BC Geological Survey
Assessment Report
38263

Ministry of Energy and Mines
BC Geological Survey

Assessment Report
Title Page and Summary

TYPE OF REPORT [type of survey(s)]: Airborne Magnetic Geophysics

TOTAL COST: $25,736.44

AUTHOR(S): Arron M. Albano & Andrew J. Mitchell **SIGNATURE(S):** A. Mitchell

NOTICE OF WORK PERMIT NUMBER(S)/DATE(S):

YEAR OF WORK: 2018

STATEMENT OF WORK - CASH PAYMENTS EVENT NUMBER(S)/DATE(S): 5737043

PROPERTY NAME: Cariboo Valley

CLAIM NAME(S) (on which the work was done): 1061176, 1061178, 1061179, 1061546, 1061718

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

MINERAL INVENTORY MINFILE NUMBER(S), IF KNOWN:

MINING DIVISION: Cariboo **NTS/BCGS:** 093A/14,15

LATITUDE: 52 ° 46' 43.63" **LONGITUDE:** 121 ° 17 ' 38.78 " **(at centre of work)**

OWNER(S):

1) Davison, James Gregory 2)

MAILING ADDRESS:
PO BOX 604, 921 7th Street, Montrose, BC, Canada, V0G1P0

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

1) Hawkeye Gold and Diamond Inc. 2)

MAILING ADDRESS:
M 202-1985 Alberni Street, Vancouver, BC Canada, V6G0A2

PROPERTY GEOLOGY KEYWORDS (lithology, age, stratigraphy, structure, alteration, mineralization, size and attitude):
Auriferous quartz vein and replacement styles of mineralization, with lesser volcanogenic massive sulphide (VMS) mineral occurrences.

Cariboo Valley property is entirely underlain by the Snowshoe Group rocks.

REFERENCES TO PREVIOUS ASSESSMENT WORK AND ASSESSMENT REPORT NUMBERS:
21930, 24989, 25437, 25904, 36449

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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			
Photo interpretation			
GEOPHYSICAL (line-kilometres)			
Ground			
Magnetic			
Electromagnetic			
Induced Polarization			
Radiometric			
Seismic			
Other			
Airborne	Helicopter-Borne Aeromagnetic - 138 Line Km		$25,736.44
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:	$25,736.44

ASSESSMENT REPORT

on

AIRBORNE MAGNETIC SURVEYING

at the

Cariboo Valley Property

Central British Columbia

Cariboo Mining Division

(N.T.S. 093A/14, 15)

Latitude 52°46'43.63"N, Longitude 121°17'38.78"W

UTM, Zone 10, Northing 5,849,027, Easting 615,063

Prepared for

Hawkeye Gold and Diamond Inc.

by

Arron M. Albano, B.Sc., GIT,

Andrew J. Mitchell, B.Sc., P. Geo

of

C.J. Greig & Associates Ltd.

Penticton, British Columbia

Date: May 14, 2019

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1.0 Summary and Introduction

The Cariboo Valley property is located in central British Columbia within the Cariboo Mining Division. The mineral tenures are approximately 22 km northeast of Likely, 33 km southeast of Barkerville and 81 km southeast of Quesnel (Figures 1, 2 and 6).

The Cariboo Valley property is entirely underlain by Neoproterozoic to Paleozoic Snowshoe Group metamorphic rocks of the Barkerville Subterrane which are host to gold-rich quartz veins and replacement style deposits.

The 2018 magnetic survey has outlined a number of areas of focus for ground-based exploration. The first phase of work should consist of prospecting, and stream sediment and grid-based soil geochemical sampling. Phase two, if warranted, should comprise additional geochemical and ground-based IP (Induced Polarization) geophysical surveys, with the goal of outlining potential vein and replacement style mineralization.

2.0 Location, Access, Physiography, Climate and Vegetation

The Cariboo Valley property is located in central British Columbia within the Cariboo Mining Division. The properties are located directly southeast of Cariboo Lake and is centered on 52°46'43.63"N latitude and 121°17'38.78"W longitude (Figures 2 and 3).

The Cariboo Valley property is situated within the central part of the Cariboo Mountains, an area that comprises steep and rugged terrane. Elevations over the Cariboo Valley property area range from 800 m near Cariboo River to over 1900 m west of Mount Borland.

The project area is occupied by mature stands of spruce, pine, fir, hemlock and cedar with an understory of thick alder. Extensive timber harvesting has been ongoing on and in the vicinity of the Cariboo Valley property.

The area has a humid continental climate, with mild summers and cold winters. Summer temperatures range from about 15 degrees to a high of 20 degrees Celsius and winter temperatures range from about -3 degrees to as low as -10 degrees Celsius. Average precipitation for the area is approximately 700 mm with about 200 cm of snowfall during the winter months.

The Cariboo Valley property is most easily accessed by four wheel drive vehicle on a network of logging roads from the town of Likely (Figure 2). Crews have not attempted to access the properties, and it may require an all terrain vehicle to access it if logging roads are deactivated. Higher elevations are more easily accessed by helicopter.

In 2018, the geophysical survey was completed using an Aerospatiale A-Star 350 B2 helicopter, operated by Yellowhead Helicopters Ltd, stationed in the town of Likely, BC.

