TECHNICAL REPORT

Red Top - Sunrise Zn-Pb-Ag Property Clearwater area British Columbia Canada

NTS 82M/12W - BCGS 82M061 51°38' 20" N Latitude 119°51' 19" W Longitude UTM 11 302429E, 5724737N (Red Top)

Kamloops Mining Division

Prepared for:

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Date and Signature Page

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1 Summary

The Red Top - Sunrise property covers an east trending ridge between the Raft and North Thompson Rivers, in the Clearwater area of south central British Columbia, Canada. The center of the property is approximately 20 kilometres east of the town of Clearwater and 112 kilometres north of the city of Kamloops. The property consists of twelve (12) contiguous mineral tenures covering 2207.08 hectares in the Kamloops Mining Division. These tenures are held by Craig A. Lynes on behalf of Rich River Exploration Ltd. ("Rich River") and are under option to Montego Resources Inc. ("Montego"), the property operator. Access to the property is via a network of logging roads that branch off the Cormie Lake Forest Service Road ("FSR"). This road connects to Interprovincial Highway 5 approximately 16 kilometres east of the town of Clearwater. The property is also close to the Canadian National Railway ("CNR") rail line and a B.C. Hydro transmission line both of which follow the course of the North Thompson River located a few kilometres south of the property. The claims lie on the south slope of Mount McClennan where elevations range from 880 to 1675 metres above sea level. The area has been extensively logged but there are still stands of mature spruce and fir found on the property.

The Red Top – Sunrise property covers 5 different mineral occurrences – Red Top, Snow, Sunrise, Morrison and Bearsden. The Redtop, Snow and Sunrise showings were first located and hand-trenched in the 1920's but the first drilling did not take place until the 1940's. In the 1960's Crowpat Minerals Ltd. and Calbay Mining Corporation Ltd. did relatively small drilling and trenching programs. Kerr, Dawson and Associates Ltd. restaked the Nimsic Claim Group on Mount McClennan in 1975 and examined the Snow and Sunrise Showings. They were the first to describe the mineralization as being of an exhalative nature. Castlemaine Explorations Ltd. acquired the Nimsic property in 1976 from Kerr, Dawson and optioned it to Canadian Nickel Co. Ltd. Canadian Nickel Co. Ltd. did geological mapping, soil sampling and a magnetometer survey over the entire grid in 1977. A limited VLF-EM survey was conducted over part of the grid at that time. Craigmont Mines Ltd. optioned the ground from Canadian Nickel Co. Ltd. in 1978 and performed further geophysical surveys and drilled five holes totalling 383 meters. The claims were allowed to lapse and the ground remained open until 1983 when Placer Dome Inc. staked the area. Placer worked on the property intermittently between 1983 to 1988 and again in 1989 doing extensive soil sampling, rock sampling, geophysics and targeted diamond drilling. The claims were allowed to lapse.

The Red Top – Sunrise property is underlain by metasediments and metavolcanics of the Upper Proterozoic-Lower Cambrian Eagle Bay Assemblage. These rocks are deformed into

a shallow plunging east trending antiform. The rocks, which occupy the north limb of the structure, include quartzite, chlorite- muscovite-quartz schist, quartz-sericite schist, limestone, calc-silicate schist and skarn. Stratiform lenses of massive, semi- massive and disseminated pyrite and pyrrhotite with lesser galena, sphalerite and chalcopyrite occur in pyritiferous, siliceous and recrystallized units. These mineral occurrences are classified as Sedimentary-exhalative but have some characteristics more similar to Kuroko volcanogenic type deposits. The Morrison and Bearsden showings appear to be vein occurrences.



Photo 1. View north toward the Sunrise showing, located near the top of the clearcut. Photo taken by the writer, July 2012. Craig Lynes in the foreground.

The Red Top - Sunrise property is a property of merit. In the writers opinion more work is needed to fully evaluate the economic potential of the property. The property is attractive because it is readily accessible and within an area considered prospective for sediment hosted massive sulphide deposits. Previous exploration has located several massive sulphide showings over a strike length of 3.6 kilometres. Sampling by the current and previous operators has returned assay values from surface trenches that grade in excess of 30% Zn. Moderately high Pb and Ag values have also been returned. A close spaced airborne electromagnetic survey is recommended as a follow up to the 2012 exploration program. If significant anomalies are detected then a program of diamond drilling is recommended.



Figure 1. Location map, Red Top - Sunrise Property, southern British Columbia.

The results of the airborne radiometric/magnetic survey described in this report have identified areas of anomalous response that cannot be directly explained on the basis of known geology. Further work is needed to determine the significance of these anomalies, particularly the north trending magnetic anomaly that cross cuts the regional stratigraphy in the center of the property. The elongate westerly trending K radiometric anomaly in the central half of the property may be due to increased concentration of potassic minerals such as K-feldspar or K-bearing mica. Both of these minerals are found in zones of hydrothermal alteration. Conversely, areas of low K radiometric response may represent zones of feldspar destructive hydrothermal alteration.

2 Introduction

This technical report has been prepared at the request of Robert Coltura, President and CEO of Montego Resources Inc. ("Montego" or the "Company"), the property operators. The writer has been asked to review all data pertaining to the property and to prepare an technical report that describes historical work completed on the property, reviews the results of recent airborne geophysical and lithogeochemical surveys and makes recommendations for further work if warranted.

The writer prepared all sections of this report that interpret the results of the 2012 exploration program. Other sections of the report, in particular the property history and geology are modified from previous assessment reports filed with the B.C. Ministry of Energy, Mines and Petroleum Resources. A summary report describing the methodology and results of an airborne magnetic/radiometric survey completed by Precision Geosurveys Inc. is appended to this report.

This technical report has been prepared in compliance with the requirements of National Instrument 43-101 and Form 43-101F1 and is intended to be used as supporting documentation to be filed with the Canadian Securities Commissions and the TSX Venture Exchange.

In preparing this report, the writer has reviewed the geological, geophysical and geochemical reports, maps and miscellaneous papers listed in the References section. Of particular value are a number of publically available assessment reports filed by previous operators on the Red Top - Sunrise property. These reports contain detailed information on the results of work done on the property since its initial discovery.

The writer visited the Red Top - Sunrise property on July 27, 2012. During this visit the writer collected rock samples from the Sunrise, Snow and Bearsden showings.

Units of measure in this report are metric; monetary amounts referred to are in Canadian dollars.



Figure 2. Mineral tenure map, Red Top - Sunrise property.

3 Reliance on other Experts

This report is based on a review of reports prepared by previous operators that have explored the Red Top – Sunrise property. Most of this work done has been filed for assessment credit and much of this information is available as free, downloadable Adobe Portable Document Format (PDF) files from the B.C. Ministry of Energy, Mines and Petroleum Resources Assessment Report Indexing System (ARIS). The writer is satisfied that the information contained in these publicly available reports was collected and processed in a professional manner following industry best practices applicable at the time, and that the historical data gives an accurate indication of the nature, style and possible economic value of known mineral occurrences on the property.

Montego has provided information on the underlying option agreement with Craig Lynes who holds title to the Red Top -Sunrise claims. Although the writer has no reason to believe this information is inaccurate in any way, a detailed audit of this option agreement has not been done and the writer is relying solely on information that has been made available to him by Montego.

4 Property Description and Location

The Red Top - Sunrise property is centered at Latitude 51° 37' 36" North and Longitude 119° 50' 30" West, and covers an east trending ridge between the Raft and North Thompson Rivers, in the Clearwater area of south central British Columbia, Canada. The center of the property is approximately 20 kilometres east of the town of Clearwater and 112 kilometres north of the city of Kamloops (Figure 1). The property is located on NTS map sheet 082M/12W and on TRIM map sheet 082M 061.

The Red Top - Sunrise property consists of twelve (12) contiguous mineral tenures that are located within the Kamloops Mining Division (Table 1 & Figure 2). The total area of the tenures that comprise the property is calculated to be 2207.08 hectares. These tenures are held by Craig A. Lynes on behalf of Rich River Exploration Ltd. At the time of writing the property was under option to Montego Resources Inc., the property operator.

4.1 Mineral Tenures

Details of the status of tenure ownership for the Red Top - Sunrise property were obtained from the Mineral-Titles-Online (MTO) electronic staking system managed by the Mineral Titles Branch of the Province of British Columbia. This system is based on mineral tenures acquired electronically online using a grid cell selection system. Tenure boundaries are based on lines of latitude and longitude. There is no requirement to mark claim boundaries on the ground as these can be determined with reasonable accuracy using a GPS. The Red Top - Sunrise claims have not been surveyed.

