APPENDIX B

Palaeontological Assessment

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PALAEONTOLOGICAL ASSESSMENT

EAGLE GOLD PROJECT

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Prepared For

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Executive Summary

OVERVIEW

Victoria Gold Corp. proposes to construct and operate the Eagle Gold Project (the Project), a gold mine in the central part of Yukon Territory. The Project is located near the confluence of Haggart Creek and Dublin Gulch, approximately 350 km north of Whitehorse and 45 km north-northeast of the Village of Mayo. The deposit to be mined (the Eagle Zone) occurs in an upland area east of Haggart Creek and south of Dublin Gulch.

The Dublin Gulch area is underlain by bedrock of the Upper Proterozoic to Lower Cambrian Hyland Group, consisting of metasedimentary rocks with granodiorite intrusions. Upland areas are covered in colluvium and the Dublin Gulch valley is infilled with Pleistocene surficial deposits. The Dublin Gulch area has yielded the only substantial collection of approximately 32,000 year old, Pleistocene vertebrate fossils from the Mayo District, consisting of small horse, steppe bison, Dall sheep, caribou, moose, American lion, and possibly mammoth.

DUBLIN GULCH FOSSIL LOCALITY

Field surveys conducted as part of the Historic Resources Impact Assessment for palaeontology found that most of the valley fill at Dublin Gulch and Haggart Creek has been reworked by placer gold mining. There is no sign of any remaining source layer for the Dublin Gulch Pleistocene fossil locality, and no additional fossil vertebrate material was found. Organic layers at the top of the surficial sequence in Dublin Gulch contain plant and arthropod material and yielded conventional (calibrated) radiocarbon ages of approximately 10,000 to 13,000 years before present. These late Pleistocene to early Holocene dates indicate the sediments were deposited during climatic warming following the McConnell Glaciation (approximately 23,000 to 29,000 years before present). A large piece of wood recovered from intact surficial deposits along the access road yielded a conventional (calibrated) radiocarbon age of late Holocene, approximately 2,700 years before present.

MAIN INFRASTRUCTURE AREA

It is expected that there will be extensive disturbance of the surficial deposits near the Dublin Gulch Pleistocene fossil locality and around the mouth of Dublin Gulch by development of the plant site, event ponds, silt borrow area, and laydown area. The likelihood of development in this area encountering palaeontological resources is considered moderately low as it is mostly disturbed and there is no indication that the source layer for the vertebrate fossils still exists.

Project effects are possible but not highly likely in remnant intact strata along the south valley wall of Dublin Gulch. As there will be ongoing use of the intact deposits as a borrow source, a palaeontological education program for the equipment operators and adherence to the Fossil Discovery Protocol (Appendix D) is recommended.

MINE SITE

The likelihood of Project mining activities encountering palaeontological resources in the bedrock is considered negligible due to the degree of metamorphism. No Project effects on palaeontological resources are expected.

HEAP LEACH FACILITY

The Heap Leach Facility will be situated in Ann Gulch. The valley fill near the base of Ann Gulch is considered to have high palaeontological potential. These deposits are intact and have not been subject to mechanized mining for placer gold. Because much of the sequence appears to be early Holocene, any remains would be relatively recent in age and provide a post-glacial faunal or floral record. Considerable subsurface disturbance is expected to shape the landscape before installation of the pad liner. The likelihood of this development encountering palaeontological resources is considered high, especially for floral remains, which have medium heritage value. The probability of the disturbance providing the opportunity to recover vertebrate remains is lower as there will be no sorting or processing of the deposits that takes place with placer gold mining. There is a moderate probability of Project effects on palaeontological resources from construction of the Heap Leach Facility.

Construction details regarding grading and excavation of the Ann Gulch Heap Leach Facility are needed. It is recommended that the construction plan be carefully reviewed to identify any opportunity for the collection of detailed stratigraphic and palaeontological information in an exposed section before it is covered by the leach pad liner. A palaeontological education program for the equipment operators and adherence to the Fossil Discovery Protocol (Appendix D) are also recommended in the event that vertebrate remains are uncovered during construction.

CAMP

The camp will be situated on a glaciofluvial terrace with intact deposits from the Middle Pleistocene Reid Glaciation. There is moderate potential to encounter palaeontological resources in this terrace. No major ground excavation is expected in this area during camp construction. The likelihood of Project effects on palaeontological resources in the camp area is considered low since ground disturbance will be limited.

A palaeontological education program for the equipment operators and adherence to the Fossil Discovery Protocol (Appendix D) is recommended during the construction stage, in the event that vertebrate remains are encountered.

WASTE ROCK STORAGE AND TOPSOIL STOCKPILE AREAS

Soil stockpile and Waste Rock Storage Areas (WRSAs) will be cleared, but little subsurface disturbance is expected. The likelihood of development disturbing palaeontological resources is considered low. No effects on palaeontological resources are expected from these project components. No further palaeontological studies or mitigation are recommended.

ACCESS ROAD AND TRANSMISSION LINE

In most areas, the access road and transmission line pass through surficial deposits that have been reworked by placer gold mining, or through areas of colluvium, bedrock, and organic deposits. In these areas, no Project effects on palaeontological resources are expected by improvement of the access road or development of the transmission line, and no further palaeontological studies or mitigation are recommended.

At the unnamed creek crossing at DG26 (Figure 9), access road improvements could disturb intact surficial strata of early Holocene age. A palaeontological education program for the equipment operators and adherence to the Fossil Discovery Protocol (Appendix D) is recommended during the construction stage in the event that vertebrate material is encountered.

IMPACT SUMMARY AND RECOMMENDED MITIGATION MEASURES

Overall, the likelihood of the Project affecting palaeontological resources is considered low as most of the strata with high palaeontological potential in the area have been disturbed by placer gold mining. As the Heap Leach Facility design advances, greater detail will be available to refine predictions and focus the application of mitigation. The overall mitigation measures recommended are:

- Use of a Palaeontological Education Program to teach equipment operators how to recognize a fossil, and what do if a fossil is found

- Adherence to a Fossil Discovery Protocol (Appendix D), where all fossils encountered during construction are recovered and the site context is recorded

- Early reporting of the discovery of any fossil remains to allow the opportunity for a palaeontologist to visit the site and investigate any fossiliferous units before they are removed

- Review of changes to the Project design and footprint by a palaeontologist to better predict where fossils could be encountered during construction.

Discovery of vertebrate fossils during Project construction could result in a significant *positive* environmental effect through the recovery of the fossils and recording of the site context.

Project Personnel

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1 INTRODUCTION

Victoria Gold Corp. proposes to construct and operate the Eagle Gold Project (the Project), a gold mine in the central part of Yukon Territory. The Project is located approximately 350 km north of Whitehorse, 45 km north-northeast of the Village of Mayo and 20 km northwest of Elsa (Figure 1). It is centred near the confluence of Haggart Creek and Dublin Gulch, two watercourse valleys that contain extensive placer gold tailings. The gold deposits of the Eagle Zone (i.e., the deposits to be mined) occur in an upland area east of Haggart Creek and south of Dublin Gulch.

On behalf of Stantec, FMA Heritage Inc. (FMA) completed a data gap analysis for palaeontological resources for the Project in the spring of 2009. This analysis indicated that significant palaeontological resources were recovered from Dublin Gulch during placer gold mining in the 1970s (Harington 1996). However, until the current studies, no palaeontologist had ever visited the Dublin Gulch fossil locality, and the state of the fossil site was unknown, as was the extent of the fossiliferous strata.

A Historic Resources Impact Assessment (HRIA) for palaeontology was initiated to determine whether or not the Project would affect palaeontological resources. Four days of field studies were conducted in September of 2009 to investigate the Dublin Gulch Pleistocene fossil locality and to examine strata in and around the Dublin Gulch area. This document presents the results of the HRIA. While no permit was required at this time, a description of the Project and the proposed assessment methods were submitted to the Yukon Palaeontology Program of the Department of Tourism and Culture.

The First Nation of Na-Cho Nyäk Dun (FNNND) was notified of the palaeontology HRIA studies on August 17, 2009. Four FNNND citizens participated in the field studies.

1.1 THE PROJECT

The Project will consist of an open pit mine with an expected capacity of 9M tonnes of ore/year. The mine will operate year-round and require the construction of a cyanide Heap Leach Facility and a gold recovery plant, as well as accommodation, administration, and repair facilities (Figure 2). The Project will also involve the upgrade of the existing access road from Silver Trail Highway 11 to the project site (approximately 48 km). Upgrades will require minor realignments, widening, and resurfacing.

1.2 PREVIOUS PALAEONTOLOGICAL ASSESSMENTS

In the late 1990s, environmental impact assessments were completed for a previously proposed gold mine at Dublin Gulch. These studies included a letter from Dr. John Storer, Yukon Palaeontologist, to the Department of Indian Affairs and Northern Development, regarding palaeontological impacts and mitigation (Storer 1998). Dr. Storer concluded that the Dublin Gulch fossil locality did not seem to be threatened directly by the project; however, “access road development and tailings ponds could be a concern”. The following items were recommended:

- Palaeontological survey of the site
- Avoidance of the fossil locality by the development
- Monitoring of any construction in the placer area and any construction at river cuts along Haggart Creek.

1.3 THE NATURE OF PALAEONTOLOGICAL RESOURCES

Palaeontological sites are non-renewable and are susceptible to alteration, damage, and destruction by development projects. The value of these resources cannot be measured in terms of individual fossils; rather the value of palaeontological resources lies in the integrated information derived from the interrelationships of the individual specimens, associated features, spatial relationships (distribution) and context. Interpretation of fossil material is based on an understanding of the nature of the relationship between fossils and the surrounding sediments/strata. Removal or mixing of these strata results in the permanent loss of information basic to the understanding of these resources. As a result, palaeontological resources are increasingly susceptible to destruction and depletion through disturbance.

Palaeontological resources can be directly adversely affected by any activities that include surface and subsurface disturbance. Indirectly, they may be affected by increased human access and human presence. An adverse effect on palaeontological resources involves the destruction or disturbance of all or part of a fossil site. This effect, if not controlled through mitigative investigation and documentation, results in the permanent loss of part of the non-renewable palaeontological record. Depending on the heritage value of the specific fossil site, a significant adverse effect could be identified. A positive effect on palaeontological resources increases the knowledge of palaeontological resources through inventory, documentation, protection, interpretation, or other means.

2 SETTING

The Project is situated in the Yukon Plateau, just south of the Ogilvie Mountains. It lies within the Omineca Belt of the northern Canadian Cordillera (Bleiler, et al. 2006) and the land is characterized by rolling hills and plateaus drained by deeply incised gulches. The landscape is highly vegetated with tree cover growing in residual soil and colluvium. Natural exposures of the bedrock and surficial deposits are rare and generally occur only on the tops of the hills and along the steep valley slopes of the gulches. Black spruce, willow, alder, and moss cover the lower elevations and sub-alpine vegetation grows in the higher elevations (Wardrop 2009).

2.1 BEDROCK GEOLOGY

The Dublin Gulch area is underlain by bedrock of the Upper Proterozoic to Lower Cambrian Hyland Group, consisting of metasedimentary rocks with igneous intrusions.

The Hyland Group strata are made up of quartzite, phyllite, and rare limestone, which accumulated in an ancient trough offshore from ancestral North America, known as the Selwyn Basin. The quartzite can be gritty, micaceous, or massive. Muscovite-sericite and chlorite are the main constituents of the phyllite. The strata have undergone regional greenschist grade metamorphism and local contact metamorphism. Close proximity to the igneous intrusions has altered the strata to quartz-biotite, sericite-biotite-chlorite schist, marble, wollastonite-quartz skarn, and pyroxenite skarn (Wardrop 2009).

The intrusive rocks are approximately 93 million years old and are part of the Tombstone Plutonic Suite. Granodiorite forms the bulk of the intrusive strata, with quartz diorite, quartz monzonite, leucogranite, and aplite comprising younger intrusive phases, mainly in the form of dikes and sills that cut both the granodiorite and bedrock. The gold deposits of the Eagle Zone are near the western limit of the main intrusion, within extensional quartz veins (Wardrop 2009).

2.2 SURFICIAL GEOLOGY

2.2.1 GLACIAL HISTORY

The Mayo District has been extensively glaciated, which rounded and smoothed the landscape, carved U-shaped valleys, and left behind thick deposits of glacial debris. There were three main glacial episodes (Harington 1996): Pre-Reid (early Pleistocene), which can be divided into the Nansen and Klaza advances; Reid (Illinoian); and McConnell (late Wisconsinan). The early Nansen advance filled Dublin Gulch with ice as high as the top of the plateau (1426 m). The Klaza advance flowed down Lynx and lower Haggart creeks and reached near the confluence of Dublin Gulch and Haggart Creek (884 m). The Reid advance, which lasted from approximately 300,000 to 200,000 years ago, flowed up Haggart Creek from the McQuesten River. It filled Dublin Gulch, but did not cover the surrounding uplands (Bond 1999). The Reid Glaciation was followed by the Koy-Yukon interglacial, which lasted for approximately 170,000 years (LeBarge, et al. 2002).

The Dublin Gulch area was ice free during the McConnell Glaciation, which started approximately 29,000 years ago (Bleiler, et al. 2006). The area hosted a periglacial environment, subject to intense freezing cycles and development of permafrost. Dry, low arctic tundra conditions prevailed with a landscape that was nearly treeless and supported a large mammal fauna (Harington 1996). The climate began to warm approximately 14,000 years ago, and deglaciation began. A conventional radiocarbon date of approximately 12,300 +/- 120 years on alluvial fan organic material from Gill Gulch suggests that the McConnell Glaciation had waned enough by this time to allow the establishment of trees (LeBarge, et al. 2002).

2.2.2 SURFICIAL DEPOSITS

In the Dublin Gulch area, upland areas are covered in colluvium and the Dublin Gulch valley is infilled with Pleistocene gravel. The gravel overlies glacial till of the Reid Glaciation (200,000 to 300,000 years old). Detail surficial geology maps are provided in Figures 3 to 5 (Appendix B) and an index table in Table B-1.

LeBarge, et al. (2002) provide a detailed description of the surficial deposits of the Haggart Creek area, based on 31 exposed stratigraphic sections examined between 1995 and 1997. Documented landforms in the area include a remnant glaciofluvial terrace, alluvial fans, and colluvial slope deposits. The general stratigraphic assemblage, from oldest to youngest, is as follows:

- Pre-Reid interglacial fluvial, gulch, and alluvial fan sediments that have been partly reworked or buried
- Early and Middle Reid glaciofluvial, glacial and periglacial sediments
- Late Reid glaciofluvial, glacial and periglacial sediments, which likely formed terraces during the retreat of the glacier
- Early and Middle McConnell periglacial sediments, made up of reworked Koy-Yukon interglacial sediments, deposited as periglacial fans at the edges of the valleys and as valley fill along the main Haggart Creek valley
- Late McConnell periglacial sediments, discontinuously deposited as alluvial fan sediments
- Holocene alluvial, colluvial, and aeolian sediments, such as the thick deposit at the confluence of Gill Gulch with Haggart Creek.

Placer gold deposits are preserved best near the maximum limits of glacial advances, as within Dublin Gulch. In these areas, there is less ice scouring and more deposition, meaning that preglacial alluvial gold deposits are buried. The Dublin Gulch valley contains valley bottom placer deposits that are likely interglacial, glacial, and glaciofluvial deposits of the Reid Glaciation overlying a basal debris flow (Hein and LeBarge 1997).