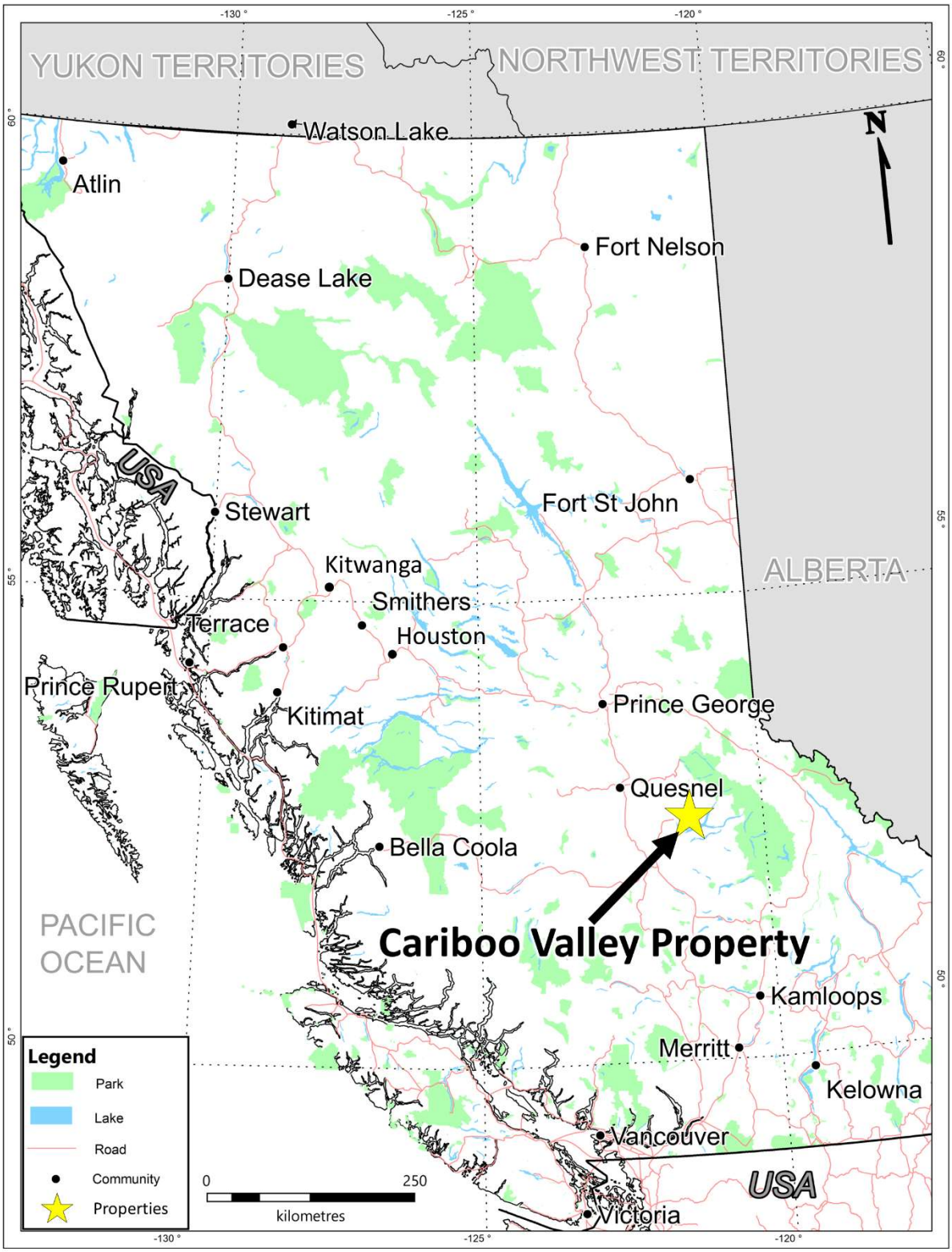


Figure 1. British Columbia, Cariboo Valley property location map

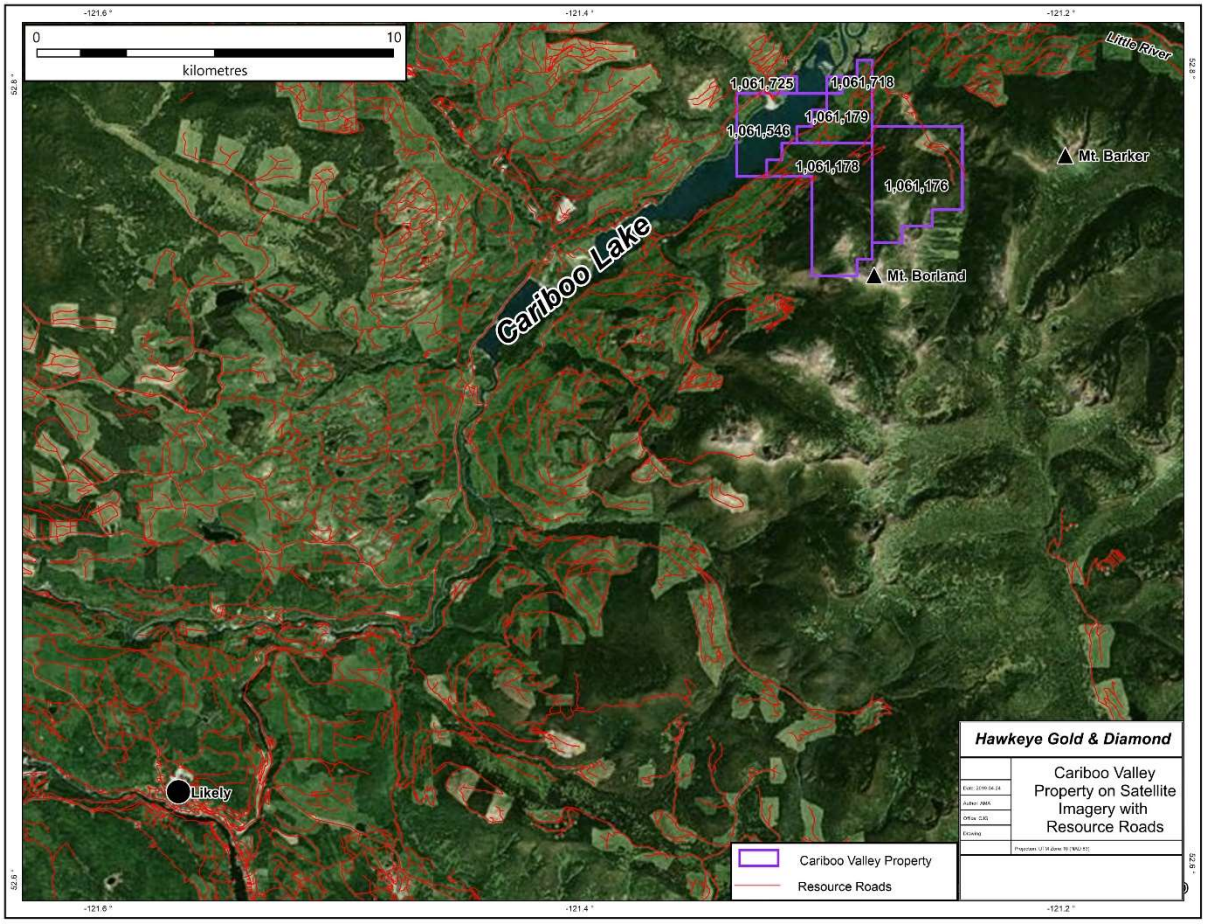


Figure 2. Cariboo Valley property, mineral tenure location map with resource roads

3.0 Claim Location and Description

The Cariboo Valley property consist of 6 mineral tenures covering a total area of 2,131.68 hectares (ha). The mineral tenures were optioned by Hawkeye from the vendor in 2017. Specifics concerning the mineral tenures are tabulated on Table 1, while the locations of individual tenures are shown on Figure 3.

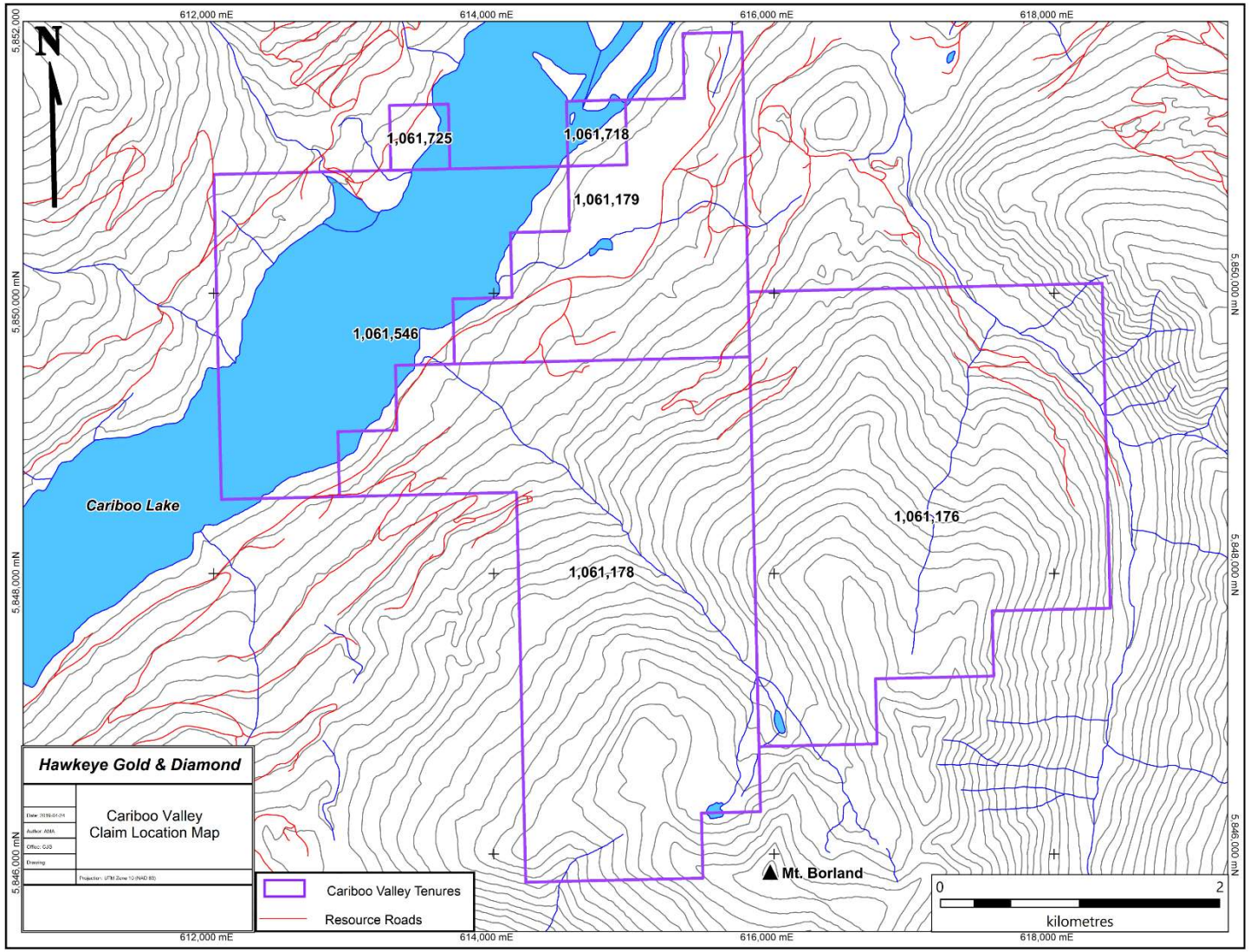


Figure 3. Cariboo Valley property claim location map with resource roads

Table 1. List of mineral tenures

Claim Name	Tenure Number	Issue Date	Good to Date	Area (ha)
SURRUCA90	1061176	2018-06-14	2021-04-01	704.096
SURRUCA91	1061178	2018-06-14	2021-04-01	704.1841
SURRUCA92	1061179	2018-06-14	2021-04-01	293.2601
SURRUCA94	1061546	2018-07-04	2021-04-01	391.0499
SURRUCA102	1061718	2018-07-10	2021-04-01	19.5475
SURRUCA107	1061725	2018-07-10	2021-04-01	19.5473

4.0 History

The Cariboo Valley property is located along trend of the of the Cariboo Gold Belt, host to the world-class Barkerville gold camp with a rich history of mining dating from the Cariboo gold rush in the 1860's. Recorded gold production from the Cariboo Gold Belt totals more than 4.5 million ounces from alluvial and lode deposits (www.barkervillegold.com/wp-content/uploads/2018/09/CorporateUpdateSeptember11_2018-1.pdf).

In the 1980s, the BC Geological Survey collected over 4000 stream sediment samples to cover NTS map sheets 93A, 93B, G and N and parts of NTS map sheet 93H. The pulps of these samples were reanalysed by Geoscience BC in 2008 by inductively-coupled plasma mass spectrometry (ICP-MS).

In 1991, Formosa Resources collected 5 rock, 56 silt and 21 soil samples along with 2500 hectares (ha) of geological mapping at a scale of 1:10,000 and 388 line km of airborne electromagnetic and magnetic surveys (McClintock, 1991).

In 1997, Barker Minerals collected 2 rock samples from the north part of the Cariboo Valley property (Samples: 9701 and 9701A). Unfortunately, neither sample returned anomalous values for base or precious metals (Payne, 1998).

5.0 Regional and Property Geology

The Cariboo Valley property is situated within the Barkerville Subterrane, a subset of the Kootenay Terrane, with which it shares many similarities (Struik, 1986 and 1988 – Figure 4). The Barkerville Subterrane consists of a late Proterozoic and/or Paleozoic sequence of continental shelf and slope deposits developed adjacent to the craton of Ancestral North America, and includes clastic sedimentary rocks along with lesser amounts of volcanic rocks and carbonates. Rocks of the Cariboo Valley property area have been metamorphosed from upper greenschist to lower amphibolite facies (Ferri and O'Brien, 2001).

Rocks of the Barkerville Subterrane were subjected to an early period of ductile deformation that resulted in a westward directed, asymmetrical folds that plunge shallowly to the northwest. Post metamorphic

open folds with upright cleavage are superimposed on earlier structures. During Late Cretaceous to Early Tertiary time, the terrane was disrupted by northwest trending dextral strike-slip faults (Struik, 1988). Northwest- and north-trending faults, with an important normal component and generally apparent right lateral displacements, record extension, probably associated with transcurrent movement. The north-striking cross faults are an important control for the gold-bearing vein systems within the Cariboo Gold Belt.

West of the property lies the Quesnel Terrane, which comprises an early Mesozoic island arc assemblage consisting of basaltic, andesitic, pyroclastic, volcaniclastic and greywacke rocks. The Quesnel Terrane has been thrust west to east onto the Barkerville Subterrane , along the Eureka Thrust Fault. To the east, the Cassiar Terrane, a late Proterozoic to Paleozoic sequence of continental shelf clastic and carbonate rocks have been thrust from east to west onto the Barkerville Subterrane along the Pleasant Valley Thrust Fault.

The Cariboo Valley property entirely underlain by Snowshoe Group rocks comprising the Harvey, Downey, and Goose Peak Successions (Figure 5). The Downey Succession south of the Cariboo River is locally coarser grained and contains sections of coarse feldspathic sandstone to granule conglomerate (Ferri and O'Brien, 2001). The Harveys Ridge Succession is characterized by black clastics and minor dark grey to black carbonaceous phyllite to siltstone. The Goose Peak Succession is characterized by thick to massive bedded, grey, poorly sorted coarse-grained feldspathic impure quartzite to granule conglomerate (Ferri and O'Brien, 2001).

