APPENDIX 21-B

Preliminary Field Reconnaissance

Preliminary Field Reconnaissance

Red Mountain Underground Gold Project
Stewart, British Columbia

Submitted to:
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January 2016

TERRA ARCHAEOLOGY LIMITED
15-0855-002

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Management Summary

This report summarizes the preliminary field reconnaissance (PFR) of IDM Mining Ltd.'s proposed Red Mountain Underground Gold Project, an underground gold-silver mine near the head of Bitter Creek and the Bromley Glacier, 17 km east of the District of Stewart, and 188 km north of the City of Prince Rupert. The project components include upgrading the existing mine site facilities on Red Mountain and construction of an access road and powerline through the Bitter Creek Valley, from the Stewart Highway (Highway 37A) to the Bear River.

The PFR was conducted based on the results of an archaeological overview assessment (AOA) of the proposed project. The AOA recommended a field survey to locate and evaluate remnant creek terraces in the Bitter Creek Valley and search for recently icebound artifacts in the alpine at the mine site proper. No further archaeological work was recommended in the AOA for the remaining development lands due to steeply sloping terrain or significant man-made or natural disturbance that would preclude detection of archaeological remains.

The PFR consisted of a helicopter survey of the entire powerline and access road rights-of-way, a vehicle survey of the original proposed powerline route south of the Bitter Creek-Bear River confluence, and pedestrian survey of proposed mine site facilities and portions of the proposed rights-of-way in the Bitter Creek Valley. No archaeological sites or other cultural heritage resources were identified during the PFR. Archaeological potential is considered to be low throughout the assessed lands due to steeply sloping terrain, absence of old growth tree stands, and significant previous land alterations from historic land use and natural processes.

The Project is located within the Nass Wildlife Area as set out in the *Nisga'a Final Agreement* (NFA). Pursuant to the NFA, the Nisga'a Nation has treaty rights to the management and harvesting of fish and wildlife within the Nass Wildlife Area.

It is important to note this assessment is intended to identify physical archaeological evidence of past human activity protected under the *Heritage Conservation Act*. It does not address traditional land use or other heritage concerns of the First Nations people with asserted traditional territory in the study area.

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1 Introduction

IDM Mining Ltd. (IDM) proposes to construct an underground mine on the Red Mountain Gold property northeast of the District of Stewart. IDM requested that Terra Archaeology Limited (Terra) conduct a preliminary review of the proposed development in order to identify potential conflicts with cultural heritage resources. That review (Anderson 2015) resulted in a recommendation that portions of the project area be ground-truthed.

1.1 Archaeological Site Protection

An archaeological site is generally defined as a location containing the preserved remains of past human activity. Protection for heritage sites, including archaeological sites, occurs automatically under the *Heritage Conservation Act* (HCA), Section 13(2) where preserved archaeological remains represent human burials, aboriginal rock art, occupation earlier than 1846 AD, or a ship or aircraft wreck. These sites, whether located on public or private land, cannot be altered in any way without a permit issued under Section 12 or 14 of the HCA.

Automatic heritage protection does not distinguish between disturbed and undisturbed sites or sites which have been documented in the Province's Site Inventory and those sites which have yet to be discovered – all sites described above are automatically protected. In order to identify locations where development may conflict with protected archaeological sites, a professional archaeologist is commissioned to conduct an impact assessment. The impact assessment process typically starts with an office review of the proposed development and documentary evidence of archaeological potential, known as an archaeological overview assessment (AOA).

1.2 Preliminary Field Reconnaissance (PFR)

A PFR is an extension of an archaeological overview assessment and is generally employed as part of an AOA when the desk-based assessment does not provide sufficient information for managing impacts to archaeological sites. The present study was conducted in accordance with the standards of a PFR as described in the *BC Archaeological Impact Assessment Guidelines* (the "*Guidelines*", Apland and Kenny 1998). Specifically,

- "to confirm or refute the existence of archaeological sites reported or predicted from documentary research;
- to allow further predictions to be made about the distribution, density and potential significance of archaeological sites within the study area;
- to identify areas where sites are apparently absent, implying low or no potential; and
- to verify, wherever possible, potential impacts imposed by the development project." (*Guidelines*, Section 3.4.3).

1.3 Report

This report includes a description of the proposed project, the methods of Terra's assessment, the results of the field assessment, and recommendations for further archaeological study. Although this document is intended as a stand-alone report, it is recommended that readers review Terra's AOA report (Anderson 2015), which includes detailed descriptions of the relevant physical and cultural settings, a review of previous archaeological studies in the region, and methods used for assessing archaeological potential based on documentary research. These aspects of the AOA study are not described in detail here.

2 Proposed Project

The Red Mountain Gold property covers 17,125 ha of the Bitter Creek Valley and portions of the Cambria Range, east of the District of Stewart and the British Columbia-Alaska border (Figure 1). IDM proposes to construct an underground gold-silver mine near the head of Bitter Creek and the Bromley Glacier. Construction of the mine and associated facilities will commence after completion of preliminary assessments and regulatory certifications, no earlier than late 2016 (IDM 2015).

The proposed mine site is located approximately 4 km south of Otter Mountain, 17 km east of Stewart, and 188 km north of the City of Prince Rupert. The proposed access road and powerline rights-of-way connect the mine site to the Stewart Highway (Highway 37A) between 6 km and 11 km north of Stewart, following the Bitter Creek Valley. The assessed project consists of the following components:

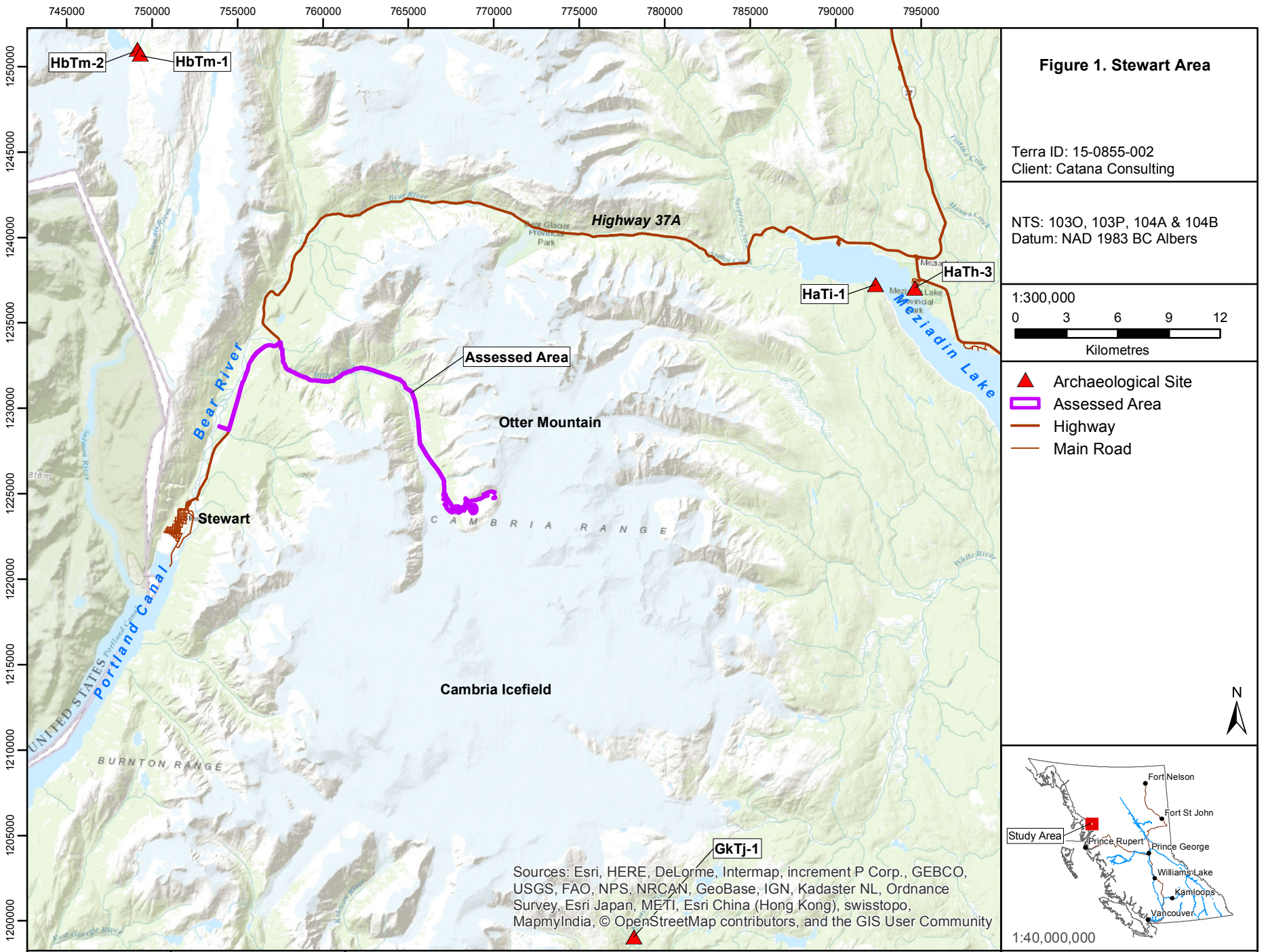
- Powerline right-of-way (51 km-long, 25 m-wide)
- Access road right-of-way (44 km-long, 15 m-wide)
- General mine access road rights-of-way (11 km in total, 15 m-wide)
- Mill Site (1.78 ha)
- Waste dump site (1 ha)
- Tailings dam site (6.69 ha)

