from a shovel test. Of the 36 sites, 30 sites have low archaeological potential, four sites have moderate or higher significance (EdRc-19, EdRc-25, EdRc-61, and EdRc-62), and there is currently no significance rating for two sites (EdRc-28 and EdRc-34).

The methodology used during the archaeological investigations is assessed as having been suitable for achieving the objectives of the AIA for the Project, based on the survey and shovel testing methodology employed and the success of the AIA at identifying small and sparse sites. The AIA results are commensurate with what is considered typical and expected given the Project's location and environment.

AIAs covering the entire Project footprint have now been completed under permits 2014-0171 and 2009-0349, with a few exceptions where small areas of outstanding assessment are scheduled to be completed in 2015. All areas of the proposed Project infrastructure that were not assessed by Terra were assessed by ERM and all Areas of Archaeological Potential identified by Terra Archaeology Ltd. within proposed Project infrastructure were assessed by ERM.

With a few exceptions where small areas of outstanding assessment are scheduled to be completed in 2015, AIAs covering the entire Project footprint have now been completed under permits 2014-0171 and 2009-0349. All areas of the proposed Project infrastructure that were not assessed by Terra were assessed by ERM (Figure 1-2) and all AAPs identified by Terra within proposed Project infrastructure were assessed by ERM. Completion of the additional work is planned for spring 2015.

Areas of Cultural Importance to the Stk'emlupsemc te Secwepemc Nation

During the comment period on the draft Application Information Requirements and in the *SSN Cultural Heritage Study* (Ignace et al. 2014), the SSN raised several topics related to archaeology or cultural heritage for consideration in the EA process. These are: archaeological site EdRc-25

(a possible hunting blind complex); Jacko Lake; Peterson Creek; and rock piles, some of which are being investigated by the SSN as possible burial cairns. As they pertain to archaeology, these topics are discussed below.

EdRc-25

Archaeological site EdRc-25 was recorded by Terra under permit 2009-0349 as three semicircular petroforms of unconfirmed antiquity and function. No prehistoric cultural material was identified at the site during shovel testing (Morin 2013). Additional study has been conducted by the SSN and it states that the petroforms may be stone hunting blinds and the site a hunting blind complex for the communal hunting of elk, caribou, or deer (Ignace et al. 2014). The SSN indicates that there are potentially additional blinds and culturally modified trees (CMTs) surrounding the site; however, currently the site boundaries on file with the Archaeology Branch are those recorded by Terra around the three petroforms. The SSN states that hunting blind sites are in their experience rare within their territory, although they have been found in other regions of BC (Ignace et al. 2014). The SSN states that EdRc-25 has "extremely high interest and irreplaceable value" (Ignace et al. 2014). Further research and discussion with the SSN and Archaeology Branch about this site is ongoing.

Jacko Lake

Jacko Lake has been identified as an important area for traditional and current practices of the Secwepmec people. Ignace et al. (2014) notes that Jacko Lake was fished for trout and the area was used to harvest roots and to hunt deer and elk. Jacko Lake can be ice-free by the middle of April and could have provided access to fresh fish before seasonal salmon runs. A travel route also passed by the Jacko Lake area; the route, documented by Dawson in 1891 and used by the HBC brigades, ran from Kamloops south to Knutsford, past Jacko Lake, and on past Stump and Nicola lakes (see also Section 2.4). While Ignace et al. (2014) describes the Jacko Lake area as having been used for a number of resource procurement activities in the past, this use was limited following land exemptions in the mid-1820s.

There are currently five archaeological sites near the shore of Jacko Lake: EdRc-1, EdRc-6, EdRc-7, EdRc-8, and EcRc-19. Historically, however, the water level in Jacko Lake has fluctuated; most recently, the current lake level was raised several metres by a dam at the outlet to Peterson Creek. Archaeological sites EdRc-7 and EdRc-8 were recorded prior to the dam being built and are now underwater, and there could be additional sites that were never recorded before being submerged. With the exception of EdRc-19, the sites are all small lithic scatters. EdRc-19 is larger lithic scatter on the north side of the lake from which an Early Nesikep projectile point (c. 7,000 BP) was found.

