

**Technical Report**

**Geology of the Rocky Mountains Claim Block  
with  
Recommendations for Further Exploration**

**Fort Steele Mining Division, British Columbia**

**NTS 82G/12**

UTM Zone 11, 603842E, 5512504N

For

**Property owner/operator:  
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By

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## 1.0 Summary

1. The Rocky Mountains Claim Block (RMCB) is 100% owned by Ruby Red Resources Inc. (RRX); it is located in the Hughes Range of the western Rocky Mountains, adjacent to the Rocky Mountain Trench at Kimberley, British Columbia.
2. The Spirit Dream and Loose Leg properties, which occur within the RMCB, represent large-tonnage gold prospects.
3. Visible gold is hosted by quartzite (arenite and wacke) within the upper part of Mesoproterozoic Aldridge Formation; the host quartzite is part of a slope assemblage of strata that occupies the change in facies between the shallow water platform assemblage on the east and the rift axis assemblage on the west (where the Sullivan mine is situated).
4. Rock samples containing gold concentrations to 18 grams per tonne highlight a mineralized unit approximately 100 m thick and more than 5 km long.
5. The target unit, called the Spirit Dream quartzite, is pervasively altered (sericite-quartz-pyrite-Fe oxide-Fe carbonate) and veined throughout its length and width.
6. Veins are closely spaced (centimeter scale), have widths ranging from millimeters to centimeters, and range in length from centimeters to a metre.
7. There is a preferred vein orientation perpendicular to bedding, an observation that should be taken into account when planning a drill program.
8. Multiple episodes of vein production are evidence that the mineralizing system was resurgent.
9. The combination of stratigraphic setting – permeable quartzite sandwiched between argillite aquacludes – and structural setting – a steep, overturned, west-dipping rock panel detached above the major east-verging Lussier thrust fault, account for both the focus of fluid flow and the resurgent nature of the fluid system.
10. The Spirit Dream property occupies a large catchment bowl from which substantial material has been removed by alpine glaciations and stream erosion; as such, it represents a likely source for the Wild Horse River gold placer deposits located 8 km downstream and from which 1.5 million ounces of gold have been recovered.
11. The Spirit Dream and loose Leg properties are part of the regional Kimberley gold trend, a zone of anomalous gold concentrations which can be traced approximately 100 km from near the town of Creston, east northeast across the Purcell Mountains to the Rocky Mountain Trench at Cranbrook, and from there to the north along the Hughes Range of the western Rocky Mountains.
12. The Kimberley gold trend reflects dilation and focused fluid flow along structures developed above the Vulcan tectonic zone, an east-west trending basement feature that controlled Proterozoic and Paleozoic basin geometry, as well as the configuration of Jurassic and Cretaceous thrust faults and folds.

## 2.0 Introduction and Terms of Reference

Ruby Red Resources Inc. (RRX) engaged RIT Minerals Corp. (RITM) to report on the geology of their Rocky Mountains Claim Block (RMCB), which comprises 26 mineral tenures covering approximately 9,782 hectares located in the western Rocky Mountains of southeastern British Columbia adjacent to the Rocky Mountain Trench. The town of Kimberley is located approximately 30 km due west. The author, R. I. (Bob) Thompson, PhD, PEng, President of RIT Minerals Corp., spent sixteen days mapping and examining the property in July and August 2009.

### 2.1 Terms of Reference

The author is not associated or affiliated with Ruby Red Resources Inc. or any related companies. Fees paid to RITM Corp. for the field work done and the preparation of this Technical Report are not dependent in whole or in part on any prior or future engagement or understanding resulting from the conclusions of this report. The fees are in accordance with industry standards for work of this nature.

All of the figures in this report were prepared by or under the direction of the author. The sections of this report that discuss geochemical aspects of the Property rely in part on unpublished analyses of rock and soil samples collected by contractors and analyzed by ACME Laboratories Ltd. an accredited, third party, independent laboratory. Sections of the report that describe regional-, local- and property-scale geology rely on (16 days) field work undertaken by the author and on the following reports:

Höy, T., 1993, Geology of the Purcell Supergroup in the Fernie West-Half Map Area, Southeastern British Columbia: BC Ministry of Energy, Mines and Petroleum Resources Mineral Resources Division, Bulletin 84, 157p.

Ransom, P., 2006, NI 43-101 Technical Report on Year 2005 Property (Mineral Claims) Acquisition by Ruby Red Resources Inc. from Supergroup Holdings Ltd. <http://www.sedar.com/DisplayCompanyDocuments.do?lang=EN&issuerNo=00024735>

Thompson, R.I., Glombick, P., Erdmer, P., Heaman, L.M., Lemieux, Y. and Daughtry, K.L., 2006, Evolution of the ancestral Pacific margin, southern Canadian Cordillera: Insights from new geological maps, *in* Colpron, M. and Nelson, J.L., eds., Paleozoic Evolution and Metallongeny of Pericratonic Terranes at the Ancient Pacific Margin of North America, Canadian and Alaskan Cordillera: Geological Association of Canada, Special Paper 45, p. 433-482.

This report presents: 1) a description of the general geological setting of the Property, a description and analysis of the geological mapping carried out by the author, and a structural interpretation based on structure cross-section preparation; 2) an evaluation of the merits of the Property; and 3) recommendations for future exploration. All reports reviewed by the author are listed in the references at the end of this report.

The author is familiar with the Property having spent 16 days during the period July 1<sup>st</sup> to August 30<sup>th</sup>, 2009 mapping and evaluating it. As well, he spent several weeks in 2009



mapping and evaluating nearby properties underlain by similar rocks in the Purcell Mountains. The author was also responsible for regional mapping and geological compilation in the Vernon (82L) and Lardeau (82K) map areas in the period 1993 – 2006 (e.g. Thompson et. al., 2006 and references therein).

All measurement units used in this report are metric. The coordinate system in use on the Property and on all maps is UTM zone 11.

There was no limitation placed on the author with respect to information regarding RRX in the preparation of this report.

## **2.2 Abbreviations and Acronyms**

A list of frequently used acronyms and abbreviations follow:

*AAS*: atomic absorption spectroscopy (laboratory analytical procedure)

*Ag*: silver

*As*: arsenic

*Au*: gold

*Bi*: bismuth

*cm*: centimetre

*Cu*: copper

*g/t*: grams per tone

*Hg*: mercury

*ICP*: Inductively Coupled Plasma (laboratory analytical procedure)

*kg*: kilogram

*km*: kilometre

*KV*: kilovolts

*lpm*: litres per minute

*m*: metre

*masl*: metres above sea level

*mm*: millimetre

*ppb*: parts per billion

*ppm*: parts per million (34.286 ppm equals one troy ounce per short ton)

*Pb*: lead

*RC*: reverse circulation drilling method

*tonne*: metric ton (1000 kg)

*Zn*: zinc

## **3.0 Reliance on Other Experts**

The author has not personally reviewed land tenure, is not a Qualified Person with regard to land tenure in British Columbia, Canada, and has not independently verified the legal status or ownership of the property or any underlying option agreements. It is the author's understanding that Ruby Red Resources Inc. is the sole registered owner of the mineral claims described herein, and that the claims are free and clear of all Crown-granted claims.

The results and opinions expressed in this report are conditional upon the aforementioned geological and geochemical information being current, accurate, and complete as of the date of this report, and the understanding that no information has been withheld that would affect the conclusions made herein.

## 4.0 Mineral Tenure Description and Location

The RMCB is roughly centered at: UTM Zone 11 603842E, 5512504N within NTS map sheet 82G/12 in the Hughes Range of the western Rocky Mountains. The tenures occupy the Wild Horse River drainage on the south and east, the Lewis Creek and Wasa Creek drainages on the west, and the upper part of the Nicol Creek drainage on the north (Fig. 1). The town of Kimberley is located 32 km to the west on the far side of the Rocky Mountain Trench; the town of Cranbrook is located 29 km to the south west; and the village of Wasa, on Wasa Lake, is 10 km to the west on the eastern margin of the trench (Figs. 1 and 2).

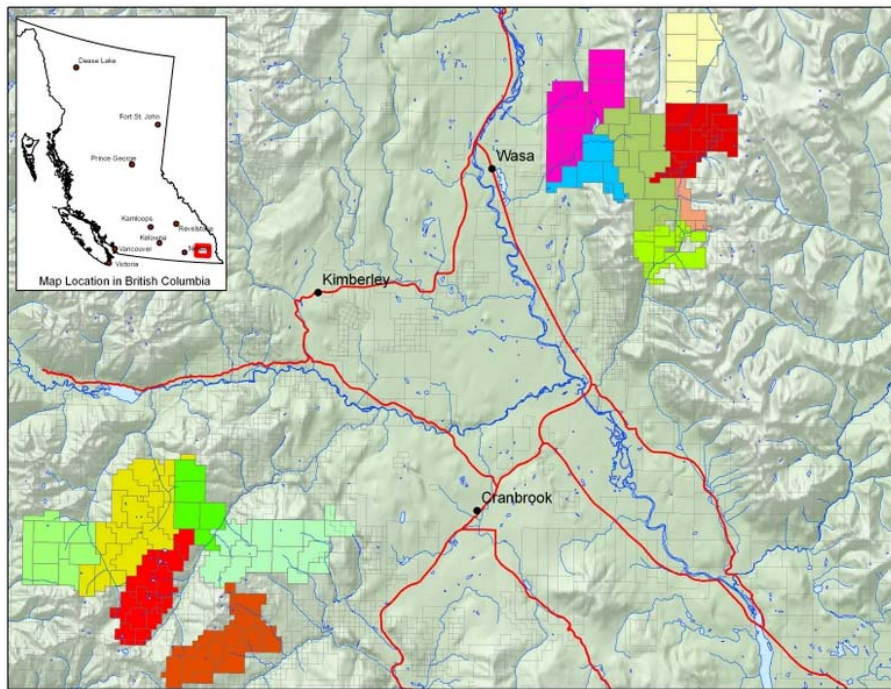


Figure 1: Location of Ruby Red Resources Ltd. mineral tenures in the Purcell and Rocky Mountains. The Rocky Mountains tenure block, is located directly east of Wasa, in the Hughes Range of the western Rocky Mountains.



Figure 2: Mid winter view east across the Rocky Mountain Trench from the town of Kimberley, southeastern British Columbia. The Rocky Mountains claim block extends the width of the image. The Estella deposit is located above tree line left of the highest snowcapped peak.

The RMCB comprises 26 mineral tenures containing 9,782 hectares (Fig. 3; Table I). The mineral cell titles were acquired online and as such there are no posts or lines marking the location of the Property on the ground.

The author has checked the status of recorded ownership and expiry dates of the cell claims as listed in the Ministry of Energy, Mines and Petroleum Resources, Mineral Titles Division website. All claims are in good standing until the expiry dates listed in Table I.

#### **4.1 Environmental Permits**

The author is not aware of any environmental issues specific to the Property.



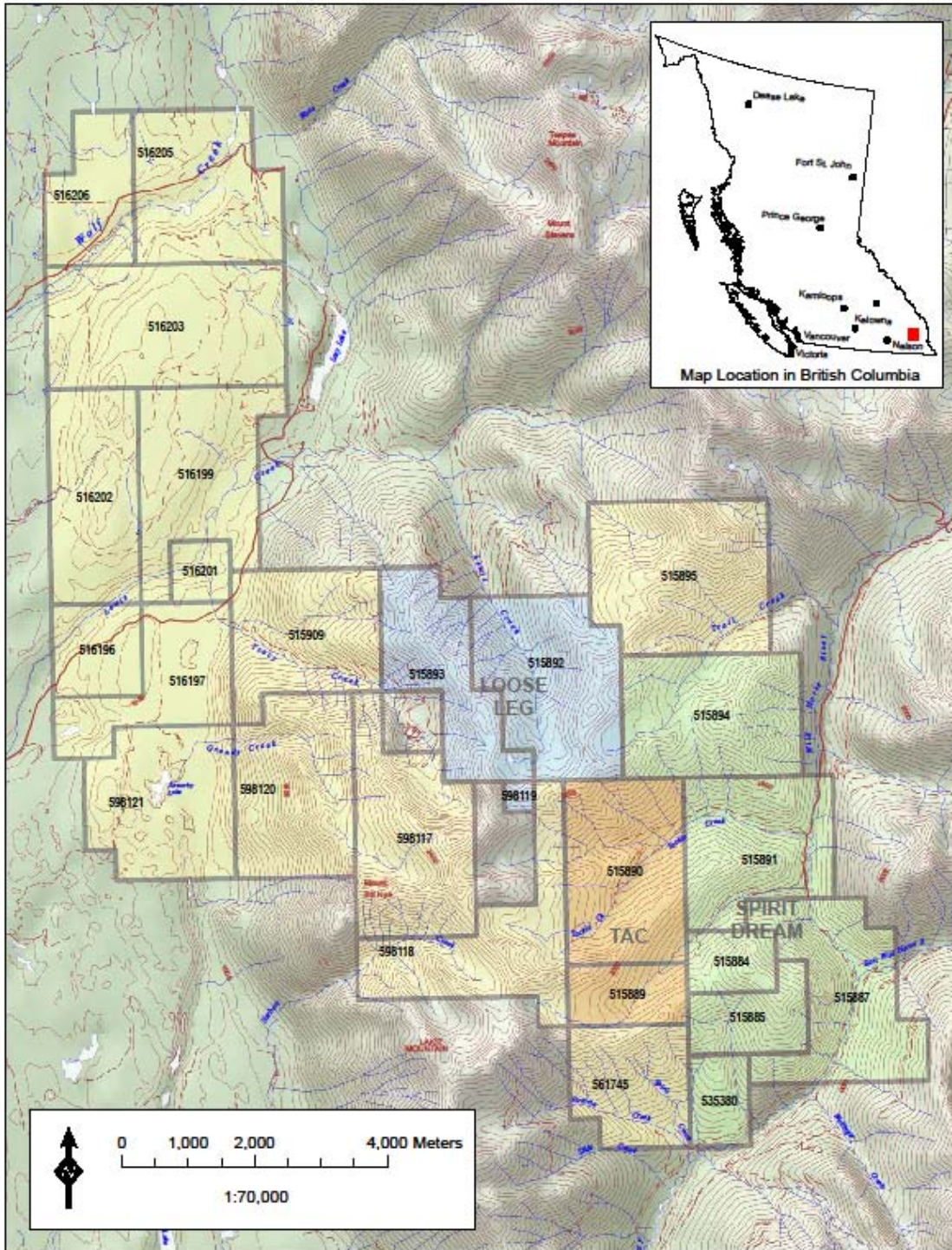


Figure 3: Digital elevation map showing location of the Rocky Mountains Claim Block mineral tenures relative to the course of the Wild Horse River flowing south-west across the southeastern part of image. Three properties within the RMCB: Spirit Dream, Tac and Loose Leg, are the main focus of this report.