				Area
Tenure Number	Claim Name	Issue Date	Good to Date	(ha)
633845	RED TOP	Sept. 14, 2009	Sept. 30, 2017	80.26
833888	BEARSDEN	Sept. 19, 2010	Sept. 30, 2017	40.15
834322	RED TOP 2	Sept. 26, 2010	Sept. 30, 2017	341.07
834327	SUNRISE SE	Sept. 26, 2010	Sept. 30, 2017	120.41
834768	RED TOP 2	Oct. 1, 2010	Sept. 30, 2017	40.12
836729		Oct. 26, 2010	Sept. 30, 2017	40.14
853838	S-W SUNRISE	May 8, 2011	Sept. 30, 2017	461.55
853840	RED-TOP NORTH	May 8, 2011	Sept. 30, 2017	501.47
867878	SUNSET	July 26, 2011	Sept. 30, 2017	140.48
965849	RED-TOP WEST	March 18, 2012	Sept. 30, 2017	300.90
965889	BEARSDEN	March 18, 2012	Sept. 30, 2017	40.15
965909	SILVER BEAR	March 18, 2012	Sept. 30, 2017	100.38
				2207.08

Table 1. List of Mineral Tenures, Red Top - Sunrise Property

The mineral tenures comprising the Red Top - Sunrise property are shown in Figure 2 and listed in Table 1. The claim map shown in Figure 2 was generated from GIS spatial data downloaded from the Government of BC, Integrated Land Management Branch (ILMB), Land and Resource Data Warehouse (LRDW) (<u>http://archive.ilmb.gov.bc.ca/lrdw/</u>). These spatial layers are generated by the Mineral-Titles-Online (MTO) electronic staking system that is used to locate and record mineral tenures in British Columbia.

Claim details given in Table 1 were obtained using an online mineral tenure search engine available on the MTO web site.

4.2 Claim Ownership

Information posted on the MTO website indicates that all of the claims listed in Table 1 are owned 100% by Craig A. Lynes. Mr. Lynes holds these claims on behalf of Rich River Exploration Ltd. ("Rich River"). As a result of the work done in 2012, the claims are in good standing until September 30, 2017.

4.3 Underlying Option Agreement

The mineral tenures listed in Table 1 are under option to Montego Exploration Corp. ("Montego") as outlined in an agreement signed on the 25th day of July, 2012 between

Montego and Rich River ("the Optionor"). Montego intends to become listed on the TSX Venture Exchange and this technical report is intended to become part of an Initial Public Offering ("IPO)". Montego provided the writer with a copy of this option agreement ("Option") which specifies the terms whereby Montego can earn a 100% interest in the Red Top -Sunrise Property, subject to a 3% Net Smelter Return ("NSR") Royalty, by completing \$1,000,000 in exploration, making cash payments of \$100,000 to the Optionor and issuing 175,000 common shares to Optionor on or within 30 days of the fourth anniversary date of listing on the TSX Venture Exchange ("TSXV").

Montego will pay the share consideration as follows:

- a) 85,000 shares to be issued upon listing; and
- b) a further 90,000 shares on or before the first anniversary of listing

All share issuances made according to the above are to be issued to Rich River Exploration Ltd.

Montego will also pay the cash and work consideration to Rich River as follows:

- a) \$10,000 upon execution of the Option Agreement (paid); and
- b) a further \$15,000 upon listing; and \$100,000 worth of work in the first year,
- c) a further \$15,000 on or before the second anniversary of listing; and \$200,000 worth of work
- d) a further \$25,000 on or before the third anniversary of listing; and \$300,000 worth of work
- e) a further \$35,000 on or before the fourth anniversary of listing; and \$400,000 worth of work

All cash paid according to the above is to be paid to Rich River Explorations Ltd.

Once Montego has fulfilled all of the requirements as stated above it shall be deemed to have earned a 100% undivided interest in the Property, subject only to a 3% NSR on all base and precious metals, gems and rare earth elements. The first 2% of the NSR is purchasable by Montego for \$500,000 per each 1%. The Vendor will retain, at maximum buyout, a 1% NSR.

4.4 Required Permits and Reporting of Work

In British Columbia, an individual or company holds the available mineral or placer mineral rights as defined in section 1 of the Mineral Tenure Act by acquiring title to a mineral tenure. This is now done by electronic staking as described above. In addition to mineral or placer mineral rights, a mineral title conveys the right to use, enter and occupy the surface of the claim or lease for the exploration and development or production of minerals or placer minerals, including the treatment of ore and concentrates, and all operations related to the business of mining providing the necessary permits have been obtained.

In order to maintain a mineral tenure in good standing exploration work or cash in lieu to the value required must be submitted prior to the expiry date. The amount required is specified by the British Columbia Mineral Tenure Act Regulation.

On July 1, 2012, the Province of British Columbia increased the assessment work required to maintain a mineral tenure in good standing. For mineral claims, the assessment work requirement will change from a 2-tier to 4 tier structure. The new assessment work requirements will be:

- \$5.00 per hectare for anniversary years 1 and 2;
- \$10.00 per hectare for anniversary years 3 and 4;
- \$15.00 per hectare for anniversary years 5 and 6; and
- \$20.00 per hectare for subsequent anniversary years.

To aid in the adjustment to the new work requirements, all claims will be treated as if they are in their first anniversary year for assessment purposes as of the date of implementation (July 1, 2012). In other words, regardless of the age of the claim, the next time work is registered on or after July 1, 2012, the assessment work requirement for a mineral claim will be \$5.00 per hectare per year.

Payment instead of exploration and development work (PIED) amounts will also increase and a minimum time period for use of PIED will be established.

Prior to July 1, 2012 the PIED rate was equivalent to the value of exploration and development work. The new PIED rate will be set at double the value of the corresponding assessment work requirement. The new minimum requirement for PIED will be 6 months. The 12 month (1 year) maximum will remain in place.

Similar to the assessment work requirements, if a recorded holder wishes to register PIED, the claim will also be treated as if it is in its first anniversary year for the purposes of calculating the assessment requirement, as of the date of implementation (July 1, 2012). PIED will be \$10.00 per hectare for anniversary years 1 and 2 for mineral claims (double the work amount).

Up to 10 years of work or cash in lieu can be applied on a claim. A change in anniversary date can be initiated at anytime and for any period of time up to 10 years. In order to obtain credit for the work done on the Red Top -Sunrise property, Montego must file a Statement of Work (SOW) and submit an Assessment Report documenting the results of the work done on the property. This report must also include an itemized statement of costs.

Prior to initiating any physical work such as drilling, trenching, bulk sampling, camp construction, access upgrading or construction and geophysical surveys using live electrodes (IP) on a mineral property a Notice of Work permit application must be filed with and approved by the Ministry of Energy and Mines. The filing of the Notice of Work initiates engagement and consultation with all other stakeholders including First Nations. It is the authors understanding that permits were not required for the 2012 airborne geophysical survey and rock sampling program as it did not involve physical disturbances.

4.5 Environmental Liabilities

There are a number of historical mine workings including adits and surface trenches on the Red Top -Sunrise property that must be maintained in a manner that minimizes any danger to the public. Otherwise, the author is not aware of any environmental issues or liabilities related to these historical exploration or mining activities that would have an impact on future exploration of the property.

5 Accessibility, Climate, Local Resources, Infrastructure and Physiography

5.1 Access

Access to the property is via the Cormie Lake Forest Service Road (FSR) which connects to Interprovincial Highway 5 approximately 16 kilometres east of the town of Clearwater. Travelling east on Highway 5, the start of the Cormie Lake road is found on the left, approximately 3 kilometres past Birch Island turnoff. This road is followed to the north as it switchbacks up a south facing slope. At approximate kilometre 13.7 there is junction with

the 10.22 forest service road. This road is followed 0.95 kilometres north to the 5085 road which accesses the east end of the old mine road to the Sunrise workings.

5.2 Climate and Vegetation

There has been extensive clear cut logging south of Mt. McClennan. Between clearcuts there are stands of mature spruce and fir. Ponds and swamps occur in small depressions and in areas of subdued topography south of Mt. McClennan. Overburden is generally less than one metre, except in swampy areas where it is known to be over three meters. Rainfall is about 1 meter per year. Winters are cold with abundant snowfall.

5.3 Local Resources

The town of Clearwater has good accommodation and logistical support including helicopters and a hospital.

5.4 Infrastructure

The property is well situated with regard to local infrastructure. Paved highway 5, the CNR rail line and a B.C. Hydro transmission line all follow the course of the North Thompson River which is located a few kilometres south of the property (Figure 2).

5.5 Physiography

The Red Top - Sunrise Property is located at the south-eastern end of the Caribou Plateau. The claims lie on the south slope of Mount McClennan where elevations range from 880 to 1675 metres above sea level.

6 History

6.1 Early Exploration Work

The Redtop, Snow and Sunrise showings were first located and hand-trenched in the 1920's. It was not until the 1940's that the first holes were drilled (Assessment Report 6931; Vollo, 1978). H.C.B. Leitch in 1960 (Assessment Report 436; Leitch 1962) examined the showings, and Crowpat Minerals Ltd. in 1966 acquired the ground, and drilled three holes totalling 459 meters (Figure 3). Calbay Mining Corporation Ltd., in 1969, staked the same ground as did Crowpat, and proceeded in doing considerable trenching as well as drilling five holes for a total of 371 meters (Figure 3).



Figure 3. Map showing drill hole and trench locations and contoured zinc in soil results (Dawson, 1976). red dot= Crowpat Minerals 1966 drill site; blue dot = Calbay Mining 1969 drill site; green dots = Craigmont Mines 1978 drill site (location approximate).

Kerr, Dawson and Associates Ltd. staked the Nimsic Claim Group on Mount McClennan in 1975 and examined the Snow and Sunrise Showings and described the mineralization as being of an exhalative nature (Assessment Report 5813; Dawson, 1976). Castlemaine Explorations Ltd. acquired the Nimsic property in 1976 from Kerr, Dawson and optioned it to Canadian Nickel Co. Ltd.