The valley fill gravel at Dublin Gulch, the gulches that feed into Dublin Gulch, and Haggart Creek between Dublin Gulch and Secret Creek, has been mostly reworked by placer gold mining (Bond 1997; Lipovsky, et al. 2001). The only area with relatively undisturbed valley fill is Ann Gulch.

2.2.3 GOLD MINING HISTORY

Placer gold was first discovered on Haggart Creek, just below Dublin Gulch, in 1895. Scheelite (a tungsten ore) was found with the placer gold in 1904 and lode gold in 1907 (Hein and LeBarge 1997). Mining for placer gold along Haggart Creek began in earnest in 1899 and became mechanized in the late 1930s (LeBarge, et al. 2002; Mayo Historical Society 1999). Most of Dublin Gulch and the nearby Haggart Creek deposits have been worked and reworked for placer gold, creating a disturbed landscape (Bond 1997). A detailed history of the mining operations along Haggart Creek and Dublin Gulch is recorded in *Gold and Galena* (Mayo Historical Society 1999). Placer operations ceased in 1998 with total recorded gold production of 2,418,300 g between 1895 and 1998 (LeBarge, et al. 2002).

In the 1970s, there was intensive placer gold mining activity at Dublin Gulch by Fred Taylor, Ron Holoway and D. Duensing, with the property sold to Canada Tungsten Mining Corp. Ltd. in 1978 (Mayo Historical Society 1999). During 1975 and 1976, under the operation of Darron Placers, fossils from the Dublin Gulch Pleistocene fossil site were recovered (Harington 1996; Sinclair, et al. 1976; Morin, et al. 1977).

2.2.4 FOSSIL RECORD AND PALAEOENVIRONMENT

The Dublin Gulch area has yielded the only substantial collection of Pleistocene vertebrate fossils from the Mayo District (Harington 1996) with a few other Pleistocene to Holocene remains from other areas (Table 1). The Dublin Gulch fossil material was recovered mostly by D. Duensing during the mid-1970s as a by-product of placer gold mining and deposited in the Kluane Museum of Natural History. The collection was subsequently studied by Dr. C.R. Harington of the Canadian Museum of Nature.

Table 1 Fossils from the Mayo District

Locality	Fossil Material[1]
Dublin Gulch (left [south] side of Dublin Gulch, slightly downstream from Stuttle Gulch, more or less halfway between Eagle Pup and Haggart Creek)[2]	Small horse (*Equus lambei*) – abundant bones Steppe bison (*Bison* cf. *B. priscus)* – abundant bones Dall sheep (*Ovis dalli*) – 6 specimens Caribou (*Rangifer tarandus*) – 5 specimens Moose (*Alces* cf. *A. alces*) – 2 partial antlers American lion (*Panthera leo atrox*) – right ulna fragment Possible Mammoth (cf. *Mammuthus* sp.) – bone fragment
Highet Creek (E. Bleiler's claim 87)	Bison (*Bison* sp.) – left radio-ulna
Stewart River (5 km downstream from Mayo)	Bison (*Bison* sp.) – 1 molar
Haggart Creek (1.6 km downstream from confluence with Dublin Gulch)	Steppe bison (*Bison priscus*) – 2 partial crania
Stewart River (opposite high bluff immediately downstream from Mayo)	Steppe bison (*Bison* cf. *B. priscus*) – partial cranium Horse (*Equus* sp.) – partial radius
Stewart River (high bluff immediately downstream of Mayo)	Horse (*Equus* sp.) – partial radius and thoracic vertebra Mammoth (*Mammuthus* sp.) – partial femur
Stewart River, Mayo Indian Village Section (2.4 km downstream from Mayo)	Plants – fungus, bryophytes, pine, pondweed, sedge, rushes, willow, birch, sorrel, bugseed, chickweed, pearlwort, buttercups, poppy, Whitlow-grass, roses, mare's tail, milfoil, hare's ear Insects – shorebugs, ground beetles, diving beetles, rove beetles, carrion beetles, round fungus beetles, pill beetles, lady bugs, weevils, crane flies, sawflies, mites
Sources: Harington (1996); Matthews, et al. (1990) Notes: 1 vertebrate fauna listed in descending order of abundance 2 location description after Storer (1998)	

There is no site description for the Dublin Gulch Pleistocene locality. Harington (1996) pieced together a possible stratigraphic succession based on records from earth scientists between 1916 and 1991, with the following stratigraphic units (oldest to youngest):

- Unit 1 – schistose-quartzite bedrock
- Unit 2 – rusty to olive boulder gravel
- Unit 3 – banded organic silt (muck)
- Unit 4 – diamicton (glacial till)
- Unit 5 – organic silt and colluvium.

Harington (1996) concluded that the source layer for the bones was just below the organic silt and colluvium (Unit 5), although he acknowledged the possibility that not all of the bones may have come from the same unit. He determined that the fossils were collected over two years from a single cut at the "extreme left limit of the gulch at the upper end of claim 3" (Harington 1996: 354). Storer (1998: 1) later described the site location as the "left [south] side of Dublin Gulch, slightly downstream from Stuttle Gulch, more or less halfway between Eagle Pup and Haggart Creek".

The Dublin Gulch Pleistocene locality includes small horse, bison, Dall sheep, caribou, moose, American lion, and possibly mammoth (Harington 1996). Horse and bison dominate the assemblage. The lack of small mammals can be explained by a collecting bias where only the larger bones were noticed and collected. Systematic screen washing for vertebrate bones is needed to capture the smaller mammal bones. The predominance of horse and bison in the assemblage is typical of Yukon and Alaskan Pleistocene faunas. A date of 31,450 +/- 1300 years before present was obtained from conventional (uncalibrated) radiocarbon analysis of a horse metatarsal bone, which makes the fauna Middle Wisconsinan. All of the species found at the Dublin Gulch Pleistocene locality have also been reported at other Yukon Middle Wisconsinan sites south of the Arctic Circle such as Sixtymile (Harington 1997), Big Creek (Harington 1989), and Ketza River (Jackson and Harington 1991).

The Middle Wisconsinan faunas suggest that a widespread grassland steppe was established in the central Yukon, although the presence of moose suggests a wetland component (Jackson and Harington 1991). Detrital organics with plant seeds, pollen, and insect remains were recovered near Mayo, beneath till of the McConnell Glaciation, and dated at 29,600 +/- 300 years (Matthews, et al. 1990). The plants indicate a nearly treeless environment, although there may have been small patches of spruce (Table 1). Typical low arctic plants are rare to absent, although the flora suggests that the climate was no colder than today's low arctic tundra, but drier. The arthropod assemblage has no species that are restricted to south of the treeline, but few of the species live at high arctic sites (Table 1). Some such as weevils and ladybugs live only in low arctic or hypoarctic tundra. Some of the beetle species are characteristic of dry, thinly vegetated riverbanks.

3 METHODS

3.1 STUDY AREA BOUNDARIES

The local assessment area (LAA) is the Project footprint. This is the area where Project effects on palaeontological resources could occur. For the purposes of baseline field data collection, a local study area (LSA) was used, which included the LAA plus an approximately 500 m buffer zone to allow for opportunistic collection of data in areas of limited stratigraphic exposure. The study areas are illustrated in Figure 6.

3.2 FIELD STUDIES

The palaeontological field investigations were conducted under snow free conditions from September 10 to 13, 2009. Potentially fossiliferous surficial and bedrock exposures were examined. The assessment focused on the LAA. However, as the potentially fossiliferous layers that may be disturbed by the Project are typically buried, it is often necessary to look at exposures adjacent to the footprint to evaluate these buried horizons and extrapolate the information to the footprint. The field studies examined nearby exposures in the LSA, and collected information on the buried horizons and the overall palaeontological potential of the area.

The field investigations were conducted on foot. Lithology, sedimentary features, amount and nature of overburden, and fossil content (vertebrate, invertebrate, and floral) were noted for each exposure. Representative collections were made of key strata, such as potential ash layers and organic accumulations. Representative samples of fossils were collected where they were of sufficient quality to allow identification of specimens in the laboratory.

Vertebrate fossil sites are always sampled cautiously to preserve the site integrity and allow for controlled excavation at a later time. Any potentially articulated material is left in place. Sampling as part of the field investigation program does not comprise comprehensive collecting or mitigation.

3.3 LABORATORY PREPARATION AND ANALYSES

The one bone collected during the field studies was cleaned by brushing off the dirt using a dry brush. Faunal experts Bonnie Brenner and Dr. Alison Landals (FMA Heritage Inc.) provided the species identification.

Four sediment samples were collected during field studies and investigated for the presence of volcanic glass. The material was sent to the Froese Lab at the University of Alberta for processing using heavy liquid separation. The float was mounted on slides and examined for the presence of volcanic glass using backscatter on the electron microprobe.

Organic layers within the surficial deposits were also sampled during field studies at waypoints DG6, DG11, DG19 and DG26. Wood from three samples was extracted and sent to the Radiocarbon Laboratory at Brock University for radiocarbon dating. Appendix C provides the laboratory reports. The remaining samples were manually wet sieved using a 0.25 mm screen to separate the organic material. The organics and remaining sediment were dried and bagged. The sediment was retained to allow for pollen analysis at a future time. Detailed species identification of the plant and insect species was not completed.

All scientifically useful samples will be filed with Dr. Grant Zazula, Yukon Palaeontology Program of the Department of Tourism and Culture.

3.4 EVALUATION OF HERITAGE VALUE

“Heritage value” or “significance” is a measure of the relative importance of a palaeontological collection or site as determined by the palaeontological consultant during the HRIA. It is an attempt to quantify the relative value of a particular locality. Although it is not the only criterion used, the presence of fossils of moderate to high heritage value in the LSA is one indication that the Project could affect palaeontological resources.

The heritage value of each collection/site was evaluated using the following criteria, which are described in detail later in this section:

- Abundance of material
- Quality of preservation
- Diversity
- Rarity of taxa
- Aesthetic value
- Taxonomic value
- Geographic or stratigraphic value.

For each category, a value between 1 and 10 was assigned for each assemblage/site. The values were then averaged to obtain an overall site value and rated as:

- Low – 1 to 3
- Medium low – 3.1 to 4.5
- Medium – 4.6 to 6.5
- Medium high – 6.6 to 7.9
- High – 8 to 10.

Abundance of Material – The abundance of the material is rated ranging from 1 – not abundant (e.g., single fossil) to 10 – abundant (e.g., material is common – more than 10 specimens). This value is a useful indicator of the likelihood of the Project affecting a resource.

Quality of Preservation – The quality of preservation of the material is rated ranging from 1 – poor (e.g., can be recognized as a fossil but not identified to a lower taxonomic level) to 10 – excellent (e.g., quality of preservation allows for accurate identification of the fossil plus other scientific information). This value is a useful indicator of how much scientific information can be obtained from a site.

Diversity – The diversity of the material is rated ranging from 1 – monotypic (e.g., single species) to 10 – diverse (e.g., four or more species). Diversity of a site indicates how many taxa can be investigated.

Rarity of Taxa – Rarity of taxa is rated ranging from 1 – common (e.g., species is found at 10 or more localities) to 10 – rare (e.g., species is found at one or few localities; includes all vertebrate taxa). Rarity of taxa indicates the scientific value attached to fossil types that are unique or uncommon.

Aesthetic and Public Value – Aesthetic value of taxa is rated ranging from 1 – low (e.g., specimen cannot be recognized as a fossil by the layperson) to 10 – high (e.g., specimen is an object of intrigue to the layperson and can have a high educational and economic value). Aesthetics rates the value of a find to the public.

Taxonomic Value – The taxonomic value is rated ranging from 1 – taxon is already well known (e.g., taxon has been thoroughly described in the scientific literature and the new specimen does not add to the knowledge base) to 10 – taxon is poorly known (e.g., taxon has not previously been described or described only based on poor material and specimen will add to the scientific knowledge base). This category rates the contribution of the site to the scientific taxonomic knowledge base.

Geographic or Stratigraphic Value – The geographic or stratigraphic value is rated ranging from 1 – low (e.g., taxon has been previously found at that geographic location or stratigraphic horizon) to 10 – high (e.g., taxon has not been previously found at that geographic location or stratigraphic horizon). This category rates the contribution of the site to the scientific knowledge base on the distribution of fossils.

3.5 IMPACT ASSESSMENT

As palaeontological resources consist largely of buried sites with only fortuitous exposures at the surface, impact assessments rate the palaeontological potential of the strata. Strata are considered to have high palaeontological potential if:

- Regionally, the strata have yielded significant palaeontological resources

- There is an indication locally that palaeontological resources occur in the area.

If a project will disturb strata with high palaeontological potential, effects on palaeontological resources could occur. These effects can be significant if there will be a loss of material or site context for palaeontological sites of high heritage value; however, there are currently no formal thresholds for determining significance. Any effects on palaeontological resource sites must be approved by the Minister of the Yukon Department of Tourism and Culture.

Recommendations for mitigation and *Historic Resources Act* clearance for the Project are formulated by the palaeontological consultant in the HRIA, which is submitted to the Yukon Palaeontology Program for review. Mitigation requirements and any conditions are determined by the Yukon Palaeontology Program and issued via the Department of Tourism and Culture. As such, the threshold for determining significance is site specific and identified by the territorial regulators during the approvals process based primarily on the scientific data collected at the HRIA stage.

3.6 MITIGATION MEASURES

Palaeontological mitigation aims to minimize the loss of fossils or site context caused by project activities. Wherever practical, the preferred mitigation measure is to avoid known palaeontological sites. Where avoidance is not practical, excavation of known sites of moderate to high heritage value may be recommended. Where excavation will occur through strata with high palaeontological potential, construction monitoring by a professional palaeontologist may be recommended. A palaeontological education program can also be used to teach project workers what to do in the event of fortuitous discovery of fossils during construction. As effect predictions are based on the localized conditions on the project footprint, any footprint changes should be re-evaluated by a palaeontologist.

With mitigation, positive effects on palaeontological objects can be expected through discovering sites, recovering fossils and recording the site context. The project can make a positive contribution to the scientific knowledge base for palaeontological resources.

3.6.1.1 Avoidance and Excavation of Known Palaeontological Sites

Where palaeontological resources are discovered on the project footprint, the heritage value of the site is evaluated. If the heritage value is high, options to avoid the site may be considered. Avoidance may include adjusting the project footprint and staking/flagging the site so that its location can be readily avoided during construction activities. Where avoidance is not practical due to construction constraints or if the heritage value is low or moderate, consultation will occur with Yukon Palaeontology Program to determine site-specific mitigation. Recommended mitigation could include:

- Detailed surface collecting of the site
- Site sampling through spot excavations
- Full site excavation.

3.6.1.2 Monitoring in Areas of High Palaeontological Potential

Construction monitoring by a professional palaeontologist is the most effective way to mitigate the risk of project effects on palaeontological resources when excavating in areas of high palaeontological potential. The monitor observes grading and excavation as it occurs. Standing the minimal safe distance away from the construction equipment, areas are inspected as they are progressively excavated and all spoil material is checked. Periodically, the monitor may signal the operator to pause and move in for closer examination of the spoil or excavation. If continuous monitoring is not practical (e.g., multiple locations are being excavated at once or the monitor is unable to get close due to safety constraints), the monitor should at minimum inspect the excavation and spoil before the spoil is removed from the site. Operators must stop excavating and call the monitor to their location if they encounter fossils. The monitor works closely with the operators to ensure safety while recording information and inspecting and collecting fossils.