Tenure No.	Name	Owner	NTS	Date
515884		145300 (100%)	82G12	2005-07-03
515885		145300 (100%)	82G12	2005-07-03
515887		145300 (100%)	82G12	200-507-03
515889		145300 (100%)	82G12	2005-07-03
515890		145300 (100%)	82G13	2005-07-03
515891		145300 (100%)	82G13	2005-07-03
515892		145300 (100%)	82G13	2005-07-03
515893		145300 (100%)	82G13	2005-07-03
515894		145300 (100%)	82G13	2005-07-03
515895		145300 (100%)	82G13	2005-07-04
515909		145300 (100%)	82G13	2005-07-04
516196		145300 (100%)	82G13	2005-07-06
516197		145300 (100%)	82G13	2005-07-06
516199		145300 (100%)	82G13	2005-07-06
516201		145300 (100%)	82G13	2005-07-06
516202		145300 (100%)	82G13	2005-07-06
516203		145300 (100%)	82G13	2005-07-06
516205		145300 (100%)	82G13	2005-07-06
516206		145300 (100%)	82G13	2005-07-06
535380		114544 (30%)	82G12	2006-06-09
561745	SPIRIT WEST 2	145300 (100%)	82G12	2007-06-30
598117	ROCKY 01-09	145300 (100%)	82G13	2009-01-28
598118	ROCKY 02-09	145300 (100%)	82G12	2009-01-28
598119	ROCKY 03-09	145300 (100%)	82G13	2009-01-28
598120	ROCKY 03-09	145300 (100%)	82G13	2009-01-28
598121	ROCKY 05-09	145300 (100%)	82G13	2009-01-28

Owner 145300 - Ruby Red Resources Inc.

Owner 114544 - Brian Kostiuk

Table I: Description of Rocky Mountains Claim Block (RMCB) mineral titles.

## 5.0 Accessibility, Climate, Local Resources, Infrastructure, and Physiography

Maps showing up-to-date road access for the region are available from Front Counter BC located in the Provincial Forest Services office in Cranbrook .

The Property is accessible using 2 major logging road systems off highway 93 where it parallels the eastern margin of the Kootenay River between Fort Steele and Wasa Lake.

At Fort Steele, and unsigned trunk road called Wardner-Fort Steele Road links immediately (500 m) with the Wild Horse River Forest Service Road which proceeds up the west bank of the river for more than 30 km (Fig. 4). An important property, called Spirit Dream, is accessed by following a spur at 7 km called Lakit Lookout. Other parts of the claim block are accessed by spur roads off the main Wild Horse River road at Little Tackle and Tackle creeks.



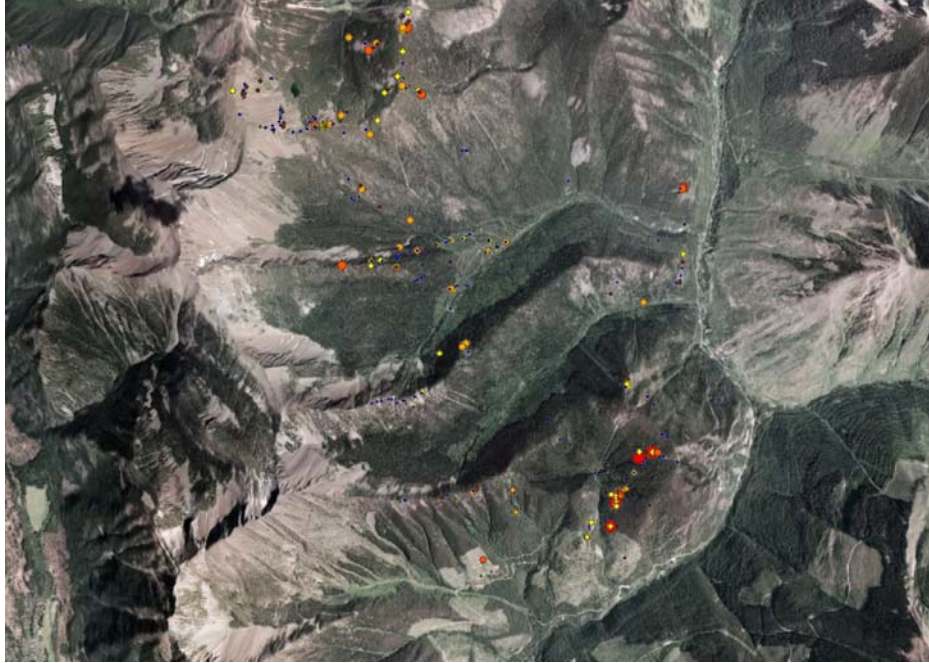


Figure 4: Aerial view of the north-to-south flowing Wild Horse River joined by east-flowing tributaries, Little Tackle and Tackle creeks. Dots represent gold values measured in rock samples: red is  $> 5$  g/T; orange is  $> 1$  g/T; yellow is  $> 0.5$  g/T. The Spirit Dream property is located in the bowl-shaped catchment basin crossed by the dense line of samples in bottom right of image; the Tac property is represented by the cluster of samples on the ridge separating Tackle from Little Tackle Creek; and the Loose Leg property is represented by the cluster of samples in the north western part of image in the headwaters of north-flowing Lewis Creek.

At Wasa Lake, the Lazy Lake Road connects to the Lewis Creek Forest Service Road which provides access to the western reaches of the claim block, specifically the Loose Leg property.

Given the steep terrain, off road traverses require significant physical effort rewarded by excellent rock exposure above tree line and agreeable mountains scenery.

The towns of Kimberley and Cranbrook are the nearest major supply centre where material and services adequate to explore the property can be found. Infrastructure resources are excellent and readily available. The Property is within a few km's of the hydroelectric grid; and the region has a long history of mining, hence personnel with heavy equipment, exploration and mining experience are available. The climate is benign, with agreeable Spring-Summer-Fall seasons and a temperate winter that sees relatively limited snow accumulations at lower levels, although accumulations may be substantial at elevation. Work in subalpine and alpine regions is seasonal, limited to June through mid October; at lower elevations the field season extends from late April until November.

The Property is underlain by moderate to rugged slopes cut by deeply incised, steep tributary streams. Elevations range from 700m to 2500 m (Fig. 4). Tree species are dominated at lower elevations by Lodgepole Pine (*Pinus contorta*) and Interior Douglas Fir (*Pseudotsuga Menziesii* var. *glauca*) with some Western Hemlock (*Tsuga*

*heterophylla*) and Engelmann Spruce (*Picea engelmannii*) on north-facing, shady slopes; Subalpine Fir (*Abies lasiocarpa*) and Engelmann Spruce may be present at higher elevations; Western Redcedar (*Thuja plicata*) and Sitka Alder (*Alnus crispa*) may occupy moist, shaded areas, avalanche shoots and steep stream beds.

## 6.0 Exploration History

The Purcell basin is one of the most important metallotects in Canada, having produced 8.5 million tonnes of lead, 8 million tonnes of zinc, and 9 thousand tonnes of silver, nearly all of it from the Sullivan mine at Kimberley. Other small base metal producers include the Kootenay King, Estella and Bull River mines in the Hughes Range and the Stemwinder, North Star and St. Eugene mines south of the Sullivan mine in the Purcell Mountains, but together these smaller deposits account for about 3 million tonnes of metal.

Placer gold provided the first exploration interest in the area starting in the mid to late 19<sup>th</sup> Century, with deposits on the Wild Horse River proving large and profitable. Perry Creek and the Moyie River, on the Purcell Mountains side of the trench, were also profitable and small operations on each of these water courses continue today, 150 years after discovery. Anecdotal information suggests at least 1.5 million ounces (46.7 million grams) of gold have been recovered. However, no corresponding lode gold deposits (gold deposits in consolidated rock) of any size have been discovered, suggesting the gold potential of the Purcell Basin has undeveloped potential.

Exploration on the Property prior its acquisition by RRX in 2005 consisted of geological mapping and soil and rock geochemistry. Since 2005, RRX has undertaken the following programs: 1) prospecting; 2) follow-up (confirmatory) soil geochemistry; 3) rock geochemistry; 4) trenching, 5) data compilation into GIS format; and 6) geological mapping. Of greatest significance has been the discovery of anomalous gold, including visible gold, in an immature quartzite succession on what they call the Spirit Dream property within the Rocky Mountains claim block. Trenching and sampling across this quartzite succession yielded significant gold anomalies across the entire unit which is uniformly altered and fractured.

This discovery has two significant implications: 1) Gold in the quartzite succession may have been the source for the rich While Horse placer deposits located 8.5 km downstream; and 2) the nature of veining, fracturing and alteration suggests gold occurs throughout the unit, making it amenable to bulk-mining procedures.

## 7.0 Geological Setting

The Property is contained within Mesoproterozoic siliciclastic rocks belonging to the Purcell Supergroup, specifically the Fort Steele, Aldridge and Creston formations. They are intruded by Late Cretaceous epizonal dikes, sills and stocks, most notably the Estella Stock. These quartz monzonite-granite-quartz syenite intrusions are compositionally

variable; their megacrystic texture defined by potassic feldspar- and albite phenocrysts in a fine (often pyritic) groundmass denotes magmatic mixing (Höy, 1993).

The Purcell basin defines the major north-trending arm (today's coordinates) of the much larger Belt-Purcell basin, most of which resides in the United States (Fig. 5). During the initial rift phase of the Purcell arm, sedimentary fill comprised thick sequences of distal siliciclastic turbidites derived mainly from the south and west (Fig. 6). This succession, called the Aldridge Formation, is best exposed and developed in the Purcell Mountains, between the Rocky Mountain Trench and Kootenay Lake, the region that once formed the deep axial keel of the Purcell arm. East of the Rocky Mountain Trench in the northern Hughes Range – the subject area of this report – the distal basin Aldridge turbidites are replaced towards the east by shelf facies fluvial-deltaic quartzite (Fort Steele Formation) overlain by shelf and slope deposits comprising siltstone, argillaceous and calcareous siltstone, silty (calcareous) dolomite, silty mudstone and shale, orthoquartzite, and immature turbiditic sandstone (Hoy, 1993; Hoy et. al., 2000; this report). Hence, the Rocky Mountain Trench, a present day physiographic feature, marks the approximate boundary between basin and shelf (Fig. 6), and by inference, the locus of basin-margin growth faults (down to the west) that controlled local stratigraphic associations while serving to focus the flow of basin brines (Höy, 1993; Höy et. al., 2000).

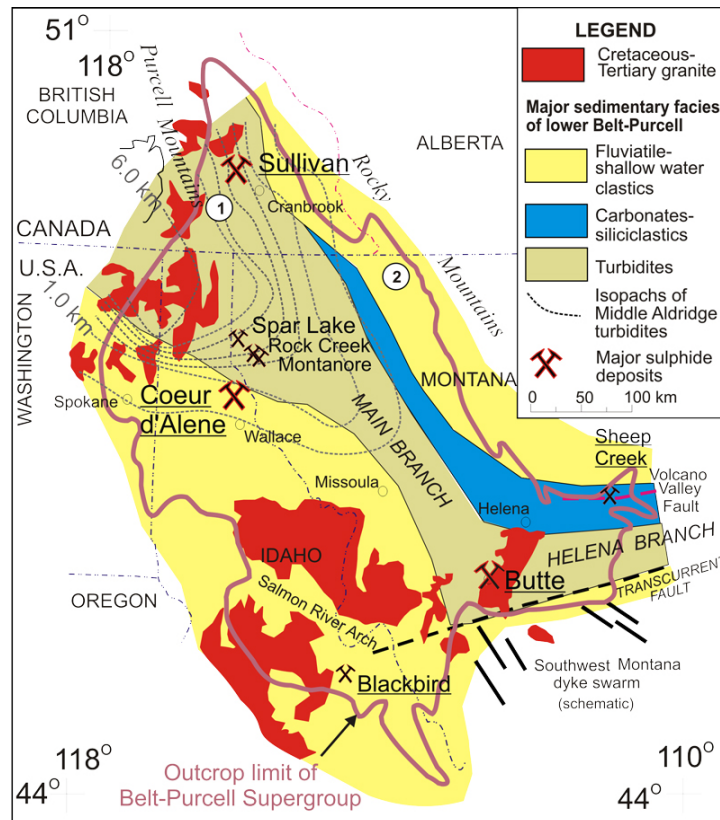


Figure 5: Regional character of the Belt-Purcell basin showing two major arms called Main Branch and Helena Branch. The Rocky Mountains claim block (located beneath “S” in Sullivan, on northeastern margin of basin) occurs at the change in facies between shallow water clastic rocks and rift axis turbidite rocks.



