



**BC Geological Survey
Assessment Report
37909**

ASSESSMENT REPORT TITLE PAGE AND SUMMARY

TITLE OF REPORT: Geophysical Assessment Report on the Currie Rose Rosland, BC Project, tenure #'s 1046604, 1054728, 1054729 and 1054733

TOTAL COST: \$39,580.20 = \$12,710.00 (event # 5715060) + \$26,870.20 (event # 5724087)

AUTHOR(S): Daniel M. Wehrle

SIGNATURE(S):

Dan Wehrle

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

STATEMENT OF WORK EVENT NUMBER(S)/DATE(S):

5715060 2018/OCT/09; 5724087 2018/DEC/27

YEAR OF WORK: 2018

PROPERTY NAME: Currie Rose Rosland, BC Project

CLAIM NAME(S) (on which work was done): Cliff – Southern Belle, Crown of Eleanor, Copper Jack, Gertrude Novelty B Bear

COMMODITIES SOUGHT: Gold, silver, copper, cobalt, nickel, tungsten

MINERAL INVENTORY MINFILE NUMBER(S), IF KNOWN: 082FSW106, 082FSW107, 082FSW108, 082FSW134, 082FSW135, 082FSW137, 082FSW141, 082FSW195, 082FSW246.

MINING DIVISION: Trail Creek

NTS / BCGS: 082F001, 082F002

LATITUDE: 49 ° 05 ' 24 "

LONGITUDE: 117 ° 48 ' 31 " (at centre of work)

UTM Zone: 11N **EASTING:** 440963 **NORTHING:** 5437776

OWNER(S): 0704723 BC Ltd. 100 % - tenure # 1054733;

0811662 BC Ltd. 100 % - tenure #'s 1046604, 1054728, 1054729

MAILING ADDRESS: Box 562, Rosland B.C. V0G 1Y0

OPERATOR(S) [who paid for the work]: Currie Rose Resources Inc.

MAILING ADDRESS: Box 1390, Rosland B.C. V0G 1Y0

REPORT KEYWORDS (lithology, age, stratigraphy, structure, alteration, mineralization, size and attitude. **Do not use abbreviations or codes**)

Early Jurassic age Rosland Group volcanics, northeast trending Elise argillaceous siltstone, mafic flows and basaltic flows intruded by augite porphyry (Rosland Sill), Rosland Monzonite, Trail Pluton and Rainy Day Pluton with associated Molybdenum Breccia complex, late stage Tertiary lamprophyre and feldspar porphyry dikes. Gold, silver and base metal sulphide healed shear vein systems trend roughly east – west and steeply dip north.

REFERENCES TO PREVIOUS ASSESSMENT WORK AND ASSESSMENT REPORT NUMBERS:
15743, 31127, 31527, 32425, 33304, 36321, 37169

TYPE OF WORK IN THIS REPORT	EXTENT OF WORK (in metric units)	ON WHICH CLAIMS Tenure #	PROJECT COSTS APPORTIONED (incl. support)
GEOLOGICAL (scale, area)			
Photo interpretation			
GEOPHYSICAL (line-kilometres)			
Ground			
Magnetic	Airborne	Flight Lines: 164.82 km	1046604, Cliff-S. Belle 1054728, Crown O.E. 1054729, Copper Jack 1054733. G.N.B. \$26,870.20
Electromagnetic			
Induced Polarization			
Radiometric			
Seismic			
Other			
GEOCHEMICAL (number of samples analysed for ...)			
Soil			
Silt			
Rock			
Other			
DRILLING (total metres, number of holes, size, storage location)			
Core			
Non-core			
RELATED TECHNICAL			
Sampling / Assaying			
Petrographic			
Mineralographic			
Metallurgic			
PROSPECTING (scale/area)			
PREPARATORY / PHYSICAL			
Line/grid (km)			
Topo/Photogrammetric (scale, area)			
Legal Surveys (scale, area)			
Road, local access (km)/trail			
Trench (number/metres)			
Underground development (metres)			
Other: Airborne	Orthophoto	Flight Lines: 164.82 km	1046604, Cliff-S. Belle 1054728, Crown O.E. 1054729, Copper Jack 1054733. G.N.B. \$12,710.00
			TOTAL COST
			\$39,580.20

**GEOPHYSICAL ASSESSMENT REPORT ON THE
CURRIE ROSE ROSSLAND, BC PROJECT
tenure #'s 1046604, 1054728, 1054729 and 1054733**

Prepared for

Operator: Currie Rose Resources Inc.

Owners: 0811662 BC Ltd., 0704723 BC Ltd.

Box 1390, Box 562

Rossland, B.C. V0G 1Y0

March 19, 2019

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Rossland, B.C.*

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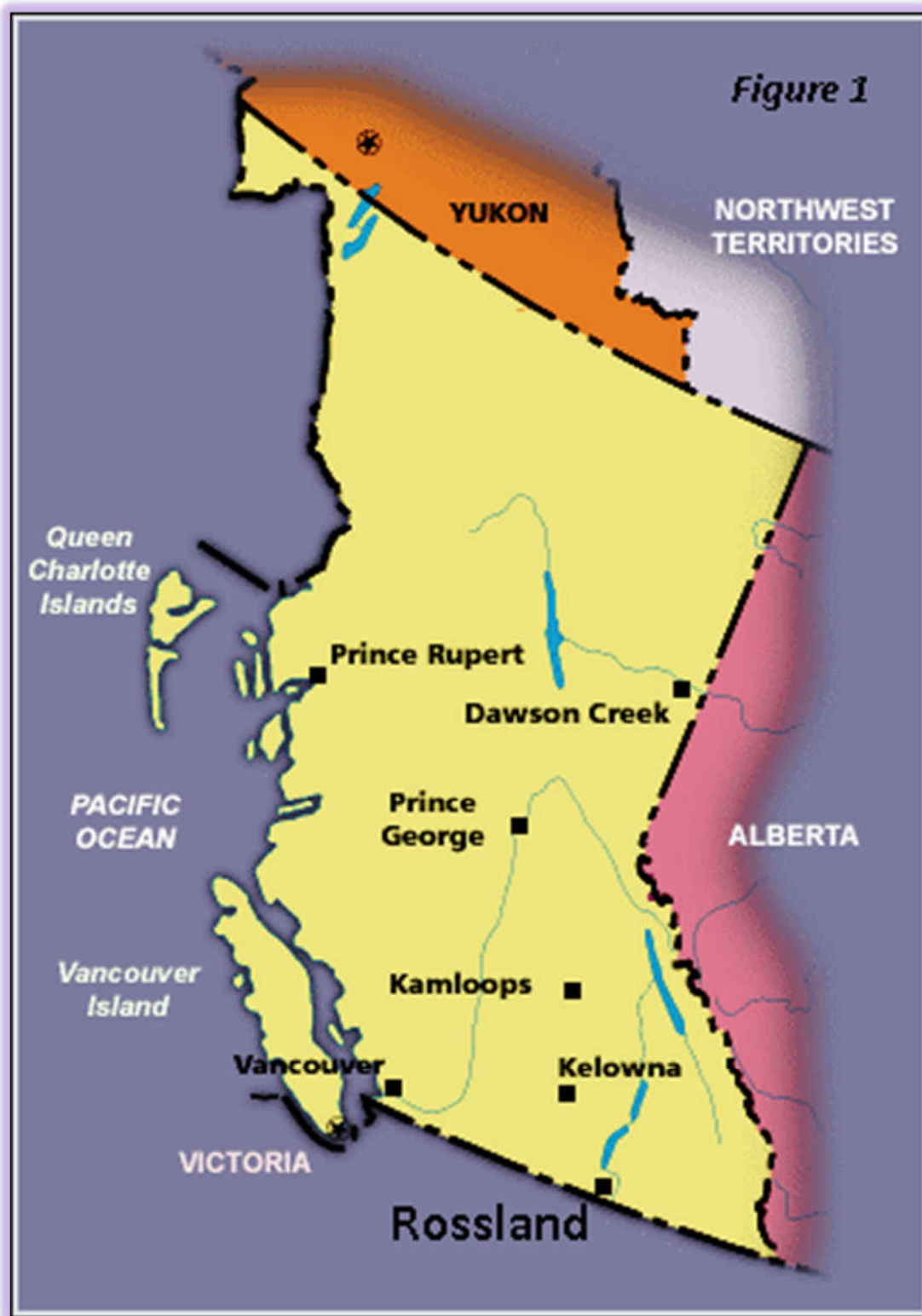
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1.0 INTRODUCTION

The geophysical work described in this report is being presented as assessment work for the following mineral claims in the Rossland, B.C. area (Table 1, Figures 1 and 2):

Title Number	Claim Name/Property	Issue Date	Good To Date	New Good To Date
849280	LITTLE DARLING	2011/MAR/18	2019/JUL/19	2020/Aug/20
* 1046604	CLIFF - SOUTHERN BELLE	2016/SEP/10	2019/JUL/19	2020/Aug/20
1054704	OK	2015/SEP/15	2019/JUL/19	2020/Aug/20
1054705	IXL - MIDNIGHT	2017/SEP/10	2019/JUL/19	2020/Aug/20
1054709	ZILOR - SUNBEAM	2017/SEP/10	2019/JUL/19	2020/Aug/20
1054722	ALFE - FORTY EIGHT	2017/SEP/10	2019/JUL/19	2020/Aug/20
1054724	DELACOLA	2015/JUN/06	2019/JUL/19	2020/Aug/20
1054727	SIDECAR	2014/MAR/29	2019/JUL/19	2020/Aug/20
* 1054728	CROWN OF ELEANOR	2017/SEP/10	2019/JUL/19	2020/Aug/20
* 1054729	COPPER JACK	2017/SEP/10	2019/JUL/19	2020/Aug/20
1054731	AGNES B	2015/JUN/04	2019/JUL/19	2020/Aug/20
1054732	BLACK EAGLE	2017/SEP/10	2019/JUL/19	2020/Aug/20
* 1054733	GERTRUDE NOVELTY B BEAR	2017/SEP/10	2019/JUL/19	2020/Aug/20
1057856	CROWN POINT	2018/JAN/22	2019/JUL/19	2020/Aug/20
1058109	GOLDEN ROSE	2018/JAN/31	2019/JUL/19	2020/Aug/20
1058111	WHITE SWAN	2018/FEB/01	2019/JUL/19	2020/Aug/20
1063062	AIR	2018/SEP/14	2019/JUL/19	2020/Aug/20
1063064	LILY MAY - CURLEW	2018/SEP/14	2019/JUL/19	2020/Aug/20
1063065	MIDNIGHT - MAYFLOWER	2018/SEP/14	2019/JUL/19	2020/Aug/20
1063066	LE ROI-WAR EAGLE-SPITZEE	2018/SEP/14	2019/JUL/19	2020/Aug/20
1063149	GOLDEN 8	2018/SEP/16	2019/JUL/19	2020/Aug/20

Table 1: Assessed Mineral Claims, (assessment work performed on)*



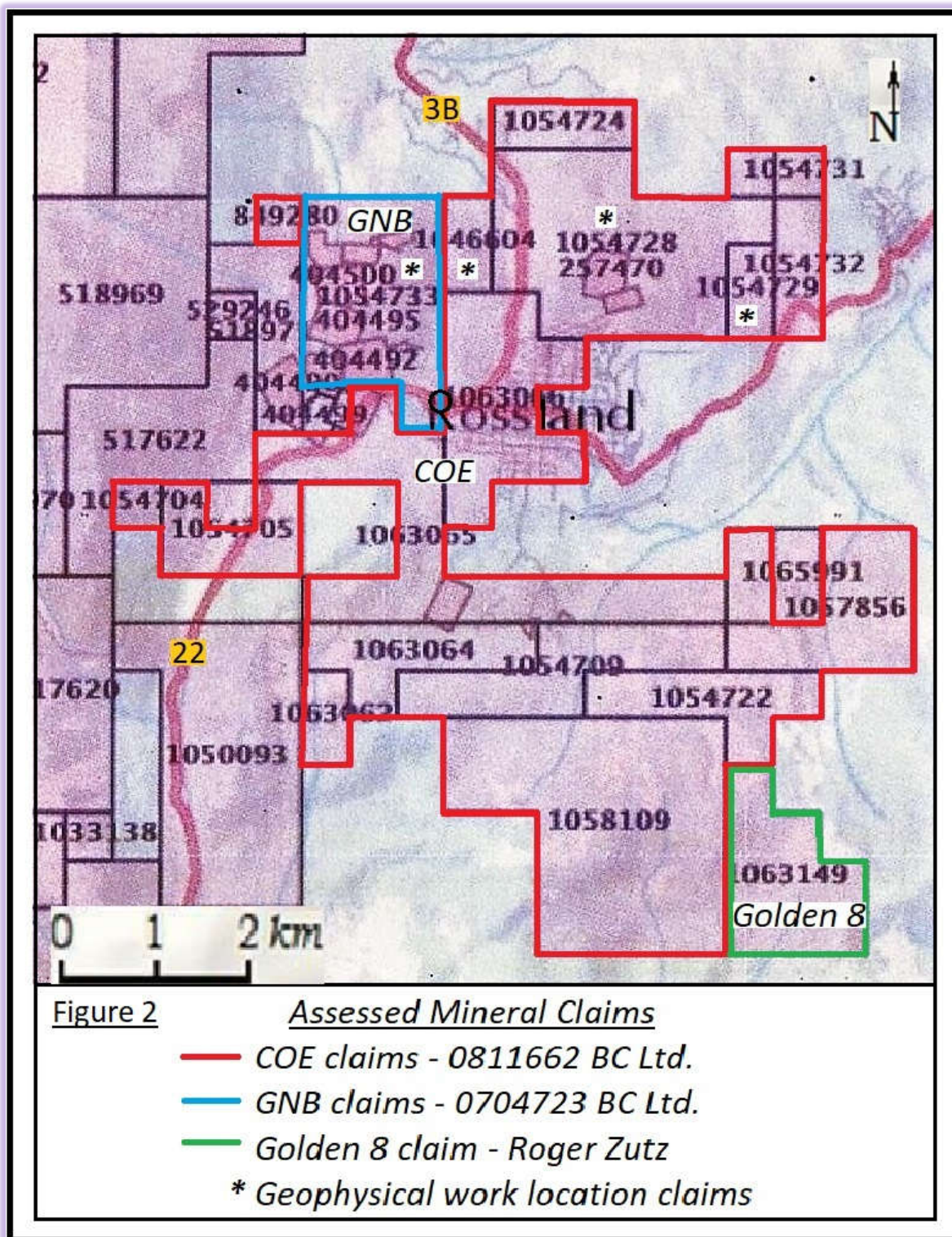


Figure 2: Assessed Mineral Claims

Preparatory airborne drone orthophoto and airborne drone magnetic geophysical assessment work during the fall of 2018 was filed in two linked events, numbers 5715060 and 5724087 respectively. Together, this work was performed on three mineral claims in the northern portion of the Crown of Eleanor (COE) cell mineral claim group and the adjacent Gertrude – Novelty – Black Bear (GNB) claim (Table 1, Figure 2). All work was applied to the above mentioned contiguous cell mineral claims (Table 1, Figure 2).