If fossils are noted, the palaeontologist determines the heritage value of the material. Fossils with low value are noted and photographed. Some fossils might be set aside for collection if they can provide any scientific information. For fossils with moderate values, representative collections are made. For fossils with high heritage values, such as articulated vertebrate material, a temporary halt to excavations is called while the monitor reports the find to, and consults with, the Yukon Palaeontology Program. The Yukon Palaeontology Program will determine the next step after construction is stopped. The monitor might be directed to collect any exposed material, or to make a shallow excavation adjacent to the find to determine the extent of the fossiliferous horizon. In rare cases, a full palaeontological excavation will be required and construction will temporarily omit the section of fossiliferous material until appropriate mitigation has been completed.

3.6.1.3 Palaeontological Education Program

When the project is a large-scale development where ground disturbance will occur over a wide area for an extended period of time, monitoring by a professional palaeontologist will only be practical in areas with the highest palaeontological potential. If it is possible that fossils could also be discovered in other areas. A palaeontological education program may be recommended to:

- Teach construction workers and supervisors how to recognize a fossil
- Inform construction supervisors of the legal requirements of reporting the discovery of fossils in the Yukon
- Provide construction workers and supervisors with procedures to follow should a fossil be found (e.g., Fossil Discovery Protocol (Appendix D)).

3.6.1.4 Evaluation of Footprint Changes

As the Project is currently in the pre-feasibility stage, minor footprint changes are expected and other refinements can be made up to the time of construction. As impact predictions and site-specific mitigation measures depend on the local conditions on the footprint, a palaeontologist should evaluate all significant footprint changes to ensure that no unmitigated impacts to palaeontological resources occur. This evaluation and any changes in mitigation recommendations must be submitted to the Yukon Palaeontology Program.

4 RESULTS

The field observations and analyses are presented in this section, arranged by Project component/area (Figure 2). Site photographs are illustrated in Appendix A. Waypoints discussed in the text are plotted on maps (Appendix B), which include both a detailed surficial geology series (Figures 3 to 5, Table B-1) and a topographic series (Figures 7 to 10). The surficial geology is based on interim compiled digital data available by request from the Yukon Geological Survey (Bond and Lipovsky 2009). Reference is also made to stratigraphic sections recorded between 1995 and 1997 by LeBarge, et al. (2002) and their interpretations. The laboratory report for the radiocarbon dating is included in Appendix C and the Fossil Discovery Protocol in Appendix D.

The Project components for the mine and infrastructure are distributed around the Dublin Gulch area (Figure 2). The landscape is heavily treed, mountainous topography that shows considerable anthropogenic disturbance (Plates 1 and 2).

Surficial exposures were examined throughout Dublin Gulch, the confluence of Dublin Gulch with Haggart Creek, and the confluence of Stuttle Gulch, Eagle Pup, Ann Gulch, and Stewart Gulch with Dublin Gulch. In all cases, the valley fill has been extensively reworked by placer gold mining. Remnant intact deposits occur along the south side of Dublin Gulch and rarely along the north side. These intact deposits were closely examined, especially around the area where the Dublin Gulch Pleistocene fossil site was recorded.

4.1 MINE SITE

4.1.1 FIELD OBSERVATIONS

The mine site will be located in an upland area south of Dublin Gulch, where the Eagle Zone occurs (Figure 2, and Plate 1). Bedrock exposures were spot checked at the proposed mine site, adjacent hillsides and within the Dublin Gulch valley. At the mine site, the rock consists mainly of igneous intrusions, and granodiorite was found at waypoint DG10 (Plates 1 and 3). Similar exposures occur in test pits in the area (e.g., waypoint DG9, Plate 4). Phyllite is exposed in the base of Dublin Gulch that is approaching a schistose grade of metamorphism (Plate 5).

4.1.2 IMPACT ASSESSMENT AND RECOMMENDATIONS

Fossils can occur in metamorphosed strata, as evidenced by Cambrian trilobites found in the Cranbrook Quartzite (southeastern British Columbia), and the Combined Metals Member of the Pioche Formation (Nevada). However, the degree of metamorphism in the Dublin Gulch area precludes preservation of any fossil remains in the bedrock. There has been too much recrystallization and reorientation of the mineral grains.

The likelihood of Project mining activities encountering palaeontological resources in the bedrock is considered negligible. No Project effects are expected from mining activities. No further palaeontological studies or mitigation are recommended.

4.2 INFRASTRUCTURE – DUBLIN GULCH, WEST OF STUTTLE GULCH

4.2.1 FIELD OBSERVATIONS

The location of the Dublin Gulch Pleistocene fossil site has been interpreted to be on the "left (south) side of Dublin Gulch, slightly downstream from Stuttle Gulch, more or less halfway between Eagle Pup and Haggart Creek" (Storer 1998). This area was closely examined and recorded as waypoint DG1 (Plate 2). No vertebrate fossils were found. There is approximately 12 m of exposure, consisting of unsorted sand, gravel and silt (Plate 6). The top 2 m consist of cobble-sized gravel with subrounded to angular clasts of quartzite, phyllite, and quartz. The lower 10 m is predominantly silt and sand with occasional pebbles and cobbles with no sign of bedding [interpreted as colluvium by LeBarge, et al. (2002)]. Sporadically exposed at the very top of the slope is up to 0.5 m of bedded sand and silt (Plate 7). There are some lenses of extremely fine-grained purplish clay (Plate 8). A sample was taken from this lens, but the results were negative for volcanic glass and a radiometric date could not be determined.

The upper cobble-sized gravel layer is a persistent feature in this area, occurring at waypoints DG2 to DG5. It is likely a colluvial layer (LeBarge, et al. 2002). At DG2, there is a section of fine silt and clay known as “muck” on the lower slope (Plate 9). It appears to be an ice thrust block among layers of sand. Between waypoints DG2 and DG1, the deposits become stratified consisting of alternating layers of gravel and sand (Plate 10). The clasts are mostly pebble sized and rounded to subrounded. LeBarge, et al. (2002) tentatively interpreted these sediments as glacial outwash from the Reid Glaciation.

Waypoint DG6 has excellent exposures of fine-grained deposits on the upper slope that are likely interchannel/overbank deposits (Plate 11). Yellowish to orange fine-grained sand is interbedded with thin layers and lenses of purplish silt (Plate 12). The purplish silt was sampled, but tested negative for volcanic glass and did not yield a radiometric date. There are also pockets of compressed organic matter within the silt (Plate 13). Radiocarbon analysis produced a conventional calibrated age of 12,960 +/- 250 years before present, indicating that the sediment was deposited during the warming period following the McConnell Glaciation.

A similar sequence to waypoint DG6 occurs across the valley, on a road cut on the north side of Dublin Gulch at waypoint DG11 (Plate 14). This is a thinner sequence than on the south side of the valley, approximately 6 m high. There are layers of cobble gravel near the base, separated by approximately 1.5 m of fine sand with minor gravel. The cobbles of quartzite and granodiorite are rounded to subangular and up to 40 cm in diameter. The gravel is overlain by 3 to 4 m of interbedded yellowish sand and grey to purplish clay with organic lenses (Plate 15). There are thin beds throughout the fine-grained sequence of angular flat clasts of quartzite and schist (Plate 16). As at waypoint DG6, samples of the silt and the organic layers were taken. The radiocarbon analysis on the organics yielded a conventional calibrated age of 10,330 +/- 90 years before present, which is slightly younger than the sample from DG6 (i.e., 12,960 +/- 250 years before present).

4.2.2 IMPACT ASSESSMENT AND RECOMMENDATIONS

This stratigraphic sequence currently found around the location of the Dublin Gulch Pleistocene fossil site does not match the stratigraphic section compiled by Harington (1996) for the site (see Section 2.2.4, *Fossil Record and Palaeoenvironment*). The radiocarbon ages obtained for the organic layers are also approximately 20,000 years younger than the radiometric age obtained on a bone from the Pleistocene fossil site. This suggests that the upper fine-grained deposits at the top of the sequence were not the source of the Dublin Gulch Pleistocene fossils. The underlying cobble gravel layer could have been the source, but despite extensive examination, no additional vertebrate material could be located. It is also possible that placer gold mining in the late 1970s completely removed the fossiliferous source layer. The spoil piles in the gulch were also extensively examined; however, as placer gold mining operations ceased approximately 30 years ago, any bone remaining in the spoil likely disintegrated under the acidic soil conditions.

The area of the Dublin Gulch Pleistocene fossil locality will be within the LAA and is situated at the silt 1 borrow area (Figure 3). This area will continue to be mined for fill. The event ponds and process plant will also be built within Dublin Gulch in this area.

It is expected that there will be extensive disturbance of the Pleistocene deposits near the Dublin Gulch Pleistocene fossil locality. However, most of these deposits have already been reworked by placer gold mining and only remnant intact deposits of unknown extent remain. Further, the field investigations found no indication that the source layer for the Dublin Gulch Pleistocene fossil locality is still present. The likelihood of development in this area encountering palaeontological resources is considered moderately low. Project effects are possible but not highly likely.

As there will be ongoing use of the intact deposits as a borrow source, a palaeontological education program for the equipment operators and adherence to the Fossil Discovery Protocol (Appendix D) is recommended.

4.3 HEAP LEACH FACILITY – DUBLIN GULCH, EAST OF STUTTLE GULCH

4.3.1 FIELD OBSERVATIONS

East of its confluence with Stuttle Gulch, there is still extensive anthropogenic disturbance along Dublin Gulch. Excellent exposures continue along the south side of the gulch, and the sediments increase in clast size approaching the confluence with Eagle Pup (waypoint DG7; Plate 17). There is a diamicton with large subrounded to subangular cobbles and boulders of granodiorite, phyllite, and quartzite (Plate 18). LeBarge, et al. (2002) interpreted this as a colluvial apron and it is mapped as Pre-McConnell Glaciation undivided alluvial plain and terrace deposits of Middle Pleistocene age (Figure 3; Bond and Lipovsky 2009).

Across the valley, on the north side along the access road, is a small borrow site cut into a rusty weathering cobble-boulder layer (waypoint DG8; Plate 19). This lithology matches Harington's (1996) description of the Reid Till. Farther up the gulch (west) near the confluence with Ann Gulch is a backhoe test pit at waypoint DG12. The pit exposes a sequence of finer-grained sediments overlain by colluvium (Plate 20). The colluvium is approximately 1.5 m thick and is made up of unsorted angular clasts in a silt matrix. Below the colluvium is bedded sand and silt. The sand grades into a fine pebble gravel and is strongly oxidized to a reddish colour (Plate 21). The silt has thin organic bands with occasional twigs. As the organic layers observed in the small test pit are thin and lack abundant preserved floral remains, a sample was not taken. However, it is possible to extract a pollen and possibly macrofloral record from such layers. LeBarge, et al. (2002) described similar strata from this area and obtained a radiocarbon date of 7,430 +/- 70 years from near the middle of the 8 m sequence, which makes this at least in part an early Holocene alluvial deposit. These Holocene organic layers are relatively common in the area as LeBarge, et al. (2002) were able to obtain radiocarbon dates from six other layers in the Haggart Creek area. The floral record within these organic layers has not been studied. The heritage value of such sites is considered medium.

The westernmost deposits in Dublin Gulch were recorded at waypoint DG17, near the confluence with Stewart Gulch (Figure 3). There are massive piles of tailings from placer gold mining in this area, but no exposed stratigraphic section (Plate 22).

This area is mapped as a Holocene undivided complex of alluvial plain, terrace and fan deposits (Figure 3; Bond and Lipovsky 2009).

4.3.2 IMPACT ASSESSMENT AND RECOMMENDATIONS

The Heap Leach Facility will be situated around the Ann Gulch Drainage, extending south into Dublin Gulch (Figure 2).

The valley fill near the base of Ann Gulch is considered to have high palaeontological potential as these deposits are intact and have not been subject to mechanized mining for placer gold (Lipovsky, et al. 2001). As much of the sequence appears to be Holocene, any remains would be relatively recent in age and provide a post-glacial faunal or floral record. Considerable subsurface disturbance is expected to shape the landscape before installation of the pad liner. The likelihood of this development encountering palaeontological resources is considered high, especially for floral remains, which have medium heritage value. However, the probability of this kind of disturbance providing the opportunity to recover vertebrate remains is lower as there will be no sorting or processing of the deposits as there is with placer gold mining. There is a moderate probability of Project effects on palaeontological resources from construction of the Heap Leach Facility.

Construction details regarding grading and excavation of the Ann Gulch Heap Leach Facility are needed. It is recommended that the construction plan be carefully reviewed to identify any opportunity for the collection of detailed stratigraphic and palaeontological information in an exposed section before it is covered by the leach pad liner. A palaeontological education program for the equipment operators and adherence to the Fossil Discovery Protocol (Appendix D) are also recommended in the event that vertebrate remains are uncovered during construction.

4.4 CAMP – CONFLUENCE OF DUBLIN GULCH AND HAGGART CREEK

4.4.1 FIELD OBSERVATIONS

The valley is broad at the confluence of Dublin Gulch and Haggart Creek. The area has been thoroughly disturbed by placer gold mining and the Dublin Gulch watercourse has been diverted north to flow into Haggart Creek near DG14 (Plate 23). Victoria Gold Corp. currently has a small camp south of this area to house exploration personnel. This area is mapped as Wisconsinan alluvial fan deposits (McConnell Glaciation) overlying a Middle Pleistocene, pre-McConnell Glaciation alluvial plain (Figure 3; Bond and Lipovsky 2009). East and northeast of waypoint DG14 is a terrace mapped as colluvium overlying a Middle Pleistocene glaciofluvial complex from the Reid Glaciation.

4.4.2 IMPACT ASSESSMENT AND RECOMMENDATIONS

The construction and operations camp will be situated north of the current confluence of Dublin Gulch with Haggart Creek (Figure 2). Most of this area has been extensively reworked by placer gold mining activities and has low palaeontological potential. The only deposits that are likely still intact are the glaciofluvial sediments from the Reid Glaciation that make up the terrace east of waypoint DG14. There is moderate potential to encounter palaeontological resources in this terrace. Camp construction should be limited to surface disturbance, and no major ground excavation is expected in this area. The likelihood of Project effects on palaeontological resources is considered low since ground disturbance will be limited.

A palaeontological education program for the equipment operators and adherence to the Fossil Discovery Protocol (Appendix D) is recommended during the construction stage, in the event that vertebrate remains are encountered.

4.5 WASTE ROCK STORAGE AND TOPSOIL STOCKPILE AREAS – PLATINUM GULCH AND EAGLE PUP

There are numerous areas that will be used for storage of waste rock and topsoil around and below the mine site (Figure 2). All are situated on upland areas. The Eagle Pup Waste Rock Storage Area (EPWRSA) will be developed around the Eagle Pup drainage. The Platinum Gulch Waste Rock Storage Area (PGWRSA) will be developed around the headwaters of this drainage, and the topsoil stockpile 1 along its north flank.

The valley fill within Eagle Pup is considered to have high palaeontological potential. However, it has already been subject to mechanized mining for placer gold and the high potential strata have been disturbed (Lipovsky, et al. 2001).

Platinum Gulch enters Haggart Creek from the east. It is heavily vegetated and has not been disturbed by placer gold mining (Plate 24). The lower reaches of Platinum Gulch are mapped as Wisconsinan alluvial fan deposits of the McConnell Glaciation overlying Middle Pleistocene, pre-McConnell Glaciation alluvial plain deposits (Figure 3; Bond and Lipovsky 2009).

4.5.1 IMPACT ASSESSMENT AND RECOMMENDATIONS

Stockpile and waste rock storage areas will be cleared, but little subsurface disturbance is expected. The likelihood of development disturbing palaeontological resources is considered low. No effects on palaeontological resources are expected from these project components. No further palaeontological studies or mitigation are recommended.

