

Ministry of Energy and Mines  
BC Geological Survey

Assessment Report  
Title Page and Summary

TYPE OF REPORT [type of survey(s)]: Geophysical, Geological

TOTAL COST: \$30,386.62

AUTHOR(S): Andris Kikauka

SIGNATURE(S):

*A. Kikauka*

NOTICE OF WORK PERMIT NUMBER(S)/DATE(S): not applicable

YEAR OF WORK: 2020

STATEMENT OF WORK - CASH PAYMENTS EVENT NUMBER(S)/DATE(S): 5847179

PROPERTY NAME: Tillicum, Heino

CLAIM NAME(S) (on which the work was done):

Slocan Tillicum Grizzly (1071800), Arnielaine1 (1072051), Till NE (1072052).

Till NE 2 (1073170)

*1071800, 1072051, 1072052, 1073170*

COMMODITIES SOUGHT: Au, Ag, Pb, Zn, Cu, W

MINERAL INVENTORY MINFILE NUMBER(S), IF KNOWN: 082FNW234

MINING DIVISION: Slocan

NTS/BCGS: 082F 13/E, 082F.092

LATITUDE: 49 ° 59 '08 " LONGITUDE: 117 ° 42 '41 " (at centre of work)

OWNER(S):

1) 1240089 BC LTD

2) Gustafson Holdings

MAILING ADDRESS:

3-1572 Lorne St East, Kamloops BC, V2C 1X6

SEESTRASSE 82 City HERGISWIL Province NW

Country SWITZERLAND postal code 6052

OPERATOR(S) [who paid for the work]:

1) MGX Minerals Inc

2)

MAILING ADDRESS:

303-1040 Hamilton St, Vancouver, BC V6B 2R9

PROPERTY GEOLOGY KEYWORDS (lithology, age, stratigraphy, structure, alteration, mineralization, size and attitude):

Jurassic and older Slocan, Milford & Rossland Group metasediments & metavolcanics intruded by Jurassic-Cretaceous alkaline

porphyritic sills (minor dykes) associated with 2 episodes of contact metasomatism, folding/shearing, & hornfels. Intrusive rocks

are genetically related to gold-silver rich skarn (tremolite-actinolite, diopside, grossularite, sericite, carbonate), precious metals

are associated with NNE-NNW trending shears with pyrrhotite, pyrite-marcasite, galena, sphalerite, arsenopyrite, tetrahedrite

REFERENCES TO PREVIOUS ASSESSMENT WORK AND ASSESSMENT REPORT NUMBERS:

7909, 9455, 11161, 12269, 15700, 19437, 25004, 26847,

27144, 30488, 31182, 35269

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TYPE OF WORK IN THIS REPORT	EXTENT OF WORK (IN METRIC UNITS)	ON WHICH CLAIMS	PROJECT COSTS APPORTIONED (incl. support)
GEOLOGICAL (scale, area)			
Ground, mapping	1:4,000 1.6 hectares	AK 1071800 (does not include 320414)	\$ 209.66 AK <del>\$2,006.55</del>
Photo interpretation			
GEOPHYSICAL (line-kilometres)			
Ground			
Magnetic			
Electromagnetic			
Induced Polarization			
Radiometric			
Seismic			\$ 30,176.96
Other	Lidar laser digital elevation survey	1071800,1072051,1072052,1073170	<del>\$28,290.07</del>
Airborne			
GEOCHEMICAL (number of samples analysed for...)			
Soil			
Silt			
Rock			
Other			
DRILLING (total metres; number of holes, size)			
Core			
Non-core			
RELATED TECHNICAL			
Sampling/assaying			
Petrographic			
Mineralographic			
Metallurgic			
PROSPECTING (scale, area)			
PREPARATORY / PHYSICAL			
Line/grid (kilometres)			
Topographic/Photogrammetric (scale, area)			
Legal surveys (scale, area)			
Road, local access (kilometres)/trail			
Trench (metres)			
Underground dev. (metres)			
Other			
		TOTAL COST:	\$30,386.62

Print Form



ASSESSMENT REPORT FOR LIDAR SURVEY &  
GEOLOGICAL MAPPING  
TILLICUM (HEINO) GOLD  
PROPERTY  
SLOCAN MINING DIVISION • BRITISH COLUMBIA

Tillicum (Heino) Mineral Tenures

1071800, 1072049, 1072050, 1072051, 1072052, 1073170, 1075801, 1075802, 1075803, 1075807,  
1075913, 1075917, 1075918, 1075920, 1077308

WORK PERFORMED ON : **1071800, 1072051, 1072052, 1073170**

Minfile #082FNW234NTS Map 82F/13

BCGS Map 082F092

UTM Zone 11 –  
Co-ordinates: 5,537,020 N 450,100 E  
49.983425 N -117.6960387  
49 59' 00.3314" N 117 41' 45.736" W

Owner: 1240089 BC LTD

Operator:

Operator: MGX Minerals Inc. (Vancouver, BC)

Report Submitted by: Andris Kikauka, P.Geo.

Date: Nov 15, 2021  
Revised: Jan 25, 2022

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Certificate Of Author  
Itemized Statement Of Costs

## APPENDICES

Axiom Exploration Group Inc Report on  
Lidar Survey on MGX Mineral Claims  
outlined in Fig 2 & 2B (Note: area of  
survey includes Caribou 518270 to east,  
report and cost statement has been  
apportioned based on area of coverage  
(40% Caribou claim 518270, reported in a  
separate report, and  
60% to MGX claims 1071800, 1072051,  
1072052, 1073170 to west)



## LIST OF FIGURES

- Figure 1. General Location of the Tillicum Property
- Figure 1B Location of the Tillicum Property
- Figure 2A. Tillicum Property - Claim Map
- Figure 2B. Tillicum Property – M T O G r i d Claim Map showing mineral zones
- Figure 2C. Tillicum Property – M T O G r i d Claim Map showing Lidar-geo map Location
- Figure 3. Tillicum Property - Regional Geology
- Figure 4A Geological Mapping of Au Skarn Zone, Lithology, Structure and Foliation
- Figure 4B. Geological Mapping of Au Skarn Zone, Lithology & Underground Workings

## 1.0 SUMMARY

The Tillicum Heino Gold Project is an advanced developed mineral property located in south-eastern British Columbia, Canada. The Tillicum Heino has undergone several phases of geochemical sampling, core drilling & underground bulk sampling during the 1980's and early 1990's. The objective of MGX Minerals 2020 geophysical Lidar fieldwork was to obtain a detail high resolution surface contour map for the purpose of future development work. Geological mapping was done in the main area of historic work in order to identify orientation, structure, lithology, & alteration of Au-Ag bearing mineralization zones.

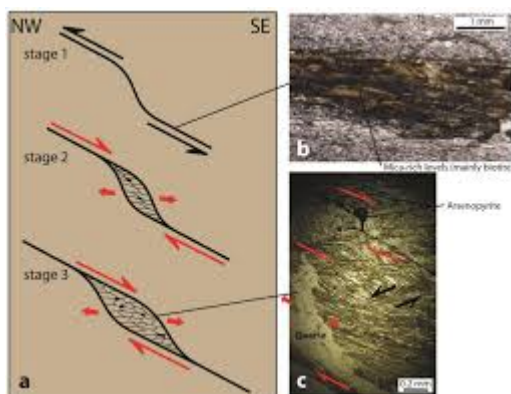
The property consists of 15 contiguous MTO mineral titles, covering an area of approximately 6,085.8 hectares (6 claims owned by 1240089 BC Ltd, 9 claims owned by MGX Minerals Inc), one mining lease 40.3 hectares (owner Gustafson Holdings Ltd), and 6 active Crown Grants named 'Silver Queen' Group (owner Gustafson Holdings Ltd). The Mineral Options Agreement state that MGX will pay an initial cash payment of CAD \$2,000,000 for a 90% right, title and interest in and to the assets, free and clear of all encumbrances, along with 20,000,000 common shares, on or before May 01, 2024. MGX may, at any time, make a cash payment of CAD\$1,000,000 to acquire the additional 10% consideration.

The centre of the property is located at approximately 49° 49' degrees latitude north and 117° 43' degrees longitude west. Fieldwork carried out by MGX Minerals has been applied to MTO mineral claims only. Work done in 2020 by MGX Minerals on the lease was done with written authorization from Gustafson Holdings Ltd, and all 2020 fieldwork (MGX Minerals Inc) was done within boundaries of MTO 1071800 and 1072051 (note- MTO 1072052, 1073170 are within 1072051). Work done on lease is described but not credited to cost statement (NOTE: assessment report in compliance with Section 8 (1) Mineral Tenure Act).

Considerable exploration has occurred on the property since its discovery in 1980 by two local prospectors. During 1981 and 1989, Esperanza Explorations Ltd. diamond drilled at least 24,148 m and developed approximately 1,928 m of underground development on 5 levels. In 1993, an agreement with Columbia Gold Mines Ltd. (formerly Esperanza Explorations Ltd.) and Bethlehem Resources Corp and Goldnev Resources Inc. saw the property advance into the mining stage, where a total of 6,800 tonnes were mined from 4 levels and 5,503 tonnes were shipped to Bethlehem's Goldstream mill, north of Revelstoke, for milling. Recovered grades were 18.62 g/t Au and 29.81 g/t Ag. Between 1996 and 2014, the Property was acquired by AMT Resources Ltd. and then optioned by 1033275 Ontario Limited and then returned to AMT Tillicum Holdings (the successor to AMT Resources Ltd.). Work during that period included surface and underground development, geological mapping, soil, stream and rock chip sampling, geophysical survey work, road rehabilitation, and compilation and digitization of historical data and 3D modelling. Various groups held the property between 2014 and 2020 before MGX optioned the property May 05, 2020.



Geological Features of the Tillicum Heino mineralization is summarized as follows: Gold-silver bearing mineralization on the Tillicum property is associated with sheared, siliceous fine grain galena & massive pyrrhotite (minor marcasite-kaolinite), and to a lesser degree with hornfels sphalerite-rich skarn alteration (garnet-diopside-tremolite) assemblages. Quartz augens (centimeter scale) are good indicators for gold-silver bearing mineralization, especially in silicified shear zones. The shears of economic interest are conjugate offsets to major regional scale shears such as the Aussie fault that separates the East Ridge and Heino Zones on Tillicum Mountain.. The deep-seated nature of hydrothermal fluid regime (1-3 km depth of emplacement, approximately 350-900 degrees C, 1-4 Kbars pressure) has resulted in medium-low grade metamorphism. The resulting Au-Ag bearing mineralization is localized as plunging ore shoots to repeat in a systematic (en echelon) pattern, and concentrate in area of cross structures (e.g. Reidel Shear 30 degree angle) conjugate shearing, and dilatant zones (see diagram below), localized by repetitive fold-hinge axes (e.g. 15 m spaced fold hinge with massive sulphide and strong quartz vein/breccia). The Au-Ag bearing mineral zones (blanket or manto like tabular orientation), are located in close proximity to large-sized Jurassic monzo-dioritic porphyry dyke\sills. Au-Ag bearing mineral zones correlate with thickening of the adjacent Jurassic dioritic hybrid-porphyry, and thickening of the Au-causative intrusives roughly correlates with higher gold content in country rock, especially where doming (anticline fold) and extensive fractures and extensional tectonics are developed.



In 2020, MGX Minerals Inc (Lidar operator: Axiom Exploration Group) carried out a 7 square kilometer area flown with Lidar laser scan survey. The west portion of the 2020 Lidar survey was flown over a 4.2 square kilometer area over the Tillicum-Heino Property (MTO mineral tenures 1071800, 1072051, 1072052, 1073170 ). The east area (an additional 2.8 square kilometers) is the subject of a separate report covering the Caribou Property (MTO 518270). Based on the 7 square kilometer total area of coverage, the cost of the Axiom Lidar survey that was apportioned to the Tillicum (Heino) Property was  $4.2/7 = 0.6$  (or 60% of total cost). The objective of the survey was to collect Lidar data (point density = 77 points/meter squared) to an accuracy of 55 mm, RMSE in well mineralized portions of the Tillicum (Heino) Property (in areas of gold-silver bearing mineralization). The Lidar can help identify higher relief zones of silicification. This is useful for tracing tabular shaped, 1.5 to 5 meter wide skarn bands, lenses and shoots, that are in part identified by high silicification and sulphides.

LiDAR data was collected using the Ranger-LRT was processed to produce a full-featured LiDAR point cloud and classified utilizing machine learning algorithms. By using the classified point cloud, the vegetation was stripped away to generate a bare earth topographic map, or Digital Elevation Model/Digital Terrain Model ('DEM/DTM'). The functionality of the high- resolution DEM/DTM has a broad range of applications including: drainage analysis, baselines, volumetric analysis, drill hole planning, collar elevation, drill holes, accurate topography for 3-D modelling, engineering, geological, & vegetation analysis (Coetzee, 2021).

<b>Deliverable:</b>	<b>File Format:</b>	<b>Projection:</b>	<b>h-Datum:</b>	<b>v-Datum:</b>	<b>Zone:</b>
Non-Colourized PointCloud	LAS	UTM	NAD 83 CSRS	CGVD2013	14N
Bare earth terrain model(DEM)	GeoTiff	UTM	NAD 83 CSRS	CGVD2013	14N

Altitude above ground level for Lidar survey averaged 125 meters. East-west oriented flight lines are spaced at 100 meters. Flight speed averaged 22 m/sec. Total flight time was 5 hours. The system manufacturer was Phoenix Lidar Systems. The model used was a Ranger LR Long Range featuring high accuracy GNSS & IMU units (Coetzee, 2021). Lidar survey data manipulation can remove the vegetation layer producing a bare earth terrain model (DEM). This imagery features high resolution images and can show geological structures that are normally obscured in air photo and standard topographic images. The Tillicum-Heino Property has a regional scale north and northeast (with minor northwest) trending shear structures. The interpretation of structures projected down-dip and down-plunge would be useful information. Based on known occurrence's, enhanced high resolution Lidar data has improved modeling and distribution of Au-Ag bearing mineralization, for example locations of subtle NW trending cross structures (& lineaments) at regular spacing along the dominant N & NE trend. Other uses of Lidar data include interpretation of pattern and direction of surface features for selection and prioritization of exploration drill sites.

In 2020, additional fieldwork involved 1: 4,000 scale geological mapping of 16 hectares at 1,970-2,225 m elevation in order to examine mappable lithologies and structures in the area of historic mine development work (see Fig 4A, 4B). NOTE: Only 1.6 hectares of area involving geological mapping have been included in the cost statement (this area is not covered by a mining lease, work performed conforms with Section 8(1) on Mineral Tenure Act). The general trend of foliation/schistosity is N to NE with steep west dips (50-90 degrees above 2,050 meters elevation) and more moderate to shallow dips of foliation/schistosity (10-50 degrees, dipping westerly below 2,050 meters elevation). A complex hybrid monzo-diorite sill/dyke (hangingwall) contact appears to be the loci of banded skarn Au-Ag bearing mineralization that is characterized by increased quartz-garnet-chlorite alteration. Geological mapping, including outcrop examination (noting orientation, structure, lithology, & alteration of Au-Ag bearing mineralization zones), established a sequence of events summarized as follows:

- 1) Jurassic Rossland Group basaltic to andesitic volcanism (tuffs, flows, breccia) contain plagioclase-hornblende-augite-epidote-amphibolite with minor diopside-tremolite-actinolite-biotite-garnet hornfels.
- 2) Jurassic-Cretaceous (and older)Slocan/Milford Group sediments turbiditic greywacke, arkose, siltstone, marls, and intercalated volcanic flows with metamorphic overprint consisting of calc-silicate (banded)-biotite-plagioclase-chlorite-clinozoisite-tremolite-chlorite-actinolite and well developed schistosity/foliation, minor lineation fabric developed in schist.
- 3) Jurassic D1 regional tight to isoclinal folding with regional deformation associated with hornblende-biotite quartz-diorite, monzodiorite, quartz monzonite with contact phases that include diopside-tremolite-clinozoisite-epidote-chlorite-garnet. minor phyllic (quartz-sericite-pyrite) alteration



4) Cretaceous D2 regional open to tight folding, influenced by large scale intrusion (Whatshan batholith) resulting in widespread hornfels and high temperature metamorphism, and aplitic sills/dykes.

5) Cretaceous-Eocene intrusion of 1-5 meter wide carbonate altered, augite-epidote bearing lamprophyre dykes.

D1 (regional tight to isoclinal folding & intrusion of feldspar porphyry sills, age Early Jurassic) and D2 (regional open to tight folding, widespread hornfels, age Cretaceous). It is assumed that D1 Early Jurassic events are related to Au-Ag mineralization and D2 Cretaceous events are related to Mo-W mineralization, however the D2 event has probably affected remobilization of gold-silver bearing mineralization. Surface shear zone traces observed trend north, northeast, and northwest, and dip steeply. It was not possible to map and estimate displacement along shear zones, but it appears there is minor sinistral displacement. Sinistral displacement of east trending shear zones (in the order of 1-5 meters) is an important feature of high grade ore shoots at the Heino Zone on Tillicum Mountain. The feldspar porphyry intrusive units are a complex of dyke/sill with variable dips and generally NE oriented strike, and rare NW oriented dykes. The Slocan & Milford Grp country rocks have been subject to high temperature (700-900 degrees C) and low-medium pressure (0.5-2.5 kilobars) metamorphism resulting in staurolite-almandine garnet facies (this high temperature and low-medium pressure type of metamorphism is also termed 'hornfels & induration').

