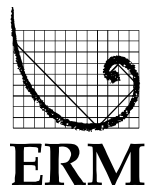


BRUCEJACK GOLD MINE PROJECT
Application for an Environmental Assessment Certificate /
Environmental Impact Statement

Appendix 22-B
2013 Paleontology Baseline Report



Pretium Resources Inc.

BRUCEJACK GOLD MINE PROJECT 2013 Paleontology Baseline Report



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October 2013

BRUCEJACK GOLD MINE PROJECT 2013 PALEONTOLOGY BASELINE REPORT

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Prepared for:

PRETIVM 

Pretium Resources Inc.

Prepared by:



an ERM company

Rescan Environmental Services Ltd., an ERM company
Vancouver, British Columbia

Executive Summary

Executive Summary

This report summarizes the results of the paleontological desktop baseline studies undertaken for Pretium Resources Inc.'s Brucejack Gold Mine Project (the Project). The Brucejack property is situated within the Sulphurets District in the Iskut River region, approximately 20 kilometres northwest of Bowser Lake or 65 kilometres north-northwest of the town of Stewart, British Columbia.

While there is no specific legislation in British Columbia that protects paleontological sites, the provincial government has developed a Fossil Management Framework. The protection of fossil sites may be considered where a site is scientifically significant or threatened by exploitation or development. Such sites must be subject to a paleontological assessment to evaluate a sites scientific importance, uniqueness, and physical extent. Sites in British Columbia can be protected by a number of existing mechanisms including the *Land Act*, *Heritage Conservation Act*, *Mineral Tenure Act*, *Park Act*, *Ecological Reserve Act*, *Environmental and Land Use Act* and *Environmental Assessment Act* and typically are considered on a case by case basis.

The paleontological baseline considered the Regional Study Area with a focus on the Local Study Area. The objectives of the baseline study were to provide a review of the geologic formations within the RSA to provide a regional context for paleontological potential and to identify any known, documented, and/or protected paleontological sites with the RSA and LSA.

No significant fossils have been recorded within the LSA or RSA, however the rock units have the potential to be fossil bearing, and several fossils have been documented within the RSA.

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BRUCEJACK GOLD MINE PROJECT

2013 PALEONTOLOGY BASELINE REPORT

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Appendix A. Paleontological Chance Find Procedure

Glossary and Abbreviations

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.

BC	British Columbia
BP	Before Present
LSA	Local Study Area
Ma	Million years ago
masl	Metres above sea level
Pretivm	Pretium Resources Inc.; the proponent for the Brucejack Gold Mine Project
Project	Pretium Resources Inc.'s Brucejack Gold Mine Project
Regional District Kitimat-Stikine	The local government of a 100,000 km ² area in northwestern British Columbia including the Project area. Member municipalities are Kitimat, Terrace, Stewart, Hazelton, and New Hazelton.
Rescan	Rescan Environmental Services Ltd.
RSA	Regional Study Area
tpd	Tonne per day

1. Introduction

1. Introduction

This baseline report summarizes the results of the paleontological desktop baseline studies undertaken by Rescan Environmental Services Ltd. for Pretium Resources Inc.'s (Pretium's) proposed Brucejack Gold Mine Project (the Project).

A Regional Study Area (RSA) and Local Study Area (LSA) were considered during this study (Figure 1-1). The RSA is 57 km north-south by 60 km east-west from Highway 37 to Sulphurets Creek, and includes portions of the Bowser River, Sulphurets Creek, and Treaty Creek watersheds. The LSA includes a 1 km buffer on either side of the proposed Project footprint which includes an the access road from Highway 37 to the current Brucejack exploration camp, proposed Project infrastructure related to the development of the Brucejack deposit, and a transmission line route (south option), which would bring power from the Long Lake Hydroelectric Project being built near the Premier Mine. The paleontological review considered the RSA with a focus on the LSA.