The specific layout of project components is subject to change. For instance, the powerline right-of-way now terminates at a proposed substation, located near the confluence of Bitter Creek and the Bear River. However, it is understood that the general location of the final project facility and rights-of-way footprints will not extend beyond the areas covered in this study.

The proposed powerline and access roads descend a steep slope (the latter by a series of switchbacks) from the mine site's location in a cirque below the Cambria Icefield to the Bitter Creek Valley. From there, both rights-of-way overlap, continuing northwest to the Bear River Valley along the east and north sides of Bitter Creek (Figure 2). The proposed rights-of-way end at the intersection with Highway 37A, north of the Bitter Creek Bridge. A previously proposed section of the powerline right-of-way crossed the highway and continued south for approximately 6 km. Portions of the proposed powerline and access road are located within existing clearings.

The proposed mine site facilities are located above the treeline, and some portions of the mine footprint overlap previously constructed mineral extraction developments, including access roads, test drill locations, and an existing underground mine portal (tunnel entrance), all of which were constructed prior to the mid-1990s.

Construction of the powerline and access road may involve vegetation clearing, cut-and-fill excavation, bridge building, and excavation for ditches and utility structures. Deactivation at the end of the project's lifespan may involve other ground altering activities (excavation of deactivation ditches across roads, for instance). Construction at the mine site may involve clearing, levelling and filling, excavation of mine adits, and additional excavation or infilling during project decommissioning. All of these activities have the potential to alter undocumented archaeological sites or objects within the proposed development footprint. Surface features such as culturally modified trees and lithic scatters are particularly vulnerable to vegetation clearing and heavy construction-related vehicle traffic.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HbTm-2
HbTm-1
Highway 37A
Bear Glacier Provincial Park
HaTi-1
HaTh-3
Meziadin Lake
Meziadin Lake Provincial Park
Assessed Area
Bear River
Otter Mountain
Stewart
CAMBRIA RANGE
Portland Canal
UNITED STATES
Cambria Icefield
BURNTON RANGE
GkTj-1
Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Figure 1. Stewart Area
Terra ID: 15-0855-002
Client: Catana Consulting
NTS: 103O, 103P, 104A & 104B
Datum: NAD 1983 BC Albers
1:300,000
0 3 6 9 12
Kilometres
Archaeological Site
Assessed Area
Highway
Main Road
N
Fort Nelson
Fort St John
Study Area
Prince Rupert
Prince George
Williams Lake
Kamloops
Vancouver
1:40,000,000
Date Produced: 2016-01-20
Client Data Currency: 2015-07-17
Topographic Data Source: CanVec+ courtesy NRCAN – 2015-05-07
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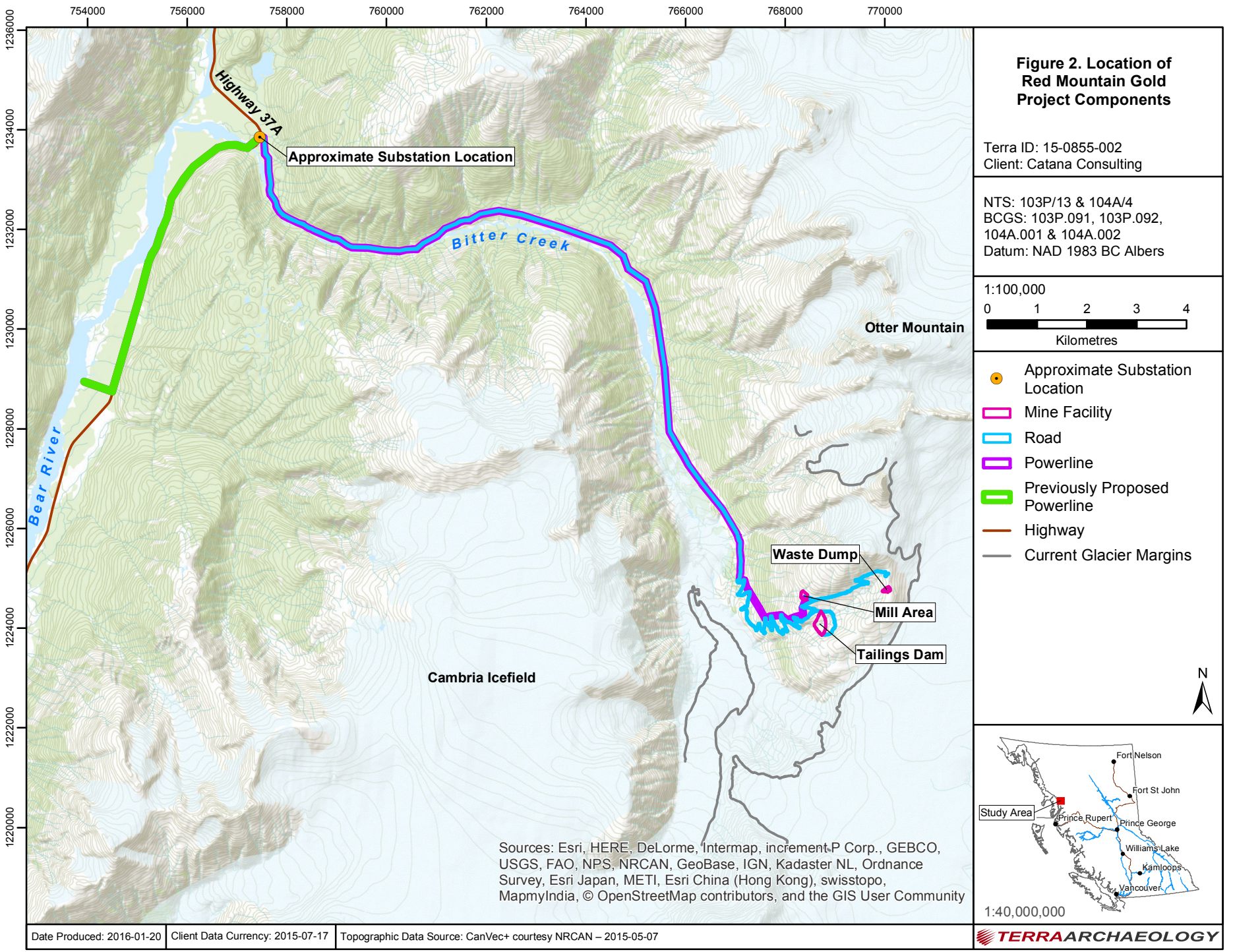

Figure 2. Location of Red Mountain Gold Project Components

Terra ID: 15-0855-002
Client: Catana Consulting

NTS: 103P/13 & 104A/4
BCGS: 103P.091, 103P.092, 104A.001 & 104A.002
Datum: NAD 1983 BC Albers

1:100,000
0 1 2 3 4
Kilometres

- Approximate Substation Location
- Mine Facility
- Road
- Powerline
- Previously Proposed Powerline
- Highway
- Current Glacier Margins

N

Date Produced: 2016-01-20 | Client Data Currency: 2015-07-17 | Topographic Data Source: CanVec+ courtesy NRCAN – 2015-05-07

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3 Study Area

3.1 Natural Setting

The proposed developments are located in a rugged, mountainous region characterized by large icefields, partially-glaciated alpine tundra, and a distinctly coastal climate (Demarchi 2011). Forested zones in this area are typically very wet Coastal Western Hemlock (CWH) or cold and wet Mountain Hemlock (MH); treeless alpine meadows (Coast Mountain-heather Alpine [CMA]) are also common.