The zoning pattern of skarn minerals suggest Tillicum Mountain intrusive rocks were deposited as a reduced magma with high ilmenite/magnetite ratio (as opposed to oxidized magma with relatively higher magnetite, and lower ilmenite content). The reduced magma at Tillicum Mountain exhibits weak to moderate fractionation resulting in proximal gold-silver banded skarn (e.g. Heino, East Ridge, Grizzly), and distal Pb-Zn silver-gold skarn (e.g. Silver Queen). Some oxidized magma (high magnetite relative to ilmenite) can generate stocks with high Sn-W-Mo content, and this may be more prominent in areas located 0.5-1.5 km southeast of Tillicum Mountain. The majority of Au-Ag bearing skarn mineralization near Tillicum Mountain is exoskarn (meta-volcanic & meta-sediment protolith), with minor endoskarn (felsic intrusive protolith) occurring within East Ridge Zone between 2060 m to 2100 m adits. The N & S ends of the East Ridge Zone are exoskarn, occurring within meta-volcanic & meta-sediment protolith. The East Ridge appears to be stratabound. The East Ridge and Grizzly Zone Au-Ag bearing mineralization occurs in shears/fractures hosted within meta-volcanic & meta-sediment related to contact phase of diorite/monzodiorite. Large scale shears, such as the N to NW trending Aussie Fault that separates Heino and East Ridge Au Zones) appear to be Cretaceous age and may in part be re-activated Jurassic (and older) structures. The large scale shears adjacent to Tillicum Mountain show considerable displacement that occurred during emplacement of Late Cretaceous Whatshan granitic batholith. It is unclear whether that north portion of East Zone (<1,950 m elev) is the same gold-bearing sill contact that occurs at higher elevation (> 1,950 m elev). It may be a different sill contact, the north facing cliffs exposing sills on the Arnie Flats Zone shows two large distinct sills, the upper sill thickens where there is increased sulphide mineralization and silica-carbonate alteration. The thickening of the porphyritic intrusive adjacent to brittle-ductile country rock structural traps (especially near cross-shears) appears to be controlling factors in distribution of ore shoots, which occur at 15 m intervals in Heino, plunge steeply south, and NNW trend is offset by ENE trending cross-shears. Mineralized intrusive-country rock contact zone has extensive lateral continuity. The large overall size of the system and limited exploration of the entire area suggests there is potential for much larger discoveries at depth within a 2,000 meter radius of Tillicum Mountain. Deep drilling down dip of known mineral trends are recommended.

## **2.0 INTRODUCTION**

A program of Lidar surveying and geological mapping was carried out by MGX Minerals Inc in 2020. Also, geological mapping of outcropping bedrock was carried out. Lidar fieldwork was performed between October 16-25, 2020 by Axiom Group (Saskatoon, SK), and the writer carried out geological mapping. The total cost of fieldwork and support carried out by MGX Minerals Inc was \$30,386.62 (listed in attached itemized cost statement). This report summarizes geological mapping carried out, and presentation of Lidar survey data. Recommendations for further exploration include core drilling collar locations that target precious and base metals.

## **3.0 LOCATION, ACCESS, PHYSIOGRAPHY**

The Heino Gold Project is an exploration gold property in British Columbia, Canada. It is located approximately 64 km north-northwest of Nelson in southeastern British Columbia within NTS map sheets 82F/13 and 82K/04. The Heino Gold Project is located in the Arrow Lakes region of southeastern British Columbia, Canada, approximately 600 km, by road, east-northeast of the city of Vancouver. The property is situated about 30 km southeast of Nakusp, BC and 12 km east of the village of Burton and overlies Tillicum Mountain on the western limits of the Valhalla Range, within the Slocan Mining District. The claims are centred near Tillicum Mountain at approximately 117°42'36.99'' W, 49°59'22.55'' N, located within UTM Zone 11 NTS mapsheets 82F/13 and 82K/4, about 12.5 km east of Burton, lying at an elevation between 920 and 2,300 meters above sea level between Caribou and Snow Creeks.

The Heino Gold Property can be accessed by way of logging and mining roads extending from Burton, BC, along the south side of Caribou Creek to a former exploration camp near the headwaters of Londonderry Creek. The total distance from Burton is approximately 17 km. Four-wheel drive vehicles are required to negotiate the steep access road to the principal workings near the summit of Tillicum Mountain. Access to the Heino Gold Project from Burton is by way of a network of logging and property access roads along the watersheds of Burton and Londonderry Creeks, a distance of approximately 17 km. This portion of the road is accessible by 2-wheel drive vehicle. Food, fuel and accommodation is available in the village of Burton, while the town of Nakusp, approximately 30 km to the North, offers more extensive services.

British Columbia occurs almost entirely within the North American Cordillera, and consists of parallel mountain ranges with intervening plateaus, valleys and plains. The Heino Gold Project occurs within the West Kootenay mountains of the Canadian Cordillera.

The Kootenay Region is mountainous encompassing four mountain ranges. From east to west these include: the Rocky Mountains, the Purcell Mountains, the Selkirk Mountains and the Monashee Mountains. The region extends from the Alberta border in the east to the Okanagan Similkameen Regional District in the west and the Columbia-Shuswap Regional District in the North,



encompassing the Canadian portion of the Columbia River Basin. The Heino Gold Project is situated in the West Kootenay's within the Selkirk Mountain Range.

The project area is characterized as having warm, moderately moist summers and cool, snowy winters, where temperatures range significantly between the lows of winter and highs of summer.. The winter season can begin in October and extend through April, with temperatures ranging from 15°C to less than -5°C. Temperatures range from approximately of 15°C to 27°C during the summer months. Precipitation is at a maximum in June and a minimum in February. Total annual precipitation in the main valley is 810 mm with about 280 mm of that in the form of rain between May and September (Government of Canada, 2020). Both precipitation and temperature vary significantly with altitude; reinforcing the influence of local conditions. The property is generally free from snow (below 2,000 m elevation) from mid-June until late October. Areas above 2,000 m elevation contain small pockets of snow on north facing slopes into August.

Elevations on the property range from 885 m to over 2,300 m on the highest peaks, with the historical camp area located at an elevation of 2,040 m. Topography is generally steep and in places, precipitous. Bedrock outcrop is generally restricted to ridge crests covering approximately 10% of the surface area. Slopes are mostly covered with overburden consisting of talus slopes, snow-avalanche debris tracks and unconsolidated glacial debris. Cedar-hemlock forests covers the entire area except for the highest peaks and ridges where barren rock occurs (Campbell, 2014; Dykes, 2003). The area is contained within the Southern Interior Mountains Eco-province, in the Northern Columbia Mountain Ecoregion.

#### 4.0 Mineral Tenures

The boundaries of the mineral claims have not been legally surveyed. A summary of the land tenure information, as extracted from the Government of British Columbia MTO website is presented below.

## MGX Minerals Inc, mineral claims in map numbers 082F and 082K

Source: Minerals Titles Online Viewer, Government of British Columbia. Retrieved from <https://www.mtonline.gov.bc.ca/mtov/jsp/searchTenures.jsp>

Title No.	Claim Name	Owner	Type	Issue Date	Good To Date	Area (ha)
1075801	ICE	283853 (100%)	Mineral	2020/APR/19	2024/APR/10	249.4449
1075802	SC	283853 (100%)	Mineral	2020/APR/20	2024/APR/10	166.2744
1075803	JO	283853 (100%)	Mineral	2020/APR/20	2024/APR/10	311.5098
1075807	TILlicum MOUNTAIN CHIEF	283853 (100%)	Mineral	2020/APR/20	2024/APR/10	20.7638
1075913	TILlicum NE EXT	283853 (100%)	Mineral	2020/APR/27	2024/APR/10	415.1992
1075917	CARIBOU CREEK	283853 (100%)	Mineral	2020/APR/27	2024/APR/10	394.3329
1075918	WOLF	283853 (100%)	Mineral	2020/APR/27	2024/APR/10	291.0015
1075920	SNOW CREEK	283853 (100%)	Mineral	2020/APR/27	2024/APR/10	311.7934
1077308	CARIBOU CREEK Arnie Conn	283853 (100%)	Mineral	2020/APR/20	2024/APR/10	41.517
1071800	SLOCAN TILlicum GRIZZLY SLOCAN CHIEFTAIN	286934 (100%)	Mineral	2019/OCT/15	2024/APR/10	477.855
1072049	EUREKA	286934 (100%)	Mineral	2019/OCT/15	2024/APR/10	290.5356
1072050	TILlicum CHIEFTAIN CONN	286934 (100%)	Mineral	2019/OCT/15	2024/APR/10	41.5165
1072051	ARNIELAINE1	286934 (100%)	Mineral	2019/OCT/15	2024/APR/10	3032.51
1072052	TIL NE	286934 (100%)	Mineral	2019/OCT/15	2024/APR/10	20.7673
1073170	TIL NE 2	286934 (100%)	Mineral	2019/DEC/07	2024/APR/10	20.7673

Title No.	Claim Name	Owner	Title Sub Type	Issue Date	Good To Date	Area (ha)
320414		138164 (100%)	Lease	1996/JAN/23	2022/JAN/23	40.3

Silver Queen Active Crown Grants: Owner Gustafson Holdings

1. Undersurface Rights No. KX 28257 registered against Parcel Identifier: 016-769-465 District Lot 2204 Kootenay District, known as "Grey Wolf" mineral claim.
2. Undersurface Rights No. KX 28258 registered against Parcel Identifier: 016-908-040 District Lot 2205 Kootenay District, known as "Red Fox" mineral claim.
3. Undersurface Rights No. KX 28259 registered against Parcel Identifier: 016-907-736 District Lot 2206 Kootenay District, known as "Black Fox" mineral claim.
4. Undersurface Rights No. KX 28260 registered against Parcel Identifier: 016-907-841 District Lot 2207 Kootenay District, known as "Black Fox Fraction" mineral claim.
5. Undersurface Rights No. KX 28261 registered against Parcel Identifier: 016-769-473, known as "Grey Wolf Fraction" mineral claim.
6. Undersurface Rights No. KX 28262 registered against Parcel Identifier: 016-908-163 District Lot 2582 Kootenay District, known as "Black Bear Fraction" mineral claim.

Owner: Gustafson Holdings Ltd. 100.0%

Note: Gustafson Holdings Ltd FMC 138164, MGX Minerals Inc FMC 283853, and 1240089 BC Ltd FMC 286934



### Underlying Agreements

On May 05, 2020, MGX Minerals Inc. entered into a mineral property option agreement with 1240089 B.C. Ltd., and Gustafson Holdings Ltd. to grant MGX the sole and exclusive right and option to acquire up to 100% of the right, title and interest in and to the Assets, free and clear of all encumbrances. The contract states that 90% of the option will be satisfied after an initial cash payment of CAD\$2,000,000, in 17 installments, is made prior to May 01, 2024. In addition, 20,000,000 common shares will be made in 9 installments prior to May 01, 2024. MGX may expend an aggregate amount of CAD\$1,050,000 of expenditures in respect of the Assets prior to December 01, 2023. The right to purchase the outstanding 10% is conditional upon a cash payment of CAD\$1,000,000 at any time.

### Environmental Considerations

There are legacy mining related structures, equipment and mine workings. The workings are mainly located on Heino and East Ridge Zones between 2,050-2,170 m elevation

Access road to the lower camp of the Heino-Money Mine site was determined to be in excellent condition, requiring only a two-wheel drive vehicle. From the lower camp to the Heino- Money mine roads were in reasonable shape requiring drainage ditching and rock debris clearing in several spots.

The lower camp area, at elevation 1,340 masl, immediately west of Londonderry Creek has one large, empty 12 x 18 m workshop with cement floor. Other buildings on the site include several connected Atco trailers forming office, dry, sleeping and kitchen facilities which require significant renovation to be useable. The upper camp area located 800 m north of the main Heino-Money workings, occurs at an elevation of 2,040 masl. It has a small core storage area and a single wooden building with metal roof cladding. Drill core is stored in racks as well as in cross-stacked piles, however, winter snow cover and core box deterioration has contributed to damaging the upper parts of the piles and rendered most of the historical core as non- referenceable. Drill core stored underneath (mainly 1988 drilling) has been mostly preserved and originates mainly from East Ridge Zone drill holes.

Reported conditions from 2002 described the underground workings to be in good condition with little or no water observed flowing out of any of the 5 adits. The large 3.7 m x 3.7 m main haulage level of the 2050 level and all other openings have been closed by solid wood boards, and rocks piled at the openings to prevent inadvertent entry, as well as marked with Caution yellow tape, and “Keep Out” signage. Minor spall had occurred in some of the other levels, but overall, they were well ventilated, generally dry, and in good condition. Equipment stored inside the building and scattered around the general area includes 2 mine cars, slusher and motor, one electric motor, a small generator, various first aid equipment, underground track, drill steel, rock bolts and plates and miscellaneous parts. An electric locomotive is stored behind a tarp just inside the portal of the Heino-Money main haulage level (Carter and Hinzer, 2002).

## 5.0 PROPERTY HISTORY

Since its discovery in 1980 by two local prospectors, the Heino Gold Project has undergone two periods of exploration and minor development. From 1981 to 1993, the project was advanced rapidly by means of acquisition by Esperanza Explorations Ltd. who conducted surface and underground diamond drilling, geophysical and geochemical surveys, mapping, trenching and underground development and bulk sampling. Early exploration work was initially focused on the discovery zone, which later became the Heino-Money Mine. Later exploration work led to the finding of several other significant mineralized zones. In total, 376 diamond holes were drilled for a total of 32,874 m, and a sum of 1,928 m in underground development was completed. In 1993, a permit was obtained for an underground mining operation and 3 bulk samples for a total of 5,788 tonnes was extracted that summer.

The second period of exploration occurred between 1995 and 2014 when AMT Tillicum Holdings Inc. and 1330275 Ontario Limited successively owned the property. Between that time, surface and underground geological mapping were conducted, as well as rock chip, soil and stream sediment sampling. In addition, two geophysical surveys were completed during this time frame. This second period of exploration endeavoured to digitize the existing data, and build and rejuvenate the existing infrastructure. No drilling or bulk sampling was conducted during this time frame.

*The following paragraphs regarding the history of the Heino Gold Project are largely extracted from previous reports prepared by Dykes (2003) and Campbell (2014) using BC Government Minfile information, internal company reports, and assessment files.*

The town of Burton was founded in 1895 as a result of gold mining activity in the area. There are reports of numerous placer operations within the Caribou Creek drainage system during the early 1890's. During the period 1896 to 1930 several small-scale, hard rock mine workings were active and are found throughout the area. Prospecting was carried out in the Tillicum Mountain area up to 1960, but the source of the placer gold was never identified. In 1980 local prospectors, Arnie and Elaine Gustafson, discovered gold in what is now known as the Heino-Money Zone, on the north slope of Tillicum Mountain.

Esperanza Explorations Ltd. optioned the property in the fall of 1981 and initiated an exploration program that sparked a district wide staking rush. The original Tillicum property covered over 15,000 acres containing 10 known deposits and prospects of gold-silver mineralization. Early exploration was initially focused on the Discovery Zone, which later became the Heino-Money Mine. Work consisted of geophysical and geochemical surveys, mapping, trenching, surface drilling, underground development, underground drilling and bulk sampling. Exploration work outside of the Heino-Money Zone led to the finding of several other significant mineralized zones; including the East Ridge and Grizzly Zones.

In 1993 Bethlehem Resources Corporation and Goldnev Resources Inc. optioned the property from Columbia Gold Mines Ltd. (formerly Esperanza Explorations Ltd.) and obtained a permit for an underground mining operation. Mining commenced in mid-August of that year and was completed in late October. A total of 6,800 tonnes were mined from 4 levels, and 5,503 tonnes were shipped to Bethlehem's Goldstream mill, north of Revelstoke, for milling. Recovered grades were reported as 18.62 g/t Au and 29.81 g/t Ag.

The Gustafson's held the property for several years until AMT Resources Ltd. acquired the property from them in 1996. In that year the company undertook surface and underground geological evaluation and sampling, geophysical survey work, access road rehabilitation, VLF-EM surveys, extensive mapping and sampling and an updated tonnage estimate (historical estimate not compliant with NI43-101 reporting guidelines).

In 1997 the property was optioned to 1033275 Ontario Limited, a subsidiary of Mustang Minerals Corporation. In 2001 this company performed rock and soil sampling, a compilation of historical data and geological interpretation of the mineralization.

In 2002, 1033275 Ontario Limited undertook digitization of the existing data, geostatistical analysis of assay data and 3D modelling. Subsequently, the property was returned to AMT Industries Canada Inc. ("AMT-I"), the successor to AMT Resources Ltd. in 2007. The company then completed a soil sampling program in 2007.

In 2009, AMT-I completed a VLF-EM survey along the network of exploration roads on the claims. Since that time, AMT-I was restructured into AMT Tillicum Holdings, Inc. In 2013 and 2014, AMT- Tillicum Holdings Inc. completed significant physical improvements to the property, including the installation of a new 12-person sleeper with complete washrooms, washing and drying areas along with a refurbished kitchen with all new appliances. A new septic system and 100 kilo watt generator was installed, as well as a workshop with concrete floors measuring 10 m x 22 m. In addition, 17 new culverts and numerous ditches were installed for erosion control along the mine access roads; one of which was a 12.2 m x 2.4 m culvert on Londonderry Creek.

In May 2020 MGX signed an option agreement to acquire 100% interest in the Heino Gold Project, according to the terms specified in the option agreement, and commissioned SRK to complete a NI43-101 compliant exploration technical report.