1.1 OBJECTIVES

The objectives of the paleontological baseline study for the Project were to:

- provide a review of the geologic formations within the RSA to provide a regional context for paleontological potential; and
- identify any known, documented, and/or protected paleontological sites within the RSA and LSA.

1.2 APPLICABLE LEGISLATION (FEDERAL AND PROVINCIAL)

While there is no specific legislation in British Columbia that protects paleontological sites, the provincial government has developed a Fossil Management Framework (Land Tenures Branch n.d.). The protection of fossil sites may be considered where a site is scientifically significant or threatened by exploitation or development. Such sites must be subject to a paleontological assessment to evaluate a site's scientific importance, uniqueness, and physical extent. Sites in British Columbia can be protected by a number of existing mechanisms including the *Land Act*, *Heritage Conservation Act*, *Mineral Tenure Act*, *Park Act*, *Ecological Reserve Act*, *Environmental and Land Use Act* and *Environmental Assessment Act* and typically are considered on a case by case basis.

1.3 METHODOLOGY

The methodology for this desktop review included a literature review of geological and paleontological resources for the RSA, with a focus on the LSA. This included a review of geological map units and published papers and reports.

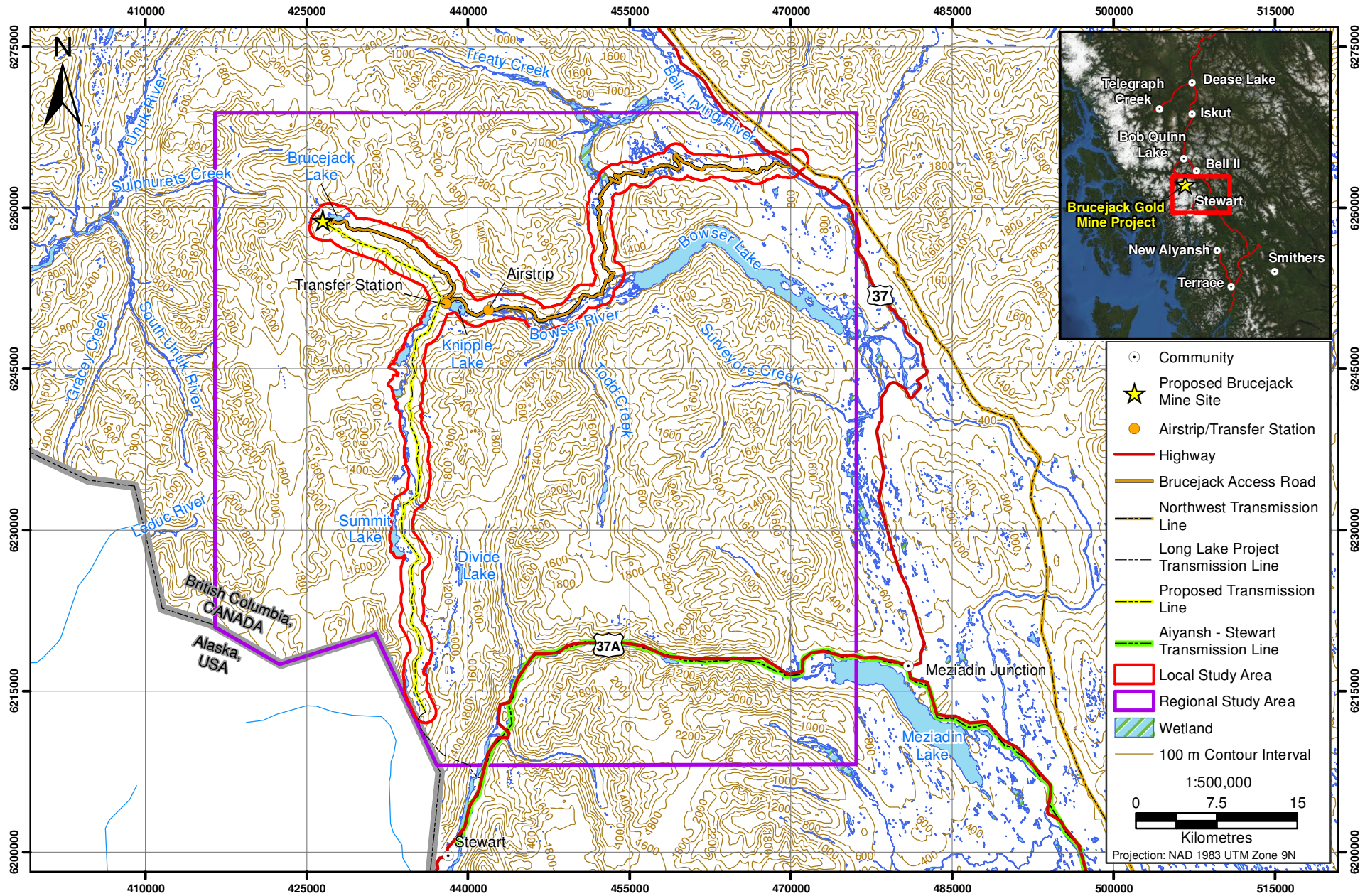


Figure 1-1

Figure 1-1

2. Project Description

2. Project Description

Pretium Resources Inc. (Pretivm) proposes to develop the Brucejack Gold Mine Project (the Project) as a 2,700 tonne per day (tpd) underground gold and silver mine. The Brucejack property is located at 56°28'20" N latitude by 130°11'31" W longitude, which is approximately 950 km northwest of Vancouver, 65 km north-northwest of Stewart, and 21 km south-southeast of the closed Eskay Creek Mine (Figure 2-1). The Project is located within the Kitimat-Stikine Regional District. Several First Nation and Treaty Nations have traditional territory within the general region of the Project including the Skii km Lax Ha, Nisga'a Nation, the Tahltan Nation, the Gitxan First Nation, and the Gitanyow First Nation.