The majority of the powerline and road rights-of-way are located within 200 m of Bitter Creek. Locations close to the creek have been subject to significant flooding and washout. In 2011, heavy rains caused significant damage to Highway 37A north of Stewart, including a washout at the Bitter Creek Bridge (Ministry of Transportation and Infrastructure 2011).

The project components cover a very wide elevation range: the south end of the transmission line right-of-way is located just above sea level (asl) at 35 m, joins the access road at 100 m asl, and climbs the Bitter Creek Valley to 700 m asl before ascending to the base of the alpine cirque at 1570 m asl.

Below the mine proper, the terrain is covered in second-growth forest (spruce, hemlock, and aspen/cottonwood) or dense undergrowth (alder and willow), and large sections of the powerline and access road rights-of-way are located in man-made clearings.

The mine facilities are located between the end of the powerline right-of-way and the icefield edge at 1870 m asl. The alpine portion of the project area is currently ice-free, but may have been glaciated as recently as several decades ago (IDM 2015, Royal Oak Mines 1996). Significant ice would likely have covered the entire mine site 100 – 300 years ago, during a period of global cooling known as the Little Ice Age (Clague and Matthews 1996).

A recent study of Bromley Glacier advances and retreats indicates an advance around 830 BP based on dated wood debris (the remains of an ancient forest) buried in glacial till; and aerial photos reveal that the glacier receded 7318 m up the Bitter Creek Valley between 1910 and 2010 (Hoffman and Smith 2013). Retreat of tributary glaciers and adjacent icefield margins would have coincided with Bromley Glacier's recent advances and retreats.

3.2 Cultural Setting

The proposed project is located within the Nass Area (and smaller Nass Wildlife Area), where the Nisga'a have specific rights under the *Nisga'a Final Agreement Act* (1999). Nisga'a territory is centred on the Nass River (*K'alii Aksim Lisims*) and includes the Cambria Ranges, Portland Canal, District of Stewart, and the Bear River. The project area is also adjacent to the traditional territories of the Gitxaala Nation (surrounding the upper Skeena River), which shares kinship ties with the Nisga'a (Halpin and Seguin 1990) and the Tahltan.

The original inhabitants of the Stewart area were the Tsetsaut (*Ts'ets'ā´ut*) (Boas 1895). The Tsetsaut language has many similarities with Athapaskan, rather than Tsimshian, although the language is only known from Boas's interviews with two informants living among the Nisga'a in the late 1890s. The Skii km Lax Ha First Nation identify themselves as Tsetsaut descendants (Rescan 2014).

3.3 Archaeological Setting

Little archaeological research has been conducted in proximity to the project area, so it is only possible to suggest that archaeological cultures in the area may have possessed traits similar to those better-documented cultures to the north, east, and south. However, as noted above, there are significant

cultural distinctions between northern-interior peoples and southern-coastal peoples historically; and so distinctions in archaeological cultures of the two regions are also expected.

To the north, archaeological research by Albright (1982) among the Tahltan on the Stikine Plateau and Fladmark (1982) in the vicinity of Mt. Edziza form the basis of many subsequent archaeological studies; most are cultural resource management (CRM) surveys. Based on that work, and despite evidence that traditional practices involved significant use of perishable materials (like wood), a wide variety of site types are anticipated in the archaeological record, including habitation features, quarrying sites, fishing sites and camps re-occupied or re-used, game drives, and hunting blinds. No cultural chronology exists for the region north of the project area.

Recently, a significant amount of archaeological work has been conducted on melting ice patches in the mountains and high alpine of western North America (Beattie et al. 2000, Hare 2011, Hare et al. 2012, and Lee et al. 2014). Under certain conditions, melting ice patches have revealed well-preserved remains of a variety of hunting tools (dart and arrow shafts, including binding sinews and fletchings), clothing, and animal and human remains. The research indicates a relatively intensive use of high alpine settings in the past 9,000 years, for a wide variety of hunting and foraging activities (Vanderhoek et al 2012).

In contrast to the scarcity of archaeological research to the north, a number of archaeological studies have focused on documenting archaeological cultures in Tsimshian territory, south of the project area. A summary of archaeological and ethnographic research in Tsimshian territory is presented by Martindale (1999).

In this area, winter village sites are characterized by midden deposits, preserved bone and antler remains, items traded from the interior (like obsidian), burials, and complex structures (MacDonald and Inglis 1981). Work at sites in the middle Skeena River indicates that an intense prehistoric salmon fishery existed circa 5000 BP (Coupland 1996). In the period circa 3500 – 2500 BP, archaeological evidence points to strengthening ties between Northwest Coast cultures, including similarities in artifact styles and evidence of trade (Fladmark et al. 1990). However, cultural traits diverge again circa 2000 – 1500 BP across the region, perhaps in response to increasing sedentism i.e., the establishment of permanent villages, intensification of salmon fisheries, and increasing social complexity (Fladmark et al. 1990:239).

3.4 Historical Setting

Portland Canal was named by George Vancouver while surveying the northwest coast of North America in 1793 (Akrigg and Akrigg 1997), but little information about the area in the historic period is reported for another century. The Klondike Gold Rush may have spurred a renewed interest in northwestern British Columbia by non-aboriginals in the early twentieth century. By the turn of the twentieth century, mining claims were being staked in the vicinity of Stewart, the Bear River, American Creek, and Bitter Creek. The communities of Stewart and Premier were both established between 1900 and the 1920s. Mining, along with the local population, declined in the latter half of the twentieth century and the population of Stewart is now approximately 500 (2011 Census), while Premier is abandoned.

3.5 Pre-PFR Archaeological Potential

No previously recorded archaeological sites are located within 10 km of the Red Mountain project area. However, the AOA identified several locations considered to have moderate to high archaeological potential (Table 1).

Table 1: Pre-PFR Archaeological Potential of Project Components

Location	Map Reference	High Potential Factors	Restricting Potential Factors	Archaeological Potential
Mill Area	Figure 3	Alpine; Partly level terrain	Mostly steep slope; Mining disturbance	Moderate
Tailings Dam	Figure 3	Alpine; Partly level terrain	Mostly steep slope; Mining disturbance	Moderate
Mine Site Access	Figure 3	Receding ice; Alpine	Steep slope; Road construction	Low-moderate
Powerline/Access (Rio Blanco–Hartley Gulch)	Figure 4	Possible veteran CMTs; Level areas near creek	Mostly steep slope; Road construction	Moderate
Powerline/Access (Hartley Gulch–Roosevelt)	Figure 5	Possible veteran CMTs; Level areas at creek crossing; Possible terrace near creek	Mostly steep slope; Road construction	Moderate-High
Powerline/Access (Cable–Crabtree)	Figure 6	Possible terrace near creek	Mostly steep slope; Mining disturbance; Road construction	Low-Moderate
Powerline/Access (Highway 37A Junction)	Figure 7	Possible terrace near creek	Mining disturbance; Road construction; Logging	Moderate
Powerline (Highway 37A to Stewart)	Figure 8	Possible river terraces	Significant road construction; Powerline construction; Poorly drained areas; Logging	Low-Moderate

4 Methodology

4.1 Archaeological Overview Assessment

The PFR was preceded by an AOA which included:

- a search of the Provincial Archaeological Report Library (PARL) for the results of previous archaeological studies in the region;
- a search for previously recorded sites in or near the project area using the Remote Access to Archaeological Data (RAAD) application;
- a review of mining industry documents related to mining and mineral exploration in the region using the Environmental Assessment Office's Project Information Centre (e-PIC) and the Ministry of Energy and Mines' Annual Report Catalog and MINFILE Mineral Inventory;
- a review of high resolution aerial photographs provided by IDM Mining; and,
- creation of a slope model of the entire project footprint (lands covered by specific project components).

Based on the results of this research, areas of moderate to high archaeological potential were identified within the project footprint.

4.2 Preliminary Field Reconnaissance

Fieldwork was conducted on September 15 and 16, 2015 by a crew of three using a combination of helicopter and vehicle survey, and pedestrian traverses.

4.2.1 Helicopter and Vehicle Survey

The entire length of the proposed powerline and access road rights-of-way from the base of the mine site was subject to low-level helicopter survey (Appendix, Image 18). Locations identified in the AOA were targeted for intensified flyovers prior to pedestrian survey. Intensive survey usually involved observing each location from several directions at low speed. During the survey, the helicopter was oriented to allow each field crew member an unrestricted view of the target location. Photographs were taken of each location identified in the AOA from several angles.