4.6 ACCESS ROAD AND TRANSMISSION LINE

Surficial exposures and a selection of bedrock outcrops were examined along or near the current access road and transmission line (Figures 7 to 10). Until it reaches the South McQuesten River, the access road and transmission line run along Haggart Creek, which has been subject to massive placer gold mining. There are only remnant intact surficial sequences. Current placer gold mining operations (2009) were observed along Haggart Creek at Gill Gulch, Secret Creek, and an unnamed creek (waypoint DG26).

Between Dublin Gulch and waypoint DG20 (confluence of 45 Pup with Haggart Creek), the road runs along the base of Haggart Creek valley. This area has been extensively reworked by placer gold mining (waypoint DG18). At the confluence with Gill Gulch (Plate 25), the road passes on the east side of Haggart Creek and does not cross Gill Gulch. Deposits in Gill Gulch are mapped as alluvial fan deposits of the McConnell Glaciation (Figure 3; Bond and Lipovsky 2009). LeBarge, et al. (2002) obtained three radiocarbon dates from Gill Gulch on wood and organics that ranged from approximately 8,000 to 12,000 years old, approximately the same as the new dates obtained from Dublin Gulch.

Between waypoints DG19 and DG20, there are extensive surficial exposures along the east valley slope of Haggart Creek (Plate 26). Much of this area is mapped as glaciofluvial complex deposits from the Reid Glaciation (Figure 3; Bond and Lipovsky 2009); however, LeBarge, et al. (2002: figure 46) also illustrated McConnell periglacial braided stream and debris flow deposits in the area.

A fine-grained sequence of interbedded sand and silt with organic pockets is preserved in the upper part of the valley wall at waypoint DG19 (Plates 27 and 28). Samples were taken of the very fine-grained purplish silt (results were negative for volcanic glass) and of the organic layer. Plant material was recovered from the organic sample, but was not radiocarbon dated. LeBarge, et al. (2002) obtained a radiocarbon date of 7,970 +/- 60 years from other organic deposits in this area (section LW97-8, unit 5).

At waypoint DG20, the access road crosses Haggart Creek (Plate 29). This area has been entirely disturbed and there are no intact deposits along the creek. 45 Pup enters Haggart Creek at this location and was also investigated. Deposits at waypoint DG21 consist entirely of old, partly vegetated spoil piles from placer gold mining (Plate 30). No exposed sections with intact deposits were found in the area. The area is mapped as Wisconsinan alluvial fan deposits of the McConnell Glaciation overlying Middle Pleistocene, pre-McConnell Glaciation alluvial plain deposits (Figure 3; Bond and Lipovsky 2009).

South of waypoint DG20, the access road runs along the west valley slope of the Haggart Creek valley, rather than through the base of the valley. At waypoint DG23, the confluence of Secret Creek with Haggart Creek, the deposits are massively reworked by current placer gold mining activities (Plate 31). The area is mapped as Wisconsinan alluvial fan deposits of the McConnell Glaciation (Figure 4; Bond and Lipovsky 2009).

Between waypoint DG23 and the South McQuesten River, the access road is mostly incised into the steep west valley slope of the Haggart Creek valley. Most of the exposures along this area are of bedrock, consisting of phyllite and quartzite

(Plates 32 to 35). The only place where surficial exposures occur is at a crossing of an unnamed creek at waypoint DG26 (Plate 36). The area is mapped as Wisconsinan alluvial fan deposits of the McConnell Glaciation (Figure 4; Bond and Lipovsky 2009). There is active placer gold mining in this area, and most of the deposits downstream of the access road have been reworked (Plate 37). The only intact deposits are in a roadcut on the south side of the unnamed creek valley (Plate 38). The deposits are made up of a fine-grained sequence of silt, clay, and occasional fine gravel layers. Organic lenses are common, and large pieces of wood are preserved (Plate 39). Samples were taken of an organic layer and a large piece of wood. Radiocarbon dating on the wood yielded a calibrated age of 2,730 +/- 50 years, indicating that this is a late Holocene deposit.

Once the access road crosses the South McQuesten River, it passes mainly through low-lying land along the river, eventually climbing slightly to meet up with the Silver Trail Highway (Figures 9 and 10).

4.6.1 IMPACT ASSESSMENT AND RECOMMENDATIONS

There is only one place where the road and transmission line pass through an area with intact surficial deposits: an unnamed creek at waypoint DG26. In all other areas, the road passes through areas where the surficial deposits have been reworked by placer gold mining, or through areas of colluvium, bedrock, and organic deposits. In these areas, no Project effects on palaeontological resources are expected by improvement of the access road or development of the transmission line and no further palaeontological studies or mitigation are recommended.

At the unnamed creek crossing at DG26, access road improvements could disturb intact surficial strata of late Holocene age. A palaeontological education program for the equipment operators and adherence to the Fossil Discovery Protocol (Appendix D) is recommended during the construction stage in the event that vertebrate material is encountered during construction.

4.7 INCIDENTAL INFORMATION

Ted Takacs is a placer gold miner who has worked extensively near Dublin Gulch. Tashe (2009, pers. comm.) reported that Mr. Takacs has found mammoth material in the area, as has Larry Poulson (equipment operator). Both individuals had left the area for the winter by the time the palaeontology surveys occurred and could not be interviewed or tracked down offsite.

An equipment operator (John) digging test pits for Victoria Gold Corp. mentioned that he had dug up a jaw on September 11, 2009. The palaeontology crew attempted to find the jaw on September 12, 2009, but it had been reburied. The jaw was found approximately 1.5 m below the surface in colluvium along Bawn Boy Gulch (waypoint DG16; Plate 40). Upslope at waypoint DG15, a moose humerus was found in the stripped topsoil, which appears to be a recent bone (Plates 41 and 42).

5 SUMMARY AND CONCLUSIONS

5.1 DUBLIN GULCH FOSSIL LOCALITY

Field surveys found that most of the valley fill at Dublin Gulch and Haggart Creek has been reworked by placer gold mining. There is no sign of any remaining source layer for the Dublin Gulch Pleistocene fossil locality, and no additional fossil vertebrate material was found. Organic layers at the top of the surficial sequence in Dublin Gulch contain plant and arthropod material and yielded conventional (calibrated) radiocarbon ages of approximately 10,000 to 13,000 years before present. These late Pleistocene to early Holocene dates indicate the sediments were deposited during climatic warming following the McConnell Glaciation. A large piece of wood recovered from intact surficial deposits along the access road yielded a conventional (calibrated) radiocarbon age of late Holocene, approximately 2,700 years before present.

5.2 MAIN INFRASTRUCTURE AREA

It is expected that there will be extensive disturbance of the surficial deposits near the Dublin Gulch Pleistocene fossil locality and around the mouth of Dublin Gulch by development of the plant site, event ponds, silt borrow area, and laydown area. The likelihood of development in this area encountering palaeontological resources is considered moderately low as it is mostly disturbed and there is no indication that the source layer for the vertebrate fossils still exists.

Project effects are possible but not highly likely in remnant intact strata along the south valley wall of Dublin Gulch. As there will be ongoing use of the intact deposits as a borrow source, a palaeontological education program for the equipment operators and adherence to the Fossil Discovery Protocol (Appendix D) is recommended.

5.3 MINE SITE

The likelihood of Project mining activities encountering palaeontological resources in the bedrock is considered negligible due to the degree of metamorphism. No Project effects on palaeontological resources are expected.

5.4 HEAP LEACH FACILITY

The Heap Leach Facility will be situated in Ann Gulch. The valley fill near the base of Ann Gulch is considered to have high palaeontological potential. These deposits are intact and have not been subject to mechanized mining for placer gold. Because much of the sequence appears to be early Holocene, any remains would be relatively recent in age and provide a post-glacial faunal or floral record. Considerable subsurface disturbance is expected to shape the landscape before installation of the pad liner. The likelihood of this development encountering palaeontological resources is considered high, especially for floral remains, which have medium heritage value. The probability of the disturbance providing the opportunity to recover vertebrate remains is lower as there will be no sorting or processing of the deposits that takes place with placer gold mining. There is a moderate probability of Project effects on palaeontological resources from construction of the Heap Leach Facility.

Construction details regarding grading and excavation of the Ann Gulch Heap Leach Facility are needed. It is recommended that the construction plan be carefully reviewed to identify any opportunity for the collection of detailed stratigraphic and palaeontological information in an exposed section before it is covered by the leach pad liner. A palaeontological education program for the equipment operators and adherence to the Fossil Discovery Protocol (Appendix D) are also recommended in the event that vertebrate remains are uncovered during construction.

5.5 CAMP

The construction and operation camp will be situated on a glaciofluvial terrace with intact deposits from the Middle Pleistocene Reid Glaciation. There is moderate potential to encounter palaeontological resources in this terrace. No major ground excavation is expected in this area during camp construction. The likelihood of Project effects on palaeontological resources in the camp area is considered low since ground disturbance will be limited.

A palaeontological education program for the equipment operators and adherence to the Fossil Discovery Protocol (Appendix D) is recommended during the construction stage, in the event that vertebrate remains are encountered.

5.6 WASTE ROCK STORAGE AND TOPSOIL STOCKPILE AREAS

Stockpile and WRSAs will be cleared, but little subsurface disturbance is expected. The likelihood of development disturbing palaeontological resources is considered low. No effects on palaeontological resources are expected from these project components. No further palaeontological studies or mitigation are recommended.

5.7 ACCESS ROAD AND TRANSMISSION LINE

In most areas, the access road and transmission line pass through surficial deposits that have been reworked by placer gold mining, or through areas of colluvium, bedrock, and organic deposits. In these areas, no Project effects on palaeontological resources are expected by improvement of the access road or development of the transmission line and no further palaeontological studies or mitigation are recommended.

At the unnamed creek crossing at DG26 (Figure 2), access road improvements could disturb intact surficial strata of early Holocene age. A palaeontological education program for the equipment operators and adherence to the Fossil Discovery Protocol (Appendix D) is recommended during the construction stage in the event that vertebrate material is encountered.

5.8 IMPACT SUMMARY AND RECOMMENDED MITIGATION MEASURES

Overall, the likelihood of the Project affecting palaeontological resources is considered low as most of the strata with high palaeontological potential in the area have been disturbed by placer gold mining. As the Heap Leach Facility design advances, greater detail will be available to refine predictions and focus the application of mitigation. The overall mitigation measures recommended are:

- Use of a Palaeontological Education Program to teach equipment operators how to recognize a fossil, and what do if a fossil is found

- Adherence to a Fossil Discovery Protocol (Appendix D), where all fossils encountered during construction are recovered and the site context is recorded

- Early reporting of the discovery of any fossil remains to allow the opportunity for a palaeontologist to visit the site and investigate any fossiliferous units before they are removed

- Review of changes to the Project design and footprint by a palaeontologist to better predict where fossils could be encountered during construction.

Discovery of vertebrate fossils during Project construction could result in a significant *positive* environmental effect through the recovery of the fossils and recording of the site context.

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1998 ***Dublin Gulch Project: Paleontological Impact and Mitigation.*** Letter to K. Simpson of the Department of Indian Affairs and Northern Development, November 30, 1998. Prepared by J.E. Storer, Yukon Paleontologist, Yukon Tourism. Whitehorse, YT.

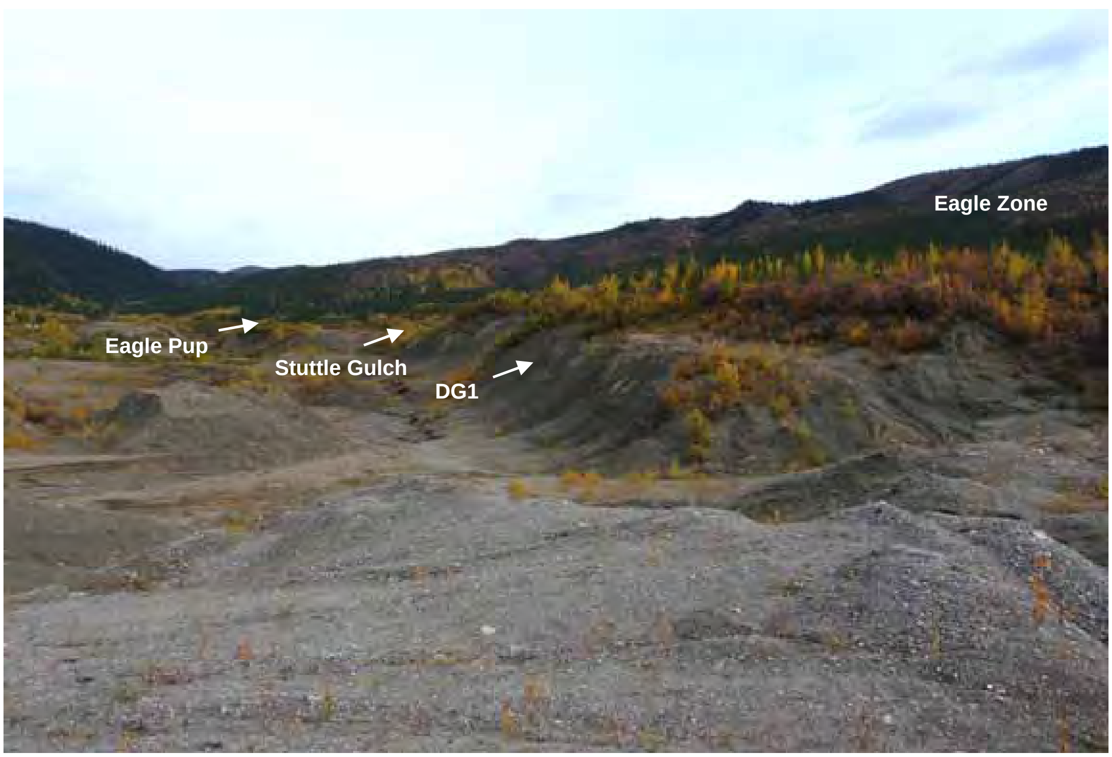
Tashe, N.
2009 Soil Scientist, Stantec. Email communication to L. Bohach. August 14, 2009.

Wardrop Engineering Inc. (Wardrop)
2009 ***Technical Data Report on the Dublin Gulch Property, Yukon Territory, Canada.*** Prepared for StrataGold Corporation. February, 2009. Available at: http://www.victoriaresourcecorp.com/site/victoria_gold/assets/pdf/dublin_technical_report.pdf

APPENDIX A
SITE PHOTOGRAPHS

Note: View to the northwest from Eagle Zone.

Plate 1 Dublin Gulch Overview



Note: View to the east from near camp: area disturbed by placer mining.

Plate 2 Dublin Gulch Disturbance

Note: View to the north.

Plate 3 Drill Site in Granodiorite, Waypoint DG10

Notes: View to the southeast, along access road east of Dublin Gulch.

Plate 4 Test Pit in Granodiorite, Waypoint DG9

Note: View to the southwest of bedrock exposed along creek, near confluence of Ann Gulch with Dublin Gulch.

Plate 5 Phyllite Exposure, Base of Dublin Gulch

Note: View to the south.

Plate 6 Gravel Exposure, Waypoint DG1

Note: Deposits at top of slope.

Plate 7 Fine-Grained Deposits, Waypoint DG1

Note: Extremely fine-grained purplish silt lens in sand with orange oxidized layers.

Plate 8 Silt Lens, Waypoint DG1

Note: View to the south. Exposure of clay, possibly an ice thrust deposit, between sand and gravel horizons.

