

VALUATION OF THE BLUE ICE PROPERTY, BRITISH COLUMBIA, CANADA

PREPARED FOR BRITISH COLUMBIA MINISTRY OF ATTORNEY GENERAL

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SUMMARY

Roscoe Postle Associates Inc. (RPA) is retained by the British Columbia Ministry of Attorney General, Legal Services Branch, to carry out an independent valuation of the Blue Ice Property. It consists of four mineral claims with an area of 65 hectares located within Wells Grey Provincial Park. The Blue Ice Property is held 100% by Mr. Sean Morriss. This report presents RPA's valuation of the Blue Ice Property, prepared for the purpose of assisting in the determination of compensation for the taking of the mineral claims effectively as of March 21, 1989, the Valuation Date.

Value as used in this report refers to Market Value, which is defined as follows:

"The market value of an estate or interest in land is the amount that would have been paid to the holder of the expropriated mineral title if the title had been sold on the date of expropriation, in an open and unrestricted market between informed and prudent parties acting at arm's length."

RPA did not visit the Blue Ice Property, nor did we carry out any independent sampling or carry out a title search. For this valuation, RPA has relied on technical data and title documents supplied by BC Ministry of Attorney General plus other information in the public domain such as Canada Stockwatch and the Canadian Mines Handbook for information on comparable transactions.

RPA has in general followed the CIMVal Standards and Guidelines for Valuation of Mineral Properties, but this report is not compliant with the CIMVal Standards because we have not visited the property and have not followed the CIMVal valuation report format.

The Blue Ice Property is at an early stage of exploration, and its value lies in the potential for the existence and discovery of an economically viable mineral deposit within the area of the property. In RPA's opinion, the Blue Ice Property should be valued as an exploration property, and not as a development property.

The three generally accepted valuation approaches are Market, Income and Cost approach. For valuation of the Blue Ice Property, RPA has used the Appraised Value Method (a Cost Approach) and the Comparable Transactions Method (a Market Approach). RPA has not used the Income Approach since it is not appropriate for such an early stage exploration property. The appraised value and comparable transaction values are then used to estimate a range of Market Values for the Blue Ice Property as of the effective Valuation Date of March 21, 1989.

The Blue Ice Property is located in eastern British Columbia in a remote mountainous area near the northeast boundary of Wells Gray Provincial Park. It adjoins a glacier near the headwaters of Hobson Creek and the Azure River. There is no road access to the property: the nearest logging road terminates 20 km southeast of the property. The Blue Ice claims are accessible by helicopter from Valemont some 50 km to the east.

The Blue Ice Property is at an elevation of about 2,000 m above sea level in a mountainous area of glacier capped peaks that rise to about 2,600 m. The property area is above the tree line. Precipitation is heavy and visibility for work and flying is often hampered by cloud cover.

The present Blue Ice claims were staked in 1953 and transferred to a syndicate. In 1957, Silver Standard Mines Ltd. (Silver Standard) acquired a 65% interest in the syndicate with a right to acquire an additional interest. Ownership of the claims was transferred to Silver Standard in September 1970, and sold to Mr. Sean Morriss in 2001.

The property was staked as early as 1919 and work was carried out in the 1920s and 1930s to explore quartz veins and limestone replacement bodies where gold values were associated with pyrite. By 1929 much work was done to explore a quartz-pyrite vein. In 1939, Anglo-Huronian drilled 10 holes on the Blue Ice property, five on each of two showings. Little or no work appears to have been done on the Blue Ice property since that time.

The general area of the Blue Ice Property is underlain by metasedimentary rocks of the Shuswap Metamorphic Complex. The country rocks consist of massive quartzite, quartz pebble conglomerate, quartz-sericite schist, phyllite, argillite and limestone. Mineral occurrences at the head of Hobson Creek are found in zones of fracturing, crosscutting host rocks at an oblique angle. Lenticular quartz bodies and fracture veins host pyrite plus other sulphides. Most are narrow, irregular stockworks or sets of short quartz-filled cracks and tension gashes. Mineralization locally extends into limestone bed, forming massive sulphide replacement.

The Blue Ice claims contain three mineralized areas of interest. The No. 1 zone contains gold values associated with pyrite and other sulphides in a persistent quartz vein. It was explored in the past over 700 ft. and apparently extended under moraine deposits. Although some high gold values were obtained in grab samples, BC Minister of Mines reported in 1938 that the greater part of the vein by far is barren.

No. 2 zone consists of a complex of quartz veining with a total exposed length of 460 ft. and a maximum width of 120 ft. Pyrite content is variable within quartz veins and masses and some good gold assays are reported in grab samples. Five holes in 1939 tested the limestone bed a few hundred feet ESE of the quartz veining complex and returned generally low gold values with one assay of 0.27 oz/ton Au over a core length of 8 ft.

The No. 3 zone contains a small gold zone outlined by surface trenching. It is stated to average 0.38 oz/ton Au over a 15 ft. width for a length of 110 ft., presumably with high assays uncut. The zone was tested in 1939 by five drill holes. The intersection in drill hole no. 3 (0.70 oz/ton Au over 15 ft. core length with high assays cut to 1.0 oz/ton) appears to correspond to the surface zone. Low values in other drill holes appear to restrict the strike length of the zone. Tonnage potential of the zone is for tens of thousands of tons with a grade in the order of 0.4 oz/ton to 0.5 oz/ton Au. Deposits of this size and grade are clearly uneconomic in this remote area where capital and operating costs are expected to be very high.

In RPA's view, exploration potential on the Blue Ice claims is limited to small deposits with moderate gold grades. The exposed areas of the four claims have been explored in the past by surface trenching with some followup drilling in 1939. Results were not sufficiently encouraging to warrant more exploration work after 1940, even though a small gold zone was outlined in pyritized limestone and scattered high gold values were obtained on other parts of the property. The remaining exploration potential is on areas of the property beneath glacial moraine deposits and where glaciers have retreated since the 1930s. These areas are rather small and RPA considers that the probability of a deposit of sufficient size and grade to be economic in this area is very low. It is therefore difficult to justify any further exploration work on the Blue Ice claims, in RPA's view..

The Blue Ice Property is at an early stage of exploration, and its value lies in the potential for the existence and discovery of an economically viable mineral deposit within the area of the property. RPA has used two methods to determine a range of Market Values for the Blue Ice Property. The appraised value method is a cost approach, and the comparable transactions method is a market approach.

Based on an estimate of the cost of the 1930s work in 1989 dollars, RPA estimates the appraised value of the Blue Ice Property to be \$75,000, as of the Valuation Date of March 21, 1989.

In order to compile comparable transactions, RPA has carried out a survey of market transactions on mineral properties in British Columbia over about a 16 month period bracketing the effective Valuation Date of the Blue Ice Property. More than 800 mineral property transactions were reported by Stockwatch in this period. RPA went through a process of elimination to retain transactions on relatively small properties in BC that may be comparable to the Blue Ice claims. The remaining 64 market transactions were compiled into a spreadsheet and the reported transaction details were analyzed to estimate each transaction value. Based on analysis of the market transactions, RPA considers that values in the range of \$30,000 to \$50,000 are most comparable to the Blue Ice Property.

In RPA's view, the comparable transactions are more reliable than the appraised value and more weight should be placed on them. RPA's opinion is that the Market Value of the Blue Ice Property was \$40,000 as of the Valuation Date of March 21, 1989.

INTRODUCTION

Roscoe Postle Associates Inc. (RPA) is retained by British Columbia Ministry of Attorney General, Legal Services Branch, to carry out an independent valuation of the Blue Ice Property. It consists of four mineral claims located within Wells Grey Provincial Park. The Blue Ice Property is held 100% by Mr. Sean Morriss. This report presents RPA's valuation of the Blue Ice Property, prepared for the purpose of assisting in the determination of compensation for the taking of the mineral claims effectively as of March 21, 1989, the Valuation Date.

Value as used in this report refers to Market Value. One definition, which is similar to other definitions, is given in the BC Mining Rights Compensation Regulations, Section 5.1, as follows:

"The market value of an estate or interest in land is the amount that would have been paid to the holder of the expropriated mineral title if the title had been sold on the date of expropriation, in an open and unrestricted market between informed and prudent parties acting at arm's length."

This report summarizes the technical aspects of the Blue Ice Property and discusses the details of the valuation methods that are utilized to arrive at the Market Value for this exploration property. Most of the technical information in this report is derived from material supplied by BC Ministry of Attorney General.

For this valuation, RPA did not visit the Blue Ice Property, nor did we carry out any independent sampling or carry out a title search. RPA has relied on technical data and title documents supplied by BC Ministry of Attorney General, as listed at the end of this report under Sources of Information. To complete the Comparable Transactions section of this report, RPA used information available in the public domain, such as Canada Stockwatch, the Canadian Mines Handbook, The Northern Miner and The George Cross News Letter.

RPA has in general followed the CIMVal Standards and Guidelines for Valuation of Mineral Properties, but this report is not compliant with the CIMVal Standards because we have not visited the property and have not followed the CIMVal valuation report format.

Unless otherwise stated Canadian dollars and both Imperial and metric units are used throughout this report.

DISCLAIMER

BC Ministry of Attorney General commissioned this valuation of the Blue Ice Property. This report dated May 31, 2005 is prepared to assist in the determination of compensation to the title holder of the Blue Ice claims which were effectively taken as of March 21, 1989, the Valuation Date.

This report has been prepared by Roscoe Postle Associates Inc. (RPA) for BC Ministry of Attorney General and may be used in connection with the determination of compensation to the Blue Ice title holder and shall not be used nor relied upon by any other party, nor for any other purpose, without the written consent of RPA. RPA accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

The information, conclusions, opinions, and estimates contained herein are based on:

1. information supplied to RPA by BC Ministry of Attorney General for the preparation of this report,
2. assumptions, conditions, and qualifications as set forth in this report, and,
3. other information obtained from public sources.

For technical information on the Blue Ice Property, RPA has relied primarily on reports and other material supplied by BC Ministry of Attorney General. RPA has not verified the technical information in these reports and other material, but has formed its

opinions on the technical merit of the property and its valuation conclusions primarily on the basis of this technical information. RPA has not visited the Blue Ice Property, nor have we taken independent samples.

While it is believed that the information contained herein is reliable under the conditions and subject to the limitations set forth herein, this report is based in part on information not within the control of RPA and RPA does not guarantee the validity or accuracy of conclusions or recommendations based upon that information. While RPA has taken all reasonable care in producing this report, it may still contain inaccuracies, omissions, or typographical errors.

VALUATION APPROACH AND METHODS

GENERAL

The objective of this Preliminary Report is to estimate a Market Value for the Blue Ice Property. There are two main categories of mineral properties, which require different approaches to valuation. These are exploration properties and development properties. This subdivision is based on technical information rather than on the type of mineral tenure.

Exploration properties are those on which an economically viable mineral deposit has **not** yet been demonstrated to exist. The real value of an exploration property lies in its potential for the existence and discovery of an economically viable deposit. Only a very small number of exploration properties will ultimately become mining properties, but they have value until such time as exploration work has been sufficient and justified to test the potential. In the mineral industry, exploration properties are optioned, joint ventured, bought, sold and traded on the basis of perceived exploration potential.

Development properties are those on which an economically viable mineral deposit has been demonstrated to exist. Such properties are at a sufficiently advanced stage that

enough reliable information exists to value the property by discounted cash flow analysis, with a reasonable degree of confidence. In general, such information includes reasonably assured Mineral Reserves, workable mining plan and production rate, metallurgical test results and process recoveries, capital and operating cost estimates, environmental and reclamation cost estimates, and commodity price projections or sales contracts.

The value of a development property is the net present value of a stream of estimated cash flows, discounted at an appropriate rate to properly reflect the risk of the mining project. Development properties include producing mines as well as properties on which development of an economically viable operation is planned.

Dividing mineral properties into exploration and development properties is straightforward for the most part. There are some properties, however, which fall into a grey area between the two groups. These marginal properties contain well-defined mineral resources, which would become economically viable at higher commodity prices or lower production costs, and have enough reliable data to show that the economics are marginal at prevailing commodity prices at the time of valuation.

The Blue Ice Property is at an early stage of exploration, and as noted above, its value lies in the potential for the existence and discovery of an economically viable mineral deposit within the area of the Property. In RPA's opinion, the Blue Ice Property should be valued as an exploration property, and not as a development property.

The three generally accepted valuation approaches are Market, Income and Cost approach. For valuation of the Blue Ice Property, RPA has used the Appraised Value Method (a Cost Approach) and the Comparable Transactions Method (a Market Approach). RPA has not used the Income Approach since it is not appropriate for such an early stage exploration property. The appraised value and comparable transaction values are then used to estimate a range of Market Values for the Blue Ice Property as of the effective Valuation Date of March 21, 1989.

APPRAISED VALUE METHOD

In the valuation of the Blue Ice Property, RPA has used the Appraised Value Method, which is based on meaningful past exploration expenditures plus warranted future costs. This method is described in articles by W.E. Roscoe (2001, 2002 and 2003), and by H. Agnerian (1996). A copy of the 2003 article by W.E. Roscoe can be found in Appendix A.

An important aspect of the Appraised Value Method is that only those past expenditures which are considered meaningful and productive are retained as value. Productive means that the results of the work give sufficient encouragement to warrant further work by identifying potential for the existence and discovery of an economic mineral deposit. Warranted future costs comprise a reasonable exploration budget to test the identified potential, which can be in the form of geophysical or geochemical anomalies, or promising mineralization, plus property holding costs such as option payments and claim fees. If past expenditures downgrade the mineral potential of a property, they are not retained as value or they are only partly retained.

The Appraised Value Method provides reasonably consistent results, if it is applied by experienced, knowledgeable exploration geologists possessing a good understanding of the principles of valuation. This valuation methodology has been generally accepted and is widely used for establishing relative values of exploration properties. RPA has an extensive database of properties valued over the past several years, which is used for internal consistency by comparing values of exploration properties at the same stage of exploration with similar perceived potential.

The Appraised Value of a mineral exploration property is considered to represent the value to a "going concern" entity, which would have been actively pursuing mineral exploration in the area at the time of the "taking". The value is not necessarily the same as cash value that the property could have been sold for. In fact, exploration properties generally trade on an option rather than a cash sale basis. To determine a Market Value,

RPA has applied its independent judgement to determine the potential and marketability of the property.

COMPARABLE TRANSACTION METHOD

The Comparable Transaction Method uses the transaction price of a comparable mineral property to establish a value for the subject property. RPA has compiled information on transactions by a number of public involving mineral exploration properties in British Columbia. RPA identified transactions reported in Canada Stockwatch and, with supplementary information from the Canadian Mines Handbook, The Northern Miner, and The George Cross News Letter, has compiled a database on the properties. Stockwatch is a subscription service that provides stock quotes and market information and publishes company news releases.

RPA estimated the value of each property transaction from published information, using the cash, issuing of the companies' stock and work commitment components of each transaction. Where agreement terms are not specified in the public record, RPA has assumed that the transaction – including cash, shares and/or work commitments - would have been completed during a four-year period from the date of the agreement. RPA notes that a three to four-year option period is common for mineral property transactions in Canada. Transactions on properties which may be comparable to the Blue Ice Property are described in a later section.

A difficulty of the Comparable Transaction Method in the mining industry is that there are no true comparable transactions, unlike real estate or oil and gas, since each mineral property is unique with regard to key factors such as geology, mineralization, costs, exploration stage, location and infrastructure. In addition, there are relatively few transactions for mineral properties compared to the frequency of real estate transactions in general. When transactions do occur they rarely involve strictly cash, leaving the valuator the task of converting blocks of shares, royalties or option terms into monetary equivalent. Nonetheless, transaction prices of similar properties can indicate a range of values for a particular mineral property.

Exploration property transactions also give an indication of how active the market may be at any given time. As in the case for most valuations of real estate properties, the reliability of the valuation depends on an active market in comparable properties. Mineral properties differ from real estate properties in several ways. There are no true comparable transactions in the valuation of mineral properties, since each property is considered unique, as noted above. Mineral properties, which are at different stages of exploration or development, and have different geological and related attributes, may have considerably different values. This is due to the potential for cash flow from an identified mineral deposit, or the potential for discovery of a deposit. Another reason for the large differences in mineral property values is that there is a small volume in mineral property transactions compared to the real estate market.

Finally, as with real estate properties, the location of a mineral property may have a large impact on its value. Exploration properties in established mining areas often have a premium value because of the higher perceived potential for discovery of a mineral deposit, and because of developed infrastructure. On the other hand, mineral properties remote from areas of infrastructure often have lower values.