The COE mineral property is located near the City of Rossland in the Trail Creek Mining Division, southeastern B.C (Figure 1 and 2). The COE cell mineral claim property, as shown outlined in red in figure 2, contains 19 claims, totalling 120 cell units covering 2,539.8 hectares (6,276 acres). The Golden 8 mineral claim (outlined in green, figure 2), tenure # 1063149 covering 190.59 ha. (471 ac.), adjacent and southeast of the COE claim block was also assessed in this work program. The COE claim group is owned 100 % by 0811662 BC Ltd. and the Golden 8 mineral claim is owned by Roger Zutz. Adjacent and northwest of the COE claim group is the Gertrude – Novelty – Black Bear (GNB) claim (outlined in blue in figure 2), tenure # 1054733 and covering 275 ha. (680 ac.) is owned by 0704723 B.C. Ltd. The author, D. Wehrle is President and agent for 0704723 BC Ltd. and 0811662 BC Ltd. and is also agent for Roger Zutz. The COE, GNB and Golden 8 mineral claims were optioned to Currie Rose Resources Inc. in April, 2018, under the terms of separate option agreements and together they form the Rossland Currie Rose Project (Rossland Project), with Currie Rose as the operator.

Pioneer Aerial Surveys Ltd. based in Saskatoon, Saskatchewan was contracted by Currie Rose to carry out the Rossland airborne drone geophysical program during the fall of 2018. Weather and technical instrument problems caused delays that necessitated the work program to be carried

out in two parts, resulting in two linked work assessment filings. The first part of the program, the preparatory airborne drone orthophoto work was conducted between Sept. 26 and Oct. 6, 2018 and the second part, the airborne drone magnetic geophysical assessment work program was conducted between Oct. 10 - 31, 2018. Each part of the work program covered 164.82 flight line kms. (including tie lines).

Together, the northern core of the large COE and GNB mineral properties contain many significant gold veins, extensions and anomalies (see ARIS BC reports 15743, 31127, 32425, 33304, and 36321). The purpose of the 2018 work program was to evaluate the northern core of the Rossland Currie Rose Project using the latest airborne drone magnetic geophysical technology to help target future mineral exploration programs. This exploration work is part of an on-going program on the COE and GNB mineral properties to verify, update and expand knowledge on the known gold bearing veins and high precious and base metal value showings of the Le Roi, North and Southbelt vein systems in the Rossland area.

2.0 LOCATION, ACCESS AND PHYSIOGRAPHY

The Rossland Currie Rose Project mineral claim property is located near the City of Rossland (Figures 1 and 2). Rossland is located in southeastern B.C. approximately 6 km. southwest of Trail, B.C. and about 7 km. north of the U.S.A. (Washington State) border. Trail is the site of the world's largest lead-zinc smelter complex (Teck Corp.) Geographic coordinates central to the Rossland Project work area are longitude 117° 48' 31" W and latitude 49° 05' 24" N on NTS map sheet 82F001 and 82F002, with central UTM coordinates 440963 E and 5437776 N (zone 11 N).

Rossland is served by highways 3B and 22, and by Trail and Castlegar airports. Access to the property is good along old gravel mining and exploration roads and numerous 4-wheel drive branch roads. Highway 3B and the Cascade highway run through the western margins of the property and highway 22 along its eastern margins (Figure 2). Telecommunication tower roads to the top of Monte Christo and Red Mountains provide access to the northern parts of the claims. Many highway, municipal and service roads follow older 1890's wagon roads from Trail and Rossland up to the old Crown Granted claims and mines of the area. The author was given keys to all locked and gated road accesses on the property by the City of Rossland and Red Mountain Resorts.

Relief on the Rossland Project northern work area is between 700 and 1591 metres above sea level (m.a.s.l.). Moderate slopes in the east rise to the peaks of Columbia – Kootenay (1235 m.a.s.l.), Monte Christo (1285 m.a.s.l.) and Red Mountains (1591 m.a.s.l.). The property is moderately treed with some dense bushy areas, predominately alder, huckleberry and hazelnut. Interior Douglas fir and Lodgepole pine with localized stands of cedar are the predominant forest cover, with local stands of poplar and birch in moister areas. Most creeks and other melt water

courses on the claim property are noted to have intermittent flows and are totally dry by midsummer.

The region has been affected by continental glaciation. Two ice directions have been recorded with the final advance being south to southwest. Consequently, glacial till, on the order of 1- 5 m. blankets most of the property. Most outcrop exposures are limited in valleys and gullies, with best exposures found on steeper mountain slopes, road cuts, near old workings and at the base of local uprooted and wind fallen trees.

Summers in Rossland are hot and dry and often extend from May through to early October. A short and wet spring from mid March to mid May and a cold dry fall from October until early December is common. Heavy snow winters from mid December to mid March are very common. Although mineral exploration and drilling programs can and have taken place all year round in the Rossland area, water availability and cooler conditions make the May – June period particularly more suitable to drilling programs. At that time water from intermittent streams and local adit outflows is available. Fall and winter drill programs often require water hauling. The City of Rossland has a contractor (yellow) fire hydrant available for water truck fill up located at the western edge of town near the Cascade highway turnoff. Water from this source is usually abundant in the spring – early summer time. City water rates averaged \$50/day for local diamond drilling programs during 2007 and 2008.

3.0 CROWN OF ELEANOR MINERAL CLAIM PROPERTY AND HISTORY

The COE claim group contains the following individual cell mineral claims:

Title Number	Claim Name	Owner	Title Type	Title Sub Type	Map Number	Issue Date	Good To Date	Status	Area (ha)
849280	LITTLE DARLING	284750 100%	Mineral	Claim	082F	2011/MAR/18	2020/AUG/20	PROTECTED	21.15
1046604	CLIFF - SOUTHERN BELLE	284750 100%	Mineral	Claim	082F	2016/SEP/10	2020/AUG/20	GOOD	42.31
1054704	OK	284750 100%	Mineral	Claim	082F	2015/SEP/15	2020/AUG/20	GOOD	21.16
1054705	IXL - MIDNIGHT	284750 100%	Mineral	Claim	082F	2017/SEP/10	2020/AUG/20	GOOD	105.82
1054709	ZILOR - SUNBEAM	284750 100%	Mineral	Claim	082F	2017/SEP/10	2020/AUG/20	GOOD	169.36
1054722	ALFE - FORTY EIGHT	284750 100%	Mineral	Claim	082F	2017/SEP/10	2020/AUG/20	GOOD	127.03
1054724	DELACOLA	284750 100%	Mineral	Claim	082F	2015/JUN/06	2020/AUG/20	GOOD	63.45
1054727	SIDECAR	284750 100%	Mineral	Claim	082F	2014/MAR/29	2020/AUG/20	PROTECTED	21.15
1054728	CROWN OF ELEANOR	284750 100%	Mineral	Claim	082F	2017/SEP/10	2020/AUG/20	GOOD	380.78
1054729	COPPER JACK	284750 100%	Mineral	Claim	082F	2017/SEP/10	2020/AUG/20	GOOD	42.31
1054731	AGNES B	284750 100%	Mineral	Claim	082F	2015/JUN/04	2020/AUG/20	GOOD	21.15
1054732	BLACK EAGLE	284750 100%	Mineral	Claim	082F	2017/SEP/10	2020/AUG/20	GOOD	63.47
1057856	CROWN POINT	284750 100%	Mineral	Claim	082F	2018/JAN/22	2020/AUG/20	GOOD	169.34
1058109	GOLDEN ROSE	284750 100%	Mineral	Claim	082F	2018/JAN/31	2020/AUG/20	GOOD	508.22
1058111	WHITE SWAN	284750 100%	Mineral	Claim	082F	2018/FEB/01	2020/AUG/20	GOOD	42.33
1063062	AIR	284750 100%	Mineral	Claim	082F	2018/SEP/14	2020/AUG/20	GOOD	42.34
1063064	LILY MAY - CURLEW	284750 100%	Mineral	Claim	082F	2018/SEP/14	2020/AUG/20	GOOD	127.02
1063065	MIDNIGHT - MAYFLOWER	284750 100%	Mineral	Claim	082F	2018/SEP/14	2020/AUG/20	GOOD	338.66
1063066	LE ROI-WAR EAGLE-SPITZEE	284750 100%	Mineral	Claim	082F	2018/SEP/14	2020/AUG/20	GOOD	232.77

Table 2: Crown of Eleanor (COE) Mineral Claim Group

The COE cell mineral claim property is shown outlined in red in figures 2 and 3 and contains 19 claims, totalling 120 cell units covering 2539.8 hectares. The COE claim group and the individual Crown of Eleanor cell mineral claim, tenure # 1054728, were named after and cover the same mineral ground as the former (lapsed) Elanore Crown Granted mineral claim (Lot 951). (see 2016 ARIS BC assessment report # 36321).

The COE cell mineral claim group is owned 100 % by 0811662 BC Ltd. of Rossland, B.C. and was optioned by Currie Rose Resources Inc. in spring 2018. A cell claim, having dimensions approximately 500 X 500 metres, is the standard unit area of a mineral claim in the Province of British Columbia since January of 2005, when B.C. inaugurated mineral staking online (MTO, Mineral Titles Online).

The Elanore (L. 951) claim was staked in 1890 and Crown Granted to the Argonaut Gold Mining Company on April 30, 1896. It reverted to the Crown some time later, was paper staked by Mike Delich of Rossland, BC in the mid 1970's (Reverted Crown Granted mineral claims could be applied for if a small fee was paid), optioned by Mike to Antelope Resources Inc. in 1989 and dropped during minimal gold prices on March 28th 1998. The Elanore area of Monte Christo Mountain was restaked as open ground on August 9th, 2001 by the author as the Eleanor #1 to #5, two - post claims. Additional open ground was staked over strategic adjacent, lapsed, Reverted Crown Granted claims (St. Lawrence L. 1197, Mascot L. 1344 and Kapai L. 11012).

The Eleanor staked mineral claims were converted to cell claims shortly after the inauguration of MTO in 2005 under the provisions of the six month exclusive right of conversion to legacy claim holders, thereby greatly increasing their extent and mineral ground acquired. The converted Crown of Eleanor (COE) mineral claim had additional cell units amalgamated to it and from 2006 onwards, other claims in the Rossland area were staked to form the present COE claim

group. The current Crown of Eleanor property covers mineral ground formerly held by a mosaic of Crown Granted mineral claims and strategically covers the Le Roi Mine complex and its vein extensions, as well as the North and Southbelt vein gold systems (Figures 3 and 4).