Plate 9 Muck, Waypoint DG2

Note: View to the south.

Plate 10 Bedded Sand and Gravel, between Waypoints DG1 and DG2

Note: View to the west near Stuttle Gulch. Dublin Gulch in midground.

Plate 11 Fine-Grained Upper Slope Deposits, Waypoint DG6

Note: View to the west of uppermost deposits.

Plate 12 Sand and Silt Layers, Waypoint DG6

Note: Compressed plant material, radiocarbon dated at 12,960 +/- 250 years (calibrated, conventional).

Plate 13 Organic Lens, Waypoint DG6

Note: View to the north at roadcut.

Plate 14 Dublin Gulch North Slope Exposure, Waypoint DG11

Note: Cobble layer overlain by bedded sand and silt with organic lenses (arrows).

Plate 15 Fine-Grained Upper Sequence, Waypoint DG11

Note: Closeup of organic lens (left side of Plate 15) radiocarbon dated at 10,330 +/- 90 years (calibrated, conventional).

Plate 16 Organic Layer and Sheet of Flat Clasts, Waypoint DG11

Note: View to the southeast of south valley wall.

Plate 17 Exposures along Dublin Gulch Approaching Eagle Pup, Waypoint DG7

Note: View to the southeast.

Plate 18 Diamicton, Waypoint DG7

Note: View to the north along access road, north side of Dublin Gulch.

Plate 19 Reid Till, Waypoint DG8

Note: View to the northeast of colluvium overlying bedded sand and silt.

Plate 20 Test Pit Exposure along Ann Gulch, Waypoint DG12

Note: Closeup of lower sediments in Plate 20.

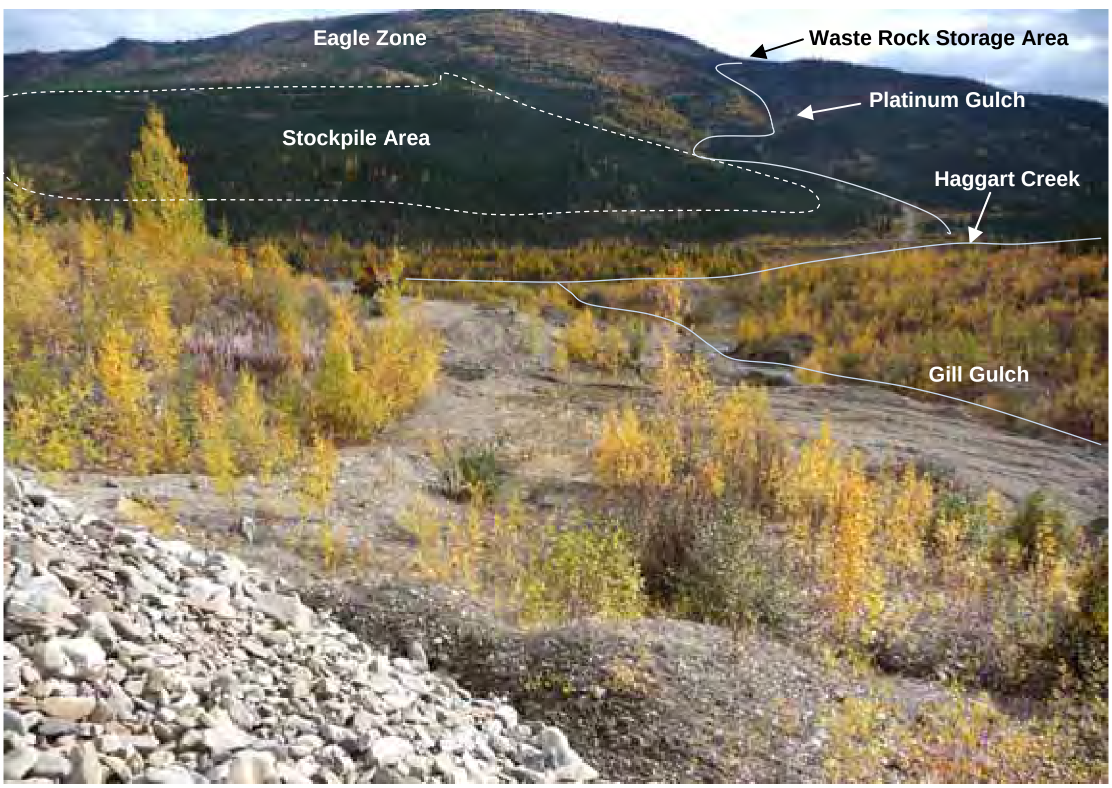
Plate 21 Bedded Sand and Silt, Waypoint DG12

Note: View to the east near confluence of Stewart Gulch with Dublin Gulch.

Plate 22 Placer Tailings, Waypoint DG17

Note: View to the east at confluence of Dublin Gulch stream with Haggart Creek.

Plate 23 Placer Tailings, Waypoint DG14



Notes: View to the southeast from Gill Gulch at waypoint DG18. Boundaries of topsoil stockpile area are approximate.

Plate 24 Platinum Gulch

Note: View to the northwest of current mining area at Gill Gulch from the access road.

Plate 25 Gill Gulch, Waypoint DG18

Note: View to the southeast from access road near waypoint DG19.

Plate 26 Remnant Valley Wall Deposits, Haggart Creek

Note: View to the northeast.

Plate 27 Upper Surficial Sequence along Haggart Creek, Waypoint DG19

Note: Closeup of Plate 27 interbedded sand and silt deposits with pockets of organic material.

Plate 28 Sand and Silt Deposits, Waypoint DG19

Note: View to the south showing disturbed valley fill deposits.

Plate 29 Access Road Crossing of Haggart Creek, Waypoint DG20

Note: View to the west, up-gulch.

Plate 30 Reworked Deposits at 45 Pup, Waypoint DG21

Note: View to the west.

Plate 31 Reworked Deposits at Secret Creek, Waypoint DG23

Note: View to the northwest of roadcut.

Plate 32 Access Road cut through Bedrock, Waypoint DG24

Note: Closeup of deposits in Plate 32.

Plate 33 Phyllite Scree, Waypoint DG24

Note: View to the south along roadcut through quartzite and phyllite.

Plate 34 Access Road cut through Bedrock, Waypoint DG25

Note: View to the north along roadcut through phyllite.

Plate 35 Access Road cut through Bedrock, Waypoint DG27

Note: View to the north. Intact deposits on west side of road.

Plate 36 Access Road Crossing of Unnamed Creek, Waypoint DG26

Note: View to the east from road, downstream toward Haggart Creek.

Plate 37 Reworked Deposits at Unnamed Creek, Waypoint DG26

Note: View to the west of roadcut (see Plate 36). Hammer and bag mark collecting site for wood.

Plate 38 Intact Deposits, Waypoint DG26

Note: Wood sample radiocarbon dated at 2,730 +/- 50 years (calibrated, conventional).

Plate 39 Preserved Wood, Waypoint DG21

Note: View to the northwest from west valley slope.

Plate 40 Test Pit at Bawn Boy Gulch, Waypoint DG16

Note: Found in disturbed surface layer (see Plate 42).

Plate 41 Moose Humerus, Waypoint DG15

Note: View to the northwest.

Plate 42 Stripped Topsoil at Bawn Boy Gulch, Waypoint DG15

APPENDIX B
MAPS

Figure 1 Eagle Gold Project Location

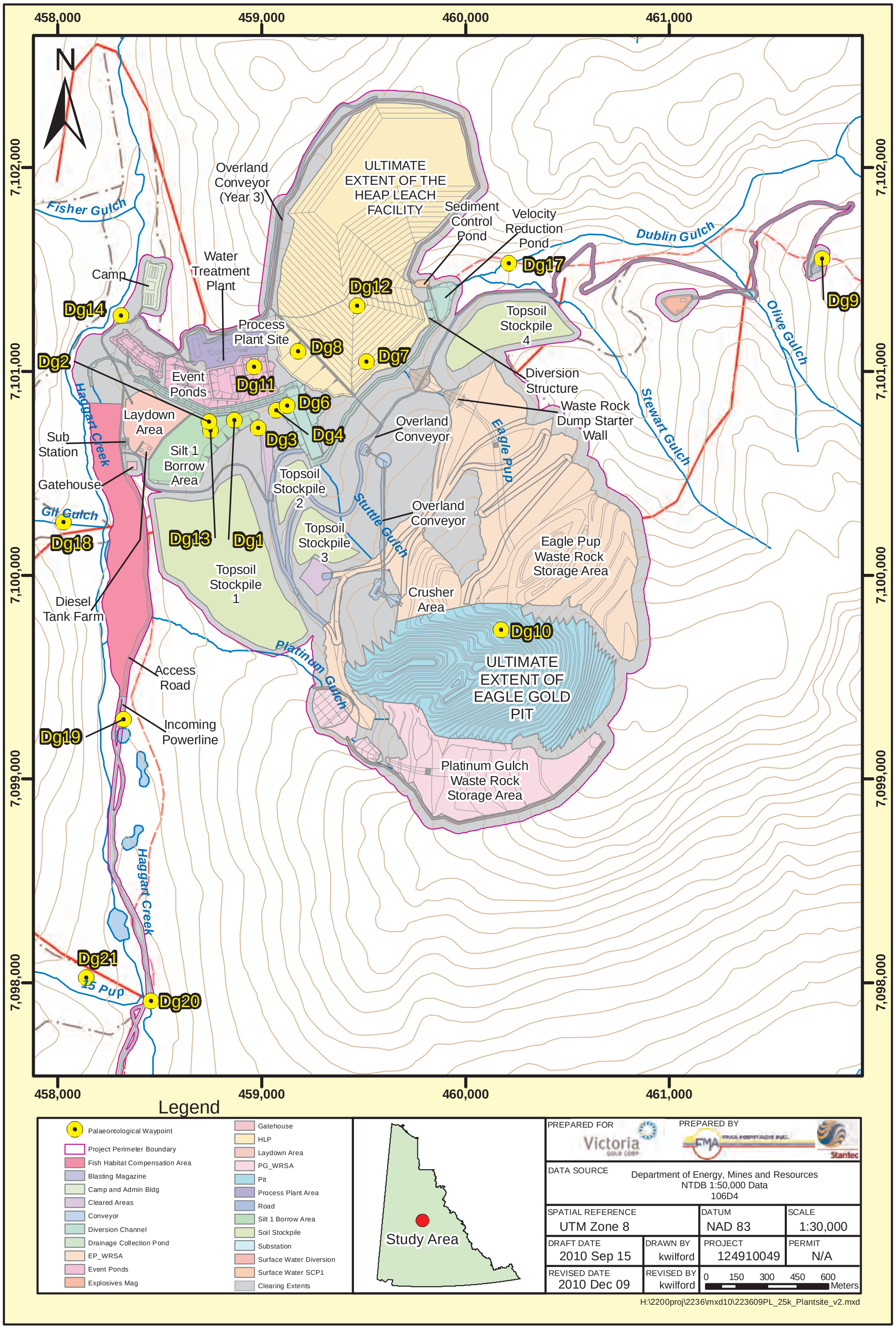
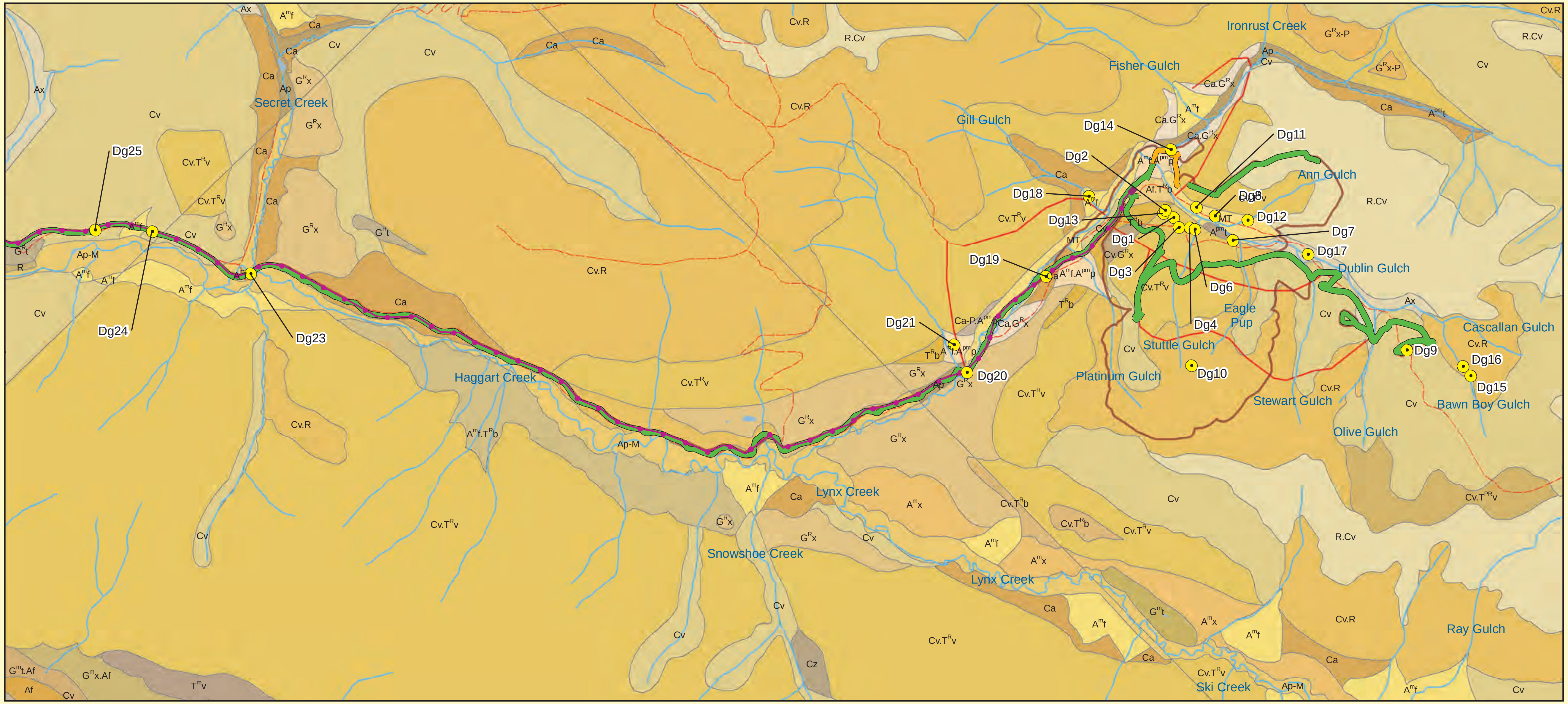


Figure 2 Project Components at Eagle Gold

Table B-1 Surficial Geology Map Legend

Label	Surficial Geology
Af	Alluvial fan (Holocene)
$A^{m}f$	Alluvial fan (Wisconsinan - McConnell Glaciation)
$A^{m}x$	Alluvial fan, plain and terrace complex, undivided (Wisconsinan - McConnell Glaciation)
Ap	Alluvial plain (Holocene)
$A^{pm}p$	Alluvial plain (Middle Pleistocene - Pre-McConnell Glaciation - Undivided)
$A^{pm}t$	Alluvial terrace (Middle Pleistocene - Pre-McConnell Glaciation - Undivided)
$A^{pm}x$	Alluvium fan, plain and terrace complex, undivided (Middle Pleistocene - Pre-McConnell Glaciation - Undivided)
At	Alluvial terrace (Holocene)
Ax	Alluvial fan, plain and terrace complex, undivided (Holocene)
Ca	Colluvium apron (Pleistocene and Holocene Undivided)
Cv	Colluvium veneer (Pleistocene and Holocene - Undivided)
$G^{m}p$	Glaciofluvial plain (Wisconsinan - McConnell Glaciation)
$G^{m}t$	Glaciofluvial terrace (Wisconsinan - McConnell Glaciation)
$G^{m}x$	Glaciofluvial complex (Wisconsinan - McConnell Glaciation)
$G^{R}c$	Glaciofluvial channel (Middle Pleistocene - Reid Glaciation)
$G^{R}t$	Glaciofluvial terrace (Middle Pleistocene - Reid Glaciation)
$G^{R}x$	Glaciofluvial complex (Middle Pleistocene - Reid Glaciation)
MT	Placer mine tailings
R	Bedrock (Proterozoic to Cambrian)
$T^{m}b$	Till blanket (Wisconsinan - McConnell Glaciation)
$T^{m}v$	Till veneer (Wisconsinan - McConnell Glaciation)
$T^{m}x$	Till complex (Wisconsinan - McConnell Glaciation)
$T^{PR}v$	Till veneer (Early Pleistocene - Pre-Reid Glaciations)
$T^{R}b$	Till blanket (Middle Pleistocene - Reid Glaciation)
Label	**Process**
K	Thermokarst (Holocene)
M	Meandering (Holocene)
fO	Fenland (Holocene)
P	Piping (Holocene)
S	Solifluction (Holocene)
Cz	Mass wasting (Pleistocene Undivided)

Notes: On the maps, surficial geology units are show first, followed by the process. Combined surficial geology units are separated by a dot with the dominant unit listed first (e.g., Ca.$G^{R}x$ is Colluvium Apron [Pleistocene and Holocene Undivided] and Glaciofluvial complex [Middle Pleistocene - Reid Glaciation]. Processes are preceded by a dash. The age of the deposits is designated by a superscript (e.g., $A^{m}f$ is an alluvial fan of Wisconsinan age from the McConnell Glaciation).