Areas adjacent to Highway 37A were assessed by vehicle with pedestrian spot-checks. The vehicle survey focused on identifying elevated landforms along the existing highway and powerline rights-of-way.

4.2.2 Pedestrian Survey

Crew members were spaced at approximately 5 – 10 m intervals along survey transects, all ground exposures encountered were inspected for cultural materials, and all trees (all species standing or fallen, including stumps) along survey transects were examined for indications of cultural modification. Survey was intensified in areas considered to have higher archaeological potential based on topographic and hydrological terrain features observed in the field.

4.3 Archaeological Potential Assessment

Archaeological potential was assessed initially based on proximity to water, food resources, slope, drainage, forest cover, the presence of topographic landforms commonly associated with known archaeological sites in the region (e.g., terraces, knolls, breaks-in-slope), and local knowledge (Stephen Bolton [Nisga'a] and Rob McLeod [IDM]). The initial assessment was then tempered with observations about the nature and intensity of land alterations such as road building, timber harvesting, and creek bank washouts.

5 Results

A combination of ongoing natural erosion and a number of proponents' past resource extraction and exploration activities have resulted in an absence of old growth vegetation and undisturbed terrain features in the surveyed areas. Undisturbed lands encountered during the PFR were either too rocky or too steep to warrant further archaeological investigations.

Slope modelling from the AOA matched field observations very closely. However, low slope values highlighted in the AOA were primarily the result of man-made levelling for mine site facilities (e.g., temporary camps), mineral exploration (cut lines and staging areas), and roads.

In addition to the results discussed below, further details are provided regarding specific proposed development locations (Table 2).

5.1 Mine Site

At the mine site, terrain is steep and rocky (Appendix, Images 1 – 6); there is a lack of soil development, and the harsh alpine conditions generally only allow for seasonal access. Ground cover is absent at the higher elevations although patchy heather and clubmoss grows in lower areas in the vicinity of the tailings dam and the eastern extent of the powerline corridor (Appendix, Images 4 and 6). Excellent ground exposures allowed for thorough surface examinations of remnant terrain features. This area was selected for field survey based on the potential for exposed organic remains preserved in adjacent ice-patches – no such remains were observed and the potential for this type of archaeological site is now considered to be low.

A small rock cairn was observed within the powerline right-of-way, south of the proposed mill site (Appendix, Image 4; Figure 3). The cairn is considered to be modern due to weathering and lichen growth patterns on individual stones which indicate that they were placed in their current positions recently. The cairn may have supported a survey stake or pole – several wooden stakes were observed in the area between the proposed mill site and tailings dam.

5.2 Bitter Creek Valley

Extremely steep slopes lead into Goldslide Creek and the Bitter Creek Valley from the proposed mine. Heavy seasonal run-off has facilitated numerous slope-failures, from high on the valley walls in some areas, as well as considerable lateral washouts along Bitter Creek (Appendix, Image 11). An extensive network of overgrown roads from past logging and mining practices was observed where the valley broadens approaching Roosevelt Creek (Appendix, Image 10).

5.3 Highway 37A Corridor

At the Bitter Creek – Bear River confluence, flooding in 2011 and the subsequent reconstruction of the Highway 37A Bridge has heavily impacted the area (Appendix, Images 15 and 16). Along Highway 37A to Glacier Creek terrain consists of low-lying, poorly drained, and/or inundated terrain which is highly susceptible to erosion (Appendix, Image 17). Ground disturbance is also extensive due to past logging, highway, and transmission line developments.

Table 2: PFR Results

Location	Location Description	Arch. Potential	Figure Number	Appendix Image Number(s)
Waste dump	Narrow east-west trending 15 – 20 m deep bedrock gully; undisturbed. Excellent surface exposures on semi-level areas on north and south sides as well as east side of gully bottom; no soil development.	Low	3	1
Mill area	Several west-facing bedrock benches surrounded by talus slope. No soil development. An old access road approaches from the eastern side, but the mill area is largely undisturbed.	Low	3	3, 6
Tailings dam	Goldslide Creek gully is 10 – 15 m deep at this location, associated with rocky terraces. Broad areas of levelled rock are present due to the construction of a camp and staging areas on the north side of the creek, and systematic drilling on the south side. Remaining intact terrain is very well exposed with little to no soil development.	Low	3	2, 5, 6
Mine site access	Partially situated on extremely steep south-facing talus slope. Overlap with exploration disturbance is significant at the eastern end (north of the waste dump), and surrounding the camp and tailings areas. East of the mill area the proposed access aligns with an 800 m length of old road.	Low	3	2, 6
Powerline (mine site)	A gentle-to-moderate slope leads directly south from the mill area; the powerline right-of-way (ROW) drops steeply to the west. An old turnaround and storage area is located 300 m south of the mill area.	Low	3	2, 6
Powerline/access (Goldslide – Rio Blanco)	Extremely steep southwest and west-facing bedrock slopes were observed along the north side of Goldslide Creek. Level portion of access ROW follows low-lying, rocky, poorly-drained terrain located in a saddle between a small bedrock hill (Devil's Ridge) to the west and the Bitter Creek Valley wall. Terrain consists of steep west-facing slopes where powerline and access ROWs merge.	Low	3	7
Powerline/access (Rio Blanco – Hartley Gulch)	Approximately 500 m north of Rio Blanco the combined ROW enters a saddle between a bedrock ridge to the west and the valley wall. A 400 m section was surveyed on foot; a north-flowing drainage meanders through this area amidst rocky, uneven, poorly-drained ground.	Low	4	8, 9
Powerline/access (Hartley Gulch – Roosevelt)	The valley floor broadens southeast of Roosevelt Creek. Extensive disturbance in this area due to the construction of roads, logging activities, and mineral exploration. A 1.1 km section east of Roosevelt Creek was surveyed on foot. An overgrown logging road is aligned with the proposed powerline/access through this section. Large clearings (possible staging areas or camp sites) are located near the Roosevelt Creek Bridge (washed out), particularly on the west side.	Low	5	10, 11
Powerline/access (Cable – Crabtree)	The valley is narrow and very steep-sided through this section. Large sections of overgrown logging road located north of Bitter Creek have been completely washed out.	Low	6	12
Powerline/access (Highway 37A Junction)	Low-lying, poorly-drained, and/or inundated terrain with evidence of significant washout events. Ground disturbance is also extensive due to past logging, highway, and transmission line construction. A 2.3 km section of powerline/access ROW which overlaps the overgrown logging road was surveyed on foot. Heavy disturbance was observed adjacent to the logging road; forest cover is second growth. The effects from the 2011 flooding and replacement of the Bitter Creek Bridge and embankments are considerable.	Low	7	13, 14, 15
Powerline [removed from plans] (Bear River – Glacier Creek)	Low-lying, heavily saturated, and/or inundated terrain which is highly susceptible to erosion. Ground disturbance is also extensive due to past logging, highway, and transmission line developments. Surveyed via helicopter and by truck with occasional pedestrian spot-checks (not mapped).	Low	8	16, 17

Conclusions and Recommendations

The results of field reconnaissance indicate that the proposed project lands have low archaeological potential due to steeply sloping or heavily disturbed (due to past land use or natural processes) terrain. The review also indicates that there are no old growth stands of cedar or lodgepole pine within the project area, so the potential for culturally modified trees is low. In the alpine, the negative results of the thorough search for exposed archaeological remains which have been preserved in snow or ice indicates that the potential for these remains within the project area is also low. **Therefore, no further archaeological work is recommended prior to construction of the Red Mountain Underground Gold Project.**

Although the potential presence of archaeological sites is considered to be low in the assessed lands, no assessment can guarantee to identify all undocumented sites located in a particular area. Therefore, if archaeological materials are observed during any phase of project construction and/or operation, all ground-altering activities in the vicinity of the materials must be halted immediately and a qualified archaeologist and Nisga'a Nation contacted. If a qualified archaeologist considers the materials to be protected under the *Heritage Conservation Act*, ground-altering activities may only resume with approval of the Archaeology Branch. Supervisors and operators should be aware that sites and objects located on public or private land and associated with human habitation or use that might pre-date 1846 AD are automatically protected under Section 13 (2) of the Act and cannot be altered without a permit issued pursuant to Sections 12 or 14 of the Act.

This assessment addresses the potential for the existence of physical evidence of past human activity and does not encompass traditional use or other heritage concerns of the First Nation communities. This information should be solicited directly from the First Nations.