**Table 6-1: Historical summary of the Heino Gold Project**

Year (s)	Mining Company	Activities
1895	n/a	Town of Burton founded due to placer activities along the Caribou Creek drainage system
1980	Arnie & Elaine Gustafson	Prospecting led to the discovery of the Heino- Money Zone
1981	Esperanza Exploration Ltd.	Geophysical & geochemical surveys, mapping, trenching, surface drilling, underground drifting &



		raising, underground drilling, bulk sampling
1981, 1985, 1991, 1993	Esperanza Exploration Ltd. (renamed to Columbia Gold Mines Ltd.)	Small scale mining from the Heino-Money Zone; discovery of other Zones, including East Ridge and Grizzly
1993	Bethlehem Resources Corporation & Goldney Resources Inc.	Underground mining commenced between mid- August to mid-October; surface & underground drilling; underground development
1994- 1996	Arnie & Elaine Gustafson	Property held with no active work programs
1996	AMT Resources Ltd.	Surface & underground geological evaluations and sampling, geophysical survey work, access road rehabilitation, VLF-EM surveys, extensive mapping and sampling and tonnage estimate
1997	1033275 Ontario Limited	Optioned from AMT Resources Ltd.
2000	1033275 Ontario Limited	Report on the project was prepared (Handfield and Glanville, 2000)
2001	1033275 Ontario Limited	Soil sampling, compilation of historical data and modelling of the mineralization
2002	1033275 Ontario Limited	Computerization of existing data, geostatistical analysis and, 3D modelling
Fall 2002	AMT Industries Canada Inc. (AMT-I)	Bought the company
2009	AMT Tillicum Holdings Inc. (restructured from AMT-I)	Soil sampling
2009	AMT Tillicum Holdings Inc.	VLF-EM survey
2013- 2014	AMT Tillicum Holdings Inc.	Infrastructure rejuvenation & geological remote sensing investigation
2020	MGX Minerals Inc.	Acquired 100% Interest in Heino Gold Project

## Historical Exploration Work

The following summary of exploration activities has been compiled from all available in-house and assessment reports available to SRK. A timeline of exploration activities on the Heino Gold Project is summarized as follows

### **Summary of exploration activities on the Heino Gold Project**

<b>Year(s)</b>	<b>Mining Company</b>	<b>Activities</b>
1980	Arnie & Elaine Gustafson	Discovered Money Zone while prospecting
1982	Esperanza Explorations Ltd.	Prospecting, geological mapping, soil sampling, trenching and diamond drilling. Extension of the previously discovered Money Pit now called the Heino-Money Zone.
1982		Airborne VLF-EM and Mag Survey
1982		Petrographic and environmental report
1983		Geological mapping, trenching, road building, diamond drilling, underground development; East Ridge Zone discovered; baseline environmental study
1985		227 tonne bulk sample from the Heino-Money Zone sent to Dankoe mill at Keremeos
1986		Surface and underground drilling; underground development (155 m drifting; 131 m slashing, 225 m test hole drilling)
1987		Preliminary engineering and environmental Report (Knight and Piesold, 1987)
1989	Esperanza Explorations Ltd. (renamed to Columbia Gold Mines Ltd.)	Diamond drilling on East Ridge Zone
1993	Bethlehem Resources Corporation & Goldney Resources Inc.	Bulk sampling commenced in mid-August and completed in late-October. Rock sample analysis and report
1994	Columbia Gold Mines Ltd.	Commissioned Ross Glanville & Associates to carry out a valuation of the Tillicum Mountain Project
1996	AMT Resources Ltd.	Surface and underground geological evaluations and sampling, geophysical survey work, limited road rehabilitation, data review; VLF EM-16 and limited Self-Potential surveys

2001	1330275 Ontario Limited (wholly owned subsidiary of Mustang Minerals Corp.)	Exhaustive re-examination of the historical database; stream sediment sampling, soil and rock chip samples; survey of the access road; camp and equipment inspections
2002	1330275 Ontario Limited	Site inspection of on-site facilities and underground workings, brief examination of mineralization and geology of the area
2009	AMT Tillicum Holdings Inc.	Soil sampling grid, VLF-EM Survey

Between 1982 and 1993, when Esperanza Explorations Ltd. held the property, the Heino Gold Project was taken from a grassroots prospect through to an advanced stage exploration project including limited underground exploration development. Over the 11 years, Esperanza Explorations Ltd. built roads, geologically mapped and prospected the area, collected and assayed rock samples, and conducted limited geochemical soil surveys. Surface and underground diamond drilling programs were undertaken almost continuously throughout those years (see Section 10). Gold mineralization discoveries outside of the Heino-Money and East Ridge Zones were also made.

In 1982 exploration work included geological mapping at a scale of 1:1,000 by Dr. J. Crawford, which concentrated on the north side of Tillicum Mountain, and over the area of the Heino-Money Zone. In addition, Dr. Ken Northcote, under the contract of Vancouver Petrographics Ltd., carried out a preliminary petrographic and mineralographic study on 34 thin sections collected from drill core and hand specimens. Geochemical soil surveys on the Tillicum Property during 1982 were restricted to four lines across the south end of Grizzly Valley and to 'reconnaissance contour-type' sampling in Sue Valley to the northwest of Tillicum Peak. Other short soil sample traverses were conducted in conjunction with prospecting on Hailstorm Ridge (Guild, 1983).

During 1982, Western Geophysical Aero Data Ltd. conducted a regional, low level airborne magnetometer and VLF-electromagnetometer survey across the Tillicum Mountain Gold prospect area. The purpose of the survey was to delineate any variations in magnetic intensity and near surface conductivity that assisted in the search for gold or massive sulphide mineralization (Guild, 1983).

Exploration in 1983 consisted of geological mapping at a scale of 1:300, surface rock chip sampling, bulldozer trenching, and 325 m of road building. In addition, 61 m of underground development was completed into the East Ridge Zone (Roberts and McClintock, 1983).

The Esperanza Explorations Ltd. exploration programs between 1985 and 1989 were focused on delineating "reserves" within the Heino-money Zone, as well as determining metallurgical qualities of mineralization; details of which are presented in Section 6.3 of



this report. In addition to historical preliminary “ore reserve” estimates, the exploration programs included 1,518 m of underground development on the Heino-Money Zone and 410 m of drifting on the East Ridge Zone; all of which were conducted by Nemo Resources of New Denver, B.C. The underground development and bulk sampling program defined continuous gold bearing skarn along 37 m of drift length (Dewonck, McClintock and Roberts, 1986). Small-scale mining occurred summer of 1993.

After a hiatus of 5 years, exploration resumed on the property in 2001. Principal work included a partial survey of the access roads, an inspection and inventory of existing on-site facilities and equipment, and the collection of 79 stream sediment, soil and rock samples from selected parts of the property. Timberland Consultants of Nelson B.C. were contracted to collect Differentially Corrected Global Positioning System survey data along the access road to the mineralized area on the Tillicum property to confirm the location of the road in NAD83 coordinates to a precision of +/-1 m. In addition to the road, the survey was also designed to locate the position of the warehouse, the Heino-Money 2050, 2130 and 2160 level portals, the East Ridge 2060 level portal and other claim boundaries (Campbell, 2014).

In 2013 and 2014, significant physical improvements to the property were made, including the installation of a new 12-man sleeper, a new septic system and 100 kilo watt generator, and 10 m x 22 m workshop. In addition, the access road was refurbished with new culverts and ditches installed for erosion control (Campbell, 2014).

### Historical Underground Development and Bulk Sampling

Underground development on the Heino-Money Zone totaled 1,518 m along with an additional 410 m of development on the East Ridge Zone (Addie, 1997), summarizes the meterage of underground development per year of exploration.

#### **Summary of underground development within the Heino-Money and East Ridge Zones**

Year (s)	Mineral Zone	Underground Development
1981-1987	Heino-Money	955 m on 4 levels
1988		442 m
1993		121 m
1981-1984	East Ridge	60 m on cross-section 2118
1988		350 m on drive 2062
Total s		
Heino-Money		1,518m (on 5 levels)
East Ridge		410 m

Small scale production occurred in 1981, 1984, and 1993 from the Heino-Money Zone, summarizes tonnages and metal content recovered per year of extraction.

**Summary of bulk sampling conducted on the Heino-Money Zone**

<b>Year</b>	<b>Mined Tonnes</b>	<b>Milled Tonnes</b>	<b>Au Grams Recovered</b>	<b>Au Ounces Recovered</b>	<b>Ag Grams Recovered</b>	<b>Ag Ounces Recovered</b>
1981	58	58	4,570	145	3,259	105
1984	227	168	48,351	1,554	51,570	1,658
1985/1986	2,972	2,972	98,910	3,180		
1993	6,800	5,503	102,455	3,294	164,071	5,275
<b>Total</b>	<b>10,057</b>	<b>8,701</b>	<b>254,286</b>	<b>8,173</b>	<b>218,900</b>	<b>7,038</b>

In 1981 a bulk sample of 58 tonnes was extracted from the Heino-Money pit, which averaged 78.8 g/t Au and 56.2 g/t Ag.

In 1984, a 227-tonne bulk sample was extracted from an underground adit driven into the upper part of the Heino-Money zone. Wire gold was reported in the blast, and some coarse grain native gold was identified. This material was shipped to the Dankoe mill located in Keremeos, BC, in 1985, where 168 tonnes was milled. The average recovered Au grade was reported at 287.8 g/t

In 1985 and 1986, a bulk sample of 2,972 tonnes of material was extracted from underground development and surface trenching on the Heino-Money Zone. This material was collected for metallurgical testwork that was conducted at a custom mill. It is reported that this material was found to be free-milling and standard crushing, grinding and gravity and flotation circuits yielded 92% gold recovery. A total of 3,180 oz of gold was recovered from this testwork, and it is reported that two-thirds of the gold was found to be associated with sulphide minerals. Results of this historical testwork have not been reviewed by SRK.

In May 1993, a total of 6,800 tonnes of material was mined from four underground levels within the Heino-Money zone and 5,503 tonnes were shipped to Bethlehem's Goldstream mill located north of Revelstoke, BC. Recovered average grades from this bulk sample were reported at 18.62 g/t Au and 29.81 g/t Ag.

## Historical Mineral Resource and Reserve Estimates

A number of historical “reserve” estimates have been reported for the various mineralized zones located within the Tillicum area. The historical estimates are only relevant in that it presents an estimate of the relative size and grade of the property at the time that it was prepared. The historical estimates do not use mineral resource categories as defined in NI43-101 and the historic estimates are not current mineral resource estimates and therefore these estimates should not be relied upon. There are no current mineral resources for the Heino Gold Project.

The historical “ore reserve” estimate for the Heino-Money zone (circa 1986) was prepared by projecting the ore zones on to a longitudinal section and subdividing the zones into 16 separate blocks based on location of underground sampling and drill holes. Grades of individual blocks were assigned using the weighted average values obtained from muck, back and floor sampling of the underground or surface workings bounding the blocks. Drill hole assays within blocks were used to confirm continuity of the zone but were not included in the calculation of the grades of blocks. Volume estimates of individual blocks were calculated by determining the area of each block using a planimeter then multiplying by thickness. The block volumes were converted to tonnes using a density factor of 3 tonnes per cubic meter. Conversion of metric tonnes to imperial tons was achieved by multiplying tonnes by a factor of 1.1023 (Dewonck, McClintock and Roberts, 1986).

In 1997, historical “reserve” estimates for the East Ridge and Grizzly Zones were developed by George Addie (Consulting Geologist) for AMT Resource Ltd.. A total of 734,487 tonnes containing 260,159 oz Au with an average grade of 9.99 g/t Au were estimated (Addie, 1997).

In 1984 following the completion of a twelve-hole drill program, a “Potential reserves” estimate was developed consisting of 2.7 to 4.5 Mt grading at 103 g/t Ag. No significant gold content has been reported within the Silver Queen zone.

### **Summary of historical reserve estimates**

<b>Zone</b>	<b>Year</b>	<b>Tonnes</b>	<b>Au Grade (g/t)</b>	<b>Cut-off Grade (Au g/t)</b>	<b>Ag Grade (g/t)</b>
Heino- Money	1983	36,287	18.7 5	--	--
	1986	45,355	31.1	6.8 6	--
East Ridge	1988	238,268	13.5 1	6.8 6	--
	1989	1,259,415	8.23	4.1 1	--
	1990	1,063,185	8.91	5.1	--

				4	
	1997	474,642	8.75	9.3 8	--
Silver Queen	1984	2.7 - 4.5 Mt	--	--	103
Grizzly	1997	252,065	12.5	--	--

In June-Oct, 2020 MGX Minerals Inc performed exploration fieldwork that included 4.55 line kilometers ground magnetometer surveying, geochemistry soil (245 samples), rock chip (48 samples), & petrographic description (1 sample). Also, metallurgical testing of a 150 kg rock chip sample from Heino Zone was carried out by ALS Metallurgy Ltd, Kamloops. This exploration fieldwork in 2020 is not a part of this report.

A total of 245 soil samples were taken in the central portion of the subject property to locate extensions of gold-silver bearing mineralization of the Heino, East Ridge, Jennie, Road, Grizzly, Golden Hope, Silver Queen, and Arnie Flats Zones.

A total of 3 metallurgical samples (approximately 150 kilograms each) were collected from:

- 1) Heino 2130 m adit outcrop see Fig 5 for location (adjacent to adit entrance, sloughed in by rock talus) UTM location Zone 11, 449,037 E, 5,537,219 N elevation 2,130 m (4 m total rock chip sample interval).
- 2) East Ridge composite sample consisted of total of 95.93 m interval from 17 drill holes (DDH 88-150, 151, 154, 155, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 173) listed in Appendix E, DDH's shown in plan view (includes samples from A, B & C Bands).
- 3) East Ridge (Central 'B Band') UTM location Zone 11, 449,265 E, 5,537,436 N, elevation 1,971 meters (3 m total rock chip sample interval).

The only sample that was fully tested by ALS Metallurgy was the Heino outcrop sample which had a head grade that exceeded 28 g/t Au. The East Ridge outcrop and drill core composite sample returned assay values <2 g/t Au and were considered too low for a metallurgical test.

A petrographic description of high grade gold sample #303 at UTM Zone 11, 449,037 E, 5,537,219 N elevation 2,130 m (angular float taken from Heino 2,130 m adit) was performed by John Payne, Ph D, P Geol (Vancouver Petrographics Ltd, Langley, BC).

In 2020, MGX Minerals Inc carried out metallurgical testing of a 180 kg sample named '**Heino Surface Comp**' from outcrop located near the Heino 2130 m adit entrance. Additional metallurgical samples include two samples, one named '**East Ridge Comp**' 170 kgs (source from 1988 DDH core samples, 75 samples in total, interval lengths 0.3-3.2 m, from 19 drill holes covering approximately 150 X 300 m area, see Fig 5B for location & Appendix E for descriptions), the other named '**East Ridge Comp 2**' was taken from outcrop at 1,970 m elevation at UTM co-ordinates 449,265 E 5,537,436 N, occurring within the north portion of East Ridge B band. The samples were submitted to ALS Metallurgical, Kamloops.



The following table lists geochemical analysis (head grade) of 3 metallurgical samples:

Sample Type	Sample ID	% Pb	% Zn	% Fe	% S	Au g/t fire assay	Au g/t fire assay duplicate	Au g/t metallic screen	Ag g/t
Outcrop	Heino Surface Comp	.19	.36	7.5	3.9	20.7	23.4	17.3	17
DDH	East Ridge Comp	.13	.37	6.7	3.8	1.97	1.9	2.57	12
Outcrop	East Ridge Comp 2	.08	1.1	11.5	7.5	1.14	1.1	1.0	4

Metallurgical testwork of the Heino Zone (sample ID Heino Surface Comp), identified coarse grained gold, and head grades ranging from 17.3 to 23.4 g/t Au, and was used for chemical and mineralogy analysis, bond ball work index testing, gravity & froth flotation, concentrating, rougher-cleaner, & locked cycle flotation.

In the locked cycle, approximately 63% of the gold was recovered in gravity concentration. A further 29% of feed gold was recovered in the froth flotation stage. Approximately 17% of silver was recovered by gravity concentration, with a further 60% reporting to the froth flotation (Appendix J).

Conclusions of the metallurgical test by ALS include the following statements (Roulston, 2020):

Gold was highly variable within the feed for the testing. Future testing should consider a bulk gravity concentration on a large mass of gravity feed sufficient enough to test variables using a more consistent precious metal content in the flotation feed.

- Sulphur was readily rejectable in the cleaner circuit without a corresponding loss in precious metals. This suggests the gold and silver in the flotation circuit is either unassociated with other minerals or perhaps associated with the other sulphide minerals such as galena, sphalerite, arsenopyrite, or copper sulphides.
- Although gold recovery was notable at a combined 92 percent, the gold content of the bulk 1<sup>st</sup> cleaner tailing and bulk rougher tailing in locked cycle testing measured about 7 and 2 g/tonne, respectively and would be considered high for a tailing stream, in our experience.