The mine site area will be located near Brucejack Lake. Vehicle access to the mine site will be via an existing exploration access road from Highway 37 that may require upgrades to facilitate traffic during mine operations. A transmission line will connect the mine site to the provincial power grid near Stewart or along Highway 37; two options are currently under consideration.

The Project is located within the boundary range of the Coast Mountain Physiographic Belt, along the western margin of the Intermontane Tectonic Belt. The local terrain ranges from generally steep in the western portion of the Project area in the high alpine with substantial glacier cover to relatively subdued topography in the eastern portion of the Project area towards the Bell-Irving River. The Brucejack mine site will be located above the tree line in a mountainous area at an elevation of approximately 1,400 masl; surrounding peaks measure 2,200 m in elevation. The access and transmission corridors will span a range of elevations and ecosystems reaching a minimum elevation near the Bell Irving River of 500 masl. Sparse fir, spruce, and alder grow along the valley bottoms, with only scrub alpine spruce, juniper, alpine grass, moss, and heather covering the steep valley walls.

The general area of the Brucejack Property has been the target of mineral exploration since the 1960s. In the 1980s Newhawk Gold Mines Ltd. conducted advanced exploration activities at the current site of the proposed Brucejack mine site that included 5 km of underground development, construction of an access road along the Bowser River and Knipple Glacier, and resulted in the deposition of 60,000 m³ of waste rock within Brucejack Lake.

Environmental baseline data was collected from Brucejack Lake and the surrounding vicinity in the 1980s to support a Stage I Impact Assessment for the Sulphurets Project proposed by Newhawk Gold Mines Ltd. In 2009, Silver Standard Resources Inc. commenced environmental baseline studies specific to the currently proposed Project which have been continued by Pretivm, following its acquisition of the Project in 2010. The scope and scale of the recent environmental baseline programs have varied over the period from 2009 to the present as the development plan for the Project has evolved.