QUALIFICATIONS OF RPA

RPA is an independent firm of Geological and Mining Consultants. Since 1985, RPA has carried out numerous consulting assignments for major mining companies, junior mining and exploration companies, financial institutions and individual investors. Clients are principally Canadian, American and European companies and RPA has worked on assignments in all parts of Canada, the United States and other countries.

RPA's main business is providing independent opinions on mineral resource and mineral reserves, project economics, valuation of mining and exploration and properties, and related matters. RPA has carried out independent valuations of more than a thousand mineral exploration properties across Canada, in conjunction with financial transactions

involving mining companies in general, and also to assist with expropriation settlements. RPA personnel are Senior Geologists and Mining Engineers with extensive experience in the exploration and mining industries.

RPA monitors the exploration and mining markets and maintains an extensive database of mineral property transactions worldwide. This allows us to derive a range of values of comparable transactions of mineral properties which are situated in similar geologic environments and are bought, sold or optioned off during certain periods of the economic cycle.

Since 1987 RPA has compiled some 8,000 mineral property transactions related to base metals, gold and other precious metals, industrial minerals as well as uranium properties. These transactions are for a wide range of exploration properties as well as for properties in the development stage and for producing mines. More than 4,500 of these transactions relate to mineral properties in Canada.

This valuation is carried out by William E. Roscoe, Ph.D., P.Eng., who has been a Consulting Geologist and Principal with RPA since its founding in 1985. Among the services he provides are ore reserve work, valuation of mineral properties and exploration projects. Dr. Roscoe has particular expertise in estimation of mineral resources and mineral reserves, valuation of exploration properties and assessment of advanced projects. He has carried out valuations of numerous mineral properties, including a number under the BC Mining Rights Compensation Regulation.

He is a member of several professional associations and has published extensively on valuation of mineral properties, economic geology, and mineral resources and mineral reserves. Dr. Roscoe was Co-Chairman of the Special Committee of the Canadian Institute of Mining, Metallurgy and Petroleum on Valuation of Mineral Properties (CIMVal), which set out the CIMVal Standards and Guidelines for Valuation of Mineral Properties.

PROPERTY DESCRIPTION

LOCATION, ACCESS, INFRASTRUCTURE AND TOPOGRAPHY

The Blue Ice Property is located in eastern British Columbia in a remote mountainous area (Figure 1). The claims are located within Wells Gray Provincial Park near its northeast boundary, and adjoin a glacier near the headwaters of Hobson Creek and the Azure River (Figure 2).

There is no road access to the property. According to Glanville (1989), the nearest logging road terminates 20 km southeast of the property. The claims were accessed in the past by trail up Hobson Creek from Hobson Lake, a distance of some 25 km. The Blue Ice claims are accessible by helicopter from Valemont 50 km to the east, although a 1953 report by Wm. St. C. Dunn of Wilson Mining Corporation Limited notes that the high elevation and consistently bad weather are disadvantages to helicopter access.

The Blue Ice Property is at an elevation of about 2,000 m above sea level in a mountainous area of glacier capped peaks that rise to about 2,600 m. The property area is above the tree line. Some of the reports reviewed refer to the area of one of heavy precipitation and snowfall. The 1938 BC Minister of Mines report notes that the Blue Ice showings offer considerable difficulty owing to the location and situation in a heavy snow belt. A 1968 report by J.H. Hachey notes that the climate is one of heavy precipitation but it is reported that July and August are commonly clear, and that work at high elevations is often hampered by heavy clouds.

CLAIMS STATUS

As of the Valuation Date of March 21, 1989, the Blue Ice Property comprised four located claims, each consisting of one claim unit, covering an area of approximately 64.8 ha, in the Kamloops Mining Division. Table 1 gives the tenure details and the claims are shown in Figure 2.

TABLE 1 DETAILS OF MINERAL CLAIMS

Blue Ice Property			
Claim Name	Tenure No.	No. of Units	Record No.
Blue Ice No. 1	220079	1	13318
Caribou No. 1	220080	1	13319
Future Price No. 1	220081	1	13320
Future Price No. 2	220082	1	13321
Total		4	

The four claims were staked by Rupert Fearnley as agent for R.W. Wilson of Vancouver in August 1953. A syndicate was formed in February 1954 with the majority of shares held by Wilson Mining Corporation (Hachey, 1968). In an agreement dated April 29, 1957, Silver Standard Mines Ltd. (Silver Standard) acquired a 65% interest in the syndicate with a right to acquire an additional 10% with a further expenditure of \$15,000. Ownership of the claims was transferred to Silver Standard in September 1970.

In 2001, the Blue Ice claims were purchased by Mr. Sean Morriss from Silver Standard.

*Claim Maintenance
+ Recording Fees*

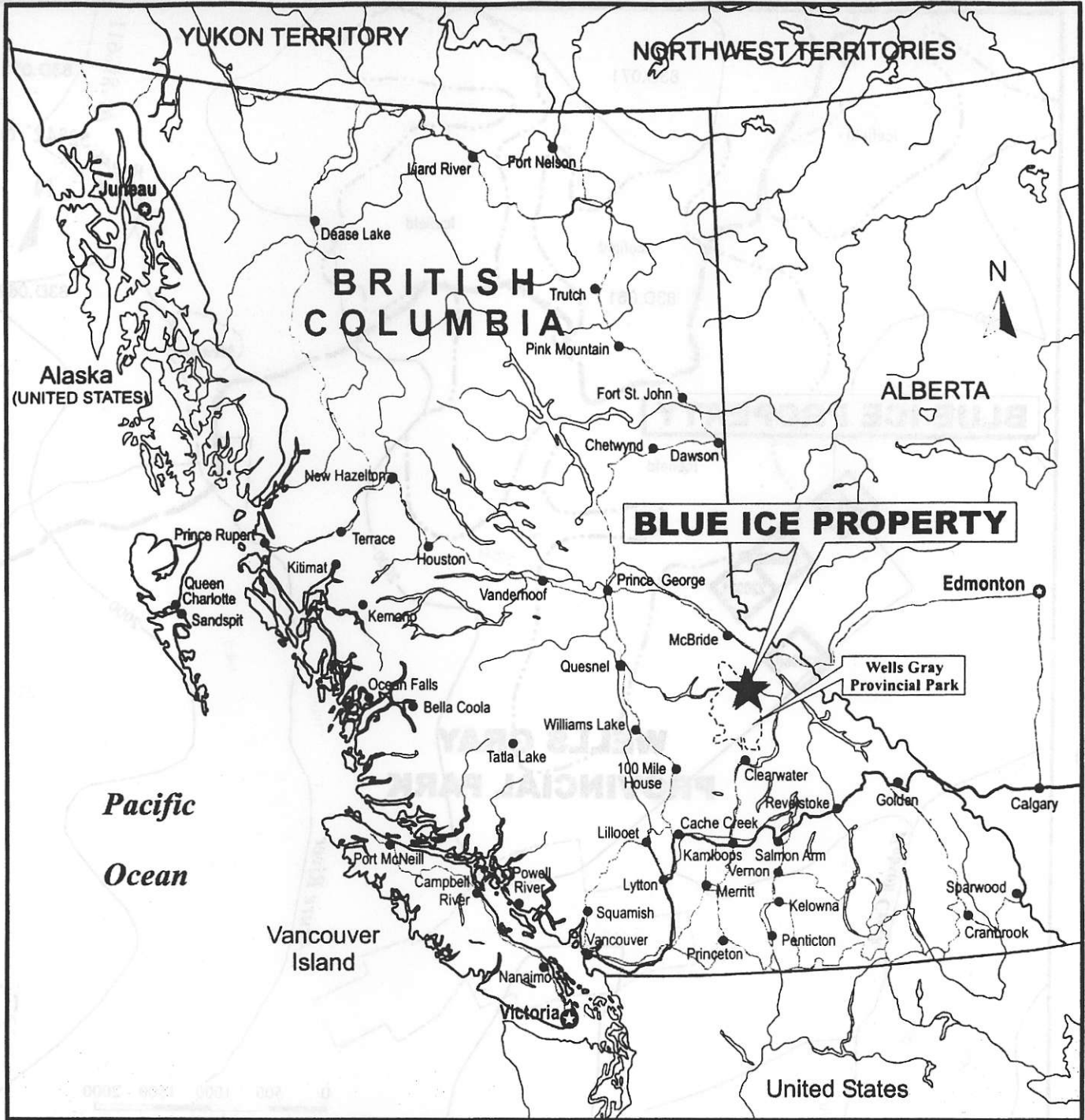
*1953-1973 - \$100 claim/yr x 4 x 20
= \$8,000*

1974-1991 - \$200 x 4 x 17 = \$13,600

+ \$10 x 4 x 17 recording fee 680

Total - \$22,280

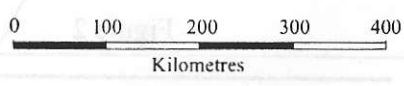
Provided - August 2001?



BLUE ICE PROPERTY

Wells Gray Provincial Park

Pacific Ocean



Legend:

- ★ Capital city
- Town, city
- Road
- Trans Canada Highway

May 2005

Figure 1

BC Ministry of Attorney General

**Blue Ice Property
Location Map**

*Kamloops Mining Division, Yale District
British Columbia, Canada*

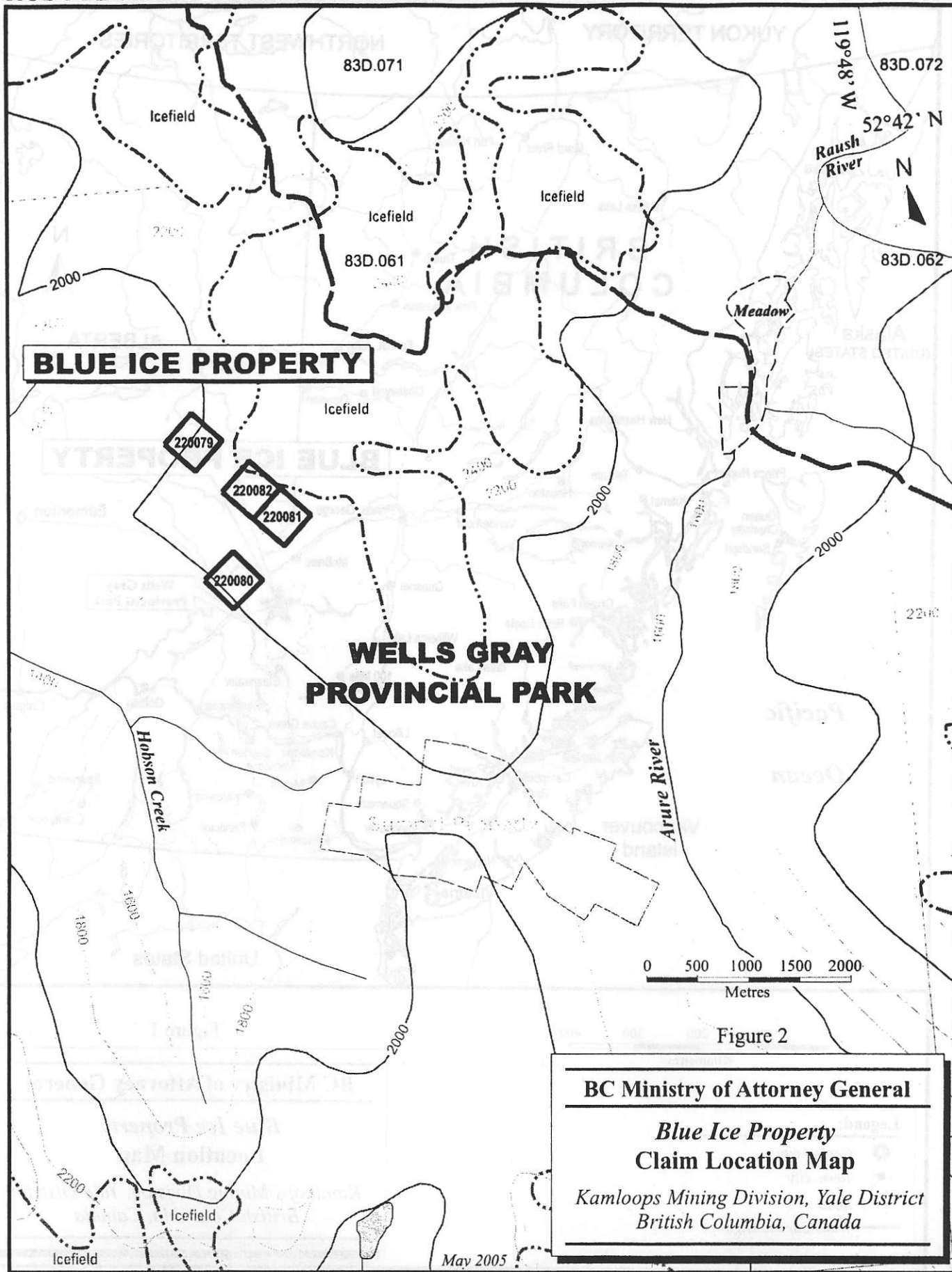


Figure 2

BC Ministry of Attorney General

Blue Ice Property
Claim Location Map

Kamloops Mining Division, Yale District
British Columbia, Canada

May 2005

EXPLORATION HISTORY

Exploration history of the Blue Ice property is documented in the BC Minister of Mines Annual Reports for 1923, 1929, 1933 and 1938, and in other reports reviewed by RPA.

The property was staked as early as 1919 by Fred Wells and later restaked by Angus Horne and associates and optioned by J. Errington. By 1929 much work was done on what now appears to be the Caribou No. 1 claim to explore a quartz-pyrite vein over a length of 750 ft. and a vertical elevation difference of 450 ft. At the time, the property was known as the Blue Lead group.

Three areas of interest on the Blue Ice property were described in the 1938 Annual Report of the Minister of Mines. The property, at that time a group of 22 claims, was optioned by W.R. Johnson and associates to Anglo-Huronian, Limited (Anglo-Huronian). A trail was constructed from Hobson Lake almost to the property where a cabin was built. Sampling was carried out on quartz veins and limestone, both containing pyrite.

In 1939, Anglo-Huronian drilled ten holes on the Blue Ice property, five on each of two showings. Core samples and sludge samples were taken for assay. Results are discussed below in the section on Mineralization.

No exploration results are reported since that time for the Blue Ice property in the material reviewed by RPA. The 1968 report by J.H. Hachey states that there is no record of any further work since the 1939 drilling. A summary of the Blue Ice property, presumably part of a Teck Explorations Limited inter-office letter, states that Silver Standard acquired the property in 1953 and carried out trenching, channel sampling and mapping. No details are given. The Lawrence valuation states that limited work was carried out in 1953 but no details are given.

Spill survey

Since 1974 the Blue Ice claims have been exempt by order-in-council from paying cash in lieu and annual rental until such time as a Park Use Permit is issued or renewed, or the mineral claims are otherwise disposed of.

GEOLOGY AND MINERALIZATION

REGIONAL AND LOCAL GEOLOGY

The general area of the Blue Ice Property is underlain by metasedimentary rocks of the Shuswap Metamorphic Complex. The following description of the geological setting and mineralization in the area is taken from BC Minfiles 083D 003, 025 and 026.

The Blue Ice claim group lies near the contact between the Hadrynian (Precambrian) upper Kaza Group and the stratigraphically overlying Isaac Formation of the Hadrynian Cariboo Group. The ground covering the Blue Ice claim group mineralization is on the crest and northeast limb of a major anticline which plunges at a low angle to the northwest. The country rocks, striking 255 degrees, consist of massive quartzite, quartz pebble conglomerate, quartz-sericite schist, phyllite, argillite and limestone, of the Isaac Formation. Lithologies of the Hadrynian upper Kaza Group consist of quartzofeldspathic psammite, phyllite, slate and minor grit.

Mineral occurrences at the head of Hobson Creek are found in zones of fracturing, crosscutting host rocks at an oblique angle. Lenticular quartz bodies consisting of white quartz host pyrite, galena and chalcopyrite, sphalerite and arsenopyrite, at points where these bodies intersect cross fracturing striking 300 degrees. Quartz veins hosted in fractures are also mineralized. Most are narrow, irregular stockworks or sets of short quartz-filled cracks and tension gashes approximately perpendicular to bedding. Siderite is a common accessory in quartz veins. Mineralization locally extends into interbedded limestone bands, forming massive sulphide replacement.

PROPERTY GEOLOGY

The Blue Ice claims are underlain by quartzite with thin bands of phyllite or quartz-sericite schist. There is a band of dark grey limestone about 20 ft. wide that strikes northwesterly and dips steeply to the northeast. Figure 3 shows the generalized geology of the Blue Ice Property.

MINERALIZATION

The Blue Ice claims contain three mineralized areas of interest, shown on Figure 3. The following descriptions are taken from the BC Minister of Mines Annual Reports for 1929 and 1938, from drill hole records of the Anglo-Huronian drilling, and from other reports as noted.