Canadian Nickel Co. Ltd. established a 98.75 kilometre grid in 1976 and completed a surface exploration program of geological mapping, soil sampling and a magnetometer survey over the entire grid in 1977 (Assessment Report 6603; Hunter and Vincent, 1977). A limited VLF-EM survey was conducted over part of the grid at that time; the results of this survey are reported in Assessment Report 6603. Craigmont Mines Ltd. optioned the ground from Canadian Nickel Co. Ltd. in 1978 and performed further geophysical surveys and drilled five holes totalling 383 meters (Assessment Report 6931; Vollo, 1978). These holes were drilled along the north limb of a tuffite horizon to test coincident geochemical highs and EM conductors (Figure 3). These drill holes failed to intersect significant mineralization. The claims were allowed to lapse and the ground remained open until 1983 when Placer Dome Inc. staked the area.

6.2 Placer Dome Inc. 1983 - 1988

The Noble 1-6 claims were staked by Placer Dome Inc. in 1983. These claims were staked to cover the lead-zinc-silver minor copper gold (Redtop, Snow and Sunrise) mineral prospects, as well as two lead-silver (Bearsden and Tinkirk) showings, and a gold occurrence (Morrison) thought to be near McCorvie Lake.

In 1983 Placer Dome Inc. examined and assessed the Redtop, Snow and Sunrise workings. The extent of work includes 27 kilometres of grid, with VLF-EM and magnetometer surveys. A total of 300 soil samples were also collected. As well, a 3.4 kilometre grid was constructed over the probable site of the Morrison Au showing. A VLF (EM-16) survey was initiated and 71 soil samples were taken. The showing was not located. Bulk silt sediment samples were also collected on Peavine Creek at 61 metre intervals between the 792 and 1311 metre contours.

During 1984, Placer Dome Inc. gathered 29.5 kilometres of ground magnetometer and VLF (EM-16) data. A limited Crone CEM (shootback EM) survey was performed with the hope that the CEM would better discriminate the massive sulphide showngs than the VLF (EM-16) instrumentation.

A limited field program was designed in 1985 to locate the source of mineralization in Peavine Creek. The program consisted of geological mapping, rock and soil sampling. During 1986 a field program was created to determine the significance of the Peavine Creek mineral occurrence, and to evaluate the Tinkirk showing. The 1986 program entailed refinement of the geological mapping and soil sampling, as well as detailed magnetometer and VLF ground surveys. Silt sampling was also initiated in the adjoining drainages to the west and an examination of the Tinkirk mineral prospect was completed.

The results of the above mentioned Placer Dome programs are described in Assessment Report numbers 12080 (Pinsent, 1984) and 13463 (Thorton, 1985).

Starting in May, 1988, a University of Toronto Electro-Magnetic Survey or U.T.E.M. was conducted over the entire SSR Grid to search for massive sulphides at depth. Geological mapping and rock sampling of the grid with detailed mapping and sampling of known mineral occurrences began in mid-June and continued into July. Regional traverses of the Noble claims during this time period discovered a sulphide replacement zone approximately 1.8 kilometres east of the Sunrise Showing.

Also in July, a detailed soil sampling survey was initiated in selective areas to relocate known, yet untested geochemical anomalies from previous surveys conducted by various

mining companies. Continuing in late-July to early-August, 25 units were staked to cover the newly-discovered sulphide replacement zone. An additional 20 kilometres of grid was constructed with soil sampling and magnetometer surveys.

Hole	Easting	Northing	Azimuth	Inclination	Length (m.)
88DD001	302362	5724862	200	-50	117.65
88DD002	302613	5724809	212	-55	336.00
88DD003	303843	5723932	205	-80	244.44
88DD004	305192	5723622	180	-85	254.20
					952.29

 Table 2. Drill hole information - 1988 Placer Dome drilling (Warner, 1989).

Table 3. Significant drill hole intersections - 1988 Placer Dome drilling (Warner 1989).

Hole No.	Target	From (m)	To (m)	Length	Cu ppm	Pb %	Zn %	Ag ppm
88DD001	Red Top	34.11	34.49	0.38	117	1.95	1.17	19.0
88DD001	Red Top	36.89	37.67	0.78	122	1.01	0.67	15.0
88DD001	Red Top	43.33	44.06	0.73	97	0.32	0.32	12.0
88DD002	Red Top	3.05	3.55	0.50	1700	5.00	2.00	35.0
88DD002	Red Top	3.55	4.14	0.59	740	0.46	0.35	6.0
88DD002	Red Top	4.14	5.00	0.86	1850	1.35	0.87	14.0
88DD002	Red Top	5.00	6.00	1.00	129	0.45	0.25	3.4
88DD002	Red Top	6.00	6.78	0.78	83	0.29	0.40	4.8
88DD003	Snow	47.27	48.39	1.12	38	0.78	55 ppm	0.8
88DD004	Sunrise	0.80	1.53	0.73	1300	0.56	394 ppm	8.0
88DD004	Sunrise	195.58	196.23	0.65	14	62 ppm	0.43	22.0



Figure 4. Google Earth image showing approximate location of 1988 Placer Dome Inc. drill holes (Warner, 1989). Also shown are the property boundary, current roads and clearcuts.

In late September, 952.3 metres of NQW diamond drilling were completed in four holes (Table 2). All drill holes, except 88DD001 were intended to determine the stratigraphic continuity and thickness of pyritic felsic schists between the showings (Assessment Report 18647; Warner 1989). The objective of 88DD001 was to test the continuity of mineralization at depth. Significant drill hole intersections are listed in Table 3. The best intersection was at the top of hole 88DD002 which ran 1700 ppm Cu, 5.0 % Pb, 2.0 % Zn and 35 ppm Ag over 0.50 metres. It is not known if this interval is a true thickness or not.

Surface as well as downhole induced polarization surveys were completed in early November. The ground survey covered the area from the Snow to the Sunrise showing (Figure 4).

6.3 Placer Dome Inc. 1989

Field work began on the Noble Project on May 12, 1989 and was completed on July 10, 1989. Within this time frame two new grids, the McCorvie and Southern Reconnaissance Grids were constructed, soil sampled, and geologically mapped. Fill-in lines were also constructed on the SSR grid and soil sampled. A total of 3233 soils and 66 rocks were collected and analyzed for copper, lead, zinc, silver, gold and arsenic and mercury. In addition, 11 rock samples were submitted for thin section and 71.85 kilometres of grid line was established.

7 Geological Setting and Mineralization

7.1 Regional Geology

The regional tectonic setting of the Red Top – Sunrise property is shown in Figure 5. The geologic unit that hosts the showings on the property is part of a package of metasedimentary rocks that are assigned to the Eagle Bay Assemblage. These rocks are bounded by the Cretaceous Raft and Baldy batholiths to the north and south respectively. The Eagle Bay Formation is flanked to the west by Devonian-Triassic volcanic and sedimentary rock units of the Fennell Formation. To the east, the Eagle Bay Assemblage is bounded by the Archean Shuswap Metamorphic Complex.

Figure 6 is a geological map of the Vavenby area (Schiarizza and Preto, 1987; Massey et al., 2005). The geology within this map area contains metavolcanic and metasedimentary rocks of the Eagle Bay Assemblage (subdivided into 8 units) and adjacent rocks.

The map area covers a belt of structurally complex low-grade metamorphic rocks that lies along the western margin of the Omineca Belt. It is flanked by high-grade metamorphic rocks of the Shuswap Complex to the east and by rocks of the Intermontane Belt to the west. The area is underlain mainly by Paleozoic metasedimentary and metavolcanic rocks of the Eagle Bay Assemblage and the Fennel Formation. Late Devonian granitic orthogneiss locally intrudes Eagle Bay rocks. The Paleozoic rocks are cut by mid Cretaceous granodiorite and quartz monzonite of the Raft and Baldy batholiths, and by Early Tertiary quartz feldspar porphyry, basalt and lamprophyre dykes. They are locally overlain by Eocene sedimentary and volcanic rocks of the Kamloops Group and by Miocene plateau lavas.



Figure 5. Regional tectonic setting of the Red Top – Sunrise property. Area covered by Schiarizza and Preto, 1987 is also shown (Study Area).



Figure 6. Geology in the vicinity of the Red Top – Sunrise property. Geology after Schiarizza and Preto, 1987; Massey et al., 2005. See Table 4 for description of map units.

The Paleozoic rocks occur in four structural slices separated by southwesterly-directed thrust faults. The upper three fault slices contain only Eagle Bay rocks, while the lowest slice comprises Eagle Bay strata structurally overlain by the Fennell Formation.

Rocks assigned to the Eagle Bay Assemblage range in age from Early Cambrian to Late Mississippian. They are in part correlative with Paleozoic successions in the Kootenay Arc and in the Barkerville-Cariboo River area. The oldest Eagle Bay rocks comprise quartzites and quartzose schists overlain by a unit of predominantly mafic metavolcanic rocks and limestone which, at one locality, contains Lower Cambrian archaeocyathids. An undated package of grit, phyllite, carbonate and metavolcanic rocks overlies the Early Cambrian succession. It is locally overlain by calcareous phyllite and associated calc-silicate schist and skarn or by mafic metavolcanic rocks. The upper part of the Eagle Bay Assemblage comprises a Devono-Mississippian succession consisting of felsic metavolcanic rocks overlain by intermediate, locally alkalic, metavolcanics and fine to coarse-grained clastic metasediments. These Devono-Mississippian rocks may be separated from older portions of the Eagle Bay Assemblage by a significant unconformity. Late Devonian orthogneiss that intrudes Eagle Bay rocks is probably related to the felsic metavolcanics.