Peterson Creek

Peterson Creek, the outflow of Jacko Lake, was originally named Jacko Creek on early maps. The creek name was later changed to Peterson Creek (see Section 2.4 for more information). Ignace et al. (2014) note that the creek was fished by scoop-net at its outflow for trout during seasonal spawning. Areas along the Peterson Creek drainage were also used to hunt deer and elk.

There are currently 14 archaeological sites (EdRc-9, EdRc-10, EdRc-22, EdRc-23, EdRc-27, EdRc-28, EdRc-32, EdRc-35, EdRc-36, EdRc-40, EdRc-47, EdRc-54, EdRc-55, and EdRc-58) recorded along the

stretch of Peterson Creek that is near the Project, between the dam at Jacko Lake and Knutsford Hill (a distance of approximately 6 km). All of the sites are small lithic scatters consisting mainly of basal and chert debitage and tool fragments, likely representing camp sites or hunting locations along the creek.

Rock Cairns

Sixty-seven rock cairns are recorded within 50 m of the Project footprint. These were primarily recorded by Terra during the AIA conducted under permit 2009-0349 and they were interpreted as historical features primarily related to ranching and agriculture, and are not recorded as archaeological sites (Morin 2014). During the course of the archaeological work conducted under permit 2009-0349, no concerns were raised with Terra regarding these features; however, the SSN is now investigating and considers some of the features to be possible burial cairns. Currently, none of these rock piles are recorded as archaeological sites; however, further research and discussion with the SSN is ongoing and the interpretation and protection status of these rock pile features may be revisited if new data become available.

7. CLOSING

This report was prepared by ERM on behalf of KGHM Ajax Mining Inc. Any use, reliance, or decisions made by third parties based on this report are the sole responsibilities of such third parties.

This AIA was not designed to address issues of traditional Aboriginal use and does not constitute a traditional use study. This report was written without prejudice to issues of Aboriginal rights and/or title.

We trust that the information contained in this report is sufficient for your present needs.

Sincerely,

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Appendix A

Photo Documentation

APPENDIX A. ASSESSMENT AREA PHOTOS

A1. TAILINGS STORAGE FACILITY AND EMBANKMENTS

Plate A1-1. View northeast towards Goose Lake and the eastern portion of the TSF. Photo taken from ASU P20.