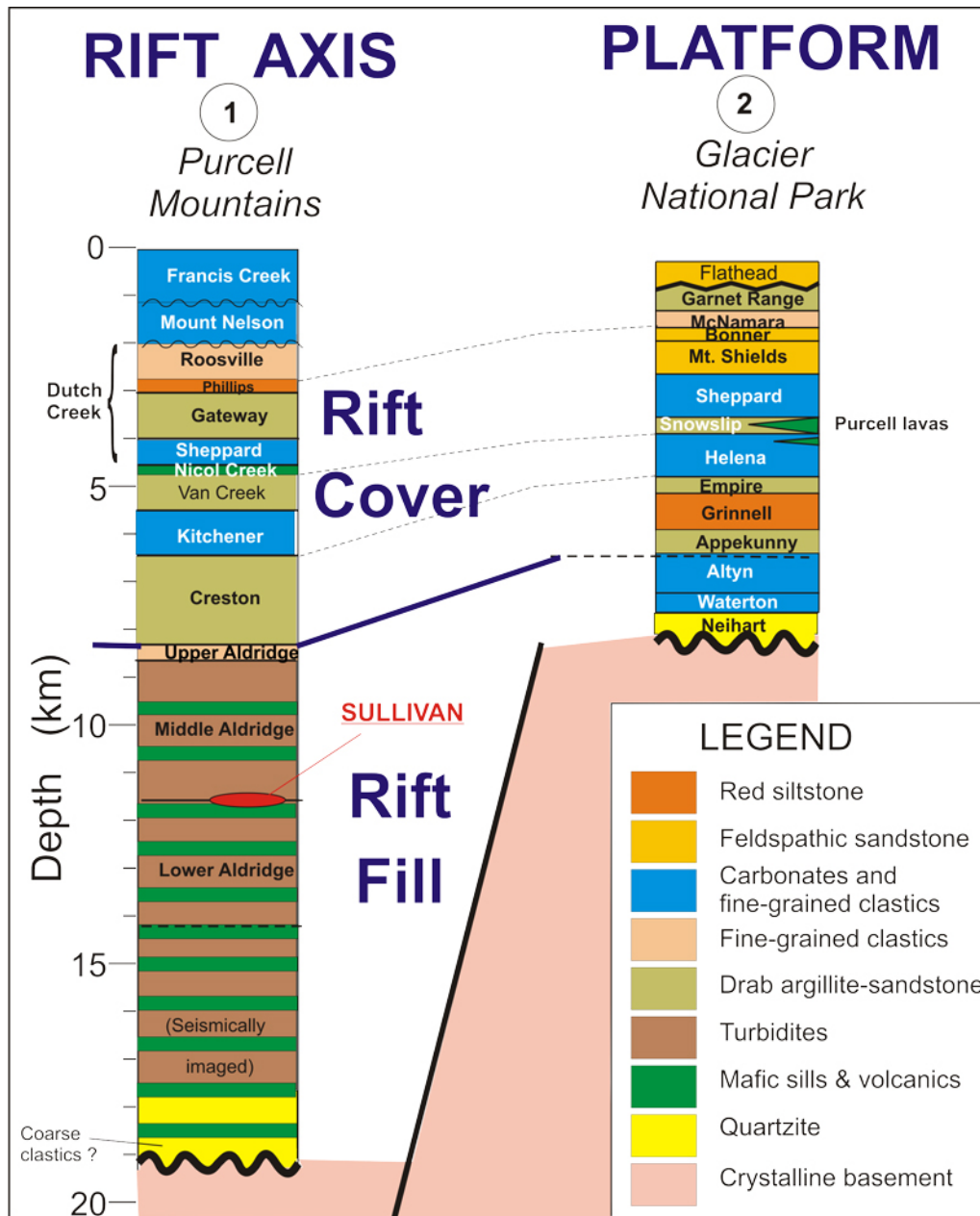


Figure 6: Transition from shelf to basin facies showing lateral changes in facies and thickness. The Rocky Mountains claim block is located at the break-in-slope between shelf and rift basin axis. Relative to the Property, the Neihart Formation is the stratigraphic equivalent to Fort Steele Formation fluvial-deltaic quartzites, and the Waterton and Albyn formation carbonates are equivalent to the Aldridge Formation slope facies dolomitic siltstone, silty dolomite and argillite (from Lydon, 2004).

Structurally, the Main Branch overlies and intersects an important east northeast trending structure called the Vulcan Tectonic Zone (Ross, et. al., 1991; Ross, 2002; Price and Sears, 2000). It is interpreted as a zone of accommodation (accretion) between two Archean age crustal blocks called Medicine Hat on the south and Hearne on the north; a similar zone called the Great Falls Tectonic Zone, trends across Montana into Idaho and stitches together the Medicine Hat block with the more southerly Wyoming craton

(Foster et. al., 2006). The importance of this high-angle intersection between basin axis and basement boundaries cannot be overstressed. It is evident within the Purcell assemblage (and younger assemblages) that reactivation of east northeast trending basement structures influenced local sedimentary patterns; the structural interplay between basement and basin faults served to focus the flow of brines while creating higher order basins or depressions into which those brines could pool.

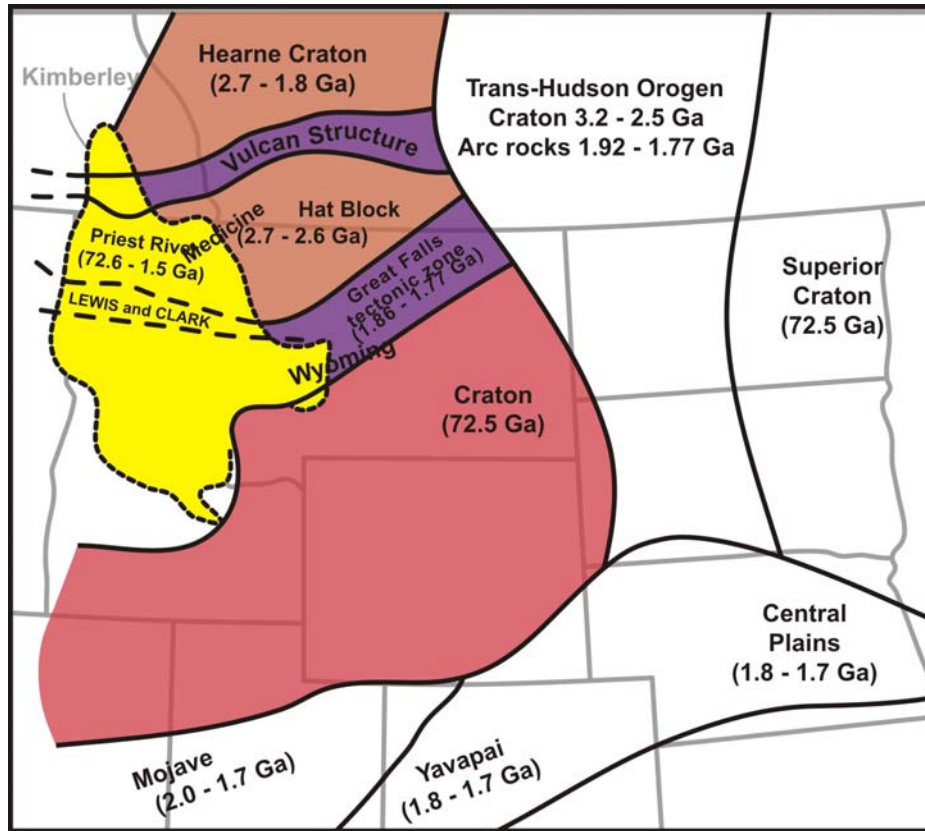


Figure 7: The Belt-Purcell basin is underlain by two major southeast trending tectonic zones, Vulcan and Great Falls, each of which played an important role in stratigraphic and structural evolution of the region. The Vulcan tectonic zone defines a zone of anomalous gold occurrences called the Kimberley Gold Trend. The RMCB is part of that trend.

The Purcell basin was succeeded by several younger basin sequences: Neoproterozoic Windermere basin; Lower Paleozoic continental margin sequence; Late Paleozoic-Mesozoic back-arc sequence (Fig. 9). Mountain building began in the Late Jurassic and persisted, intermittently, until the early Tertiary. The Purcell basin is part of a thrust and fold belt that accounts for about 150 km of west to east foreshortening atop a basal décollement (Price and Sears, 2000).

The influence of the Vulcan tectonic zone on Jurassic and Cretaceous faults and folds is evident in the nearly right-angle bend of major contraction (thrust) faults like the St Mary's and Moyie which strike east northeast in the Purcell Mountains, and north

northwest in the Rocky Mountains (Hughes Range). This bend mimics an original one in the ancient Pacific continental margin (Sears and Price, 2000; Thompson, et. al., 2006). Of economic importance here is the requirement that a component of shear be associated with movement along faults that have curvilinear traces, and with it the potential for focused fluid flow along local zones of extension (releasing fault bends; Fig. 8). The result is the Kimberley Gold Trend, which follows the trace of the Vulcan tectonic zone across the Purcell Mountains and into the Rocky Mountains. The gold trend then turns abruptly north, parallel to the Hughes Range (and beneath the RMCB) in the Rocky Mountains. The Kimberley Gold Trend is approximately 100 km long and 30 km wide (Fig. 8).

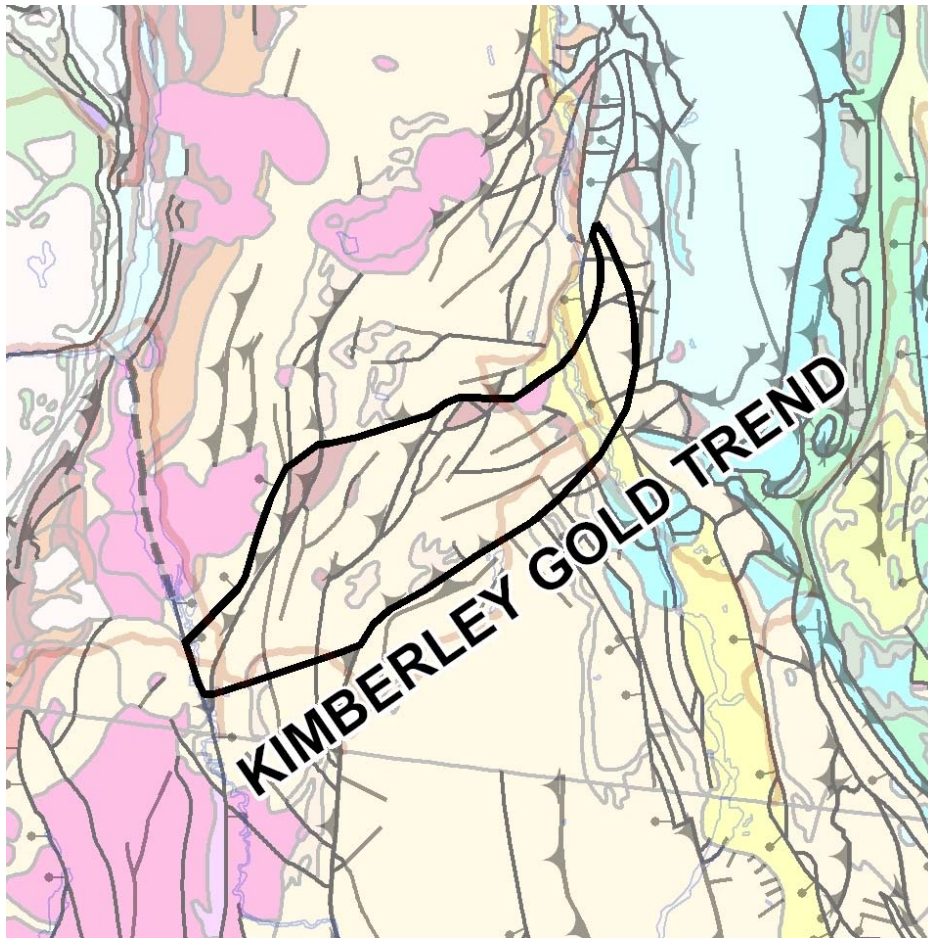


Figure 8: Kimberley Gold trend is approximated by the St. Mary's and Moyie faults to the northwest and southeast respectively, and the hangwall block of the Lussier thrust fault in the western Rocky Mountains (east of the major Rocky Mountain Trench normal fault). The trend overlies the Vulcan (basement) tectonic zone (ref. Fig. 7) which influenced structural development and helped focus fluid flow during Jurassic and Cretaceous folding, faulting and intrusion.

The final chapter in geological evolution of the region was extension along west-side-down normal faults, the most major of which follows the locus of the Rocky Mountain





pervasiveness of alteration, and anomalous gold content. The source(s) of fluids include: 1) hydraulic jacking associated with thrust displacement; and 2) fluid expulsion and (or) circulation driven by the emplacement of Late Cretaceous magmas.

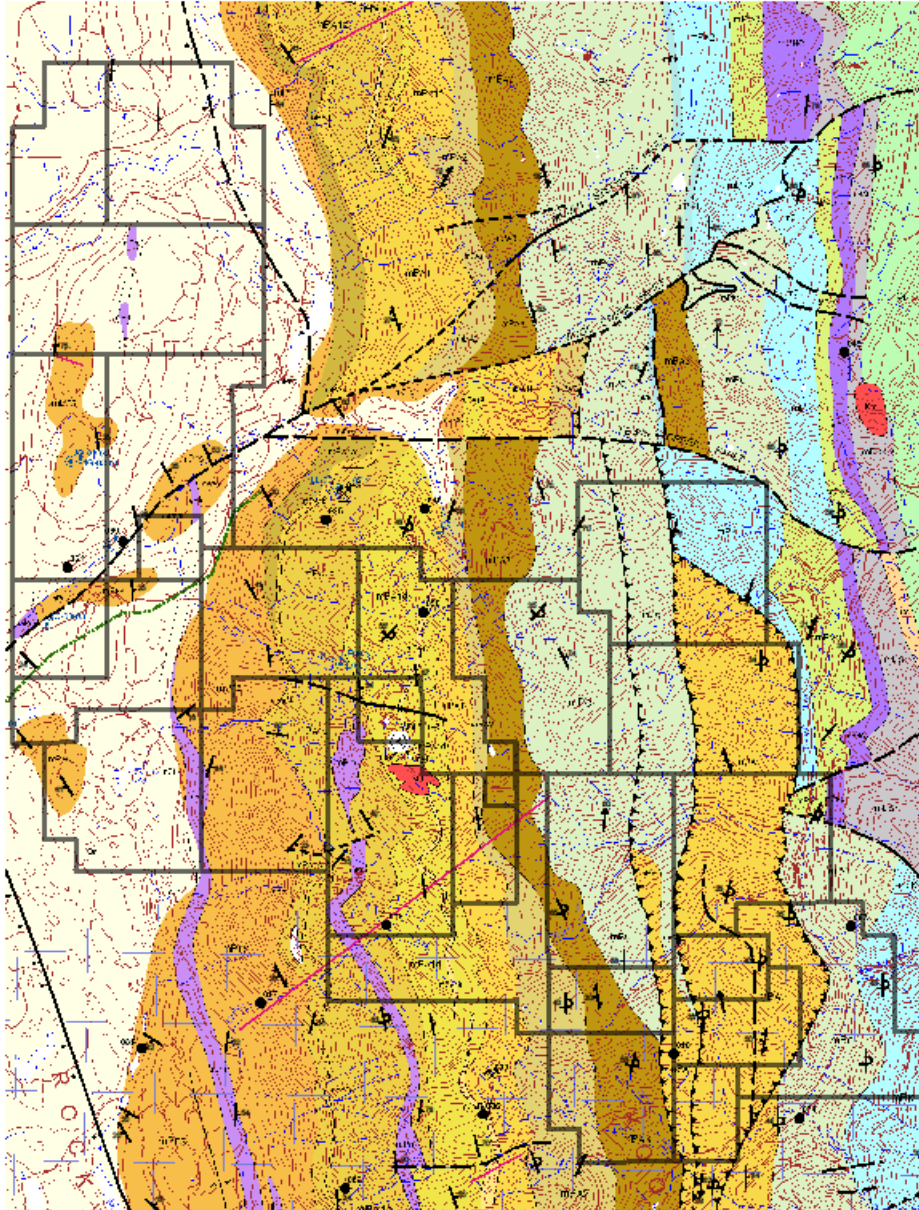


Figure 10: Area geology of the Rocky Mountains Block taken from GSC Open File . Tenure blocks are outlined in grey with numbers at centre; black dots are mineral occurrences. Stratigraphic unit labels are the following: mPFS = Fort Steele Formation (equivalent to lower Aldridge); mPM = Moyie gabbro sills; mPA1a-f = (middle part of) middle Aldridge; mPA2 = (upper part of) middle Aldridge; mPA3 = upper Aldridge; mPC = Creston Formation; mPK = Kitchener Formation; mPVC = Van Creek Formation; mPNC = Nicol Creek Formation; mPSh = Sheppard Formation; CJ = (Cambrian) Jubilee Formation; KM = Late Cretaceous monzonite to diorite, Estella Stock at lower left.