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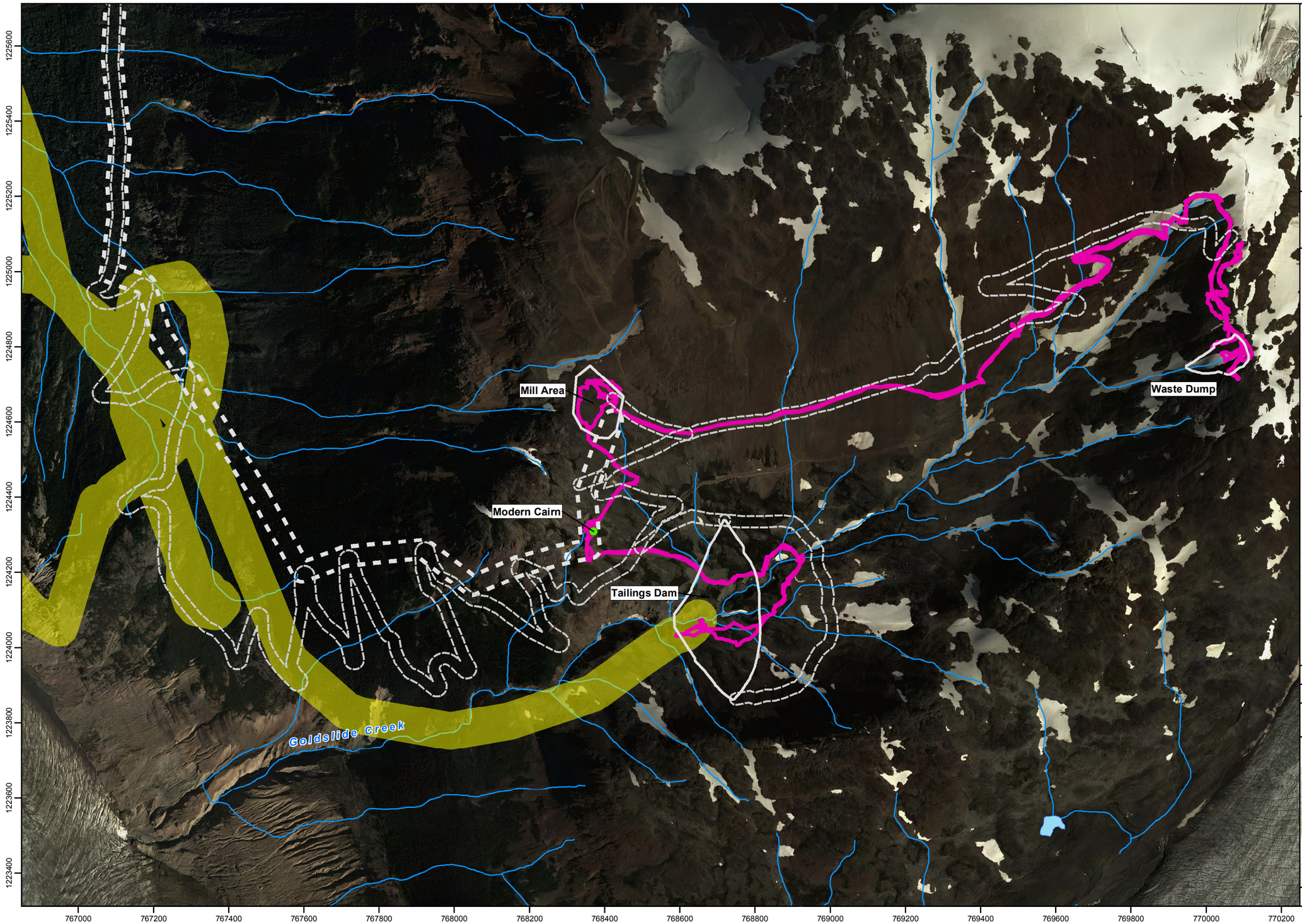

Figure 3. Red Mountain Gold Project – Mine Facilities

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Client: Catana Consulting

NTS: 103P/13
BCGS: 103P.092
Datum: NAD 1983 BC Albers

1:10,000
0 100 200 300 400
Metres

Mine Facility
Road
Powerline

Survey Coverage
Pedestrian
Vehicle
Helicopter

River/Creek
Waterbody

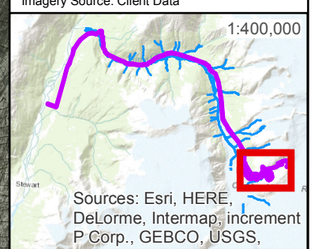
Petroform

N

Date Produced: 2015-11-26

Client Data Currency: 2015-07-17

Topographic Data Source: CanVec+ courtesy NRCAN – 2015-05-07
Imagery Source: Client Data



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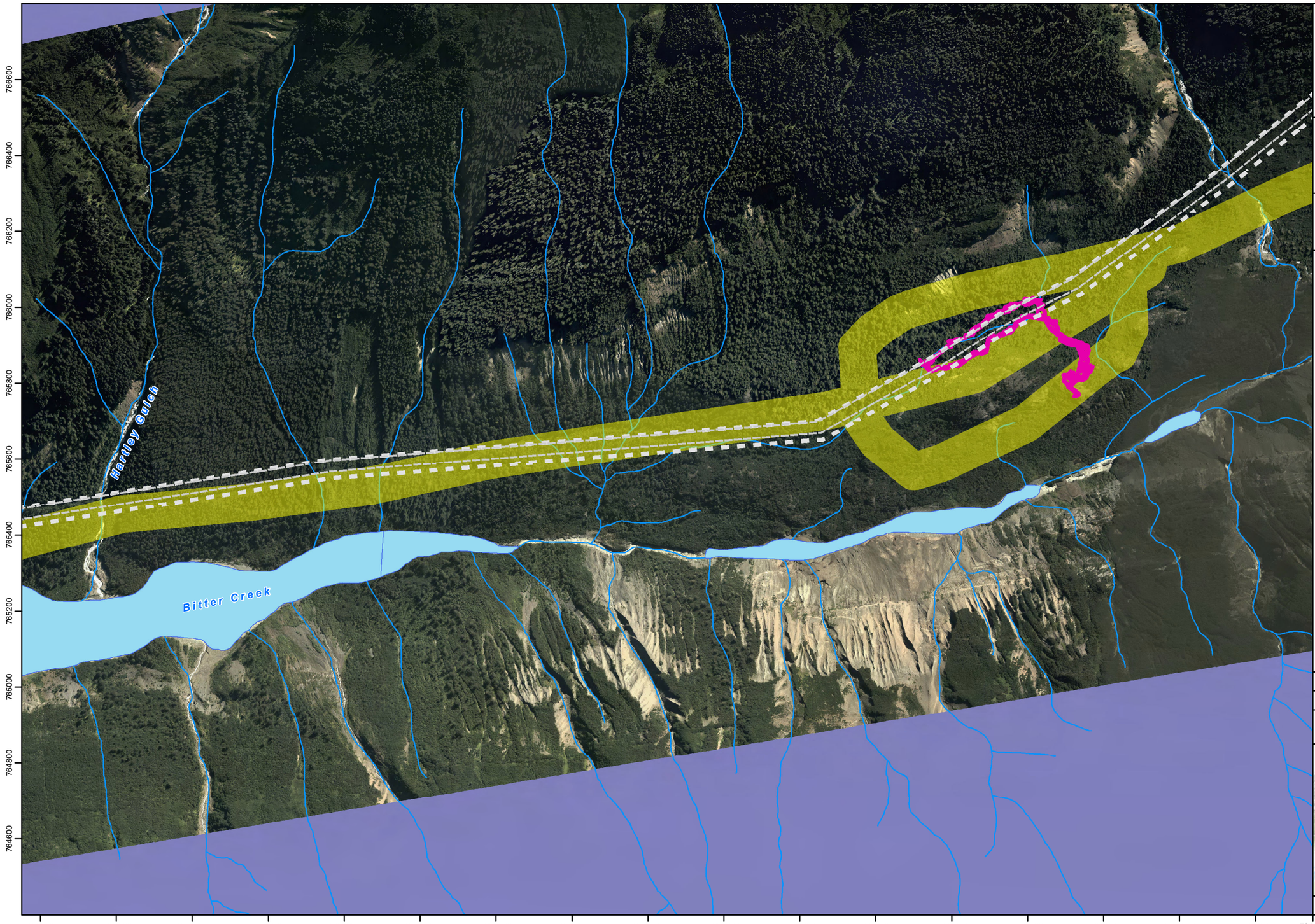