Geochemical analysis of rock chip samples taken in 2020 by MGX Minerals are summarized with anomalous values highlighted in yellow (Note- samples 301-306 are taken from the Heino 2130 m collapsed adit area, EAST=East Ridge Zone, SQ=Silver Queen Zone, GRIZ=Griz, AF=Arnie Flats Zone, ROAD=Road Zone, JEN=Jen Zone, GHOPE=Golden Hope Zone):

Sample no	Au ppm	Ag ppm	Cu ppm	Pb ppm	Zn ppm	Ca %	Fe %	S %	Mn ppm	As ppm	Sb ppm
301	138.5	1075	1950	90500	39200	1.9	19.5	>10.0	1465	10000	1030
302	87.4	524	2150	47500	49400	2.29	18.8	>10.0	1835	3140	427
303	207	112	398	10150	33800	1.03	16.4	9.45	1120	228	52
304	114	1080	2900	91300	44900	2.05	23.2	10	1370	985	845
305	85.5	1035	2320	75000	53500	1.11	23.4	9.99	1140	890	824
306	7.52	284	1910	34500	125500	1.18	30.6	8.85	1910	1530	303
20EAST1	1.33	13.95	2170	15.5	13300	1.33	28	9.72	488	1530	3.06
20EAST2	2.32	47.8	961	2350	4520	2.99	22.7	8.75	1400	4180	85.1
20EAST3	0.87	23.3	1790	472	9250	0.12	45.2	10	693	9200	13.3
20SQ1	1.48	19	57.5	40.2	62	2.48	5.16	2.94	325	7740	20.5
20SQ2	2.87	9.06	37.7	45.5	73	1.83	6.19	3.23	373	10000	74.5
20SQ3	0.22	51.3	270	358	52800	4.94	5.91	3.67	3140	135.5	33.5
20SQ4	0.73	1895	422	63400	130500	11.85	14.85	10	10150	32	779
20SQ5	0.7	96.1	120.5	546	54500	5.45	4.56	2.79	2810	832	60
20SQ6	0.89	1270	366	72000	21900	2.19	9.93	6.12	1340	97.7	921
20SQ7	1.08	2590	807	110500	180000	2.45	19	10	4620	60.2	2330
20GRIZ1	10.55	16	1665	345	456	0.15	14.25	10	201	138	6.88
20GRIZ2	3.52	10.55	274	355	416	0.29	3.97	2.06	396	33.5	6.79
20GRIZ3	0.02	1.64	49.1	33.2	51	0.43	2.35	0.39	235	4.1	0.37
20GRIZ4	0.1	2.1	186.5	75.8	68	1.08	3.43	1.27	299	4.2	0.3
20GRIZ5	14.25	6.21	208	23.4	86	0.44	3.97	1.03	395	319	0.26
20GRIZ6	0.02	15.9	80.6	147.5	66	0.91	4.19	0.19	360	5.7	0.15
20GRIZ7	0.07	128	584	22800	13400	0.42	7.51	5.32	725	1.8	0.25
20GRIZ8	0.07	158	840	152500	72800	0.16	25.3	10	673	4.1	117
20GRIZ9	6.75	3.18	733	205	98	0.01	22.2	10	54	4.7	0.24
20GRIZ10	0.03	0.87	33.7	453	165	0.12	2.19	0.18	121	6.5	0.42
20GRIZ7 B WR	0.02	0.93	161	10	75	1.4	6.69	2.46	519	25.3	0.49
20GRIZ8 B WR	0.04	14.7	435	433	118	1.28	11.35	6.21	339	2.2	0.38
20GRIZ9 B WR	0.02	0.69	158.5	4.4	31	0.52	3.92	1.06	411	4.1	0.24
20GRIZ10 B WR	0.02	0.99	147.5	26.4	38	0.31	4.85	1.25	354	5.8	0.16
20GRIZ11	0.02	0.53	78.6	3.8	32	0.61	4.09	1.37	403	1.2	0.13
20GRIZ12	0.02	1.69	83.6	11.6	10	0.7	6.14	0.61	122	3.2	0.38
20GRIZ13	0.02	1.86	76.9	14.7	22	0.49	5.83	0.11	158	2.2	0.42
20AF1	4.17	430	460	1085	403	0.08	13.7	0.36	252	39.9	53.9
20AF2	3.47	421	462	889	278	0.19	12.6	0.5	263	34.5	61.3
20AF3	0.02	2.39	122	19.3	53	1.01	4.78	1.22	293	4.4	0.52
20AF4	0.02	1.65	86.3	13.3	39	0.72	6.17	1.5	262	7.9	0.54
20JEN1	1.13	42.4	295	6990	13300	1.63	6.84	3.96	832	162	29.4

20JEN2	0.85	2.21	74.1	128	491	1.06	3.65	1.17	937	112	0.82
20JEN3	0.02	1.75	83.7	36.4	195	1.62	4.8	2.4	273	32.3	2.35
20JEN4	1.46	3.02	99	177.5	3690	1.53	6.31	2.24	1160	1985	3.15
20ROAD1	2.28	7.55	109	396	2700	1.27	7.4	2.56	1370	17	0.46
20ROAD2	0.03	1.68	126.5	57.2	1400	1.64	4.95	2.29	1140	73.5	1.35
20GHOPE1	0.04	1.22	104	25.9	94	1.66	3.89	0.52	562	17.5	0.59
20GHOPE2	0.58	3.4	171	28.4	52	0.71	4.6	0.98	343	31.6	0.66
20GHOPE3	0.02	2.72	208	139	201	3.32	7.67	4.45	271	3.2	0.48
20GHOPE4	0.21	3.04	372	37.5	2200	0.31	9.81	1.39	796	21.7	0.39
20GHOPE5	0.27	2.33	198.5	37.9	2610	1.93	8.31	0.74	1200	25.7	0.31
	Au ppm	Ag ppm	Cu ppm	Pb ppm	Zn ppm	Ca %	Fe %	S %	Mn ppm	As ppm	Sb ppm

Gold geochemistry in rock chip samples: Gold is highest in Heino rock samples (ranging 8-207 g/t Au), with moderate to high values in Grizzly rock samples (4 samples ranging 3.5-14.3 g/t Au). Arnie Flats, East Ridge, Silver Queen and Road Zones rock samples contain moderate gold values (9 samples ranging 1-2.9 g/t Au). It is notable that Grizzly and Arnie Flats elevated Au values in rock samples are not associated with strong (polymetallic) sulphides and massive pyrrhotite, sphalerite, minor arsenopyrite, but rather with moderate galena with trace sulphosalt minerals. Both Grizzly and Arnie Flats have lenses and pods of massive pyrrhotite in close proximity to parallel Au-Ag bearing (galena-sulphosalt) shear zones. East Ridge and to a lesser extent Grizzly are characterized by parallel to sub-parallel bands of massive to semi-massive pyrrhotite in close proximity to parallel Au-Ag bearing shear zones striking north and dipping west. The East Ridge, Heino and Silver Queen mineral zones contain relatively high sphalerite content (>1% Zn). The high silver values in Silver Queen rock samples (3 samples ranging 1,270-2,590 g/t Ag, 779-2,330 ppm Sb) are likely to be associated with argentiferous galena-sphalerite and sulphosalt minerals such as tetrahedrite and pyrargyrite.

Silver geochemistry in rock chip samples: Silver is highest in Silver Queen and Heino rock samples (6 samples ranging 1075-2590 g/t Ag), with moderate to high values in Arnie Flats rock samples (2 samples ranging 421-430 g/t Ag). East Ridge, Grizzly, Jennie Zones rock samples contain moderate silver values (11 samples ranging 10.5-158 g/t Ag).

The Heino and East Ridge Zones exhibit a strong polymetallic (Cu-Pb-Zn) mineralogy that correlates with >5% pyrrhotite (elevated Fe% & S%), and minor arsenopyrite, and trace tetrahedrite/tennantite (elevated ppm As & Sb).

Higher grades of gold and silver on the Grizzly rock samples don't correlate with polymetallic base metals, and the best precious metal values are in shear zones adjacent to lenses of massive pyrrhotite with base metals. The Grizzly mineral zone has widespread galena with minor sphalerite in the hangingwall (west of mineral zone) and some rare but significant tungsten values.

The Silver Queen exhibits similar polymetallic mineralogy to Heino & East Ridge, however the high Ca% and ppm Mn suggest the Silver Queen has more of the classic skarn alteration (e.g.

diopside-tremolite-garnet-actinolite), and is characterized by quartz-feldspar porphyry (granitic) dykes (whereas the Heino & East Ridge have a late-stage lamprophyre dyke swarm).

The Arnie Flats mineralogy is characterized by trace argentite-tetrahedrite and moderate galena with low chalcopyrite-sphalerite content that contains elevated gold-silver. A large cliff-exposed well mineralized sill located approximately 200 m ENE of Arnie Flats known mineral zone requires mountaineering equipped sampling crew (on cliff face) to test this mineral zone that was observed from a distance. The heavily oxidized sill of interest appears to be thicker (> 15 m true width) or swollen in the center, and this bulge may be an anticline structure that traces the Arnie Flats mineral zone. There is a sill underneath the upper sill and the Arnie Flats sills may correlate with the two main shallow dipping hybrid diorite sills that host the lower East Ridge ore zones.

Hybrid diorite sills are shallow dipping and the related mineralized shear structures are steeper dipping. This geological setting is similar to the East Ridge and Heino Zones, that both appear to have mineral zones that are steep dipping above approximately 2,000 m elevation, and shallow dipping related to hybrid diorite sills that occur below 2,000 m elevation. The hybrid diorite sill and dyke complex is considered to be Jurassic age and has been altered and metamorphosed by Cretaceous emplacement of the Whatshan granodioritic batholith, and cut by Eocene late-stage lamprophyre dykes (that affect, and displace by several meters), the East Ridge mineral zones as to a lesser degree, the Heino zone. The dyke/sill complex in close proximity to Tillicum Mountain may be the edge of a deep-seated Jurassic porphyry system.

Soil analysis results from 2020 sampling suggest the main areas to follow up elevated gold and silver (precious metals) values are listed in order of importance:

**1) Heino-East Ridge-Jennie-Road** (5,537,000 N to 5,537,150 N & 449,100 E to 449,250 E covering East Ridge S, also 5,537,450 N to 5,537,500 N & 449,200 E to 449,300 E covering East Ridge N, 5,537,400 N to 5,537,450 N & 449,075 E to 449,150 E covering Jennie, 5,537,600 N to 5,537,650 N & 449,000 E to 449,075 E covering Road Zone. This area is generally where all the previous mine development work on Heino-East Ridge was carried out between 2,050 to 2,170 m elevation, as well as the north extensions of the Heino-East Ridge (e.g. Road, Jennie) between 1,900 to 2,050 m elevation. Generally, there are 4 bands of N-S trending, steep to moderate W dipping Au-Ag bearing shear zones with banded siliceous skarn alteration (from W to E: 1-'Heino', 2-'East Ridge C', 2-'East Ridge B', 2-'East Ridge A'). The Heino trends NNW, and Jennie-Road trends WNW. The soil anomaly trends correlate with the geological mapping. The geological mapping of the Jennie, East Ridge N & Road Zones are somewhat more difficult to trace due to the shallow dip of the hybrid diorite sills and complex ENE trending late-stage faulting. The large volume of galena-sphalerite present in the area of Heino-East Ridge-Jennie-Road showings suggest there is porphyry (or sedex) deposit type(s) in the area of Tillicum Mountain. The strong arsenic in soil anomaly in the area of Heino-East Ridge-Jennie-Road showings suggest there is considerable thermal-contact metasomatism from the close proximity of the Cretaceous Whatshan batholith (which is not present on more distal zones such as Grizzly, Silver Queen, Arnie Flats). The arsenopyrite present in the area of Heino-East



Ridge-Jennie-Road showings are considered secondary (Cretaceous age) whereas the gold-silver bearing mineralization is interpreted as Jurassic age and related to galena (to a lesser degree sphalerite). The Heino-East Ridge Zones are proximal to Jurassic volcanic center/dyke-sill complex, and are considered 'banded-siliceous skarn' deposit type.

2) **Silver Queen** 5,535,350 N to 5,535,550 N & 450,300 E to 450,400 E covering south-central portion of Silver Queen. The strong silver in soil values over a width exceeding 100 meters suggests there is a large silver resource in this zone that has an apparent strike length of 900 meters. The high Ca% and Mn ppm present in Silver Queen soil samples are more typical skarn deposit porphyry intrusions in contact with marble, whereas the Heino-East Ridge are marble-poor, meta-basalt-hosted. The Silver Queen marble bands form large-scale traps for hydrothermal fluids and wide zones of skarn alteration. The Silver Queen soils are unusually low in Pb-Zn, however the As-Sb values are high suggesting that silver is associated with sulphosalts such as tetrahedrite-pyrargyrite as opposed to argentiferous galena such as the galena in the Silverton-New Denver area (with high Zn/Pb ratio, as well as Sn-Cd bearing minerals) to the east. The Silver Queen (located 2 km SE of Tillicum Mountain) is characterized by high Ca% and Mn ppm suggesting it is a CRD (carbonate replacement deposit), whereby the Silver Queen hydrothermal mineralization is more distal than the proximal Heino-East Ridge Heino-East Ridge Zones (proximal to Jurassic volcanic center/dyke-sill complex) located north of Tillicum Mountain are considered banded skarn deposit type.

3) **Grizzly N** 5,536,800 N to 5,536,850 N & 449,900 E to 450,000 E covering Grizzly N (strong lead in soil anomaly 5,536,800 N from 449,900 E to 449,075 E). There is a wide zone of clay/silica altered feldspar porphyry contact with meta-sediments adjacent to the soil anomaly. Geological mapping suggests that the widening of the alteration is accompanied by several fault splays and flexure of the strike of the faults ranging from NNE to NE (Addie, 1997). It is possible this strong lead in soil anomaly 5,536,800 N from 449,900 E to 449,075 E is underlain by a fold structure due to a localized dip-slope on the east side of the ridge (as it appears that all foliation dips west in the area on both sides of the ridge north and south of the Grizzly N Zone). Also, there is a small 50 m diameter circular lake about 100 m ESE of the strong lead in soil anomaly. It is unclear whether there may be breccia deposit type (diapir structure) associated with the circular lake.

4) **Grizzly S** 5,536,300 N to 5,537,400 N & 449,550 E to 449,625 E covering Grizzly S. The Au-Ag in soil anomalies correlate with massive pyrrhotite lenses & localized strong positive magnetometer anomaly. Also at 5,536,350 N to 5,536,400 N & 449,100 E to 449,250 E covering Grizzly S Au-Ag in soil anomaly (banded skarn, siliceous meta-volcanic/sediment adjacent to hybrid diorite sill/dyke). There is a complex series of hybrid diorite sill/dyke/stock intrusive bedrock with at least distinct 3 bands of mineralization in the Grizzly southern area, and the soil sampling reflects these 3 bands. The 3 mineralized bands generally trend NNE and dip moderate to steep to the west, and compare favourably to the same geological setting as the East Ridge Zone, however the Grizzly S area is not cut by Eocene age, vertically dipping lamprophyre dyke swarms that occur on the East Ridge.

5) **Arnie Flats** Au-Ag in soil anomalies occur at the west limit of known surface mineralization and correlates with elevated Au-Ag in rock samples (20AF-1 4.17 g/t Au, 430 g/t Ag, and 20AF-2 3.47 g/t Au, 421 g/t Ag). The soil survey suggests that silver-bearing mineralization may be widespread, whereas gold bearing zones are confined to narrower, banded siliceous skarn hosted shear zones.

6) **Golden Hope** 5,536,550 N to 5,536,600 N, and 448,975 E to 449,075 E is the area with elevated Au-Ag in soil values, and also correlates with elevated Cu. One soil sample from the northeast extension of Golden Hope contains anomalous Cu-Ag, but Au values are low.

The Heino-East Ridge S magnetometer grid outlined 4 localized, 'spot high' positive values:

- 1)L 5,537,150 N 449,245 E to 449,255 E
- 2)L 5,537,050 N 449,082 E to 449,092 E
- 3)L 5,537,000 N 449,110 E to 449,140 E
- 4)L 5,536,900 N 448,950 E to 448,970 E

The East Ridge S magnetometer anomalies 2)L 5,537,050 N 449,082 E to 449,092 E, & 3)L 5,537,000 N 449,110 E to 449,140 E are located on steep, bedrock exposed sections and correlate with known NNE trending, steeply W dipping shear zones. The magnetometer positive anomalies are indicators that massive pyrrhotite and/or magnetite may be present. Follow-up mapping and sampling exploration work is suggested. Magnetometer positive anomaly 4)L 5,536,900 N 448,950 E to 448,970 E is located on the southern slope of Tillicum Mountain that has a moderate (low-angle) slope with scarce bedrock and detailed mapping and sampling is suggested.

The Grizzly S magnetometer grids outlined 2 localized, 'spot high' positive values:

- 1)L 5,536,450 N 449,682 E to 449,692 E
- 2)L 5,536,350 N 449,560 E to 449,590 E

The Grizzly S magnetometer positive anomaly 2)L 5,536,350 N 449,560 E to 449,590 E is located adjacent to the water source for core drilling (in creekbed). It is postulated that this positive magnetometer anomaly represents massive pyrrhotite and/or magnetite. This was the highest positive anomaly in the 4.55 line-km surveyed and drilling an angle hole collared 25 m west of the anomaly edge is recommended. The magnetometer positive anomalies are postulated to correlate with massive and/or semi massive pyrrhotite mineralization. The southern portion of the Heino-East Ridge has several spot high anomalies that roughly correlate with N-S trending East Ridge A, B & C Bands and Heino Band to the west. The Grizzly S magnetometer survey indicates there may be 3 bands of mineralization (similar to East Ridge A, B & C Bands). The Grizzly easternmost band appears to be the main mineralized trend, and the middle and westernmost Grizzly bands are more localized and include a small 50 m diameter circular lake between the Grizzly N & S Zones. The circular lake is located adjacent to the strong Pb in soil anomaly and widening/flexure/fault splayed alteration zone in the ridge to the NE. The main focus of development of Grizzly should focus on easternmost band (main zone) and secondary focus on other bands of mineralization (& circular lake breccia target) to the west.

A petrographic description of high grade gold sample #303 (angular float taken from Heino 2,130 m adit) was performed by John Payne, Ph D, P Geol (Vancouver Petrographics Ltd, Langley, BC). Location of the sample is at UTM Zone 11, 449,037 E, 5,537,219 N elevation 2,130 m. This sample (#303), contained the highest Au geochemical analysis (207 g/t Au, 112 g/t Ag, 1% Pb, 3.4% Zn).

It is noteworthy that native Au is abundant as irregular concentrations up to 1.5 mm grains hosted in quartz and 'mineral A'. The distribution of native Au as irregular grains and not distributed evenly would make this sample difficult using standard geochemical analysis. Based on petrographic description of sample #303, it is suggested that future Au ore assays should be either metallic screen or Actlab Neutron Activation Au (and multi-element ICP) geochemical analysis (the latter choice has lower cost/sample).

The K-feldspar alteration identified in sample #303 (adjacent to coarse-grained quartz), is a secondary alteration that is considered an important pathfinder for gold bearing mineralization. The high percentage of feldspar in the sulphide-rich skarn/replacement (metasomatic) portions of meta-basalt may be sourced by nearby monzonitic-diorite intrusive rock. Tremolite & chlorite occur in meta-basalt host rock (primary) and in skarn/replacement (secondary). Diopside, garnet and quartz are important indicators for secondary skarn/replacement.

## 6.0 Geology and Mineralization

The Heino Gold Project is located on Tillicum Mountain, which is underlain by a sequence of pelitic schists, calc-silicates and meta-volcaniclastics assigned to the Milford Group, of Upper Paleozoic to Triassic age. The strata trends northwesterly and lies between the Slocan syncline to the north and the Valhalla dome to the south. Three episodes of intrusion are recognized: The first consists of swarms of porphyritic dioritic sills, the second comprise large-scale Cretaceous monzonitic stocks (Goat Canyon and Halifax Creek stocks), and the third are swarms of late stage lamprophyre dykes of probable Eocene age. Gold and/or silver mineralization occurs in shear related calc-silicate quartz skarns developed adjacent to, or in close proximity to quartz monzodiorite porphyry sills. The area is structurally complex with at least two stages of folding recognized with metamorphic grade throughout the region typically of sillimanite facies.