## 7.2 Property Geology

The geology reported on in this report is summarized in figure 11 and presented in detail in figures 11a, 11b and 11c. The Spirit Dream quartzite (brown colored map unit) is the primary exploration target, especially at the southern termination of the eastern panel where trenches have exposed a continuous zone of altered quartzite with anomalous gold values across its width and for at least 1200 metres along its length.

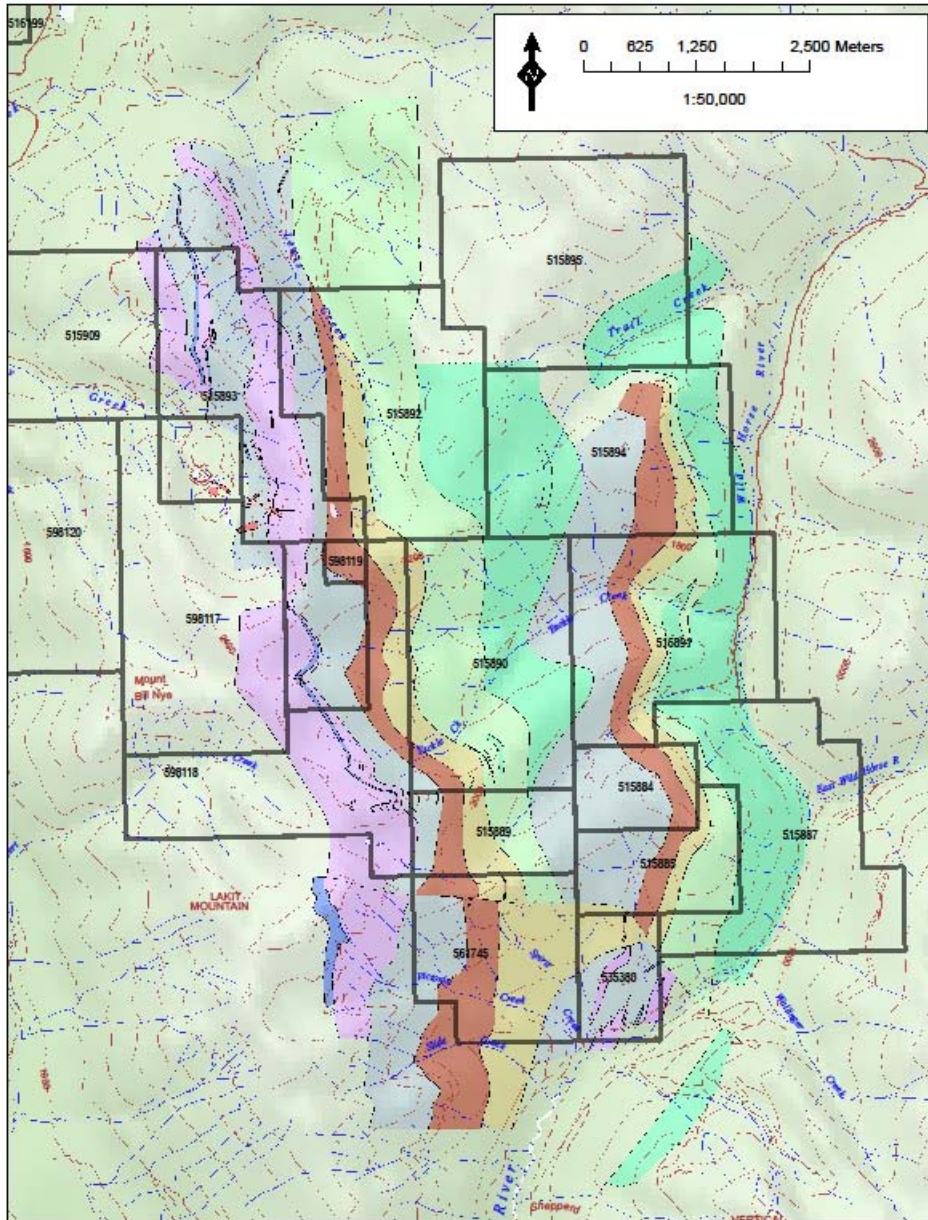


Figure 11: A 1:50,000 scale rendering of the geology reported on in this report. Figures 11a, 11b, and 11c (separate maps) show detailed plots of observation locations including alteration, and gold values from rock and soil geochemistry respectively. The Spirit Dream quartzite, shown brown, is the primary exploration target.

### 7.2.1 Stratigraphy

The Property is underlain by Mesoproterozoic Purcell strata belonging to the Fort Steele, Aldridge, Creston and Kitchener formations.

The mapping done for this report focused on the southern portion of the property which is underlain by the Aldridge and Creston formations (Fig. 11a; Table 2).

Map unit boundaries shown in figure 10 are generally correct; however, in detail figure 11a demonstrates there are important differences that bear on the gold potential of the area, thickness estimates for the Aldridge Formation, and apparent repetition of units. Likewise, the breakdown and mapped distribution of lithological units within the Aldridge Formation varies with those illustrated in figure 4 and in Höy (1993). This report emphasizes discrete lithological map units; a correlation with map units shown in figure 4 is made for the reader's convenience.

The stratigraphic succession is described in terms of the map units shown in table 2.

In general, the lower portion of the Aldridge Formation (this report: units mPAd, mPAdsq, mPAKKq) is dominated by variably dolomitic siltstone, silty dolomite, and quartzite; by contrast, the upper portion is more argillaceous and siliceous (quartzose), is not dolomitic or calcareous, and contains proximal, turbiditic, quartz-wackes. The transition from Aldridge to Creston formations is gradational, via grey and black siliceous argillite to grey and green weathering phyllite and quartzite. The appearance of shallow-water sedimentary structures signifies a change in depositional environment from basin-slope (Höy, 1993) to platform, that is, from rift-fill to rift cover (sag) sequences.

#### **Map Unit mPAd** (unit mPA1b of Höy, 1993)

One horizon or more of medium grey dolostone occurs within the lowermost strata of the Aldridge Formation in the Hughes Range. It reaches tens of metres in thickness and is best exposed along the main Wildhorse Forest Service Road (Fig. 11a). This unit is the carbonate marker *A1b* of Höy (1993) which is mapped from the Kootenay King mine area north to Wasa.

Rare, metre-thick beds of grey dolostone are gradationally interbedded with dolomitic siltstone. The dolostone has a distinctive flinty texture with conchoidal fracture on fresh surfaces (Fig. 12) and lacks the strong banding of adjacent siltstones, although faint laminae may be visible and bedding planes can be identified. Locally, weathering of disseminated pyrite imparts a deep rusty colour to weathered surfaces. Decimetre scale lunate ripples in flinty dolostone were observed in the Wild Horse Forest Service Road cut (Fig. 13).



Map Legend: Rocky Mountains Tenure Block

Abbreviation	Map Unit	Formation	Description
Ct-E	Syenite	Estella stock	Estella stock: Medium-grained, k-spar porphyritic syenite to quartz diorite
JL	Judy-Lou		
mPt-M	gabbro	Moyie sills	Moyie sills: Massive, coarse-grained hornblende gabbro to variably foliated, fine- or medium-grained dark green greenstone.
mPt-K	Kitchener Fm	Kitchener	Kitchener Fm: Dolomitic phyllite and dolomitic siltstone
mPt-Cq	Creston quartzite	Creston	Creston Fm quartzite: Green, mauve or white to light grey quartzite and phyllitic quartzite in massive beds with interlayered phyllite; Mauve or green orthoquartzite with ubiquitous current structures including planar and trough cross-bedding (and cross-lamination) and asymmetric ripples; synuresis cracks ubiquitous in some beds
mPt-Cph	Creston phyllite	Creston	Creston Fm phyllite: Grey to green phyllitic argillite and siltstone with distinctive wavy bedding surfaces and local syneresis cracks; buff or grey weathered surfaces typically without indigenous sulphide; Tan or cream limonitic immature quartzite sharply interbedded with carbonaceous phyllite; quartzite forms massive (non-laminated) beds ~0.2-2 metres thick.
mPt-Aarg	Aldridge Fm argillite	Aldridge	Aldridge Fm argillite: Silty, often planar laminated medium to dark grey argillaceous rocks; platy to highly fissile and moderately rusty weathering
mPt-Asq	Spirit quartzite	Aldridge	Spirit quartzite: Creamy white (bleached?), limonitic massive metasandstone; bedding surfaces are straight with or without load casts; usually with qtz-ser-py alteration and bearing auriferous qtz-FeCO <sub>3</sub> -sulphide veins normal to bedding; pale greenish to white where unaltered.
mPt-Atq	turbiditic quartzite	Aldridge	Turbiditic quartzite: Thick, planar bedded, immature light grey to white metasandstone sharply interbedded with strongly planar laminated siltstone and phyllite; common scour and load structures; Tan or cream limonitic immature quartzite sharply interbedded with carbonaceous phyllite; quartzite forms massive (non-laminated) beds ~0.2-2 metres thick.
mPt-Asst	siliceous siltstone	Aldridge	Siliceous siltstone: Dark grey, platy and siliceous, finely parallel laminated siltstone with minor argillite; dark rusty weathering from disseminated pyrite and glassy sounding when struck; resistant, cliff-forming unit
mPt-AKKq	Kootenay King quartzite	Aldridge	Kootenay King quartzite: Extremely massive white to light grey or light pink-brown orthoquartzite; characteristic vitreous fresh surface with granular, 'tapioca' texture; often veined and always lacks compositional banding
mPt-Adst	dolomitic siltstone	Aldridge	Dolomitic siltstone: Prominently planar or flaser laminated to banded argillaceous to dolomitic siltstone and siltstone; dark and light grey with brown-buff weathering; often pyritic
mPt-Ad	dolostone	Aldridge	Dolostone: Light grey, massive, silty to flinty dolostone; often cleaved and lacks compositional banding; strongly pyritic to non-sulphidic; locally, bedding-parallel carbonate sweets leave small lensoidal pits; flinty member has conchoidal fracture and lunate ripples at Wildhorse FSR

Table II: Summary description of stratigraphic succession mapped within Rocky Mountains tenure block. Note, map unit of particular economic interest for gold is mPA<sub>sq</sub> (Spirit Quartzite) .





Figure 12: Grey, fine crystalline, flinty dolostone with conchoidal fracture pattern. Location: UTM Zone 11, 605289E, 5508487N (station 09JKRM056).



Figure 13: Lunate ripple casts on underside of bedding plane in silty dolomite, map unit *mPA<sub>d</sub>*. Location: : UTM Zone 11, 605289E, 5508487N (station 09JKRM056).

***Map Unit mPA<sub>d</sub>st*** (unit mPA<sub>1d</sub> of Höy, 1993)

The Aldridge Formation strata which host the Kootenay King and Estella mines are dominated by laminated siltstone and dolomitic siltstone. The dolomitic and non-

calcareous varieties of siltstone, although interlayered, can be separated into map units in which one variety is dominant. Dolomitic siltstone is identified by its buff or orange-brown weathering and effervescence in 10% HCl. It is invariably laminated or banded at millimetre to centimetre scale with contrasting dark grey and brown-buff bands. Laminae to centimetre beds are planar (Fig. 14) or define truncated bedforms such as flaser bedding or centimeter scale cross-stratification (Fig. 15). Rusty weathering is associated with framboidal which is disseminated in this and other units. Dolomitic siltstone is brittle and tends to form angular, unstable talus above tree line.



Figure 14: Parallel laminated and bedded silty dolostone. Location: UTM Zone 11, 600839, 5512762N (station 09twrm167).



Figure 15: Flaser-bedded and laminated dolomitic siltstone.

**Map Unit mPA<sub>KKQ</sub>** (Kootenay King quartzite; unit mPA<sub>1e</sub> of Höy, 1993)

The Kootenay King quartzite consists of grey-weathering, massive, quartz arenite and quartz wacke units that can be traced more-or-less continuously from the Wild Horse River to Wasa Creek. Interestingly they directly underlie (stratigraphically) the Kootenay King lead-zinc deposit, and occur in proximity (and directly beneath based on projection; ref. Fig 11a) to the Estella lead-zinc vein 5.5 km to the north northwest. Discontinuous outcrops of one or more Kootenay King quartzite were also encountered along the Wild Horse Forest Service Road, due south of the trenches in the Spirit Dream quartzite (ref Fig. 11a).

Quartzite beds are decimeter to meters thick, massive, blocky and uniformly light- to medium grey weathering; the combination of color and resistant character make them a good marker for mapping purposes (Fig. 16). Siliceous, black argillite interbeds, centimeters to metres thick, provide definition; contacts are gradational. Grain size is uniform, medium, and sand content is roughly divided 80 percent quartz to 20 percent lithic (Fig. 17).



Figure 16: Metre-thick beds of blocky weathering, massive, Kootenay King quartz-arenite. Ridge exposure, looking north, at UTM Zone 11, 601689E, 5509674N, (1.8 km north northeast of Lakit Mountain, above Kootenay King lead-zinc deposit).





Figure 17: Kootenay King quartz-arenite illustrating medium-grained, homogeneous character with approximately 10-15 percent black, lithic grains. See figure 5 for location.

These quartzites are thicker and coarser south of the Kootenay King deposit where coarse, angular rip-up clasts are observed at the base of the succession. Höy (1993) interpreted them as sands distributed via channels cut into the distal turbidite siltstone succession that envelope the quartzites. Our mapping demonstrates the quartzites are more laterally continuous than previously thought; it is also clear that the quartzites occur at more than one stratigraphic level. North of the Estella deposit (Fig. 11a), two quartzites project south, beneath it.