NO. 1 ZONE

No. 1 zone on the Caribou No. 1 claim consists of a quartz vein with good continuity. It was explored by trenches and open cuts over a length of 700 ft. and an elevation difference of 450 ft. The average width of the vein is 5 ft., although in places it is as wide as 16 ft. Pyrite content is notable and some chalcopyrite, galena and sphalerite are also present. Siderite patches are common. Some good gold assays are reported in BC Minister of Mines 1929 and 1938 (Table 2). The 1938 report notes, however, that mineralization is restricted chiefly to the uppermost 200 ft. as exposed and to the lowermost end and that the greater part of the vein by far is barren.

TABLE 2 ASSAYS ON NO. 1 ZONE

Blue Ice Claims

Source of Assays	Au oz/ton	Ag oz/ton	Comments
1938 BC Minister 1929	0.62	2.4	Grab - upper open cut
	2.90	0.3	Grab - second open cut
	0.60	7.0	Grab - almost solid sulphide
	0.02	0.2	20 inch chip - lowermost open cut
BC Minister 1938	0.06	3.5	General chip sample - open cuts
	0.16	4.6	Across 4 ft. - SE end of open cuts
	0.04	7.8	Across 3.5 ft. - adjacent to above
	trace	1.5	Disintegrated pyrite in bottom of cuts
	0.8	1.0	Blue quartz with considerable pyrite
	trace	0.3	Lower NW end of open cuts
	0.05	0.05	Grab - highly pyritized quartz

NO. 2 ZONE

No. 2 zone on the Blue Ice No. 1 claim occurs on a knoll of quartzite surrounded by moraine. It consists of a complex of quartz veining with a total exposed length of 460 ft. and a maximum width of 120 ft. Pyrite content is variable within quartz veins and masses. There is a sericitic alteration of the rocks in the general area of the zone. Individual quartz veins are up to 20 ft. wide. The zone of quartz veining in quartzite is bounded to the southwest by a WNW trending bed of limestone, which shows some pyrite content with low gold values.

Three prominent orientations of quartz veins are noted in BC Minister of Mines 1938: N55W (parallel to the strike of the host rocks), N30W and N15E; all have steep dips. The first vein set is mostly barren of gold values and the second set is poorly mineralized. Pyrite commonly occurs in short veins of the third set and within larger quartz bodies, mostly of the same orientation. Short gash veins of the last orientations are aligned in a belt trending N30W.

Assays listed in Table 3 are all grab samples.

TABLE 3 ASSAYS ON NO. 2 ZONE

Blue Ice Claims

Source of Assays	Au oz/ton	Ag oz/ton	Comments
BC Minister 1938	0.06	0.1	Grab - 20% coarse pyrite in quartz
	2.82	1.8	Grab - almost solid pyrite
	0.02	0.2	Grab - quartz with 3% to 5% pyrite
	0.18	0.2	Grab - quartz with 75% pyrite
	1.44	1.6	Grab - pyrite stringer in schist
	0.68	0.5	Grab - pyrite mass in schist
	nil	nil	Grab - siderite with trace of pyrite

Five holes (Nos. 6 to 10) were drilled by Anglo-Huronian in 1939 that tested the limestone bed a few hundred feet ESE of the quartz veining complex. Some of the maps reviewed show pyrite replacement of the limestone in this area. Reported drilling results are listed in Table 4. Sludge assays were also reported, and show similar gold values at or downhole from the core assays. The reported sample lengths are often less than the from-to interval, presumably due to lost core in that interval. Holes 6 to 9 were closely spaced and covered about 150 ft. of strike length of the pyritized limestone bed and Hole 10 was located about 150 ft further WNW. ✓

50ft. spacing

Lawson

TABLE 4 DRILL HOLE ASSAYS FOR NO. 2 ZONE

Blue Ice Claims

Drill Hole No.	From (ft.)	To (ft.)	Length of Sample (ft.)	Au oz/ton
6	68	70	2	0.09
	70	78	4.7	0.27
	78	81.5	2.3	0.005
7	32	33	1	0.72
	34	35	0.6	0.11
	41	42	1	0.04
	53	61	4.3	0.10
8	85	91	3.2	0.04
9	35	42	4.1	0.04
	42	48.7	4.2	0.16
	48.7	55.8	5.3	trace
	55.8	60.6	4.3	0.11
10	148	154	5.3	0.12
	154	162	2.8	0.005
	167.5	171.6	1.7	0.109
	176	179	--	0.005

NO. 3 ZONE

No. 3 zone on the Future Price No. 1 and No. 2 claims consists of a limestone bed with a section of pyrite replacement and an area of quartz veining. The limestone bed is

interpreted to be the same one as in the No. 2 zone. The intervening area was covered by a glacier at the time of the BC Minister of Mines reports, but the glacier has since retreated.

The area of quartz veining with local pyrite is generally similar to that of the No. 2 zone with the same three vein orientations, but the quartz veining is much more widely spaced. The vein set parallel to the host quartzites is very weakly mineralized. Pyrite occurs in the other two sets, perhaps more so in the set that strikes N10E to N20E. Widths of quartz are extremely variable over lengths up to 200 ft. to 300 ft. Pyrite distribution varies from nearly massive in some veins, over widths of inches to feet, and for maximum lengths of a few tens of feet. Assays are listed in Table 5.

TABLE 5 ASSAYS ON NO. 3 ZONE QUARTZ VEINS			
Blue Ice Claims			
Source of Assays	Au oz/ton	Ag oz/ton	Comments
BC Minister 1938	0.16	1.4	Grab – almost solid pyrite
	0.80	0.4	Across 10 in. of well mineralized vein
	0.34	0.5	Across 13 in. of strongly mineralized vein
	0.32	2.1	Grab – quartz with 60% pyrite
	0.52	0.3	Across 24 inch vein with 80% pyrite
	0.66	4.5	Grab – quartz with 60% pyrite

The limestone bed was exposed in 1938 for a length of 875 ft. and was covered by ice at both ends. It is in the order of 20 ft. wide with a steep dip and a southeasterly strike. The limestone bed is replaced by pyrite over a length of about 110 ft. and its full width of 18 to 19 ft. At both ends, the pyritic zone is narrower within the limestone bed for a further 40 ft. along strike, plus small stringers further still. The replacement mineralization appears to be related to small pyrite and carbonate bearing cross fissures in the quartzites.

Gold values are associated with the pyrite zone in the limestone bed. BC Minister of Mines (1938) reported results of channel sampling of fresh material (Table 6).

TABLE 6 CHANNEL SAMPLES ON NO. 3 ZONE PYRITIZED LIMESTONE

Blue Ice Claims			
Sampled Width	Au oz/ton	Ag oz/ton	Comments
18 ft.	0.32	0.2	Central part of zone - 4 samples
2 ft	1.96	Trace	10 ft. SE of first sampled width
Grab	0.62	0.4	30 ft. SE of first sampled width
5 ft.	0.28	0.3	40 ft. SE of first sampled width
5 ft.	nil	nil	80 ft. SE of first sampled width

RPA has received no records of sampling of the pyritized limestone bed by Anglo-Huronian. A letter by Paul Billingsley dated January 29, 1940 describes an oreshoot 150 ft. long of which only 100 ft. give surface samples of 0.20 oz/ton Au or better. The average grade is stated to be 0.38 oz/ton over a width of 15 ft.

Anglo-Huronian drilled five holes on the pyritized limestone zone in 1939. Results of core assays are listed in Table 7. The same as for the No. 2 zone drill hole assays, the discrepancy between from-to core intervals and reported sample lengths is presumed to be due to lost core. Sludge assays were also reported, and show similar gold values to the core assays, except for Hole 2 which shows elevated sludge assays with no core assays, apparently past the limestone bed.

TABLE 7 DRILL HOLE ASSAYS FOR NO. 3 ZONE

Blue Ice Claims				
Drill Hole No.	From (ft.)	To (ft.)	Length of Sample (ft.)	Au oz/ton
1	110	128	18	trace
2	158	176	7.6	Trace
3	105	125.5	15.8	Trace
	125.5	128.5	2.2	2.10
	128.5	132	3	0.35
	132	137.8	6	2.45
	137.8	140.5	2.2	0.18
4	Hole caved at 193 ft. - no core			
5	130	169	39	0.05 (avg)

The average grade of the 15 ft. intersection in Hole 3 is 1.48 oz/ton Au uncut or 0.70 oz/ton Au with high assays cut to 1.0 oz/ton Au. Cutting of high assays is a common practice in many gold mines.

Comment!

MINERAL RESOURCES AND MINERAL RESERVES

There are no mineral resources or mineral reserves reported on the Blue Ice Property.

EXPLORATION POTENTIAL

In RPA's view, the exploration potential for economic gold deposits on the Blue Ice claims is limited to small, moderate grade gold deposits. Because of the remoteness of the area, difficulty of access and the harshness of the climate, the capital and operating costs of a mining operation would be very high. It is difficult to imagine that small, moderate grade gold zones in the order of tens of thousands of tonnes would be economic.

Testimony to the limited potential are the facts that no work has been done on the property since about 1940 and that the property holders at that time and subsequently were unable to interest other parties in spending money to carry out further exploration work.

One small zone of gold mineralization (No. 3 zone) has been outlined by surface trenching and drilling. High gold assays have been obtained from work done on other parts of the property, but they are mostly from selected grab samples and the rest are over narrow widths. There appears to be potential for discovery of similar small, moderate grade gold zones on areas of the property that were not accessible to surface prospecting and sampling in the 1920s and 1930s. Specifically, these areas are beneath glacial moraine deposits and where glaciers have retreated since that time. These areas are limited to the small area of the Blue Ice claims which cover only 65 ha in three separate claim groupings.

The No. 3 zone contains a small gold zone outlined by surface trenching. It is stated to average 0.38 oz/ton Au over a 15 ft. width for a length of 110 ft., presumably with high assays uncut. The intersection in drill hole no. 3 (0.70 oz/ton Au over 15 ft. core length with high assays cut to 1.0 oz/ton) appears to correspond to the surface zone. Low values in other drill holes appear to restrict the strike length of the zone. In RPA's view, tonnage potential of the zone is for tens of thousands of tons with a grade in the order of 0.4

oz/ton to 0.5 oz/ton Au. The eastern and western extensions of the limestone bed hosting the gold zone were covered by glacier ice at the time the last work was done in the 1930s. In his report on staking the Blue Ice claims in 1953, however, Fearnley noted that the glacier had retreated about 250 ft. since 1938, fully exposing the limestone bed, and that there was no sign of replacement sulphides in this area.

*2
0
check 6*

There is insufficient information to do an economic study on the No 3 zone, but "back of the envelope" type calculations indicate that it is clearly uneconomic. At a gold price of US\$395 per ounce (March 1989), exchange rate of \$1.19 (March 1989), assumed recovery of 85% and a diluted grade of 0.35 oz/ton, revenue would be in the order of \$140 per ton. Operating costs for a small underground mining operation at the time were over \$200 per ton. Even at higher grade, there is little or no margin for payback of capital costs and profit.

The No. 2 zone contains gold values associated with pyrite in a quartz vein complex and with pyritic portions of the same limestone bed that hosts the No. 3 zone. Some high gold assays were obtained in grab samples from pyrite rich quartz vein material. The limestone bed was apparently tested by five drill holes that returned some gold values over narrow widths. The best assay was 0.27 oz/ton Au over a core length of 8 ft. At the time the last work was done in the 1930s, the western extension of the quartz vein complex was covered by glacial moraine and the eastern extension of the limestone bed was covered by a glacier.

x

The No. 1 zone contains gold values associated with pyrite and other sulphides in a persistent quartz vein. It was explored in the past over 700 ft. and apparently extended under moraine deposits. The total potential vein length on the Caribou No. 1 claim is about 1,500 ft. Although some high gold values were obtained in grab samples, BC Minister of Mines reported in 1938 that the greater part of the vein by far is barren.

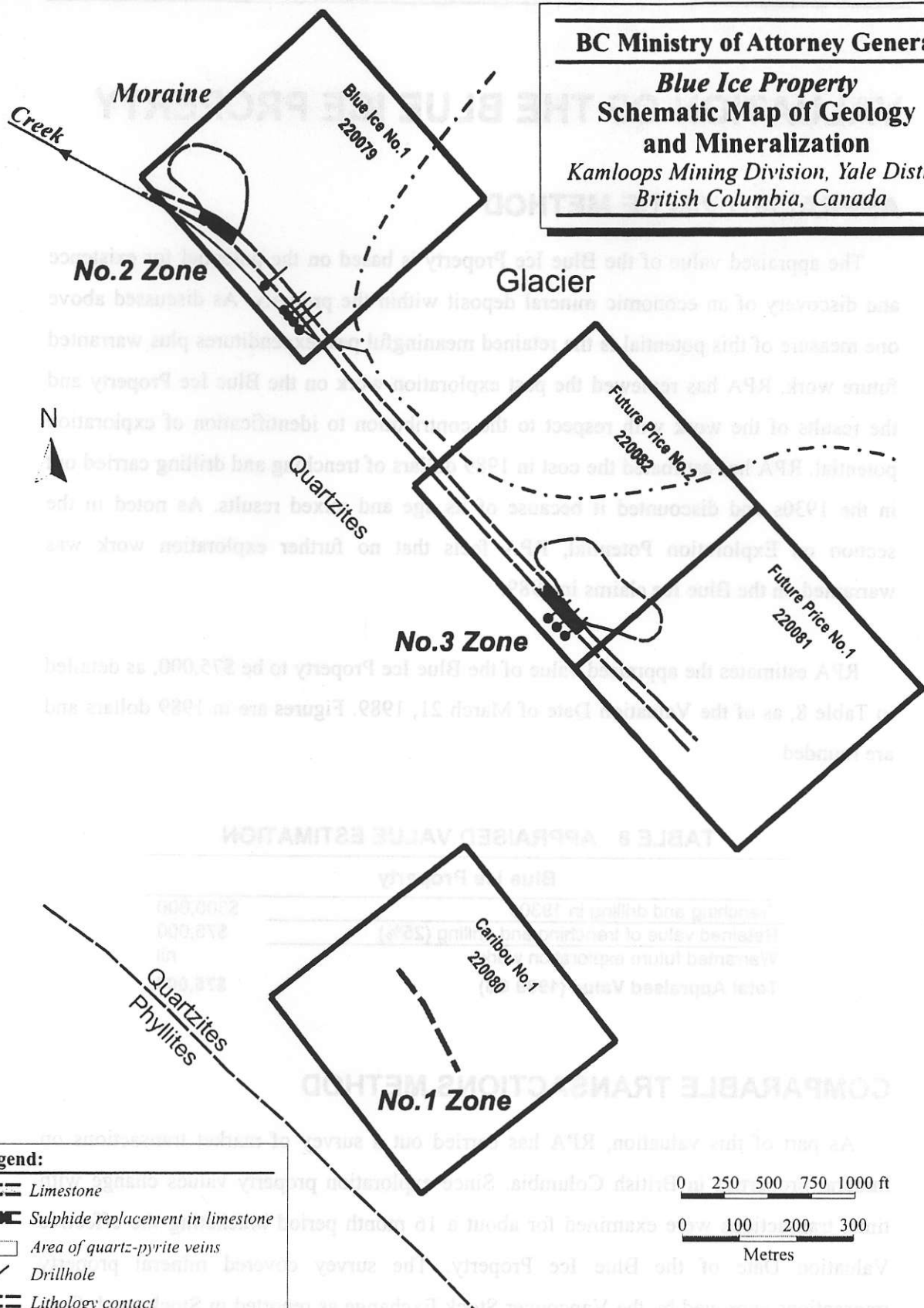
200' surface

In summary, in RPA's view, exploration potential on the Blue Ice claims is limited to small deposits with moderate gold grades. The exposed areas of the four claims have been explored in the past by surface trenching with some followup drilling in 1939.

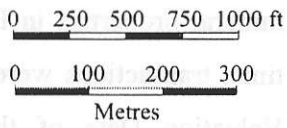
Results were not sufficiently encouraging to warrant more exploration work after 1940, even though a small gold zone was outlined in pyritized limestone and scattered high gold values were obtained on other parts of the property. The remaining exploration potential is on areas of the property beneath glacial moraine deposits and where glaciers have retreated since the 1930s. These areas are rather small (Figure 3) and RPA considers that the probability of a deposit of sufficient size and grade to be economic in this area is very low. It is therefore difficult to justify any further exploration work on the Blue Ice claims, in RPA's view.