The Fennell Formation comprises imbricated oceanic rocks of Slide Mountain terrane that were tectonically emplaced onto Mississippian clastic rocks of the Eagle Bay Assemblage prior to synmetamorphic southwesterly directed folding and thrusting. The formation comprises two major divisions. The lower structural division is a heterogeneous assemblage of bedded chert, gabbro, diabase, pillowed basalt, sandstone, quartz-feldspar-porphyry rhyolite and intraformational conglomerate. Conodonts extracted from bedded chert range in age from Early Mississippian to Middle Permian, while zircons extracted from quartz feldspar porphyry yield a Devonian uranium-lead age. The distribution of dated units indicates that the lower division is segmented into at least three and locally four imbricate thrust slices. The upper division consists almost entirely of pillowed and massive basalt, together with minor amounts of bedded chert and gabbro. Conodonts from two separate chert lenses within the division are respectively Early(?) Pennsylvanian and Middle Permian in age. The two divisions are therefore the same age, at least in part, and are inferred to be separated by a thrust fault.

Rocks of the Fennell and Eagle Bay assemblages are intruded by Middle to Late Jurassic granodiorite of the Raft batholith north of Mt. McClennan. A number of smaller, isolated granitic intrusions of Cretaceous to Tertiary age also cut the older assemblages. (unit KTg).

The youngest rocks in the area are vesicular olivine basalts of Pleistocene age (unit Plvb).

Map code	Age	Unit	Description
Plvb	Pleistocene	Unnamed	vesicular olivine basalt
KTgr	Cretaceous to Tertiary	Unnamed	biotite and muscovite-biotite granite, quartz monzonite, pegmatite and aplite
Kqm	Cretaceous	Unnamed	quartz monzonite, granodiorite
MLJgd	Middle Jurassic to Late Jurassic	Unnamed	granodiorite
DPFL	Devonian to Permian	Fennell Assemblage - Lower Structural Division	bedded chert, cherty argillite, diabase, gabbro, diorite and pillowed to massive metabasalt
MEBS	Mississippian	Eagle Bay Assemblage - Slate Creek Unit	mudstone, siltstone, shale fine clastic sedimentary rocks
DMEBR	Devonian to Mississippian	Eagle Bay Assemblage - Rexspar Unit	calc alkaline volcanic rocks
DMEBF	Devonian to Mississippian	Eagle Bay Assemblage - Foghorn Mountain Unit	andesitic volcanic rocks
DEBSk	Devonian	Eagle Bay Assemblage - Skwaam Bay Unit	calc alkaline volcanic rocks
DEBog	Devonian	Eagle Bay Assemblage	granodioritic orthogneiss
lPzEBF	Lower Paleozoic	Eagle Bay Assemblage - Forest Lake Unit	greenstone, greenschist metamorphic rocks
lCmEBlm	Lower Cambrian	Eagle Bay Assemblage	Tshinakin limestone member: massive, light grey finely crystalline limestone and dolostone
lCmEBJ	Lower Cambrian	Eagle Bay Assemblage - Johnson Lake Unit	greenstone, greenschist metamorphic rocks
lCmEBva	Lower Cambrian	Eagle Bay Assemblage	hornblende-quartz-feldspar-sericite- chlorite schist (intermediate metatuff or meta-intrusive?)
uPrCmEBG	Upper Proterozoic to Lower Cambrian	Eagle Bay Assemblage - Graffunder Lakes Unit	quartzite, quartz arenite sedimentary rocks
uPrPzEB	Upper Proterozoic to Paleozoic	Eagle Bay Assemblage	undivided quartzite, micaceous quartzite, siliceous phyllite, garnet- mica-quartz schist, greenstone, chloritic phyllite, chlorite schist, limestone, argillite, slate and conglomerate
uPrCmEBpg	Upper Proterozoic to Lower Cambrian	Eagle Bay Assemblage	Includes paragneiss, orthogneiss of unit Dog and sericite-quartz phyllite derived from quartz porphyry dikes and sills
PrPzShlm	Proterozoic to Paleozoic	Shuswap Assemblage	marble and diopsidic marble with lesser calc-silicate gneiss and amphibolite
PrPzShm	Proterozoic to Paleozoic	Shuswap Assemblage	undivided quartzofeldspathic gneiss, biotite-quartz schist, amphibolite, quartzite, marble, calc-silicate rock and skarn

Table 4. Table of Formations	Table 4	1. T	able	of F	ormations
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The structure of the Clearwater-Vavenby area is described in Schiarizza and Preto (1987). They state that deformation is predominantly Jura-Cretaceous and early Tertiary in age. The earliest macroscopic structures are the thrust faults which imbricate the Fennell Formation and separate it from Mississippian elastic rocks of the Eagle Bay Assemblage. East-verging, premetamorphic mesoscopic folds within the Fennell Formation probably also formed at this time. Tectonic emplacement of the Fennell Formation was followed by synmetamorphic southwesterly directed folding and associated thrust faulting which gave rise to several large overturned folds and the thrust faults which define the structural/stratigraphic panels which dominate the map pattern. The associated synmetamorphic schistosity is the dominant mesoscopic fabric within the area. These early structures are cut by postmetamorphic northwest-trending mesoscopic folds with associated steeply dipping crenulation cleavage and axial crenulation lineation, and by later west trending macroscopic and mesoscopic folds which are synchronous with intrusion of the mid-Cretaceous Raft and Baldy batholiths. The youngest structures recognized are northeast-trending strike-slip faults and later northerly trending faults and associated folds which are Eocene in age.

7.2 Property Geology

The geology of the Red Top – Sunrise property is shown in Figure 7. This map and the following geological information are modified from Schiarizza and Preto, 1987.

7.2.1 Eagle Bay Assemblage

The oldest Eagle Bay rocks exposed on the property are micaceous quartzite, grit, phyllite and quartz mica schist, accompanied by minor amounts of chlorite schist, limestone, calcareous phyllite, calc-silicate schist and amphibolite of the Upper Proterozoic to Lower Cambrian Graffunder Lakes unit (uPrCmEBG). This unit is stratigraphically overlain by Devono-Mississippian Eagle Bay rocks, and locally by rocks of uncertain age. Locally it is intruded by bodies of orthogneiss and by sills (?) of quartz-eye sericite schist (quartz porphyry) that may be directly related to overlying felsic volcanic rocks of the Skwaam Bay Unit (DEBSk).

The dominant rock type within the Graffunder Lakes Unit is light to medium (rarely dark) grey to brownish grey, fine to medium-grained micaceous quartzite. It is generally well foliated, with a platy aspect due to more or less regularly spaced micaceous partings between plates and lenses of quartz-rich rock that are several millimetres to several centimetres thick. The mica is typically muscovite with minor amounts of chlorite, but includes biotite in higher metamorphic grade exposures where garnet porphyroblasts may also be present. The quartz and mica are generally accompanied by minor amounts of

plagioclase (albite or oligoclase), opaque oxides, tourmaline and apatite. The quartzites are locally calcareous, in which case they contain calcite as evenly scattered microscopic grains or aggregates, or as pods and lenses oriented parallel to the foliation.



Figure 7. Geology of the Red Top – Sunrise property (Schiarizza and Preto, 1987). See Table 4 for description of map units.

Light grey to white, massive quartzite occurs locally within the Graffunder Lakes Unit, but is not common. Where present it comprises intervals ranging up to several metres thick which are enclosed within typical platy quartzites and quartz mica schists. Limestone (unit EBQ1), marble, calc-silicate schist and calcareous phyllite, together with chlorite schist of mafic metavolcanic origin, dominate the upper part of Graffunder Lakes unit where it is exposed along the slopes south of Mount McLennan. These rocks are intercalated with quartzite and quartz mica schist and are overlain by either Skwaam Bay (DEBSk) or Forest Lake Unit (IPZEBF).

The age of the Graffunder Lake Unit is unknown, other than that it must be older than the mid to late Devonian granitic and volcanic rocks which respectively intrude and overlie it. It is, however, lithologically very similar to rocks of Early Cambrian and/or older age, with which it is tentatively correlated. This correlation suggests that the mafic metavolcanics, limestone and related rocks which comprise the upper part of the Graffunder Lake Unit in the vicinity of Mount McClennan and to the northeast of Granite Mountain may be correlative with lithologically similar Early Cambrian rocks of the Johnson Lake Unit (ICmEBJ).

The Forest Lake Unit (IPzEBF) is a heterogeneous package of rocks dominated by fine to coarse-grained clastic metasediments which are intercalated with carbonate and mafic to felsic volcanic and volcaniclastic horizons. Rocks assigned to this unit occur mainly at the base of the first fault slice, but also locally within the third fault slice where they overlie the Graffunder Lake Unit.

Rocks assigned to the Forest Lake Unit (IPzEBF) consist mainly of schistose chloritesericite grit and sandstone, together with chlorite-sericite-quartz schist and relatively pure quartzite. These rocks are intercalated with minor amounts of dark grey phyllite, dark green chlorite schist of probable mafic volcanic origin, and rare thin horizons of limestone and dolostone. They outcrop on the slopes south of Mount McClennan on the north side of the North Thompson River, and south of the river east of Jones Creek. They are apparently restricted to a single fault block, within which they are underlain by the Graffunder Lake Unit and overlain by Mississippian fine-grained sedimentary rocks of the Slate Creek Unit.