***Map Unit mPA<sub>sst</sub>*** (unit mPA1f of Höy, 1993)

Dark grey to black, pyritic mudstone, siliceous mudstone, and silty mudstone characterize map unit *mPA<sub>sst</sub>*. It shatters underfoot like plate glass, testament to its siliceous almost cherty composition and planar laminated to thin-bedded character (Figs. 18 and 19). Rusty weathering may accompany pyritic horizons. The succession is uniform in character, non calcareous, and can be very resistant. It is little-altered and lacks fractures and veins suggesting low initial porosity and permeability. A relatively quiet basin depositional setting is proposed by Höy (1993).



Figure 18: Planar laminated to thin bedded, buff-weathering, black siliceous argillite. Location in rock-scrree slide at UTM Zone 11, 604741E, 5513670N (station 09twrm 117).



Figure 19: Black siliceous argillite with lamina of orange-weathering siltstone. Low angle truncation features and troughs are evident along some depositional planes. Located on ridge in headwaters of Tackle Creek, at UTM Zone 11, 601610E, 5513484N (station 09twrm139).

***Map Unit mPA<sub>sq</sub>*** (The Spirit Dream Quartzite; unit mPA2 of Höy, 1993)

The map unit of greatest economic interest is the Spirit Dream quartzite, a quartz-arenite succession deposited as decimeter- to meter thick turbidites. There are two north-trending, west dipping panels separated by a shallow west dipping extension fault (Fig. 11a); both panels are prospective for gold.



Most effort has been expended on the eastern outcropping panel, especially its southern extremity, upslope from the Wild Horse Forest Service Road. We call it the Spirit Dream property. Thickness of the quartzite succession there is estimated between 75 and 100 metres. It can be traced northward a distance of 6 km across Little Tackle and Tackle creeks and into Trail Creek. An increase in thickness to approximately 200 m occurs on the north slope of Tackle Creek.

The western panel was mapped from the Wild Horse Forest Service Road north across the upper drainages of Little Tackle and Tackle creeks and into the headwaters of Lewis Creek, a distance of 9.3 kilometres. Thickness is in excess of 200 metres.

The eastern and western panels will be described separately.

### The eastern panel

Individual beds are massive, ungraded, medium-grained, and bounded by sharp planar contacts (Fig. 20); in some parts of the succession, quartzite turbidites are separated by argillaceous partings, in other parts, argillite interbeds centimeters thick separate individual turbidites (Fig. 21). Flute casts were observed on some bedding surfaces, providing current direction indicators and suggesting these deposits accumulated in channels or the inner portions of a fan complex in a high flow regime (Fig. 22). There is a lack of grading in most instances; however, the occasional thin basal conglomerate suggests some coarse angular debris was available (Fig. 23) and supports the interpretation that these quartz sands are proximal in origin. The Spirit Dream turbidites likely indicate a period of basin instability accompanied by syndepositional faulting.



Figure 20: Exposure of Spirit Dream quartzite along exploration trench at the south end of the eastern panel. Turbidites, decimeters to metres thick, are separated by thin, argillaceous partings.



Figure 21: Ridge top exposure of Spirit Dream quartzite illustrating argillite beds separating individual quartzite turbidites.



Figure 22: Flute casts on underside of bedding plane in eastern panel of Spirit Dream quartzite. Current direction from top left to bottom right.





Figure 23: Tabular pebble conglomerate at base of Spirit Dream quartzite turbidite.

The eastern panel is remarkable in its uniformity, in terms of lithology, thickness, alteration and vein density. Sericite-quartz-pyrite-Fe carbonate alteration is ubiquitous; veins are typically millimeter to centimeter wide, have a variety of lengths from centimeters to metres, and are closely spaced at centimeter scale.

#### The western panel

Individual quartzite turbidites are thicker, overall thickness of the succession greater (Fig. 24). Like the eastern panel, flutes casts are well developed on some bedding surfaces, giving an overall north to south current direction (Fig. 25). Unlike the eastern panel, the quartzites are not well fractured or altered south of Tackle Creek; however, north of the creek, on the drainage divide between it and north flowing Lewis Creek, there is a broad zone of intense alteration and veining associated with anomalous gold values in both rock and soil samples (Figs. 26 and 27; ref Figs. 11b and 11c).





Figure 24: Massive, steep (Overturned) west-dipping beds of Spirit Dream quartzite separated by cm thick cleaved argillite interbeds.



Figure 25: Flute casts on underside of steep, west-dipping (overturned) Spirit Dream quartzite turbidite. Current direction is from left (north) to right (south).





Figure 26: View southeast at Spirit Dream quartzite forming the headwall of Lewis Creek. Intense sericite-quartz-pyrite-Fe-carbonate alteration imparts orange weathering color. Rock and soil samples are anomalous in gold.



Figure 27: Spirit Dream quartzite from headwaters of Lewis Creek (ref Fig 20) illustrating textures and alteration typical of quartzite in eastern panel. Sericite-quartz-pyrite-Fe-carbonate alteration is pervasive.

**Map Unit *mPAarg*** (mPA3 of Höy, 1993)

Laminated, fissile (easily split along closely spaced planes) argillite and siliceous argillite typifies map unit *mPAarg*. Typically, the unit becomes blacker and more phyllitic up section (Fig. 28). More resistant units of laminated, buff-weathering siltstone and silty-argillite occur near the base of the unit. Its contact with the overlying Creston Formation is a mixed gradation with green-weathering phyllite and phyllitic quartzite. For mapping purposes, the contact is placed at the first occurrence of shrinkage (mud) cracks.

The most distinctive lithology seen in this unit is a plane- to wavy- parallel bedded silty-argillite at the 5 - 10 mm scale; often, individual beds weather in relief.



Figure 28: Parallel laminated, bleached and altered, siliceous argillite of map unit *mPAarg*. Brown spots are oxidized pyrite. Edge of Canadian two dollar coin for scale.

**Map Unit *mPCph*** (mPC1, lower Creston Formation, of Höy, 1993)

The Creston Formation marks the onset of a shallow-water depositional setting. The lower Creston Formation consists of interbedded grey, black and green-tinged siltstone and phyllite. Shrinkage cracks (Fig. 29) are present at or near the base (they are described as syneresis by Hoy, 1993). Green, white and sometimes mauve sericitic quartzite occurs as thin beds with increasing presence up section; ripple and trough cross-lamination may be present. Map patterns (Fig. 5a) suggest a significant northward thinning along the eastern panel.





Figure 29: Shrinkage crack casts stand in relief on underside of lower Creston phyllitic argillite. Canadian two dollar coin for scale.

***Map Unit mPCq*** (mPC2, middle Creston Formation, of Höy, 1993)

The middle Creston Formation is a cliff-forming succession of interbedded quartzite, siltstone and argillite. Beds of green- and mauve-tinged quartz-arenite and quartz-wacke are decimeters to metres thick. Cross bedding is common.



Figure 30: Cross-bedding in middle Creston quartzite.

### *Map Unit uKg*

Late Cretaceous epizonal dikes, sills and stocks, most notably the Estella stock intrude the succession. These quartz monzonite-granite-quartz syenite intrusions are compositionally variable; their megacrystic texture defined by potassic feldspar- and albite phenocrysts in a fine (often pyritic) groundmass denotes magmatic mixing (Fig. 31; Höy, 1993).

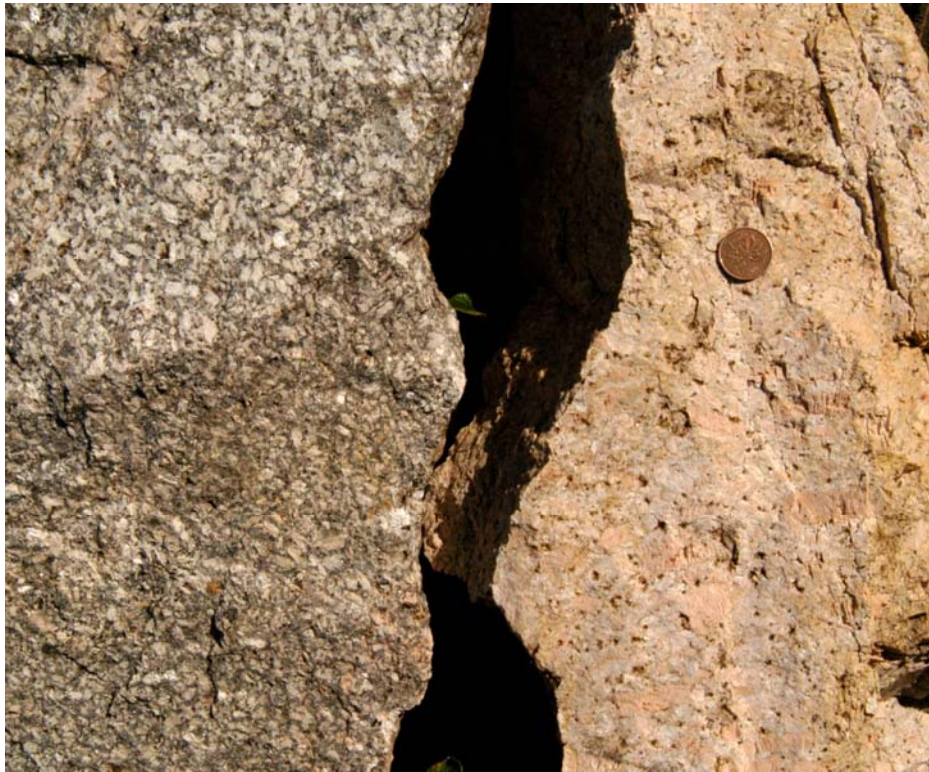


Figure 31: Contrasting phase of the Estella intrusive suite samples for adjacent outcrops. Quartz monzodiorite on left contrasts with syenogranite on right. The combination of coarse feldspar crystals in a fine matrix and the differences in composition are evidence of magma mixing and multiple magma sources.

The Estella stock and the dykes and sills associated with it are interpreted as epizonal, volatile-rich, and composite (ref. Fig. 11a for location and distribution).

#### **7.2.2 Structure**

The Property is contained within the hinge zone and steep, west-dipping, overturned limb of the Lewis Creek anticline (Fig. 11a): an asymmetric, east-verging anticline detached above the Lussier Thrust Fault (Fig. 32). The anticline has an axial length of 55 km trending north with essentially no plunge.

The duplication of north-striking stratigraphic panels reflects down-to-the-west movement across the Tackle Creek extension fault (Fig. 11a). The net effect of this fault has been to displace the fold hinge and the upper part of its eastern limb 5 kilometres to



the west. The offset and geometrical relations between eastern and western panels of stratigraphy are illustrated in a structural cross section drawn perpendicular to the fold hinge, along the ridge separating Little Tackle from Tackle creeks (Fig. 33).



Figure 32: View towards the south, along the hinge zone of the Lewis Creek anticline. Note axial plane of fold is west dipping; beds at extreme left of image are steeply west dipping and overturned. Image taken from ridge defining the headwaters of Lewis Creek

The Tackle Creek fault is offset by a left lateral strike-slip fault that truncates the eastern panel of stratigraphy at its southern end (Fig. 11a). Displacement of 500 metres is indicated from offset across the western stratigraphic panel; however, displacement appears to increase towards the east where the eastern stratigraphic panel juxtaposes Kootenay King quartzite and silty dolomite. We're confident of the mapped relations but not of the fault interpretation in this area.

Deformation within the Lewis Creek anticline is confined to flexural slip across bedding-parallel faults, occasional chevron-style folds (long straight limbs, narrow hinges), and axial-plane cleavage (Fig. ) which is penetrative in shale units and widely spaced in competent units. Generally speaking minor folds are rare.

Structural measurements are summarized in figure 35. There is close correspondence between the trend and plunge of the Lewis Creek anticline calculated using bedding ( $359^{\circ}$  at  $07^{\circ}$ ), and from direct measurement of minor fold hinges ( $182^{\circ}$  at  $02^{\circ}$ ). Trend and plunge of the average pole to cleavage is  $087^{\circ}$  at  $61^{\circ}$  (axial plane strikes  $178^{\circ}$  and dips  $39^{\circ}$  west).

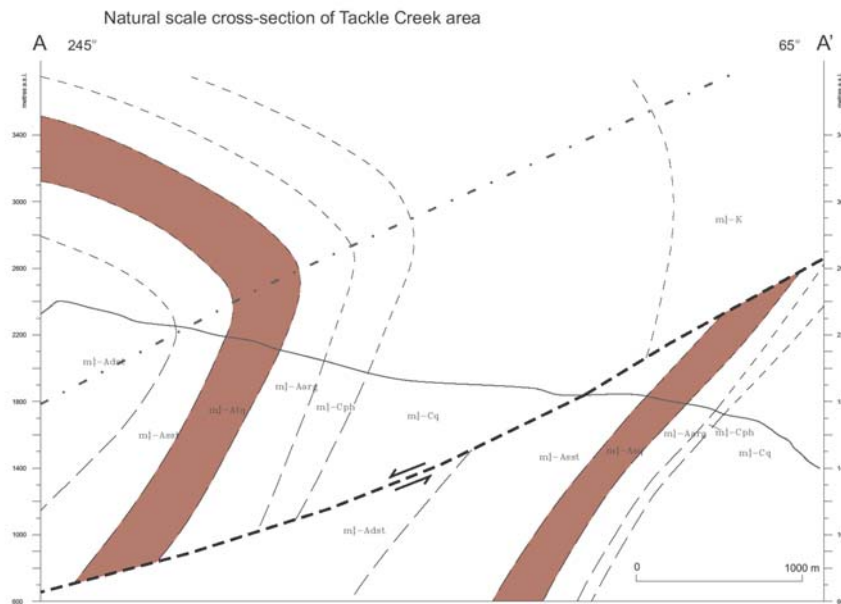


Figure 33: East-west structural cross section, viewed from the south, drawn along the ridge separating Little for Tackle creeks. The Spirit Dream quartzite is highlighted in brown. The Spirit Dream property is in the footwall of the Tackle Creek extension fault and represents part of the eastern panel of stratigraphy; the Loose Leg property occurs in the hangingwall of the fault, along the northward projection of the quartzite-ridge intersection.



Figure 34: Axial plane cleavage in argillaceous bed separating quartzite turbidites (view toward the south).