Figure 3

BC Ministry of Attorney General
Blue Ice Property
Schematic Map of Geology
and Mineralization
 Kamloops Mining Division, Yale District
 British Columbia, Canada



- Legend:**
- Limestone
 - Sulphide replacement in limestone
 - Area of quartz-pyrite veins
 - Drillhole
 - Lithology contact



May 2005

VALUATION OF THE BLUE ICE PROPERTY

APPRAISED VALUE METHOD

The appraised value of the Blue Ice Property is based on the potential for existence and discovery of an economic mineral deposit within the property. As discussed above one measure of this potential is the retained meaningful past expenditures plus warranted future work. RPA has reviewed the past exploration work on the Blue Ice Property and the results of the work with respect to the contribution to identification of exploration potential. RPA has estimated the cost in 1989 dollars of trenching and drilling carried out in the 1930s and discounted it because of its age and mixed results. As noted in the section on Exploration Potential, RPA feels that no further exploration work was warranted on the Blue Ice claims in 1989.

RPA estimates the appraised value of the Blue Ice Property to be \$75,000, as detailed in Table 8, as of the Valuation Date of March 21, 1989. Figures are in 1989 dollars and are rounded.

TABLE 8 APPRAISED VALUE ESTIMATION

Blue Ice Property	
Trenching and drilling in 1930s	\$300,000
Retained value of trenching and drilling (25%)	\$75,000
Warranted future exploration work	nil
Total Appraised Value (1989 C\$)	\$75,000

COMPARABLE TRANSACTIONS METHOD

As part of this valuation, RPA has carried out a survey of market transactions on mineral properties in British Columbia. Since exploration property values change with time, transactions were examined for about a 16 month period bracketing the effective Valuation Date of the Blue Ice Property. The survey covered mineral property transactions approved by the Vancouver Stock Exchange as reported in Stockwatch from

the last quarter of 1988 to the first quarter of 1990. Since there was a time lag between the agreement date and the date of approval, the property agreement dates were in the period September 1988 to December 1989.

More than 800 mineral property transactions were reported by Stockwatch in the period referred to above. RPA went through a process of elimination to retain transactions on properties that may be comparable to the Blue Ice claims. Supplementary information was obtained from the Canadian Mines Handbook for 1988-89, 1989-90 and 1990-91. The following criteria were used to derive potential comparables:

- ✓ • Retain properties located only in British Columbia.
- Retain only properties with small areas, less than about 1,000 hectares. In most cases areas were estimated from number of claims or claim units. Properties of unknown size were eliminated.
- Eliminate properties where the exploration target was obviously not gold.
- • Eliminate properties located in the Eskay Creek area because of large premiums at the time of the Eskay Creek gold-silver discovery.
- • Eliminate the few properties in the Vancouver and New Westminster mining divisions, assumed to be less remote than the area of the Blue Ice claims.
- Eliminate transactions that were obviously non-arms length.

The remaining 64 market transactions were compiled into a spreadsheet and the reported transaction details were analyzed to estimate each transaction value. The transactions consisted of various combinations of cash payments, stock payments and exploration work. Where these components had an optional aspect, factors were applied to subsequent years to reflect the probability of realization. In most cases, the factors were 100% for the initial year (firm commitment), and declined progressively in subsequent years when the commitment was optional (75%, 50%, 25%, 10%, 0). Details on the value analysis and property transactions are in Appendix B.

Statistics of the transaction values are reported in Table 9. The average the all 64 transactions is \$93,000 and the median \$43,000. In our view, the median value is more representative of the data set because the average value is overly influenced by the

highest values. The relatively wide range of values is shown by the quartile statistics, where the averages vary from \$12,000 for the lowest 25% of the values to \$269,000 for the highest 25%. The middle 32 transactions values average \$46,000 and the median is \$43,000. These middle 32 transactions range from \$18,000 to \$85,000.

Although the average property size of 472 ha is significantly larger than the Blue Ice claims at 64 ha, RPA considers it appropriate to compare property values directly rather than on a per hectare basis. For small properties, the potential is more likely related to specific mineralized showings and the value consequently is less sensitive to area.

In RPA's view, transactions in the lower to middle part of the range of values are most comparable with the Blue Ice Property. RPA considers that values in the range of \$30,000 to \$50,000 are most comparable to the Blue Ice Property.

TABLE 9 BC MARKET TRANSACTIONS 1988-89

Blue Ice Property

Transaction Values in C\$000s

Statistic	All Values	Middle 50%	Lowest Quartile	Second Quartile	Third Quartile	Highest Quartile
Number	64	32	16	16	16	16
Mean	93	46	12	31	62	269
Median	43	43	10	31	60	160
Std Deviation	156	19	3	7	12	238

TRANSACTION ON THE BLUE ICE PROPERTY

RPA reviewed information from BC Attorney General on the acquisition of the Blue Ice claims by Mr. Sean Morriss from Silver Standard. This information includes a November 22, 2001 agreement to purchase the Blue Ice claims along with two other mineral properties; a Bill of Sale Absolute dated February 12, 2001 transferring ownership of the Blue Ice claims from Silver Standard to Mr. Morriss; a promissory note dated February 12, 2001 from Sean Morriss to Silver Standard for final payment on the Blue Ice claims; a release from the promissory note to Sean Morriss by Silver Standard

dated November 28, 2003; and a general security agreement dated November 12, 2003 between Sean Morriss and a lender with the Blue Ice claims as security.

RPA cannot draw any conclusions from these documents on the value of the Blue Ice claims when purchased by Mr. Morriss. In RPA's opinion, this transaction is irrelevant since the apparent time of the purchase in 2001 is well past the Valuation Date of March 21, 1989. In any case, the fact that mineral exploration was not allowed on the Blue Ice claims was known at the time of the purchase.

OTHER VALUATIONS OF THE BLUE ICE PROPERTY

Two other valuations of the Blue Ice claims have been carried out that RPA is aware of. One was prepared in November 1989 by Ross Glanville for Consolidated Silver Standard Mines Limited, the property holder at that time. The other was prepared in February 2005 by Ross Lawrence of Watts, Griffis and McOuat for Sean Morriss, the current property holder. These two valuations are summarized below along with RPA's comments.

GLANVILLE VALUATION

Glanville valued the Blue Ice property at approximately \$2.2 million based on his estimate of discounted cash flow plus a premium of 50% for potential beyond his estimated "mineral inventory". Glanville notes that this value appears to be in line with what the "market" was paying for gold ounces in the ground, some US\$75 per ounce.

Glanville has carried out a brief analysis of mining and processing the pyrite replacement zone in limestone, including an estimate of tons and gold grade. In RPA's view, Glanville's analysis is a "back of the envelope" type analysis and is extremely optimistic. For example, the total capital cost including road access to the site, camp, office, mobilization and demobilization is estimated as \$1 million. The cost of a mobile processing plant is not mentioned in the Glanville report.

In addition, in RPA's view, there are problems with the Glanville tonnage and grade estimate of "mineral inventory" and "reserves" to be mined in his cash flow analysis.

- The gold grade estimate of 0.89 oz/ton Au (reduced to 0.85 oz/ton for the analysis) is based on four drill holes but appears to use sludge assays for three holes and an assumed gold grade for one hole, rather than the core assays listed in Table 7, which show only one significant drill hole intersection.
- High gold assays are not cut.
- The surface trenching average grade of 0.38 oz/ton Au is not used by Glanville.
- The tonnage estimate assumes a strike length of 225 ft. and a depth of 225 ft. and assumes that 60% will be "ore". The strike length of the replacement zone indicated in surface trenching is only 110 ft.
- Glanville assumes a mining dilution grade of 0.21 oz/ton Au. There is no indication of any gold values adjacent to the pyrite replacement zone.
- Glanville assumes a waste to ore ratio of 20:1 for an open pit to 125 ft. to mine 12,500 tons of "ore". In RPA's view, the waste to ore ratio will be much higher for an open pit to 125 ft. depth with 45° pit slopes.

All of the above comments negatively impact the potential economics of the Glanville cash flow analysis. As noted previously, RPA's view is that the exploration potential is for tens of thousands to tons with gold grades in the order of 0.4 oz/ton to 0.5 oz/ton, which are clearly uneconomic in this area.

LAWRENCE VALUATION

Lawrence valued the Blue Ice claims at \$1.2 million as of the Valuation Date of March 21, 1989. Lawrence used four methods to derive values for the property, which he analyzed to arrive at a fair market value. The valuation methods are summarized below along with RPA's comments.

- Discounted cash flow analysis used the figures and assumptions developed in the Glanville valuation. Lawrence expressed some cautions about the risks in the Glanville scenario, deducted a further \$0.5 million for the cost of a

preparatory work program, and reduced Glanville's 50% premium to 25%, resulting in a value of \$1.25 million. RPA's comments on the Glanville cash flow analysis apply also here also.

- Best fit comparable analysis was used to identify and analyze three transactions on gold exploration and development properties in BC. Lawrence estimated a range of values from \$1.3 million to \$1.6 million for the three transactions. RPA rejected these three transactions as comparables for various reasons, including: property too large in area, property too advanced, transaction not within time period bracketing the Valuation Date, and property too close to infrastructure.
- Total market comparable analysis was based on a study published by Mining Business Digest on gold property acquisitions costs during the 1990s, expressed in \$ per ounce gold for resources acquired and in % of the gold price at the time of acquisition. Based on the Glanville estimate of "resources" Lawrence calculated a value of \$600,000 for the Blue Ice claims. As noted above, there are a number of problems with the Glanville "resource" estimate in RPA's view.
- The appraised value method was used by Lawrence to estimate a cost for past work of \$461,000 in 1989 dollars, plus future work of \$529,000 for a total of \$990,000. The cost of past work is somewhat higher than RPA's estimate of \$300,000 for past work, which RPA discounted.

VALUATION SUMMARY

RPA has employed two methods in the valuation of the Blue Ice Property. Results are listed below:

- Appraised Value: \$75,000
- Comparable Transactions Method: \$30,000 to \$50,000

In RPA's view, the comparable transactions are more reliable than the appraised value and more weight should be placed on them. The appraised value is based on old information and does not sufficiently reflect the facts that there has been no interest in

exploring the property for many decades and that the property is very restricted in area.

The comparable transactions, on the other hand, give a good representation of deals that were transpiring in the marketplace before and after the Valuation Date. RPA's opinion is that the Market Value of the Blue Ice Property was \$40,000 as of the Valuation Date of March 21, 1989.

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CERTIFICATE OF QUALIFICATIONS

WILLIAM E. ROSCOE

As author of this report entitled "Valuation of the Blue Ice Property" (the Report) dated May 31, 2005, prepared for BC Ministry of Attorney General, I hereby make the following statements:

- A. My name is William E. Roscoe and I am a Consulting Geologist employed by Roscoe Postle Associates Inc. My office address is Suite 501, 55 University Avenue, Toronto, Ontario M5J 2H7.
- B. I have received the following degrees in Geological Sciences:
 - B.Sc. (Eng.) 1966 - Queen's University, Kingston, Ontario
 - M.Sc. 1969 - McGill University, Montreal, Quebec
 - Ph.D. 1973 - McGill University, Montreal, Quebec.
- C. I am registered as a Professional Engineer and designated as a Consulting Engineer in the Province of Ontario. I am a Member of the Canadian Institute of Mining, Metallurgy and Petroleum, and a Fellow of the Geological Association of Canada.
- D. The Report is based on my personal review of technical reports and other data provided by the BC Ministry of Attorney General, and on information available from public sources.
- E. I have been practising as a professional geologist for over thirty years.
- F. I have not visited the Blue Ice Property.
- G. I am independent of the property holder and have no interest in the subject property.



Dated at Toronto, Ontario
May 31, 2005

William E. Roscoe, Ph.D., P.Eng.

**APPENDIX A VALUATION ARTICLE BY W.E.
ROSCOE**

ROSCOE POSTLE ASSOCIATES INC.

VALUATION OF NON-PRODUCING MINERAL PROPERTIES

William E. Roscoe, Ph.D., P.Eng.

Roscoe Postle Associates Inc.

Toronto, Canada

**Paper presented at the Fifth Joint Advanced Business Valuation Conference
of the American Society of Appraisers and the Canadian Institute of
Chartered Business Valuators**

Orlando, Florida

October 24-26, 2002

Published in The Journal of Business Valuation, 2003

VALUATION OF NON-PRODUCING MINERAL PROPERTIES

William E. Roscoe, Ph.D., P.Eng., Roscoe Postle Associates Inc., Toronto, Canada

ABSTRACT

Valuation methods are well established for mineral properties with production or imminent production, and include discounted cash flow and comparable transactions. Valuation methods for non-producing mineral properties, however, are more subjective.

Non-producing mineral properties include those at various stages of exploration, properties at the prefeasibility or feasibility stage, properties with currently uneconomic mineral resources, and past-producers. Different valuation methods may be appropriate for different types of mineral properties.

Income approach methods such as discounted cash flow and option pricing are generally not applicable to properties at the exploration stage. The market approach is generally appropriate to all types of mineral properties, although it is difficult to find good comparables because of the unique nature of mineral properties and the small number of transactions. Cost approach methods, such as appraised value and geoscience factor, are commonly used for exploration stage properties.

Canadian standards and guidelines for valuation of mineral properties are in the process of being finalized by a Special Committee of the Canadian Institute of Mining, Metallurgy and Petroleum (CIMVal Committee). The CIMVal Standards are intended to be consistent with National Instrument 43-101, which sets regulatory standards of disclosure for mineral projects, and with International Valuation Standards. The intent of the CIMVal Standards and Guidelines is that mineral property valuation be carried out by appropriately qualified individuals and that all relevant information be disclosed. The Standards and Guidelines are based on industry best practice and allow for professional judgement in certain instances.

INTRODUCTION

The purpose of this paper is to describe approaches and methodology for the valuation of non-producing mineral properties, to provide some valuation examples, and to outline general levels of mineral property values. By way of background, different types of mineral properties are defined, since they require different valuation approaches and methods. Since the vast majority of mineral properties are non-producing properties at the exploration stage, the nature of exploration properties and the exploration process are covered.

Valuations of mineral properties are needed for various reasons, including mergers and acquisitions, non-arms length transactions, pricing of initial public offering of stock, support for property agreements, litigation, compensation for expropriation, and insurance claims. Independence of the valuator is usually implicit for these applications.

Value and valuation in this paper refer to fair market value. In some circumstances, other definitions of value may apply, such as net present value, replacement value, salvage value, book value, assessed value, insured value, etc.

Mineral property refers to any right, title or interest to property held or acquired in connection with the exploration, development, extraction or processing of minerals which may be located in, on or under the surface of the property, together with all related plant, equipment and infrastructure. Mineral property may take the form of real property, unpatented mining claims, prospecting permits, development and mining licenses, mining leases, patented mining claims, etc.

One of the important concepts of fair market value that is critical to mineral properties is the effective date of valuation. This is because mineral property values vary over time, depending on events on neighbouring properties, market interest, commodity prices, etc. In respect of a valuation for an expropriation, insurance claim or litigation, the effective date may be a very contentious issue. This is because the mineral property owner may perceive that the property

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will be more valuable in the future, when market conditions improve, and that the expropriation or legal issue forces the valuation in poor market conditions.

STANDARDS FOR VALUATION OF MINERAL PROPERTIES

Canadian standards and guidelines for valuation of mineral properties are in the process of being finalized by a Special Committee of the Canadian Institute of Mining, Metallurgy and Petroleum (CIMVal Committee).

In the wake of the Bre-X gold salting scandal, the Mining Standards Task Force (MSTF) was formed by the Toronto Stock Exchange and the Ontario Securities Commission. The MSTF made a number of recommendations in its 1999 final report with a view to improving the regulatory climate in the exploration and mining industries. Many of the recommendations dealt with the establishment of professional standards in several areas, including valuation of mineral properties. This led to the formation of the CIMVal Committee, of which the writer is Co-Chair. The CIMVal Draft Standards and Guidelines were released in February 2002 for comments by interested parties. A final draft was released for further comments in September 2002. The CIMVal Standards and Guidelines for Valuation of Mineral Properties are expected to be finalized in late 2002.

National Instrument 43-101, Standards for Disclosure of Mineral Projects, which came into force February 1, 2001, was formulated by the Canadian Securities Administrators, an umbrella association of Provincial Securities Commissions. NI 43-101 is now the principal regulatory document in Canada for disclosure of information on mining projects. The CIMVal Standards and Guidelines have been drafted to be consistent with and to augment NI 43-101 with respect to valuation of mineral properties. The CIMVal Standards and Guidelines are also intended to be consistent with the general thrust of the International Valuation Standards being developed by the International Valuation Standards Committee.

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The Australian VALMIN Code and Guidelines govern the technical assessment and/or valuation of mineral and petroleum assets and securities and set standards for independent expert reports. In South Africa, standards and guidelines for valuation of mineral projects, properties and assets are at the drafting stage (SAMVAL Code). The International Valuation Standards Committee aims to develop standards for the valuation of mineral properties within the framework of its International Valuation Standards.