Figure 4. Red Mountain Gold Project – Rio Blanco to Hartley Gulch

Terra ID: 15-0855-002
Client: Catana Consulting

NTS: 103P/13 & 104A/4
BCGS: 103P.092 & 104A.002
Datum: NAD 1983 BC Albers

1:10,000
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Metres

Mine Facility
Road
Powerline

Survey Coverage
Pedestrian
Vehicle
Helicopter

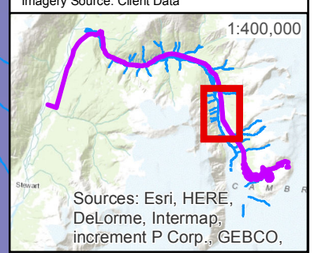
River/Creek
Waterbody

N

Date Produced: 2015-11-26

Client Data Currency: 2015-07-17

Topographic Data Source: CanVec+ courtesy NRCAN – 2015-05-07
Imagery Source: Client Data



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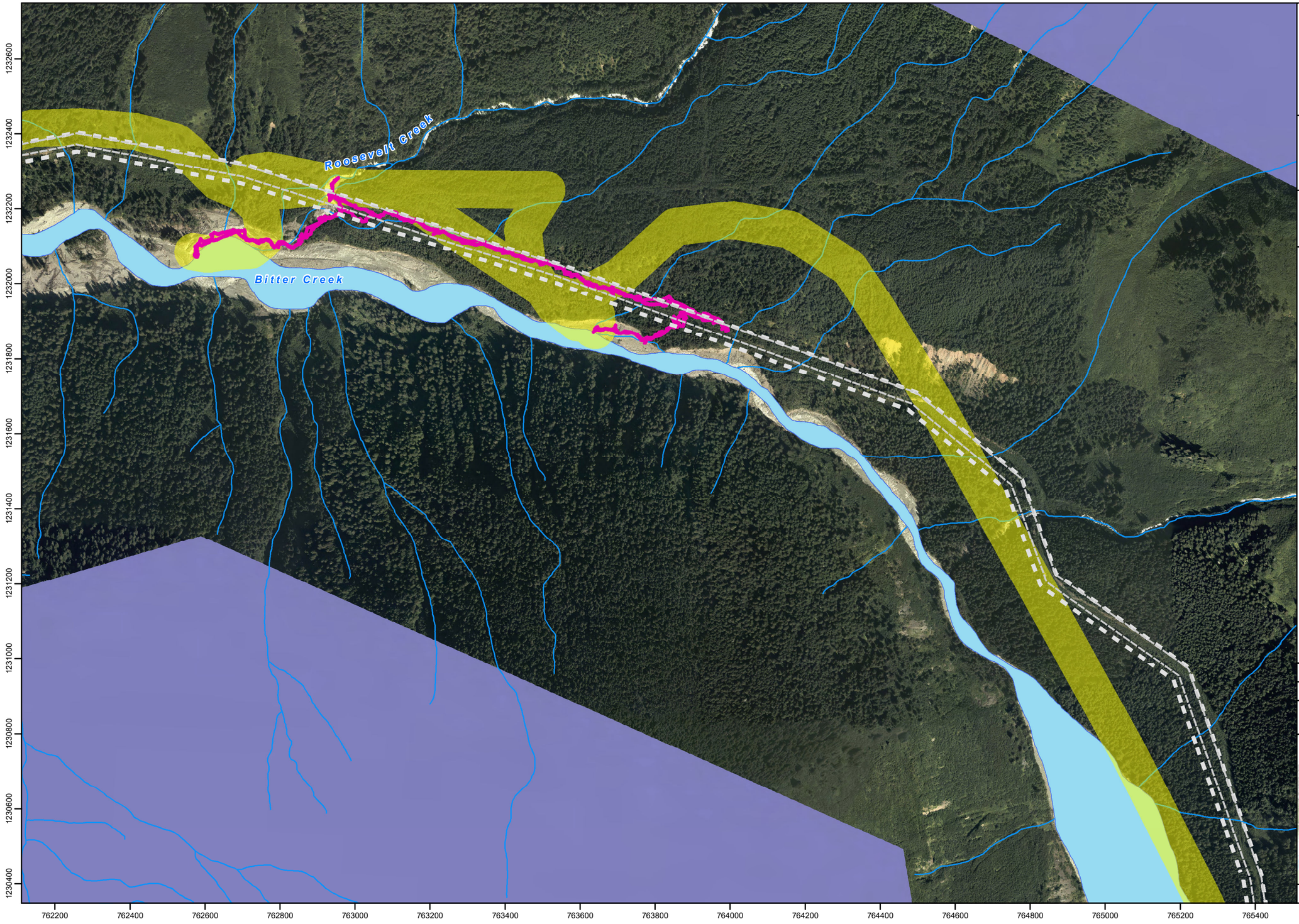


Figure 5. Red Mountain Gold Project – Hartley Gulch to Roosevelt Creek

Terra ID: 15-0855-002
Client: Catana Consulting

NTS: 104A/4
BCGS: 104A.001 & 104A.002
Datum: NAD 1983 BC Albers

1:10,000
0 100 200 300 400
Metres

Mine Facility
Road
Powerline

Survey Coverage
Pedestrian
Vehicle
Helicopter

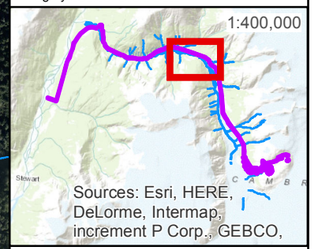
River/Creek
Waterbody

N

Date Produced: 2015-11-26

Client Data Currency: 2015-07-17

Topographic Data Source: CanVec+ courtesy NRCAN – 2015-05-07
Imagery Source: Client Data



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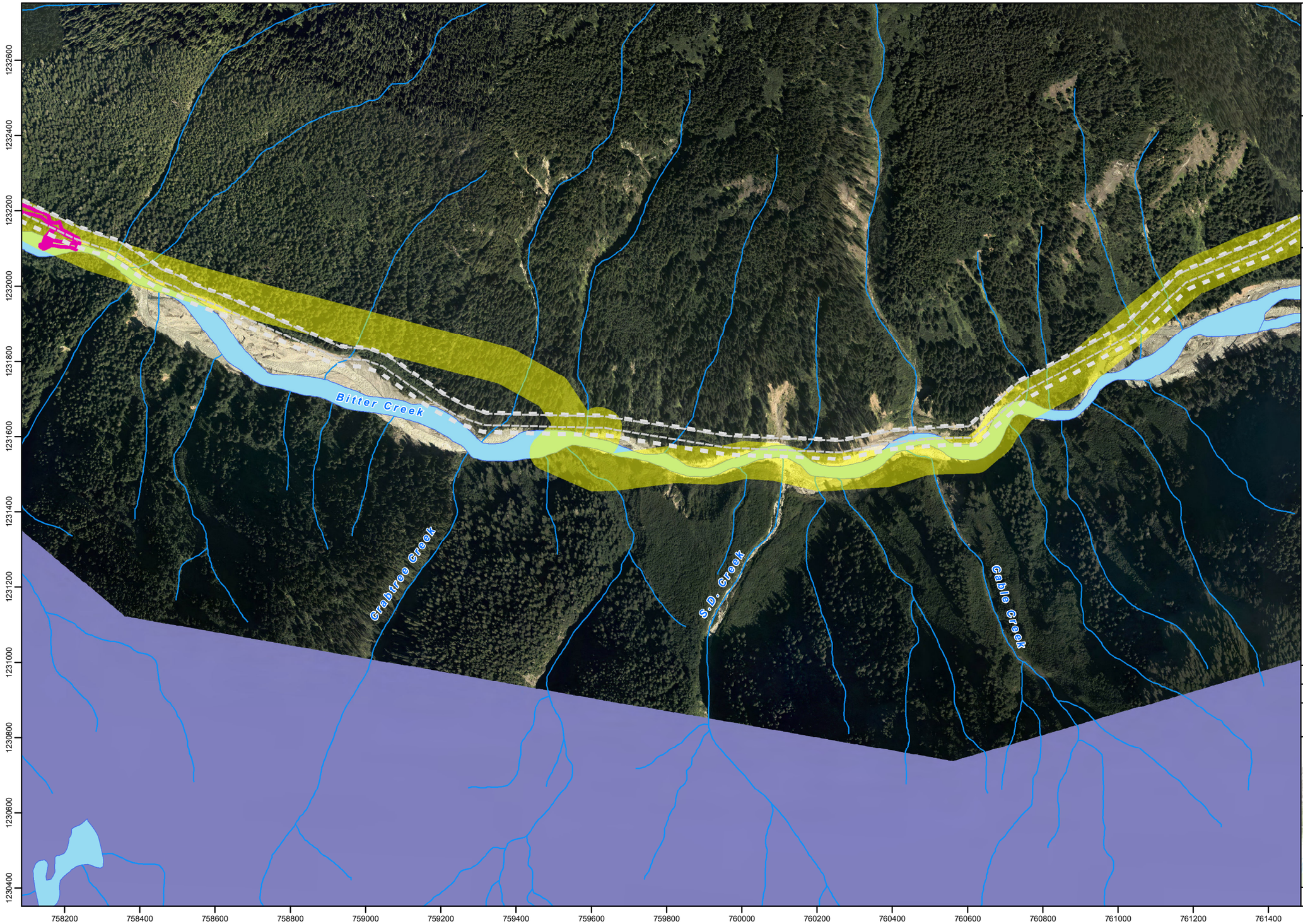