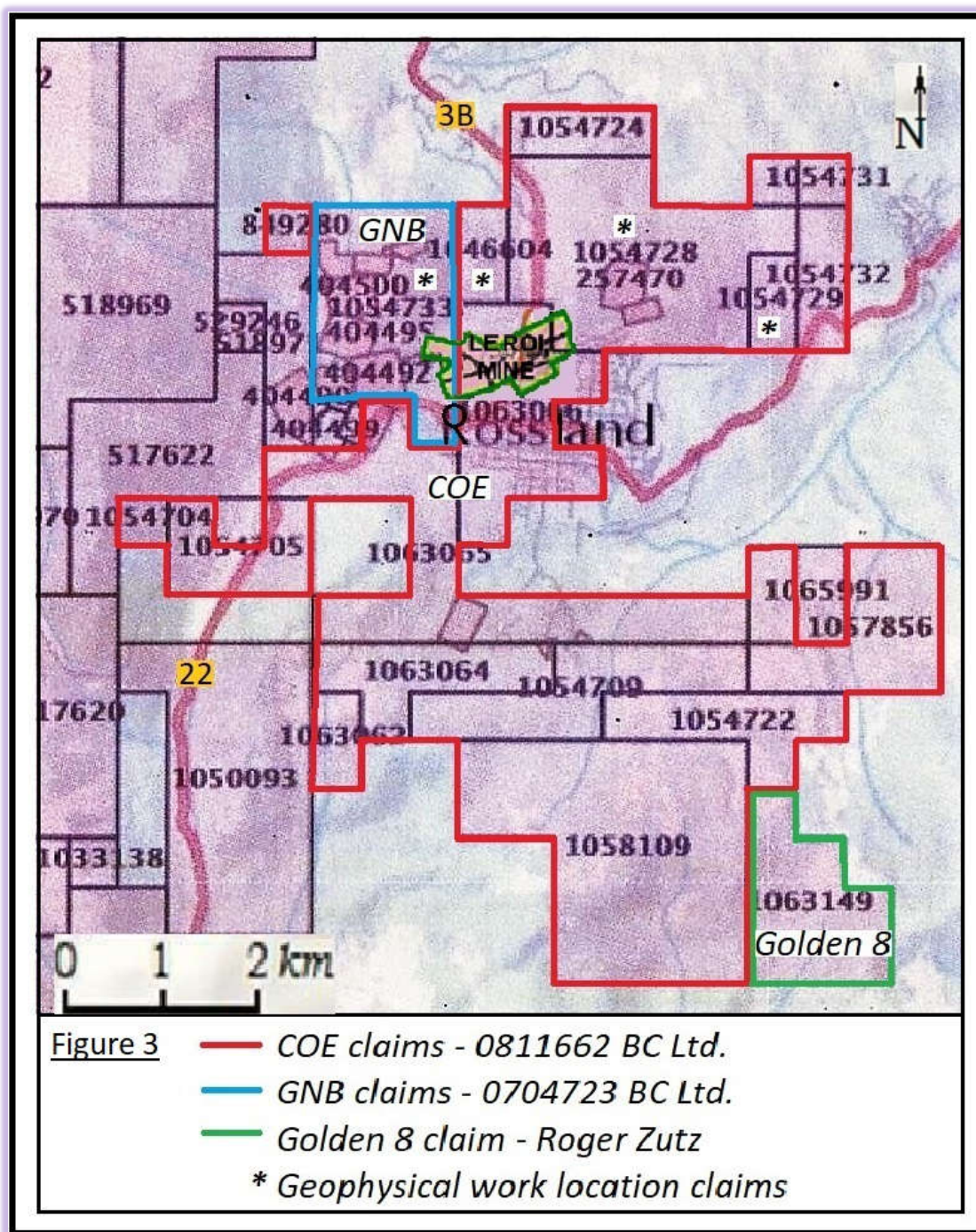


Figure 3: Le Roi Mine Complex, COE and GNB Mineral Claims

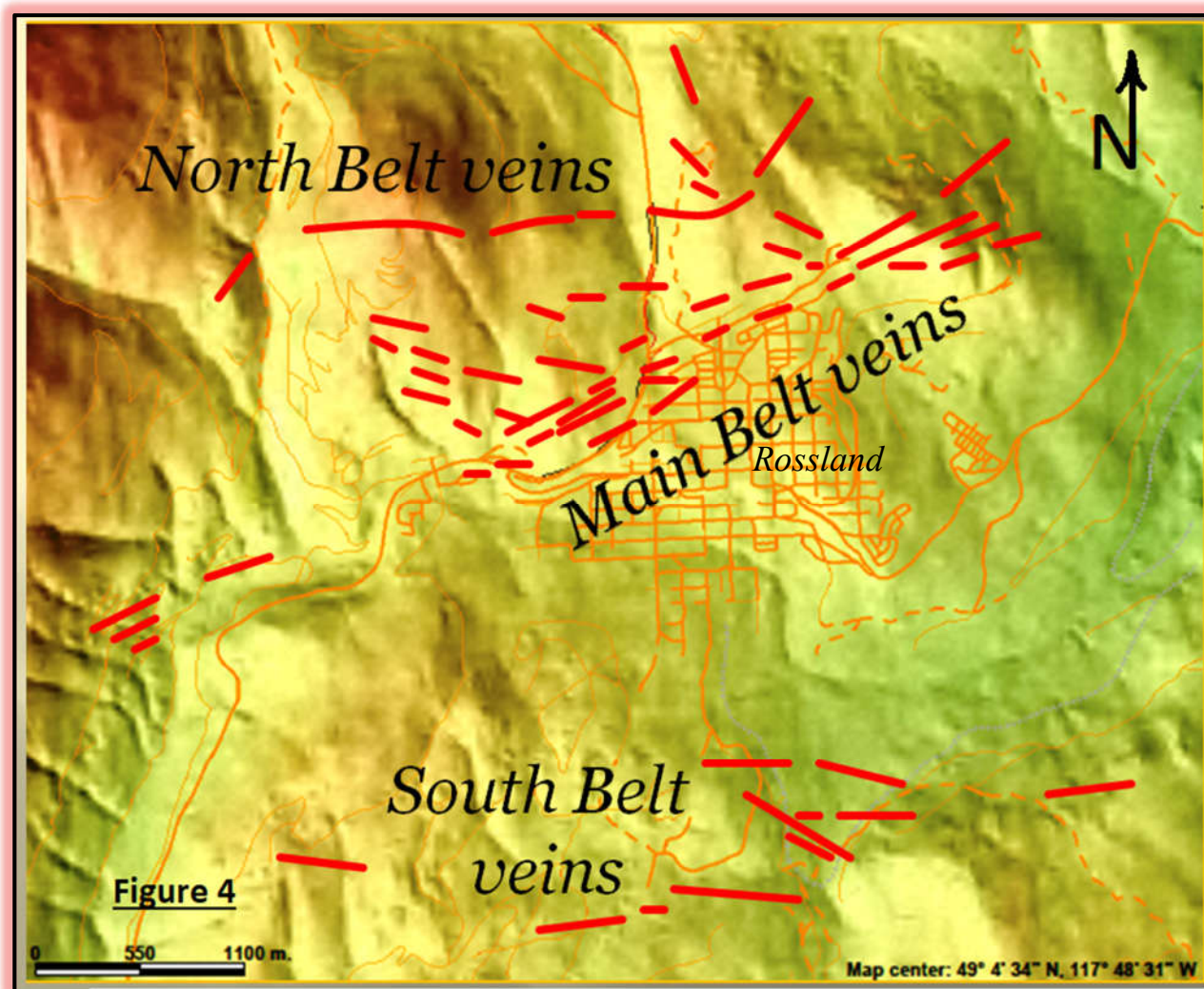
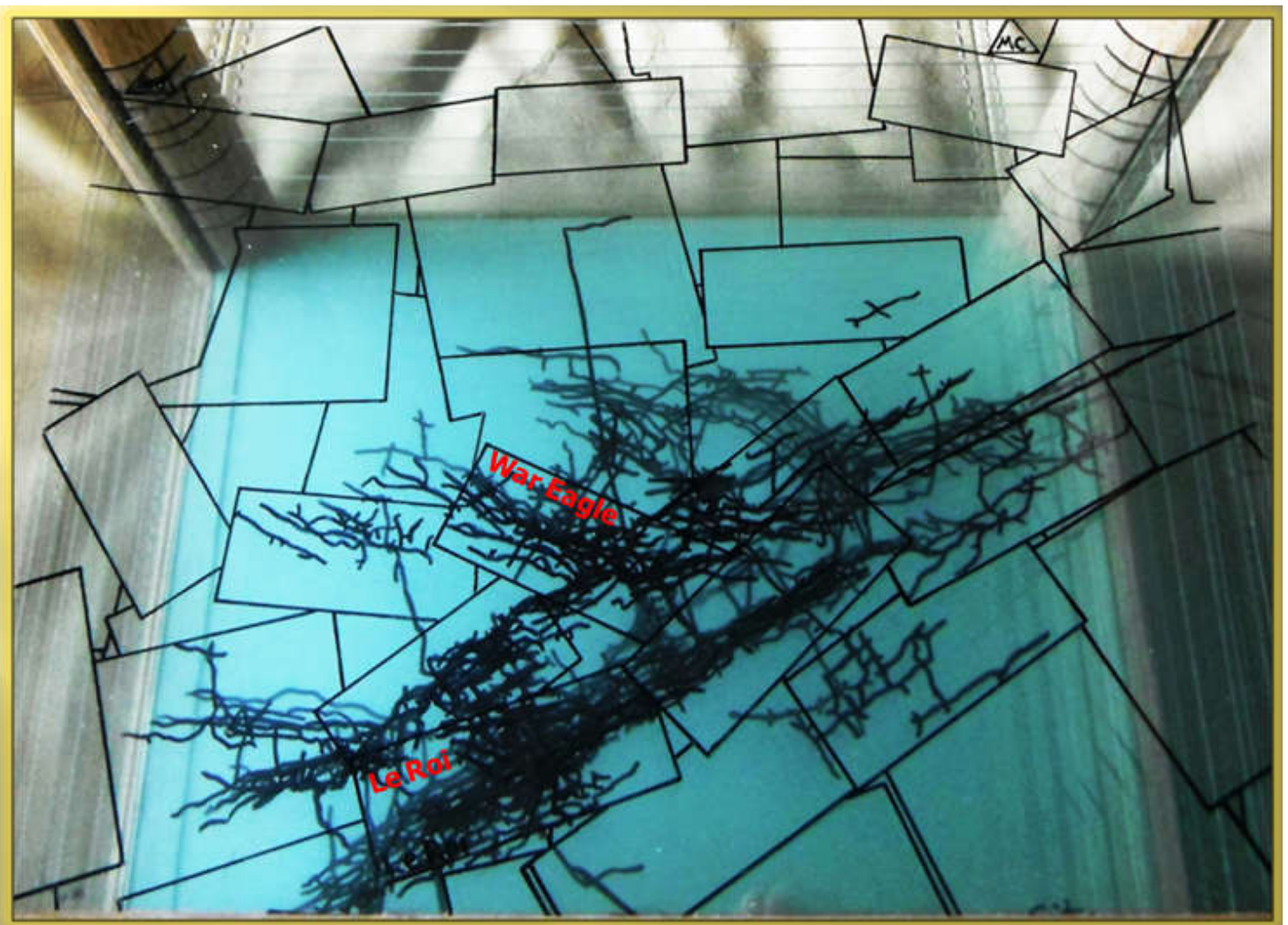


Figure 4: Le Roi Vein System (from the author's 2010 BC Minerals South Presentation)

Crown Granted mineral claims that make up part of the past producing Le Roi gold mine complex (1890 – 1928) are found at the centre of the Crown of Eleanor and Gertrude – Novelty - Black Bear (GNB) claim group (Figure 3) and are still held by Teck Corporation (previously Teck – Cominco). Other Crown Granted and staked legacy mineral claims (non converted to cell claims) last held by (?) Vangold Resources Ltd. are inliers within and surrounded by the COE and GNB cell claims. All of these Crown Granted and legacy claims would automatically be absorbed into the overlying COE and GNB cell mineral claims should they cease to be valid.

4.0 ROSSLAND EXPLORATION AND DEVELOPMENT HISTORY

Shear controlled gold-silver-copper ores were discovered in the Rossland area in 1890. Production from this district totalled approximately 6,200,000 tons of ore grading an average recovered grade of 0.47 oz. gold/ton, 0.49 oz. silver/ton and 1% copper, making Rossland Western Canada's third largest historical gold producer (1890 – 1995) and Canada's largest gold producer prior to 1900. Most of this production (over 3 million ounces of gold, 3.7 million ounces of silver and 124 million pounds of copper) came from an interconnected series of mines on the Le Roi vein system, an area of approximately 100 acres, immediately north of Rossland (picture 1, below).



Picture 1: Plate Glass Model Le Roi Gold Mine Workings (D. Wehrle, 2013)

The BC Minister of Mines annual reports show only 116 claims were staked in the Rossland camp in 1890, with 40 of them on the South belt of veins (1 km. south of Rossland) and the remainder on the Main belt veins (Red – Monte Christo – Columbia/Kootenay Mountains), North belt veins (Red and Monte Christo Mountains) and the ‘free gold belt’ (OK Mountain 2 km. west of Rossland). Near OK mountain the OK, IXL and Midnight claims were staked where 10,000 tons of ore returning 33,000 oz. gold, 13,000 oz. silver and 10 tons of copper was mined from 1898 to 1962. The Rossland area received the initial wave of pre 1892 Crown Granted claim locations (approximately 20 acre rectangular shaped claims, 600 X 1500 feet in size) prior to the blanket staking of the greater Rossland area in 1895 by the larger, square, post 1892 claims (1500 X 1500 feet). The orientation of pre 1892 mineral claims often mimics the surface trace direction of early vein discoveries (Figure 5 below).

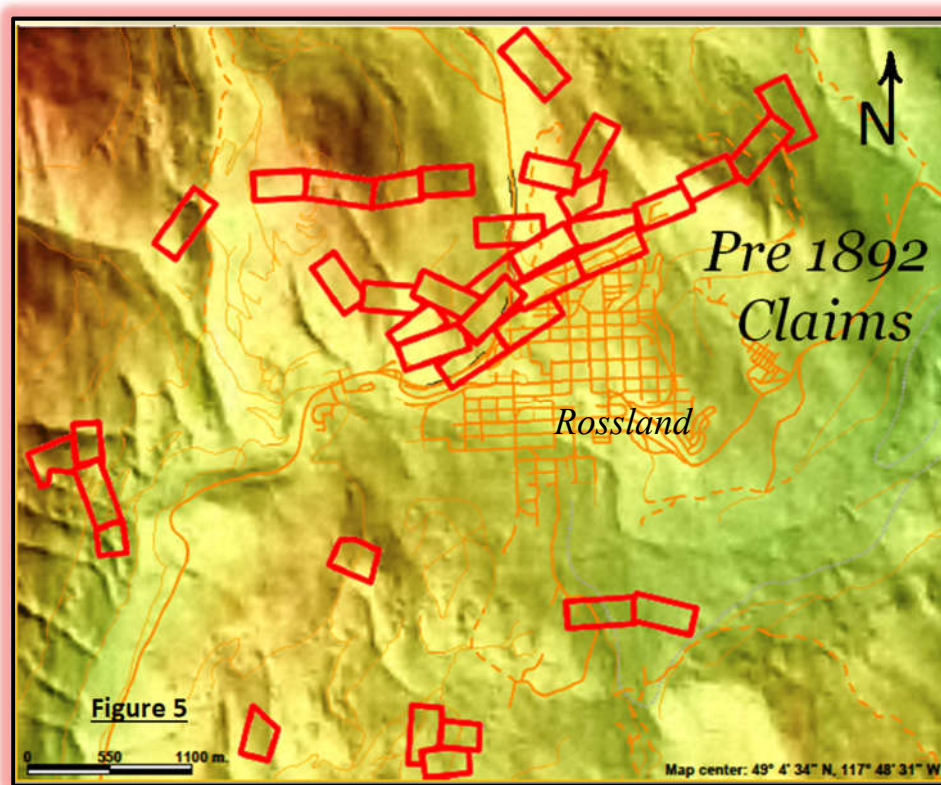


Figure 5: Early Rossland Mineral Claims

By the end of 1895 the first large ore body in the camp had been discovered on the War Eagle, over 2,200 mineral claims had been staked, a smelter was being built in Trail and two different railways were being built to reach Rossland.

Dividend paying gold mines were active in Rossland from 1890 to 1928 and in 1906 the Consolidated Mining and Smelting Company of Canada Ltd. was organised with the Rossland gold mines forming Cominco's founding asset (Consolidated stood for the consolidation of the Rossland mines). With gold at \$20/ounce and water pumping costs approaching the cost of extraction, production was shut down in 1928. Further incentive occurred when at that time metallurgical problems associated with the massive Sullivan lead – zinc – silver deposit in Kimberly were solved. The Rossland gold mines were also shut down for nearly 2 years during 1920 – 1922 when the Company made a preliminary focus on the challenges of the Sullivan ore body.

At the time of the Rossland gold mine shutdown in 1928, records show that seven, 1 ounce/ton gold stopes were still being mined in the War Eagle mine alone (personal research 1988, Rossland Historical Museum records). In the early 1930's leasers reactivated the 4 upper dry levels of the Le Roi mine complex on Red Mountain, where it is estimated that approximately 250,000 ounces of gold were further extracted. Leaser production was so large that by the mid 1930's Cominco severely limited such operations and gold production from the Rossland area virtually ceased. It is said, "That during the 1930's leasing operations, shipping ore had to be greater than 0.5 oz/ton gold or it was left behind," (personal communication 1989, Mike Delich, Jack MacDonald, depression era gold lease workers).

From 1966 to 1972 1.1 million tons of molybdenum ore, grading 0.22 % Mo. (4.8 million pounds of elemental molybdenum) was open pit mined from the western slopes of Red Mountain

northwest of Rossland. This ore came from a mineralized system of breccias located about 1000 meters northwest of the Le Roi vein system. Gold was not assayed for during Red Mountain Mines Ltd. molybdenum milling operations (personal communication 1997, former mill manager Red Mountain Mines Ltd.).

From 1994 to 1995 the Evening Star and Iron Colt properties on Monte Christo Mountain together produced 20,000 tons of ore at a recovered grade of 0.44 ounces gold / ton. During this operation (the author was chief geologist), shrinkage stope mining produced gold from near surface ore bodies only above previously existing adit levels. Development of intermediate depth and lateral gold resources was constrained by deteriorating \$350/ounce gold economics.

Rossland has a rich documented history of mining and exploration. These past work programs are too detailed to review in this assessment report, however most of this information is summarized and referenced in B.C. MINFILE (Mineral File), ARIS B.C. (Assessment Report Indexing System) and B.C. 'Property File.'

5.0 GEOLOGY AND MINERALIZATION

Rocks in the Rossland area are dominated by Early Jurassic age Rossland Group volcanics (Fig. 6). Northeast trending Elise argillaceous siltstone, mafic flows and Lower Elise Formation basaltic flows are intruded by Late Jurassic augite porphyry (the Rossland Sill), the Rossland Monzonite and the Rainy Day Pluton with associated Molybdenum Breccia complex. Locally these rocks are intruded by various late stage Tertiary lamprophyre and feldspar porphyry dikes.