Legend

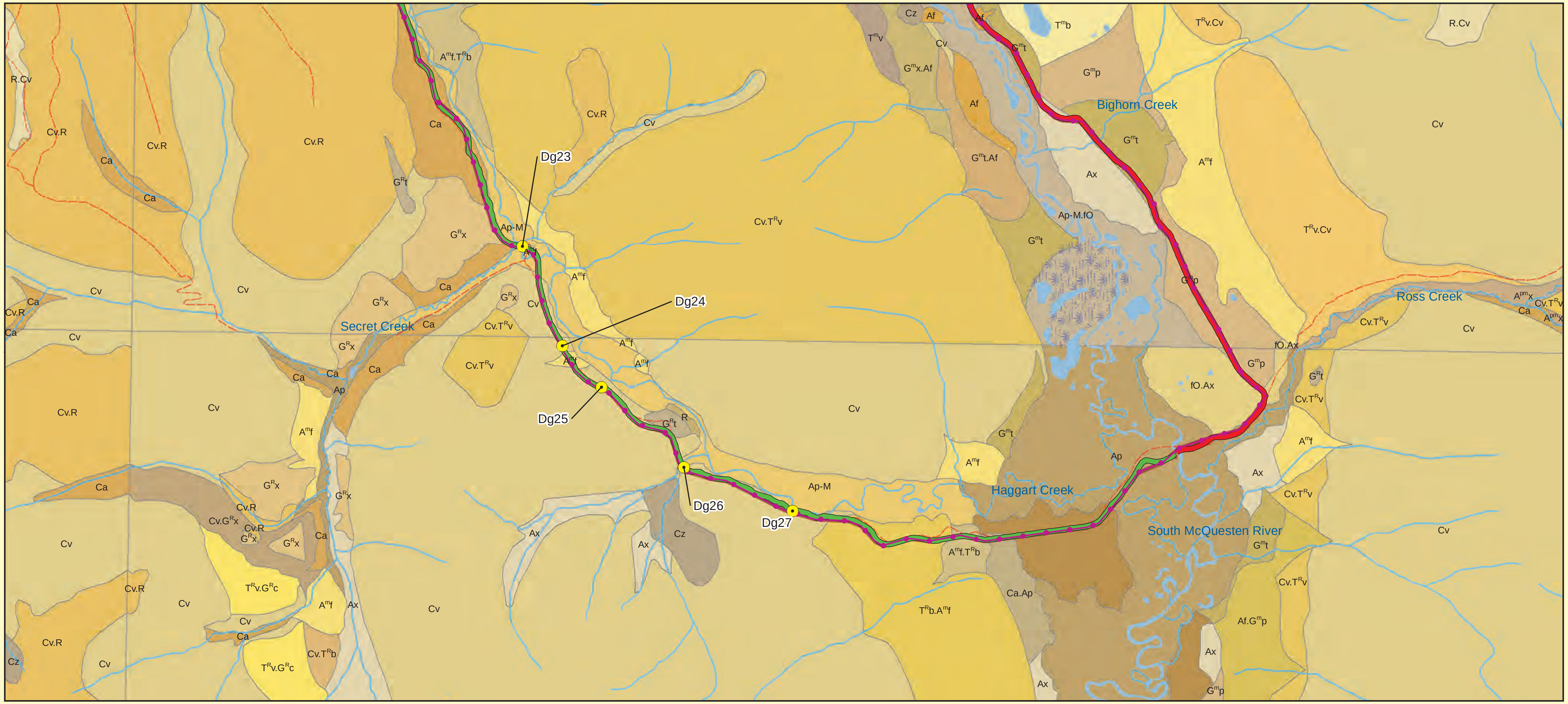
- Palaeontological Waypoint
- Road Existing
- Realigned Road
- Road Proposed/Upgrade
- Transmission Centreline
- Transmission Substation
- Clearing Boundary

0 0.5 1 1.5 2
Kilometers

Data Source:
Geological Survey of Canada
Bond 1998.
Surficial Geology 1:50,000 Data
105M, 106D, 115P, and 116A

Surficial Geology		Map 01	
PREPARED FOR: Victoria Gold Corp		PREPARED BY: FMA Heritage Inc.	
SPATIAL REFERENCE: UTM Zone 12		DATUM: NAD 83	SCALE: 1:50,000
DRAFT DATE: 2009/09/18	DRAWN BY: EF	PROJECT: 124910049	PERMIT: N/A
REVISED DATE: 2010/09/15	REVISED BY: KW	FILE: 223609PL_mpbk_geo_50k_v3.mxd	

Figure 3 Surficial Geology Map 1: Project Infrastructure and Access Road



Legend

- Palaeontological Waypoint
- Road Existing
- Realigned Road
- Road Proposed/Upgrade
- Transmission Centreline
- Transmission Substation
- Clearing Boundary

N

0 0.5 1 1.5 2
Kilometers

Data Source:
Geological Survey of Canada
Bond 1998.
Surficial Geology 1:50,000 Data
105M, 106D, 115P, and 116A

Surficial Geology

Map 02

PREPARED FOR: Victoria Gold Corp		PREPARED BY: FMA Heritage Inc.	
SPATIAL REFERENCE: UTM Zone 12		DATUM: NAD 83	SCALE: 1:50,000
DRAFT DATE: 2009/09/18	DRAWN BY: EF	PROJECT: 124910049	PERMIT: N/A
REVISED DATE: 2010/09/15	REVISED BY: KW	FILE: 223609PL_mpbk_geo_50k_v3.mxd	

Figure 4 Surficial Geology Map 2: Access Road

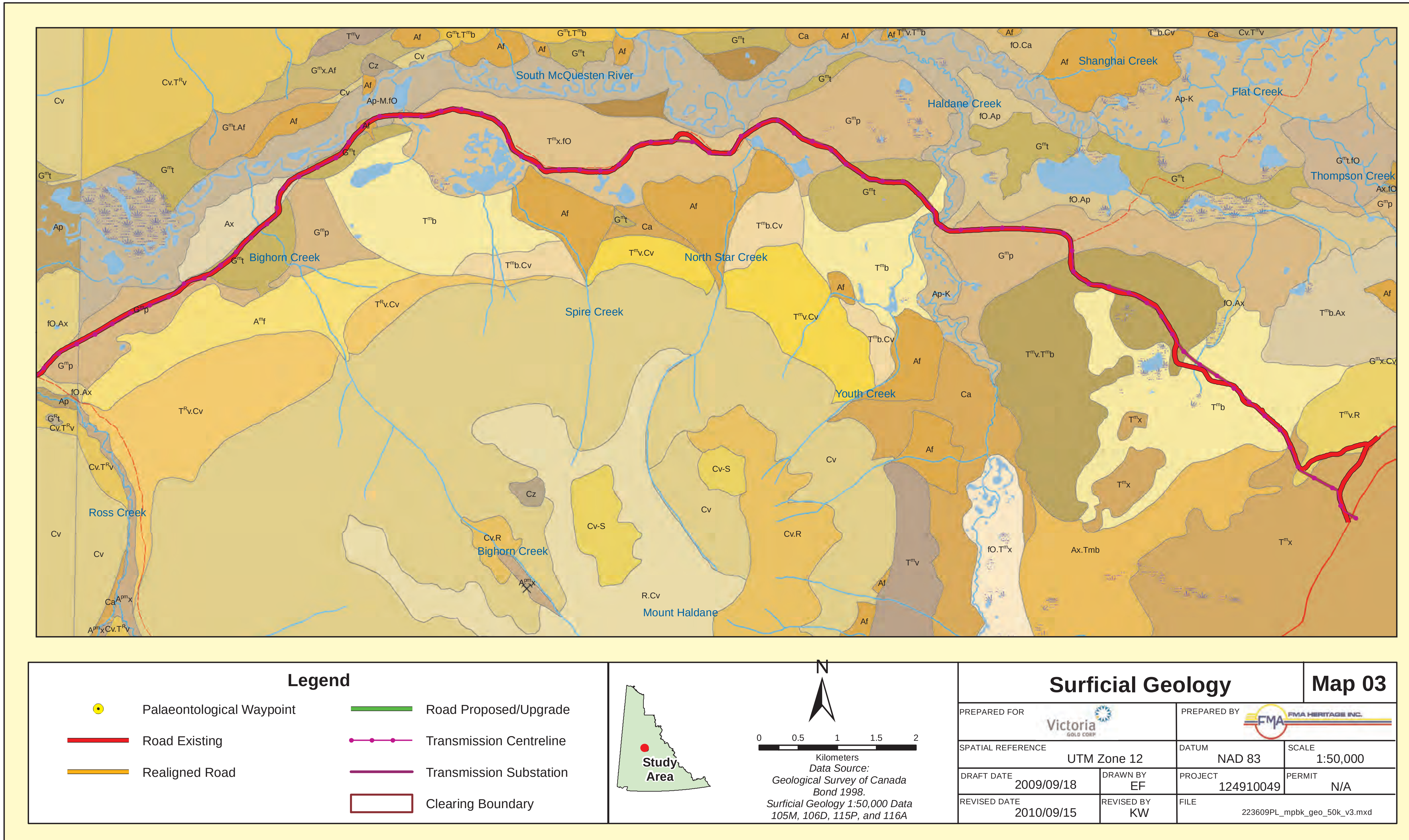


Figure 5 Surficial Geology Map 3: Access Road

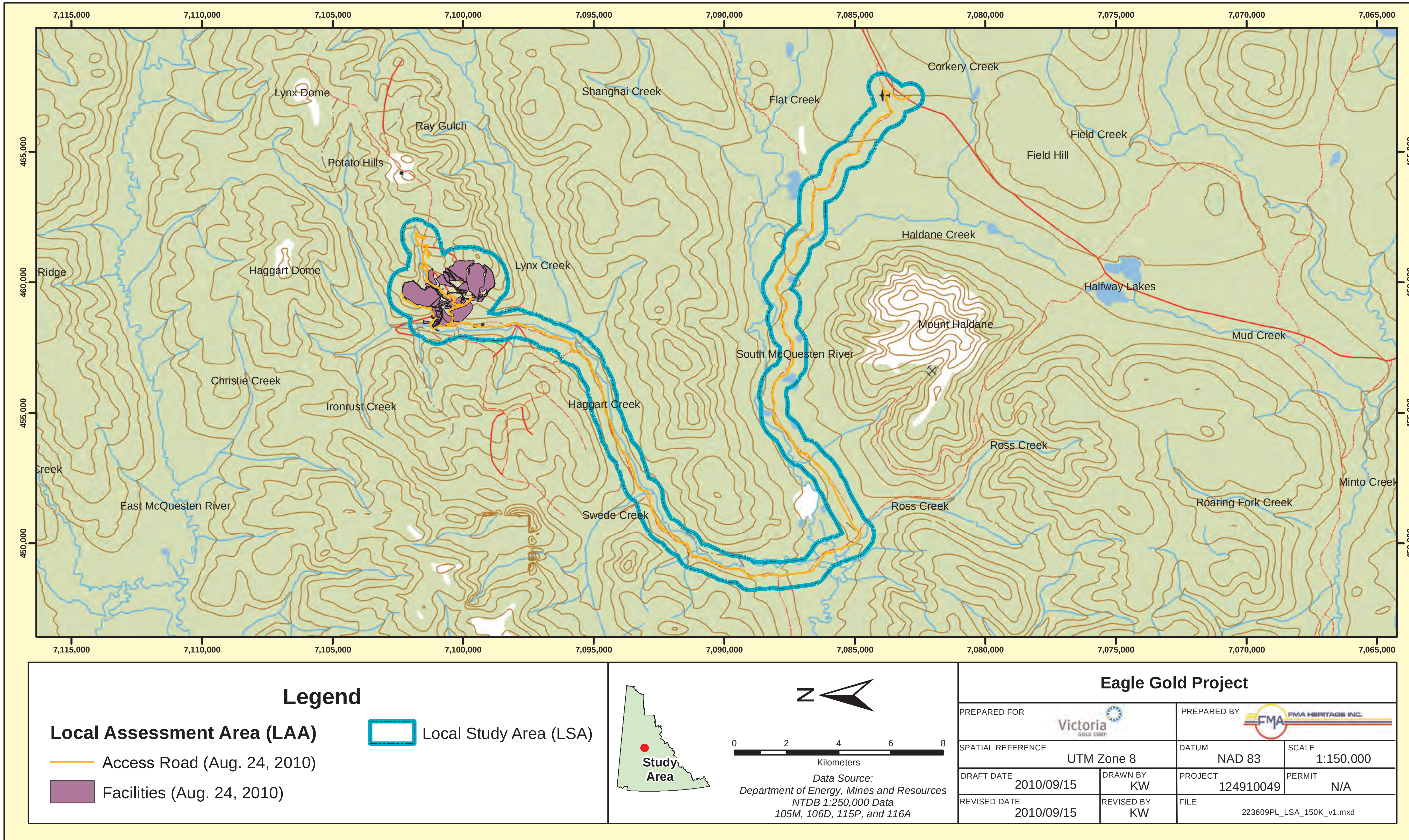
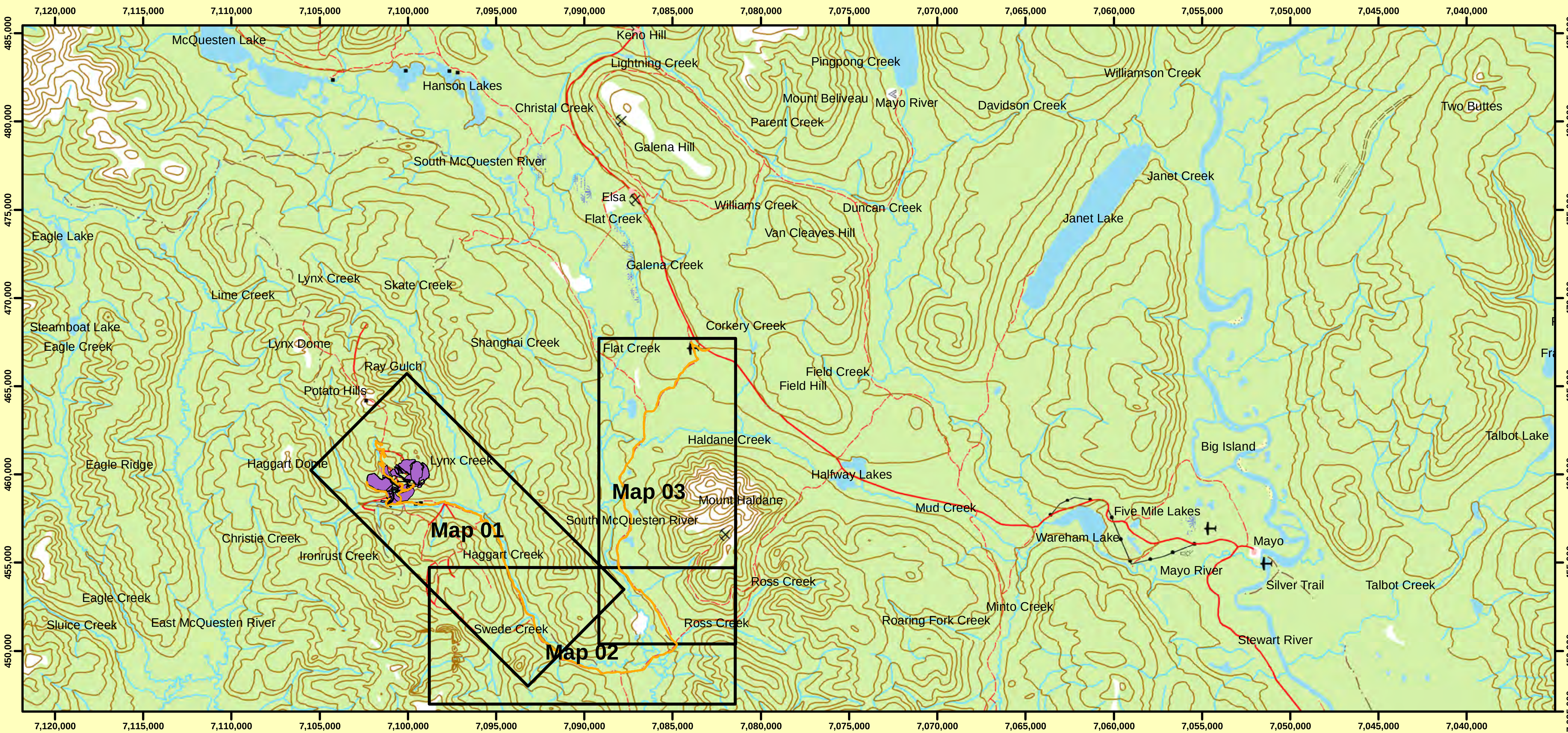