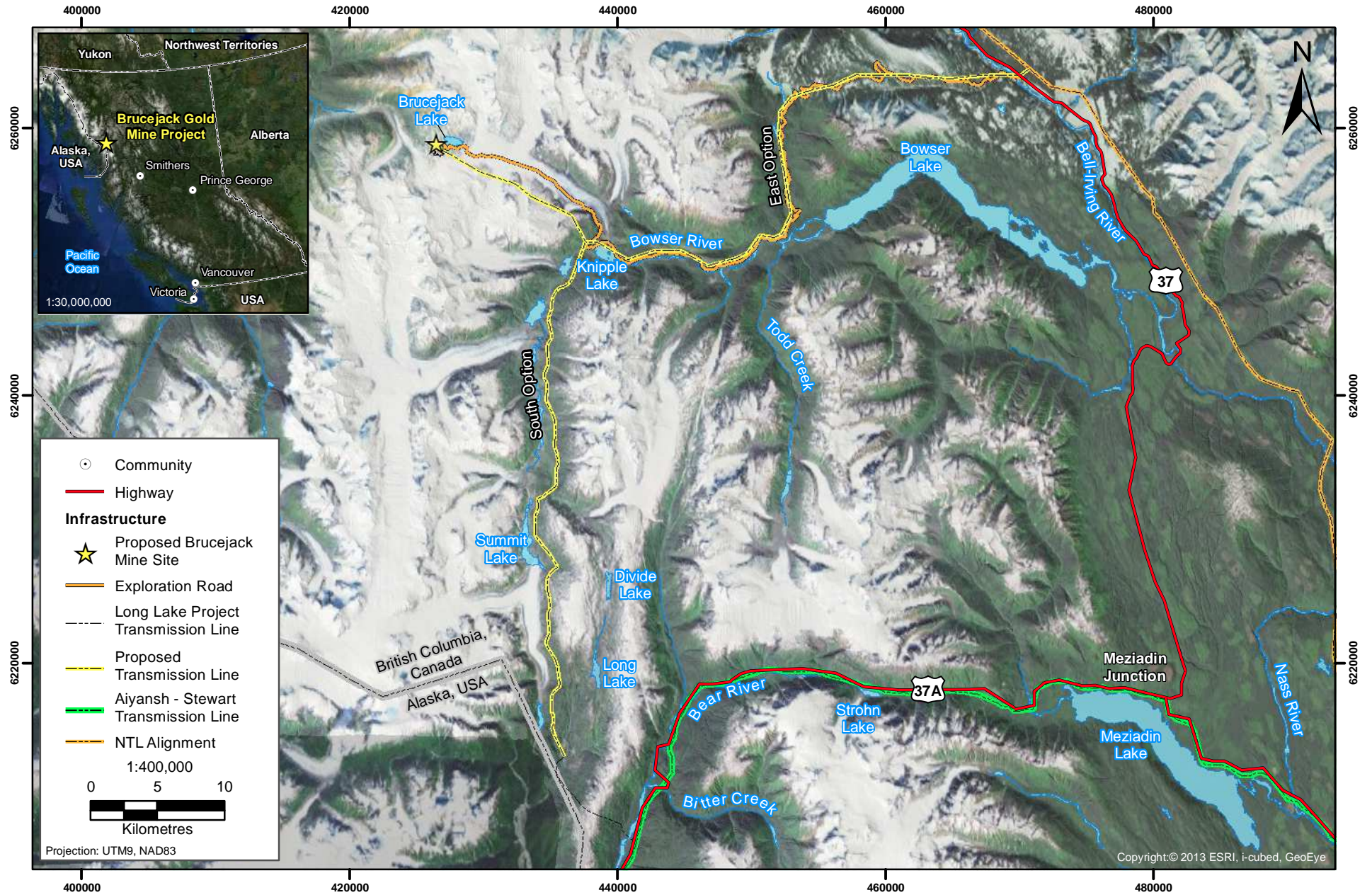


Figure 2-1

Figure 2-1

3. Geological Setting

3. Geological Setting

The geology underlying the Project area is generally comprised of rock units belonging to the Hazelton Group; however the western portion of the LSA is underlain by rocks of the Bowser Lake Group (Figure 3-1). The Hazelton Group is an Early to Middle Jurassic volcanic and sedimentary succession of rocks deposited on the Stikine Terrane (or Stikinia) of the Canadian Cordillera. Hazelton Group rocks range from volcanic flows to boulder conglomerate to volcanic sandstone, siltstone and mudstone. Taken together, they are interpreted to represent a basin adjacent to a volcanic arc that was active throughout much of the Mesozoic (Gagnon et al., 2012). The Bowser Lake Group is a Mid-Upper Jurassic to early Cretaceous predominantly marine sequence of shales and chert-pebble conglomerates, but coals, plant fossils sedimentary structures also evidence intervals of terrestrial deposits. These non-marine clastic rocks are interpreted as having been deposited in a deltaic system (MacLeod and Hills 1990, Evenchick et al. 2005).