The CIMVal Standards recognize other documents relevant to valuation in general. These include Ontario Securities Commission Rule 61-501, Canadian Institute of Chartered Business Valuators standards for the valuation of businesses and corporations, and Investment Dealers Association of Canada Bulletin #2827.

The guiding philosophy and intent of the CIMVal Standards and Guidelines is that mineral property valuation be carried out by appropriately qualified individuals and that all relevant information be disclosed. The Standards and Guidelines are based on industry best practice and allow for professional judgement in certain instances. Key features of the Draft Standards and Guidelines are:

- They cover valuation of mineral properties but not valuation of corporations.
- They cover metallic and non-metallic mineral properties, both subsurface and surface, and energy fuels. Oil and gas properties are not covered.
- Value refers primarily to Fair Market Value.
- The basic tenets are materiality, transparency, independence, competence and reasonableness.
- A Qualified Valuator (QV) is responsible for the overall valuation, and may be assisted in or rely on a Qualified Person (QP) for various aspects. The QV must be a professional with at least five years of relevant experience, and must belong to a self-regulatory professional organization. The QP is a geoscientist or engineer with at least five years of relevant experience, and must belong to a self-regulatory professional organization.
- All technical input to a valuation, including Mineral Reserves and Mineral Resources, must be verified by a QP.

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- The entity commissioning a valuation must reasonably establish that the QV is sufficiently qualified, competent and independent. Similarly, the QV must be satisfied with the credentials of any QPs involved in the valuation.
- The QV has the responsibility to decide which valuation approaches and methods to use. The three standard methods of Income, Market and Cost must be considered.
- The valuation must be reported as a range of values to reflect the uncertainty of the valuation process.
- The valuation must be reported in a Valuation Report that sets out, among other things, the key risks and assumptions used. The Guidelines recommend a table of contents for the Valuation Report.
- Mineral Reserve and Mineral Resource estimates must be disclosed, and must follow definitions as set out in NI 43-101.
- For Income Approach methods, such as discounted cash flow, it is generally acceptable to use all Proven and Probable Mineral Reserves; and to use Mineral Resources that a QP states are likely to be economically viable and for which the higher risk is recognized in the valuation by some appropriate means.
- The valuation date must be specified and all valuations within the previous 24 months must be discussed.
- The Valuation Report must include Certificates of Qualifications for the QV and any QPs involved, and a statement that the valuation complies with the Standards and Guidelines.

TYPES OF MINERAL PROPERTIES

There are three main categories of mineral properties that require different approaches to valuation. These are development properties, exploration properties, and marginal development properties, which are defined below. This subdivision is based on technical information rather on the type of mineral tenure. Exploration properties and marginal development properties are non-producing mineral properties.

In the minerals industry, mineral exploration properties are optioned, joint ventured, bought, sold and traded on the basis of perceived exploration potential. There are a number of different approaches and methods that are used to value mineral exploration properties, all of which are subjective.

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There is also a spectrum of mineral properties, ranging from exploration properties to producing mines, each of which requires different valuation approaches. For convenience here, mineral properties are categorised as development properties, exploration properties, and marginal development properties.

Development Properties

Development properties are those on which an economically viable mineral deposit has been demonstrated to exist. Such properties are at a sufficiently advanced stage that enough reliable information exists to value the property by discounted cash flow analysis, with a reasonable degree of confidence. In general, such information includes reasonably assured mineable reserves, workable mining plan and rate, metallurgical test results and process recoveries, capital and operating cost estimates, environmental and reclamation cost estimates, and commodity price projections.

The value of a development property is the net present value of a stream of estimated cash flows, discounted at an appropriate rate to properly reflect the risk of the mining project. Development properties include producing mines as well as properties on which development of an economically viable operation is feasible, planned or under construction.

Exploration Properties

Exploration properties are those on which an economically viable mineral deposit has **not** been demonstrated to exist. The real value of an exploration property lies in its potential for the existence and discovery of an economically viable mineral deposit. Only a very small number of exploration properties will ultimately become mining properties, as discussed in the following section, but until exploration potential is reasonably well tested, they have value. Exploration properties can be further subdivided into those with and without quantifiable mineral resources.

Marginal Development Properties

Dividing mineral properties into exploration or development properties is relatively straightforward for the most part. There are some mineral properties, however, which fall into a

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grey area between the two groups. These are properties which contain well-defined mineral resources which would become economically mineable reserves under improved circumstances, and have enough reliable data to show that the economics are marginal under prevailing conditions at the time of valuation. Improved circumstances can include commodity prices, technology improvements, establishment of local infrastructure, etc. Such properties are herein called marginal development properties. These also include mines which are temporarily closed down due to low commodity prices. Marginal development properties may have to be valued by a third type of valuation approach, such as the option pricing method.

EXPLORATION PROPERTIES AND THE EXPLORATION PROCESS

Exploration properties are non-producing mineral properties that are acquired for their perceived potential to host an economic mineral deposit. The challenge of the exploration process is to discover economic mineral deposits on those very few exploration properties where they exist.

Modern exploration is a staged process. In general, each stage of exploration work is designed to get to the next decision point, that is, whether or not to continue exploration on a property, based on results of the previous stage. Each successive stage is, in general, more expensive, due to the progressively more detailed nature of the work required. Whenever an exploration program moves to the next stage, the value of a property may be enhanced, reduced, or remain the same, depending on how results of the program affect the perceived exploration potential.

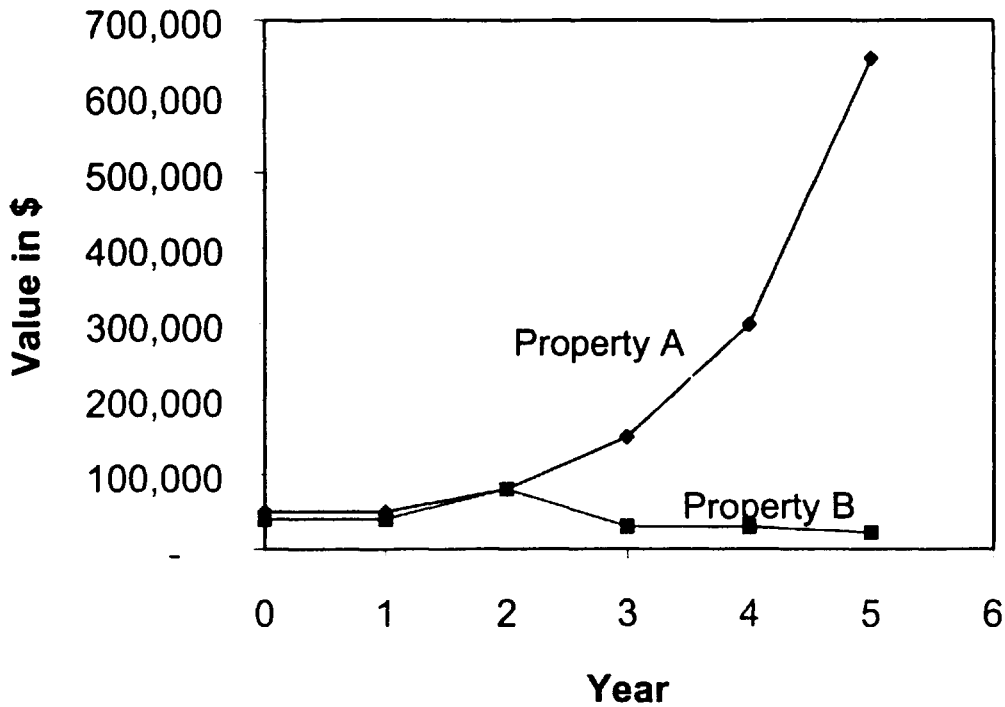
The objective of the exploration process is to identify and concentrate work on the properties that show more promise in terms of exploration potential, and screen out the properties that are downgraded by ongoing work. Obviously the properties on which work demonstrates higher exploration potential are more valuable to mining companies. A corollary is that exploration properties on which work demonstrates little or no potential have little or no value.

Figure 1 illustrates how the values of exploration properties vary over time and emphasizes the importance of the effective date of valuation. Exploration work on Property A gave encouraging results year after year, which shows up as an increase in value over time. Exploration work on Property B gave encouraging results and increased in value over the first two stages of

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exploration in the first two years, but exploration work in year 3 was discouraging, resulting in a decrease in value. No work was done in years 4 and 5 on Property B, resulting in a leveling off then a decrease in value and market interest declined.

FIGURE 1. Variation in the Values of Exploration Properties over Time



The intrinsic value of an exploration property lies in its potential for the existence and discovery of an economic mineral deposit. In the mining industry, mineral exploration properties are optioned, joint ventured, bought, sold and traded on the basis of perceived exploration potential. There are a number of different approaches and methods that are used to value mineral exploration properties, all of which are subjective.

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VALUATION APPROACHES AND METHODOLOGY

As in other fields, the three main approaches to valuation of mineral properties are income, cost and market approaches. Different approaches apply to different types of mineral properties as do different methods, in the writer's view, as summarized in Table 1.

TABLE 1. Valuation Approaches and Methods for Different Types of Mineral Properties

Valuation Approach	Valuation Method	Development Properties	Marginal Development Properties	Exploration Properties
Income	Discounted Cash Flow	Yes	Maybe	No
	Option Pricing	Yes	Yes	No
Cost	Appraised Value	No	Yes	Yes
	Geoscience Factor	No	Maybe	Yes
Market	Comparable Transactions	Yes	Yes	Yes
	Option Agreement Terms	Yes	Yes	Yes

INCOME APPROACH

Discounted Cash Flow Method

As noted above, development properties are those on which an economically viable mineral deposit has been demonstrated to exist. Development properties may be in production or may be in preparation for production. Demonstration of economic viability requires that sufficiently reliable technical, financial and other information have been generated to assess the economics of the property with a reasonable degree of confidence. The appropriate approach to valuing development properties is discounted cash flow (DCF) analysis to determine the net present value of a stream of estimated future cash flows. The DCF method can also be used for marginal

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development properties, but its usefulness is doubtful because low or negative values may be derived which do not necessarily reflect the market value.

The DCF method is a well established and standard method used in the mining industry to value development properties. Such properties are commonly bought and sold on the basis of net present value derived from DCF analysis.

DCF analysis requires that the property is sufficiently advanced that reliable and up to date information is available in the following areas:

- Reasonably assured mineable reserves (proven and probable)
- Mining plan, rate and schedule
- Metallurgical test or operating results
- Process recovery and design
- Capital cost estimates including mine, process plant, surface facilities and infrastructure, environmental compliance, decommissioning and reclamation, working capital, etc.
- Operating cost estimates including mining, processing, administration and management, transportation, infrastructure, environmental compliance, sales, royalties, etc.

Other factors which form important components of a DCF analysis are:

- Reasonable commodity price projections and currency exchange rate
- Federal, provincial and municipal taxes
- Appropriate discount rate

Valuations by the DCF method should always allow for the return of the capital invested in determination of the net present value. The net present value should also take into account all applicable taxes.

Sensitivity analyses are commonly done in connection with DCF analysis to determine the effect of various estimated parameters on the net present value. This is very useful for identifying

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variables that have a large effect on the viability (and value) of the property, such as metal grade, operating cost, commodity price or capital cost. Monte Carlo analysis can be used to quantify the expected value in response to variability in input parameters.

The main advantage of the DCF method is that it is a well established and widely accepted method of valuing advanced mineral properties and operating mines. There are two main disadvantages to the method. One disadvantage is that it is commonly applied without due regard for the quality and reliability of the input factors, particularly technical parameters such as mineral reserve tonnage and grade, estimated capital and operating costs, metallurgical recovery, etc. The other disadvantage is that the method may undervalue mineral properties in times of low commodity prices.

Option Pricing Method

The option pricing method is suited to the valuation of marginal development properties, where the level of information in terms of detail and reliability is similar to that of development properties, but DCF analysis results in a very low or negative net present value at current commodity prices. Such marginal development properties nevertheless have value, since transactions do occur. Marginal development properties also include mines temporarily closed down due to low commodity prices.

The option pricing method is described in publications by Brennan and Schwartz (1985), McKnight (2002), McKnight and Goldie (1990), and Palm et al (1986). In general, the method is poorly understood and is not used much in valuation of mineral properties.

In the option pricing method, a mineral property is regarded as a complex option on its mineral reserves. The approach involves developing various models for the options available, which include:

- Option to develop and commence production
- Option to shut down or resume production
- Option to hedge production
- Option to change the rate of production

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- Option to change the grade of production

An option pricing model can be developed whereby a value is generated by modelling such factors as the strike price, the costs of exercising the option, and the probability that the option would be exercised. The strike price is the price of the underlying commodity at which management would consider exercising the option.

The advantage of the option pricing method is its ability to value marginal development properties, which in the real world change hands for significant consideration, while standard DCF analysis renders low or negative values. One disadvantage may be the complex mathematics involved. In the option pricing approach, care must be taken that the various options available to management of an operation, such as to shut down and reopen, must be realistic in terms of practicality, cost, and the time needed.

COST APPROACH

Methods using a cost approach, such as the appraised value method and the geoscience factor method, are applicable to non-producing mineral properties, that is, exploration properties and in many cases marginal development properties.

Appraised Value Method

The appraised value method is based on the premise that the real value of an exploration property or a marginal development property lies in its potential for the existence and discovery of an economic mineral deposit. The appraised value method assumes that the amount of exploration expenditure justified on a property is related to its value. The cost approach is given some validity by the fact that option agreements on mineral properties are often based on expenditures required to earn an interest. There is also often a reference to past exploration expenditures in option agreements, which can be related to value of the residual interest of the optionee.

The appraised value method is described in papers by Roscoe (1988, 1999, 2001, 2002), Agnerian (1996a), Thompson (1991) and Lawrence (1989, 1998).

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The basic tenet of the appraised value method is that an exploration property is worth the **meaningful past exploration expenditures plus warranted future costs**. An important element of this method, which is often overlooked in its application, is that only those past expenditures that are considered reasonable and productive are retained as value. Productive means that the results of the work give sufficient encouragement to warrant further work by identifying potential for the existence and discovery of an economic mineral deposit.

Warranted future costs comprise a reasonable exploration budget to test the identified potential, which can be geophysical or geochemical anomalies, or promising mineralization already identified. As noted previously, if exploration work downgrades potential, it is not productive and should not be retained as value. Obviously, if the property is considered to have negligible exploration potential, it has little or no value.

Past expenditures are usually analyzed on an annual basis, using technical expertise to assess which expenditures to retain and which to reject in terms of identifying remaining exploration potential. In times of high inflation, past expenditures are escalated to the effective date of valuation or current unit costs are applied to the work retained. Usually little of the expenditures more than five or so years prior to the effective valuation date are retained.

In the case of dual or multiple property ownership, the Appraised Value of the whole property is determined first. Then the value is apportioned to one or more of the property owners. During an option or earn-in period, the property interests of each party are assumed to be the final earned interests. Some properties carry a royalty, commonly as a net smelter return or net profits interest. Such royalties are deducted as a pro rata percentage from the Appraised Value apportioned to the non-royalty holder. This is done to recognize the existence of the royalty and is not meant to imply a value for the royalty. In some cases it may be necessary to differentiate between a net smelter return and net profits interest royalty by using a higher percentage for the former relative to the latter.

The derivation of an Appraised Value by adding the retained past expenditures to the warranted future costs should be thought of as an abstract exercise to determine the cost of an exploration

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'play' on a property, which is considered to be the Appraised Value. It should not be thought of in terms of who pays for the future exploration program, although it is similar to the earn-in aspect of some option agreements. It should also not be thought of as an accounting exercise where exploration expenditures are booked and can be written off over time or against income.

The Appraised Value Method is best applied to properties that are actively being explored. It is more difficult to apply the method to properties that have been idle for some years, especially those that have had substantial expenditures in the past. Many such properties have subeconomic or marginal resources outlined by the past work, and some qualify as marginal development properties. The key to the valuation of inactive properties is a realistic assessment of the remaining exploration potential, which could be in the form of untested targets, potential to increase the grade or tonnage of the existing resource, or potential for development with changes in technology or economic conditions.

For marginal development properties and inactive exploration properties, Roscoe Postle Associates has developed a set of guidelines for what proportion of the past expenditures to retain as value, depicted in Table 2.