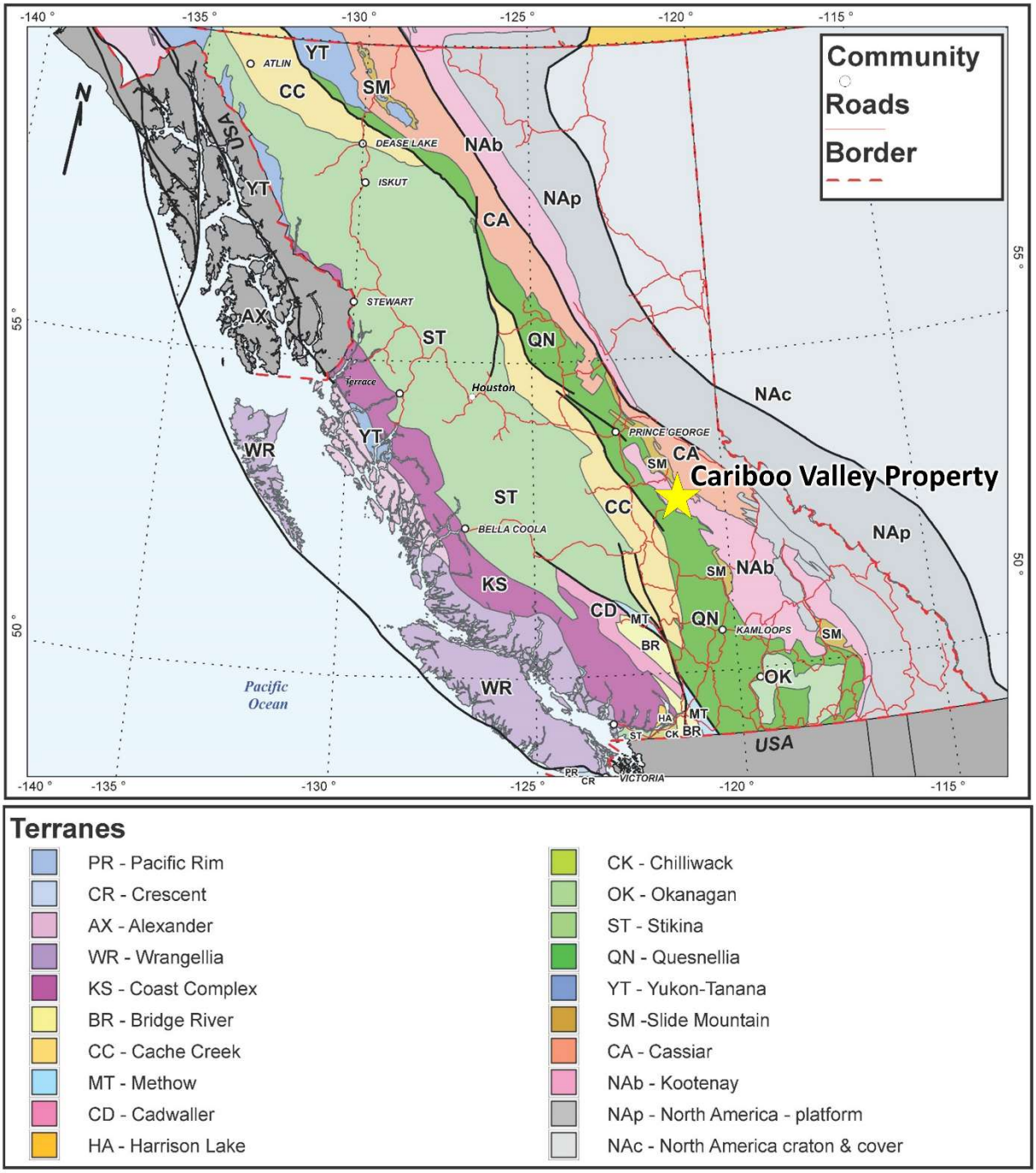


Figure 4. Cordilleran Terrane map with Cariboo Valley property location after Colpron et al., 2007

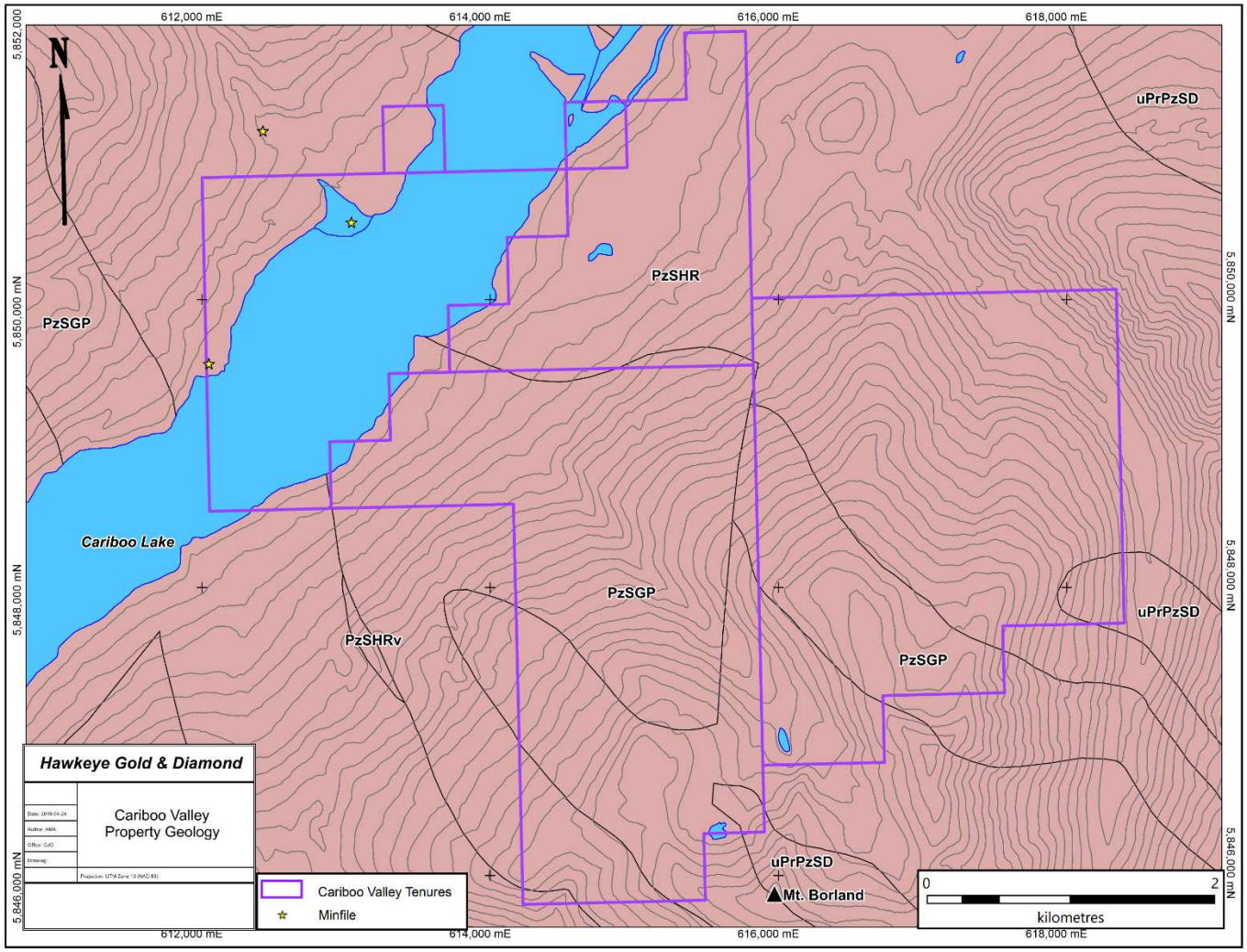
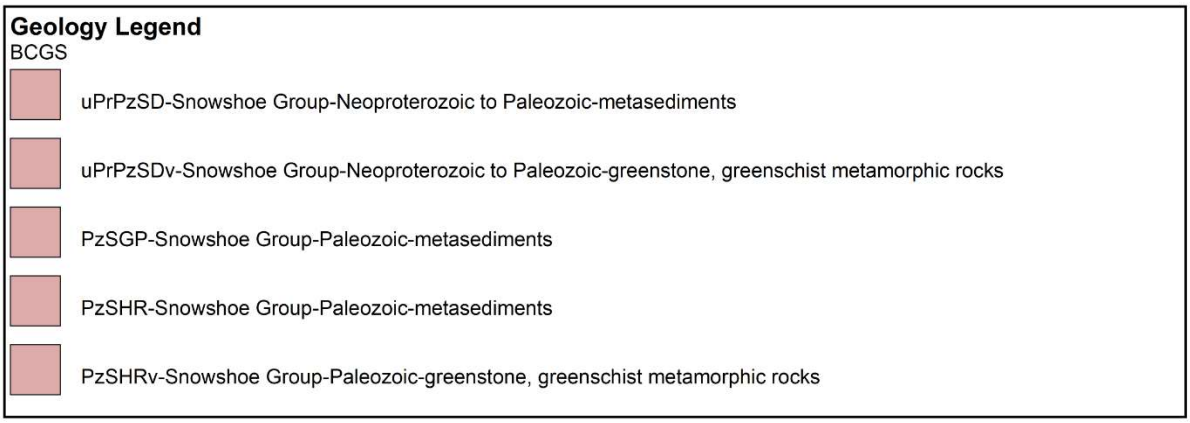


Figure 5. Cariboo Valley property area geology map after the BC Geological Survey with Minfiles (key below)



6.0 Mineralization

Hawkeye's Cariboo Valley property area is situated within the Cariboo Gold Belt, an area that has produced over 4.5 million ounces of gold from alluvial and lode deposits. Barkerville Gold Mines published a resource of 1.60 million ounces of gold in the measured and indicated categories (8.1 million tonnes grading 6.1 g/t Au) and 2.16 million ounces of gold in the inferred category (12.7 million tonnes grading 5.2 g/t Au) from their Cariboo Gold projects, which are located approximately 37 km to the northwest of the Cariboo Valley property (www.barkervillegold.com/wp-content/uploads/2018/09/CorporateUpdate September11_2018-1.pdf).

The Cariboo Valley property area is known to host auriferous quartz vein and replacement styles of mineralization, with lesser volcanogenic massive sulphide (VMS) mineral occurrences. Brief descriptions summarizing the different types of mineralization in the area (primarily the Cariboo Gold Belt and associated deposits) are as follows:

Gold-Bearing Quartz Veins

Four types of quartz veins have been recognized in the Cariboo Gold Belt (Johnston and Uglow, 1926; Hanson, 1935; Richards, 1948; Sutherland Brown, 1957; Robert and Taylor, 1989; Hall, 1999a). The quartz veins and their orientations are summarized below:

1) **Transverse (orthogonal) veins:** Typically strike northeast at 30-40° with sub-vertical to steep southeast dips. The Transverse veins are the most abundant type in the region and are generally small quartz extension veins with strike lengths of 0.5-5 m. Larger transverse veins are present within ore zones at the former Cariboo Gold Quartz mine (Minfile: 093H 019), and other locations in the district. At the Cariboo Gold Quartz mine the Transverse veins contained 60-70 % of the gold ore.

2) **Diagonal (oblique) veins:** Typically strike 70-90°, with vertical or north dipping in orientation at the Cariboo Gold Quartz mine, and steep south dipping at the Island Mountain mine. Veins of this type are sinistral shear veins that generally have longer strike lengths than transverse veins. These

veins are few in number but larger than the transverse veins and were the only veins mineable at the Island Mountain mine (Minfile: 093H 006).

3) **Strike veins:** The earliest vein set and strikes parallel to northwest trending bedding, parallel/subparallel to S2 foliation, and dip 45-70° to the northeast, generally more steeply than bedding. Although not abundant, these are the most prominent veins with the longest strike lengths in the district, forming resistant outcrops which were the focus of early lode gold prospecting and mining in the area. Veins of this type, including the BC Vein (093H 139), are generally erratically gold-bearing and only limited production has been obtained from them.