A number of significant mineralized zones have been identified. These include the gold-rich zones: Heino-Money Zone, East Ridge Zone, Grizzly, Lower Jennie, and Road Ridge; and the silver-rich zones: Silver Queen and Arnie Flats. Mineralization is structurally controlled with two structural styles recognized: A steeply dipping, crosscutting Heino-Money Zone type mineralization and shallower dipping stratabound East Ridge Zone type mineralization. The Heino-Money Zone is contained within a north trending shear/fracture zone. The steep fracture zone likely post-dates an earlier mineralization phase, probably represented by the East Ridge Zone, but predates faults and fractures associated with Cretaceous stocks and Tertiary lamprophyre dykes. The interrelationship between the East Ridge Zone and the Heino-Money Zone is poorly understood but high-grade mineralization is possibly the result of remobilization and enrichment of the earlier phase into the shear/fracture zone.

Skarn assemblages consist of quartz, plagioclase, sericite, tremolite-actinolite, clinozoisite, garnet, biotite and microcline with high grade gold hosted within quartz-actinolite-chlorite assemblages.

Skarns contain quartz calc-silicate segregations and veins that vary from a few centimetres to 4 meters in width. Skarn zones vary in thickness from 1 to 60 meters and contain finely disseminated sulphides orientated within the foliation or as coarse-grained aggregates within segregations.

Sulphides include pyrrhotite, pyrite, sphalerite, galena, as well as traces of chalcopyrite and tetrahedrite. Native gold occurs within the skarn assemblages as 25-micron disseminations to over several millimeter diameter flakes within and along the margins of the quartz calc-silicate segregations. Gold is generally free, but associated with pyrrhotite, arsenopyrite, sphalerite and pyrite-marcasite.

## 7.0 Regional Geology

*The following paragraphs have been largely extracted from an assessment report written by Campbell (2014).*

The area is underlain by the Early to Late Triassic Slocan Group, a sequence of metasedimentary argillites, carbonates and metavolcanics. The Slocan Group is underlain by the Milford Formation, a series of Pennsylvanian to Triassic volcano-sedimentary wackes, and overlain by the Lower Jurassic Rossland Group, a series of basaltic-andesitic flows and tuffaceous siltstones (Addie, 1997).

Intrusive into these are Jurassic granites and the Early to Late Cretaceous granodioritic Whatshan Batholith. On the property, Devlin and Roberts (1989) described a range of porphyritic stocks and sills intruding the sedimentary and volcanic country rocks with sub-alkalic to calc-alkaline affinities and quartz monzonite to quartz monzodiorite compositions. Dykes (2003) recognized three episodes of intrusion. The first consists of swarms of dioritic sills, the second comprise large-scale Cretaceous monzonitic stocks and sills (Goat Canyon and Halifax Creek stocks), and the third are swarms of late stage lamprophyre dykes of probable Eocene age (Addie, 1997).

At least two stages of folding are recognized with metamorphic grade throughout the region typically of the sillimanite facies, however the grade is lower around Tillicum Mountain with biotite, muscovite, chlorite and amphibole observed as the main metamorphic minerals (Dykes, 2003).

Gold and/or silver mineralization occurs in shear related calc-silicate quartz skarns developed in metavolcanic and metasedimentary rocks adjacent to, or in close proximity to stocks and sills.

## 8.0 Property Fieldwork 2020 & METHODS AND PROCEDURES

2020 Lidar survey (carried out by Axiom Group for MGX Minerals Inc, Oct 16-25, 2020):

Geophysical fieldwork, LiDAR high resolution laser scanning was carried out in Oct, 2020, on 4 square kilometers of terrain, however about 2 square kilometers of the higher elevation terrain that was planned for surveying was not completed, and LiDAR survey (operator: Axiom Group) completion is planned at a future date. The LiDAR survey will be used for surveying, volumetric calculations, numerical terrain modelling, 3D modelling, CAD drawing, calculation of tree height, autonomous vehicle tracking and volume & geological purposes. Geological mapping of 16 hectare area located 200-300 meters N & E of Tillicum Mountain, was carried out in the main area of 1993 underground bulk sample. Fieldwork involved 1: 4,000 scale geological mapping of 16 hectares at 1,970-2,225 m elevation in order to examine mappable lithologies and structures in the area of historic mine development work (see Fig 4A, 4B). NOTE: Only 1.6 hectares of geological mapping was credited to cost statement as this was the only area that was mapped outside of lease 320414 (in compliance with Section 8 (1) Mineral Tenure Act, technical fieldwork done on lease not credited to cost statement). Mapping and surveying of outcrop was assisted by Garmin 64s GPS receiver, 50 m tight chain, hand lens, streak plate, dilute HCl acid, and Brunton compass.

The general trend of foliation/schistosity is N to NE with steep west dips (50-90 degrees above 2,050 meters elevation) and more moderate to shallow dips of foliation/schistosity (10-50 degrees, dipping westerly below 2,050 meters elevation). A complex hybrid monzodiorite sill/dyke (hangingwall) contact appears to be the loci of banded skarn Au-Ag bearing mineralization that is characterized by increased quartz-garnet-chlorite alteration. Geological mapping, including outcrop examination (noting orientation, structure, lithology, & alteration of Au-Ag bearing mineralization zones), established a sequence of events summarized as follows:

- 1) Jurassic Rossland Group basaltic to andesitic volcanism (tuffs, flows, breccia) contain plagioclase-hornblende-augite-epidote-amphibolite with minor diopside-tremolite-actinolite-biotite-garnet hornfels.
- 2) Jurassic-Cretaceous (and older) Slocan/Milford Group sediments turbiditic greywacke, arkose, siltstone, marls, and intercalated volcanic flows with metamorphic overprint consisting of calc-silicate (banded)-biotite-plagioclase-chlorite-clinzoisite-tremolite-chlorite-actinolite and well developed schistosity/foliation, minor lineation fabric developed in schist.
- 3) Jurassic D1 regional tight to isoclinal folding with regional deformation associated with hornblende-biotite quartz-diorite, monzodiorite, quartz monzonite with contact phases that include diopside-tremolite-clinzoisite-epidote-chlorite-garnet. minor phyllic (quartz-sericite-pyrite) alteration



4) Cretaceous D2 regional open to tight folding, influenced by large scale intrusion (Whatshan batholith) resulting in widespread hornfels and high temperature metamorphism, and aplitic sills/dykes.

5) Cretaceous-Eocene intrusion of 1-5 meter wide carbonate altered, augite-epidote bearing lamprophyre dykes.

D1 (regional tight to isoclinal folding & intrusion of feldspar porphyry sills, age Early Jurassic) and D2 (regional open to tight folding, widespread hornfels, age Cretaceous). It is assumed that D1 Early Jurassic events are related to Au-Ag mineralization and D2 Cretaceous events are related to Mo-W mineralization, however the D2 event has probably affected remobilization of gold-silver bearing mineralization. Surface shear zone traces observed trend north, northeast, and northwest, and dip steeply. It was not possible to map and estimate displacement along shear zones, but it appears there is minor sinistral displacement. Sinistral displacement of east trending shear zones (in the order of 1-5 meters) is an important feature of high grade ore shoots at the Heino Zone on Tillicum Mountain. The feldspar porphyry intrusive units are a complex of dyke/sill with variable dips and generally NE oriented strike, and rare NW oriented dykes. The Slocan & Milford Grp country rocks have been subject to high temperature (700-900 degrees C) and low-medium pressure (0.5-2.5 kilobars) metamorphism resulting in staurolite-almandine garnet facies (this high temperature and low-medium pressure type of metamorphism is also termed 'hornfels & induration').

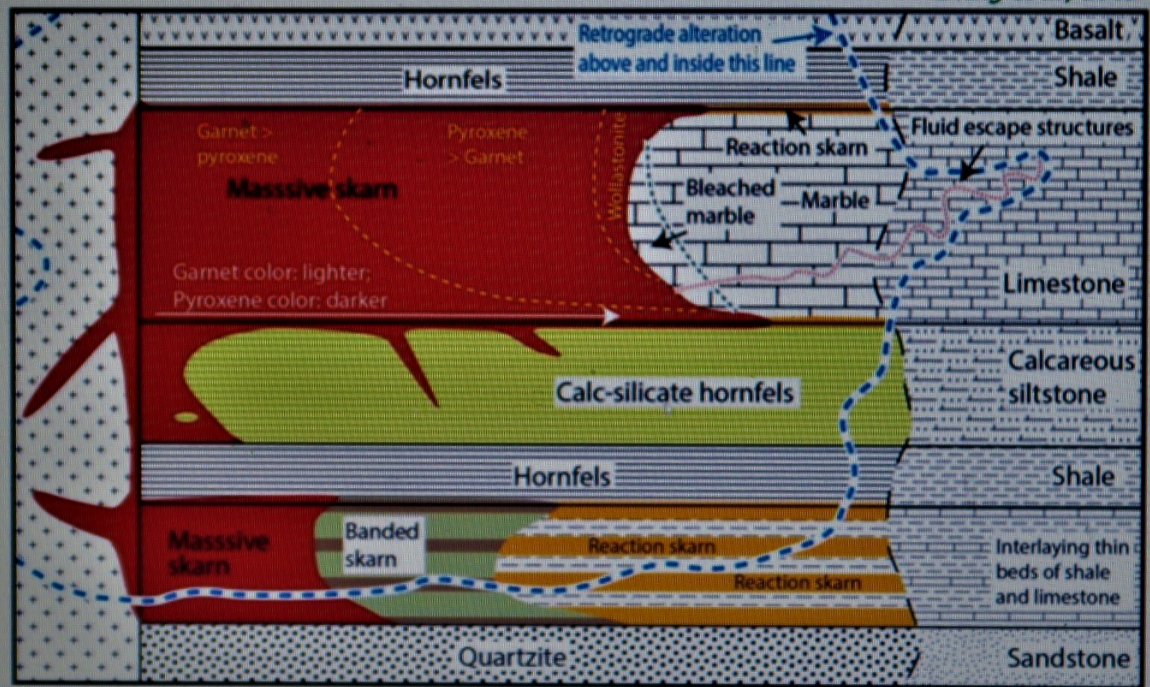
## 9.0 Conclusions & Recommendations

The zoning pattern of skarn minerals suggest Tillicum Mountain intrusive rocks were deposited as a reduced magma with high ilmenite/magnetite ratio (as opposed to oxidized magma with relatively higher magnetite, and lower ilmenite content). The reduced magma at Tillicum Mountain exhibits weak to moderate fractionation resulting in proximal gold-silver banded skarn (e.g. Heino, East Ridge, Grizzly), and distal Pb-Zn silver-gold skarn (e.g. Silver Queen). Some oxidized magma (high magnetite relative to ilmenite) can generate stocks with high Sn-W-Mo content, and this may be more prominent in areas located 0.5-1.5 km southeast of Tillicum Mountain. The majority of Au-Ag bearing skarn mineralization near Tillicum Mountain is exoskarn (meta-volcanic & meta-sediment protolith), with minor endoskarn (felsic intrusive protolith) occurring within East Ridge Zone between 2060 m to 2100 m adits. The N & S ends of the East Ridge Zone are exoskarn, occurring within meta-volcanic & meta-sediment protolith. The East Ridge appears to be stratabound. The East Ridge and Grizzly Zone Au-Ag bearing mineralization occurs in shears/fractures hosted within meta-volcanic & meta-sediment related to contact phase of diorite/monzodiorite. Large scale shears, such as the N to NW trending Aussie Fault that separates Heino and East Ridge Au Zones) appear to be Cretaceous age and may in part be re-activated Jurassic (and older) structures. The large scale shears adjacent to Tillicum Mountain show considerable displacement that occurred during emplacement of Late Cretaceous Whatshan granitic batholith. It is unclear whether that north portion of East Zone (<1,950 m elev) is the same gold-bearing sill contact that occurs at higher elevation (> 1,950 m elev). It may be a different sill contact, the north facing cliffs exposing sills on the Arnie Flats Zone shows two large distinct sills, the upper sill thickens where there is increased sulphide mineralization and silica-carbonate alteration. The thickening of the porphyritic intrusive adjacent to brittle-ductile country rock structural traps (especially near cross-shears) appears to be controlling factors in distribution of ore shoots, which occur at 15 m intervals in Heino, plunge steeply south, and NNW trend is offset by ENE trending cross-shears. Mineralized intrusive-country rock contact zone has extensive lateral continuity. The large overall size of the system and limited exploration of the entire area suggests there is potential for much larger discoveries at depth within a 2,000 meter radius of Tillicum Mountain. Deep drilling down dip of known mineral trends are recommended.

In general, the large portion of skarn mineralization present on Tillicum Mountain is banded skarn at Heino-East Ridge, Jennie, Road, Grizzly, Arnie Flats, Golden Hope Zones with reaction skarn (carbonate replacement) at Silver Queen. There is a strong possibility that massive skarn and/or porphyry deposit type mineralization may be present in closer proximity to the causative intrusions (adjacent to dyke/sill swarms and Tillicum Mountain). This summary of skarn zonation (by Chang 2019, SEG lecture series) suggests that basalt is impervious to skarn fluids, however the Tillicum deposits are mainly basalt hosted shear zones and have a high degree of skarn minerals associated with silicification.

# Summary – skarn zonation

*Chang et al., 2019*



In reviewing the compiled database and historical reports pertaining to the Heino Gold Project, recommendations include relog and resample historical drill core, channel sample exposed mineralization within the existing underground and surface development, twin drill a small sub-set of historical drill holes for data verification purposes, and re-survey existing underground workings using laser/drone survey methods.

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## **CERTIFICATE AND DATE**

I, Andris Kikauka, of 4199 Highway, Powell River, BC am a self-employed professional geoscientist. I hereby certify that:

1. I am a graduate of Brock University, St. Catharines, Ont., with an Honours Bachelor of Science Degree in Geological Sciences, 1980.
2. I am a Fellow in good standing with the Geological Association of Canada.
3. I am registered in the Province of British Columbia as a Professional Geoscientist.
4. I have practiced my profession for forty years in precious and base metal exploration in the Cordillera of Western Canada, U.S.A., Mexico, Central America, and South America, as well as for three years in uranium exploration in the Canadian Shield.
5. The information, opinions, and recommendations in this report are based on fieldwork carried out in my presence on the subject property (Oct, 2020) during which time a technical evaluation consisting of helicopter supported Lidar survey carried out.
6. I have a direct interest in the Tillicum Heino Mineral Property and MGX Minerals Inc (who paid for the Lidar survey). I have no interest in the Caribou Property MTO ID number 518270. The recommendations in this report are for the purpose of describing future exploration work, and cannot be used for the purpose of public financing.
7. I am not aware of any material fact or material change with respect to the subject matter of this Technical Report that is not reflected in the Technical Report, the omission to disclose which makes the Technical Report misleading.
8. This technical work report supports requirements of BCEMPR for Exploration and Development Work/Expiry Date Change.

Andris Kikauka, P. Geo., November 15, 2021



ITEMIZED COST STATEMENT- GEOLOGICAL MAPPING/LIDAR SURVEY

WORK PERFORMED ON MTO MINERAL CLAIMS 1072052, 1073170, 1072051, 1071800  
LIDAR SURVEY DONE: October 16-25, 2020

LIDAR FIELD CREW: Tanya Coetzee, Cayton Garvey, Jeff Scott, Brendan Morris, Adrienne Winton

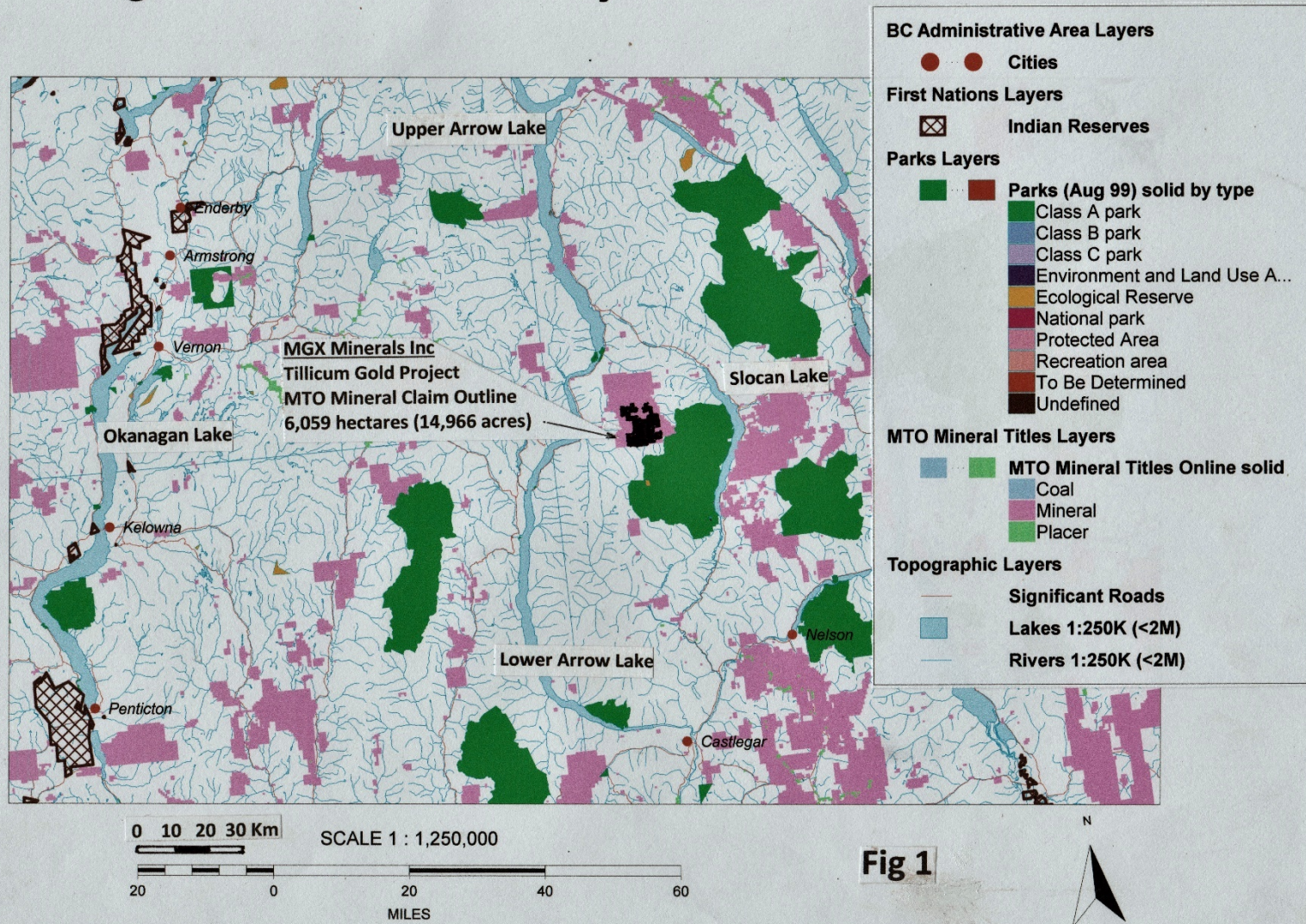
LIDAR REPORT GENERATION DONE: December 15, 2020