The age of the Forest Lake Unit is not known. It is presumed to be Early Cambrian and/or younger as it locally overlies the Graffunder Lake Unit and Middle Devonian and/or older since it lies beneath the Middle Devonian felsic phyllites of the Skwaam Bay Unit. It is lithologically similar to parts of the Lardeau Group in the Kootenay Arc, which is inferred to be Cambro-Ordovician in age. It is also similar to Palaeozoic grit and associated rocks within the Snowshoe Formation of the Barkerville terrane.

The Devonian Skwaam Bay Unit (DEBSk) is dominated by light grey chlorite-sericitequartz phyllite and schist derived mainly from felsic to intermediate volcanic and volcaniclastic rocks. Green chlorite schist derived from mafic volcanic rocks is present locally. Bands of dark grey phyllite and siltstone comprise approximately 10 per cent of the unit. This unit is host to numerous polymetallic base and precious metal showings within the Clearwater-Vavenby area.

The most abundant and characteristic rock type within the unit is fine-grained, light silvery grey to greenish grey sericite quartz phyllite, grading in places to slightly coarser grained muscovite quartz schist. Chlorite is generally present in amounts subordinate to the sericite, but may be absent. Weathered surfaces are light to medium shades of yellowish brown, reddish brown or grey, but may be dark rusty brown or bright yellow in areas of relatively intense pyrite mineralization. The rocks typically display a very fine and well developed papery fissility, although more platy varieties, comprising millimetre to centimetre-thick siliceous lenses and layers separated by thin sericite partings, also occur.

Roundish "eyes" of clear quartz are commonly present and grains of chalky white feldspar are locally evident. In places the phyllite has a spotted appearance due to the presence of porphyroblasts of rusty brown-weathering siderite, or less commonly chlorite or chloritoid.

Thin veins and lenses of quartz or quartz-carbonate often occur parallel to the schistosity. The phyllites are typically quite homogeneous over large intervals and contacts between individual volcanic or volcaniclastic horizons are not commonly evident. Locally the phyllite is coarsely fragmental and probably derived from coarse pyroclastic rocks although fragmental units are not as common as in overlying Forest Lake Unit. The clasts, comprising sericitic and/or chloritic siliceous lithic fragments, range from less than 1 centimetre to several tens of centimetres in size; they are generally flattened and foliated within the plane of the matrix schistosity but have a higher proportion of chlorite relative to sericite and are usually less quartzose and more feldspathic than their lighter coloured counterparts.

Distinctly more mafic, medium to dark green schists consisting of chlorite, albite, epidote and actinolite or green biotite are also present; these have little or no quartz and sericite. A band of dark green fragmental schist 10 metres thick, exposed along lower Foghorn Creek, contains coarse fragments of both dark green chloritic schist and light grey sericite quartz schist.

Metasedimentary intervals of medium to dark grey phyllite, siliceous phyllite, slate and siltstone are present throughout the Skwaam Bay Unit and are estimated to comprise about 10 per cent of the succession. Individual bands range from a few metres to a few tens of metres in thickness. Contacts with adjacent light-coloured sericite quartz phyllite are

generally sharp but locally are gradational and indistinct. The dark grey phyllite and siltstone are usually pyritic and may contain concordant lenses of pyritic quartz or quartz and rusty carbonate. These dark metasediments are very similar in appearance and composition to the slate, phyllite and siltstone which characterize the Mississippian Slate Creek Unit (MEBS).

The Slate Creek Unit (MEBS) of Mississippian age, is the youngest unit of the Eagle Bay Assemblage exposed within the Clearwater-Vavenby area. It is comprised mainly of dark grey slate, phyllite and siltstone, together with sandstone, granule to pebble conglomerate, limestone, dolostone and intermediate to felsic volcaniclastic rocks. These rocks crop out in several fault blocks on the property. Good exposures in this area are mainly in the lower reaches of Jones and Avery creeks.

Slate, phyllite and siltstone are the most abundant rock types within the Slate Creek Unit. These rocks are typically dark grey to black in colour, although light greenish grey phyllite is present1ocally: Siltstone may be somewhat lighter in colour than the associated slaty rocks and, in places, has a greenish or reddish cast. Cubes of pyrite and/or siderite or ankerite porphyroblasts are commonly present and may cause the rocks to become rusty; elsewhere the rocks are medium to dark grey on weathered surfaces. Siltstone is generally subordinate to slate or phyllite and occurs as horizons ranging up to a few centimetres in thickness. These may comprise persistent tabular layers (on the scale of an individual outcrop) or they may be markedly lenticular in nature. Rare grading, small-scale channels, flame structures and vague crossbedding were observed within the siltstone/slate sequences.

Slate and phyllite typically display a well-defined papery splitting habit; commonly, however, the slaty cleavage is cut by a strongly developed crenulation cleavage. The slaty rocks consist mainly of a fine-grained (0.04 millimetre), well foliated intergrowth of quartz, sericite and chlorite. Trains of fine, dark carbonaceous material may also be present; grains of tourmaline, apatite, plagioclase and zircon are also rarely evident. The coarser grained, less fissile siltstone horizons are similar in composition, but generally display relict clastic textures.

Approximately 30 per cent of the unit exposures contain horizons of sandstone and/or granule to pebble conglomerate, in addition to slate and siltstone. These coarser grained rocks occur in groups of beds intercalated with slate and phyllite over intervals of several tens of metres or more. They comprise mainly fine to coarse-grained sandstone which occurs in beds ranging from several centimetres to more than 1 metre thick. In general, the thicker beds are coarser grained and often include granule-size clasts. The sandstone beds are commonly graded and rare channels, ripups and sole markings were observed at their bases. These features suggest that much of the sandstone was deposited by turbidity currents.

The metasandstones of the Slate Creek Unit were derived mainly from moderately to poorly sorted quartz-rich wackes. Somewhat flattened grains of monocrystalline and polycrystalline

quartz, together with a much smaller amount of chert, plagioclase, lithic grains, and accessory muscovite, tourmaline and zircon, occur within a fine-grained recrystallized and foliated matrix. The matrix typically comprises from 10 to 40 per cent of the rock and consists mainly of quartz, sericite and chlorite; carbonate, opaque oxides and pyrite are minor constituents which may be intergrown with the matrix minerals or occur as relatively large porphyroblasts. The lithic component of the sandstones is largely fine-grained slate and siltstone, possibly derived from underlying beds, but also includes sericitic quartzofeldspathic rock, muscovitic quartzite and graphitic muscovite quartz phyllite or schist.

Foliation within the lithic fragments is, in most cases, continuous with that of the matrix. Rarely, however, lithic grains display a discordant foliation which predates the matrix cleavage. Detrital muscovite grains are invariably present in accessory amounts within the sandstone; these grains are much coarser than the fine-grained foliated sericite of the matrix and are often bent and fractured.

Quartz-pebble conglomerate was noted rarely within the Slate Creek Unit and is similar in composition to the finer grained sandstone and granule conglomerate with which it is associated. Clasts range up to 2 centimetres in size and are set within a dark grey silty or sandy phyllitic matrix.

Bands of rusty weathering light to medium greenish grey metatuff and metavolcanic breccia, similar to those in the Devonian-Mississippian Foghorn Mountain Unit (DMEBF), are intercalated with phyllite and siltstone of Slate Creek unit at a number of places within the area. These metavolcanic layers are typically a few metres or less in thickness and most cannot be traced for any substantial distance.

Pale greenish grey schistose chlorite sericite dolostone was slice. It outcrops along Avery Creek and to a lesser extent along Jones Creek and on the lower slopes of the North Thompson River valley east of Peavine Creek. The dolostone is intercalated with dark grey phyllite, granule to pebble conglomerate and rarely, thin lenses of dark grey limestone. Exposures along Avery Creek indicate that the dolostone locally occurs over intervals that are many tens of metres thick.

Slate Creek rocks exposed in the Vavenby area occur at the top of the third Eagle Bay fault slice. Within this area, which is transected by a number of late, northerly trending faults, the unit is generally thin; it is gradationally underlain by the and structurally overlain by quartzites of the Graffunder Lake Unit of the overlying fault slice.

The abrupt change in Eagle Bay stratigraphy across the bounding faults suggests that they may follow the loci of earlier faults which were active during deposition of the Devono-Mississippian section of the Eagle Bay succession.

7.2.2 Raft River Batholith

The north-central portions of the property are underlain by Early Jurassic, medium to coarse-grained diorite to granodiorite of the Raft River Batholith that weathers to a white to pinkish hue (MLJgd). Border zones, which are from a few metres to over 100 metres in width, are commonly mafic-rich and greenish in colour; they are reported to appear to be altered in composition by the assimilation of Nicola Group rocks during intrusion. Weak sericite alteration is common near intrusive contacts and it is intensely developed in the Silver King area.