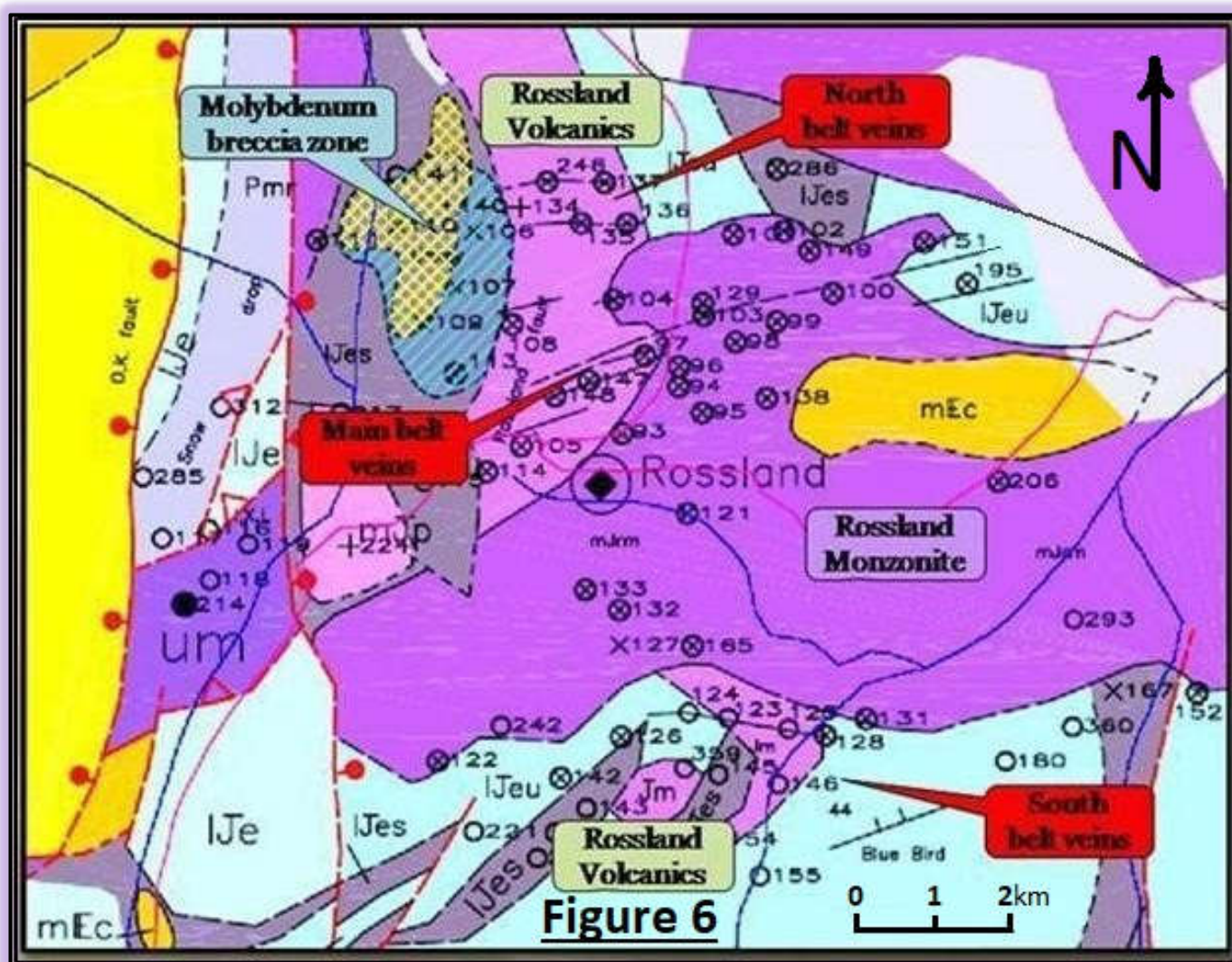


Fig. 6: Rossland Geology (with MINFILE references, adapted from Hoy and Dunne 1998)

Gold, silver and base metal sulphide associated healed shear vein systems trending roughly east – west and steeply dipping north are extensive throughout the Rossland area and have been found to exist in an east – west extent from east of the Columbia River near Trail to west of the Patterson Highway (approximately 20 km.) and in a north – south extent from north of Red mountain to south of the International boundary (approximately 10 km.). Gold, silver and base metal production from these vein systems has been limited to within 1 km. of the northern and southern margins of the Rossland monzonite intrusion.

Exploration drilling has shown the Rossland monzonite to be a phased intrusion, locally containing dioritic to gabbroic stocks (sometimes called monzodiorite) where resulting remnant wedges or ‘cracks’ of volcanics sometimes provide a high grade channel for gold sulphide vein mineralization (eg: Iron Colt area). The Rossland monzonite also gives off a roughly east – west and steeply dipping dike facies of hornblende porphyry that sometimes forms a hanging or footwall contact to gold bearing sulphide mineralization (Drysdale 1915). Some of the best geological ingredients for gold bearing sulphide mineralization are where these monzonite related hornblende porphyry dikes traverse through ground containing Elise augite porphyry volcanics, especially near monzonite margins and near large feldspar porphyry dikes (eg: Le Roi area).

Although heavy sulphide – gold associations are common, very high grade gold drill intersections have also shown only 1 – 2% sulphides. Pyrrhotite is the most common and dependable gold associated sulphide followed by arsenopyrite. Chalcopyrite is favourable but often randomly associated (no guarantee of gold association). Sphalerite often has a good association with gold (particularly in the Southbelt but rarely present in the main and Northbelt). Galena and associated silver mineralization, although more common in the Southbelt is

occasionally found in trace amounts on the margins of gold bearing veins. The presence of pyrite although somewhat associated with gold mineralization in large amounts often signals a local bottoming or a lateral approach to crosscutting dikes. Fine, interstitial to crystal margins, free gold, on average makes up approximately 25% of Rossland ores (Drysdale 1915). Visible gold is locally associated with gold - sulphide bearing veins in Rossland and has been noted in drill core grading from 0.18 to 24 oz/ton (no guarantee of high grade). Preliminary metallic sieve analyses has shown no appreciable nugget effect to analysed gold bearing rock, that is, almost all the gold is found in the fine fraction. 'Bonanza' gold grades have been found in veins midway between dikes with related gold depletion found near or adjacent to dike margins.

Swarms of dark, fine-grained lamprophyre dikes, steeply dipping east and trending north – south, although a nuisance to drilling programs seem to be essential to local control of gold mineralization. Having similar orientations, large feldspar porphyry dikes often define the east – west extent of mineralized blocks within a vein system. Both types of dikes seem to play a large role in remobilizing and concentrating gold bearing sulphide veins or channelling late pulses of gold bearing fluids. Southwest or west – southwest trending drill orientations help to minimize dike interference. Blind (no surface expression) vein offsets to the hanging wall (eg: War Eagle vein, Evening Star main vein) sometimes display a resumption to gold mineralization when a particular vein has apparently bottomed (see Fig. 7). Further, detailed information on the geology, structure and mineralization of the Rossland area can be found in Memoir 77, "Geology and Ore Deposits of Rossland, B.C.," G.S.C. Drysdale, 1915 and Bulletin 109, "Metallogeny and Mineral Deposits of the Nelson - Rossland map area," B.C. Ministry and Mines Energy and Minerals Division (Hoy and Dunne, 2001).

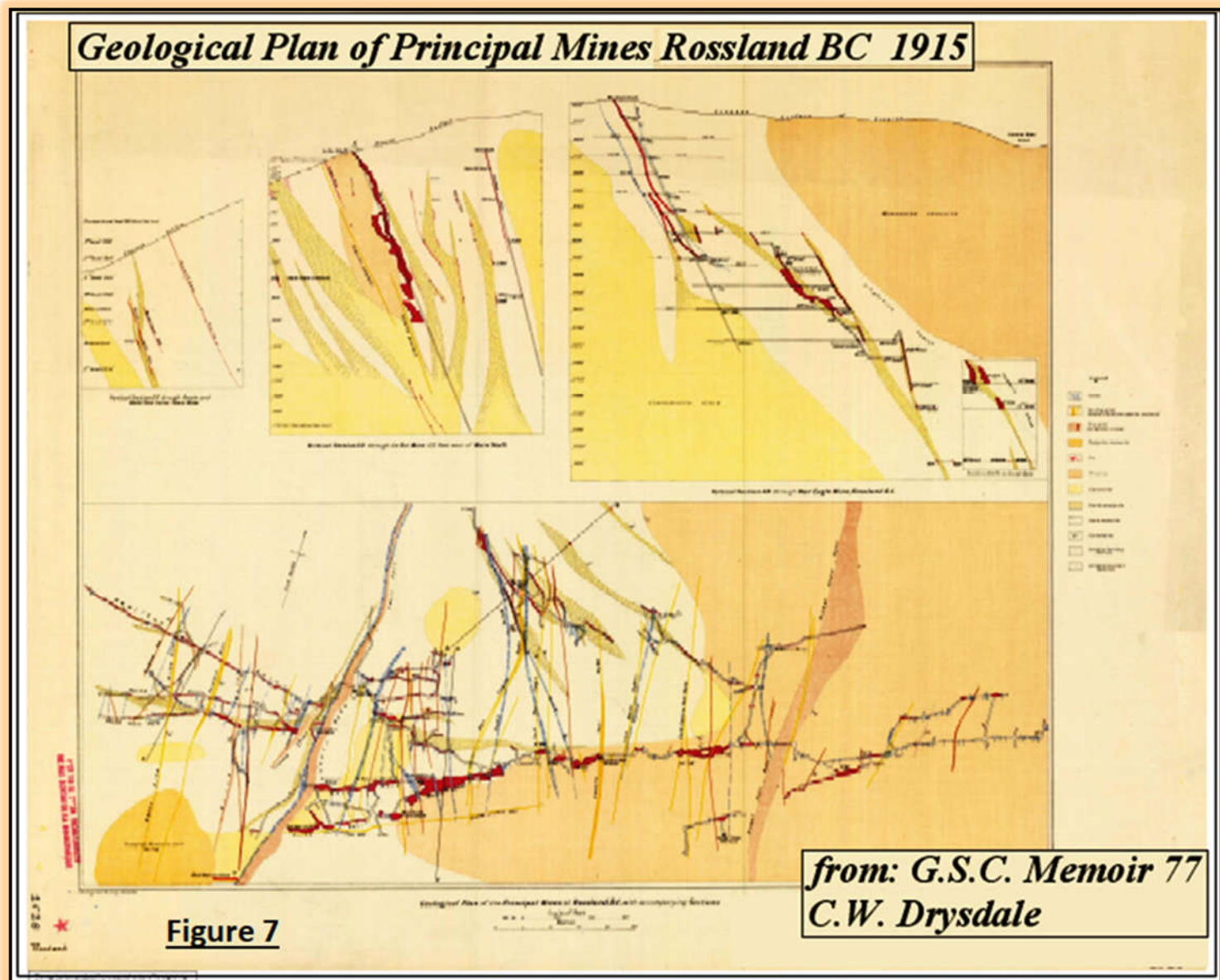


Figure: 7 Geological Plan of Principal Mines Rossland BC, 1915

6.0 OBJECTIVE OF PRESENT WORK

Pioneer Aerial Surveys Ltd. based in Saskatoon, Saskatchewan was contracted by Currie Rose Resources Inc. to carry out an airborne drone geophysical survey program during the fall of 2018. The purpose of the 2018 work program was to evaluate the northern core of the Rossland Currie Rose Project using the latest airborne drone magnetic geophysical technology to help target future mineral exploration programs. The northern core of the large COE and GNB mineral properties contains many significant gold veins, extensions and anomalies (see ARIS BC reports 15743, 31127, 32425, 33304, and 36321). This exploration work is part of an on-going program on the COE and GNB mineral properties to verify, update and expand knowledge on the known gold bearing veins and high precious and base metal value showings of the Le Roi, North and South belt vein systems in the Rossland area.

Preparatory airborne drone orthophoto and airborne drone magnetic geophysical work programs, each totalling 164.82 total flight line kilometres (including tie lines), was performed on the acquired mineral ground of three mineral claims in the northern portion of the Crown of Eleanor (COE) cell mineral claim group and also the adjacent Gertrude – Novelty – Black Bear (GNB) claim (Figure 2). The drone orthophoto and drone magnetic surveys were flown over both east and west blocks of this claim area. (Figures 8 and 9).

Weather and technical instrument problems caused delays that necessitated the work program to be carried out in two parts, (resulting in two linked work assessment filings). The first part of the program, the preparatory airborne drone orthophoto work was conducted between Sept. 26 and Oct. 6, 2018 and the second part, the airborne drone magnetic geophysical work program was conducted between Oct. 10 - 31, 2018.

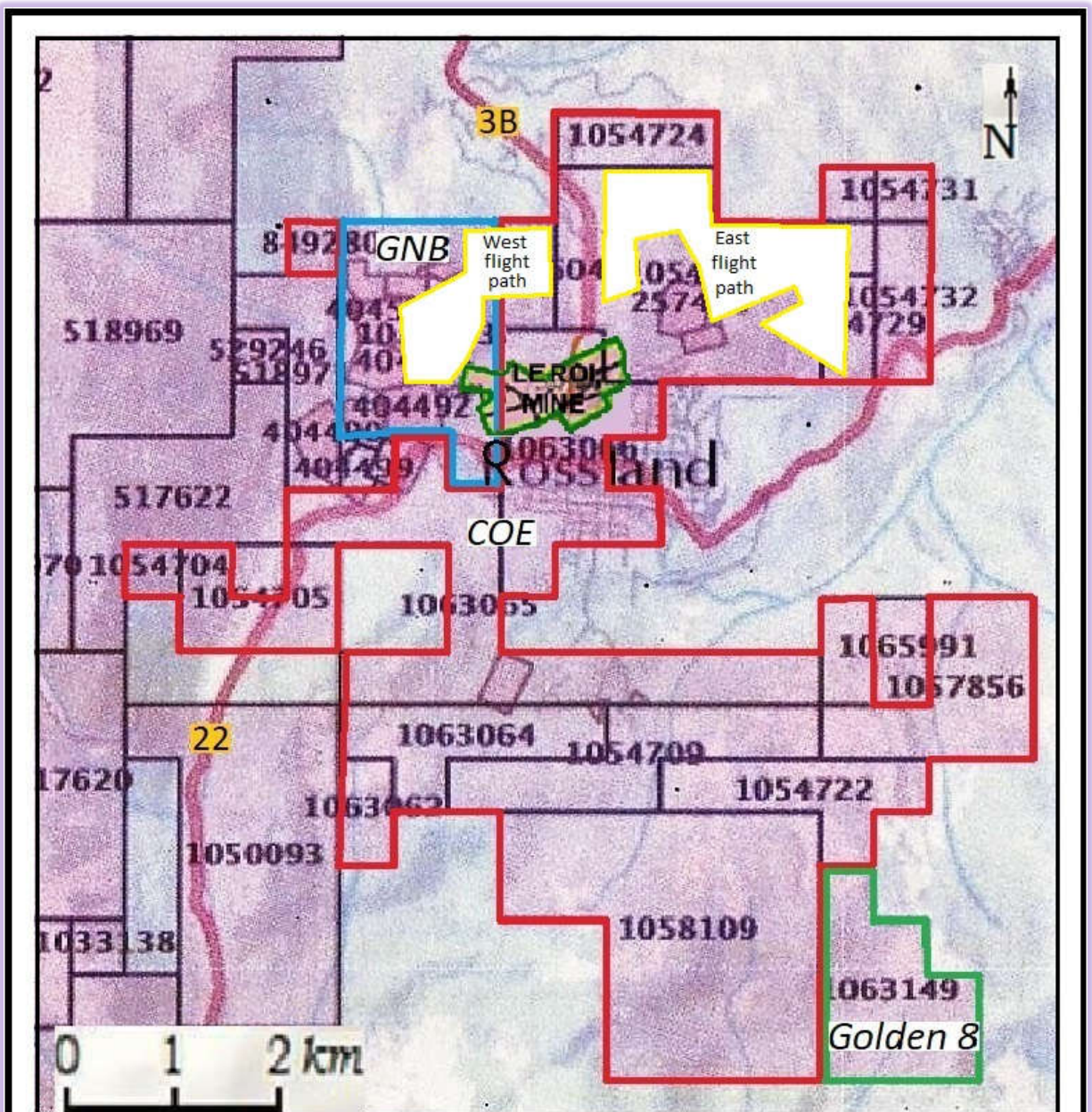


Figure 8 Drone Survey Flight Block Areas

- COE claims - 0811662 BC Ltd.
- GNB claims - 0704723 BC Ltd.
- Golden 8 claim - Roger Zutz

Figure 8: Drone Survey Flight Block Areas

7.0 PROCEDURE

Personnel from Pioneer Aerial Surveys Ltd. arrived in Rossland on Sept. 26, 2018 and after several days of field reconnaissance with the author, plans were made to begin the preparatory orthophoto drone survey. The orthophoto survey is required to help refine the later drone magnetic survey readings by providing accurate treetop and other topographic elevations and positions.