GEOLOGICAL MAPPING CREW: Andris Kikauka  
GEOLOGICAL MAPPING SURVEY DONE: October 18, 2020

COSTS:

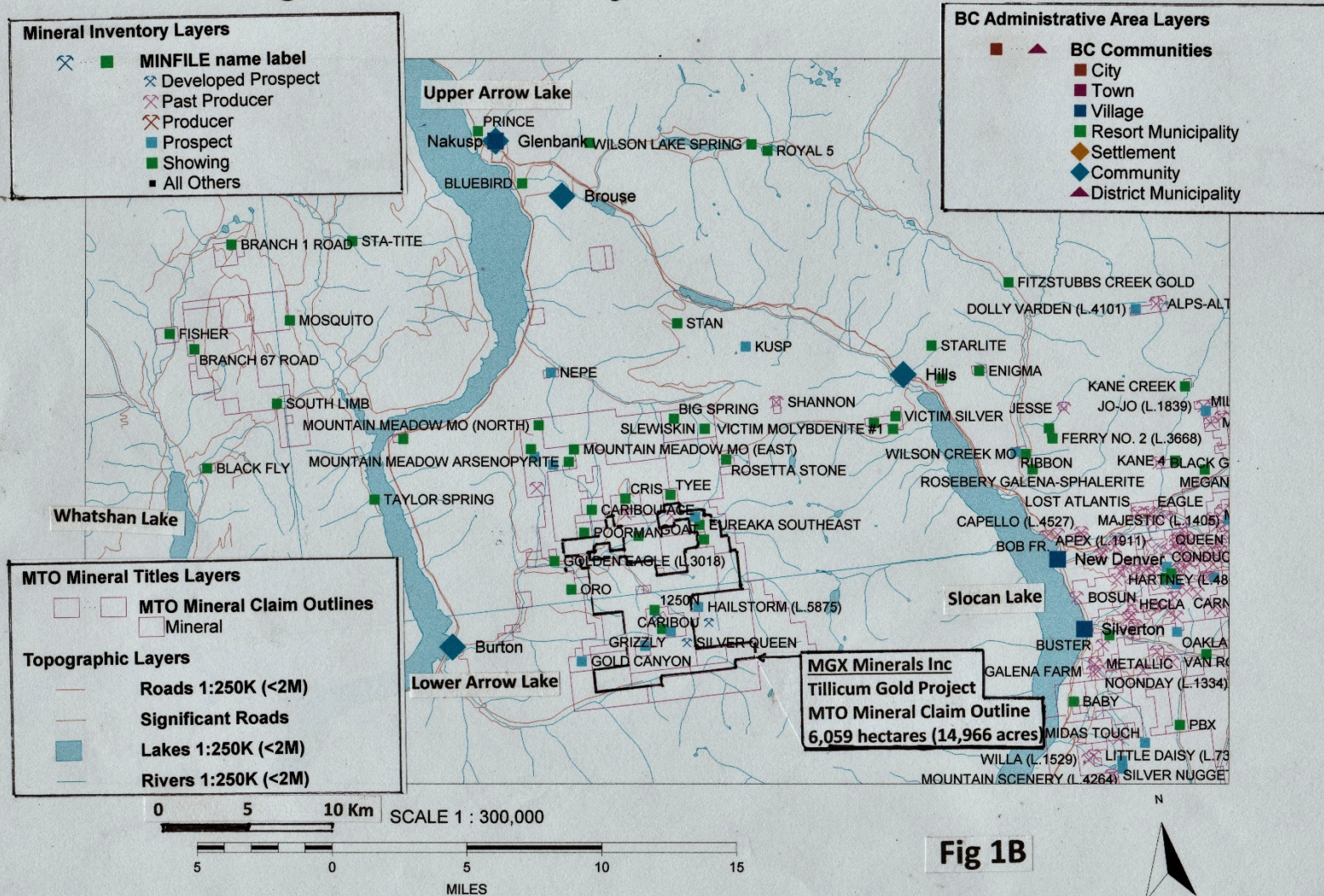
Mob/demob	\$ 4,500.00
Standby charges	4,200.00
Meals and accommodations	1,080.00
Helicopter charter	10,959.00
Heli mount rental	1,689.00
Survey costs (personnel)	4,008.62
Processing costs (personnel & proprietary software)	2,100.00
LIDAR Report generation (May 19, 2021)	300.00
Assessment Report	1,500.00
Geologist A. Kikauka, 0.1 day mapping 1.6 hectare	50.00
Total	<u>\$30,386.62</u>

# Fig 1 Tillicum Gold Project General Location



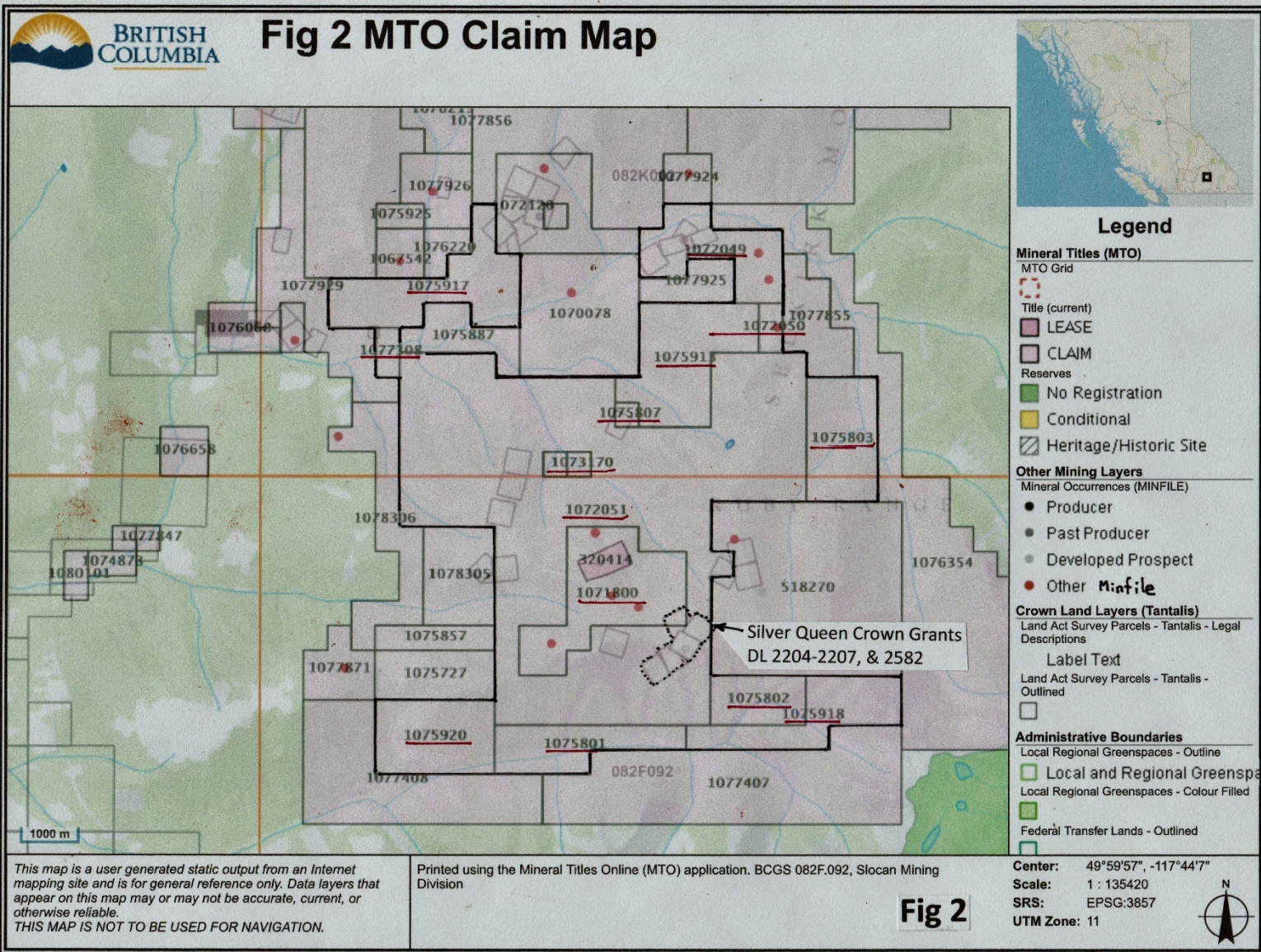


# Fig 1B Tillicum Project General Location

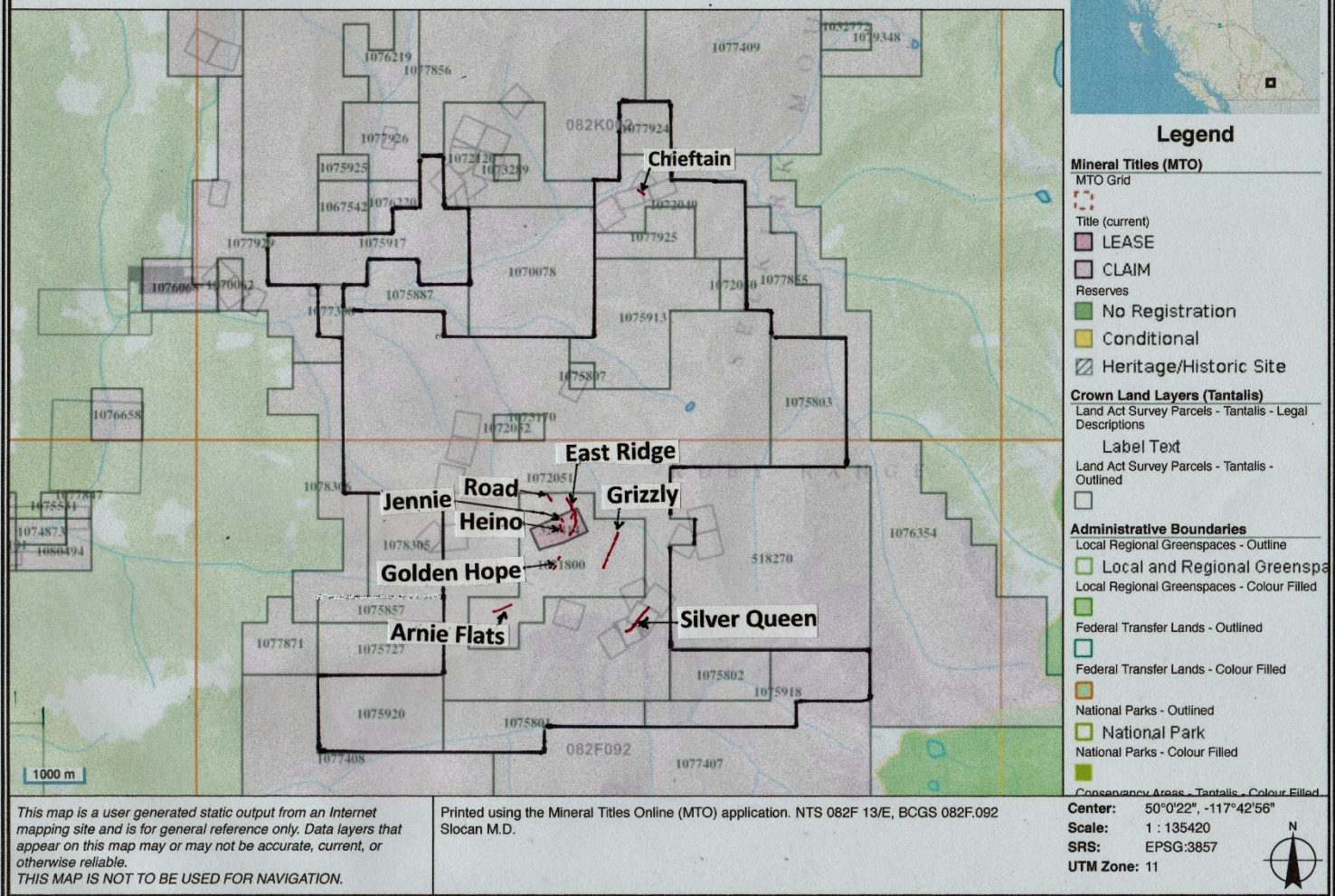
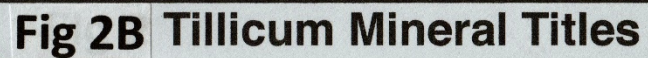




## Fig 2 MTO Claim Map





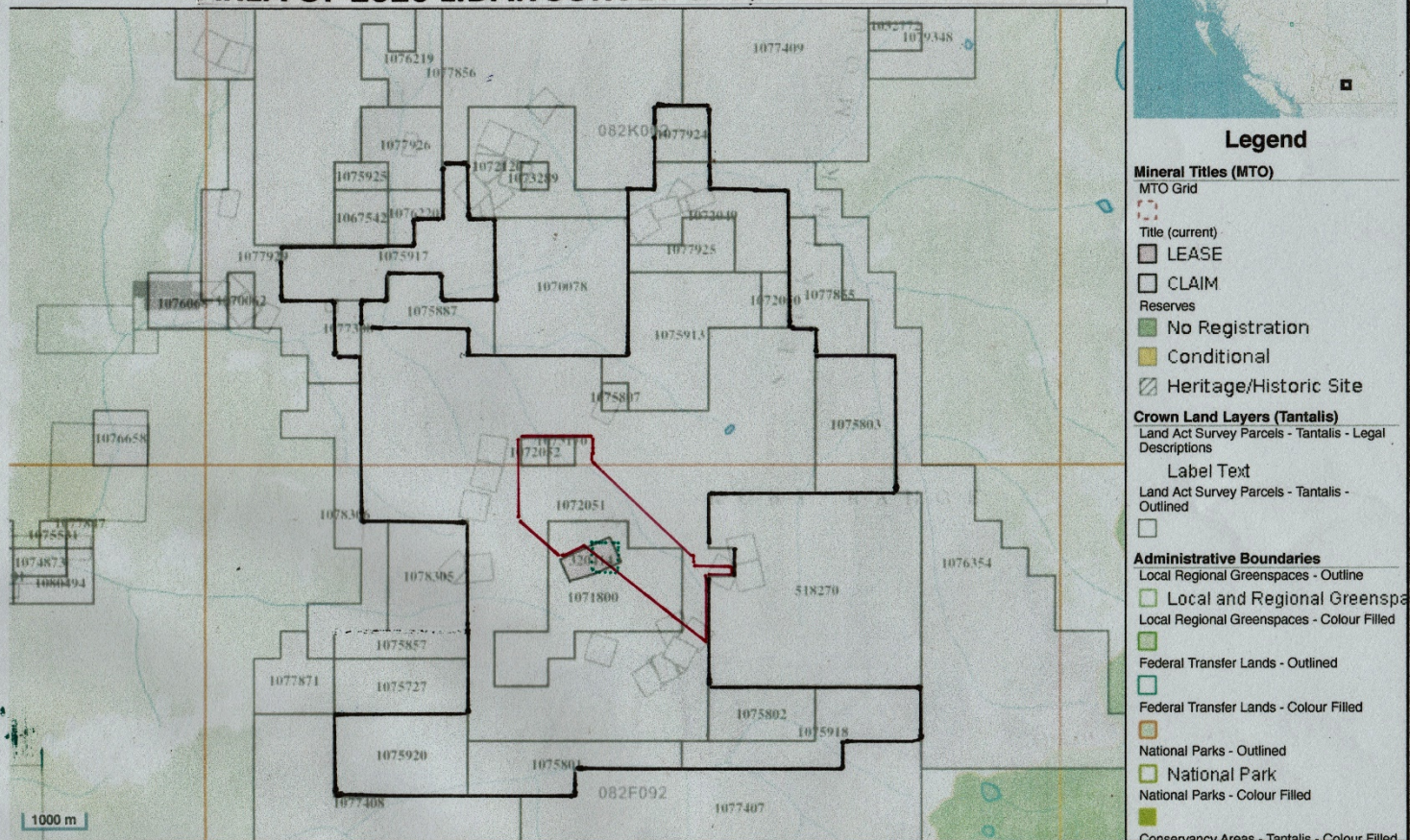






## Fig 2C Tillicum Mineral Titles

### AREA OF 2020 LIDAR SURVEY & GEOLOGICAL MAPPING



This map is a user generated static output from an Internet mapping site and is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.  
**THIS MAP IS NOT TO BE USED FOR NAVIGATION.**

Printed using the Mineral Titles Online (MTO) application. NTS 082F 13/E, BCGS 082F.092  
Slocan M.D. **NOTE: Future LIDAR Survey will be extended south**  
— Area of 2020 LIDAR survey (total 495 hectares)  
--- Area of 2020 Geological Mapping (total 16 hectares)