Name	Minfile No	Easting	Northing	Commodity	Alteration	Minerals
Red Top	082M 044	302429	5724737	Ag, Pb, Zn, Cu, Au	Sericite, silica, pyrite	Pyrite, pyrrhotite, galena, sphalerite, chalcopyrite
Snow	082M 045	303840	5723909	Ag, Pb, Zn, Cu, Au	Pyrite, silica	Pyrite, pyrrhotite, galena, sphalerite, chalcopyrite
Sunrise	082M 046	305174	5723548	Ag, Pb, Zn, Cu, Au	Silica	Pyrite, pyrrhotite, sphalerite, galena, chalcopyrite, tetrahedrite
Morrison	082M 047	306082	5722121	Au	Quartz	Mariposite
Bearsden	082M 033	305187	5721382	Ag, Pb, Cu, Au	Quartz	Pyrite, galena, chalcopyrite

Table 5. Mineral occurrences, Red Top - Sunrise property.

Note: UTM coordinates - NAD83, Zone 11

7.3 Mineral Occurrences

Lower Cambrian Eagle Bay Formation rocks on Mount McClennan are comprised of metasediments and metavolcanics, which are deformed into a shallow plunging east trending antiform. The rocks, which occupy the north limb of the structure, include quartzite, chlorite- muscovite-quartz schist, quartz-sericite schist, limestone, calc-silicate schist and skarn. Stratiform lenses of massive, semi- massive and disseminated pyrite and pyrrhotite with lesser galena, sphalerite and chalcopyrite occur in pyritiferous, siliceous and recrystallized units (Table 5). The Morrison and Bearsden showings appear to be quartz vein occurrences.

7.3.1 Red Top (Minfile #082M 044)

The Redtop prospect is a 300 metre thick section of rusty, pyritic, quartz-sericite schist with intercalated meta-argillite and limestone. The strata strikes 110 degrees and dips 30 to 50 degrees northeast. A 1.5 metre chip sample assayed 0.17 grams per tonne gold, 18.9 grams per tonne silver, 0.08 per cent copper, 2.75 per cent lead and 3.15 per cent zinc (Assessment Report 436; Leitch, 1962). A 2.0 metre thick chip sample of the pyritic unit, close to the

base of the limestone assayed 3.4 grams per tonne silver, 0.015 per cent copper, 0.047 per cent zinc and 0.08 per cent lead (Assessment Report 12080; Pinsent, 1984).

7.3.2 Snow (Minfile #082M 045)

The Snow prospect consists of four "semi-conformable", 0.3 to 1.2 metre wide bands of massive sulphide within a 12.2 metre thick, flat-lying unit of carbonate bearing quartz-sericite schist. Zinc rich bands grade upward into copper rich bands and chalcopyrite is partially mobilized into north trending tension fractures. A 0.6 metre sample assayed 1.70 per cent copper, 8.25 per cent lead and 2.57 per cent zinc (Assessment Report 436; Leitch, 1962) and chips from several mineralized blocks assayed 1.18 per cent copper, 0.80 per cent zinc, 2.10 per cent lead, 140 grams per tonne silver and 0.12 grams per tonne gold (Assessment Report 12080; Pinsent 1984).

7.3.3 Sunrise (Minfile #082M 046)

The Sunrise prospect consists of massive sulphide horizons, up to 1.2 metre thick, within flat-lying quartz sericite schist and close to the nose of the antiform. A 2.0 metre chip sample assayed 1.73 grams per tonne gold, 225 grams per tonne silver, 2.62 per cent lead, 18.3 per cent zinc and 0.13 per cent copper (Assessment Report 12080; Pinsent, 1984). The mineralization occurs over a 150 metre length.

7.3.4 Morrison (Minfile #082M 047)

Gold is reported in quartz veins and altered chlorite-sericite-quartz schist. A channel sample is reported to assay 13.7 grams per tonne gold (Assessment Report 436; Leitch, 1962). Mariposite probably occurs in the schist.

7.3.5 Bearsden (Minfile #082M 033)

A quartz vein apparently carries silver, gold, copper and lead mineralization. An unknown sample type assayed 0.34 grams per tonne gold, 295 grams per tonne silver and 11.26 per cent lead (Old Mineral Deposit Inventory Form in Property File).

8 Deposit Types

The Red Top, Sunrise and Snow occurrences are characterized by stratiform lenses of massive, semi- massive and disseminated pyrite and pyrrhotite with lesser galena, sphalerite and chalcopyrite hosted by pyritiferous, siliceous and recrystallized sedimentary and volcanic units. These mineral occurrences are classified as Sedimentary-Exhalative (SEDEX) in the MINFILE database. However, the presence of felsic metavolcanics in the

host stratigraphy suggests a possible volcanogenic origin similar to Kuroko type massive sulphide deposits. Both types of mineral deposits form on the seafloor where metal bearing hydrothermal fluids are being discharged from a vent. These fluids precipitate sulphide minerals which accumulate as massive sulphide mounds or beds on the seafloor. The size and grade of the deposit that can be formed depends on the length of time venting has occurred and the metal content of the hydrothermal fluids

The Morrison and Bearsden showings appear to be vein occurrences and are probably unrelated to the massive sulphide deposits.

9 **Exploration**

The 2012 Red Top - Sunrise exploration program involved two components: an airborne geophysical survey with radiometric and magnetic sensors done by Precision Geosurveys and a ground lithogeochemical and prospecting program targeting specific areas on the property done by Rich River Exploration. As part of the prospecting program road access to the main showings was improved by cutting out windfall and removing underbrush. In addition, the writer compiled data and did a one day property examination for Rich River on July 27, 2012. The total cost of the work done in 2012 was \$109,329.32. Of this amount, \$95,500 was filed for assessment credit (Statement of Work filed September 25, 2012 by C. Lynes, MTO event no. 5407123).

9.1 Airborne Geophysical Survey

The following information is extracted from a report submitted to Montego Resources Ltd., the property operator, by Precision Geosurveys Inc., the contractor engaged to fly an airborne geophysical survey over the Red Top - Sunrise property (Poon, 2012). The total pre-tax cost of this survey was \$27,000.

The geophysical survey involved the acquisition of high resolution magnetic and radiometric data over the Red Top - Sunrise property. The survey area was approximately 6.0 km by 6.5 km (Figure 8). A total of 260 line kilometres were flown for this survey; this total includes tie lines and survey lines. The survey lines were flown at 100 meter spacing at a $030^{\circ}/210^{\circ}$ heading; the tie lines were flown at 1 km spacing at a heading of $120^{\circ}/300^{\circ}$. Precision GeoSurveys flew the property using a Bell 206 Jet Ranger helicopter. The average survey elevation was 48 meters vertically above ground.

The base of operations for this survey was in Clearwater, BC. The survey was started on September 7 and completed on September 8, 2012.



Figure 8. Location of airborne geophysical survey lines(UTM Zone 11, NAD83).

A magnetic base station was set up before every flight to ensure that diurnal activity is recorded during the survey flights. The base station was installed at a magnetically noise-free area, away from metallic items such as steel objects, vehicles, or power lines that could affect the survey data. Base station readings were reviewed at regular intervals to ensure that no data was collected during periods with high diurnal activity (greater than 5 nT per minute). The magnetic variations recorded from the stationary base station are removed from the magnetic data recorded in flight to ensure that the anomalies seen are real and not due to solar activity.

For this survey, a magnetometer, spectrometer, base station, laser altimeter, pilot guidance unit, and a data acquisition system were required to carry out the survey and collect quality, high resolution data. Detailed information on these survey components are contained in the appended geophysical report.

The magnetometer used by Precision GeoSurveys is a Scintrex cesium vapor CS-3 magnetometer. The system was housed in a front mounted "stinger".

The IRIS, or Integrated Radiometric Information System is a fully integrated, gamma radiation detection system containing 16.8 litres of NaI (T1) downward looking crystals and 4.2 litres NaI (T1) upward looking crystals.

For monitoring and recording of the Earth's diurnal magnetic field variation, Precision GeoSurveys operates two GEM GSM-19T magnetometer base stations continuously throughout the airborne data acquisition survey.

9.1.1 Magnetic Data

Magnetic surveying is probably the most common airborne survey type to be conducted for both mineral and hydrocarbon exploration. The type of survey specifications, instrumentation, and interpretation procedures, depend on the objectives of the survey. Typically magnetic surveys are performed for:

- 1. Geological Mapping to aid in mapping lithology, structure and alteration in both hard rock environments and for mapping basement lithology, structure and alteration in sedimentary basins or for regional tectonic studies.
- 2. Depth to Basement mapping for exploration in sedimentary basins or mineralization associated with the basement surface.

Figure 9 shows geology and mineral occurrence locations superimposed on the Total Magnetic Intensity (TMI) base map. This map was produced by the writer using Manifold GIS software. The most striking feature visible on this map is a north trending area of positive magnetic response that crosscuts the structure and stratigraphic trends on the property. This north trending feature appears to connect with an easterly trending zone of high magnetic response that occupies the northern part of the property forming a T-shaped anomaly. The easterly trending anomaly corresponds to rocks that are assumed to sit stratigraphically above the mineralized horizons on the property. A similar magnetic response appears to be associated with rocks underlying the Morrison and Bearsden showings. These magnetic highs are probably related to the presence of magnetic minerals in underlying bedrock. It is unknown whether these minerals are primary or secondary in



Figure 9. Geology contacts and mineral showings superimposed on Total Magnetic Intensity (TMI). See Table 4 for geology legend.

9.1.2 Radiometric Data

Radiometric surveys detect and map natural radioactive emanations, called gamma rays, from rocks and soils. All detectable gamma radiation from earth materials come from the natural decay products of three primary elements; uranium, thorium, and potassium. The purpose of radiometric surveys is to determine either the absolute or relative amounts of U, Th, and K in surface rocks and soils.