The east and west flight path blocks (Figures 8 and 9), were accessed by 4 X 4 vehicle on gravel roads to various staging points where the aerial drone could safely take-off and land. Visual line of sight between pilot and aerial drone is required, so high points, large clearings or occasionally manlifts were used as pilot stations. The drone would then fly flight lines for approximately fifteen minutes before it would have to land to change batteries. Flight lines were 25 metres apart and data readings were taken every 2.5 metres. Tie lines were flown to enhance the accuracy of the flight grid lines. The orthophoto drone work was completed by Oct. 6, 2018. Technical problems with the drone magnetic sensor prevented further work until Oct. 10, 2018. After several wet weather days and further technical delays the drone magnetic survey was completed on Oct. 31, 2018.

Further technical information regarding the aerial drone geophysical survey, equipment and specifications are detailed in the 'UAV-MAG Survey Logistics Report' prepared by Pioneer Aerial Surveys Ltd. and found in Appendix 3 of this report. The large volume of geophysical raw and refined magnetic data generated by the survey (over 41.5 Megabytes of excel spreadsheet data) was, due to its size, copied onto a memory storage device and submitted separately to MTO BC assessment report staff.

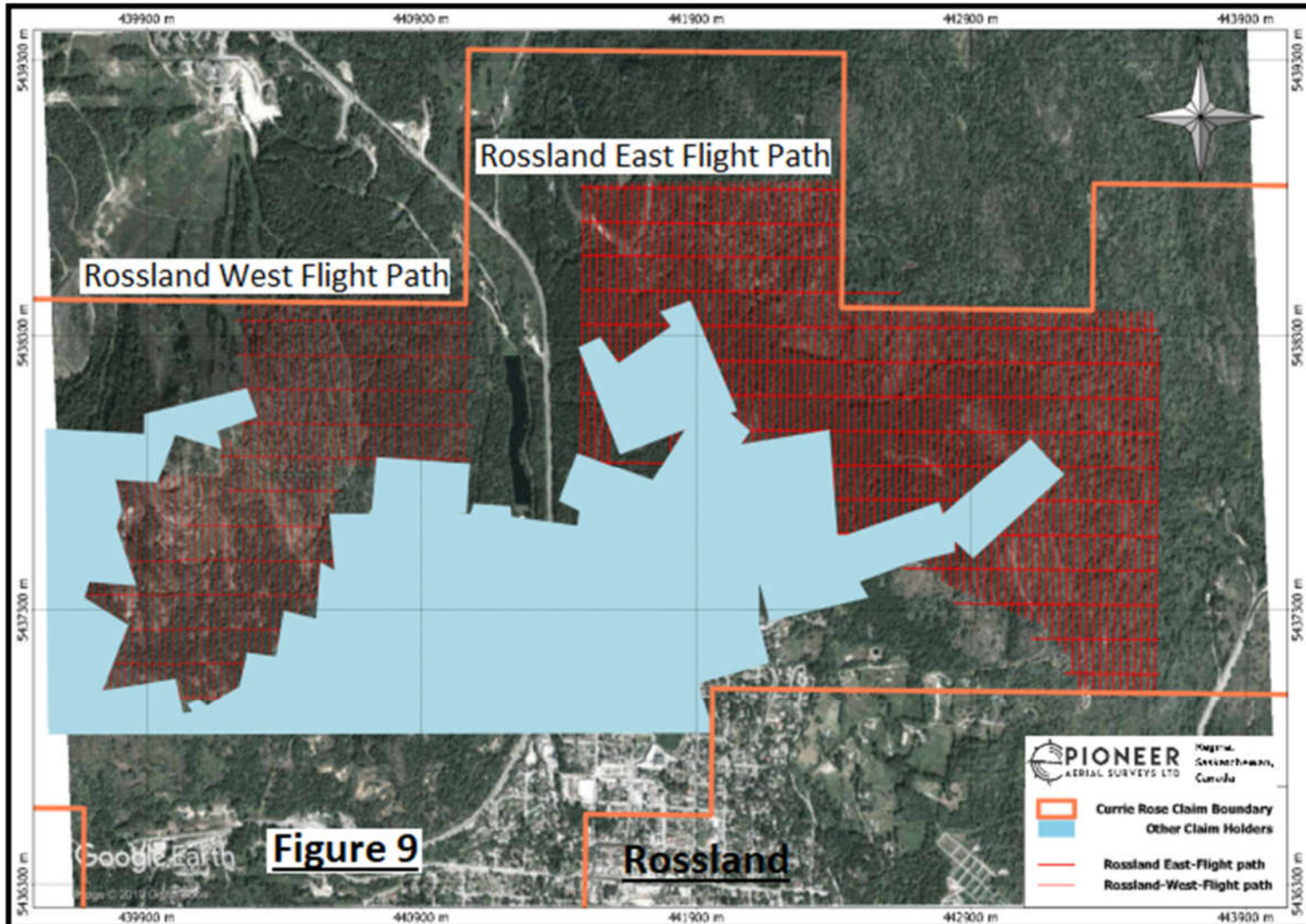


Figure 9: Drone Survey Flight Path Grids (from Pioneer Aerial Survey Ltd.'s report, 'UAV-MAG Survey Logistics Report')

8.0 DISCUSSION OF RESULTS

Figures 10, 11 and 12 display the 2018 Rossland East and West aerial drone survey results as processed by Pioneer Aerial Surveys Ltd. from their ‘UAV-MAG Survey Logistics Report,’ attached in Appendix 3 of this report. These maps show the total magnetic intensity (TMI), first vertical derivative (1VD) and analytic signal (AS) data presentations respectively. The Pioneer report discusses these various data presentations as follows:

‘The final magnetic data has been presented in the form of several different magnetic maps (Appendix 2: Final Maps). Each of these different data presentations is a useful tool for identifying geological structures and other features. The total magnetic intensity (TMI) map is created by interpolating the filtered magnetic data. This is the standard presentation of magnetic data and can be used to highlight major geological structures that may be visible in the survey area by their magnetic signature or their magnetic contrast to their surroundings. The first vertical derivative (VD1) quantifies the rate of change of the magnetic field as a function of elevation. This presentation of the magnetic data emphasizes high frequency features, such as shallow structures and the edges of magnetic source bodies. The analytic signal (AS) typically peaks at the edges of magnetic source bodies, so this is also quite useful for edge detection and delineation of structures.’ (page 7, UAV-MAG Survey Logistics Report, 2018).

The drone magnetic survey results show numerous geophysical anomalies clustered throughout the surveyed claim area and Currie Rose is currently analysing, processing and interpreting this data to help refine future exploration targets.



Flight Parameters:

Flight line spacing: 25 m
 Flight line width: 000°N
 Line spacing: 125 m
 Tie line direction: 090°N
 Average M/G sensor elevation above ground: 50 m

Instrumentation

Unmanned aerial vehicle: Matrice 600 UAV
 In-flight magnetometer: GEM Systems GSM-35UA (Potassium)
 In-flight sampling rate: 10 Hz (0.1 s)
 Ground magnetometer (base station): GEM GSM-10 (Nathanbauer probe)
 Base station sampling rate: 0.16 Hz (6.0 s)

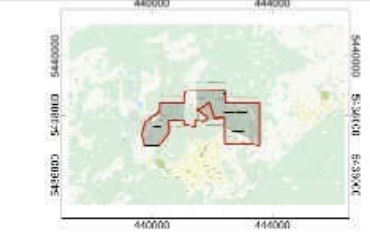
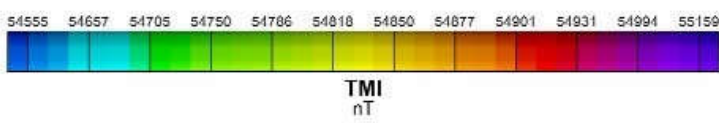
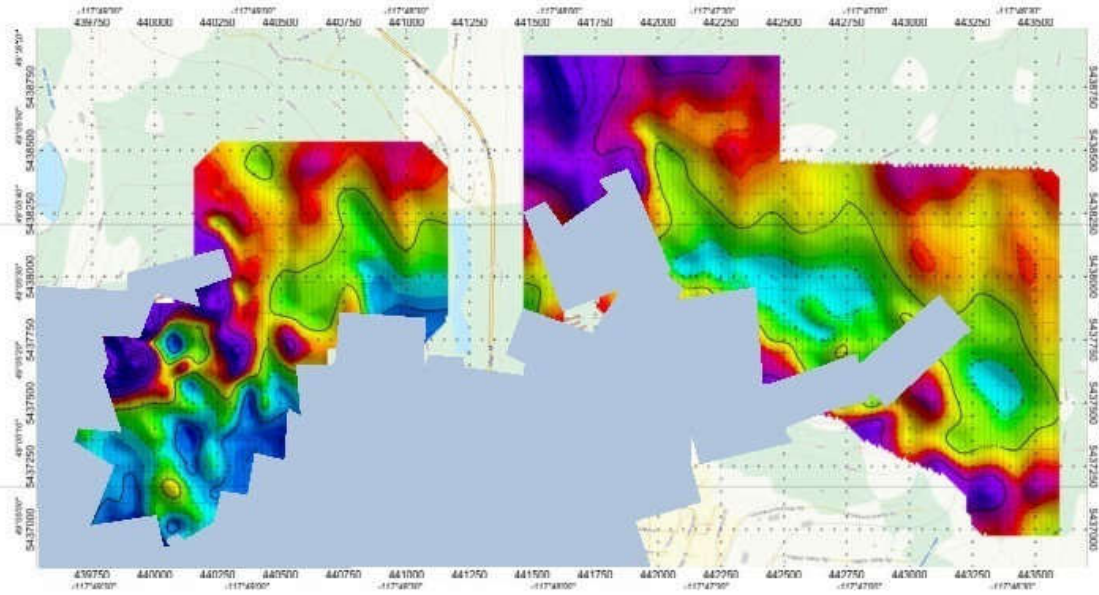
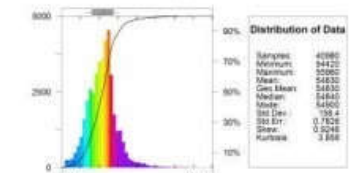
Coordinate system:

Datum: WGS84
 Projection: Universal Transverse Mercator Central meridian (Zone 11N)

Hill shade inclination: 045°N
 Hill shade declination: 045°N (NW-SE)

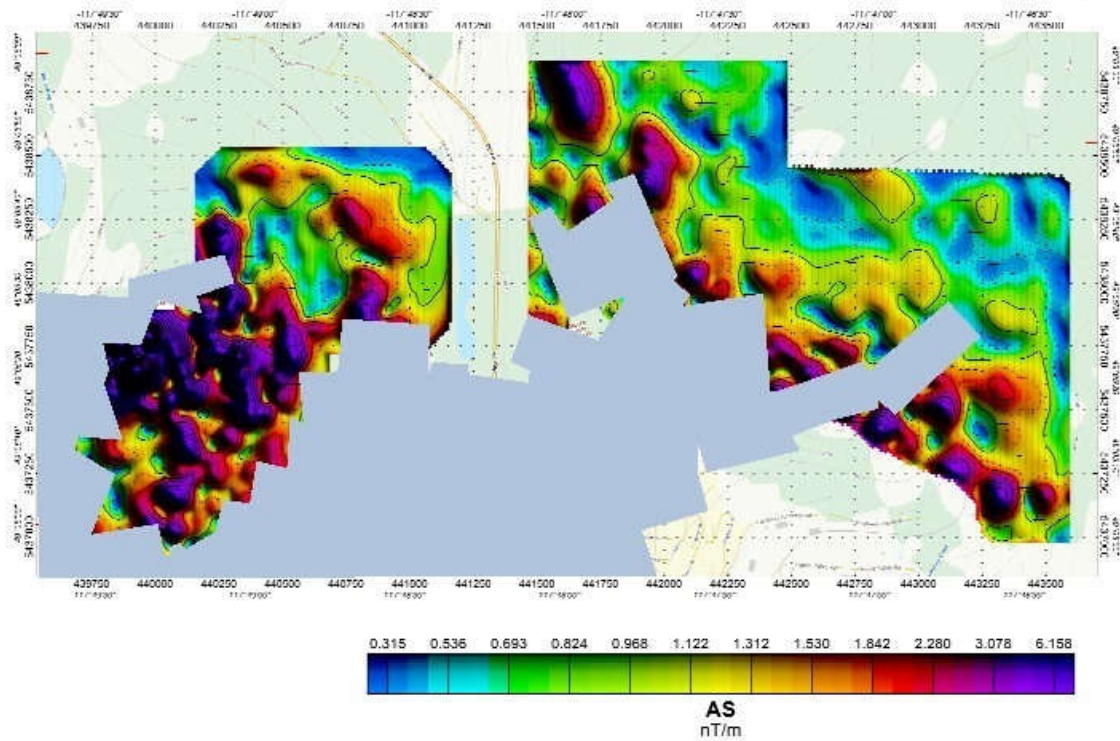
IGRF Model: IGRF 2015

Contour Legend:



Pioneer Aerial Surveys Ltd.
 Levelled UAV Magnetic Survey
 Total Magnetic Intensity
 Units: nT
 Date of Survey: October 2018
 Map Author: Kiyavash Parvar

Figure 10: Drone Survey Results TMI (Total magnetic Intensity)



Scale 1:12000
200 0 200
MAG BY CURR/2018/10/18

Figure 11: Drone Survey Results AS (Analytic Signal)



Flight Parameters:

Flight line spacing: 25 m
Flight line width: 0.00°N
Line spacing: 175 m
Line direction: 080°N
Average MAG sensor elevation above ground: 60 m

Instrumentation:

Unmanned aerial vehicle: Matrox 800 UAV
In sight magnetometer: GLM systems GSNP-3SUA (Hotsum)
In sight sampling time: 10 sec (0.1 s)
Ground magnetometers (base station): GEM 15 (Overhauser proton)
Base station sampling rate: 0.16 Hz (6.0 s)

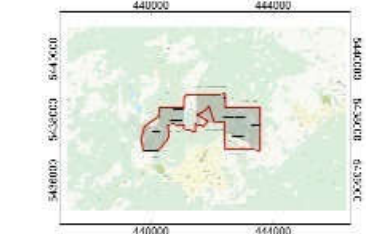
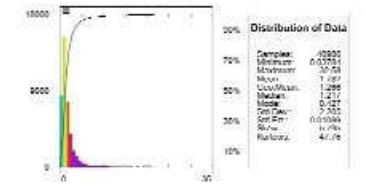
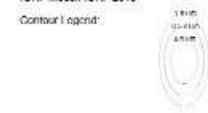
Coordinate system:

Datum: WGS84
Projection: Universal Transverse Mercator Central meridian: (Zone 11N)