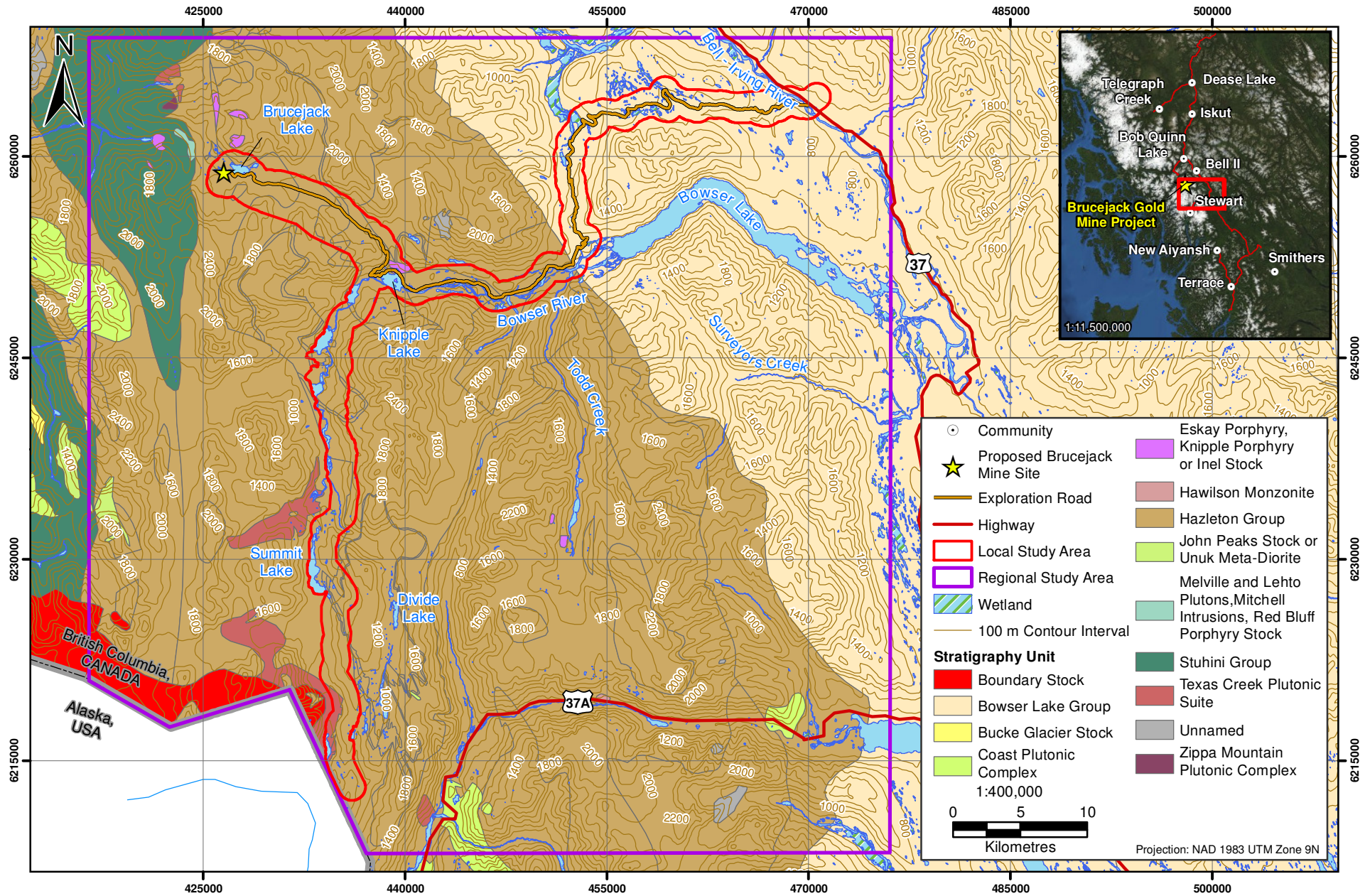


Figure 3-1

General Geology of the Brucejack Project Showing Extent of Hazelton and Bowser Lake Groups

Figure 3-1

4. Results

4. Results

Nascent paleontological work has been conducted in northwestern British Columbia. Most of these efforts have been focused on working out regional stratigraphy and chronology (see review from Evenchick et al., 2001), but there have also been a number of discoveries that have expanded known diversity of marine life in both the Paleozoic and Mesozoic. The Bowser Basin, in particular, has produced recent finds of dinosaur tracks, turtle fossils and plant remains (Evenchick et al. 2005). The Geological Survey of Canada, the Geological Branch of the British Columbia Ministry of Energy, Mines, and Petroleum Resources, the Royal British Columbia Museum, and Simon Fraser University have undertaken helicopter-supported paleontological field trips into the Bowser and Sustut basins, targeting potential fossils in the region. In addition, reconnaissance was undertaken in the late 1980s in the Unuk River-Salmon River-Anyox Area, during which several fossils were documented on the western side of Mount Dilworth (Grove 1986). To date, no biologically significant fossils have been found within the LSA or RSA.