Figure 6. Red Mountain Gold Project – Cable Creek to Crabtree Creek

Terra ID: 15-0855-002
Client: Catana Consulting

NTS: 104A/4
BCGS: 104A.001
Datum: NAD 1983 BC Albers

1:10,000
0 100 200 300 400
Metres

Mine Facility
Road
Powerline

Survey Coverage
Pedestrian
Vehicle
Helicopter

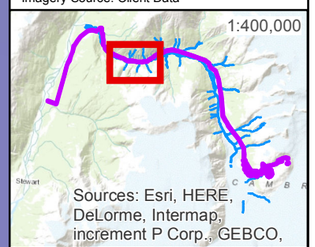
River/Creek
Waterbody

N

Date Produced: 2015-11-26

Client Data Currency: 2015-07-17

Topographic Data Source: CanVec+ courtesy NRCAN – 2015-05-07
Imagery Source: Client Data



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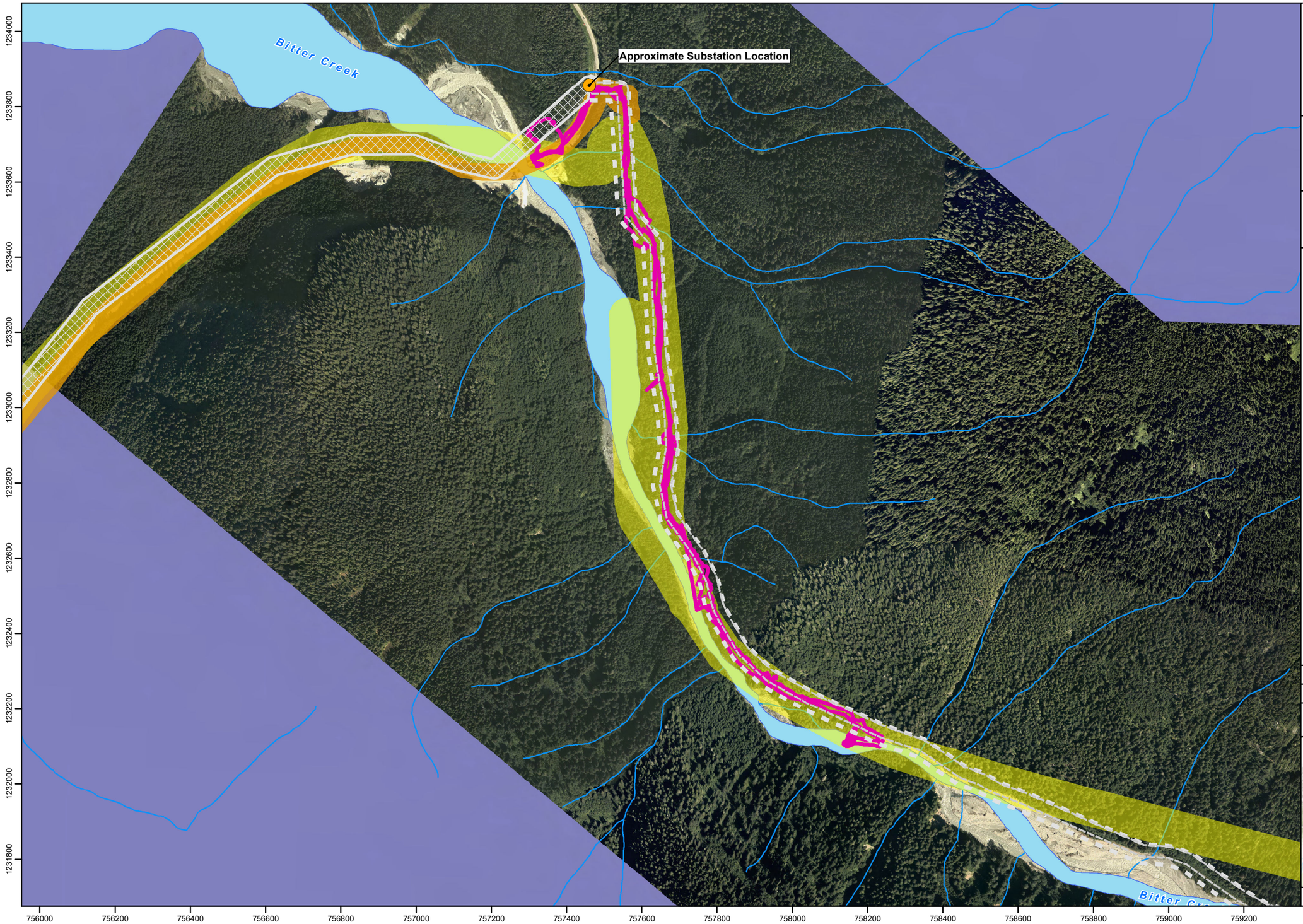

Figure 7. Red Mountain Gold Project – Highway 37A Junction

Terra ID: 15-0855-002
Client: Catana Consulting

NTS: 104A/4
BCGS: 104A.001
Datum: NAD 1983 BC Albers

1:10,000
0 100 200 300 400
Metres

- Approximate Substation Location
- Mine Facility
- Road
- Powerline
- Previously Proposed Powerline

Survey Coverage

- Pedestrian
- Vehicle
- Helicopter

- River/Creek
- Waterbody

N

Date Produced: 2016-01-20

Client Data Currency: 2015-07-17

Topographic Data Source: CanVec+ courtesy NRCAN – 2015-05-07
Imagery Source: Client Data

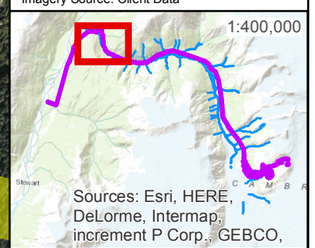

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Figure 8. Red Mountain Gold Project – Highway 37A to Stewart

Terra ID: 15-0855-002
Client: Catana Consulting

NTS: 103P/13 & 104A/4
BCGS: 103P.091 & 104A.001
Datum: NAD 1983 BC Albers

1:16,000
0 160 320 480 640
Metres

- Approximate Substation Location
- Mine Facility
- Road
- Powerline
- Previously Proposed Powerline

Survey Coverage

- Pedestrian
- Vehicle
- Helicopter

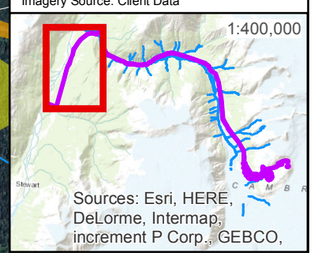
- Contour
- River/Creek
- Waterbody

N

Date Produced: 2016-01-20

Client Data Currency: 2015-07-17

Topographic Data Source: CanVec+ courtesy NRCAN – 2015-05-07
Imagery Source: Client Data



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Appendix: Images 1 through 18

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Image 1: View east to proposed Waste Dump (lower right).

Image 2: View west to Goldslide Creek and existing camp (within proposed tailings dam).

Image 3: View southwest to proposed Mill Site (foreground), and Bromley Glacier (background).

Image 4: Modern cairn located near powerline right-of-way, south of mill site.

Image 5: View west to tailings dam from Goldslide Creek.

Image 6: View north from south of Goldslide Creek at proposed tailings dam showing general terrain; proposed mill site at upper left.

Image 7: Aerial view west to "Devil's Ridge", north of Goldslide Creek at the toe of Bromley Glacier.