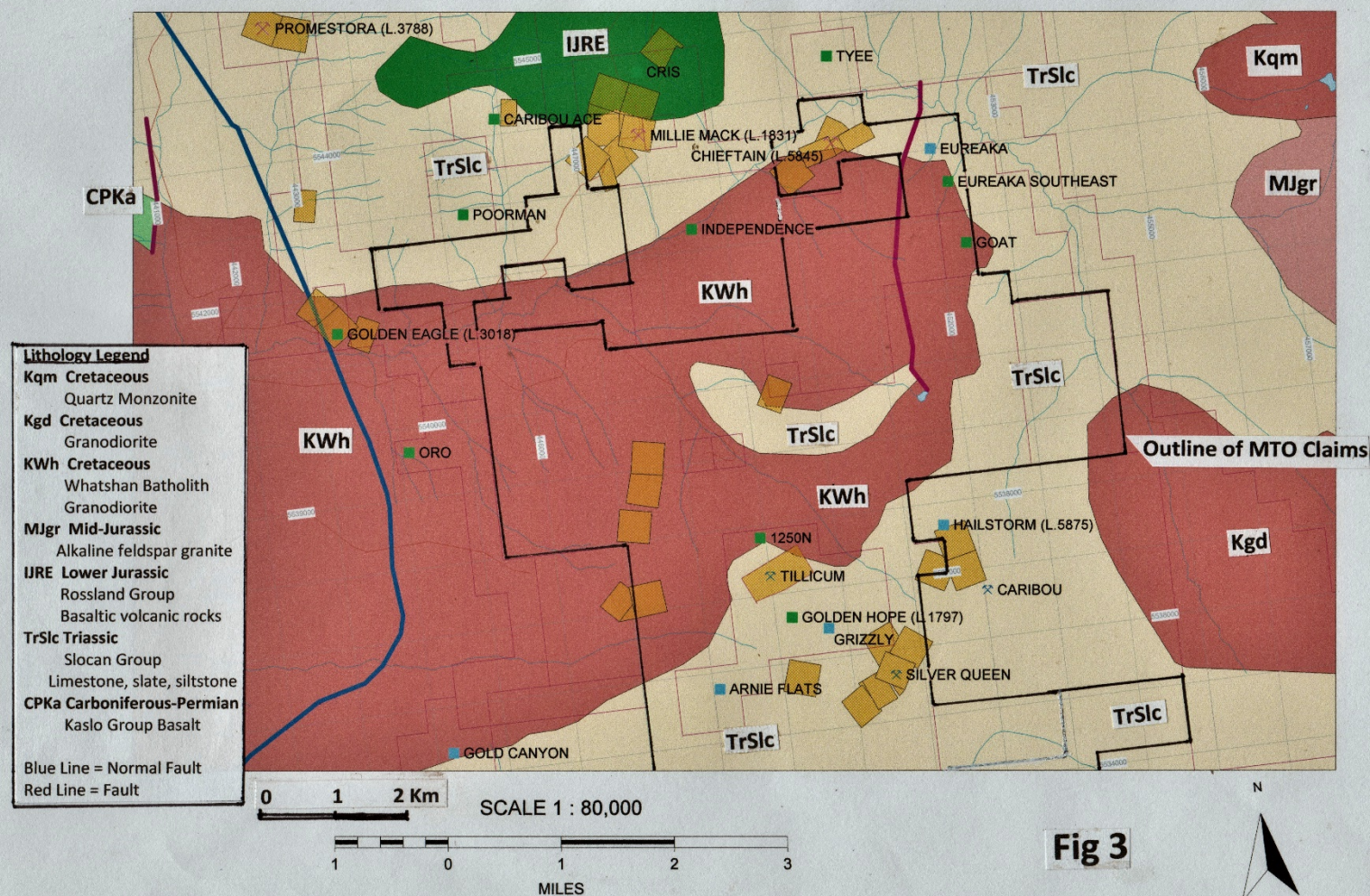
Center: 50°0'22", -117°42'56"  
Scale: 1 : 135420  
SRS: EPSG:3857  
UTM Zone: 11



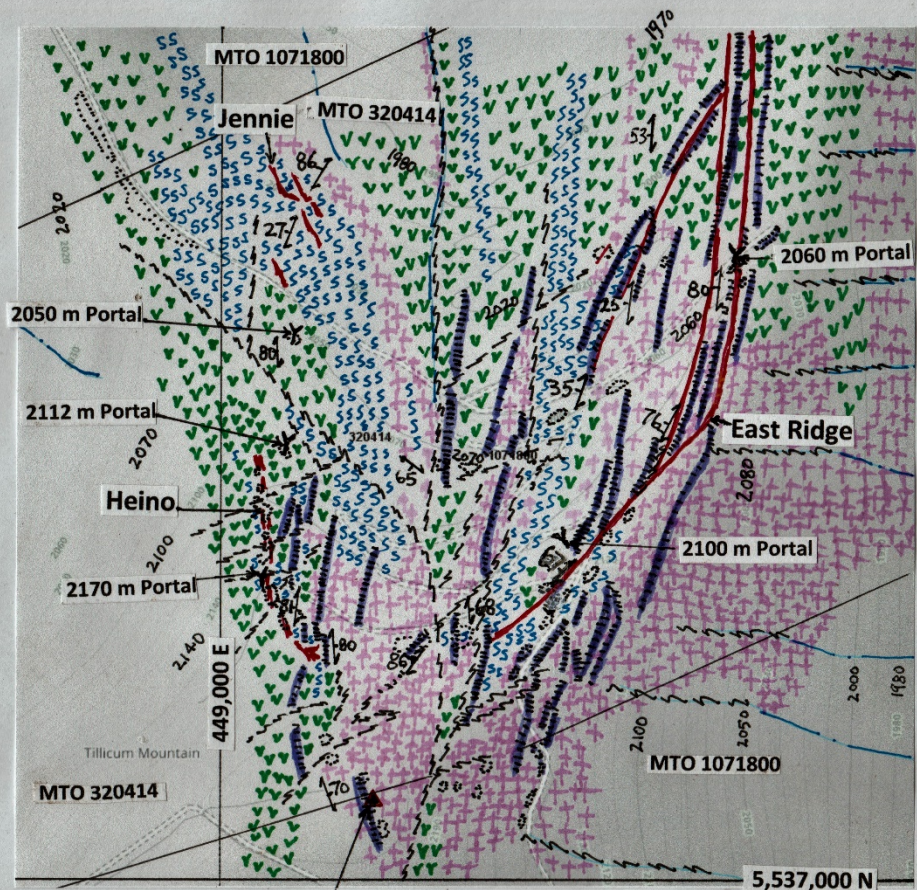


# Fig 3 Tillicum Project General Geology

BCGS 082F.092, NTS 082F 13/E, Slokan Mining Division

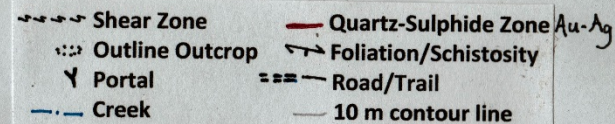
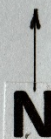
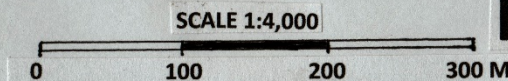










Tillicum Mtn 449,101 E, 5,537,049 N, elev. 2,225 m (7,298 ft)

BCGS 082F.092, NTS 082F 13/E, Slocan Mining Division

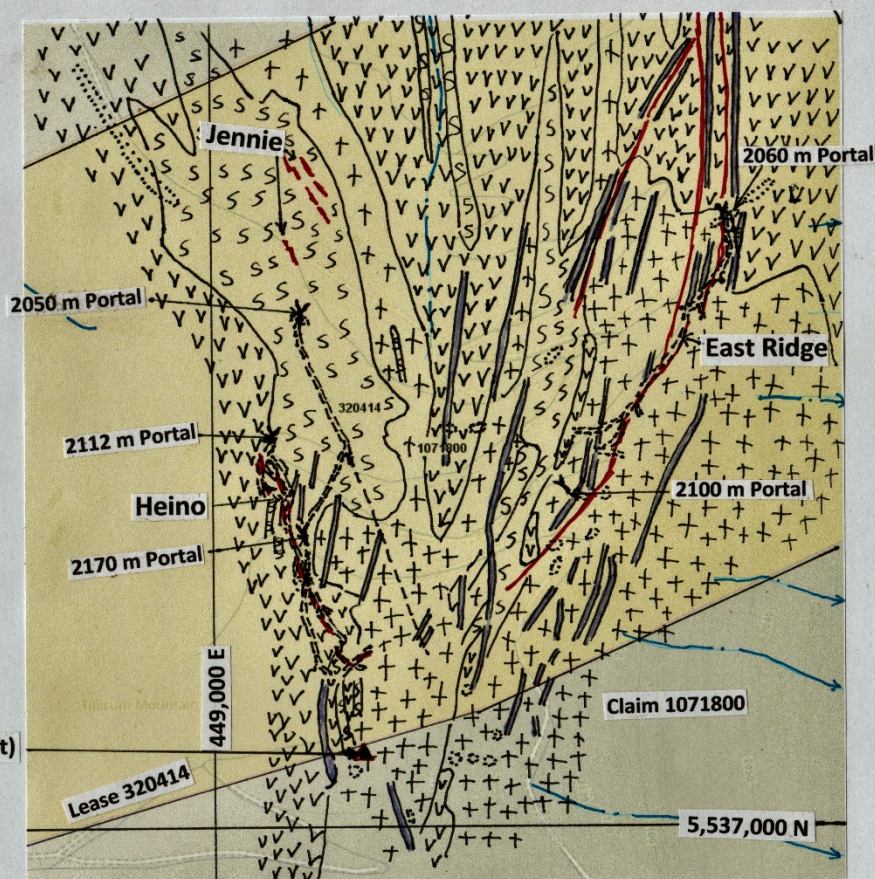




**Fig 4A Heino & East Ridge Structural & Foliation/Schistosity Geological Mapping**



- LEGEND**
- CRETACEOUS/EOCENE?**  
 Lamprophyre Dyke  
 (Augite, Calcite, Epidote)
- JURASSIC-CRETACEOUS**  
 Goat Canyon-Halifax Ck Stocks  
 Hornblende-Biotite quartz diorite,  
 monzodiorite, quartz monzonite  
 porphyritic & contact phases have  
 diopside-tremolite-grossularite-  
 actinolite gold-bearing quartz skarn
- JURASSIC-CRETACEOUS (AND OLDER)**  
 Slocan & Milford Group metasediments  
 Metamorphosed greywacke, siltstone  
 shale, intercalated tuffaceous andesite  
 laminated, schistose, local QSP alteration  
 and fracture-filling quartz-Au skarn
- JURASSIC**  
 Rossland Group metavolcanics  
 Metamorphosed basalt-andesite  
 Breccia, tuffs, flows with minor  
 fracture-filling quartz-Au skarn

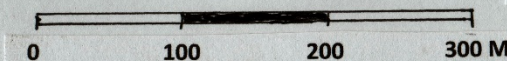
Tillicum Mtn 449,101 E; 5,537,049 N, elev. 2,225 m (7,298 ft)



- Lithology Contact — Quartz-Sulphide Zone Au-Ag  
 Outline Outcrop --- Proposed 2050 m extension  
 Portal — Creek ===== Underground working

**Fig 4B Heino & East Ridge Geological Mapping  
 Lithology Contacts & Underground Workings**

BCGS 082F.092, NTS 082F 13/E, Slocan Mining Division





# REPORT ON HELICOPTER LIDAR SURVEY

TILlicum PROJECT, BRITISH COLUMBIA,  
CANADA



PREPARED FOR:

**MGX MINERALS INC.**

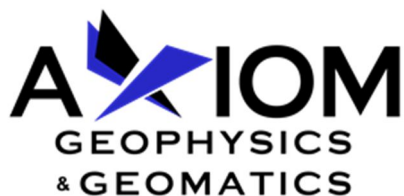
ATTENTION TO: Jared Lazerson

303 – 1040 HAMILTON ST.  
VANCOUVER, BC  
V6B 2R9 PO Box 3003,  
CANADA

PREPARED BY:

**AXIOM EXPLORATION GROUP LTD.**

SUITE 101 - 3239 FAITHFULL AVENUE  
SASKATOON, SK, CANADA



MAY 14, 2021

TANYA COETZEE, B.Sc. HONS  
PETER DUECK, P.GEO., MBA



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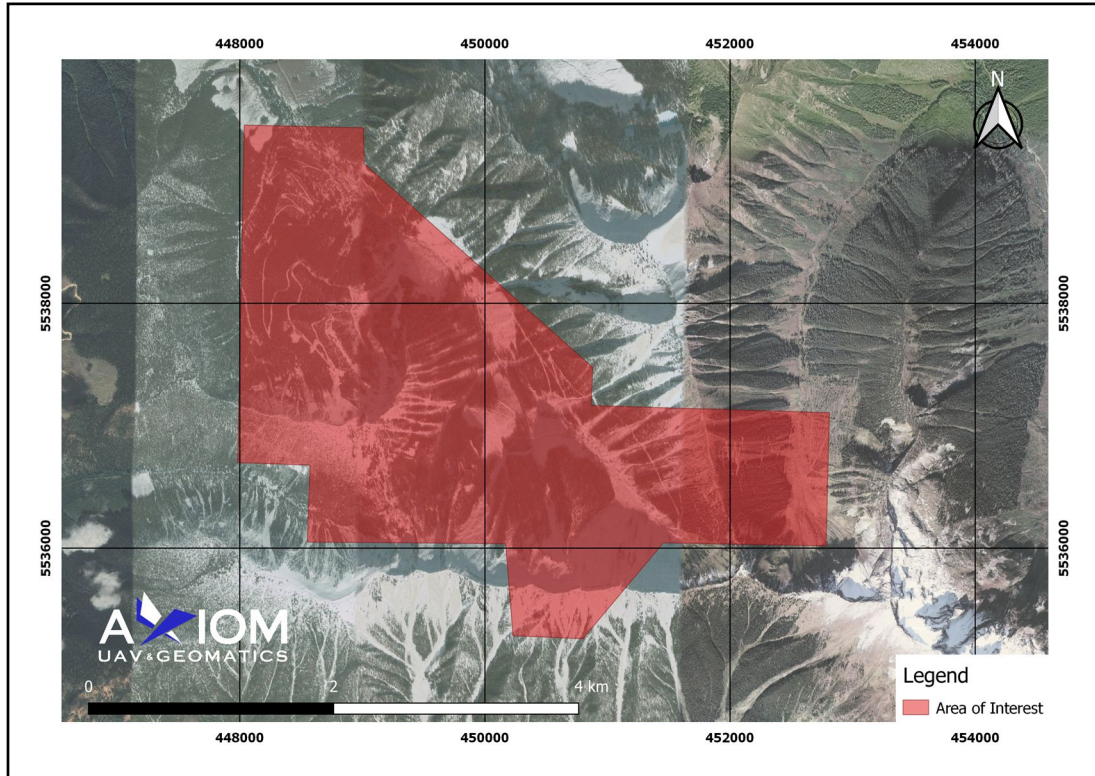
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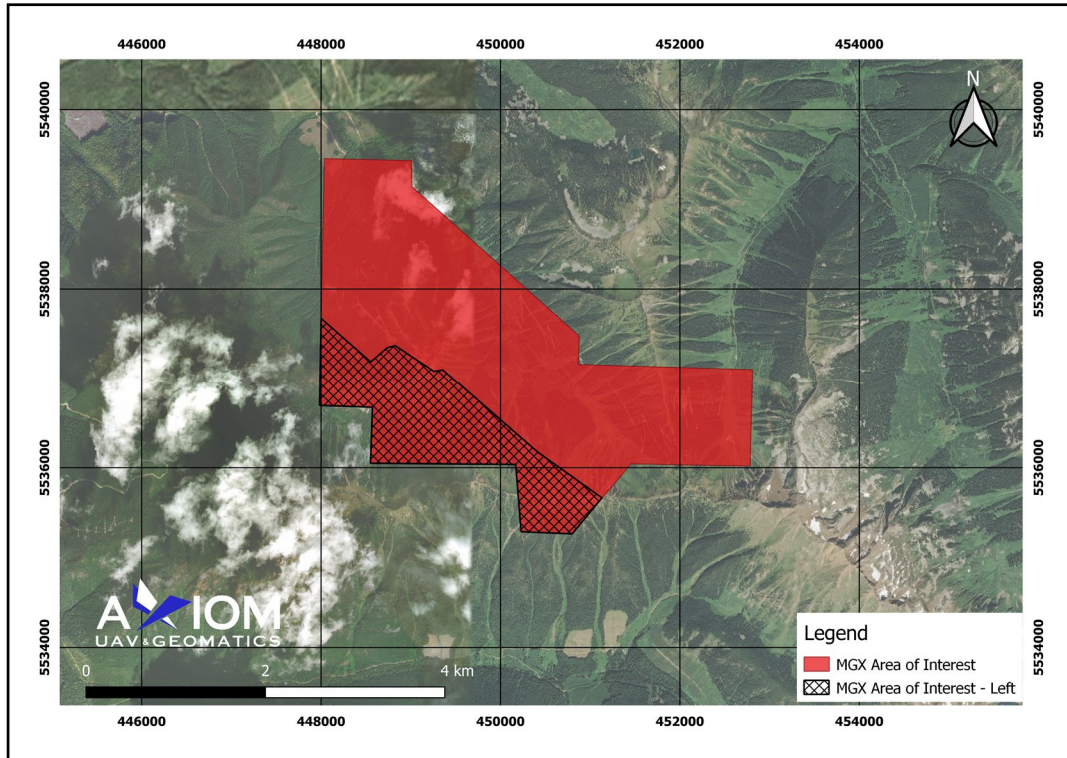
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## 1. PROJECT OVERVIEW

In September 2020, MGX Minerals. (the Client) engaged Axiom Exploration Group Ltd. ('Axiom'), based in Saskatoon, SK, to design, manage and execute a survey to collect airborne LiDAR data over the Tillicum Property, Burton, BC, Canada. The total area surveyed ('survey block') covers 11 km<sup>2</sup> (Figure 1).



**Figure 1: Areas of Interest**



**Figure 2: Areas of Interest Left**

## AREAS OF INTEREST

Due to colder weather condition the survey was not completed and a total of 7km<sup>2</sup> was completed (Figure 2). The remainder of the survey will be completed in the summer of 2021.

**Table 1: Deliverables, Formats, Units & Projections**

Deliverable:	File Format:	Projection:	h-Datum:	v-Datum:	Zone:
Non-Colourized Point Cloud	LAS	UTM	NAD 83 CSRS	CGVD2013	14N
Bare earth terrain model (DEM)	GeoTiff	UTM	NAD 83 CSRS	CGVD2013	14N

## 2. DATA ACQUISITION & CALIBRATION

Between October 16<sup>th</sup> and October 26<sup>th</sup>, 2020, Axiom completed an airborne LiDAR survey over the areas of interest shown in Figure 2.