TABLE 2. Guidelines for Retained Expenditures for Marginal and Inactive Properties

Retained Portion of Past Expenditures	Guidelines
75%	Property with resources but no work done for some years. Some future work is warranted. Usually a property with marginal resources and potential for more but not quite exciting enough to attract exploration expenditures easily. May be at the underground exploration stage.
50%	Property with subeconomic resources, but may have some potential in future, conditional on commodity prices, infrastructure, improved technology, economic conditions, etc. No work recommended at time of valuation. Could be a property with potential for a commodity with a low price or low demand at the time of valuation.
25%	Inactive property with subeconomic resources with very little hope for development, but cannot write them off completely. The

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	resources represent <i>in situ</i> mineral inventory with only a long shot at eventual development. No work recommended.
0 to 10%	Inactive property with no resources and negligible or very little exploration potential. Could be a property with all of the geophysical targets tested that will be dropped when assessment credits run out.
Nominal value of \$5,000 to \$10,000	Inactive property with indeterminate but low or negligible exploration potential. Could be a property with little or no data available but in a geologically uninteresting area.

The Appraised Value may have to be adjusted to Fair Market Value if the local market for properties is markedly depressed or markedly high as of the effective date of the valuation. For example, during the peak of flow-through financing in Canada from 1986 to 1988, exploration property transactions values were at high levels. Unit costs for exploration expenditures were also commonly higher than before and after the flow-through period. In other periods, such as in the early 1990s and the late 1990s, exploration activity was at a relatively low level, which was reflected in low market activity for exploration properties. These conditions can be recognized by applying a subjective market factor, usually in increments of 25%, as either a discount or a premium to the Appraised Value. A premium may be applied to the Appraised Value to recognize an advantageous location such as proximity and geological similarity to an operating mine or new discovery.

Application of the appraised value method requires a thorough understanding of the exploration process, industry standards, and unit costs for drilling and other exploration techniques. The valuer, therefore, must become familiar with the geological setting, exploration targets, exploration history and results, appropriate exploration techniques, mining parameter, costs, processing methods, etc. Hence, a seasoned exploration geologist or engineer, who has varied experience and sound technical judgment, would be required. Above all, the valuer needs familiarity with 'real-world' mineral property transaction values.

One advantage of the appraised value method is that exploration cost information and technical data are readily available for most exploration properties and marginal development properties. It is a good way of comparing the relative values of exploration properties. The main

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disadvantage is that experienced judgement is required to separate the past expenditures considered to be productive from those considered not to contribute to the value of the property. This leaves the method open to misuse and possible abuse.

It is prudent for the valuator to compare the Appraised Value of a mineral property with values derived from other methods, particularly those that use a market approach, as summarized in a later section.

Geoscience Factor Method

The geoscience factor method is a variant on the cost approach, used for non-producing mineral properties. The method is based on ranked and weighted geological aspects, including proximity to mines and deposits, the significance of the mining camp, and the commodities sought (Thompson, 1991; 2002). One such method was published by Kilburn (1990) for valuation of mineral properties without exploitable mineral reserves. The general approach is similar to a point system once used to assist the British Columbia Securities Commission in assessing suitability of exploration properties for financing.

The Kilburn (1990) geoscience factor method is based on four main characteristics: location with respect to other mineral occurrences, grade and amount of mineralization, geophysical and geochemical targets, and geological patterns considered favourable for mineralization. These main categories are divided into subcategories which are then ranked by relative importance and assigned factors. Each mineral claim equivalent in the property is given a base value and the various geoscience factors are estimated by the valuer. The value of each claim is determined by multiplying the base value by all of the geoscience factors. The claim values are summed to arrive at the total property value.

Kilburn (1990) points out that the value determined by his method is based on the expertise of geologists and engineers, commodity market factors, financial market factors, stock market factors, mineral property market factors, metal prices and political and economic conditions, which vary with time.

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One advantage of this method is that it forces a disciplined technical approach on the geologist or engineer doing the valuation, so that different parts of a property and different properties should be ranked according to their technical merit. A major disadvantage of the method is the degree of dependence of the property value on the assumed basic value of each claim (or area unit). A change in the basic claim value has a proportional effect on both the claim and the property value. In addition, large properties would tend to have very high values and very small properties would tend to have very low values, which may not reflect the real exploration potential. These disadvantages make it difficult to recommend the geoscience factor method for valuation of non-producing exploration properties and marginal development properties.

MARKET APPROACH

Methods using a market approach are applicable to all types of mineral properties. The two methods described here are comparable transactions and option agreement terms. The option agreement terms method is often used to place a value on mineral property transactions used for comparative purposes, since most mineral property transactions are not cash sales. For these and other methods, the effective date of the valuation is important, therefore comparable transactions should be within a reasonable time from that date.

Comparable Transaction Method

The comparable transaction method uses the transaction price of comparable properties to establish a value for the subject property (Thompson, 1991; Roscoe, 1999; Lawrence, 2002; Ward and Lawrence, 1998). The difficulty of this approach in the mining industry is that there are no true comparables (unlike real estate or oil and gas), since each property is unique with respect to key factors such as geology, mineralization, costs, stage of exploration, and infrastructure. In addition, there are relatively few transactions for mineral properties compared to the frequency of real estate transactions in general. When transactions do occur they rarely involve strictly cash, leaving the valuator the task of converting blocks of shares, royalties or option terms into present day money equivalent.

In spite of the above qualifications, transaction prices of comparable properties can indicate a range of values for a particular property. Exploration property transactions also give an

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indication of how active the market may be at any given time. For example, in the late 1990s there were relatively few exploration property transactions across Canada because of the depressed state of the exploration and mining industries. Consequently market values were relatively low.

As discussed previously, the value of an exploration property depends on its potential for the existence and discovery of an economic mineral deposit. The potential of a mineral exploration property depends to some extent on its acreage, but depends to a greater extent on its geological attributes, mineralization, exploration results and targets, neighbouring properties, and other factors. There is an analogy with real estate properties in that location is important. Non-producing exploration properties in established mining areas often have a premium value because of the higher perceived potential for discovery of a mineral deposit, and because of developed infrastructure.

The main advantage of this method is that it 'ground truths' the value of mineral properties derived by other methods, and provides a general measure of relative property values. The main disadvantage is that there are no true comparables; each mineral property is unique as noted above. Subjective judgement is needed to identify similar properties.

Option Agreement Terms Method

The option agreement terms method can be applied where a property is subject to an existing option agreement. In a typical option agreement involving a non-producing mineral property, a schedule of committed and optional cash payments and work commitments applies over a period of several years. An approximation of the value of the property is reflected in the payments made and work commitments fulfilled, plus the subjective probability of the optionee making the rest of the payments and fulfilling the balance of the exploration programs. In some cases payments are made in stock of the company earning in. Table 3 provides an example of how a transaction value is estimated from the option agreement terms.

This method is best applied to properties being actively explored during the option period. The method is generally not applicable to properties on which the option has been exercised by

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fulfilment of the payment terms and work commitments, at which stage the property value usually exceeds the payments made.

TABLE 3. Analysis of Option Agreement Terms to Estimate Transaction Value

Option agreement terms to earn a 60% interest in the mineral property					
Year of Agreement	Nature of Commitment	Payment Schedule	Exploration Expenditure Schedule	Probability of Realization	Value Component
1	Firm	\$25,000	\$100,000	100%	\$125,000
2	Optional	\$50,000	\$200,000	75%	\$187,500
3	Optional	\$100,000	\$300,000	25%	\$100,000
4	Optional	\$225,000	\$400,000	10%	\$62,500
Totals		\$400,000	\$1,000,000		\$575,000
• Value of 60% of property = \$575,000					
• Value of 100% of property = \$958,333					
• Round to \$960,000					

One advantage of the option agreement terms method is that it has some real world validity in the early years of the option period. A disadvantage is that the valuation is meaningful only during the early years of the option period. As time goes on and more exploration results are collected, the property value is likely to diverge either up or down from the option agreement terms. Either the results will not justify continued expenditures and the option is dropped, or results will be good enough that further expenditure and payment terms will seem to be a bargain compared to the property value.

The option agreement terms method can be used to determine the value of comparable transactions, since most exploration property transactions are option or joint venture earn-in agreements.

OTHER VALUATION METHODS FOR NON-PRODUCING PROPERTIES

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The valuation methods described above are those considered by the writer to be the most commonly used and the most widely accepted. Several other methods used by mineral valuation practitioners for non-producing properties are described briefly below, along with the writer's view on their acceptability.

A probabilistic DCF method uses assumed mineral reserves to produce a net present value, which is then factored by the subjective probability of realizing the assumed mineral reserves. This method is not widely used and is generally not well accepted because of its highly subjective nature.

The gross value of metal in the ground, based on a mineral resource estimate, is used occasionally to characterize the value of a mineral property. This method is unacceptable since it fails to take into account the cost of extracting and processing the mineral deposit to a saleable product.

A related method uses an estimate of the net value of metal in the ground, based on a mineral resource estimate. In many cases the "net value" is an arbitrary number, for example US\$50 per ounce of gold. This widely used rule of thumb should not be used as a primary valuation method, but can be used as a check on valuations by other methods or to compare property values on an order of magnitude basis.

Value per unit area (\$ per acre or hectare) factors are sometimes used to estimate the value of large exploration properties. This should be used as an order of magnitude check on valuations by other methods or to adjust transaction values on large properties by area for comparison purposes (see Valuation Example 4 in Appendix).

Many publicly traded junior mining companies hold a dominant exploration property as their major asset. This leads to the practice of putting a value on that exploration property based on the market capitalization of the junior company. Although this method may have some validity in some circumstances, the market capitalization is more related to the perceived value of the

company than to the value of its major property asset, in the writer's view. The property value is just one of many components of the market capitalization of the company.

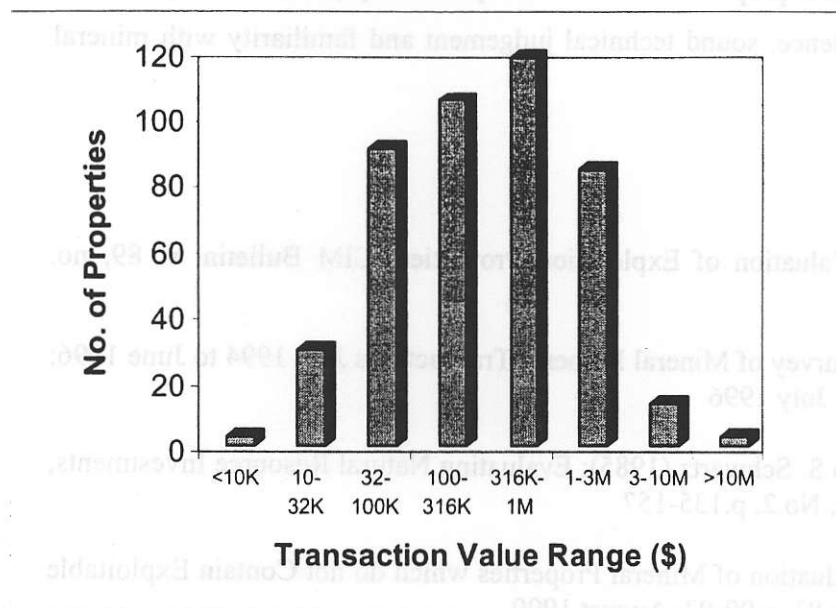
MINERAL PROPERTY VALUATION EXAMPLES

Seven examples of mineral exploration property valuations are given in the Appendix. These give a brief description of the subject property, then show how the value is derived, by one or more methods.

RANGE OF EXPLORATION PROPERTY VALUES

Roscoe Postle Associates has developed an extensive database of mineral exploration property values, based on published transactions (Agnierian, 1996b). Figure 2 shows the range of values for 445 exploration property transactions located across Canada during 1995 and 1996. The histogram shows the percentage frequency in each range of values, on a logarithmic scale. Some 50% of the property values lie between \$100,000 and \$1,000,000. Some 27% of the property values are less than \$100,000 and 23% are greater than \$1,000,000.

FIGURE 2. Frequency distribution of 445 Transactions in Canada in 1995-96



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CONCLUSIONS

Non-producing mineral properties include those at various stages of exploration, properties at the prefeasibility or feasibility stage, properties with currently uneconomic mineral resources, and past-producers. Different valuation methods may be appropriate for different types of mineral properties.

Income approach methods such as discounted cash flow and option pricing are generally not applicable to properties at the exploration stage. The market approach is generally appropriate to all types of mineral properties, although it is difficult to find good comparables because of the unique nature of mineral properties and the small number of transactions. Cost approach methods, such as appraised value and geoscience factor, are commonly used for exploration stage properties.

Canadian standards and guidelines for valuation of mineral properties are in the process of being finalized by a Special Committee of the Canadian Institute of Mining, Metallurgy and Petroleum (CIMVal Committee).

Valuation of non-producing mineral properties is best accomplished by professional geologists or engineers with relevant experience, sound technical judgement and familiarity with mineral property transaction values.

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APPENDIX

Valuation Example 1

- British Columbia exploration property, 1993 valuation date
- Remote location, helicopter access
- Some potential for Ni-Cu-PGE mineralization
- Some anomalous soil and rock samples
- No future work warranted in 1993
- Total past expenditures estimated at \$65,000

Appraised Value (1993)

Retained value of past work	\$26,000
Warranted future exploration	nil
Appraised Value	\$26,000
Fair market value adjustment (50% to 75%)	\$13,000 to \$20,000

Comparable Transactions (1993)

\$11,000	\$25,000
\$18,000	\$31,000
\$24,000	\$36,000

Fair Market Value Range \$13,000 to \$20,000

Valuation Example 2

- British Columbia exploration property, 1993 valuation date
- Difficult location, old track access
- Quartz vein with some gold values
- Moderate exploration potential for small gold veins
- Several drill holes recommended
- Total past expenditures 1983 to 1992 estimated at \$200,000

Appraised Value (1993)

Retained value of past work	\$50,000
Warranted future exploration	\$260,000
Appraised Value	\$310,000

RÖSCOE POSTLE ASSOCIATES INC.

Fair market value adjustment (50% to 75%) \$155,000 to \$235,000

Comparable Transactions (1993)

\$102,000 \$144,000

\$114,000 \$204,000

Fair Market Value Range \$155,000 to \$200,000

Valuation Example 3

- Large grassroots exploration property, 1998 valuation date
- Northwestern Quebec location, fixed wing or helicopter access
- Company has option to earn 50% interest
- Gold and base metal showings in banded iron formation
- Some soil, till and EM anomalies
- Good potential for economic gold mineralization
- Total past expenditures \$100,000

Appraised Value (1998)

Retained value of past work \$100,000

Warranted future exploration \$365,000

Appraised Value \$565,000

Value of Company share (50%) \$283,000

Fair Market Value of Company Share \$283,000

Valuation Example 4

- Huge diamond exploration property, 1997 valuation date
- Northwest Territories location, fixed wing or helicopter access
- Company has 50% joint venture interest
- Much of past work downgraded diamond potential
- Property is adjacent to promising diamond prospect
- Future work involves reprocessing geophysics and till samples, plus follow-up geophysics and drilling
- Total past expenditures estimated at \$5.3 million

Appraised Value (1997)

Retained value of past work \$2,466,000

ROSCOE POSTLE ASSOCIATES INC.

Warranted future exploration	\$1,812,000
Appraised Value	\$4,278,000
Value of Company share (50%)	\$2,139,000

Comparable Transaction (1997)
\$4.8 million (prorated from \$8.0 million on a per hectare basis)

Fair Market Value of Company Share \$2,139,000

Valuation Example 5

- Small gold exploration property, 1998 valuation date
- Northwest Ontario location, adjacent to producing gold mine
- Valuation required for acquisition by owner of adjacent gold mine
- Negative results from near-surface drilling in the past
- Ore-bearing structure projects onto the property at depth
- Good deep exploration potential will be tested in the future
- Total past expenditures over 50 years estimated at \$1.0 million in 1998 dollars

Appraised Value (1998)

Retained value of past work	\$250,000
Warranted future exploration	\$772,000
Appraised Value	\$1,022,000
Appraised Value with 50% premium for proximity to producing mine	\$1.5 million

Comparable Transactions (1994-97)

Four transactions in the same area range from \$0.5 to \$3 million, but none are considered to be directly applicable

Fair Market Value Range \$1.0 to \$1.5 million

Valuation Example 6

- Medium size property, 1988 valuation date
- Northern Manitoba location, fixed wing or helicopter access
- Exploration work followed up reported airborne EM conductors
- No significant results from 1984 exploration program
- Property dormant since 1984 and no work recommended

Appraised Value (1988)

ROSCOE POSTLE ASSOCIATES INC.