Pyrite Replacement

Two types of pyrite replacement ore exist within the Cariboo Gold Belt. One type of replacement mineralization occurs within limestones, and the other type within clastic rocks.

1) **Pyrite Replacement in Limestone**: Ores of this type were historically mined from Mosquito Creek and Island Mountain Gold mines and occur within limestones. The ore bodies occur in the form of pipes or pencil-like ore shoots which plunge 45° to the northwest at an angle of 22°. Ore comprises fine-grained massive pyrite.

2) **Pyrite Replacement in Clastic Rocks:** Mineralization comprising auriferous fine-grained massive pyrite within clastic sedimentary rocks located at the Bonanza Ledge deposit (093H 140).

VMS Style Mineralization

Ace Showing (Minfile: 093A 142): The Ace showing is located approximately 7 km northeast of the Cariboo Valley property (Figure 6). The Ace showing was discovered in 1994 by Louis Doyle, who discovered mineralized boulders by following up flakes of gold found in a culvert along the "F" spur, a branch of Weldwood's "8400" logging road in 1993 (Assessment Report No. 24989A). The Ace showing possibly represents a sheared, Besshi-style system with meta-sediments and volcanics of the Downey succession (Höy and Ferri, 1998a; Payne, 1999 – Assessment Report: 25904). Also, at the Ace showing, are boulders containing gold-rich quartz-sulphide veins. Grab samples of massive sulphide boulders from the Ace showing have returned up to 9.9% Zn and 7.7% Pb, while grab samples from the quartz-sulphide veins have returned up to 29 g/t Au.

Frank Creek Showing (Minfile: 093A 152): The Frank Creek showing is located approximately 3 km west-southwest of the Cariboo Valley property (Figure 6). The Frank Creek showing likely represents Besshi or SEDEX-style mineralization. Significant assay results include up to 21.2% Cu, 0.73% Pb, 8.44% Zn and 165 g/t Ag within disseminations, blebs, stringers and semi-massive to massive sulphide lenses in a heavily altered sedimentary host rock. In 2011, Barker Minerals drilled 22.45 m grading 3.8 g/t Au in diamond drill hole FC11-03. In 2016 a rock sample (Sample 286) contained 501.2 g/t Au, while another sample (Sample 289) assayed 14.63 g/t Au, 0.025 % Cu and 0.058 % Zn (Assessment Report: 36449).

7.0 Geophysics

7.1 Regional Airborne Magnetics

In 2016, Barkerville Gold Mines identified a 60 km long gold-bearing structural trend (Cariboo Break) from a high resolution airborne magnetic survey (Barkerville Gold Mines Press Release, Dated October 4, 2016 - Figure 6). The Cariboo Break is interpreted as a major deep-seated shear zone which appears to have acted as a fluid pathway to focus gold mineralization along its length. It is characterized as a linear magnetic low coincident with auriferous soil samples that can be traced for more than 60 km. The Cariboo Valley property is situated approximately 6 km along strike of the Cariboo Break.

7.2 2018 Airborne Magnetic Survey

In 2018, an airborne magnetic survey was flown over the Cariboo Valley property. Hawkeye contracted GEOTECH to fly a total of 138 line-km along east-west oriented lines spaced at 100 m apart. The detailed report is located in Appendix C of this report.

7.3 Interpretations of 2018 Airborne Magnetic Survey

The survey identified two features of interest on the Cariboo Valley property (Anomaly A and B - Figure 7). Anomaly A is characterized by a northwest to southeast-trending magnetic low that is fringed by weak to moderate magnetic highs, which may represent a fault zone (Figure 7). Anomaly B is characterized by an unexplained northeast to southwest-trending string of moderate magnetic highs (Figure 7).

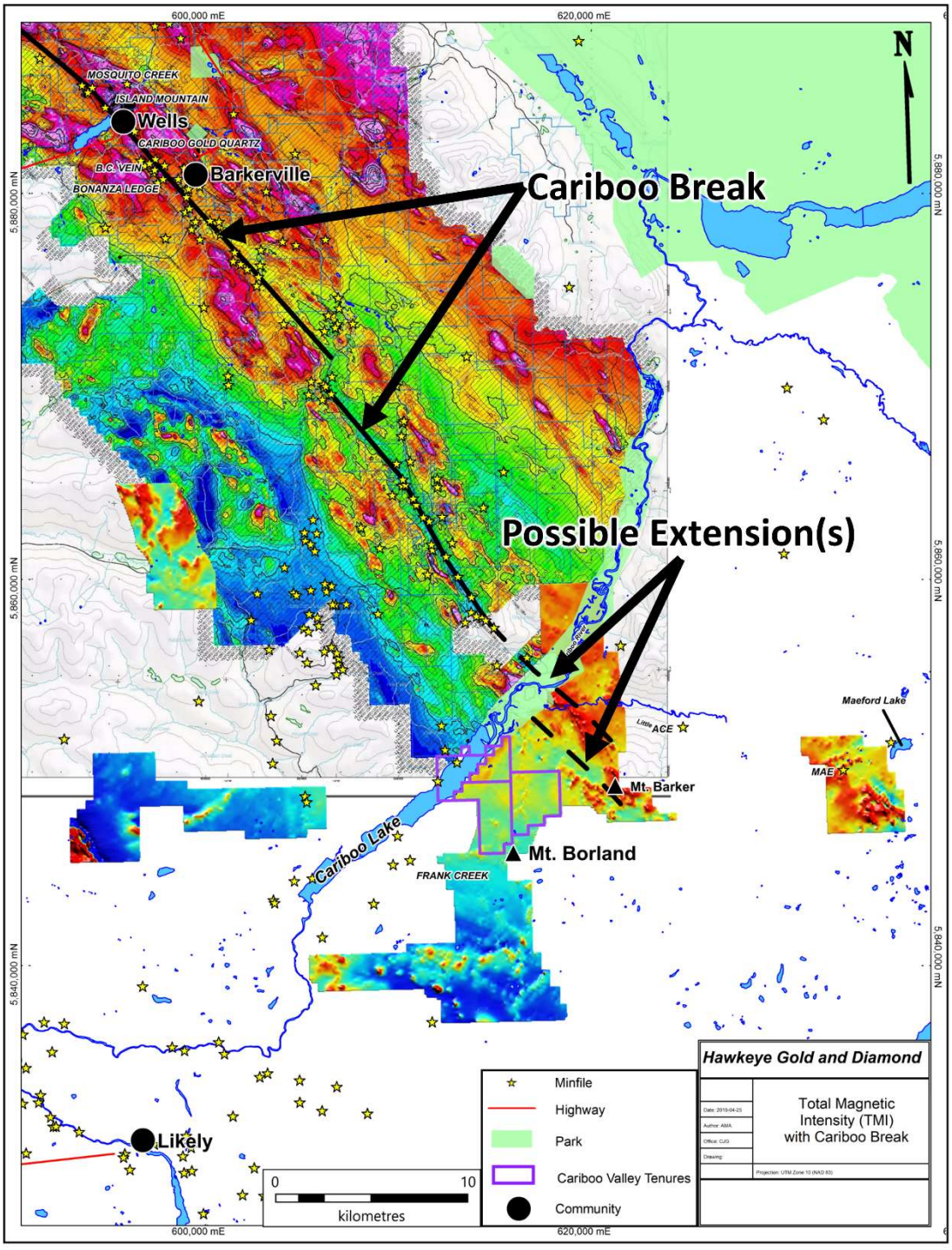


Figure 6. Cariboo Break identified by Barkerville Gold Mines from regional soil geochemistry and airborne magnetic surveys and regional mineral occurrences (http://barkervillegold.com/wp content/uploads/2017/06/j.pdf)

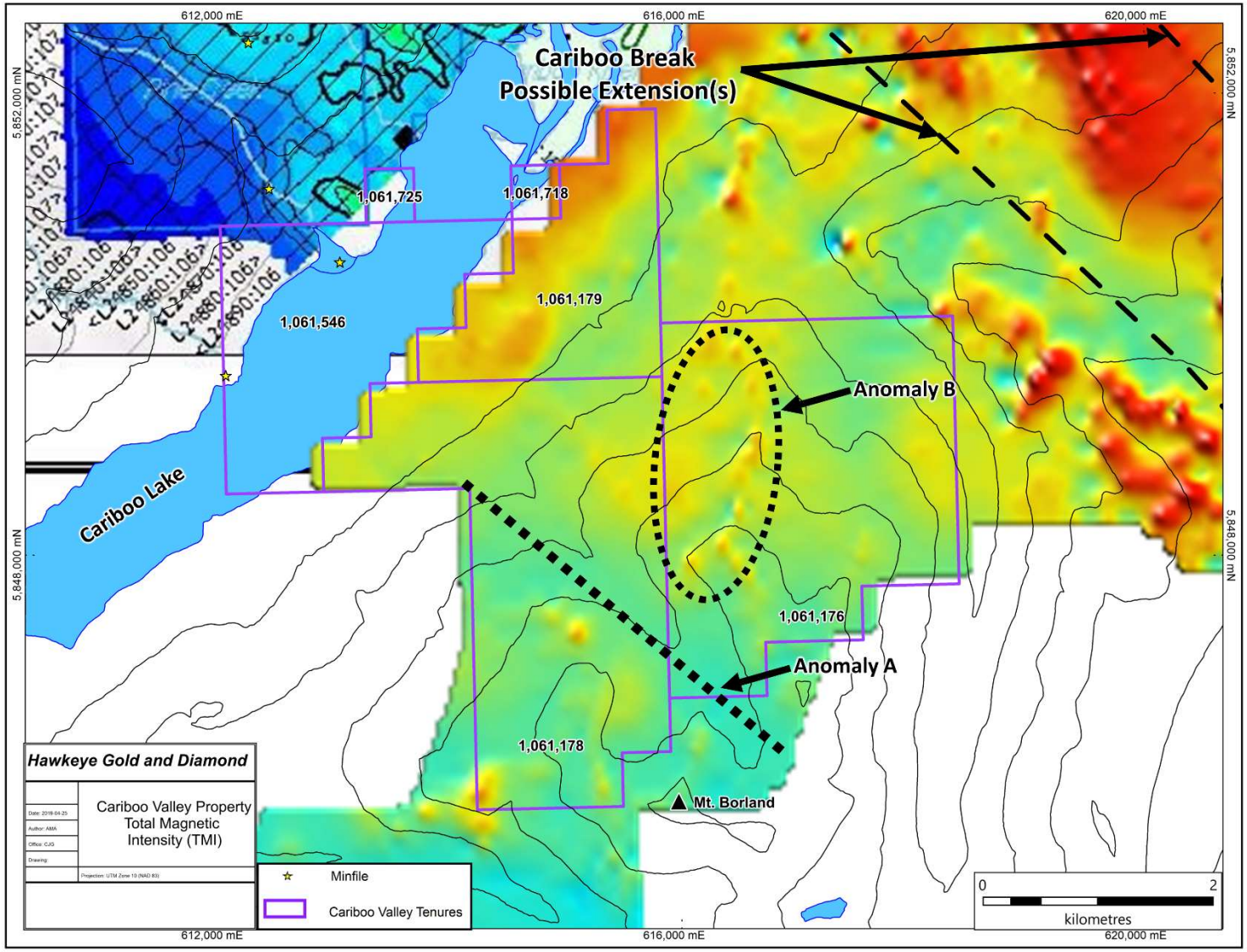


Figure 7. Airborne Total Magnetic Intensity survey data over the Cariboo Valley property with interpreted geophysical anomalies

8.0 Conclusions

The Cariboo Valley property area is situated south of the of the Cariboo Gold Belt, an area that has produced over 4.5 million ounces of gold from alluvial and lode deposits. The region has a strong history of mining dating back to the 1860's during the Cariboo gold rush. Barkerville Gold Mines is currently conducting definition drilling at Cariboo Gold projects, located about 38 km to the northwest.