The stratigraphy of the Hazelton Group has evolved through many iterations. It is informally divided into upper and lower parts, separated by an erosional unconformity at the boundary (Gagnon et al. 2012), and represents the last volcanic phase of the Stikine volcanic arc with intervening sedimentary basin deposition. The basal Jack Formation is a locally variable Lower Jurassic unit comprised of conglomerates and a buff weathering, fossiliferous calcareous sandstone known to contain bivalves, ammonoids, and a diverse assemblage of other macroinvertebrates (Jakobs and Pálffy 1994). This formation crosses the LSA on the western shore of Brucejack Lake, where it outcrops as a thick sequence of sandstones to cobble conglomerates (Lewis 2013). The Betty Creek Formation is generally unfossiliferous, with the exception of some poorly preserved ammonite fragments and laminated algal-microbial limestones (stromatolites) that are indicative of a peritidal environment (Jakobs and Pálffy 1994). Additional fossils preserved in the Hazelton Group include solitary and colonial corals, gastropods, bivalves, belemnites, and vertebrate fragments (Jakobs and Pálffy 1994), highlighting the marine setting of the emergent volcanic arc. The formations of the upper Hazelton Group consist of interbedded tuffaceous siltstone and sandstone layers containing abundant marine fossils and trace fossils (Gagnon et al. 2012). The fossiliferous Treaty Ridge member is prominent in the LSA southeast of Brucejack Lake along the margins of the Knipple Glacier (Lewis 2013).