Retained value of past work	nil
Warranted future exploration	nil
Nominal Value	\$5,000

Fair Market Value \$5,000

Valuation Example 7

- Advanced small exploration property, 1997 valuation date
- Ontario location, good road access
- Company can purchase a 100% interest subject to a 2% net smelter return
- Property contains a significant low grade gold resource with heap leach potential
- Preliminary cash flow analysis gives encouraging results but is very sensitive to gold price, recovery and cost assumptions
- Future work includes drilling, metallurgical testwork, environmental work and prefeasibility work
- Total past expenditures 1986-90 estimated at \$1,080,000

Appraised Value (1997)

Retained value of past work	\$810,000
Warranted future property payment and work	\$900,000
Appraised Value	\$1,710,000
Company Share net of 2% net smelter return	\$1,676,000

Comparable Transactions (1996, Western U.S.)

\$1.1 million	\$3.4 million
\$2.1 million	\$3.9 million
\$2.4 million	\$4.4 million

The subject property is considered to be most comparable to the low end of the range.

Fair Market Value Range \$1.1 to \$1.7 million

**APPENDIX B DETAILS OF MARKET
TRANSACTIONS ON SMALL BC MINERAL
PROPERTIES**

Market Transactions on Small BC Mineral Properties September 1998 to December 1999

Company	Cash Value	Stock Value	Work Value	% Acquired	Value of 100% of Property
Asian Canadian Res		17,000		100%	17,000
Doron Expl		58,800		100%	58,800
G W R Res	35,000			50%	70,000
Golden Seville Res	2,000	18,000	60,000	100%	80,000
Keefer Res. Inc	4,000	5,600		100%	9,000
Manhattan Mineral	50,000	45,938		25%	384,000
Rococco Res Ltd	10,000	21,000		100%	31,000
Source Res Ltd		14,500		100%	15,000
Trove Res Ltd	11,862			100%	12,000
Algonquin Minerals		28,050		100%	28,000
Deltec Res Ltd		66,000		100%	66,000
Kancana Ventures		87,500		100%	88,000
Lysander Gold			87,500	50%	175,000
Lysander Gold	11,250	6,500		100%	18,000
Skyworld Res & Dev	23,400	12,844		100%	35,000
Skyworld Res & Dev			124,800	100%	121,000
Sumac Ventures Inc	36,000			100%	35,000
Zorah Media Corp	2,500	6,000		100%	9,000
Brooks Res Ltd	34,500	15,000	90,000	100%	140,000
Canova Res Ltd	22,500	137,500	115,000	100%	275,000
Canova Res Ltd			153,750	49%	314,000
Eastfield Res Ltd	125,233			100%	123,000
Eureka Res Inc	24,000	4,800		100%	28,000
International Werner	67,500	13,500		100%	81,000
International Werner	131,250	13,500		100%	145,000
Kancana Ventures		62,500		100%	63,000
Simplon Res Ltd		46,000		100%	46,000
Wind River Res		24,650		100%	25,000
Adastral Res Ltd	10,000			100%	10,000
Bethlehem Res Corp	142,500	16,640	300,000	67%	689,000
Boise Creek Res		10,000		100%	10,000
Boise Creek Res		6,000	56,250	100%	62,000
Clifton Star Res	25,000	15,000		100%	39,000
Consolidated Bel-Air Res	1,700	6,000		100%	8,000
Golen Eye Ltd	34,000	15,000		100%	48,000
Golden Trump Res	25,000	31,000		100%	56,000
Goldspring Res Ltd	3,000	29,450		100%	32,000
Halcyon Res Ltd	15,000	20,000		100%	35,000

Hollywood Investment	5,000	55,000		100%	59,000
International Werner		43,000		100%	43,000
International Werner		43,000		100%	43,000
Jaguar Equities Inc	10,000	8,000		100%	18,000
Jaguar Equities Inc		8,000		100%	8,000
Little Bear Res Ltd	25,000	13,000		100%	37,000
Mollie Gibson Mines	40,000	15,000		100%	54,000
Northair Mines	23,400	16,900	520,000	60%	934,000
Partners Oil & Minerals	10,000	9,000		100%	19,000
Remington Creek	10,000	20,000		100%	30,000
Spur Ventures	2,000	20,000		100%	22,000
Tenajon Res Corp	5,000			50%	10,000
US Grant Gold	40,000	21,000		100%	61,000
Vikon Int. Res		8,000	50,000	50%	116,000
Wirlwind Res Ltd		10,000		100%	10,000
Aatra Res Ltd	25,000	87,500	187,500	75%	400,000
Akiko-Lori Gold		101,250		50%	203,000
Athlone Res Ltd		30,000		100%	30,000
Booker Gold Exp	10,000			100%	10,000
Camfrey Res Ltd		85,000		100%	85,000
Camfrey Res Ltd		85,000		100%	85,000
Consolidated Bel-Air Res	25,000	36,000		100%	60,000
Halley Res Ltd	2,000	8,000		100%	10,000
Partners Oil & Minerals		24,000		100%	24,000
Rose Spit Res	7,000	8,000		100%	15,000
Swift Minerals Ltd	20,000	100,000		100%	118,000

Market Transactions on Small BC Mineral Properties

2001/02

Asian Canadian Resources Ltd ANC — *Gone*
 Shares issued: 2,655,708 Dec 13 close: \$0.17
 Wed 14 Dec. 88 Acquisition
 The VSE has accepted for filing an agreement dated
 November 1 1988 between the company and B & H Leasco
 Ltd whereby the company has acquired the Jova 200,
 Perrow Zoo and Wolfe claims, Omineca mining division,
 BC. Consideration is the issuance of 100,000 shares and
 the vendor has retained a 1% NSR. A finders fee of
 10,000 shares is payable to Genell Sample.
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Doron Explorations Inc. DNE
 Shares issued: 3,707,167 Dec 20 close: \$0.98
 Wed 21 Dec. 88 Acquisition *Genell*
 The VSE has accepted for filing an agreement dated
 November 3 1988 between the company and Timothy L.
 Williams whereby the company acquired a 100% interest
 subject to a 1% NSR in and to the Expo 9 mineral claim
 located in the Vernon mining division, BC in
 consideration of the issuance of 60,000 shares of the
 company. *Vernon old*
Vernon
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G W R Resources Inc GWQ
 Shares issued: 3,062,113 Dec 20 close: \$0.30
 Wed 21 Dec. 88 Acquisition
 The VSE has accepted for filing an agreement with First
 International Ventures Inc, dated November 17 1988
 whereby the company will acquire a 50% interest in two
 claims in the Whiteman Creek area of BC, for a total
 consideration of approximately \$35,000.
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Reach Lake. ?
TPY

Golden Seville Resources Ltd GSV
 Shares issued: 6,128,631 Jun 10 close: \$0.18
 Fri 18 Nov. 88 Acquisition *GONE*
 The VSE has accepted for filing documentation with
 respect to an agreement dated September 22 1988 between
 the company and Rod McCansh whereby the company
 acquired a 100% undivided interest in the Whorley 3
 mineral claim, Kamloops mining division, BC for the
 following consideration: \$2000 cash; 100,000 common
 shares of the company and; \$60,000 of exploration
 expenditures on the property by September 22 1989.

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Keefer Resources Inc. **KFR**
Shares issued: 2,451,831 Oct 21 close: \$0.14
Thu 27 Oct. 88 Acquisition
The VSE has accepted for filing an agreement dated September 13 1988 among the company and William D. Yorke_Hardy, Robert G. Irving, John R. Wright and Robert W. Yorke_Hardy for the acquisition of two claims located in the Vernon mining division, BC. Consideration is a total of \$4,000 and 40,000 free trading shares. The vendors will also retain 2% of any net smelter returns.
The VSE has also accepted for filing a letter to the shareholders of Keefer dated September 12 1988 disclosing a change in the use of proceeds as disclosed

GONE
Vein?

Manhattan Mineral Corp **MHN**
Shares issued: 1,842,000 Nov 28 close: \$0.60
Wed 30 Nov. 88 Acquisition
The VSE has accepted for filing an agreement dated November 3 1988 between the company and Warstar Resources Inc, whereby the company can acquire an additional 25% interest in the Golden Sidewalk property, BC for \$50,000 and the staged issue of up to 87,500 shares.
Manhattan will thereby have an option on 75% of the property.

Property Goal
Vein?

Rococco Resources Ltd **RCO**
Shares issued: 4,799,178 Oct 12 close: \$0.21
Thu 13 Oct. 88 Acquisition
The VSE has accepted for filing documentation with respect to the acquisition of 100% interest in the Lana 6 mineral claim, Clinton mining division, for consideration of \$10,000 cash and issuance of 100,000 shares to Stephen Horvat.

GONE
Vein?

Source Resources Ltd **SSU**
Shares issued: 2,004,711 Nov 7 close: \$0.29
Wed 9 Nov. 88 Acquisition
The VSE has accepted for filing documentation with respect to the acquisition of a 16 unit mineral claim in the Nelson mining division, BC for \$1.00 and issuance of 50,000 common shares.

GONE
Vein?

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Trove Resources Ltd TRV
 Shares issued: 1,695,001 Nov 9 close: \$0.55
 Fri 18 Nov. 88 Acquisition

The VSE has accepted for filing an agreement dated September 1 1988 between the company and Touchstone Resources. Under the terms of the agreement, the company has acquired the Central 1 and Central 2 mineral claims, located in the Alberni mining division, BC. Consideration was the payment of \$11,831,69.

GONE.

Alberni

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Algonquin Minerals Inc AMF
 Shares issued: 2,423,663 Mar 3 close: \$0.33
 Wed 8 Mar. 89 Acquisition

The VSE has accepted for filing the following:
 Pursuant to an agreement dated April 8 1988 between Michael Renning and the company, the company acquired a 100% interest in four mineral claims (the El Amino claims) in the Skeena mining division, BC. The consideration consisted of \$6000 and 50,000 shares of the company. Pursuant to an agreement dated December 7 1988 between Micheal Renning and the company, the company acquired a 100% interest in two mineral claims (the Midnight and Blue claims) in the Skeena mining division, BC. The consideration consists of 85,000 shares of the company with the vendor retaining a 1.5% NSR.

GONE

Skeena

?

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Deltec Resources Ltd DEC
 Shares issued: 1,900,001 Apr 7 close: \$0.66
 Mon 10 Apr. 89 Acquisition

The VSE has accepted for filing an agreement dated February 20 1989 between the company and John Kime whereby the company has acquired the Peak, Tiny and Anchor mineral claims in the Fort Steele mining division, BC for 100,000 shares. There is a finder's fee of 10,000 shares.

GONE

F4 9400k

?

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Kancana Ventures Limited KCV
 Shares issued: 1,339,308 Apr 27 close: \$0.40
 Fri 28 Apr. 89 Acquisition

The VSE has accepted for filing an agreement dated November 7 1988 between the company and Andrew Babiy whereby the company is acquiring the Andy 1 mineral claim located in the Kamloops mining division, in

GONE

consideration for the issuance of 50,000 shares up front and 50,000 shares upon completion of phase I.
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Lysander Gold Corporation LYS
Shares issued: 3,258,013 Apr 11 close: \$0.13
Thu 13 Apr. 89 Acquisition

The VSE has accepted for filing the following:
An agreement dated January 9 1989 between the company and BP Resources Canada whereby the company may acquire a 50% working interest in the Cat 1 and Cat 2 mineral claims, Omineca mining division, BC, by the expenditure of \$150,000 on the property by January 9 1991, of which \$50,000 must be spent by January 9 1990.

(a)

Omineca

PP4

2 Blocks - 2 claims

(b) An agreement dated February 15 1989 between the company and Alvin Gerun whereby the company may acquire a 100% interest in the Bet No. 1 mineral claim, Omineca mining division by the payment of \$15,000 over a period of three years and the issuance of 50,000 common shares.
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1 claim - size?

Skyworld Resources & Development SKD
Shares issued: 2,835,984 Apr 11 close: \$0.19
Wed 12 Apr. 89 Acquisition

The VSE has accepted for filing the following:
An option agreement dated February 8 1989 to acquire a 100% interest in the Sturt Bay No. 1 and 3 crown granted mineral claims, Nanaimo mining division, BC. Consideration is the issuance of 130,000 shares, payment of \$45,000 and exploration work commitments of \$240,000 over five years. There is a 3% NSR applicable.
An option agreement dated March 7 1989 to acquire a 100% interest in the Sturt Bay No. 2 and 4 crown granted mineral claims, Nanaimo mining division, BC. Consideration is the issuance of 130,000 shares, payment of \$45,000 and exploration work commitments of \$255,000 over five years. There is a 3% NSR applicable.
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a

Gen E

Nanaimo

✓ size?

(b)

Sumac Ventures Inc SSV
Shares issued: 4,958,519 Feb 14 close: \$0.06
Thu 16 Feb. 89 Acquisition
The VSE has accepted for filing an agreement dated April 1 1988 to acquire a 100% interest in three mineral claims in the Greenwood mining division, BC for \$250,000 payable at \$10,000 per year and issuance of 150,000 shares over 18 months from the date of the agreement. The vendor is also entitled to a 2.5% NSR.

Greenwood
Access to
Hot sand & pyrite

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Zorah Media Corporation ZOR
Shares issued: 6,368,091 Jan 4 close: \$0.06
Thu 5 Jan. 89 Acquisition
The VSE has accepted for filing a purchase agreement dated November 28 1988 between James Reamsbottom and the company. Pursuant to the terms of the agreement, the company has acquired the right, title and interest in the Sun mineral claim located in Nicola mining division, BC in consideration of \$2,500 and the issuance of 100,000 treasury shares.

gone
Nicola
?

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Brooks Resources Ltd BRC
Shares issued: 2,401,430 Jul 25 close: \$0.30
Wed 2 Aug. 89 Acquisition
The VSE has accepted for filing an option/joint venture agreement dated May 11 1989 (superceding an option agreement dated January 19 1989), between the company and Bruce J. Stewart, whereby the company has acquired a 100% interest in certain mineral claims located in the Cariboo mining division, BC. Consideration is a total of \$34,500 the issue of 50,000 common shares and expenditures on the property of \$90,000.

gone
Cariboo

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Canova Resources Ltd CVD
Shares issued: 7,306,134 May 17 close: \$0.12
Thu 18 May 89 Acquisition
The VSE has accepted for filing an option agreement dated February 1 1989 amended May 5 and 10 1989 between the company and Bradley T. White and J.W. Richard Smith whereby the company has been granted an option to acquire a 100% interest in the El Centro I, II and III claims in the Atlin mining division. The consideration consists of \$45,500, represented by \$5000 paid and \$7500 and \$10,000 and \$20,000 due by January 31 1990, 1991 and 1992 respectively; 200,000 shares as to 50,000 on regulatory acceptance and 50,000 share blocks on completion of work programs and reports recommending further work; \$115,000 on exploration and development of the property.

gone
Atlin
Vein
Accessible

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Canova Resources Ltd CVD
Shares issued: 7,306,134 Apr 25 close: \$0.20
Wed 3 May 89 Acquisition
The VSE has accepted for filing an option agreement

Kancana Ventures Limited **KCV**
 Shares issued: 1,339,308 May 12 close: \$0.50
 Mon 15 May 89 Acquisition
 The VSE has accepted for filing an agreement dated
 March 31 1989 whereby the company has acquired from
 John W. Curle the Tatli 1, Tatli 2 and Tatli 3 mineral
 claims, Clinton mining division, BC.
 Consideration for the acquisition is 100,000 shares to
 be issued to Mr Curle in two blocks.
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GOWE

*Clinton
Road?*

Simplon Resources Ltd **SMP**
 Shares issued: 2,022,435 Aug 3 close: \$0.46
 Wed 9 Aug. 89 Acquisition
 The VSE has accepted for filing an agreement dated July
 24 1989 with respect to the acquisition of three mining
 claims located in the Kamloops mining division, BC for
 100,000 shares of the company.
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GOWE

- Road?

Wind River Resources Ltd **WID**
 Shares issued: 1,163,707 Aug 11 close: \$0.29
 Mon 14 Aug. 89 Acquisition
 The VSE has accepted for filing a purchase agreement
 dated January 9 1989 between the company and Michael
 Pym. Pursuant to the terms of the agreement, the
 company acquired a 100% interest in the Beau 1 and 2
 claims situated in the Nanaimo mining division in
 consideration of the issuance of 85,000 shares.
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GOWE

Adastral Resources Ltd **ASA**
 Shares issued: 2,647,221 Dec 4 close: \$0.07
 Tue 5 Dec. 89 Acquisition
 The VSE has accepted for filing an agreement dated
 September 6 1989 between the company and John R.
 Woodcock, president of the company, whereby the company
 has acquired all right, title and interest to a mineral
 claim (the Todd Creek property) in the Skeena mining
 division. The consideration consisted of \$10,000 with
 the vendor retaining a 1% NSR.
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*GOWE
Stewart.*

Venn

Bethlehem Resources Corp **BTH**
 Shares issued: 14,415,071 Nov 6 close: \$0.64
 Tue 7 Nov. 89 Acquisition
 The VSE has accepted for filing an agreement dated
 October 20 1989 between the company and Goldpac
 Investments whereby the company has acquired an option

*Not Romb
Length!*

on a 66.6% interest in the Keg 1, 2 and 3 claims, Revelstoke mining division. In order to exercise the option the company must: issue 10,000 shares initially, 10,000 shares in six months and a further 10,000 shares on each of the first, second and third anniversary of the agreement; pay \$30,000 on signing, \$35,000 in six months, \$60,000 on the first anniversary, \$125,000 on the second and \$250,000 on the third; and incur expenditures of \$100,000 in the first year, \$200,000 in the second and \$400,000 in the third.