The detailed magnetic survey has outlined several areas of interest for ground-based exploration on the Cariboo Valley property. The first phase of work should include soil geochemical sampling over geophysical anomalies. If results are favourable from the phase one program, detailed geological mapping and ground-based IP surveys should be implemented, and if areas of coincident geophysical and geochemical anomalies are outlined, they should be tested by diamond drilling.

9.0 References

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* All Assessment Reports are available on-line at http://aris.empr.gov.bc.ca/

* BC Ministry of Energy, Mines and Petroleum Resources Exploration Assistant available online at http://webmap.em.gov.bc.ca/mapplace/minpot/ex_assist.cfm

* Minfile descriptions are available on-line at http://minfile.gov.bc.ca/searchbasic.aspx

* All BC GSB publications are available on-line at

http://www.empr.gov.bc.ca/MINING/GEOSCIENCE/PUBLICATIONSCATALOGUE/Pages/default.aspx

Appendix A: Statements of Qualifications

I, Arron M. Albano, of 950 Tillar Road, Naramata, British Columbia, Canada, hereby certify that:

1. I am a graduate of the University of British Columbia with a B.Sc. (Geological Sciences, 2017) and have practiced my profession continuously from 2014 to present.

2. I have been employed in the geoscience industry for 5 years and have explored for gold and base metals in British Columbia, Canada, for junior exploration companies as well as one mid-tier mining company.

3. I am a Geoscientist in Training from the Association of Professional Engineers and Geoscientists of British Columbia (license #202310).

4. I am not aware of any material fact or material change with respect to the subject matter of the technical report that is not reflected in the technical report, the omission to disclose which makes the technical report misleading.

5. I have no direct or indirect interest in the property described herein, nor do I expect to receive any.

6. I am an author of the report entitled; "Airborne Magnetic Surveying at the Cariboo Valley Property" dated May 14, 2019.

Dated at Penticton, British Columbia, this 14th day of May, 2019

"*A M Albano*"

Arron M. Albano, B.Sc., G.I.T.

I, Andrew Mitchell of 1090 Lacombe Road, Kelowna, British Columbia, Canada, hereby certify that:

1) I graduated from the University of British Columbia in 2010 with a B.Sc. in Earth and Environmental Sciences

2) From 2010 to present, I have been actively engaged in mineral exploration in Yukon Territory and British Columbia.

3) I am a member in good standing of the Association of Professional Engineers and Geoscientists of British Columbia (license #46211)

4) I have interpreted all data resulting from this work.

5) I am a co-author of the report entitled: "Airborne Magnetic Surveying at the Cariboo Valley Property," dated May 14, 2019.

Dated at Penticton, British Columbia, this 14th day of May, 2019.

Respectfully submitted,

"*Andrew James Mitchell*"

Andrew J. Mitchell, B.Sc., P.Geo.

Appendix B: Statement of Costs

Cariboo Valley Property Statement of Work		
	line-kilometers	**Subtotal**
Airborne Magnetic Survey	138	$24,736.44
Report writing	1.538 days @ $650/day	$ 1,000.00
	Total	$25,736.44

Appendix C: Heliborne High Resolution Aeromagnetic Survey

HELISTINGER

REPORT ON A HELICOPTER-BORNE AEROMAGNETIC GEOPHYSICAL SURVEY

PROJECT:	CARIBOO VALLEY
LOCATION:	LIKELY, BRITISH COLUMBIA
FOR:	HAWKEYE GOLD & DIAMONDS INC.
SURVEY FLOWN:	NOVEMBER – DECEMBER 2018
PROJECT:	GL180345

Geotech Ltd.
245 Industrial Parkway North
Aurora, ON Canada L4G 4C4

Tel: +1 905 841 5004
Web: www.geotech.ca
Email: info@geotech.ca

GEOTECH
AIRBORNE GEOPHYSICAL SURVEYS

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EXECUTIVE SUMMARY

CARIBOO VALLEY BLOCK
LIKELY, BRITISH COLUMBIA

From November 16th to December 7th, 2018 Geotech Ltd. carried out a helicopter-borne geophysical survey over the Cariboo Valley Block situated near Likely, British Columbia.

The principal geophysical sensor was a caesium magnetometer. Ancillary equipment included a GPS navigation system, radar altimeter and laser altimeter. A total of 140 line-kilometres of geophysical data were acquired during the survey.

In-field data quality assurance and preliminary processing were carried out on a daily basis during the acquisition phase. Preliminary and final data processing, including generation of final digital data and map products were undertaken from the office of Geotech Ltd. in Aurora, Ontario.

The processed survey results are presented as the following maps:

- Total Magnetic Intensity (TMI),
- Calculated Vertical Gradient (CVG)
- Digital Terrain Model (DEM)

The survey report describes the procedures for data acquisition, description o equipment processing, final image presentation and the specifications for the digital data set.

1. INTRODUCTION

1.1 GENERAL CONSIDERATIONS

Geotech Ltd. performed a helicopter-borne geophysical survey over the Cariboo Valley Block situated near Likely, British Columbia (Figure 1 & Figure 2).

Greg Neeld represented Hawkeye Gold & Diamonds Inc. during the data acquisition and data processing phases of this project.

The geophysical survey consisted of helicopter-borne aeromagnetics using a caesium magnetometer system. A total of 140 line-km of geophysical data were acquired during the survey.

The crew was based out of Likely, within the project area, for the acquisition phase of the survey. Survey flying started on November 16th, 2018 and was completed on December 7th, 2018.

Data quality control and quality assurance, and preliminary data processing were carried out on a daily basis during the acquisition phase of the project. Final data processing followed immediately after the end of the survey. Final reporting, data presentation and archiving were completed from the Aurora office of Geotech Ltd. in January, 2017.

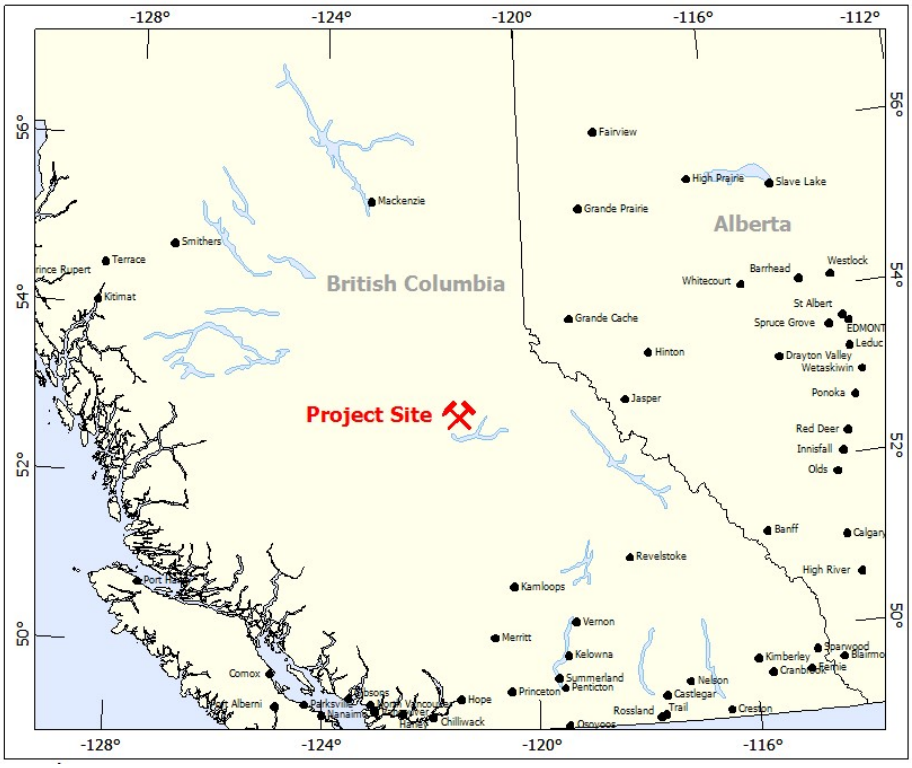

Figure 1: Survey location.

1.2 SURVEY AND SYSTEM SPECIFICATIONS

The survey area was located approximately 22 kilometres northeast of Likely, British Columbia (Figure 2).

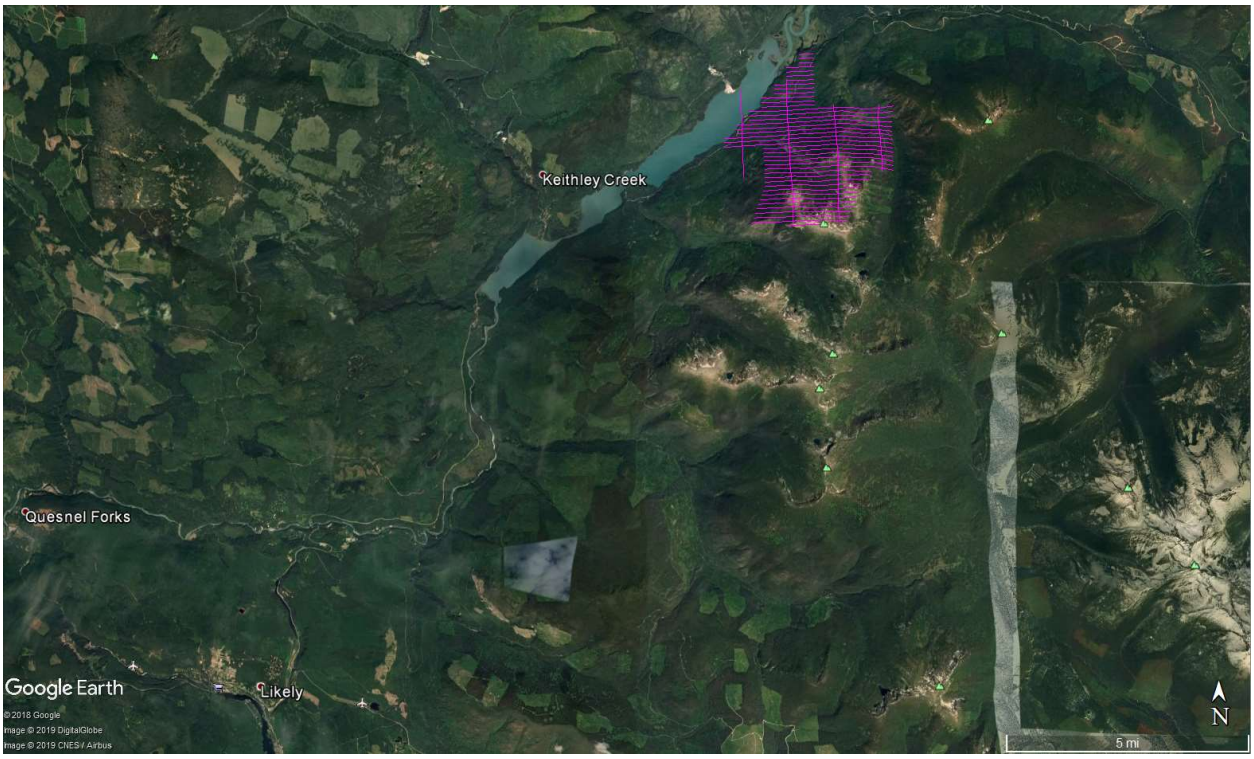

Figure 2: Survey area locations on Google Earth.