Stereoplots of structural data from Spirit Dream,  
Tac and Looseleg properties 2009

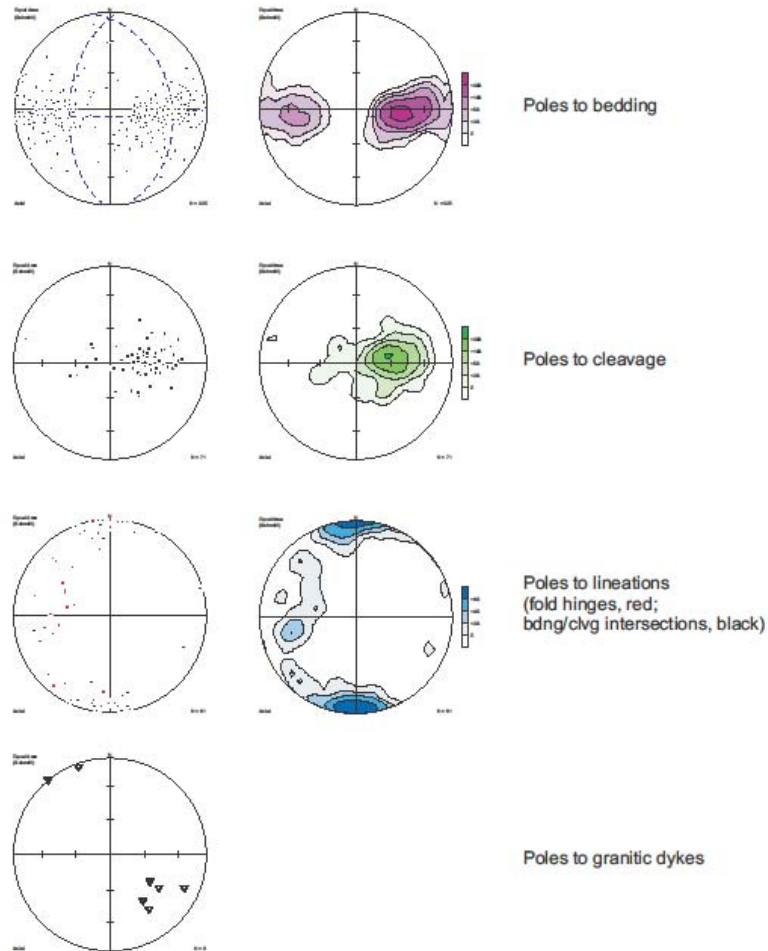


Figure 35: Stereographic plots of poles to bedding (magenta), poles to cleavage (green), minor fold hinge lineations (blue), and poles to granitic dykes (triangles). Trend and plunge of the Lewis fold hinge calculated as the pole (normal) to the girdle described by bedding values is:  $359^\circ$  at  $07^\circ$ ; trend and plunge of poles to the fold limbs is:  $096^\circ$  at  $45^\circ$  and  $266^\circ$  at  $33^\circ$ ; trend and plunge of minor fold hinges is:  $182^\circ$  at  $02^\circ$ ; trend and plunge of poles to granitic dykes is:  $137^\circ$  at  $22^\circ$ .



## 8.0 Mineralization and Potential Deposit Type

Two Au-bearing mineralized zones hosted by the Spirit dream quartzite are summarized in Table III.

Mineralization	Type	Tenure No.	UTM Zone 11 Coordinates	Informal Name	Au Values ppm	Host Map Unit (Fig. 5a)
Au ± Cu	vein micro-vein stockwork disseminated	515884 515885 535380 515891 515894	605377 5510062	Spirit Dream Showing	to 18	<i>mPA<sub>sq</sub></i>
Au	vein micro-vein stockwork disseminated	598118 598119 515892 515890	602021 5509407	Loose Leg Showing	to 4	<i>mPA<sub>sq</sub></i>

Table III: Location and type of mineralized zones addressed by this mapping project.

### 8.1 Style of Mineralization

The Spirit Dream showing is a large tonnage exploration opportunity characterized by:

1. anomalous gold values throughout the host quartzite unit;
2. millimeter to centimeter width, closely-spaced veins;
3. pervading sericite-quartz-pyrite-Fe carbonate alteration; and
4. episodic vein development.

The consistency of alteration and veining in a unit more than 100 m thick and 6,000 m long provides for significant exploration potential. In figure 11a, alteration plots illustrate how unit-specific the alteration is. We conclude that the Spirit Dream quartzite (*mPA<sub>sq</sub>*) acted as both fluid conduit and host.

Visible gold associated with hematitic alteration is direct evidence of gold mineralization (Fig. 36).

The veins have a preferred orientation perpendicular to bedding, are typically a few millimetres up to a centimetre wide, centimetres to a metre in length, and spaced at centimetre to decimeter scales (Fig. 37).

Vein formation was recurrent, demonstrated by cross-cutting relationships (Fig. ) that are consistent with the notion of a resurgent mineralizing system driven by episodic hydraulic fracture.



Figure 36: Visible gold (centre of photograph) in hematite filled vein cutting the Spirit Dream quartzite host (map unit *mPAsg*).



Figure 37: Typical vein morphology and spacing within Spirit Dream quartzite. Bedding is horizontal in photograph, most veins are perpendicular to bedding. Note the close spacing (Cdn penny for scale) of veins, and vein widths from millimeter to centimeter scales.



Figure 38: Three stages of vein development are present: Vertical vein is latest, off-set and thinnest horizontal vein is earliest. In each case, vein reconstruction involves slight oblique movement parallel to elongate crustal growth directions.

## 8.2 Alteration

Alteration, expressed as a creamy buff to orange weathering color, is pervasive, observed the entire width and length of the Spirit Dream quartzite host (Fig. 39). Under magnification, sericite and the oxidized remnants of disseminated pyrite are ubiquitous. Several varieties of hematite are present with the brick-red oxide (Fig. 40) most likely to have visible gold associated with it. Limonite is also evident in most outcrops.

Veins are typically filled with hematite and (or) limonite, quartz, and pyrite,  $\pm$  Cu oxide and magnetite.

This style of alteration is well developed on the Loose Leg property which is at the northern end of the western panel of Spirit Dream quartzite. It's obvious as an orange-brown weathering ridge top exposure (Figs. 26 and 27) and at the outcrop scale where vein morphology and alteration minerals are consistent with those seen on the Spirit Dream property. This area did not receive detailed examination or sampling; however, preliminary observations and results (Table III) suggest it too is a prime target for additional work.





Figure 39: Quartz-limonite vein suggesting at least two episodes of dilation, the first associated with deposition of quartz, the second with the deposition of limonite. In this case, the vein is antitaxial because reopening occurred along the vein wall as opposed to the vein axis.

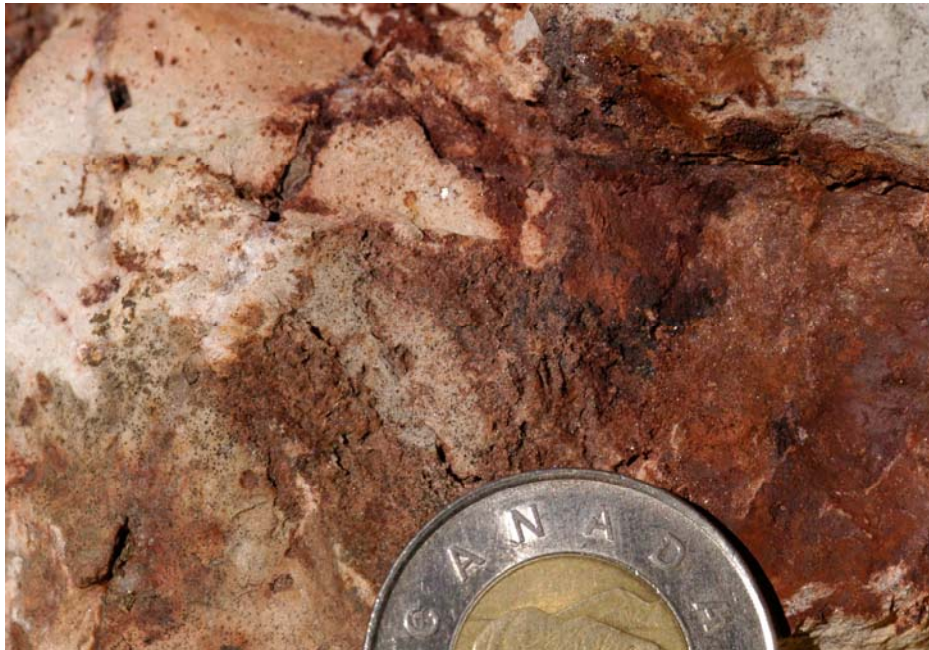


Figure 40: Red hematite alteration. Most visible gold is found associated with this color of hematite; hence it is a good prospecting guide.

### 8.3 Economic Opportunity

The key economic driver for the Spirit Dream quartzites is size. The entire unit is anomalous with respect to gold. Given the pervasive nature of the alteration, and the close spacing of veins, there is potential for a bulk-tonnage type deposit.

Drilling should respect vein orientation. Since veins have a preferred bedding-normal orientation, the greatest density of veins will be intersected by drilling along or at a shallow oblique angle to bedding.

### 8.4 A Model

The Spirit Dream quartzite is a permeable unit sandwiched between impermeable, less brittle argillaceous rock units (aquaculudes) in the hanging wall of a major thrust fault. The quartzite was both more permeable and more brittle during thrust development. One scenario to explain fracturing and fluid channeling along (up) it involves fluid expulsion associated with thrust fault displacement (Fig. 41).

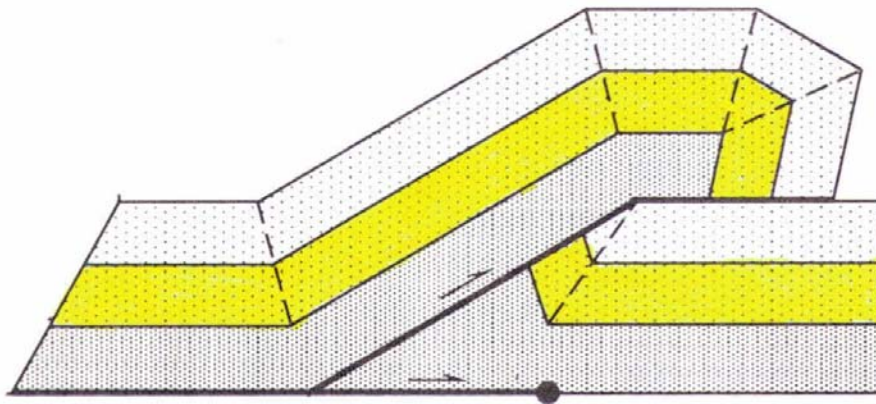


Figure 41: Idealized Lewis Creek anticline detached above Lussier thrust fault. Yellow unit represents Spirit Dream quartzite; stippled units represent impermeable argillaceous aquaculudes. Displacement along thrust requires high pore fluid pressures. Each fault movement has a “valving action” associated with it whereby: 1) fluid pressure builds, 2) the fault moves, 3) hangingwall units bend and fracture, 4) fluid discharge into newly cracked/veined succession, 5) fault sticks 6) cycle repeats.

To move, the coefficient of sliding friction along a thrust fault must be reduced to near zero; this is accomplished by hydraulic pumping, creating pore fluid pressures at or near lithostatic stresses on the fault plane. Limits to deformation depend on maintenance of the fluid pressure.

The Spirit Dream quartzite would have provided a fluid escape conduit because it is naturally permeable and susceptible to fracture under conditions of high pore fluid (high pore fluids reduce rock strength).

A fault such as the Lussier Thrust moved many kilometers over a long period of time as a series of small fault events. Hence, recurrent fluid expulsion and associated hydraulic fracturing of the Spirit Dream quartzite could be expected.

What's unique about the quartzite is the combination of alteration and gold deposition – this is not normal association in fold and thrust belts. Fluids, if derived from the thrust fault process, also required a chemical composition consistent with the mineral products now evident in the gold-bearing quartzite.

Late Cretaceous intrusion of granitic rocks, like the Estella stock and the dikes and sills associated with it, may have influenced the source, temperature and chemistry of fluids in the system.

Hence, the combination of 1) a permeable and brittle host, 2) folding associated with thrust displacement, and 3) intrusion of granite during one or more stages of fault displacement, may have provided the necessary ingredients for gold mineralization.

### **8.5 Spirit Dream Property as Source for the Wild Horse River Placer Deposits**

Given the proximity of the Spirit Dream Property to the Wild Horse River, we postulate it was the source for the Wild Horse placer gold deposits located 8 kilometres down stream. Our reasoning is based on two observations: 1) The quartzite is nearby and has the most consistently anomalous gold values over a significant width and strike length; and 2) it occupies the only large bowl-shaped catchment basin along either slope of the river from where sufficient material could have been sourced to create a sizeable placer deposit downstream.

## **9.0 Exploration**

The property operator has conducted exploration on four fronts:

1. prospecting supported by rock sample geochemistry, performed under contract (Fig. 5b);
2. soil sampling carried out under contract (Fig. 5c);
3. trenching and associated sampling (reported on elsewhere);
4. property-scale geological mapping (this report); and
5. compilation of existing databases into a GIS format (ref. Figs. 5a, 5b, and 5c).

### **9.1 Rock Geochemistry**

No rock geochemical results are reported on herein, however, figure 5b contains a summary of results from other sources.



## **9.2 Soil Geochemistry**

No soil geochemical results are reported on herein, however, figure 5c contains a summary of results from other sources.

## **10.0 Drilling**

No drilling has occurred.

## **11.0 Sampling Method and Approach**

Reports on sampling programs are available elsewhere.

## **12.0 Sample Preparation, Analyses and Security**

Sample preparation protocols are available elsewhere.

## **13.0 Data Verification**

n/a

## **14.0 Mineral Processing and Metallurgical Testing**

No metallurgical sampling or testing have been conducted on materials from the Property.

## **15.0 Mineral Resource and Mineral Reserve Estimates**

There are no Reserves or Resources on the Property either historically or as defined by NI 43-101 or conforming to CIMM standards.

## **16.0 Adjacent properties**

Two past producing mines, the Kootenay King and the Estella, are adjacent to the Property (Fig. 5a). Both mines produced Ag-Pb-Zn, with some gold also produced from the Kootenay King mine (Table IV).

The Kootenay King deposit is stratiform in character, and occurs on the overturned limb of the Lewis Creek anticline. Bedded ore occurs within an impure dolomitic quartzite near the top of the Kootenay King quartzite succession (*Map Unit mPAkkq*).

Mineralization consists of fine-grained, laminated pyrite, galena and pale grey to green sphalerite. The deposits lacks many of the geological characteristics typical of the Sullivan massive sulphide deposit such as a footwall tourmalinized breccia “vent”,

footwall stringer zone, and hangingwall alteration, suggesting it might be distal from the vent source, or that much of the deposit is eroded (e.g. Höy, 1993).

Property	Deposit Type	Ore Mined (tonnes)	Au (grams)	Ag (tonnes)	Pb (tonnes)	Zn (tonnes)	Location UTM Zone 11
Kootenay King	Stratiform Exhalitive	13,260	715	882	711	881	603617E 5509135N
Estella	Vein Mesothermal	109,518		6,393	5,181	9,834	600748E 5613800N

Table IV: Summary of production from the Kootenay King and Estella Mines located adjacent to the Rocky Mountains claim block.