Figure 6 Study Areas



Legend

- Access Road (Aug. 24, 2010)
- Facilities (Aug. 24, 2010)
- Map Frame

Study Area

0 2 4 6 8
Kilometers

Data Source:
Department of Energy, Mines and Resources
NTDB 1:250,000 Data
105M, 106D, 115P, and 116A

Eagle Gold Project

PREPARED FOR: Victoria Gold Corp		PREPARED BY: FMA Heritage Inc.	
SPATIAL REFERENCE: UTM Zone 8		DATUM: NAD 83	SCALE: 1:250,000
DRAFT DATE: 2009/09/18	DRAWN BY: EF	PROJECT: 124910049	PERMIT: N/A
REVISED DATE: 2010/09/15	REVISED BY: KW	FILE: 223609PL_mpbk_50k_index_v3.mxd	

Figure 7 Topographic Map Index

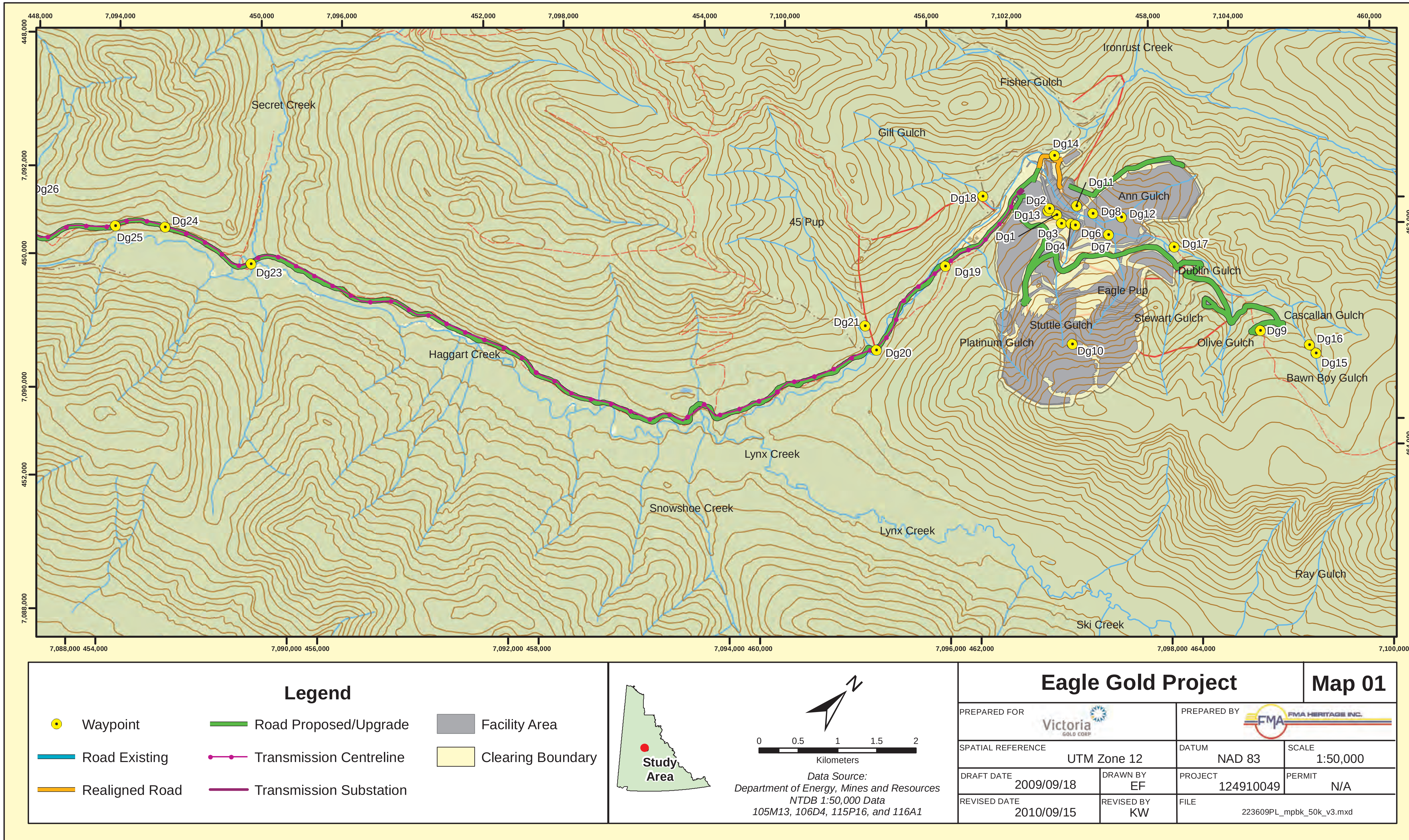


Figure 8 Topographic Map 1: Project Infrastructure and Access Road

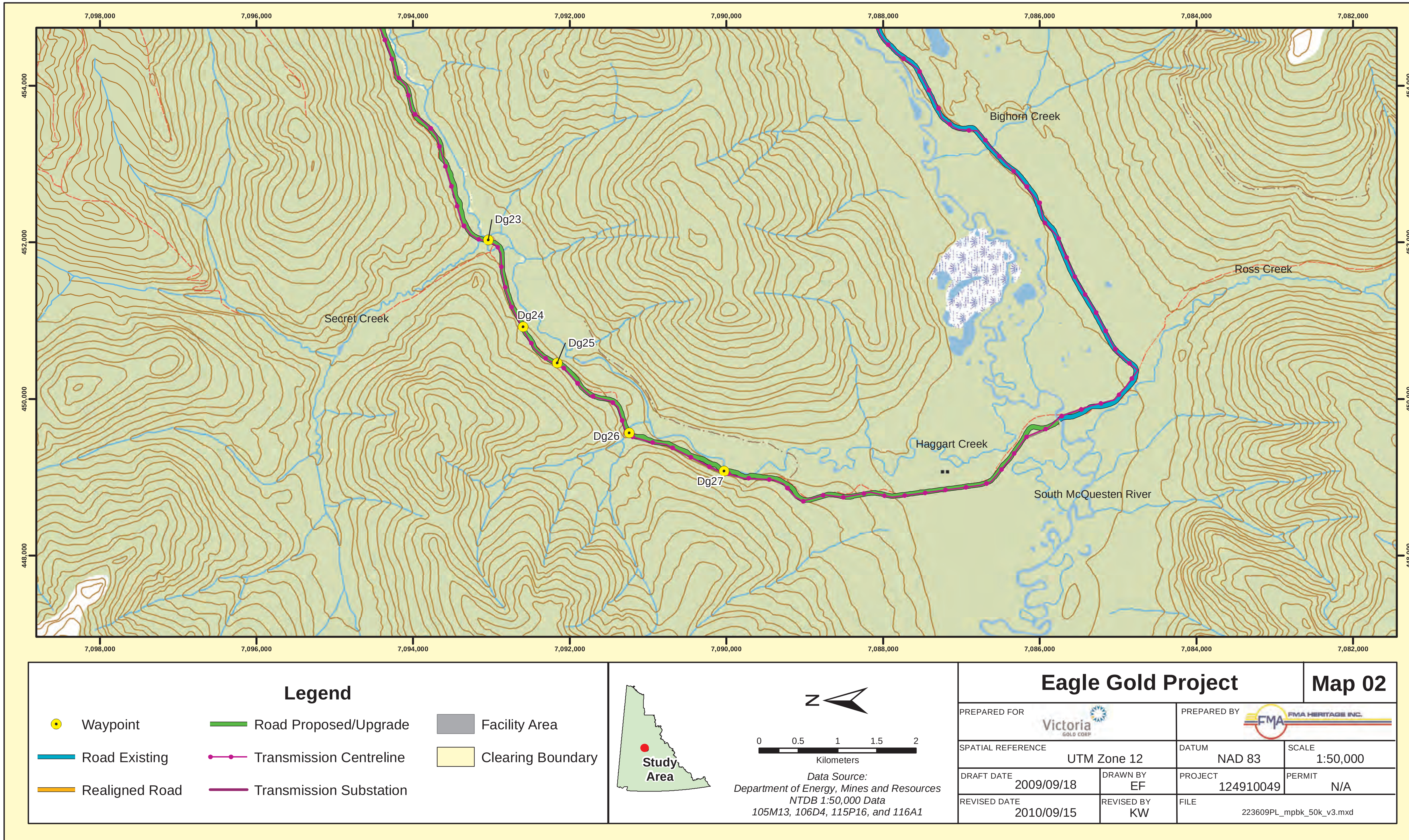


Figure 9 Topographic Map 2: Access Road

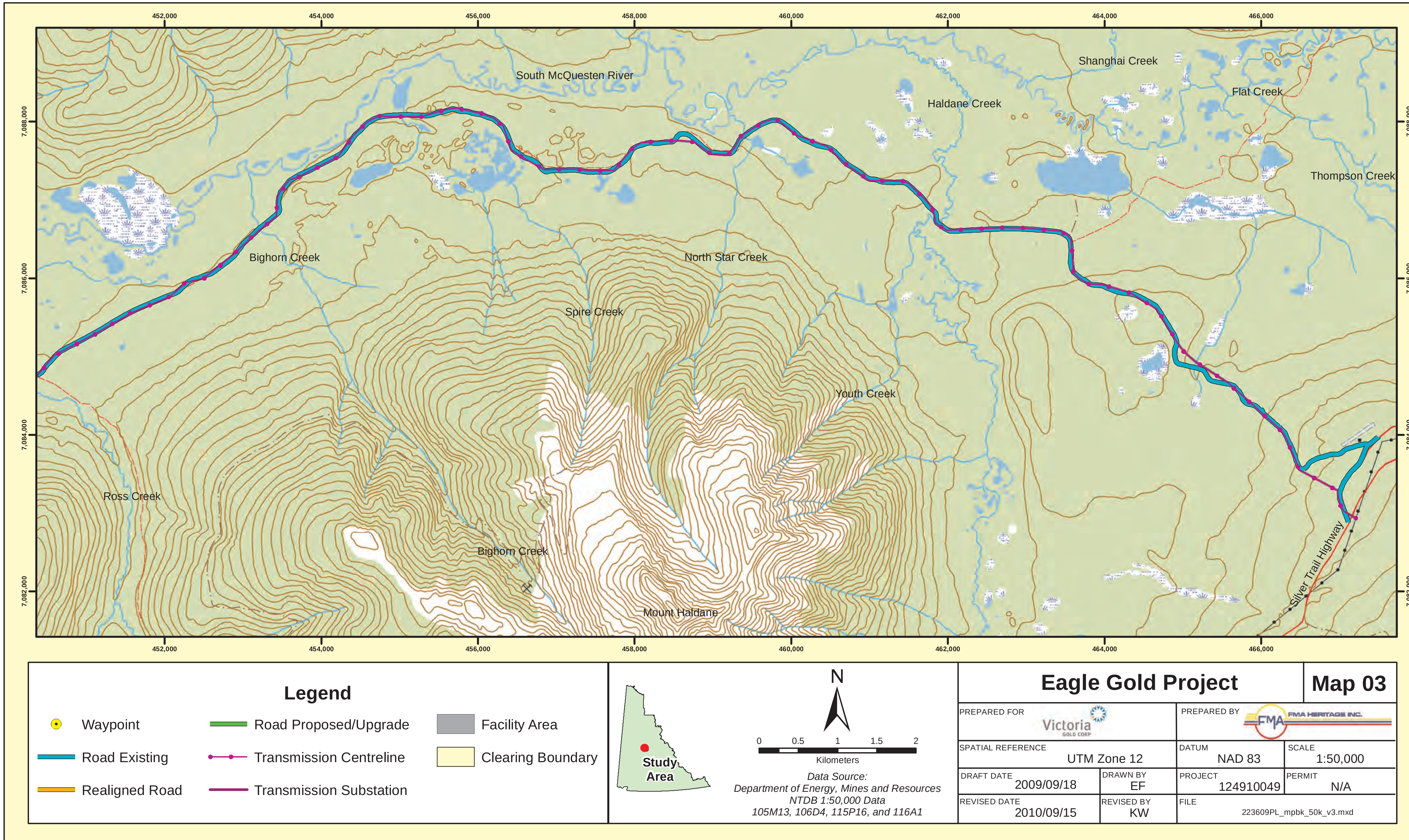


Figure 10 Topographic Map 3: Access Road

APPENDIX C
RADIOCARBON LAB REPORTS

BROCK UNIVERSITY EARTH SCIENCES

RADIOCARBON LAB REPORT

Date of Analysis: Dec. 2, 2009.