The survey was flown in an east to west (N 90° E azimuth) direction, with traverse line spacing of 150 as depicted in Figure 3. Tie lines were flown perpendicular to the traverse lines. For more detailed information on the flight spacing and direction see Table 1.

1.3 TOPOGRAPHIC RELIEF AND CULTURAL FEATURES

Topographically, the survey area exhibits a moderate relief with an elevation ranging from 805 to 2034 metres above mean sea level over an area of 45 square kilometres.

There are various rivers and streams running through the survey area which connect various lakes and wetlands. There are no visible signs of culture such as roads and buildings located in the survey area. (Figure 3)

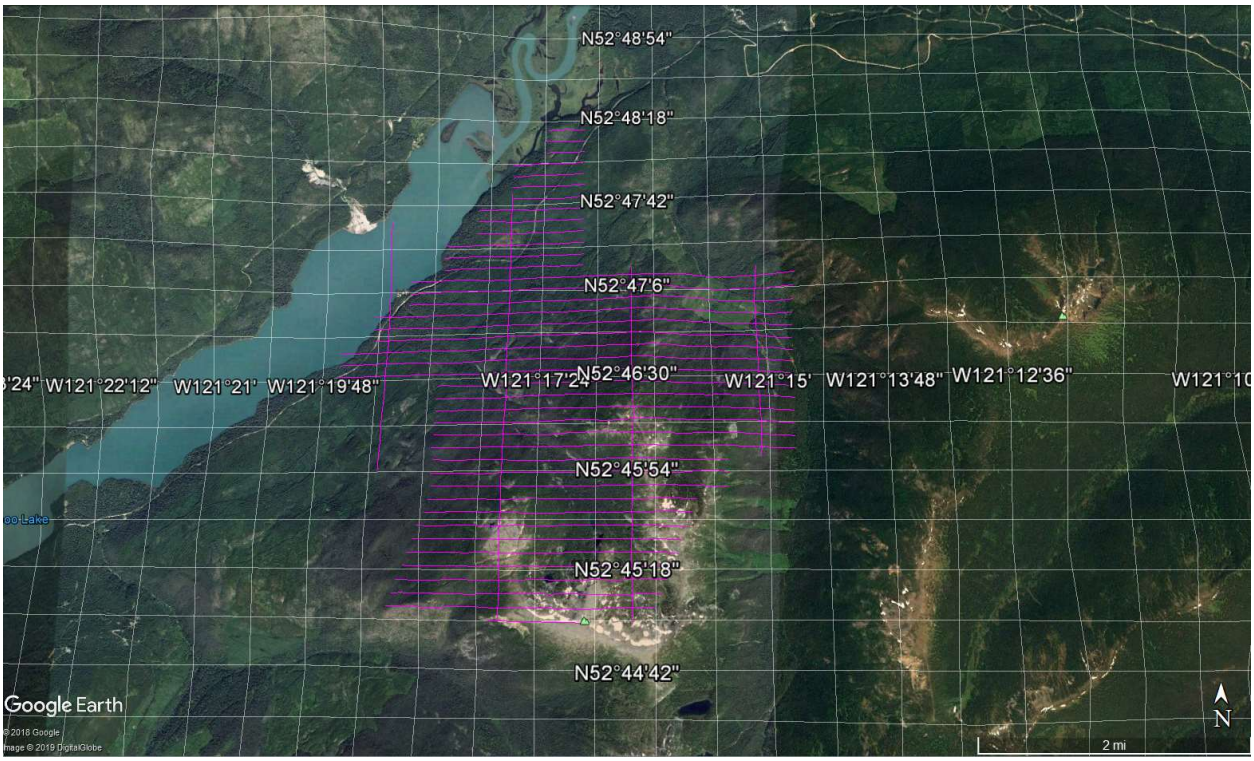

Figure 3: Flight path over a Google Earth Image.

2. DATA ACQUISITION

2.1 SURVEY AREA

The survey area (see Figure 3 and Appendix A) and general flight specifications are as follows:

Table 1: Survey Specifications

Survey block	Line spacing (m)	Area (Km^2)	Planned[1] Line-km	Actual Line-km	Flight direction	Line numbers
Cariboo Valley	Traverse: 150	22	138	140	N 90° E / N 270° E	L3540 – L3940
	Tie: 1500				N 0° E / N 180° E	T5031 – T5060
TOTAL		22	138	140		

Survey area boundaries co-ordinates are provided in Appendix B.

2.2 SURVEY OPERATIONS

Survey operations were based out of Likely, British Columbia from November 16th until December 7th 2018. The following table shows the timing of the flying.

Table 2: Survey schedule

Date	Comments
2018-11-16	Crew arrived in Okotoks, AB. Completed local logistics.
2018-11-17	Commenced system assembly.
2018-11-18	Completed system assembly.
2018-11-19	Commenced system testing, mag issue observed during testing. Commenced troubleshooting and located source, requested part from the office.
2018-11-20	Crew received shipment from the office.
2018-11-21	Replaced part, completed test line. Unable to complete high altitude test flights due to extreme high winds at altitude, will complete once onsite. Ground crew commenced mobilization towards Likely, BC.
2018-11-22	Ground crew arrived onsite, Heli arrival delayed due to weather.
2018-11-23	Heli arrival delayed due to weather, tested base stations.
2018-11-24	Heli arrived on site in the afternoon, completed recon flight, will re-adjust flying height due to 120-130ft trees in the survey area. Unable to complete test flights due to low ceilings.
2018-11-25	No test flights completed due to weather, low ceilings.
2018-11-26	No test flights completed due to weather, rain throughout the day.
2018-11-27	No test flights completed due to weather, rain and low ceilings throughout the day.
2018-11-28	Late start due to weather, crew was able to complete high altitude test flights, system cleared for production.
2018-11-29	1 short production flight completed in the morning, aborted due to low ceilings, once weather improved 2nd production flight completed in the afternoon, 267km flown.
2018-11-30	Late start due to weather, 2 production flights completed, 249km flown.
2018-12-01	Late start due to weather, 2 production flights completed, 222km flown.
2018-12-02	Late start due to weather, 1 production flight completed, 138km flown.
2018-12-03	2 short production flights completed, 53km flown. Some troubleshooting required.
2018-12-04	Completed troubleshooting, test flight completed, 9km flown.

[1] Note: Actual Line kilometres represent the total line kilometres in the final database. These line-km normally exceed the Planned Line-km, as indicated in the survey NAV files.

2018-12-05	Attempted production flight but aborted due to weather, low ceilings throughout the day.
2018-12-06	3 production flights completed, 355km flown.
2018-12-07	3 production flights completed, 169km flown. Flight Path Completed.

2.3 FLIGHT SPECIFICATIONS

During the survey the helicopter was maintained at a mean altitude of 73 metres above the ground with a nominal survey speed of 140 km/hour.

The on-board operator was responsible for monitoring the system integrity. The operator also maintained detailed flight logs during the survey, tracking the times of the flight as well as any unusual geophysical or topographic features.

On return of the aircrew to the base camp the survey data was transferred from a compact flash card (PCMCIA) to the data processing computer. The data were then uploaded via ftp to the Geotech office in Aurora for daily quality assurance and quality control by qualified personnel.

2.4 AIRCRAFT AND EQUIPMENT

2.4.1 SURVEY AIRCRAFT

The survey was flown using an Aerospatiale A-Star 350 B2, registration C-GXAH. The helicopter is owned and operated by Yellowhead Helicopters. Installation of the geophysical and ancillary equipment was carried out by a Geotech Ltd crew.

2.4.2 AIRBORNE MAGNETOMETER

The magnetic sensor utilized for the survey was Geometrics optically pumped cesium vapour magnetic field sensor was installed inside the stinger. The sensitivity of the magnetic sensor is 0.01 nanoTesla (nT) at a sampling interval of 0.025 seconds or at sampling frequency of 40Hz.

2.4.3 MAGNETIC COMPENSATION SYSTEM

The magnetic data were compensated in real-time using an RMS Instruments AARC510 Compensator, utilizing a three-axis (XYZ) Fluxgate magnetometer to measure roll, pitch and yaw movements of the survey aircraft. A 26-term model of the aircraft magnetic noise was determined during a pre-survey test flight, removing permanent, induced, and eddy current fields from the airborne magnetic measurements. The efficacy of this compensation was tested with a Figure of Merit (FOM) test; the total FOM was determined to be 1.071 nT (Appendix D).

2.4.4 ALTIMETER

A Terra TRA 3000/TRI 40 radar altimeter was used to record terrain clearance.

2.4.5 VIDEO CAMERA

A colour 550 High-Resolution camera with auto gain control, 550 line resolution was used with a standard 3.6mm lens. Digital files provided with resolution of 768 by 494 at selectable 1-30 frames per second.

2.4.1 LASER ALTIMETER

A Schmitt Industries AR300 laser altimeter was used. Altitude range 0.5 to 300m and accuracy ± 5cm.

Figure 4: System Configuration.

2.4.2 GPS NAVIGATION SYSTEM

The navigation system used was a Geotech PC104 based navigation system utilizing a NovAtel's WAAS (Wide Area Augmentation System) enabled GPS receiver, Geotech navigation software, a full screen display with controls in front of the pilot to direct the flight and a NovAtel GPS antenna mounted on the helicopter tail (Figure 4). As many as 11 GPS and two WAAS satellites may be monitored at any one time. The positional accuracy or circular error probability (CEP) is 1.8 m; with WAAS active, it is 1.0 m. The co-ordinates of the block were set-up prior to the survey and the information was fed into the airborne navigation system.