The Estella silver-lead-zinc vein is hosted by siltstone and argillite belonging to map unit *Map Unit mPA<sub>ss</sub>t* (Fig. 5a). Two mappable quartzite units, belonging to the Kootenay King succession, strike into it suggesting this deposit occurs at approximately the same stratigraphic level as the Kootenay King silver-lead-zinc deposit. The mineralized vein occurs within a zone of fracturing and minor shearing, adjacent to the Estella stock, which dips to the southwest at angles between 40° and 70°; the main ore shoot rakes at a shallow angle to the southeast (Hoy, 1993; Hedley, 1952, 1964).

## 17.0 Other Relevant Data and Information

There are no other relevant data, information or material of significance to report.

## 18.0 Interpretation and Conclusions

1. The Spirit Dream and Loose Leg properties, which occur within the Rocky Mountains claim block, represent large-tonnage gold prospects.
2. Visible gold is hosted by quartzite (arenite and wacke) within the upper part of Mesoproterozoic Aldridge Formation, in the Hughes Range, near the town of Kimberley in southeastern British Columbia.
3. Rock samples containing gold concentrations to 18 grams per tonne highlight a mineralized unit approximately 100 m thick and more than 5 km long.
4. The target unit, called the Spirit Dream quartzite, is pervasively altered (sericite-quartz-pyrite-Fe oxide-Fe carbonate) and veined throughout its length and width.
5. Veins are closely spaced (centimeter scale), have widths ranging from millimeters to centimeters, and range in length from centimeters to a metre.
6. There is a preferred vein orientation perpendicular to bedding, an observation that should be taken into account when planning a drill program.
7. Multiple episodes of vein production is evidence that the mineralizing system was resurgent.
8. The combination of stratigraphic setting – permeable quartzite sandwiched between argillite aquacludes – and structural setting – a steep, overturned,

west-dipping rock panel detached above the major east-verging Lussier thrust fault, account for both the focus of fluid flow and the resurgent nature of the fluid system.

9. The Spirit Dream property occupies a large catchment bowl from which substantial material has been removed by alpine glaciations and stream erosion; as such, it represents a likely source for the Wild Horse River gold placer deposits located 8 km downstream and from which 1.5 million ounces of gold have been recovered.
10. The Spirit Dream and loose Leg properties are part of a regional Kimberley gold trend, a zone of anomalous gold concentrations which can be traced approximately 100 km from near the town of Creston, east northeast across the Purcell Mountains to the Rocky Mountain Trench at Cranbrook, and from there to the north along the Hughes Range of the western Rocky Mountains.

## **19.0 Recommendations and Budget**

A two-phase exploration program is recommended (Table V).

Phase I would continue mapping and sampling of the Spirit Dream quartzite, especially on the Loose Leg property where few samples have been taken.

Phase II, conducted concurrent with Phase I, would focus on the Spirit Dream property and comprise the following three elements:

1. Channel sample program of quartzite outcrops and large boulders;
2. Trench development and sampling to expose ridge-top exposures; and
3. 2000 metres of diamond drilling, split between two locations, to test the extent and grade of gold mineralization.

Details and estimated costs of this program are tabulated below in table V.

The drill program should take care to address the preferred orientation of veins within the Spirit Dream quartzite. Optimal vein intersection will occur when drilling parallel to bedding. Given the tabular aspect ratio of the quartzite, an optimal drill orientation would be on the order of 30° to the plane of bedding. This orientation would ensure adequate vein intersection to provide proper grade estimates while also providing an estimate of grade over true thickness.



<b>Activity</b>	<b>Personnel/Equipment</b>	<b>Estimated Cost</b>
<b>Phase I</b>		
Map northward extent of Spirit Dream quartzite by continuing to fill in detailed geology of the Rocky Mountains Claim Block	2 pers x 15 days @ \$2000/day all in	\$ 30,000
Prospect and sample Loose Leg property with emphasis on alteration zone at the head of Lewis Creek	2 pers x 10 days @ \$1200/day all in	\$ 12,000
Sample analyses	200 samples @ \$30/sample all in	\$ 6,000
<b>Phase II</b>		
Trench Spirit Dream property to ridge top	excavator + operator x 15 days @ \$1200/day all in	\$ 18,000
Channel sample trench exposures	2 pers x 5 days @ \$1000/day all in	\$ 5,000
Diamond drill holes split between two locations	2000 m x \$100/m	\$ 200,000
Sample analyses	1000 samples @ \$30/sample all in	\$ 30,000
project management/report writing/presentations	30 days @ \$1000/day all in	\$ 30,000
15% contingency		\$ 45,000
<b>Total estimated cost</b>		<b>\$ 376,000</b>

Table V: Tabulated exploration program and costs for Rocky Mountains Claim block with emphasis on the Spirit Dream Property.

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## 21.0 Statement of Costs

Personnel:	
R.I. Thompson 16 days @ \$800 per day	\$ 12,800.00
J. Kraft 16 days @ \$400 per day	\$ 6,326.94
Field Expenses:	
Food and Accommodation: 30 man days @ \$200/day	\$ 6,000.00
Truck rental/expenses: 2019 km @ \$1.00/km	\$ 2,019.00
Travel: To and from field area	\$ 600.00
Report writing and preparation: 5 days @ \$800.00/day	\$ 4,000.00
Drafting and GIS support: 12 hr @ \$50/hr	\$ 600.00
15% administration fee (Calgary office)	\$ 4,851.89
<b>Total</b>	<b>\$ 37,197.83</b>
PAC account withdrawl	\$ 6,750.94
<b>Total amount applied</b>	<b>\$ 43,948.77</b>



## 22.0 Statement of Qualifications

I, Robert I. Thompson, do hereby certify that:

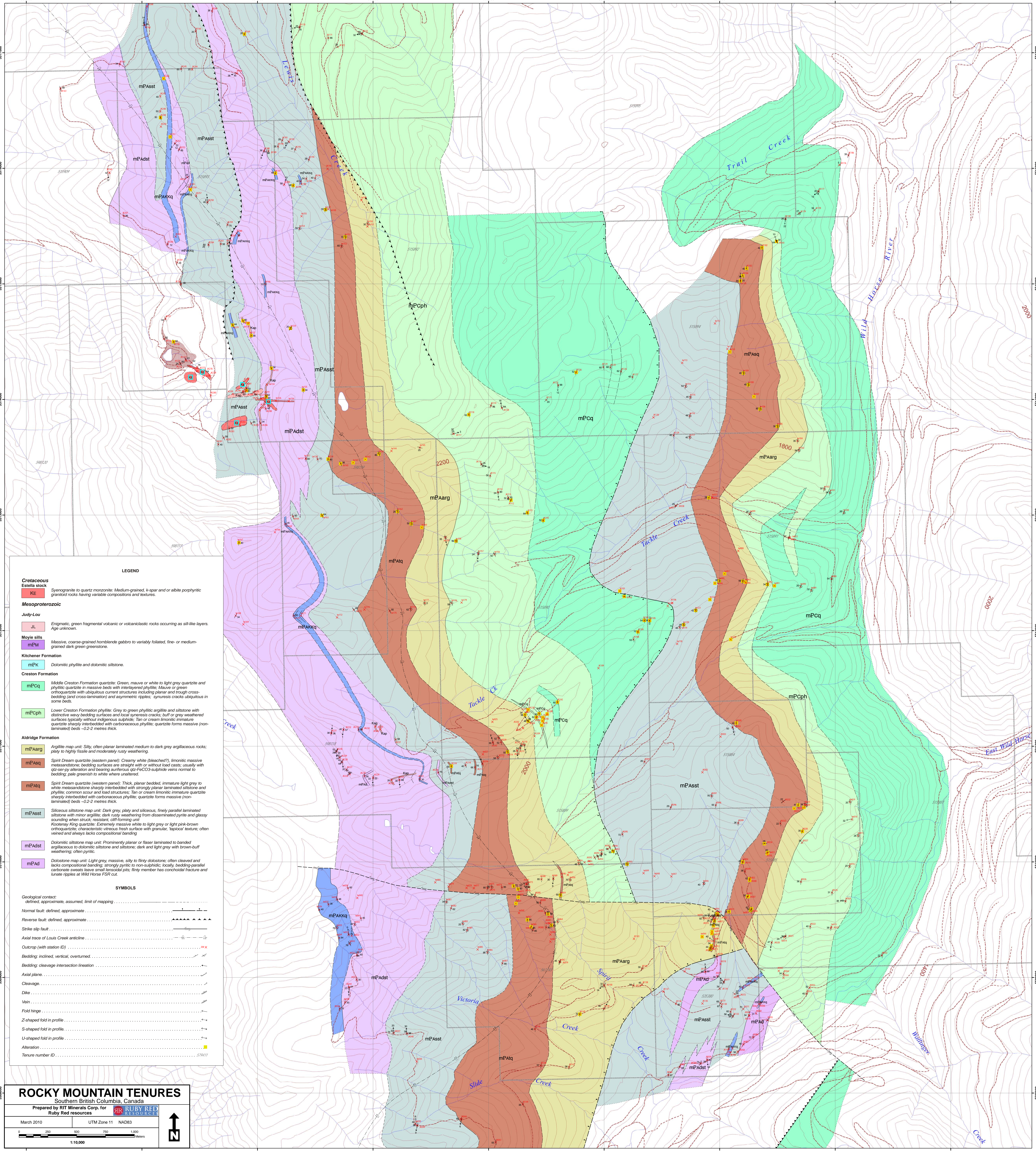
- 1) I attained the degree of Doctor of Philosophy (PhD) in geology from Queens University, Kingston, Ontario in 1972.
- 2) I have a Hon. B.Sc. in geology from Queens University, Kingston, Ontario (1968).
- 3) I am a registered member of the Association of Professional Engineers and Geoscientists of British Columbia (P.Eng. 1972).
- 4) I am a Fellow of the Geological Association of Canada.
- 5) I have worked as a geologist for a total of 38 years since my graduation from university, all of it in the Canadian Cordillera.
- 6) I have worked for the BC Geological Survey (1972-74) and the Geological Survey of Canada (1974-2007) and now act as an independent consultant (2007-present).
- 7) I acted as a consultant to the Petroleum Department of the Bolivian Government (1990) under the auspices of PCIAC (Petro Canada International Aid Corp).
- 8) I have a thorough knowledge of the geology of southern British Columbia based on extensive field mapping.
- 9) I have authored numerous scholarly publications in peer-reviewed journals, and have published or am preparing to publish 32, 1:50,000 scale geological maps of Lardeau (NTS 82K) and Vernon (NTS: 82L) areas.
- 10) I was retained by Ruby Red Resources Inc to undertake geological mapping and evaluation of the Rocky Mountains Claim Block.
- 11) I am the sole author of this report.
- 12) I am not aware of any material fact or material change with respect to the subject matter of this report, which is not reflected in this report.
- 13) I have no interest, direct or indirect, in Ruby Red Resources Inc. or the Rocky Mountains Claim Block.

“signed and sealed” at North Saanich, B.C.

Robert I. Thompson, PhD, P.Eng  
RIT Minerals Corp  
10915 Deep Cove Rd.,  
North Saanich, B.C.

Dated at North Saanich, B.C. this 30th day of March, 2010  
Reg. No. 115741 **Association of Professional  
Engineers and Geoscientists of British Columbia**





**LEGEND**

**Cretaceous**  
**Estella stock**  
**KE** Syenogranite to quartz monzonite. Medium-grained, k-spar and/or albite porphyritic granitoid rocks having variable compositions and textures.

**Mesoproterozoic**  
**Judy-Lou**  
**JL** Enigmatic, green fragmental volcanic or volcanoclastic rocks occurring as sill-like layers. Age unknown.  
**Moyie sills**  
**mPM** Massive, coarse-grained hornblende gabbro to variably foliated, fine- or medium-grained dark green gneiss.

**Kitchener Formation**  
**mPk** Dolomitic phyllite and dolomitic siltstone.

**Creton Formation**  
**mPcQ** Middle Creton Formation quartzite: Green, mauve or white to light grey quartzite and phyllitic quartzite in massive beds with interlayered phyllite. Mauve or green orthoquartzite with ubiquitous current structures including planar and trough cross-bedding (and cross-lamination) and asymmetric ripples; synresc cracks ubiquitous in some beds.  
**mPcPh** Lower Creton Formation phyllite: Grey to green phyllitic argillite and siltstone with distinctive wavy bedding surfaces and local syneresis cracks; buff or grey weathered surfaces typically without indigenous sulphide. Tan or cream limonitic immature quartzite sharply interbedded with carbonaceous phyllite; quartzite forms massive (non-laminated) beds ~0.2-2 metres thick.  
**Aldridge Formation**  
**mPAarg** Argillite map unit: Silty, often planar laminated medium to dark grey argillaceous rocks; play to highly fissile and moderately rusty weathering.  
**mPAso** Spirit Dream quartzite (eastern panel): Creamy white (bleached?), limonitic massive metasediment; bedding surfaces are straight with or without load casts; usually with qtz-veiny alteration and bearing auriferous qtz-FeCO<sub>3</sub>-sulphide veins normal to bedding; calc greenish to white where unaltered.  
**mPAatq** Spirit Dream quartzite (western panel): Thick, planar bedded, immature light grey to white metasediment sharply interbedded with strongly planar laminated siltstone and phyllite; common scour and load structures; Tan or cream limonitic immature quartzite sharply interbedded with carbonaceous phyllite; quartzite forms massive (non-laminated) beds ~0.2-2 metres thick.  
**mPAst** Siliceous siltstone map unit: Dark grey, platy and siliceous, finely parallel laminated siltstone with minor argillite; dark rusty weathering from disseminated pyrite and glassy sanding when struck; resistant, self-forming unit.  
**mPAdst** Dolomitic siltstone map unit: Prominently planar or lesser laminated to banded argillaceous to dolomitic siltstone and siltstone; dark and light grey with brown-buff weathering; often pyritic.  
**mPAad** Dolomite map unit: Light grey, massive, silty to finny dolomite; often cleaved and lacks compositional banding; strongly pyritic to non-sulphidic; locally, bedding-parallel carbonate weavos leaves small lensoidal pits; finny member has conchoidal fracture and lunate ripples at Wild Horse FSR cut.