The survey was flown using an A-Star Helicopter, provided by Access Helicopters, equipped with a Phoenix Ranger LR Long Range LiDAR system with high-accuracy GNSS and IMU units.



**Table 2: Survey Parameters**

Survey Area	7 km <sup>2</sup>
Flight Altitude Above Ground Level (AGL)	125 m
Flight Line Spacing	100 m
Average Flight Speed	22 m/s
Total Flight Time	5 hrs

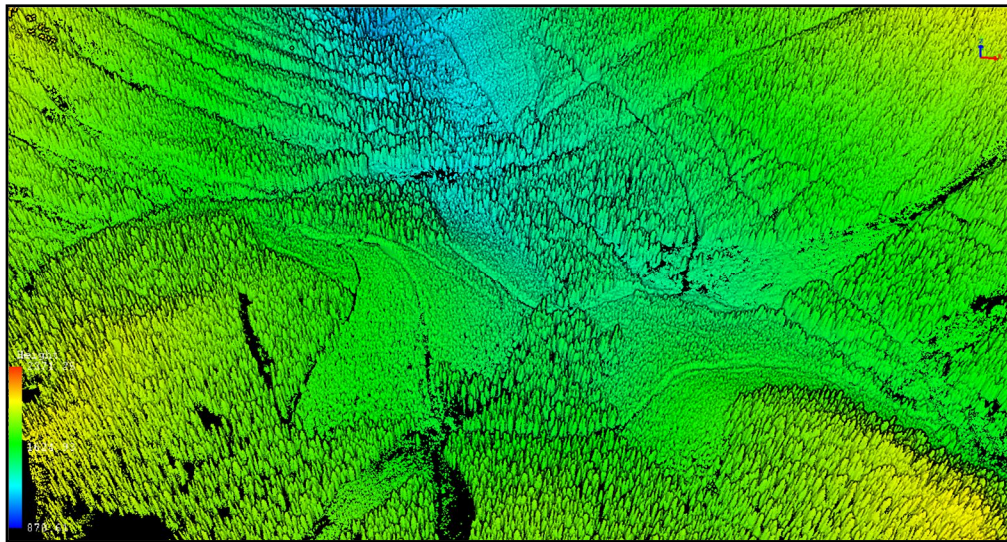
## **LIDAR CALIBRATION**

The LiDAR system is calibrated annually by the system manufacturer, Phoenix LiDAR Systems.

Calibrations Details: Date of Last Calibration: June 20, 2020

### 3. LiDAR DATA PROCESSING

The LiDAR data was collected using the Ranger-LRT was processed to produce a full-featured LiDAR point cloud and classified utilizing machine learning algorithms. By using the classified point cloud, the vegetation was stripped away to generate a bare earth topographic map, or Digital Elevation Model/Digital Terrain Model ('DEM/DTM'). The functionality of the high-resolution DEM/DTM has a broad range of applications including: drainage analysis, baselines, volumetric analysis, drill hole planning, collar elevation corrections for historical drill holes, accurate topography for 3-D modelling, and vegetation analysis.



**Figure 3: LiDAR Point Cloud - Coloured by Elevation**

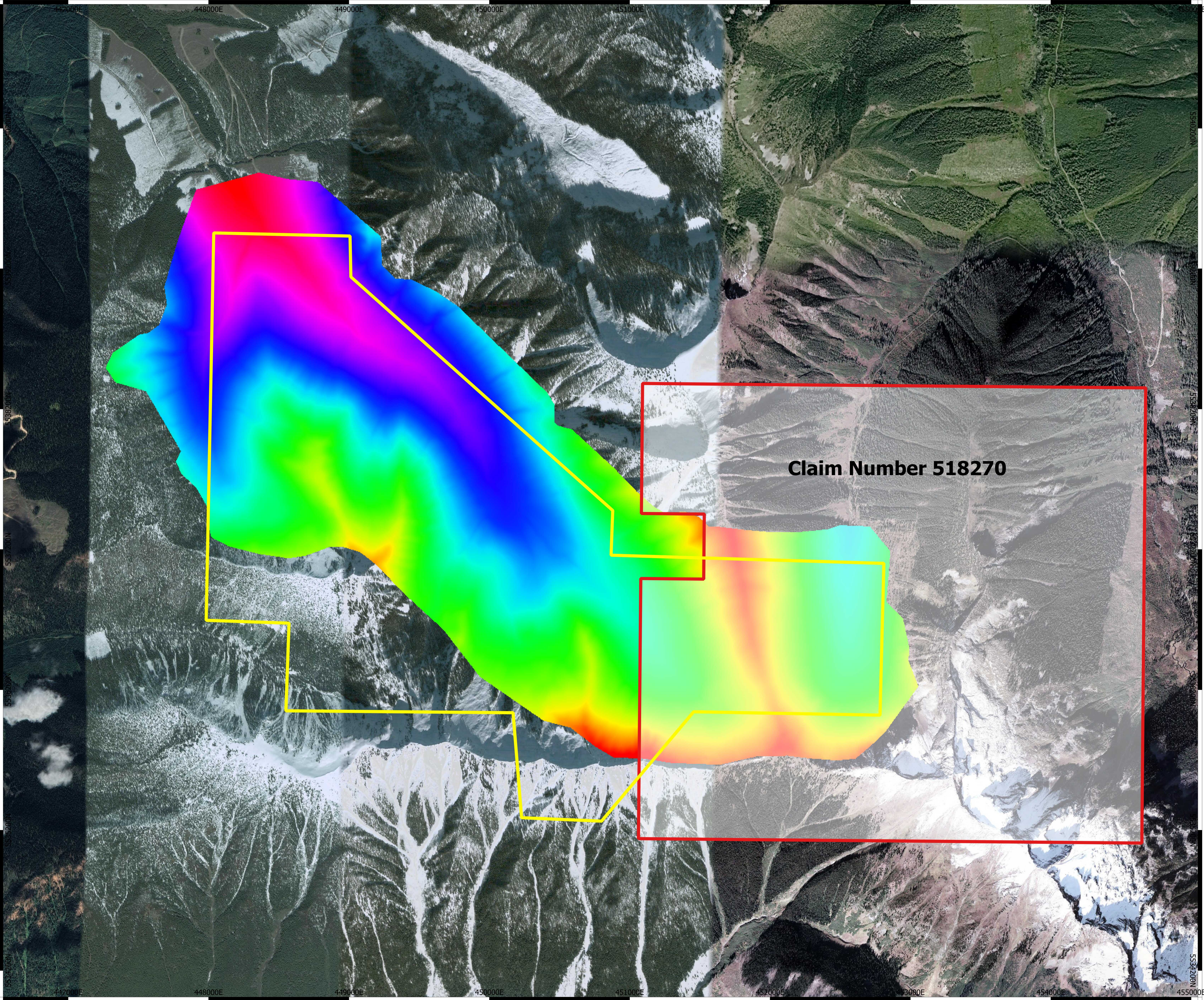
### 4. RESULTS





















All data has been delivered to the Client via online sharing. A summary of the accuracy of the final deliverables is shown in the table below:

**Table 3: Point Density, Coverage & Accuracy**

Survey Area	7 km <sup>2</sup>
LiDAR Point Density Average	77 points/m <sup>2</sup>
LiDAR Accuracy	55 mm RMSE
Survey Swath Width (LiDAR & Orthophoto)	50 m
LiDAR Scan Rate	820 kHz
Angular Range	45° to 315°





ELEVATON (m)													
	1249.45		1409.38		1569.32		1729.25		1889.19		2049.12		2209.06
	1302.76		1462.70		1622.63		1782.57		1942.50		2102.44		2262.37
	1356.07		1516.01		1675.94		1835.88		1995.81		2155.75		



Project Area



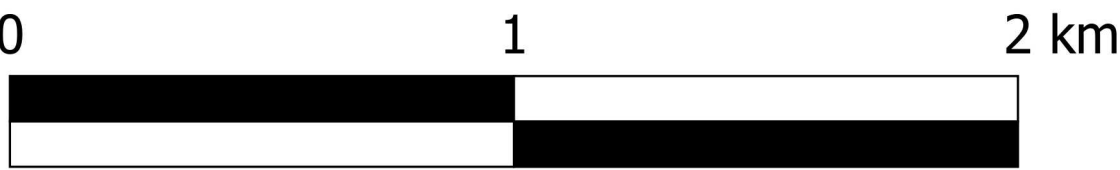
NOTES:

SURVEY  
-Date of Survey: October 16 to October 25, 2020  
-Projection: WGS84 UTM Zone 11N  
-Survey Type: Helicopter - A-Star  
-Survey Line Spacing: 100m  
-Survey Elevation : 125m  
- 5m Resolution DEM

LEGEND  
 Area of Interest  
 Claim 518270

INSTRUMENTS  
-System: Phoenix LiDAR - Reigl LR

MAPS  
- Topographic data was derived from CanVec from Natural Resources Canada (NRCAN)



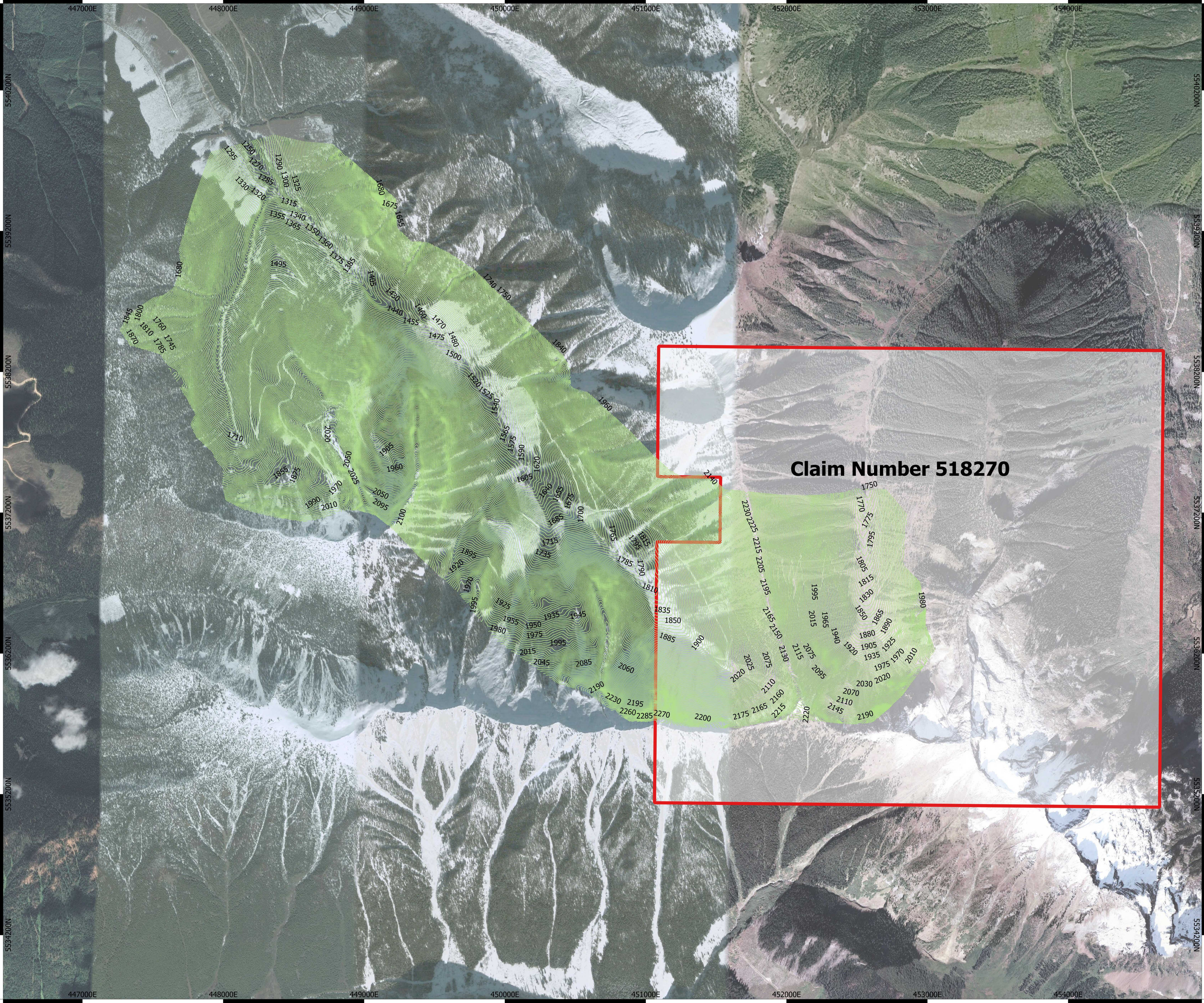
Scale 1 : 15,000

Helicopter LiDAR Survey  
Digital Elevation Model (DEM)

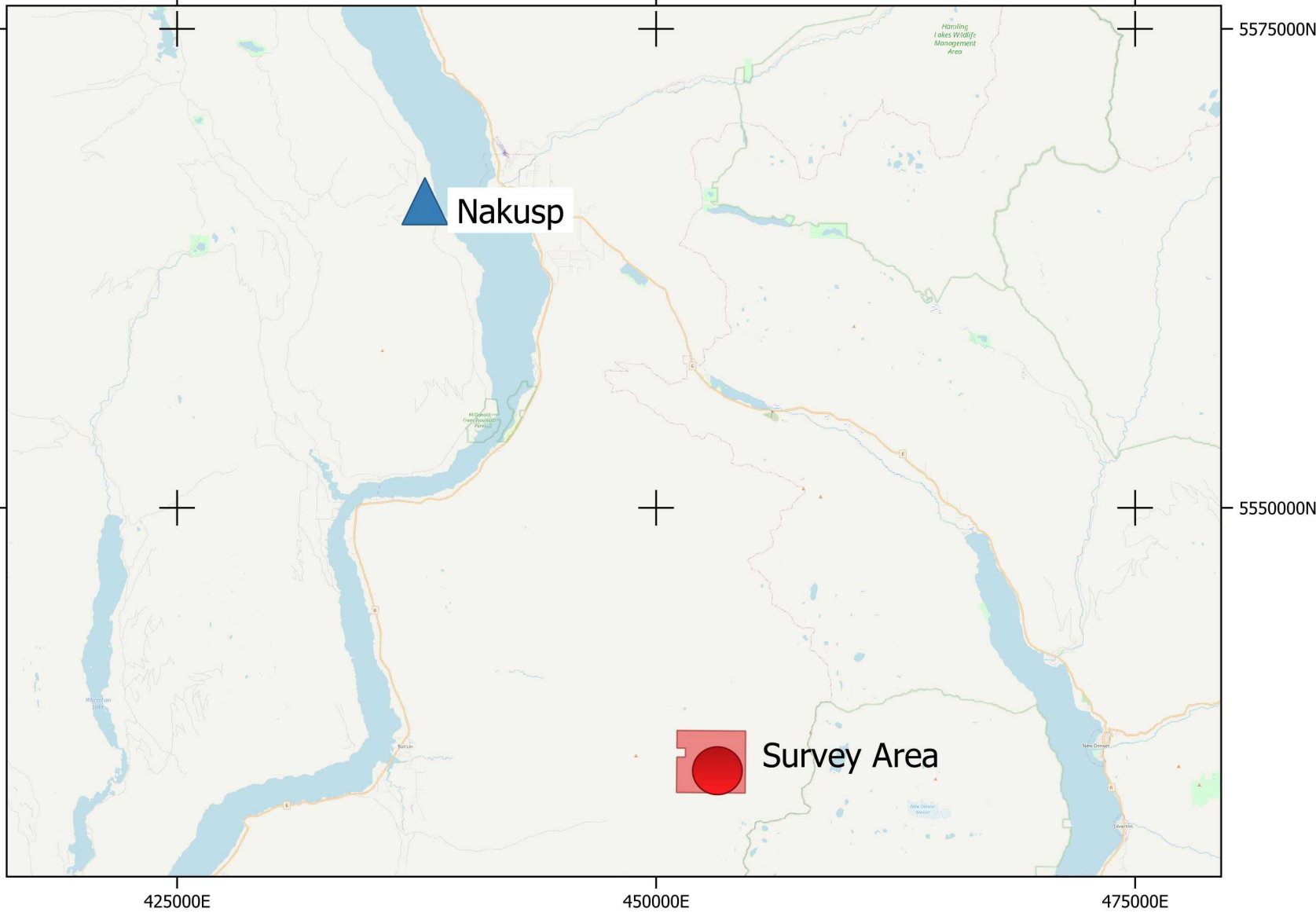
MGX Minerals  
Tillicum  
British Columbia, Canada

Flown and Processed by:  
Axiom Group  
Date: May 19, 2021  
Job Number: 20.5048.MGX





**Project Area**



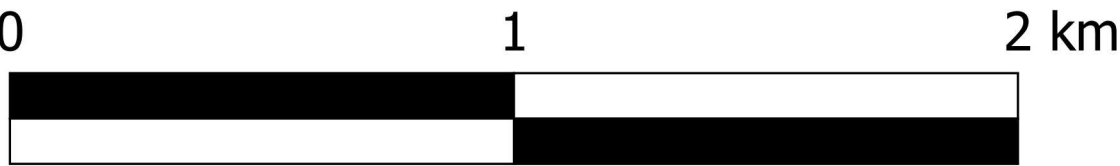
**NOTES:**

**SURVEY**  
-Date of Survey: October 16 to October 25, 2020  
-Projection: WGS84 UTM Zone 11N  
-Survey Type: Helicopter - A-Star  
-Survey Line Spacing: 100m  
-Survey Elevation : 125m  
- 5m Resolution DSM

- LEGEND**
- 5m Contours
  - Area of Interest
  - Claim 518270

**INSTRUMENTS**  
-System: Phoenix LiDAR - Reigl LR

**MAPS**  
- Topographic data was derived from CanVec from Natural Resources Canada (NRCAN)



**Scale 1 : 15,000**

**Helicopter LiDAR Survey  
Contours**

MGX Minerals  
Tillicum  
British Columbia, Canada

Flown and Processed by:  
Axiom Group  
Date: May 19, 2021  
Job Number: 20.5048.MGX