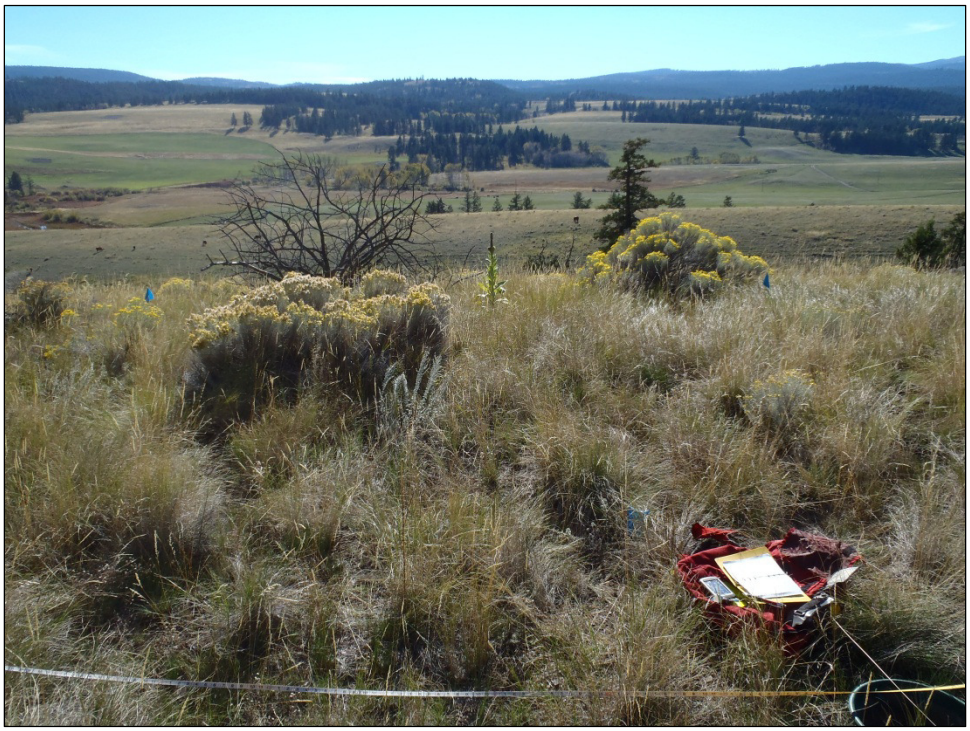

Plate A1-2. View south of the proposed TSF, looking across the central portion of the TSF from the northeastern corner of ASU N17.

Plate A1-3. View south of the proposed TSF and embankments, looking across the southern portion. Photo taken from ASU P18.

Plate A1-4. View west of the proposed TSF and embankments, looking across the northern portion of the TSF from ASU P17.

A2. SOUTH MINE ROCK STORAGE FACILITY

Plate A2-1. View west of the proposed SMRSF from the southeastern corner of the SMRSF in ASU T18.

Plate A2-2. View east of the proposed SMRSF from the approximate centre of the SMRSF in ASU S17.

Plate A2-3. View northwest of the proposed SMRSF looking across the northern portion of the SMRSF from ASU T17.

A3. PLANT SITE

Plate A3-1. View northwest of the proposed Plant Site in ASU U17.

Plate A3-2. View south of the proposed Plant Site, looking across the central portion of the Plant Site from ASU U16.

Plate A3-3. View west of the proposed Plant Site, looking across the northern portion of the Plant Site in ASU U16.

A4. ORE STOCKPILE

Plate A4-1. View northwest of the proposed Ore Stockpile and the northern edge of the TSF and embankments. Photo taken from ASU Q16.

Plate A4-2. View south across the northern portion of the proposed TSF and embankments towards the Ore Stockpile. Photo taken in ASU Q16.

Plate A4-3. View north of the northern portion of the proposed Ore Stockpile from ASU-Q16.

A5. SUBSTATION AND 230KV HYDROLINE

Plate A5-1. View of the proposed 230 kV Hydroline, looking north along Humphrey Creek (ASU-U17).

Plate A5-2. View west of the proposed substation. The proposed 230 kV hydroline would parallel the existing hydroline visible in the background.

A6. WATERLINE

Plate A6-1. View north along Sugarloaf Road. Proposed waterline will run alongside the road.

Appendix B

Ajax Project Archaeological "Chance Finds" Procedure

KGHM-Ajax Mine Project

Archaeological Chance Finds Procedure

1.0 PURPOSE

The purpose of the Chance Find Procedure is to address the possibility of archaeological deposits, finds and features becoming exposed during earthmoving and ground altering activities associated with the KGHM-Ajax Mine Project exploration and Environmental Assessment activities and to provide procedures to follow in the event of a chance archaeological find.

Although all areas of the proposed Ajax Mine Site have undergone thorough site investigations to identify archaeological or cultural heritage resources, it is possible other archaeological or cultural heritage resources will be encountered. The objectives of this procedure are to identify and promote the preservation and recording of any archaeological material that may be discovered during activities conducted on the proposed Mine site and to outline the protocol to be followed if a new archaeological or cultural heritage resource is encountered.

2.0 RESPONSIBILITIES and JOB REQUIREMENTS

All KGHM-Ajax personnel, consultants, agents or contractor representatives will follow the guidelines set out in this document.