The middle-to-late Jurassic Ritchie Alger Assemblage of the overlying Bowser Lake Group occurs within the RSA immediately north and south of Bowser Lake (Evenchick et al. 2008). While this unit has been established as broadly fossiliferous (Evenchick et al. 2001, 2005), no fossils have been found within this unit within the RSA. Furthermore, it does not intersect with the LSA.

5. Conclusions

5. Conclusions

Fossils have been recorded within the RSA; and strata within the LSA have the potential to be fossil bearing. Several fossils of marine invertebrates have been documented within the RSA. Ground disturbance activities may reveal paleontological materials, if present, particularly around Brucejack Lake. In the event that unanticipated paleontological finds are encountered it is recommended that the Paleontological Chance Find Procedure (Appendix A) be followed.

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Definitions of the acronyms and abbreviations used in this reference list can be found in the Glossary and Abbreviations section.

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Appendix A

Paleontological Chance Find Procedure

BRUCEJACK GOLD MINE PROJECT

Paleontological Chance Find Procedure

Introduction

While the paleontological potential for this region of the province is not well known or documented, fossils which have been encountered include dinosaur footprints, turtle shells, plant macrofossils, and marine corals and shellfish. These fossils have been discovered from river valleys to high mountain tops. For this reason, it is possible that you may encounter a fossil or paleontological site during your work. This procedure has been established to increase awareness of these important and finite resources, to assist in the protocols around protecting significant paleontological sites, and to assist in planning future project developments.

Paleontological Site Protection

In British Columbia, there is no specific legislation that protects paleontological sites; however, the provincial government has developed a Fossil Management Framework to protect significant sites on a case by case basis. The protection of fossil sites may be considered where a site is scientifically significant or threatened by exploitation or development. Such sites are subject to a paleontological assessment to evaluate their scientific importance, uniqueness, and physical extent.

Paleontological sites in British Columbia can be protected by a number of existing mechanisms including the *Land Act*, *Heritage Conservation Act*, *Mineral Tenure Act*, *Park Act*, *Ecological Reserve Act*, *Environmental and Land Use Act* and *Environmental Assessment Act* and typically are considered on a case by case basis.

Means of Discovery

Developments that involve the excavation, movement, or disturbance of soils and blasting and drilling of bedrock can impact paleontological sites, if present. It is anticipated that the principle type of ground disturbance for the project will involve blasting, road building, landscaping, and logging, and as such, paleontological sites that may be present within or adjacent to the proposed project footprint could be adversely affected. In addition, project personnel who may be conducting survey work away from the project may also encounter fossils/paleontological sites on exposed bedrock outcrops.

Chance Find Guidelines

If you discover a fossil or what you suspect could be a paleontological site in the course of your work:

- Stop all work in the area to avoid damaging the site.
- **Do not disturb any remains/fossils that you may encounter.**
- Report your discovery to your supervisor or if they are unavailable, Pretium Resources Inc. will provide further instructions.
- Isolate and protect the area.
- Note the location and leave all discoveries in place.

- Prepare an initial Chance Find Form.
- Pretium Resources Inc. will contact the Project's Heritage Team.
- A member of the Project's Heritage Team will assess the potential significance of the find. If it is determined to be a significant paleontological site, they will contact the appropriate government ministry.
- The Project's Heritage Team, in consultation with the appropriate government ministry, will conduct an investigation to determine if the site will be granted protection.
- The Project's Heritage Team will work Pretium Resources Inc. and the Mine Site Manager to prepare Site Instructions to recommence work in the area.
- A site report will be submitted to Pretium Resources Inc. and the appropriate government ministry.

Contacts

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Paleontological Chance Find Report Form

Recorder's Name/Affiliation: _____

Date: _____

Location of chance find (Location description, UTM coordinates, road, quarter section, depth below surface): _____

Description of find: _____

Method used to mark and protect find: _____

Distribution:

Mine Site Manager

Pretivm

Heritage Team

Government
Ministry

Sketch Map	Photo
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