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*Good
- Rare Metals?*

Boise Creek Resources Ltd BOS
Shares issued: 3,220,419 Sep 7 close: \$0.10
Thu 28 Sept 89 Acquisition
The VSE has accepted for filing an agreement dated September 13 1989 between the company and Kevin Luther whereby the company acquired the Michaela claims 7687 and 7688 located in the Omenica mining division, BC. The consideration consisted of 100,000 shares of the company.

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*Good
?*

Boise Creek Resources Ltd BOS
Shares issued: 3,220,419 Oct 10 close: \$0.06
Wed 11 Oct. 89 Acquisition
The VSE has accepted for filing an agreement dated September 22 1989 between the company and Freida Seyfert whereby the company acquired the SVX No. 5 and No. 6 claims, located in the Kamloops mining division, BC. As consideration, the company is to issue 100,000 shares of the company and incur \$90,000 of property development expenditures by November 15 1993.

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*Good
Kamloops*

Clifton Star Resources Inc CFO
Shares issued: 3,014,855 Oct 5 close: \$0.15
Tue 10 Oct. 89 Acquisition
The VSE has accepted for filing an agreement dated August 28 1989 between the company and J. Paul Stevenson and Associates Natural Resource Exploration & Development Ltd whereby the company acquired the Clare claim in the Skeena mining division. The consideration consists of \$25,000 and 100,000 shares of the company. The vendor retains a 2.5% NSR.

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*Abandoned
- Skeena ✓
Claims!*

Consolidated Bel-Air Resources Ltd CBT
Shares issued: 2,399,333 Oct 30 close: \$0.30
Tue 31 Oct. 89 Acquisition

The VSE has accepted for filing an agreement dated October 4 1989 between the company and Craig A. Angus, whereby the company is to acquire the ED No. 1 and No. 2 claims, located in the Atlin mining division, BC. The consideration consists of \$1700 and 20,000 shares.
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*Gont
Atlin?*

Golden Eye Minerals Ltd GOM
Shares issued: 3,802,035 Sep 20 close: \$0.12
Fri 22 Sept 89 Acquisition

The VSE has accepted for filing an agreement dated August 3 1989 between Golden Eye and Gerald H. Klein. Pursuant to the terms of the agreement, Golden Eye has been granted the option to acquire a 100% interest in the NOR 2 and 3 mineral claims, Nelson mining division, BC. Consideration is comprised of: \$5000 upon execution; 50,000 shares upon regulatory acceptance; \$10,000 and 50,000 shares on or before August 3 1990; \$20,000 and 50,000 shares on or before August 3 1991; \$30,000 and 50,000 shares on or before August 3 1992; \$40,000 on or before August 3 1993; \$50,000 on or before August 3 1994; and a 2% NSR with minimum advance royalty payments of \$50,000 per annum. Share issuances pursuant to the above are subject to the filing of an acceptable engineering report with the exchange.
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*Gont
Nelson?*

Golden Trump Resources Ltd GTZ
Shares issued: 1,375,013 Nov 17 close: \$0.31
Wed 22 Nov. 89 Acquisition

The VSE has accepted for filing an agreement dated September 7 1989 between the company and Grenfal Exploration whereby the company has acquired the Marge claim in the Skeena mining division, BC for \$25,000 and 100,000 shares.
The company has also agreed to pay Yorkton Continental a finder's fee of 10,000 shares.
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*"Goread"
Abandoned
to - on ?*

Goldspring Resources Ltd GSI
Shares issued: 2,928,734 Oct 25 close: \$0.32
Thu 26 Oct. 89 Acquisition

The VSE has accepted for filing an agreement dated August 18 1989 with C.R.C. Explorations whereby the company has acquired four claims in the Greenstone

Gont

Mountain area, Kamloops mining district, BC for \$10,000 and 100,000 shares.

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Halcyon Resources Ltd
Shares issued: 6,255,732
Tue 19 Sept 89

HYN
Sep 18 close: \$0.20
Acquisition

The VSE has accepted for filing an agreement dated August 17 1989 between the company and J. Paul Stevenson and Associates Natural Resources Explorations and Developments whereby the company has acquired the Reg claim in the Skeena mining division for \$15,000 and 100,000 shares.

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*"Claims"
Goose
* Erkey?*

Hollywood Investment Corporation
Shares issued: 1,997,287
Fri 15 Dec. 89

HLD
Dec 14 close: \$0.55
Acquisition

The VSE has accepted for filing an agreement dated October 23 1989 between the company and Dass No. 34 Holdings, whereby the company has acquired the Arc 13A and Arc 13B mineral claims, Liard mining division, BC. Consideration for the acquisition is \$5000 and 100,000 shares of the company to be issued to Dass. The property is subject to a 2% NSR royalty payable to a third party under an underlying agreement.

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*Goat
Liard
* "Erkey"
"Grounds"*

International Werner Technologies
Shares issued: 2,671,394
Thu 7 Dec. 89

IWI
Dec 6 close: \$0.43
Acquisition

The VSE has accepted for filing the following documents:

(c) An agreement dated October 26 1989 between the company and Imo Hudani whereby the company has acquired a undivided 100% interest in the Quartz-2 mineral claim record No. 6190, located in the Liard mining division, BC.

Consideration for the acquisition is the issuance to Hudani of 100,000 shares of the company.

(d) An agreement dated October 26 1989 between the company and Berend van der Kwast whereby the company has acquired an undivided 100% interest in the Quartz-3 mining claim, record No. 6193, located in the Liard mining division, BC.

Consideration for the acquisition is the issuance to van der Kwast of 100,000 shares of the company.

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*Goat
Liard
Jew?
No Work Done?
"Ground"*

Jaguar Equities Inc. JGE
Shares issued: 2,471,364 Sep 11 close: \$0.08
Wed 13 Sept 89 Acquisition

The VSE has accepted for filing the following:
By agreement dated May 1 1989 the company has acquired an option to purchase 100% interest, subject to a 2.5% NSR in the Deer claim situated in the Trail Creek mining division, BC for \$10,000 cash and 100,000 shares of the company from Western Exploration Properties.
By agreement dated August 21 1989 the company has purchased 100% interest in the Emerald claim situated in the Trail Creek mining division for 100,000 shares from Ronald Smallwood.

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(a)

(b)

Trail Creek
Van?
"Old Showings"
Resland claim

Little Bear Resources Ltd LBR
Shares issued: 4,003,750 Oct 2 close: \$0.13
Mon 16 Oct. 89 Acquisition

The VSE has accepted for filing an agreement dated September 7 1989 between the company and Grenfal Explorations whereby the company has acquired the Felix claim in the Skeena mining division, BC for \$25,000, 100,000 shares and a 2.5% NSR.

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Goat
Skeena
Claim
"Eskey Grounds"

Mollie Gibson Mines Inc MLI
Shares issued: 1,692,001 Dec 8 close: \$0.15
Mon 11 Dec. 89 Acquisition

The VSE has accepted for filing an agreement dated September 6 1989 between the company and Grenfall Explorations by which the company has acquired a 100% interest in two mineral claims in the Skeena mining division in consideration of 100,000 shares, \$40,000 and a 2.5% NSR.

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Goat
Felix claim
"Eskey Grounds"

Northair Mines Ltd NRM
Shares issued: 12,918,880 Nov 28 close: \$0.25
Wed 29 Nov. 89 Acquisition

The VSE has accepted for filing an agreement dated May 19 1989 between the company and Giles R. Peatfield and Thomas A. Richards (the optionors) whereby the company can earn a 60% interest in the Punt property by making cash payments totalling \$45,000 issuing shares totalling 130,000 and making work expenditures on the

Wheel?
New showing

property totalling \$1,000,000 on or prior to June 1 1994. The company can acquire a further 15% undivided interest in the Punt property by completing an additional \$750,000 of work expenditures and issuing a further 70,000 shares in the capital of the company within two years of the exercise of the option to acquire the 60% interest in the Punt property.
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Partners Oil & Minerals Ltd PTO
 Shares issued: 1,885,282 Dec 19 close: \$0.09
 Wed 20 Dec. 89 Acquisition

The VSE has accepted for filing an agreement dated September 21 1989 whereby the company purchased the Swiss and Miss mineral claims located in the Lillooet mining division, BC for \$10,000 and issuance of 100,000 shares of the company.
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Gone
Lillooet
"Ground"

Remington Creek Resources Inc RCR
 Shares issued: 2,103,687 Nov 30 close: \$0.20
 Fri 1 Dec. 89 Acquisition

The VSE has accepted for filing an agreement dated November 1 1989 whereby the company acquired the Big Casino and Independence claims located in the Skeena mining division, BC for \$10,000 and 100,000 shares.
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Gone
Skeena
Claims?
*"Ground - Eskey" **

Spur Ventures Inc SVU
 Shares issued: 1,894,201 Nov 30 close: \$0.20
 Fri 1 Dec. 89 Acquisition

The VSE has accepted for filing an agreement dated June 7 1989 whereby the company acquired the K-1 and K-2 mineral claims in the Alberni mining division, BC for \$2000 and 100,000 shares of the company.
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Alberni
See?
"Ground"?

Tenajon Resources Corp TJS
 Shares issued: 8,895,811 Oct 25 close: \$0.58
 Thu 26 Oct. 89 Acquisition

The VSE has accepted for filing documentation with respect to the acquisition of a 50% interest in two mineral claims located in the Skeena mining division, BC. By agreement dated October 11 1989 with David Javorsky consideration was the payment of \$5000. The company has the right to acquire the remaining 50% interest for \$5000.

Stewart
See? ✓
*Purchase **
SB

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U.S. Grant Gold Mining Company Ltd USG
 Shares issued: 7,023,113 Nov 20 close: \$0.21
 Thu 23 Nov. 89 Acquisition
 The VSE has accepted for filing documentation with respect to the acquisition of the Liz and Sara claims, Liard mining division from J. Paul Stevenson and Associates, Natural Resources Explorations and Development for cash consideration of \$40,000 and 100,000 shares, pursuant to an agreement dated August 25 1989.

GONE
Claims?
"Eskey Ground"

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Vikon International Resources Inc VIK
 Shares issued: 1,636,001 Nov 15 close: \$0.16
 Thu 16 Nov. 89 Acquisition
 Kali Venture Corporation (KIV)
 The VSE has accepted for filing an option agreement dated September 8 1989 whereby Kali Venture Corporation granted an option to Vikon International Resources to earn a 50% interest in the Paige claim, located in the Skeena mining division, BC for issuance of 50,000 shares and \$50,000 of exploration expenditures in the first year of the agreement. Any expenditures above \$50,000 will be deemed to be contributed by Vikon towards any subsequent joint venture.

GONE
Claim
"Eskey Ground"

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Wirwind Resources Ltd WHD
 Shares issued: 5,898,210 Oct 4 close: \$0.10
 Thu 5 Oct. 89 Acquisition
 The VSE has accepted for filing documentation relating to the acquisition of a 100% interest in one mineral claim located in the Liard mining division, BC. Consideration of 100,000 shares of the company will be issued to the vendor, Pierre Lessard.

GONE
~~*Claim*~~
*Valid Target **
NO

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Aatra Resources Ltd ARF
 Shares issued: 2,634,051 Jan 9 close: \$3.80
 Wed 10 Jan. 90 Acquisition
 The VSE has accepted for filing an option agreement dated November 16 1989 between the company and Edward Ashworth whereby the company has been granted an exclusive option to acquire a 75% interest in certain claims in the Vernon mining division, BC. The consideration consists of \$25,000 to be paid

GONE
Vernon
Au Road
SCAN
- see details.

immediately, 50,000 shares on signing of the agreement, an additional 50,000 shares after completion of a \$100,000 work program and property development expenditures totalling \$400,000 (\$100,000 in 1990, \$150,000 in 1991 and \$150,000 in 1992).

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Akiko-Lori Gold Resources Ltd AKI
 Shares issued: 3,963,945 Jan 4 close: \$1.80
 Fri 5 Jan. 90 Acquisition

The VSE has accepted for filing an option and joint venture agreement dated September 18 1989 between the company and Cheryl Resources (now Tymar Resources) whereby the company has acquired the option to purchase a 50% interest in the Lakewater property situated in the Skeena mining division, BC for \$51,257, issuance of 75,000 shares in three equal stages and incurring 50% of future expenditures on the property.

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GONE

*Skeena
 Au? ✓*

"Eskay Ground"

Athlone Resources Ltd AT
 Shares issued: 1,900,000 Dec 29/89 close: \$0.30
 Wed 3 Jan. 90 Acquisition

The VSE has accepted for filing an agreement dated October 20 1989 whereby the company has purchased the Aur 1 and 2 claims, Similkameen mining division, BC from Victoria Schmitt for 100,000 shares.

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Accessible

*Aur?
 Old prospect*

Booker Gold Explorations Ltd BGE
 Shares issued: 2,675,333 Nov 14/89 close: \$0.12
 Tue 2 Jan. 90 Acquisition

The VSE has accepted for filing documentation in connection with an agreement dated September 6 1989 whereby the company has purchased the Ginetti claim, Skeena mining division, BC from Grenfal Explorations for \$10,000 and 100,000 shares.

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*Skeena
 Claim*

"Eskay Ground"

Camfrey Resources Ltd CFB
 Shares issued: 8,433,693 Feb 20 close: \$0.85
 Wed 21 Feb. 90 Acquisition

The VSE has accepted for filing the following:
 CHILKOOT 2 MINERAL CLAIM
 By agreement dated November 30 1989 between the company and G. Arnold Armstrong, the company purchased the Chilkoot 2 mineral claim, Lillooet mining division, for 100,000 shares.

*Vein
 Ground -
 high price*

(a)

VAL MINERAL CLAIM

(b)

By agreement dated November 30 1989 between the company and Frederick J. Hilton the company purchased the Val mineral claim, Lillooet mining division, for 100,000 shares.

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Consolidated Bel-Air Resources Ltd CBT
Shares issued: 2,519,333 Jan 17 close: \$0.36
Fri 19 Jan. 90 Acquisition

The VSE has accepted for filing documentation in connection with an agreement dated August 29 1989 whereby the company has acquired the Audrey claim, Skeena mining division, BC from J. Paul Stevenson and Associates Natural Resources Exploration and Development for \$25,000 and 100,000 shares. The vendor retains a 2.5% net smelter return royalty. Yorkton and L.O.M. Western will each receive 5,000 shares as a finders fee.

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Skeena
"Claim"
"Eskey Ground"

Halley Resources Ltd HLL
Shares issued: 8,028,036 Jan 25 close: \$0.08
Mon 29 Jan. 90 Acquisition

The VSE has been advised that the company entered into an agreement dated November 30 1989 with Dominion Pioneer Resources pursuant to which the company acquired a 100% interest in the Maxx-2 No. 2478 claim located in the Fort Steele mining division, BC. Consideration to Pioneer is comprised of cash payment of \$2000 and 100,000 free trading shares.

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Accessible
?
✓
Can

Partners Oil & Minerals Ltd PTO
Shares issued: 1,985,282 Mar 9 close: \$0.24
Tue 13 Mar. 90 Acquisition

The Vancouver stock exchange has been advised of the following exempt transaction:

Pursuant to an agreement dated December 11 1989 the company has purchased the Yeti and Timberline claims, Lillooet mining division for 100,000 shares consideration from Scott Briggs as vendor.

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"Ground"

Rose Spit Resources Inc ROS
Shares issued: 2,452,000 May 2 close: \$0.08
Mon 7 May 90 Acquisition

The VSE has been advised of the following exempt

transaction:

The company has acquired a 100% interest in the Wolf Gold and Cougar Gold mining claims, Greenwood mining division, BC from Daniel Ruethnauer, pursuant to an agreement dated effective November 8 1989. Consideration was \$7000 and 100,000 shares.

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*Outside
+ more shares*

Swift Minerals Ltd

Shares issued: 3,024,736

Fri 5 Jan. 90

The VSE has accepted for filing an agreement dated September 11 1989 whereby the company acquired the Hill claim in the Omineca mining division, BC for \$20,000 and issuance of 100,000 shares subject to a 1.5% NSR upon commercial production.

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SWS

Jan 2 close: \$1.00

Acquisition

PPM