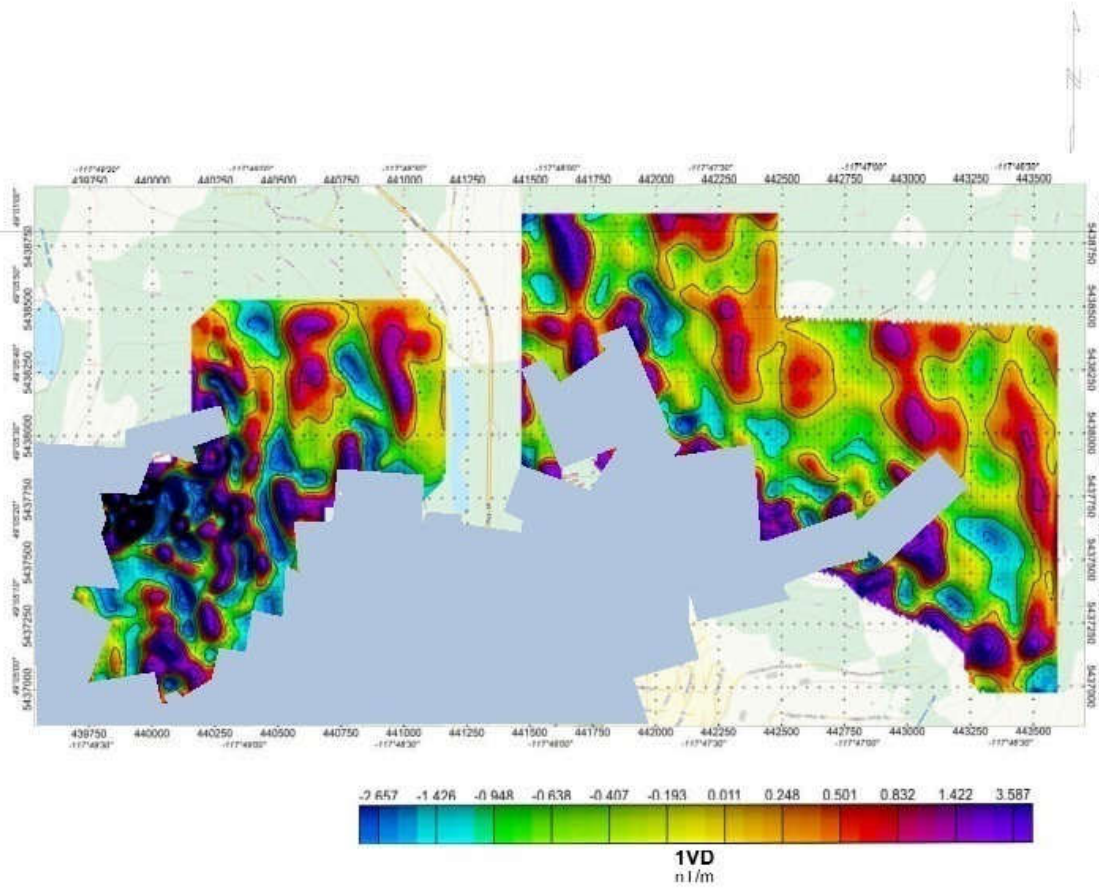
Magnetic inclination: 046°N
Magnetic declination: 105°W (NW-SE)

IGNF Model: IGNF-2010

Contour Legend:



Pioneer Aerial Surveys Ltd.
Levelled UAV Magnetic Survey Analytic Signal Units: nT/m
Date of Survey: October 2018
Map Author: Kiyavash Parvar



Flight Parameters

Flight line spacing: 25 m
 Flight line azimuth: 000°N
 Tie line spacing: 125 m
 Tie line direction: 000°N
 Average MSL sensor elevation above ground: 50 m

Instrumentation:

Unmanned aerial vehicle: Mavlink 600 UAV
 In-flight magnetometer: GEM Systems GSM-35UA (Potassium)
 In-flight sampling rate: 10 Hz (0.1 s)
 Ground magnetometer (base station): GEM GSM-19 (Overhauser proton)
 Base station sampling rate: 0.16 Hz (6.0 s)

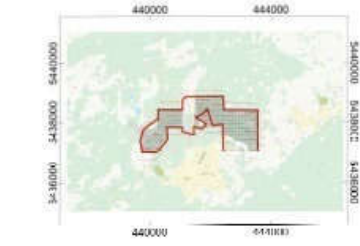
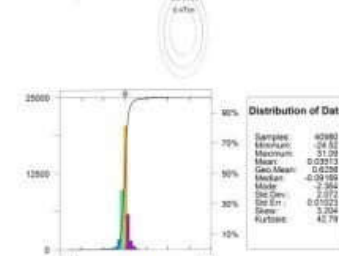
Coordinate system:

Datum: WGS84
 Projection: Universal Transverse Mercator Central meridian (Zone 11N)

Hill shade inclination: 045°N
 Hill shade declination: 045°N (NW-SE)

IGRF Model: IGRF 2015

Contour Legend:



Scale 1:12000
 WGS 84 UTM Zone 11N

Figure 12: Drone Survey Results 1VD (First Vertical Derivative)

Pioneer Aerial Surveys Ltd.
Levelled UAV Magnetic Survey First Vertical Derivative Units: nT/m
Date of Survey: October 2018
Map Author: Kiyavesh Farvar

9.0 CONCLUSIONS AND RECOMMENDATIONS

The recently completed Drone Magnetic Survey has provided further insight into the project area by adding additional new information to the historic detailed geological mapping, historic geophysical surveys and production records from the former Rossland mines which sit adjacent to and within the project area. The Magnetic survey has also added a level of clarity to the mapped lithological contacts which are key drivers of gold mineralization.

In addition, the survey has demonstrated that the method will be a valuable tool for future exploration, particularly in the southern half of the Project where modern data on a regional scale has been missing from the knowledge base as the South Belt has not had any new geophysics for decades.

It should also be noted that the survey was non-evasive with little or no impacts on local residence compared with other airborne methods.

Overall, the new data has provided another layer of quality information that coincides with the historical data and has confirmed our planned drill targets and opened other potential sites from newly generated anomalies.

REFERENCES

ARIS: B.C. Assessment Report Indexing System, 15743, 31127, 32425, 33304.

Drysdale, C.W. (1915): Memoir 77, Geology and Ore Deposits of Rossland, B.C., Geological Survey of Canada.

Dueck, Peter (2018): UAV-MAG Survey Logistics Report, Rossland B.C., Pioneer Aerial Surveys Ltd.

EMPR AR: Energy Mines and Petroleum Resources B.C. Annual Reports, 1896 pg. 558.

Haggen, R.W. (1938): Progress Report to the Directors, Georgia and Mascot areas, Rossland B.C., Gold Cup Mining Company NPL. Unpublished.

Haggen, R.W. (1940): Report on the Georgia & Mascot Groups, Rossland B. C., Rossland B.C., Gold Cup Mining Company NPL. Unpublished.

Hoy, T., and Dunne, K.P.E. (2001): Metallogeny and Mineral Deposits of the Nelson - Rossland Map-area. Part 2, the early Jurassic Rossland group, south-eastern B.C. Bulletin 109 pub. B.C. Ministry & Mines Energy and Minerals Division.

Little, H.W. (1982): Geology of the Rossland-Trail Map Area, GSC report 79-26

MINFILE: 082FSW101, 082FSW102, 082FSW286.

Mouat, Jeremy. (1995): Roaring Days: Rossland's Mines and the History of British Columbia, University of BC Press.

MTO: Mineral Titles Online B.C.

Property File BC

Rossland Historical Museum: Archives.

Thorpe, R.I. (1966): Controls of Hypogene Sulphide Zoning, Rossland, B.C. Ph.D. Thesis, U of Wisconsin.

Wehrle, D. (2009, 2010, 2016): Speaker at Minerals South Conferences, notes and maps from power point presentations. Cranbrook, Nelson, British Columbia.

Appendix 1

Itemized Cost Statement

ITEMIZED COST STATEMENT

Work conducted between Sept. 26 and Oct. 6, 2018. *(including rain/technical delay days)*

Event #5715060

Geophysical Preparatory Survey

<u>Site Planning</u> : Sept. 26 – 28, 3 days @ \$450/day.....	\$1,350.00
<u>Mob in</u> : Oct. 2, @ \$3,000.....	\$3,000.00
<u>Drone Orthophotos</u> : Oct. 3 – 5, @ \$2,500.....	\$2,500.00
<u>Drone Pilot wages</u> : Sept. 26- 28, Oct. 3 – 6, 7 days @ \$450/day.....	\$3,150.00
<u>Operations Manager</u> : Oct. 3 – 6, 4 days @ \$350/day.....	\$1,400.00
<u>Food</u> : 10 units @ \$60/day.....	\$600.00
<u>Man Lift Rental</u> : 2 days @ \$300/day.....	\$600.00
<u>Drone Mag test</u> : Oct. 5.....	<u>\$110.00</u>

Total: \$12,710.00

Work conducted between Oct. 10 – 11; Oct. 23 - 31, 2018. *(including rain/technical delay days)*

Event #5724087 (linked to Event #5715060)

Geophysical Survey

<u>Mob out</u> : Oct. 31, @ \$3,000.....	\$3,000.00
<u>Drone Magnetic Survey</u> : Oct. 11, 24, 25, 28, 30.....	\$9,620.20
<u>Drone Pilot wages</u> : Oct. 11, 24 – 30, 7 days @ \$450/day.....	\$3,150.00
<u>Operations Manager</u> : Oct. 10, 24, 25, 26, 28, 30. 6 days @ \$350/day.....	\$2,100.00
<u>Food</u> : 13.33 units @ \$60/day.....	\$800.00
<u>Man Lift Rental</u> : 9 days @ \$300/day.....	\$2,700.00
<u>Pioneer Logistics Report</u> :.....	\$2,500.00
<u>Accommodation (total)</u> : @ \$900/month (Currie Rose Rossland apartment).....	\$900.00
<u>Assessment Report</u> : P.Geo. 3 days @ \$700/day.....	<u>\$2,100.00</u>

Total: \$26,870.20

Program Total Cost: \$39,580.20

Appendix 2

Authors' Qualifications

AUTHOR'S QUALIFICATIONS

I, Dan Wehrle, a resident of the City of Rossland, in the Province of British Columbia do hereby certify that:

- 1) I am a Professional Geoscientist registered and in good standing with the *Association of Professional Engineers and Geoscientists of British Columbia*.
- 2) I am a 1985 graduate of the *University of Saskatchewan* with a B.Sc. Honours degree in Geology and have practised my profession as Exploration Geologist continuously since 1985.
- 3) This report is based on work supervised by myself on the Currie Rose Rossland Project mineral property in southeastern British Columbia.
- 5) I am President of both 0704723 B.C. Ltd. and 0811662 B.C. Ltd., owners of the GNB and COE mineral claims mentioned in this report.

Disclaimer

The use of this report shall be at the sole risk of the user and I hereby disclaim any and all liabilities arising out of the use and distribution of this report, or reliance by any party on the data herein.

Dated this 19th day of March, 2019 in the City of Rossland, British Columbia.



D. Wehrle P.Geol.

Appendix 3

UAV-MAG Survey Logistics Report



UAV-MAG™ Survey Logistics Report



Pioneer Aerial Surveys Ltd. is a Subsidiary of Global UAV Technologies Ltd., a vertically integrated drone technology company that is publicly traded on the Canadian Securities Exchange under the symbol UAV. For more information refer to www.globaluavtech.com

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Introduction

From October 3rd, 2018 to October 27th, 2018, Pioneer Aerial Surveys Ltd. (Pioneer) completed an airborne magnetic survey (UAV-MAG™) over the Rossland BC property using an Unmanned Aerial Vehicle (UAV). The survey was flown at the request of Currie Rose Resource Inc.

This report covers data acquisition, instrument descriptions, data processing and presentations. The digital data delivery is described later in this report. This report does not include any geological interpretations of the geophysical dataset. Key survey personnel are listed in Table 1.

Table 1: Personnel involved with the project.

<i>Pilot</i>	Thomas Stanley-Jones
<i>Ground Supervisor</i>	Jeremy McCalla, Chase Wood
<i>Data Processing and QA/QC</i>	Kiyavash Parvar

Location

The survey area is located directly north of Rossland, BC. The grid was accessed by 4x4 truck to the staging areas. Due to complexity of the area and rough terrain multiple staging areas were required to complete the survey safely and within the requirements set by Transport Canada (TC). A powered platform man lift was required to maintain line of sight to the drone over the treetops. The general location of the survey grid is shown in Figure 1.

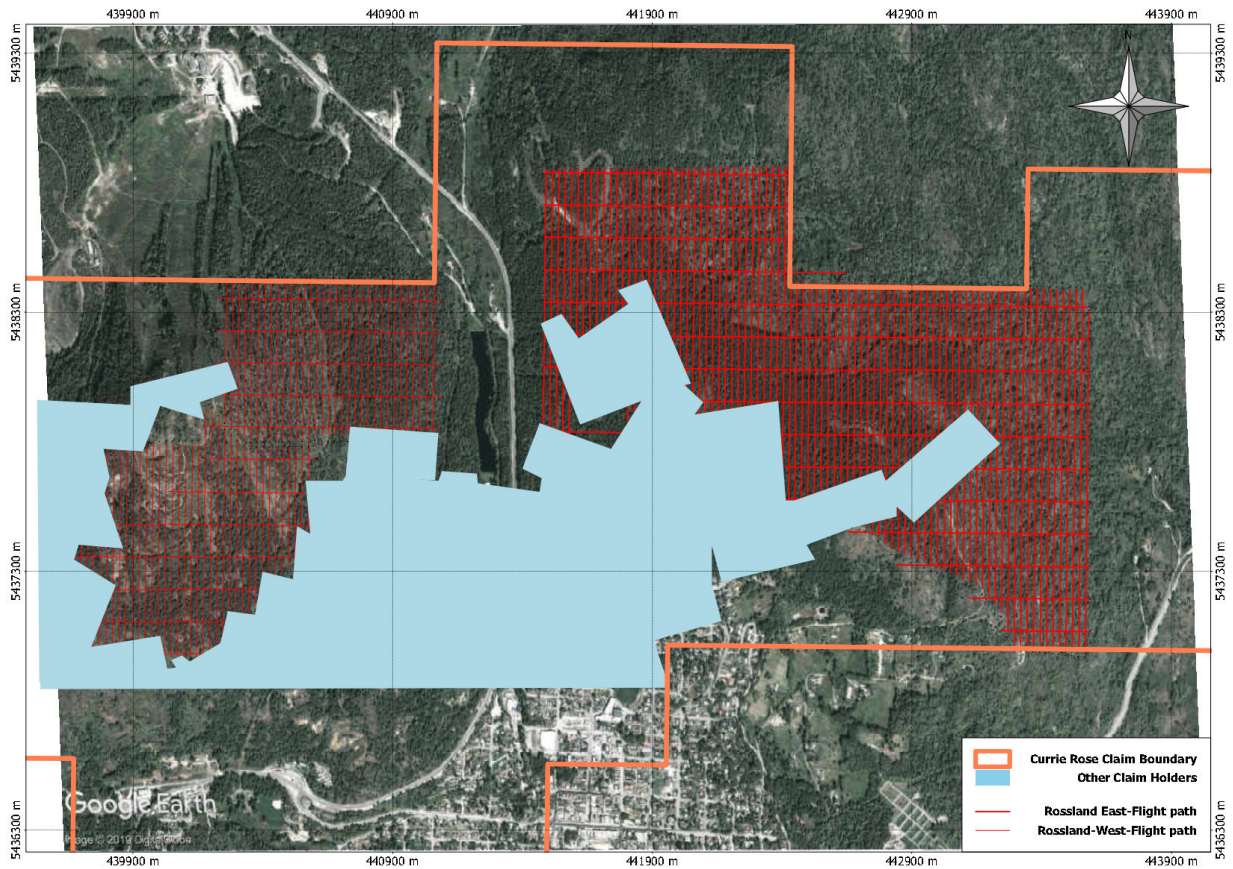


Figure 1: Location of survey area in relation to Rossland, BC. Original quoted survey area is outlined in red, with completed flight lines in purple.

Survey Specifications and Procedures

The nominal altitude above ground level (AGL) was set to 50 m. Elevation data used to determine ground level for this survey was sourced from the Canadian Digital Elevation Model (CDEM) 0.75-arcsecond dataset. The nominal production airspeed is 10 m/s for flat topography with no wind. This may be modified by the field crew in areas of rugged terrain or in windy conditions.