Brock Sample Number: BGS 2910

Client's Sample Number: DG-6

Geographical Location or Site Name: Dublin Gulch, Mayo District, Yukon
64.03187072 -135.83671871

Request for Dating By: Dr. Lisa Bohach, FMA Heritage Inc. Calgary, AB

Sample Description: Material Type: Wood

Size of sample: Very small

Condition of sample: Adhering silt.

Pretreatment:	(1) Removal of foreign material	Yes
	(2) Pretreatment for Humic Acid	No
	(3) Acid Leach with 10% HCl	Yes
	(4) Distilled water rinse	Yes

(5) Comments: I picked off a few small roots and rinsed off the silt.
Clean dry weight = 2.9 gm

Wt. of Benzene produce:	0.8469 gm
Calculated age of sample:	10,920 +/- 250 yrs BP
Calibrated age :	12,960 +/- 250 yrs BP

BROCK UNIVERSITY EARTH SCIENCES

RADIOCARBON LAB REPORT

Date of Analysis: Dec. 9, 2009.

Brock Sample Number: BGS 2911

Client's Sample Number: DG-11

Geographical Location or Site Name: Dublin Gulch, Mayo District, Yukon
64.03355238 -135.84007147

Request for Dating By: Dr. Lisa Bohach, FMA Heritage Inc. Calgary, AB

Sample Description: Material Type: Wood

Size of sample: Good size of sample

Condition of sample: Contained pebbles and silt

Pretreatment:	(1) Removal of foreign material	Yes
	(2) Pretreatment for Humic Acid	No
	(3) Acid Leach with 10% HCl	Yes
	(4) Distilled water rinse	Yes

(5) Comments: I washed off the silt and pebbles. No rootlets.
Clean dry weight = 8.5 gm (Original wt = 32 gm)

Wt. of Benzene produce:	3.6200 gm
Calculated age of sample:	9,197 +/- 80 yrs BP
Calibrated age :	10,330 +/- 90 yrs BP

BROCK UNIVERSITY EARTH SCIENCES

RADIOCARBON LAB REPORT

Date of Analysis: Dec. 10, 2009.

Brock Sample Number: BGS 2912

Client's Sample Number: DG-26

Geographical Location or Site Name: Dublin Gulch, Mayo District, Yukon
63.94454344 -136.02916301

Request for Dating By: Dr. Lisa Bohach, FMA Heritage Inc. Calgary, AB

Sample Description: Material Type: Wood

Size of sample: A very large sample

Condition of sample: Only clean large portion used

Pretreatment:	(1) Removal of foreign material	Yes
	(2) Pretreatment for Humic Acid	Yes
	(3) Acid Leach with 10% HCl	Yes
	(4) Distilled water rinse	Yes

(5) Comments: The sample was given a full pretreatment. I cut off clean solid portions to use for the Radiocarbon date.

Wt. of Benzene produce:	4.1356 gm
Calculated age of sample:	2,546 +/- 50 yrs BP
Calibrated age :	2,730 +/- 50 yrs BP

```
                    UNIVERSITY OF WASHINGTON
                     QUATERNARY ISOTOPE LAB
             RADIOCARBON CALIBRATION PROGRAM REV 4.3
    based on Stuiver, M. and Reimer, P.J., 1993, Radiocarbon, 35, p. 215-230.
  Listing file: c14res.doc
  Export file: c14res.txt
```

BGS 2910
DG-6
Small wood sample
Radiocarbon Age BP 10920 +/- 250 yrs BP

Calibrated age(s) cal BC 11015
cal BP 12964

Reference (Stuiver et al., 1998a)

Reported Age: 12,960 +/- 250 yrs BP

```
   cal AD/BC (cal BP) age ranges obtained from intercepts (Method A):
    one Sigma**    cal BC 11204 - 10865 (13153 - 12814)
                          10777 - 10709 (12726 - 12658)
    two Sigma**    cal BC 11492 - 10630 (13441 - 12579)
                          10577 - 10383 (12526 - 12332)

    Summary of above:

    maximum of cal age ranges (cal ages) minimum of cal age ranges:
     1 sigma   cal BC 11204 (11015) 10709
               cal BP 13154 (12964) 12659
     2 sigma   cal BC 11492 (11015) 10383
               cal BP 13442 (12964) 12333

   cal AD/BC & cal BP age ranges (cal ages as above)
     from probability distribution (Method B):

#  % area enclosed       cal BC (cal BP) age ranges      relative area under
#                                                      probability distribution
#  68.3 (1 sigma)     cal BC 11234 - 10822 (13183 - 12771)      0.817
#                            10814 - 10682 (12763 - 12631)      0.174
#                            10495 - 10490 (12444 - 12439)      0.009
#  95.4 (2 sigma)     cal BC 11804 - 11759 (13753 - 13708)      0.008
#                            11518 - 10349 (13467 - 12298)      0.972
#                            10284 - 10179 (12233 - 12128)      0.020
**************************************************************************
```

BGS 2911
DG-11
Wood sample
Radiocarbon Age BP 9197 +/- 80 yrs BP

Calibrated age(s) cal BC 8427, 8423, 8412
8394, 8380, 8371
8358, 8352, 8336

Reference (Stuiver et al., 1998a)

```
                  cal BP 10376, 10372, 10361
                         10343, 10329, 10320
                         10307, 10301, 10285

       Average Age Reported:  10,330 +/- 80 yrs BP

    cal AD/BC (cal BP) age ranges obtained from intercepts (Method A):
     one Sigma**   cal BC 8539 - 8491 (10488 - 10440)
                          8480 - 8288 (10429 - 10237)
     two Sigma**   cal BC 8628 - 8618 (10577 - 10567)
                          8613 - 8263 (10562 - 10212)

     Summary of above:

     maximum of cal age ranges (cal ages) minimum of cal age ranges:
      1 sigma  cal BC 8539 (8427, 8423, 8412, 8394, 8380, 8371,
                            8358, 8352, 8336)  8288
               cal BP 10489 (10376, 10372, 10361, 10343, 10329, 10320,
                                10307, 10301, 10285)  10238
      2 sigma  cal BC 8628 (8427, 8423, 8412, 8394, 8380, 8371,
                            8358, 8352, 8336)  8263
               cal BP 10578 (10376, 10372, 10361, 10343, 10329, 10320,
                                10307, 10301, 10285)  10213

    cal AD/BC & cal BP age ranges (cal ages as above)
      from probability distribution (Method B):

#  % area enclosed       cal BC (cal BP) age ranges       relative area under
#                                                       probability distribution
#  68.3 (1 sigma)    cal BC 8520 - 8514 (10469 - 10463)          0.047
#                           8470 - 8295 (10419 - 10244)          0.953
#  95.4 (2 sigma)    cal BC 8603 - 8269 (10552 - 10218)          1.000
*************************************************************************
```

BGS 2912
DG-26
Large wood sample
Radiocarbon Age BP   2546 +/- 50 yrs BP

Calibrated age(s) cal BC 785
cal BP 2734

Reference
(Stuiver et al., 1998a)

Reported Age: 2,730 +/- 50 yrs BP

```
   cal AD/BC (cal BP) age ranges obtained from intercepts (Method A):
    one Sigma**   cal BC 797 - 760 (2746 - 2709)
                         682 - 666 (2631 - 2615)
                         631 - 591 (2580 - 2540)
                         577 - 559 (2526 - 2508)
    two Sigma**   cal BC 806 - 518 (2755 - 2467)
                         458 - 453 (2407 - 2402)
                         436 - 434 (2385 - 2383)
                         416 - 415 (2365 - 2364)
```

Summary of above:

maximum of cal age ranges (cal ages) minimum of cal age ranges:

1 sigma	cal BC 797 (785) 559
	cal BP 2746 (2734) 2508
2 sigma	cal BC 806 (785) 415
	cal BP 2755 (2734) 2364

cal AD/BC & cal BP age ranges (cal ages as above)
from probability distribution (Method B):

#	% area enclosed	cal BC (cal BP) age ranges	relative area under probability distribution
#	68.3 (1 sigma)	cal BC 797 - 759 (2746 - 2708)	0.334
#		685 - 662 (2634 - 2611)	0.173
#		641 - 584 (2590 - 2533)	0.317
#		583 - 549 (2532 - 2498)	0.176
#	95.4 (2 sigma)	cal BC 812 - 511 (2761 - 2460)	0.984
#		463 - 448 (2412 - 2397)	0.008
#		438 - 425 (2387 - 2374)	0.008

#

References for calibration datasets:
Stuiver, M., Reimer, P.J., Bard, E., Beck, J.W.,
Burr, G.S., Hughen, K.A., Kromer, B., McCormac, F.G.,
v.d. Plicht, J., and Spurk, M. (1998a)
Radiocarbon 40:1041-1083.
Stuiver, M., Reimer, P.J., and Braziunas, T.F. (1998b)
Radiocarbon 40:1127-1151. (revised dataset);
Stuiver, M. and Braziunas, T.F. (1993) The Holocene
3:289-305. (original dataset)

Comments:
* This standard deviation (error) includes a lab error multiplier.
** 1 sigma = square root of (sample std. dev.^2 + curve std. dev.^2)
** 2 sigma = 2 x square root of (sample std. dev.^2 + curve std. dev.^2)
where ^2 = quantity squared.
[ ] = calibrated with an uncertain region or a linear
extension to the calibration curve
0* represents a "negative" age BP
1955* denotes influence of nuclear testing C-14

NOTE: Cal ages and ranges are rounded to the nearest year which may be too precise in many instances. Users are advised to round results to the nearest 10 yr for samples with standard deviation in the radiocarbon age greater than 50 yr.

APPENDIX D
FOSSIL DISCOVERY PROTOCOL

Victoria Gold Corp. is committed to the protection of historic resources. During construction activities, all palaeontological and archaeological remains will be reported to the environmental manager. All fossils and artifacts will be recovered and the sites will be recorded using the following Discovery Record form.

All discoveries will be reported as soon as possible to the Yukon Department of Tourism and Culture to allow the opportunity for a palaeontologist to visit the site and investigate any fossiliferous units before they are removed entirely.

Eagle Gold Project Fossil and Artifact Discovery Record

Location (Gulch name, etc.) ______________________________

GPS Coordinates (Lat/Long or UTMs from GPS) ______________________________

Activity at Time of Discovery (e.g., backhoe excavation) ______________________________

Name of Person who Discovered the Fossil ______________________________

Reporter Contact Information ______________________________

Date of Discovery ______________________________

Description of Find ______________________________

STRATIGRAPHIC INFORMATION

Context (disturbed or un-disturbed ground conditions) ______________________________

Depth from Surface ______________________________

Strata (describe the material in which the fossil/artifact was found) ______________________________

____

____

Sketch of location where fossil was found (please include photographs)

Completed forms are to be sent with the fossils or artifacts to the attention of:

Dr. Grant Zazula, Yukon Palaeontologist
Government of Yukon
Department of Tourism and Culture
Yukon Palaeontology Program
133A Industrial Road
Whitehorse, YT Y1A 2C6
Ph. (867) 667-8089
Fax. (867) 667-5377
grant.zazula@gov.yk.ca

Dr. Ruth Gotthardt, Yukon Archaeologist
Government of Yukon
Department of Tourism and Culture
Yukon Archaeology Program
133A Industrial Road
Whitehorse, YT Y1A 2C6
Ph. (867) 667-5983
Fax. (867) 667-5377
ruth.gotthardt@gov.yk.ca

APPENDIX C

Fossil and Artifact Discovery Record

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Fossil and Artifact Discovery Record

StrataGold Corporation

Location (Gulch Name, etc.) ______________________________________

GPS Coordinates (Lat/Long or UTMs from GPS) ___________________________

Activity at Time of Discovery (e.g., backhoe excavation) ___________________

Name of Person who discovered the Fossil ______________________________

Reporter Contact Information ______________________________________

Date of Discovery ____

Description of Find ____

Sketch of location where fossil was found (please include photographs)

Stratigraphic Information

Context (disturbed or undisturbed ground conditions) ___________________

Depth from Surface ____

Strata (describe the material in which the fossil/artifact was found) ___________

____

____

Heritage Resource Contact List

Todd Goodsell
SGC Environmental Manager
Ph. (867) 393-4655
C: (867) 334-2655
tgoodsell@vitgoldcorp.com

Dr. Ruth Gotthardt, Yukon Archaeologist
Government of Yukon
Department of Tourism and Culture
Yukon Archaeology Program
133A Industrial Road
Whitehorse, YT Y1A 2C6
Ph. (867) 667-5983
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StrataGold Corporation

Fossil and Artifact Discovery Record

Discovery Type	Features	Required Contacts	Comments
Prehistoric:	**remains resulting from the traditional occupation of the Yukon by Aboriginal people before contact with European traders**		
Habitation	Housepit, cave, rock shelter	SGC Environmental Coordinator (on-site) ↓ SGC Environmental Manager ↓ **Archaeologist, Department of Tourism and Culture**	
Trail	Visible, bent trees, trail markers		
Campsite	Fire-cracked rock, calcined bone, stone tools, artificial cobble concentration, culturally modified trees (stone axe-cute stump, old bark stripping)		
Cache	Ground cache (depression), boulder cache		
Subsistence	Caribou fence (wood/stone), rock hunting blind, fish trap, net sinker stones)		
Burial Sites	Ground depression, mound, grave offerings, cremation site		
Human Remains	Partial skeletons, bones, cremated remains, complete human bodies,	SGC Environmental Coordinator (on-site) ↓ SGC Environmental Manager ↓ **RCMP**	Based on the information, the RCMP will notify: (1) Coroner's office if the site is of forensic or criminal in nature, or (2) both the FNNND and the Archaeologist, Department of Tourism and Culture
Fossils	Leaves, seeds, nests, dinosaur tracks, fish, invertebrates, mammoth tusks, etc.	SGC Environmental Coordinator (on-site) ↓ SGC Environmental Manager ↓ **Palaeontologist, Department of Tourism and Culture**	Eagle Gold Project Fossil and Artifact Discovery Record
Historic:	**these can be Aboriginal or non-Aboriginal, and date from the time of European contact until 45 years ago**		
Structure	Brush camp, tent frame, log building	SGC Environmental Coordinator (on-site) ↓ SGC Environmental Manager ↓ **Archaeologist, Department of Tourism and Culture**	
Structural traces	Building outline, berm, foundation (log, stone or concrete), depressions		
Cultural material	Tin cans, bottles, axe-cut stumps, culturally modified trees (bark stripping, ringed)		
Subsistence feature	Deadfall trap, hunting blind, fish wheel, fish net, net sinker stones, animal traps (leg hold and 'houses', snares		
Mining	Placer workings, 'glory holes', mine adits (entrances)		
Travel	Trail, blazed trees, wagon road, watercraft		
Burial Sites	Grave house, grave fence, cross, unmarked or ground disturbed, depression		
Human Remains	Partial skeletons, bones, cremated remains, complete human bodies	SGC Environmental Coordinator (on-site) ↓ SGC Environmental Manager ↓ **RCMP**	Based on the information, the RCMP will notify: (1) Coroner's office if the site is of forensic or criminal in nature, or (2) both the FNNND and the Archaeologist, Department of Tourism and Culture
Fossils	Leaves, seeds, nests, dinosaur tracks, fish, invertebrates, mammoth tusks, etc.	SGC Environmental Coordinator (on-site) ↓ SGC Environmental Manager ↓ **Palaeontologist, Department of Tourism and Culture**	See Eagle Gold Project Fossil and Artifact Discovery Record