2.4.3 DIGITAL ACQUISITION SYSTEM

A Geotech data acquisition system recorded the digital survey data on an internal compact flash card. Data is displayed on an LCD screen as traces to allow the operator to monitor the integrity of the system. The data type and sampling interval as provided in Table 3.

Table 3: Acquisition Sampling Rates

Data Type	Sampling
Magnetometer	0.025 sec
GPS Position	0.2 sec
Pressure and Temperature	1 sec
Radar Altimeter	0.2 sec

2.5 BASE STATION MAGNETOMETER

A dedicated computer including a high sensitivity base station cesium magnetometer and a GPS system to record the GPS time together with the magnetic data was employed to record diurnal magnetic activity. A Geometrics G822B high-sensitivity caesium vapour magnetometer and integrated GPS unit for accurate time synchronization was used with 10Hz data output. Digital recordings of the ground magnetometer were recorded at all times during the survey. The digital data include the date, an absolute value of the magnetic field, and GPS time with accurate synchronization to the aircraft data acquisition system.

The base station magnetometer sensor was installed near the landing site, away from electric transmission lines and moving ferrous objects such as motor vehicles. The base station data were backed-up to the data processing computer at the end of each survey day.

2.6 GPS GROUND BASE STATION

A dedicated Novatel PROPAK-V3_TR20 GPS receiver and a dedicated ground based GPS antenna was used with a 10Hz Raw GPS data recording. Post-flight differential GPS data processing utilizing Novatel GrafNav 8.3 software was used to produce sub-meter accuracy of the airborne system location at 10Hz sampling interval.

3. PERSONNEL

The following Geotech Ltd. personnel were involved in the project.

FIELD:

Project Manager:	Shauna-Lee Hewitt (Office)
Data QC:	Dmitriy Danchenko (Office)
Crew chief:	Juan Carlos Florez Osorio
Operator:	n/a

The survey pilot and the mechanical engineer were employed directly by the helicopter operator – Yellowhead Helicopters.

Pilot:	Jason Cyr
Mechanical Engineer:	n/a

OFFICE:

Preliminary Data Processing:	Dmitriy Danchenko
Final Data Processing:	TaiChyi Shei
Data QA/QC:	Zihao Han
	Kanita Khaled
Reporting/Mapping:	Joseli Soares

Processing and Interpretation phases were carried out under the supervision of Alexander Prikhodko, P.Geo, PhD, and Director of Geophysics. The customer relations were looked after by Jean M. Legault.

4. DATA PROCESSING AND PRESENTATION

Data compilation and processing were carried out by the application of Geosoft Oasis Montaj and programs proprietary to Geotech Ltd.

4.1 FLIGHT PATH

The flight path, recorded by the acquisition program as WGS 84 latitude/longitude, was converted into the WGS84 Datum, UTM Zone 10 North coordinate system in Oasis Montaj.

The flight path was drawn using linear interpolation between x, y positions from the navigation system. Positions are updated every second and expressed as UTM easting's (x) and UTM northing's (y).

4.2 MAGNETIC DATA

The processing of the magnetic data involved a correction for diurnal variations by using the digitally recorded ground base station magnetic values. The base station magnetometer data was edited and merged into the Geosoft GDB database on a daily basis. The aeromagnetic data was corrected for diurnal variations by subtracting the observed magnetic base station deviations.

Tie line levelling was carried out by adjusting intersection points along traverse lines. A micro-levelling procedure was applied to remove persistent low-amplitude components of flight-line noise remaining in the data.

The corrected magnetic data was interpolated between survey lines using a random point gridding method to yield x-y grid values for a standard grid cell size of 37.5 metres at the mapping scale. The Minimum Curvature algorithm was used to interpolate values onto a rectangular regular spaced grid.

5. DELIVERABLES

5.1 SURVEY REPORT

The survey report describes the data acquisition, processing, and final presentation of the survey results. The survey report is provided in two paper copies and digitally in PDF format.

5.2 MAPS

Final maps were produced at scale of 1:15,000 for best representation of the survey size and line spacing. The coordinate/projection system used was WGS84 Datum, UTM Zone 10 North. All maps show the flight path trace and topographic data; latitude and longitude are also noted on maps.

The preliminary and final results of the survey are presented as a colour TMI contour map and vertical derivative colour maps.

- Maps at 1:15,000 in Geosoft MAP format, as follows:

GL180345_15K_TMI_CaribooValley:	Total Magnetic Intensity (TMI)
GL180345_15k_CVG_ CaribooValley:	Calculated Vertical Gradient (CVG)
GL180345_15k_DEM_ CaribooValley:	Digital Elevation Model (DEM)

- Maps are also presented in PDF format.
- The topographic data base was derived from 1:50,000 Natural Resources Canada NTDB data www.geogratis.ca
- A Google Earth file *GL180345_Hawkeye_SellerCreek.kml* showing the flight path of the block is included. Free versions of Google Earth software from: http://earth.google.com/download-earth.html

5.3 DIGITAL DATA

Two copies of the data on DVD were prepared to accompany the report. Each DVD contains a digital file of the line data in GDB Geosoft Montaj format as well as the maps in Geosoft Montaj Map and PDF format.

- DVD structure.

  Data contains databases, grids and maps, as described below.
  Report contains a copy of the report and appendices in PDF format.

Databases in Geosoft GDB format, containing the channels listed in Table 4.

Table 4: Geosoft GDB Data Format

Channel Name	Description
X	X Easting Positional data (meters) – WGS84 UTM 10N
Y	Y Northing Positional data (meters) – WGS84 UTM 10N
Z	GPS antenna elevation (meters – ASL)
Longitude	WGS84 GPS longitude (decimal degrees) from x
Latitude	WGS84 GPS latitude (decimal degrees) from y
Date	Flight Date (YYYY/MM/DD)
gtime	UTC time, second of the day
Fiducial	Sample Number
Flight	Survey Flight Number
Radar	Aircraft Terrain Clearance from Radar altimeter (metres)
DEM	Digital elevation model derived from Radar altimeter (metres)
Flux_X	Vector Magnetometer X Component (nT)
Flux_Y	Vector Magnetometer Y Component (nT)
Flux_Z	Vector Magnetometer Z Component (nT)
TFCMP1	Raw Total Compensated Magnetic field (nT)
Mag1	De-spiked and compensated Total Magnetic field (nT)
Basemag	Magnetic diurnal variation (nT)
Mag2	Diurnal corrected Total Magnetic field (nT)
Mag3	Final Levelled Total Magnetic field (nT)
CVG	First Vertical Derivative of Total Magnetic field (nT/m)

- Grids in Geosoft GRD and GeoTIFF format, as follows:

  GL180345_TMI_ CaribooValley: Total magnetic intensity (nT)
  GL180345_CVG_ CaribooValley: Calculated Vertical Derivative of TMI (nT/m)
  GL180345_DEM_ CaribooValley: Digital Elevation Model (metres)

  A Geosoft .GRD file has a .GI metadata file associated with it, containing grid projection information. A grid cell size of 37.5 metres was used.

6. CONCLUSIONS AND RECOMMENDATIONS

A helicopter-borne geophysical survey has been completed over the Cariboo Valley Block situated near Likely, British Columbia.

The total area coverage is 22 km^2. Total survey line coverage 140 line kilometres. The principal sensor was a high-sensitivity caesium magnetometer. Results have been presented as contour colour images at a scale of 1:15,000. A formal Interpretation has not been included or requested.

Based on the geophysical results obtained a formal magnetic interpretation is recommended and can be completed by Geotech. This includes the structural interpretation and 3D magnetic inversion and geological integration.

Respectfully submitted[2],

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Geotech Ltd.

Tai-chyi Shei
Geotech Ltd.

Kanita Khaled, P.Geo
Geotech Ltd.

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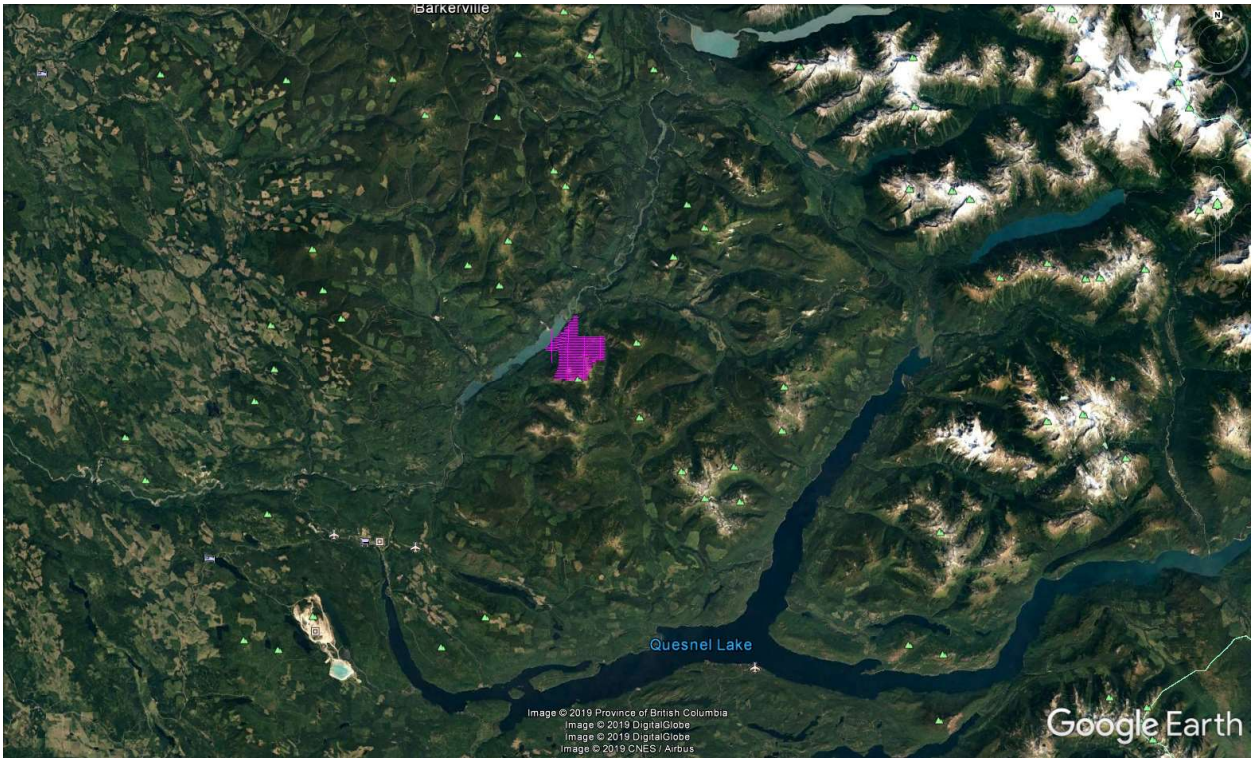
January, 2019.

[2] Final data processing of the EM and magnetic data were carried out by Tai-chyi Shei, from the office of Geotech Ltd. in Aurora, Ontario, under the supervision of Alexander Prikhodko, P.Geo.