3.0 PROCEDURE

During exploration and Environmental Assessment activities on the proposed Ajax Mine site additional archaeological sites, artifacts, or cultural heritage resources may be encountered. If during these activities, a suspected archaeological site or artifact is found, the following procedures will be implemented:

A. All construction ore exploration activity in the vicinity of the find/feature/site will cease immediately.

B. Contact the Environmental Coordinator or the Logistics Lead immediately on securing the site from further activity.

C. Environmental Coordinator or the Logistics Lead will immediately contact the Environmental Manager. Efforts will be made immediately to protect the site. If an artifact has been discovered, it will not be removed from the site. All work near the site or artifact will stop immediately and construction equipment or exploration equipment will be kept away from the site or artifact to avoid further disturbance or destruction.

D. An archaeological or cultural heritage resources report will be completed. The person who identified the potential archaeological or cultural heritage resource, the Environmental Coordinator, the Logistics Lead or the Environmental Manager will complete the archaeology report with the following information:

- Date (when the archaeological find was first encountered);
- Observer (name of the person recording the information on the site or artifact);
- Site location (detailed enough so that it can be relocated, GPS if possible);
- Type of site (archaeological site, burial site or artifact);
- Any obvious disturbance to the site (by equipment, animals, etc.) and;
- Photographs.

The completed archaeology site reports will be submitted to the Environmental Department.

E. The Environmental Manager will contact a qualified archaeologist and the BC Forests, Lands and Natural Resource Operations (FLNRO) Archaeology Branch, and provide details of the suspected site or artifact. If photographs are available, these will be provided to the archaeologist for preliminary assessment.

F. The qualified archaeologist will visit the site to survey and document the find. The qualified archaeologist will assess the significance of the artifact and the location. Mitigation options for the site or artifact will be drafted by the archaeologist, reviewed by the Archaeology Branch, and the affected Fist Nations. Agreement on the approach to mitigation will be determined by the qualified archaeologist in coordination with the Archaeology Branch and affected First Nations.

G. If human remains are discovered, procedures will follow the Archaeology Branch Policy Statement “Found Human Remains” (September 1999). Police will also be informed in the case of found human remains.

H. Once the site is assessed and mitigated to the satisfaction of the Archaeology Branch and the site has been cleared, construction or operations activities may recommence.

4.0 REPORTING

If monitoring is required, a report will be submitted to the Archaeology Branch as part of the permit. The reports will include the following general items:

- A summary of construction/exploration or Environmental activities at or near any archaeological site;
- Any non-compliance activities and subsequent work stoppages, mitigative actions and/or rectifying measures;
- Unexpected archaeological concerns and potential mitigation strategies and;
- Incident reports describing significant archaeological issues.

The Heritage Branch requires the submission of a final report for the Inspection, investigation or alteration in regards to the archaeological and cultural heritage resources, by the permitted archaeologist. The permit holder will prepare the final report when all fieldwork for the permit has been completed.

The permit holder will prepare progress reports to ensure that the KGHM-Ajax Environmental Team is kept up to date with the status of the archaeological studies. During Exploration and Environmental Assessment activities, as appropriate, the principal archaeologist for the Project will submit progress reports during active periods of archaeological inventory and impact assessment, monitoring, systematic data recover, and mitigation as required. All reports will be submitted to the Environmental Manager for distribution to the Project Manager.

5.0 CONTACT INFORAMTION

Mine Manager: Wayne Fong	250 374 5446 (office) 250 299 7391 (cell)
Environmental Manager: Kate Parsons	250 374 5446 (office) 250 571 3648 (cell)
Logistics Lead: Trevor Fulcher	250 374 5446 (office) 250 318 3952 (cell)
Archaeologist: Sean McKnight (ERM Archaeology)	604 689 9460 (office)
FLNRO, Archaeological Branch	250 953 3334 (reception)
RCMP	250 828 3000