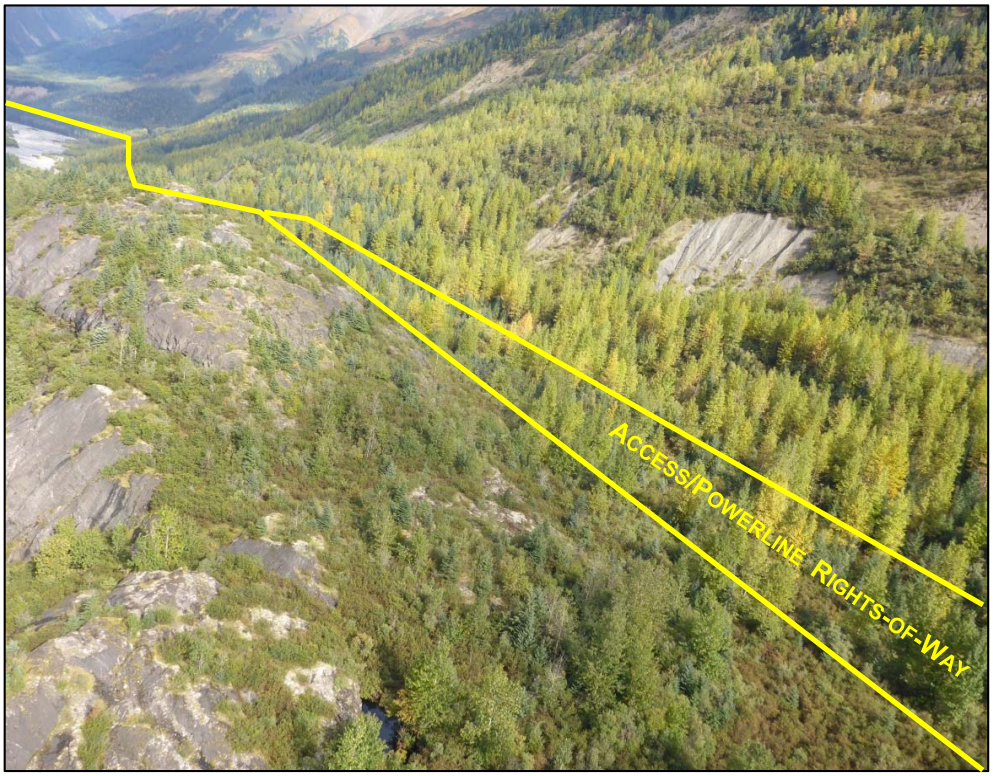

Image 8: Aerial view north to pedestrian-surveyed location south of Hartley Gulch; note mass-wasting of valley wall upslope (right) of rights-of-way.

Image 9: View to slopewash debris and vegetation (willow and alder) indicating poorly-drained terrain, south of Hartley Gulch.

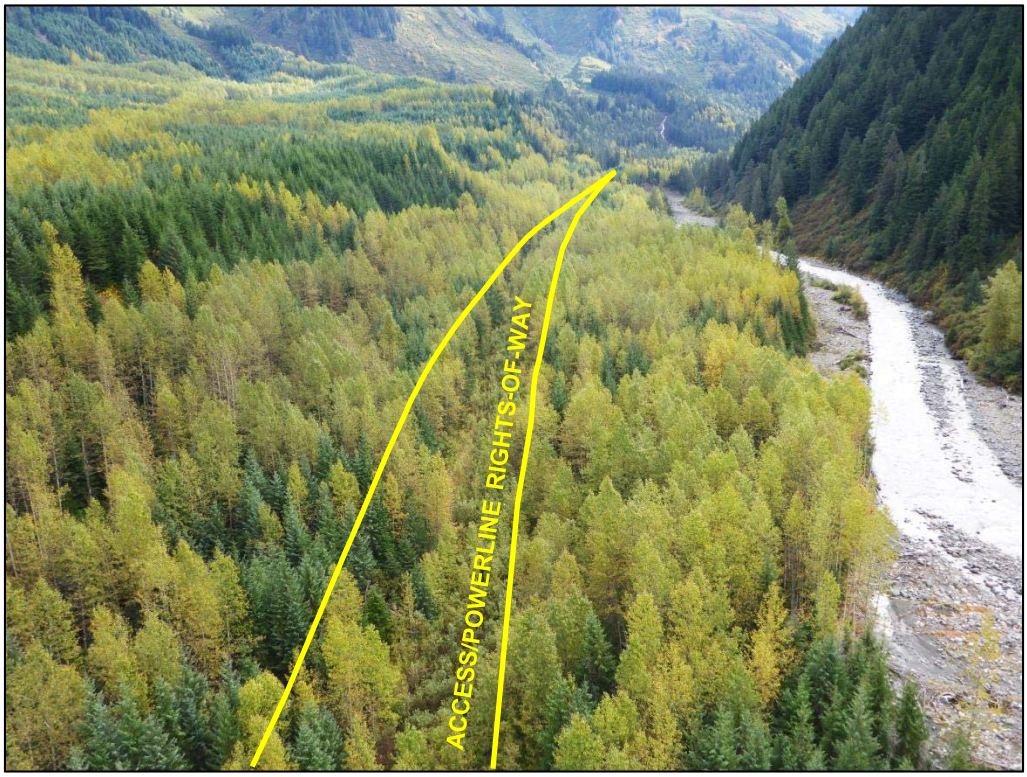

Image 10: Aerial view southeast from Roosevelt Creek along Bitter Creek (right) and access/powerline rights-of-way; note overgrown clearings (top left).

Image 11: View of east bank of Bitter Creek, south of Roosevelt Creek, showing significant natural erosion of remnant terrace.

Image 12: Aerial view east (upstream) of steep-sided section of Bitter Creek Valley near Crabtree Creek.

Image 13: View west along existing road (quad trail) within access/powerline rights-of-way, east of Highway 37A.

Image 14: View of second growth forest characteristic of vegetation west of Crabtree Creek.

Image 15: View east (upstream) to Highway 37A at Bitter Creek Bridge.

Image 16: View south to Bear River and Highway 37A washout.

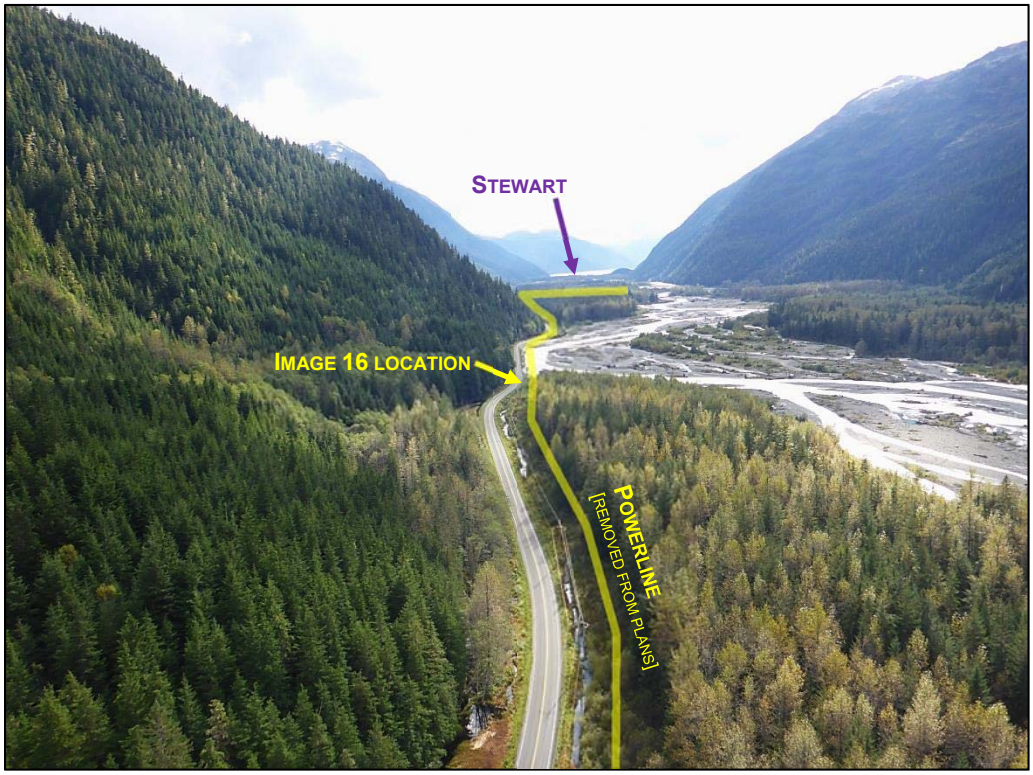

Image 17: Aerial view south over Highway 37A, the Bear River, and previously proposed powerline (approximate centreline).

Image 18: Helicopter survey along the Bear River Valley, near Stewart.