APPENDIX A

SURVEY AREA LOCATION MAP



Overview of the Survey Area

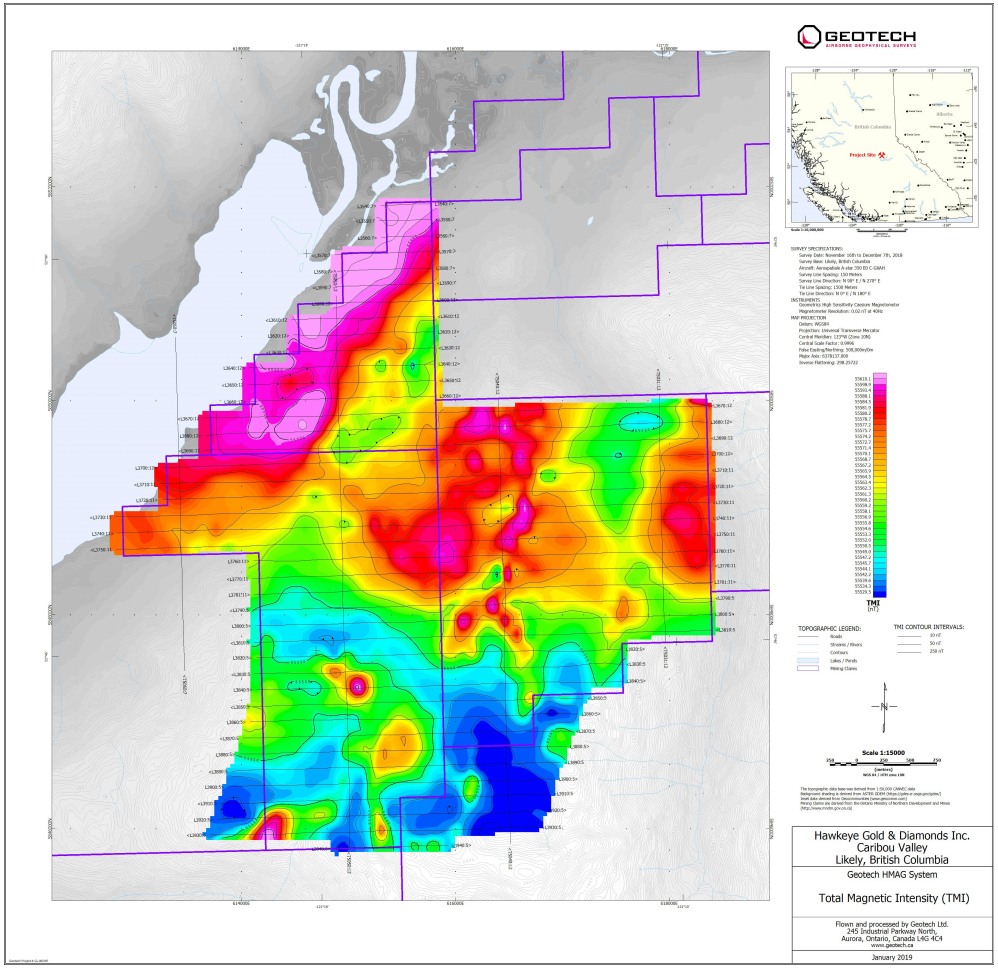
APPENDIX B

SURVEY AREA COORDINATES

(WGS 84, UTM Zone 10 North)

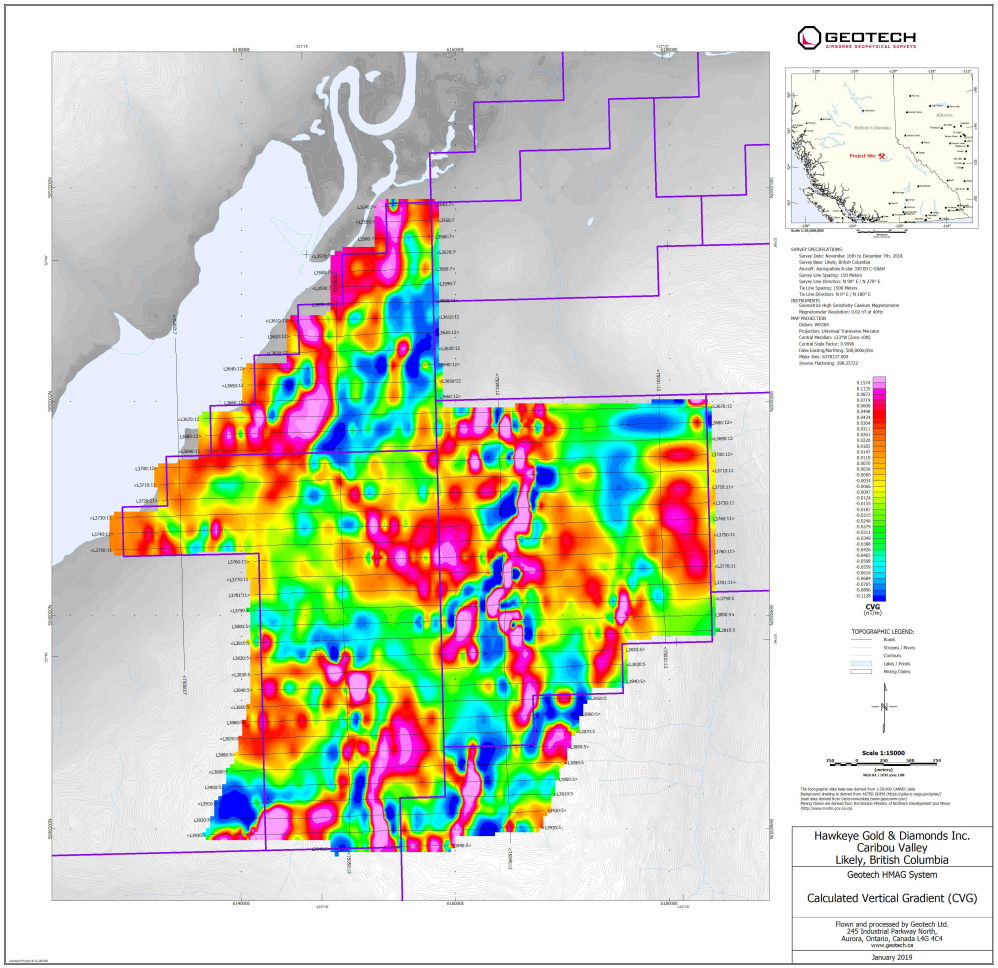
X	Y
612826	5848614
612818	5848916
613264	5849379
613640	5849839
615300	5851824
615771	5851840
615835	5849894
618346	5849953
618398	5847859
617576	5847834
617565	5847380
617152	5847368
616772	5846013
613703	5845943
614142	5847302
614195	5848648

APPENDIX C - GEOPHYSICAL MAPS[1]

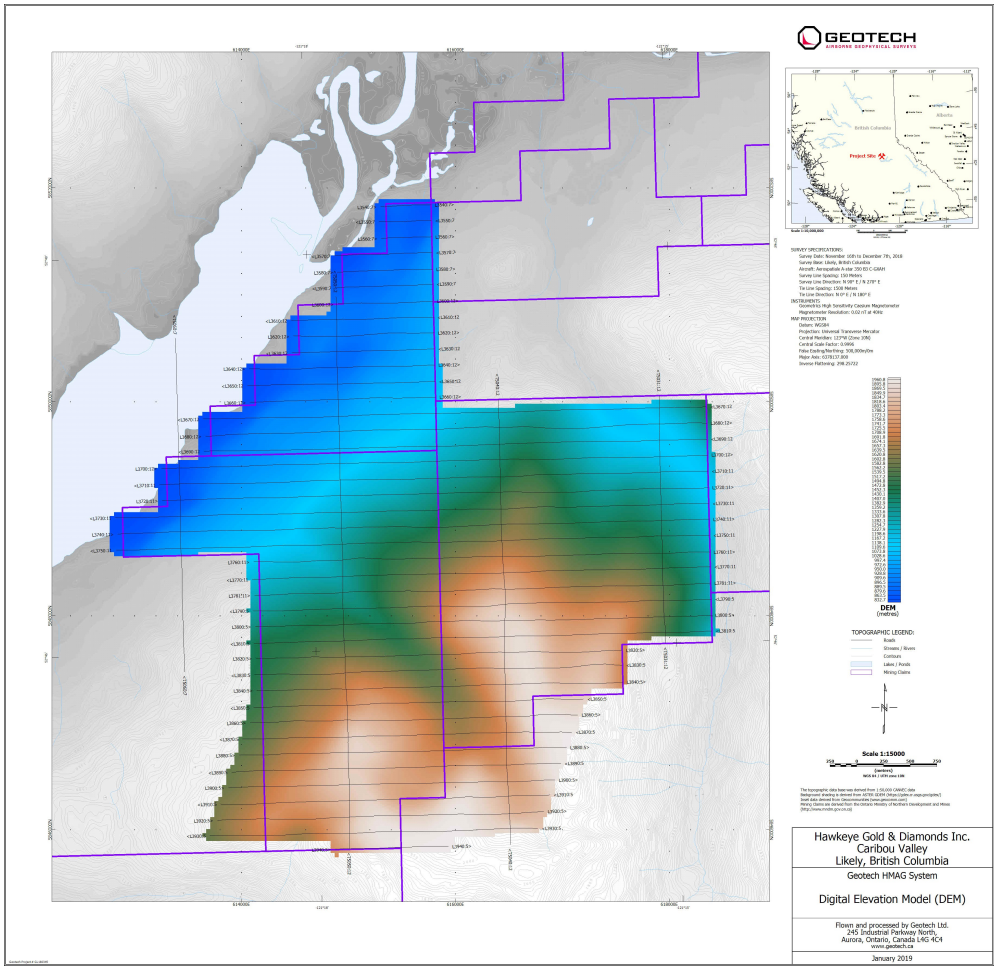


Total Magnetic Intensity (TMI)

[1] Full size geophysical maps are also available in PDF format on the final DVD



Calculated Vertical Gradient (CVG)



Digital Elevation Model (DEM)

APPENDIX D

FIGURE OF MERIT TEST

The Figure of Merit test was performed immediately after the compensation solution was acquired during a high-altitude test near Dragon, BC, on November 28, 2018.

During the test, the aircraft duplicates the roll, pitch and yaw maneuverers performed during the compensation test in all four survey directions. The absolute errors from each of the 12 manoeuvers are summed, and should be less than 2.0nT to confirm adequate compensation.

Figure of Merit result:

Total Field 1 (Stinger Sensor)

Direction	Roll	Pitch	Yaw	Total
0	0.118	0.125	0.088	**0.331**
90	0.088	0.079	0.098	**0.265**
180	0.109	0.068	0.086	**0.263**
270	0.063	0.075	0.074	**0.212**
Total	**0.378**	**0.347**	**0.346**	**1.071**

FOM =	1.071	nT