The original survey plan was initially larger than what was completed. When the field crew was on site, they determined that some areas were not able to be surveyed due to major roadways or infrastructure. Details of the completed survey can be found in Table 2.

Table 2: Rossland surveys details.

Area Name	Line Spacing (m)	Line Direction (deg)	Tie Line Spacing (m)	Flight Lines (km)	Tie Lines (km)	Total Line Kilometres (km)
Rossland	25	000°	125	135.51	29.31	164.82

Instrumentation and Software

The principal airborne sensor used was a Gem Systems Canada GSMP-35UA potassium vapor sensor mounted on a UAV platform. Ancillary equipment included a laser altimeter with a 130m range, Global Positioning Satellite (GPS) system antenna and Inertial Measurement Unit (IMU). A stationary GSM-19 Overhauser magnetometer was used as a base station. Raw aerial magnetometer data was collected at a rate of 10 Hz while base station data was collected at a rate of 0.16 Hz. Total field and GPS UTC time was recorded with each data point, enabling diurnal correction to be applied during final data processing.

Magnetic Base Station

A GSM-19 Overhauser Magnetometer base station was placed in a location of low magnetic gradient, away from electrical transmission lines and moving metallic objects, such as motor vehicles and aircrafts. The data collected from this base station was used to diurnally correct the aeromagnetic data. The GSM-19 Overhauser Magnetometer is supplied by GEM systems of Markham, Ontario. General specifications of the magnetometer are included in Appendix 1: Instrument Specification.

Unmanned Aerial Vehicle – Matrice 600

Pioneer used the Matrice 600 UAV to complete this survey. The Matrice 600 (M600) is DJI’s platform designed for professional aerial photography and industrial applications. It is built to closely integrate with a host of powerful DJI technologies, including the A3 flight controller, Lightbridge 2 transmission system, Intelligent Batteries and Battery Management system, for maximum performance and quick setup. As stated by the manufacturer, some of the advantages to using this type of helicopter systems are:

Total Integration: The modular design makes the M600 easy to set up and ready to use in just minutes. Its dust proof propulsion systems simplify maintenance while actively cooled motors make for reliable operation during extended use.

Smart Flight Safety: The M600 uses sine-wave driven, intelligent ESCs to ensure it performs accurately, safely and efficiently while A3’s self-adaptive flight systems adjust flight parameters automatically based on different payloads. The A3 can be upgraded with two additional GNSS and IMU units to A3 Pro or with D-RTK GNSS for enhanced accuracy.

Extended Flight Time and Transmission Range: The M600 features an extended flight time and a 5 km long-range, ultra-low latency HD image transmission for accurate image composition and capture. The system uses 6 small DJI Intelligent Batteries, allowing it to be shipped easily to wherever it is needed. A customized battery management system and power distribution board allows all six batteries to be turned on with the press of a single button and keeps the system in flight in the event of a battery failure. It also allows users to check the battery status in real-time during flight.

Powerful App Control: The M600 supports a live HD view, battery status, redundancy status, transmission strength and much more, straight from the tablet application.

UAV-MAG™ Configuration

GEM System’s UAV GSMP-35UA is a potassium magnetometer providing unmatched sensitivity in addition to a low heading error effect. The GSMP-35UA operates on principles similar to other alkali vapor magnetometers however benefits from the unique nuclear properties of potassium. Each GSMP-35UA system has 0.0002 nT sensitivity combined with +/- 0.1 nT absolute accuracy over its full operating range. More details on the instrument can be found in Appendix 1: Instrument Specification.

Data Deliverables and Channel Descriptions

All data is typically delivered in either Geosoft Database (GDB) or simple formats such as .txt or csv. The data deliverables are client specific to best suit their needs and software requirements. Regardless of software, a database is supplied to the client with channel descriptions as described in Table 3.

Table 3: Database channel descriptions.

Parameter	Explanation	Units/Format
year	Date(Year)	-
month	Date(Month)	-
day	Date(day)	-
hhmmss_s	GNSS time stamp (UTC)	hhmmss.ss
lat	Latitude (WGS84)	Decimal degrees
lon	Longitude (WGS84)	Decimal degrees
alt	GPS altitude above the average sea level	metres
utmE	UTM easting (WGS84)	metres
utmN	UTM northing (WGS84)	metres
sat	Number of locked satellites	metres
zone	UTM zone	-
yaw	IMU yaw reading	Degrees
pitch	IMU pitch reading	Degrees
roll	IMU roll reading	Degrees
nT	Magnetic field readings (Raw)	Nanotesla

nT2	Diurnal correction has been applied on the nT channel (Diurnal datum: 54700 nT)	Nanotesla
Final	Final leveled and micro-leveled data	Nanotesla
VD1	1 st Vertical derivative	nT/m
AS	Analytic Signal	nT/m
Dist	Distance to the first point of the line	metres
laser	Laser altimeter data	metres

Data Processing

In general, all typical magnetic QA/QC and data processing techniques have been applied to the data. All post-field data processing was carried out using Geosoft Oasis Montaj, Python and Microsoft Excel software/ programming languages. Presentation of final maps used ESRI ArcMap and/or Geosoft's Oasis Montaj. Results were gridded using minimum curvature method and a grid cell size of approximately 1/3 of flight line spacing.

The geophysical images accompanying this report are positioned using the WGS 1984 datum. The survey geodetic GPS positions have been map projected using the Universal Transverse Mercator (UTM) projection. A summary of the map datum and projection specifications are as follows:

- Datum: WGS 1984 UTM Zone 11U
- Scale Factor: 1:12000
- Linear Unit: Metre (1)

The magnetic data was first quality checked in the field and any points lacking sufficient georeferenced data or which were excessively noisy were removed. The resulting data was processed as mosaics throughout the survey area as data was collected daily. A final combination of all data formed the final results including lines that were re-flown due to weak or insufficient magnetic signal.

The base station readings were initially processed and filtered to remove sudden spikes. The filtered base station dataset was then used to perform a diurnal correction on the magnetic survey data. The diurnally corrected profile data were interpolated into a grid using the minimum curvature technique with a grid size of approximately 1/3 of flight line spacing. All final maps have a normalized color interval.

After finishing interpolation, initial processing subjected the data to a non-linear filter with a wavelength limit of 3-4 fiducials and tolerance of 0.001. This filter removes extra high frequency features which mostly occur because the sensor is in the dead zone. This usually occurs due to sudden changes in sensor

orientation, effect of ferro-metallic objects, or the influence of weather conditions on the sensor. This filter smooths out noise and high frequency features.

After leveling the data using the tie lines, to mitigate the corrugation effect associated with gaps between the data lines, the data was micro-leveled. This task was done by applying a high-pass butterworth filter with the threshold of 100 metres (line spacing x 4) followed by a directional cosine filter perpendicular to the line direction. The resulted noise channel was then subtracted from the leveled values to microlevel the data. The final result of the leveling and micro-leveling processes was then put in “Final” Channel of the database.

The following corrections were applied to the airborne magnetic data:

- Correction for diurnal variation using the digitally recorded ground base station magnetic values as described above
- Lag was negligible therefore only a minor lag correction was applied
- Heading biases were negligible therefore no heading correction was applied
- Micro-leveling
- Analytic Signal calculation
- First Vertical Derivative calculation

The final maps are included in Appendix 2: Final Maps.

Data Comments

Pioneer's UAV Mag surveys result in a high quality, high resolution data product. The increased flight line density and lower flight elevation possible with the use of a UAV platform result in superior resolution data products when compared to conventional airborne magnetic data. Using an auto-controlled UAV platform also allows for minimal deviation from pre-planned flight lines, and greatly reduces the impact of human error during data collection.

The final magnetic data has been presented in the form of several different magnetic maps (Appendix 2: Final Maps). Each of these different data presentations is a useful tool for identifying geological structures and other features. The total magnetic intensity (TMI) map is created by interpolating the filtered magnetic data. This is the standard presentation of magnetic data, and can be used to highlight major geological structures that may be visible in the survey area by their magnetic signature or their magnetic contrast to their surroundings. The first vertical derivative (VD1) quantifies the rate of change of the magnetic field as a function of elevation. This presentation of the magnetic data emphasizes high frequency features, such as shallow structures and the edges of magnetic source bodies. The analytic signal (AS) typically peaks at the edges of magnetic source bodies, so this is also quite useful for edge detection and delineation of structures.

Logistics remains a major challenge of UAV surveying. In order to operate legally within the guidelines set by Transport Canada, line of sight must be maintained to the UAV and surrounding airspace at all times. This often results in several staging locations being necessary to cover a survey area, and sometimes requires the employment of additional equipment such as an aerial platform or scissor lift in order to achieve unobstructed line of sight beyond surrounding buildings or vegetation.

Pioneer makes every effort to identify potential sources of noise and mitigate their impact on our collected survey data. Flight lines are planned with a minimum of 50 m overlap past the survey boundaries so that the magnetic sensor has time to stabilize itself after the UAV has completed its turns. Wind speeds are carefully monitored and when excessive data inconsistency is noted due to weather conditions, flights are suspended until conditions improve.

Respectfully submitted,



Peter Dueck, P. Geo
President

Appendix 1: Instrument Specification

GSM-19 Overhauser Magnetometer

Performance

Sensitivity: Standard

GSM-19 0.022 nT @ 1 Hz

GSM-19PRO 0.015 nT @ 1 Hz

Resolution: 0.01 nT

Absolute Accuracy: 0.1 nT

Dynamic Range: 20,000 to 120,000 nT

Gradient Tolerance: up to 10,000 nT/m

Samples at: 60+, 5, 3, 2, 1, 0.5, 0.2 sec

Operating Temperature: -40°C to +50°C

Operating Modes

Manual: Coordinates, time, date and reading stored automatically at up to 0.2 sec.

Base Station: Time, date and reading stored at 1 to 60 second intervals.

Remote Control: Optional remote control using RS-232 interface.

Input / Output: Input/Output: RS-232 using 6-pin weatherproof connector with USB adapter.

Memory - (# of Readings in millions)

Mobile: 1.4M,

Base Station: 5.3M,

Gradiometer: 1.2M,

Walking Mag: 2.6M

Dimensions

Console: 223mm x 69mm x 240 mm(8.7x2.7x9.5in)

Sensor: 175mm x 75mm diameter cylinder (6.8in long by 3 in diameter)

Weights

Console with Belt: 2.1 kg

Sensor and Staff Assembly: 1.0 kg

Matrice 600

Structure

Diagonal Wheelbase: 1133 mm

Aircraft Dimensions: 1668 mm x 1518 mm x 759 mm (Propellers, frame arms and GPS mount unfolded)

640 mm x 582 mm x 623 mm (Frame arms and GPS mount folded)

Package Dimensions : 620 mm x 320 mm x 505 mm

Intelligent Flight Battery Quantity: 6

Weight (with six TB47S batteries): 9.1 kg

Weight (with six TB48S batteries): 9.6 kg

Max Takeoff Weight: 15.1 kg

Performance

Hovering Accuracy (P-Mode, with GPS) Vertical: ± 0.5 m, Horizontal: ± 1.5 m

Max Angular Velocity: Pitch: $300^\circ/s$, Yaw: $150^\circ/s$

Max Pitch Angle: 25°

Max Speed of Ascent: 5 m/s

Max Speed of Descent: 3 m/s

Max Wind Resistance: 8 m/s

Max Flight Altitude above Sea Level: 2500 m

Max Speed: 18 m/s (No wind)

Hovering Time (with six TB47S batteries)* No payload: 35 min, 6 kg payload: 16 min

Hovering Time (with six TB48S batteries)* No payload: 40 min, 5.5 kg payload: 18 min

* The hovering time is based on flying at 10 m above sea level in a no-wind environment and landing with 10% battery level.

Remote Controller

Operating Frequency:

- 920.6 MHz to 928 MHz (Japan)
- 5.725 GHz to 5.825 GHz
- 2.400 GHz to 2.483 GHz

Max Transmission Distance (unobstructed, free of interference) :

- FCC Compliant: 3.1 miles (5 km)
- CE Compliant: 2.1 miles (3.5 km)

EIRP:

- 10 dBm @ 900 M/li>
- 13 dBm @ 5.8 G

- 20 dBm @ 2.4 G

Video Output Port: HDMI, SDI, USB

Dual Users Capability: Master-and-Slave control

Mobile Device Holder: Supports smartphones and tablets

Output Power: 9 W

Operating Temperature: 14° to 104° F (-10° to 40° C)

Storage Temperature:

Less than 3 months: -4° to 113° F (-20° to 45° C)

More than 3 months: 72° to 82° F (22° to 28° C)

Charge Temperature: 32° to 104° F (0° to 40° C)

Built-in Battery: 6000 mAh, 2S LiP

Max Tablet Width: 170 m

Propulsion System

Motor Model: DJI 6010

Propeller Model: DJI 2170

Battery

Model: TB48S

Capacity: 5700 mAh

Voltage: 22.8 V

Type: LiPo 6S

Energy: 129.96 Wh

Net Weight: 680 g

Operating Temperature: 14° to 104° F (-10° to 40° C)

Storage Temperature: Less than 3 months: -4° to 113° F (-20° to 45° C)

More than 3 months: 72° to 82° F (22° to 28° C)

Charge Temperature: 41° to 104° F (5° to 40° C)

Max Charging Power: 180 W

Charger

Model: A14-100P1A

Voltage: Output 26.3 V

Power Rating: 100 W

GEM GSMP-35UA: Ultra Light-Weight Potassium Magnetometer

Magnetometer Specifications

Sensitivity: 0.0002 nT @ 1 Hz
Resolution: 0.0001 nT
Absolute Accuracy: +/- 0.1 nT
Heading Error: + / - 0.05 nT
Dynamic Range: 15,000 to 120,000 nT
Gradient Tolerance: 50,000 nT/m
Sampling Intervals: 1, 2, 5, 10, 20 Hz
Operating Temperature: -40°C to +55°C

Orientation

Sensor Angle: optimum angle 35° between sensor head axis & field vector.
Proper Orientation: 10° to 80° & 100° to 170°
Heading Error: +/- 0.05 nT between 10° to 80° and 360° full rotation about axis.