Figure 10 shows geology and mineral occurrences superimposed on the K equivalent radiometric base map. This map was produced by the writer using Manifold GIS software. The K concentration was deemed to be the most useful radiometric measurement as K alteration is a common feature of hydrothermal systems. Areas of K enrichment may

correspond to the potassic zone; removal of K (plus Na, Ca, Mg) may occur as a result of intense and pervasive argillic (clay) alteration.



Figure 10. Geology and mineral showings superimposed on airborne radiometric data showing potassium equivalent concentration. Map prepared by D.G. MacIntyre.

The most striking feature visible on Figure 10 is a northwest elongate high in the central portion of the property. This anomaly is at a slightly oblique angle to what is assumed to be the east trending axis of a major antiform. Other areas of anomalous K response occur in the southeast corner of the property. The significance of these anomalies is unknown. Some of the K lows shown on Figure 10 may be due to feldspar destructive hydrothermal alteration or to the presence of rocks with low K content.



Figure 11. Traverse lines (orange) superimposed on a Google Earth image of the property.

9.2 Lithogeochemical Sampling

A program of lithogeochemical sampling and prospecting was undertaken by Craig Lynes, the property owner. This work was done by Mr. Lynes's company, Rich River Exploration in the time period July 24th to 30th and August 10th to 24th, 2012. A total of 22 rock samples were collected. Figure 11 shows the location of prospecting traverses on a Google Earth image of the property. A total of 52.6 traverse kilometres were done in 2012. Where mineralization was observed, samples were collected for lithogeochemical analyses. Figure 12 shows the location of samples collected in 2012. Analytical results are summarized in Table 6.

Samples collected in 2012 by C. Lynes were sent to ALS Laboratories in Kamloops for analysis. The analytical method used was conventional Inductively Coupled Plasma - Atomic Emission Spectroscopy (ICP - AES). A standard Fire Assay with Atomic Absorption finish on a 30g sample was used to determine Au concentrations. For the ICP-AES technique, sample decomposition was done by nitric agua regia digestion. A prepared sample is digested with aqua regia in a graphite heating block. After cooling, the resulting solution is diluted to 12.5 mL with deionized water, mixed and analyzed by inductively coupled plasma-atomic emission spectrometry. The analytical results are corrected for inter-element spectral interferences. It should be noted that in the majority of geological matrices,

data reported from an aqua regia leach should be considered as representing only the leachable portion of the particular analyte. ALS runs standards and provides re-samples at varying intervals for each sample shipment analysed.



Figure 12. Location of 2012 lithogeochemical samples collected by C. Lynes.

Table 6.	Summarv	of analytical	results for	grab samples	s collected by	C.Lvnes. 2012.
		o		8- was sumption		

Map No.	Sample	Easting	Northing	Description	Cu ppm	mqq nZ	Pb ppm	Au ppm	Ag ppm	Fe %	S %
1	708932	302130	5723778	rusty quartz vein material - subcrop and end of logging spur	25	1495	4090	0.057	76.3	1.88	0.92
2	708933	302117	5723755	quartz-carb. vein material with py,	9	243	137	0.134	0.9	3.65	1.14

Map No.	Sample	Easting	Northing	Description	Cu ppm	Zn ppm	h ppm	Au ppm	Ag ppm	Fe %	S %
3	708934	302086	5724475	40cm angular	828	26500	175	<0.005	30	9.85	>10.0
5	100754	502000	5724475	quartz subcrop with sph., cpy., py.	020	20300	175	<0.005	5.9	7.05	/10.0
4	708935	302024	5724367	quartz with massive po in roadcut old trench?	447	37	4	<0.005	1.2	22.8	>10.0
5	708936	302025	5724368	massive po with minor cpy same trench area	505	34	3	0.02	1.3	39.4	>10.0
6	708937	302677	5723755	quartz subcrop in road cut	88	42	27	<0.005	< 0.2	3.2	0.53
7	708938	303316	5723689	sucrosic quartz subcrop with py	67	64	17	<0.005	0.4	5.04	3.3
8	708939	303718	5723750	quartz with massive po and minor cpy	143	14	7	< 0.005	0.4	7.94	4.8
9	708940	303816	5723570	mineralised outcrop in road bed	59	30	14	<0.005	0.3	6.19	4.11
10	708941	303841	5723240	epidote rich skarn with diss py minor cpy?	338	18	7	0.007	0.3	8.91	1.05
11	708942	303852	5723241	epidote skarn with blebs semi massive pyrite	186	51	298	0.02	0.4	9.33	6.28
12	708943	303661	5723298	epidote skarn with minor diss. cpy and mal. in outcrop	378	140	14	0.009	<0.2	3.02	0.36
13	708944	302632	5723439	0.5m quartz vein in outcrop rusty and micaceous	66	50	9	0.017	<0.2	4.15	0.28
14	708945	304813	5723322	massive po in outcrop in road bed	859	27	3	< 0.005	0.7	33	>10.0
15	708946	304843	5723351	quartz with massive po minor cpy in old trench	458	29	6	<0.005	0.5	11.05	8.52
16	708947	302340	5722975	quartz vein in outcrop with py and cpy -	3870	63	6	0.652	6.2	3.7	1.29

Map No.	Sample	Easting	Northing	Description	Cu ppm	Zn ppm	Pb ppm	Au ppm	Ag ppm	Fe %	S %
				malachite stained							
17	708948	302333	5722954	40cm quartz vein in outcrop vuggy with magnetite cpy	474	10	3	0.025	1.7	2.14	0.7
18	708949	302334	5722953	same vein with mal. stain in area of epidote alt zone	1385	40	3	0.028	1.2	1.43	0.14
19	708950	302329	5722948	angular quartz subcrop with mal.	7840	71	12	0.097	7.6	5.52	1.39
20	14701	302029	5722961	massive py. near skarn zone with epidote	67	12	23	<0.005	0.3	20.4	>10.0
21	14702	302267	5722838	semi-massive py with magnetite in road bed	994	306	16	0.023	0.9	26.9	>10.0
22	14703	302561	5722700	massive magnetite minor py - subcrop float	1915	249	10	<0.005	0.4	32.9	>10.0

9.2.1 Rock Samples

A total of 22 rock samples were collected and analyzed as part of Rich River's targeted geochemical program. Original analytical certificates issued by Acme for this work were provided to the writer. Analytical results for Cu, Zn, Pb, Au, Ag, As, Fe and S are given in Table 6. Several samples returned anomalous results. The best result was for sample 708934 (No. 3, Figure 12) which returned 828 ppm Cu and 2.65% Zn and 3.9 ppm Ag. This sample is described as a 40 centimetre wide subcrop of quartz with visible sphalerite, chalcopyrite and pyrite. A total of 8 of the 22 samples collected contained greater than 500 ppm Cu, one sample contained 4090 ppm Pb (No 1, Figure 12).

The writer is confident that Mr. Lynes and his field crew collected the samples listed in Table 6 following current industry best practices and that a sufficient level of sample security was employed.

10 Drilling

Only limited diamond drilling has been done on the Red Top - Sunrise property and this work is described in the History section of this report. No recent diamond drilling has been done on the property which is still in the early stages of exploration.

11 Sample Preparation, Analyses and Security

Rock samples collected by the writer in 2012 were placed in labelled plastic bags, with a label also placed within the bag and taken directly to the Acme Analytical Laboratories Ltd. ("Acme") preparatory laboratory in Smithers B.C. Acme is an accredited laboratory registered under the ISO 9001 standard. At the lab each rock sample was crushed to 70% passing 10 mesh followed by pulverizing a 250gm split to 95% passing 150 mesh. Only the author handled or had access to the samples before they arrived at the preparatory lab.

After crushing and sieving, a 250 gram sample at -200 mesh was prepared and shipped to Acme's Vancouver laboratory for analyses. A full suite of 53 elements were determined by ICP Mass Spectrometry following an Aqua Regia digestion. For well mineralized samples, Cu, Pb, Zn and Ag were determined by a hot Aqua Regia digestion and ICP Emission Spectrometry while Au, Pt and Pb were determined by Fire Assay fusion and ICP-MS analysis.

Acme runs standards and provides re-samples at varying intervals for each sample shipment analysed. A re-sample consists of analysing a second cut (subsample) from the same sample pulp (or occasionally reject portion), and is reported as a rerun (RE) or reject rerun (RRE) on the analysis certificate. In most cases there has been good reproducibility of results between the original subsamples and re-samples, with the exception of gold at the lower end of the detection range in some stream sediment and soil samples.

The writer is satisfied that the quality control and quality assurance methods employed by Acme are sufficient to ensure a high level of precision and accuracy in the analytical results produced by the lab. The author has no reason to believe that there are any problems with the security, sample preparation or analytical procedures used by Acme.

12 Data Verification

The writer collected 7 lithogeochemical samples during a property visit on July 27, 2012. These samples were collected from the Sunrise, Snow and Bearsden showings (Figure 13). The purpose of this sampling was to verify the historical grades reported from these

showings. A description of each sample is given in Table 7; analytical results are given in Tables 8 and 9.



Figure 13. Location of 2012 lithogeochemical samples collected by D. MacIntyre

Table 7. Description and location information for grab samples collected by D. MacIntyr	e,
July 2012. Sample locations are shown on Figure 13.	