**SYMBOLS**

Geological contact:  
 defined, approximate, assumed, limit of mapping

Normal fault: defined, approximate

Reverse fault: defined, approximate

Strike slip fault

Axial trace of Louis Creek anticline

Outcrop (with station ID)

Bedding: inclined, vertical, overturned

Bedding: cleavage intersection lineation

Axial plane

Cleavage

Dike

Vein

Fold hinge

Z-shaped fold in profile

S-shaped fold in profile

U-shaped fold in profile

Alteration

Tenure number ID

**ROCKY MOUNTAIN TENURES**  
 Southern British Columbia, Canada

Prepared by RIT Minerals Corp. for  
**RUBY RED RESOURCES**

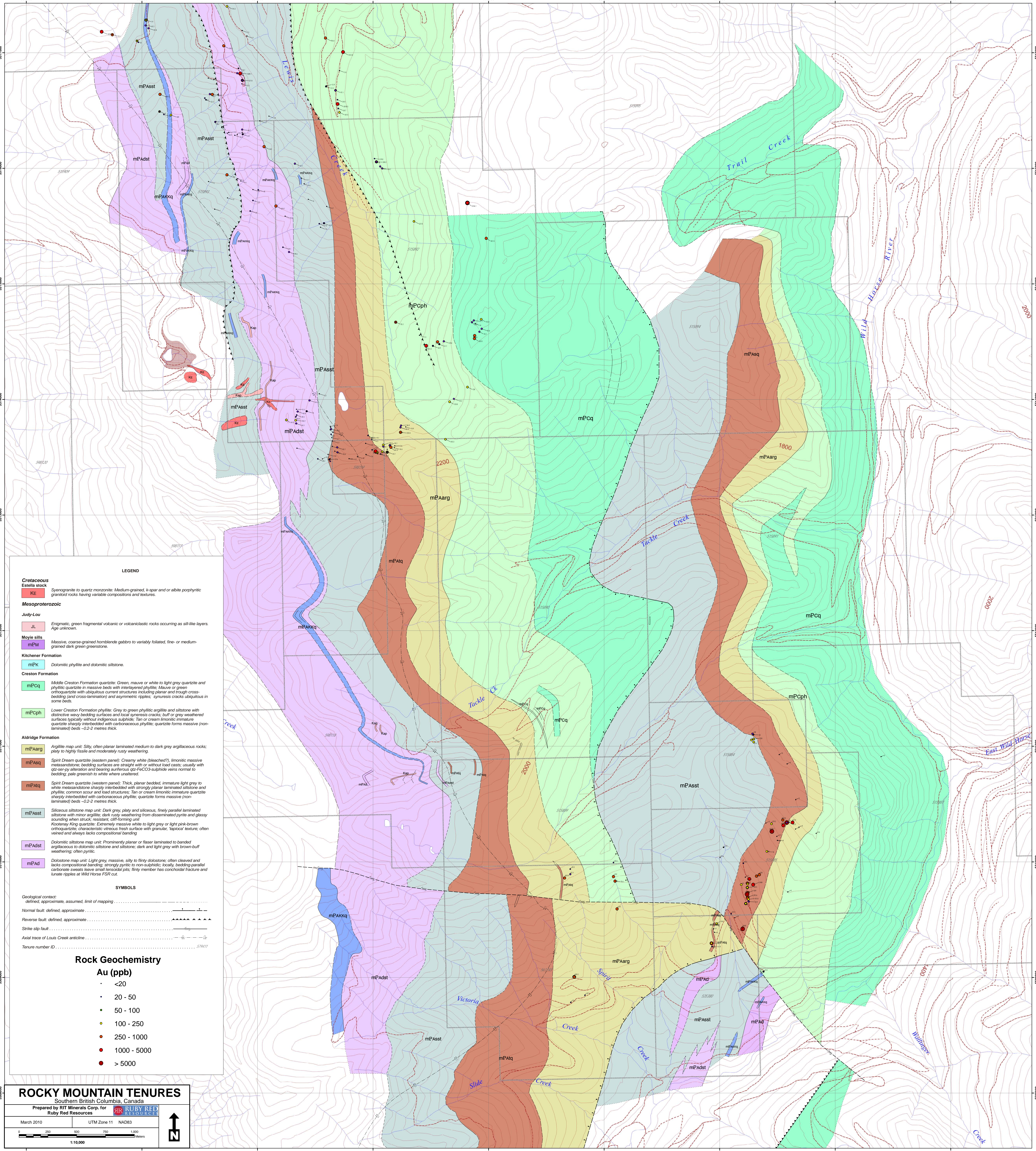
March 2010 UTM Zone 11 NAD83

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 1:10,000 Meters

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5510000 5515000 5520000 5525000 5530000 5535000 5540000 5545000 5550000





**LEGEND**

- Cretaceous**
- Estrella stock**
- KE** Syenogranite to quartz monzonite. Medium-grained, k-spar and/or albite porphyritic granitoid rocks having variable compositions and textures.
- Mesoproterozoic**
- Judy-Lou**
- JL** Enigmatic, green fragmental volcanic or volcanoclastic rocks occurring as sill-like layers. Age unknown.
- Moyie sills**
- mPM** Massive, coarse-grained hornblende gabbro to variably foliated, fine- or medium-grained dark green gneiss.
- Kitchener Formation**
- mPk** Dolomitic phyllite and dolomitic siltstone.
- Creston Formation**
- mPCq** Middle Creston Formation quartzite: Green, mauve or white to light grey quartzite and phyllite in massive beds with interlayered phyllite; Mauve or green orthoquartzite with ubiquitous current structures including planar and trough cross-bedding (and cross-lamination) and asymmetric ripples; synuresis cracks ubiquitous in some beds.
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- mPAatq** Spirit Dream quartzite (western panel): Thick, planar bedded, immature light grey to white metasediments sharply interbedded with strongly planar laminated siltstone and phyllite; common scour and load structures; Tan or cream limonitic immature quartzite sharply interbedded with carbonaceous phyllite; quartzite forms massive (non-laminated) beds ~0.2-2 metres thick.
- mPAst** Siliceous siltstone map unit: Dark grey, platy and siliceous, finely parallel laminated siltstone with minor argillite; dark rusty weathering from disseminated pyrite and glassy sanding when struck; resistant, self-forming unit.
- mPAadst** Dolomitic siltstone map unit: Prominently planar or lesser laminated to banded argillaceous to dolomitic siltstone and siltstone; dark and light grey with brown-buff weathering; often pyritic.
- mPAad** Dolomite map unit: Light grey, massive, silty to finny dolomite; often cleaved and lacks compositional banding; strongly pyritic to non-sulphidic; locally, bedding-parallel carbonate sweets leave small lensoidal pits; limy member has conchoidal fracture and lunate ripples at Wild Horse FSR cut.

**SYMBOLS**

- Geological contact:**
- defined, approximate, assumed, limit of mapping
- Normal fault: defined, approximate**
- Reverse fault: defined, approximate**
- Strike slip fault**
- Axial trace of Louis Creek anticline**
- Tenure number ID**

- Rock Geochemistry**
- Au (ppb)**
- <20
  - 20 - 50
  - 50 - 100
  - 100 - 250
  - 250 - 1000
  - 1000 - 5000
  - > 5000

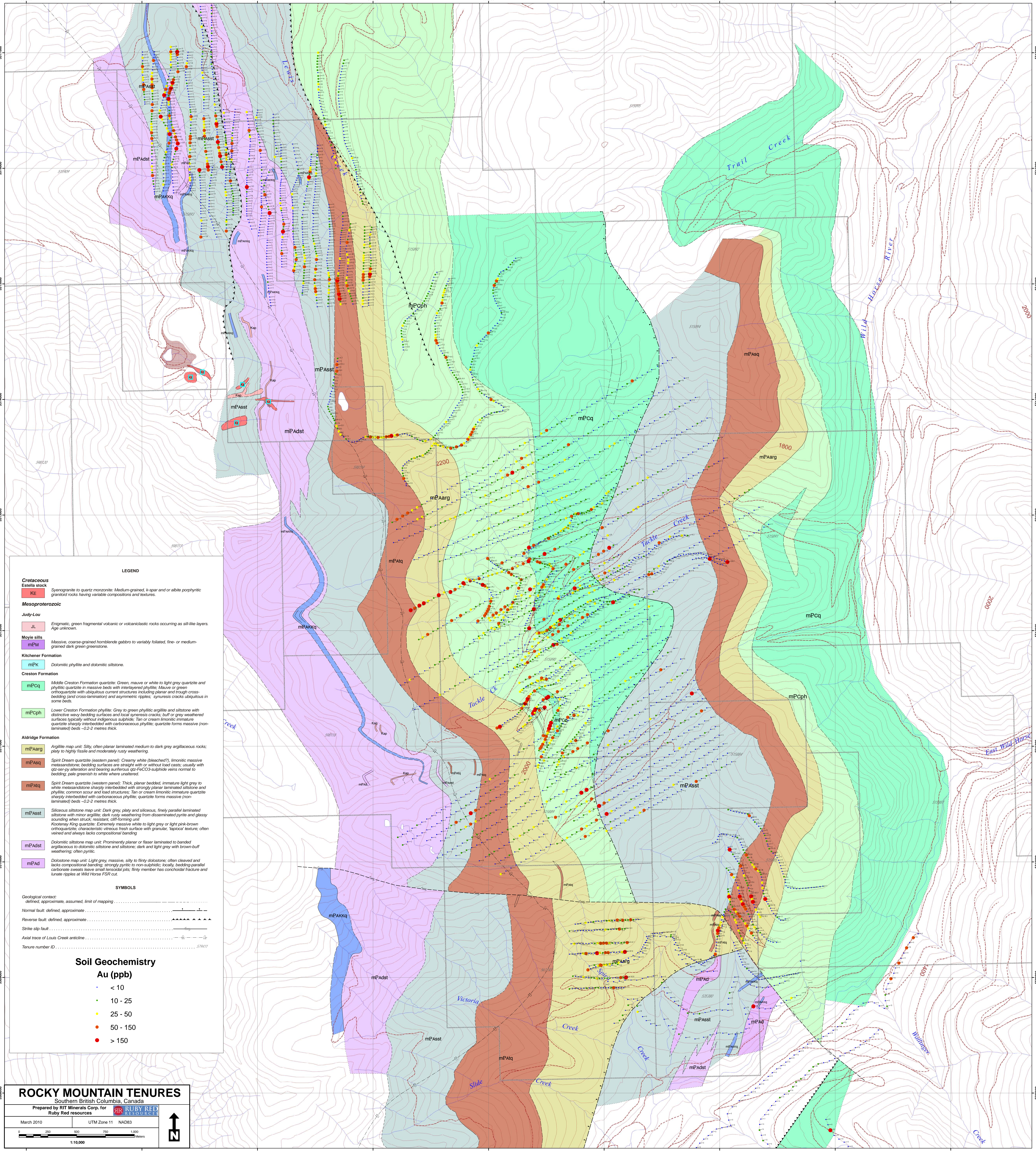
**ROCKY MOUNTAIN TENURES**  
Southern British Columbia, Canada

Prepared by RIT Minerals Corp. for Ruby Red Resources

March 2010 UTM Zone 11 NAD83

Scale: 1:10,000





**LEGEND**

**Cretaceous**  
**Estella stock**  
**KE** Syenogranite to quartz monzonite. Medium-grained, k-spar and/or albite porphyritic granitoid rocks having variable compositions and textures.

**Mesoproterozoic**  
**Judy-Lou**  
**JL** Enigmatic, green fragmental volcanic or volcanoclastic rocks occurring as sill-like layers. Age unknown.

**Moyie sills**  
**mPM** Massive, coarse-grained hornblende gabbro to variably foliated, fine- or medium-grained dark green gneiss.

**Kitchener Formation**  
**mPK** Dolomitic phyllite and dolomitic siltstone.

**Creston Formation**  
**mPCq** Middle Creston Formation quartzite: Green, mauve or white to light grey quartzite and phyllitic quartzite in massive beds with interlayered phyllite. Mauve or green orthoquartzite with ubiquitous current structures including planar and trough cross-bedding (and cross-lamination) and asymmetric ripples; synstress cracks ubiquitous in some beds.

**mPCph** Lower Creston Formation phyllite: Grey to green phyllitic argillite and siltstone with distinctive wavy bedding surfaces and local synstress cracks; buff or grey weathered surfaces typically without indigenous sulphide. Tan or cream limonitic ironstone quartzite sharply interbedded with carbonaceous phyllite; quartzite forms massive (non-laminated) beds ~0.2-2 metres thick.

**Aldridge Formation**  
**mPAarg** Argillite map unit: Silty, often planar laminated medium to dark grey argillaceous rocks; play to highly fissile and moderately rusty weathering.  
**mPAst** Spirit Dream quartzite (eastern panel): Creamy white (bleached?), limonitic massive metasediments; bedding surfaces are straight with or without load casts; usually with qtz-csp-py alteration and bearing auriferous qtz-FeCO<sub>3</sub>-sulphide veins normal to bedding; pale greenish to white where unaltered.  
**mPAstg** Spirit Dream quartzite (western panel): Thick, planar bedded, immature light grey to white metasediments sharply interbedded with strongly planar laminated siltstone and phyllite; common scour and load structures; Tan or cream limonitic ironstone quartzite sharply interbedded with carbonaceous phyllite; quartzite forms massive (non-laminated) beds ~0.2-2 metres thick.  
**mPAstq** Siliceous siltstone map unit: Dark grey, platy and siliceous, finely parallel laminated siltstone with minor argillite; dark rusty weathering from disseminated pyrite and glassy sanding when struck; resistant, self-forming unit.  
**mPAstt** Kootenay King quartzite: Extremely massive white to light grey or light pink-brown orthoquartzite; characteristic vitreous fresh surface with granular, 'apocai' texture; often veined and always lacks compositional banding.  
**mPAstx** Dolomitic siltstone map unit: Prominently planar or flaser laminated to banded argillaceous to dolomitic siltstone and siltstone; dark and light grey with brown-buff weathering; often pyritic.  
**mPAstz** Dolomite map unit: Light grey, massive, silty to finny dolomite; often cleaved and lacks compositional banding; strongly pyritic to non-sulphidic; locally, bedding-parallel carbonate sweets leave small lensoidal pits; flinty member has conchoidal fracture and lunate ripples at Wild Horse FSR cut.

**SYMBOLS**

Geological contact:  
 defined, approximate, assumed, limit of mapping

Normal fault: defined, approximate

Reverse fault: defined, approximate

Strike slip fault

Axial trace of Louis Creek anticline

Tenure number ID

**Soil Geochemistry**  
**Au (ppb)**  
 • < 10  
 • 10 - 25  
 • 25 - 50  
 • 50 - 150  
 • > 150