Environmental

Operating Temperature: -40°C to +55°C
Storage Temperature: -70°C to +55°C
Humidity: 0 to 100%, splashproof

Dimensions & Weight

Sensor: 161mm x 64mm (external dia) with 2m cabling ; 0.43 kg
Electronics Box: 236mm x 56mm x 39mm; 0.46 kg
Option 1 cabling; .125kg
Option 3 light weight battery; .250kg

Power

Power Supply: 18 to 32 V DC
Power Requirements: approx. 50 W at start up, dropping to 12 W after warm-up
Power Consumption: 12 W typical at 20°C
Warm-up Time: <15 minutes at -40°C

Outputs

20 Hz RS-232 output with comprehensive Windows Personal Computer (PC) software for data acquisition and display.

Outputs UTC time, magnetic field, lock indication, heater, field reversal, GPS position (latitude, longitude altitude, number of satellites)

Components

Sensor, pre-amplifier box, 2m sensor /pre-amplifier cable (optional cable 3-5m), manual & shipping case

Appendix 2: Final Maps

Flight Parameters:

Flight line spacing: 25 m
 Flight line azimuth: 090°N
 Tie-line spacing: 125 m
 Tie-line direction: 090°N
 Average MAG sensor elevation above ground: 50 m

Instrumentation:

Unmanned aerial vehicle: Matrice 600 UAV
 In-flight magnetometer: GEM Systems GSMP-35UA (Potassium)
 In-flight sampling rate: 10 Hz (0.1 s)
 Ground magnetometers (base station): GEM GSM-19 (Overhauser proton)
 Base station sampling rate: 0.16 Hz (6.0 s)

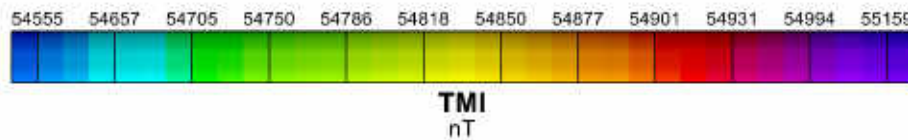
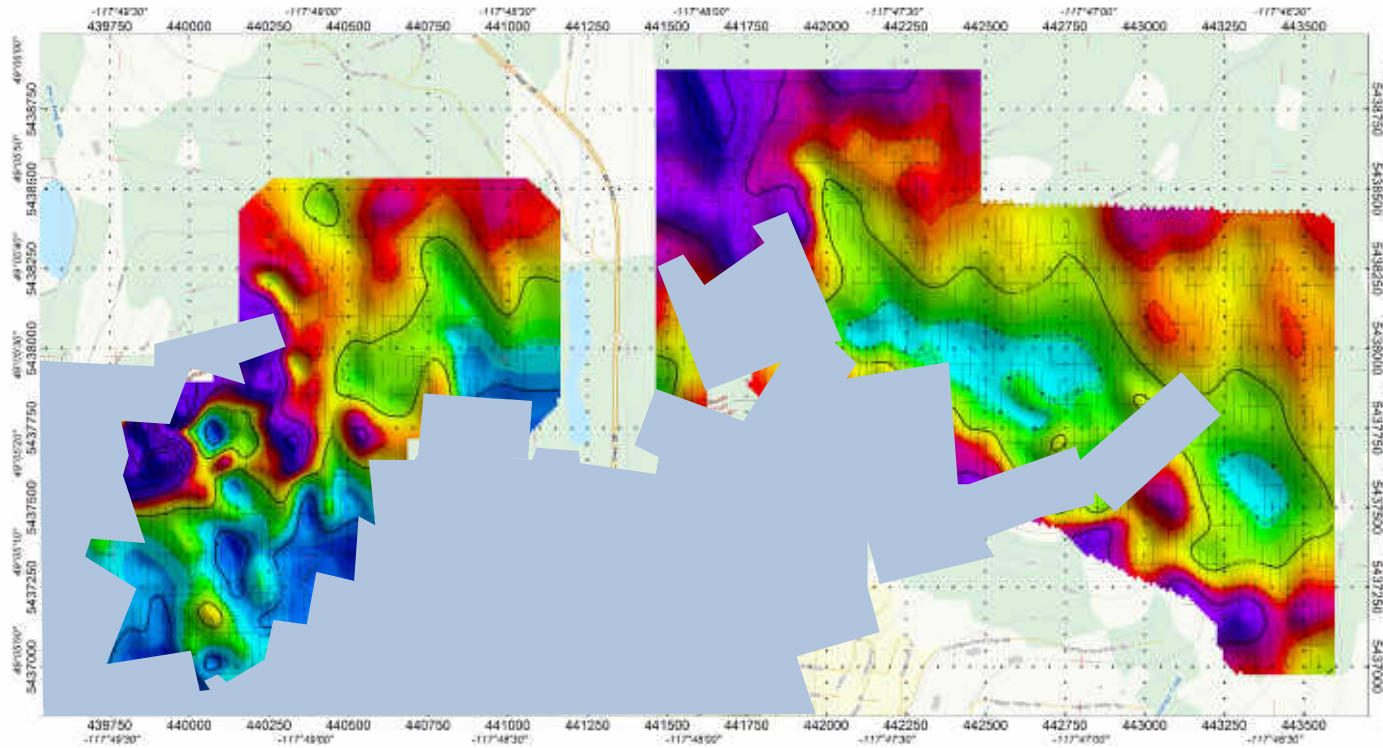
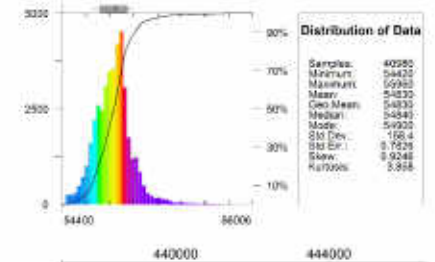
Coordinate system:

Datum: WGS84
 Projection: Universal Transverse Mercator Central meridian (Zone 11N)

Hill shade inclination: 045°N
 Hill shade declination: 045°N (NW-SE)

IGRF Model: IGRF 2015

Contour Legend:



Scale 1:12000
 0 250
 meters
 WGS 84 UTM zone 11N

Pioneer Aerial Surveys Ltd.

Levelled UAV Magnetic Survey
 Total Magnetic Intensity
 Units: nT

Date of Survey: October 2018

Map Author: Kiyavash Parvar

Flight Parameters:

Flight line spacing: 25 m
 Flight line azimuth: 090° N
 Tie-line spacing: 125 m
 Tie-line direction: 090° N
 Average MAG sensor elevation above ground: 50 m

Instrumentation:

Unmanned aerial vehicle: Matrice 600 UAV
 In-flight magnetometer: GEM Systems GSMP-35UA (Potassium)
 In-flight sampling rate: 10 Hz (0.1 s)
 Ground magnetometers (base station): GEM GSM-19 (Overhauser proton)
 Base station sampling rate: 0.16 Hz (6.0 s)

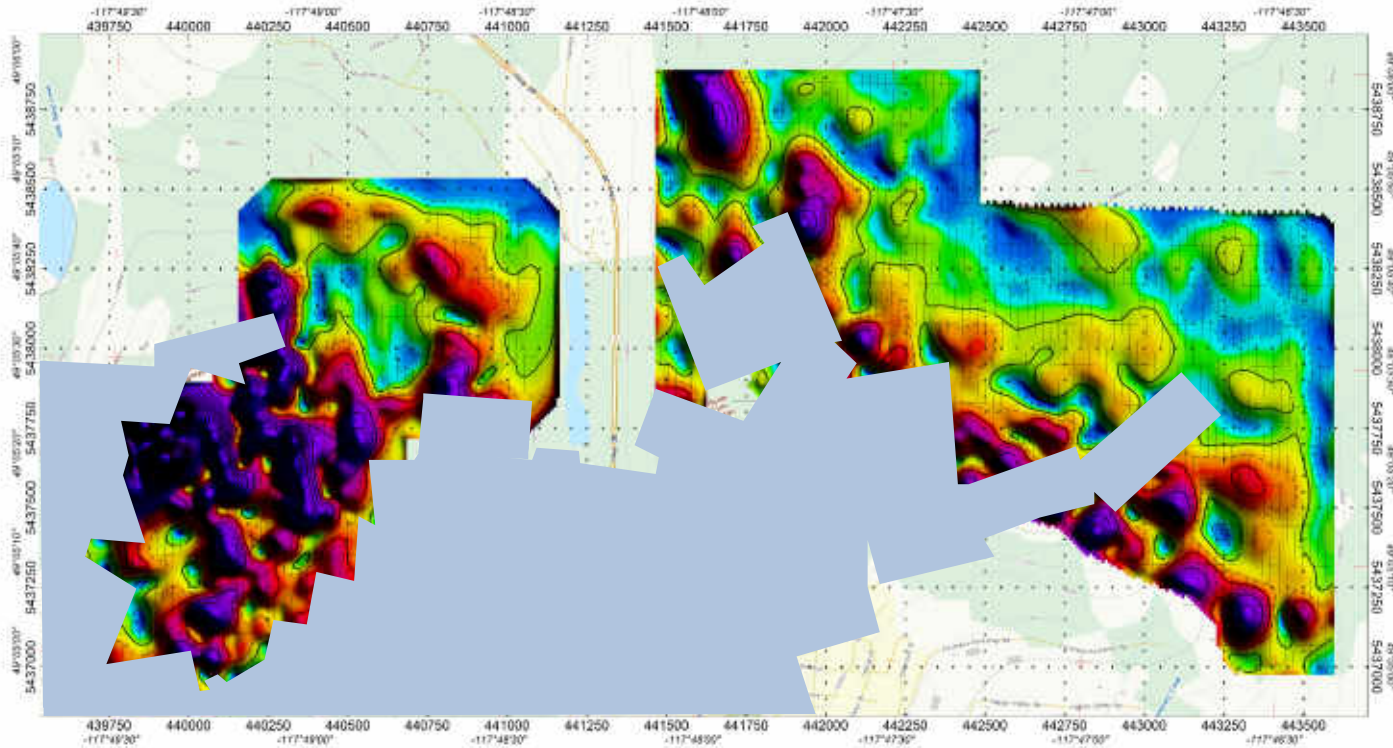
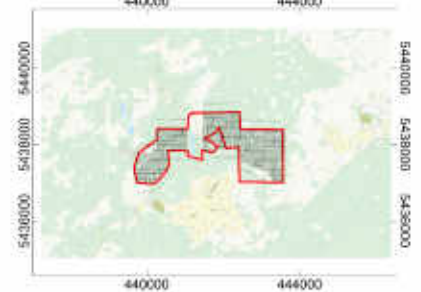
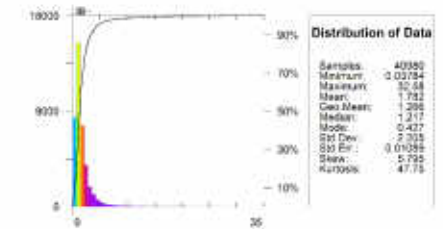
Coordinate system:

Datum: WGS84
 Projection: Universal Transverse Mercator Central meridian: (Zone 11N)

Hill shade inclination: 045° N
 Hill shade declination: 045° N (NW-SE)

IGRF Model: IGRF 2015

Contour Legend:



AS
nT/m

Scale 1:12000
 0 250
 meters
 WGS 84 / UTM zone 11N

Pioneer Aerial Surveys Ltd.

Leveled UAV Magnetic Survey
 Analytic Signal
 Units: nT/m

Date of Survey: October 2018

Map Author: Kiyavash Parvar

Flight Parameters:

Flight line spacing: 25 m
 Flight line azimuth: 090°N
 Tie-line spacing: 125 m
 Tie-line direction: 090°N
 Average MAG sensor elevation above ground: 50 m

Instrumentation:

Unmanned aerial vehicle: Matrice 600 UAV
 In-flight magnetometer: GEM Systems GSMP-35UA (Potassium)
 In-flight sampling time: 10 Hz (0.1 s)
 Ground magnetometers (base station): GEM GSM-19 (Overhauser proton)
 Base station sampling rate: 0.16 Hz (6.0 s)

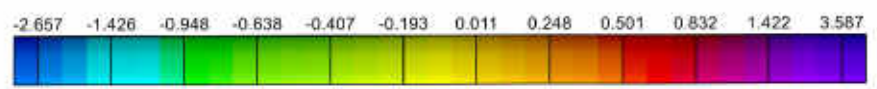
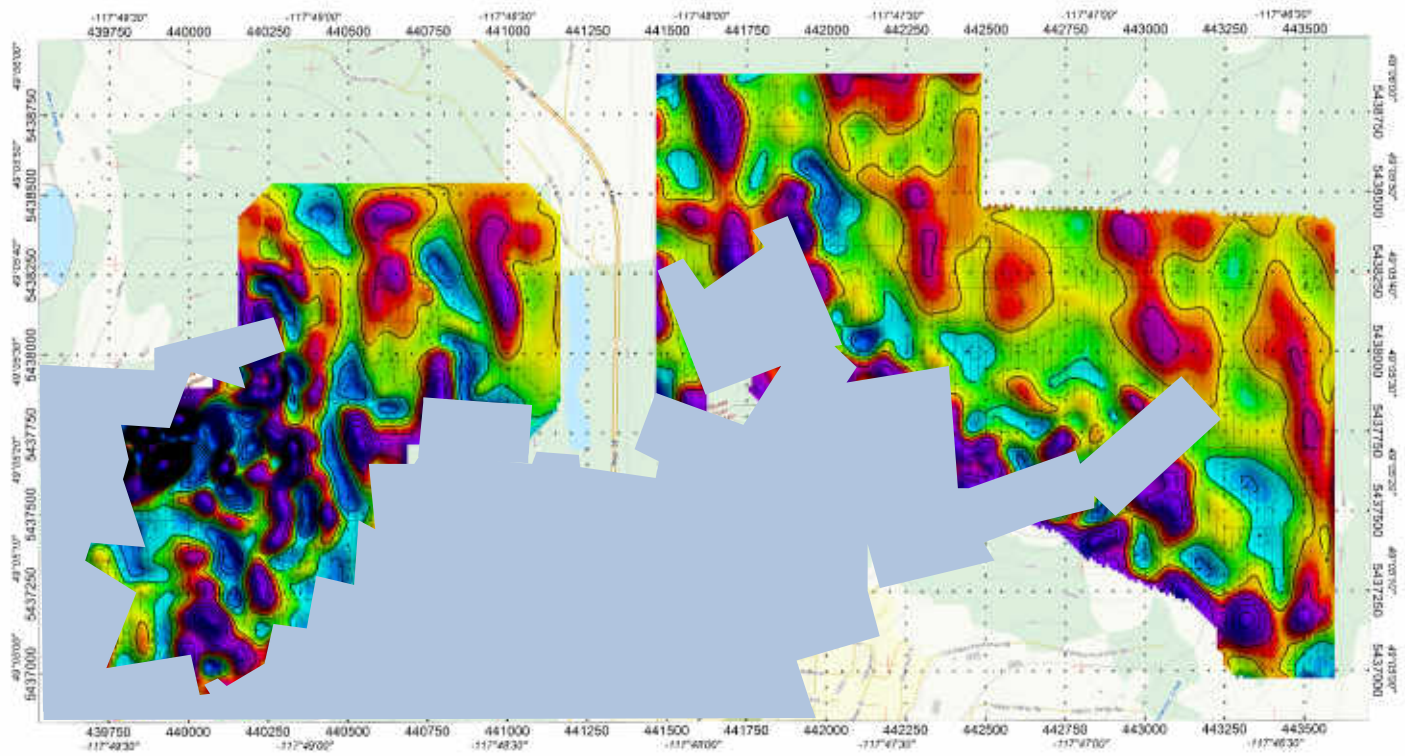
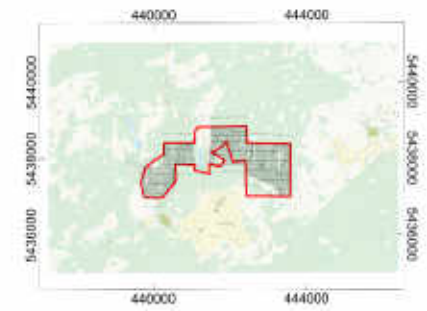
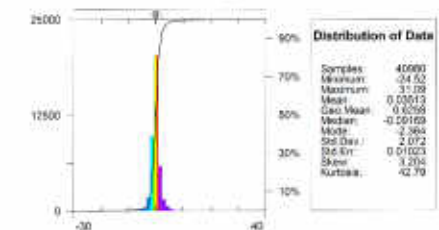
Coordinate system:

Datum: WGS84
 Projection: Universal Transverse Mercator Central meridian (Zone 11N)

Hill shade inclination: 045°N
 Hill shade declination: 045°N (NW-SE)

IGRF Model: IGRF 2015

Contour Legend:



1VD
nT/m

Scale 1:12000
 METERS
 WGS 84 / UTM Zone 11N

Pioneer Aerial Surveys Ltd.
Levelled UAV Magnetic Survey First Vertical Derivative Units: nTm
Date of Survey: October 2018
Map Author: Kiyavash Parvar