Map No.	Sample	Easting	Northing	Showing	Description
D1	SR12-001	305110	5723594	Sunrise	massive sulphide float from end of trench
D2	SR12-002	305131	5723597	Sunrise	massive sulphide float from bottom of trench
D3	SR12-003	305190	5723596	Sunrise	rusty quartz-sericite-schist
D4	SR12-004	305200	5723598	Sunrise	massive sulphide float on surface near trenches
D5	SR12-005	303868	5723942	Snow	quartz-muscovite schist float with mass. sulphide bands
D6	SR12-006	305238	5720983	Bearsden	quartz float with galena
D7	SR12-007	305238	5720983	Bearsden	schist with quartz, mariposite, galena

Note: coordinates are in UTM zone 11, datum NAD83

Samples of massive sulphide collected by the writer from the Sunrise showing returned high values for Zn (26.1% and 32.6%), Pb (9.57% and 4.34%) and Ag (104 and 227 grams per tonne) and moderately anomalous values in Cu (D1,D2, Table 9). Sample D2 also contained anomalous Au (823 ppb). A sample of quartz-muscovite schist with massive sulphide bands from the Snow showing contained 4.72% Pb, 2.1% Zn, 1.11% Cu and 259 grams per tonne (GM/T) Ag (D5, Table 9). These results are comparable to results reported by previous operators on the property and confirm the presence of high grade massive sulphide mineralization at the Sunrise and Snow showings. A sample collected from the Bearsden showing (D6, Table 9) contained 1.14% Pb and 33 GM/T Ag.

Map No.	Cu PPM	Zn PPM	MAA qA	Au PPB	Ag PPB	As PPM	Ni PPM	Co PPM	Fe %	S %	Hg PPB
D1	262.45	>10000.0	>10000.00	107	>100000	0.6	54.2	44	14.93	9.76	22259
D2	1065.93	>10000.0	>10000.00	1221	>100000	< 0.1	92.1	47.4	17.59	9.09	15041
D3	86.64	3169.2	781.13	<100	3102	0.2	29.3	4.9	3.05	0.74	112
D4	1731.22	668.2	176.23	<100	1700	0.7	112.9	93.4	>40.00	>10.00	51
D5	>10000.0	>10000.0	3952.65	133	>100000	49.4	23.4	22.9	28.48	>10.00	525
D6	68.45	204.2	>10000.00	<100	33670	32.2	172	29.6	4.72	0.65	16
D7	40.7	188.7	6937.55	<100	13994	11.4	68.4	9.9	4.48	0.26	19

Table 8. ICP-MS analytical results for samples listed in Table 6.

Table 9. Assay results for high grade samples listed in Table 7.

Map No.	Cu %	% uZ	Pb %	Au PPB	Ag GM/T
D1	0.022	26.1	9.57	68	104
D2	0.109	32.6	4.34	823	227
D5	1.11	2.1	4.72	78	259
D6	0.004	0.02	1.14		33

Note: Cu, Zn, Pb, Ag by ICP-ES; Au by fire assay/ICP-MS

13 Mineral Processing and Metallurgical Testing

There is no record of any mineral processing or metallurgical testing having been done on samples collected from the Red Top - Sunrise property.

14 Mineral Resource Estimates

There has not been sufficient drilling to determine the subsurface extent and overall grade of mineralization on the Red Top - Sunrise property. Therefore, there are no historical mineral resource estimates for the property.

15 Adjacent Properties

There is no publically available information that would indicate there are significant mineral resources on adjacent mineral tenures. Therefore, it is unlikely these properties would have a significant impact on the potential development of the Red Top – Sunrise property.

16 Other Relevant Data and Information

The author has reviewed all publically available reports pertaining directly to the property. The writer is not aware of any additional sources of information that might significantly change the conclusions presented in this technical report.

17 Interpretation and Conclusions

The Red Top - Sunrise property is a property of merit. In the writers opinion more work is needed to fully evaluate the economic potential of the property. The property is attractive because it is readily accessible and within an area considered prospective for sediment hosted massive sulphide deposits. Previous exploration has located several massive sulphide showings over a strike length of 3.6 kilometres. Sampling by the current and previous operators has returned assay values from surface trenches that grade in excess of 30% Zn. Moderately high Pb and Ag values have also been returned.

The results of the airborne radiometric/magnetic survey described in this report have identified areas of anomalous response that cannot be directly explained on the basis of known geology. Further work is needed to determine the significance of these anomalies, particularly the north trending magnetic anomaly that cross cuts the regional stratigraphy in the center of the property. The elongate westerly trending K radiometric anomaly in the central half of the property may be due to increased concentration of potassic minerals such as K-feldspar or K-bearing mica. Both of these minerals are found in zones of hydrothermal alteration. Conversely, areas of low K radiometric response may represent zones of feldspar destructive hydrothermal alteration.

There does not appear to be any direct correlation between elevated magnetic response and the known bedrock geology. More follow up work is needed to determine what is causing the magnetic anomalies on the property. Some of these magnetic highs could be due to the presence of magnetic minerals associated with massive sulphide mineralization.

Recommendations 18

The primary targets on the Red Top – Sunrise property are stratabound massive sulphide beds and lenses containing high grade Zn, Pg and Ag values. The occurrences that have been found to date are encouraging and suggest a favourable environment for this type of deposit. Because this type of massive sulphide deposit occurs within specific geologic units and typically produces a strong electromagnetic response it is recommended that a close-spaced airborne electromagnetic survey be flown over the property. Flight lines at 100 metre separation should be oriented approximately north-south in order to cross the stratigraphy at a right angle. Any strong conductors and EM cross-overs detected should be followed up with additional prospecting, targeted soil sampling and close spaced ground electromagnetic and magnetic surveys. Depending on the results of these follow up surveys, a program of diamond drilling could be done to test the best targets.

A proposed success contingent, two stage work program is presented in Table 10. Stage 1 would focus on the airborne electromagnetic survey, compilation of all existing data and new data onto a common base and targeted follow-up geophysical and geochemical ground surveys. Stage 2 would involve diamond drilling of the best targets. The projected cost of the Stage 1 program is \$224,800.

Table 10. Projected costs for a proposed exploration program, Red Top - Sunrise property

Stage I									
Expense		Units	Unit cost	Total					
Data compilation	10	person days	\$600	\$6,000					
Airborne ZTEM survey	260	line-km	\$330	\$85,800					
Ground geophysics/geochem	20	line-km	\$3,000	\$60,000					
Per diem costs	80	person days	\$100	\$8,000					
Analytical	200	analyses	\$30	\$6,000					
Geologist/camp manager	20	person days	\$600	\$12,000					
Field assistants (3)	60	person days	\$300	\$18,000					
Report preparation	10	days	\$600	\$6,000					
Permitting	5	days	\$600	\$3,000					
Contingency				\$20,000					
			Total	\$224,800					

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Stage 2				
			Unit	
Expense		Units	cost	Total
Drilling	2000	metres	\$160	\$320,000
Per diem costs	240	Person days	\$100	\$24,000
Analytical	300	analyses	\$30	\$9,000
Geologists/camp manager	30	Person days	\$600	\$18,000
Report preparation	10	days	\$600	\$6,000
Contingency 10%				\$37,100
			Total	\$414,100
			Stage	
			1+2	\$638,900

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Appendix A. Statement of Qualifications

I, Donald George MacIntyre, Ph.D., P.Eng., do hereby certify that:

- 1. I am an independent consulting geologist providing services through D.G. MacIntyre and Associates Ltd. a wholly owned company incorporated December 10, 2004 in the Province of British Columbia (registration no. BC0710941). My residence and business address is 4129 San Miguel Close, Victoria, British Columbia, Canada, V8N 6G7.
- 2. I graduated with a B.Sc. degree in geology from the University of British Columbia in 1971. In addition, I obtained M.Sc. and Ph.D. degrees specializing in Economic Geology from the University of Western Ontario in 1975 and 1977 respectively.
- 3. I have been registered with the Association of Professional Engineers and Geoscientists of British Columbia since September, 1979, registration number 11970. I am a Fellow of the Geological Association of Canada and a member of the British Columbia Association for Mineral Exploration.
- 4. I have practiced my profession as a geologist, both within government and the private sector, in British Columbia and parts of the Yukon for over 40 years. Work has included detailed geological investigations of mineral districts, geological mapping, mineral deposit modeling and building of geoscientific databases. I have directly supervised and conducted geologic mapping and mineral property evaluations, published reports and maps on different mineral districts and deposit models and compiled and analyzed data for mineral potential evaluations.
- 5. I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirement to be a "qualified person" for the purposes of NI 43-101.
- 6. I am responsible for all sections of the technical report titled "Technical Report: Red Top Sunrise Zn-Pb-Ag Property, British Columbia, Canada" dated January 30, 2013 (the "Technical Report"). The effective date of this Technical Report is October 1, 2012. Sections not written by myself are noted in the text. I visited the Red Top Sunrise property on July 27, 2012.
- 7. I have not had prior involvement with the property that is the subject of the Technical Report.
- 8. I am not aware of any material fact or material change with respect to the subject matter of the Technical Report the omission of which would make the Technical Report misleading.
- 9. I am independent of the issuer applying all of the tests in Section 1.5 of National Instrument 43-101.
- 10. I have read National Instrument 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.
- 11. I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

Dated this 30th day of January, 2013



D.G. MacIntyre, Ph.D. P.Eng.