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**Cathedral Gold Corporation**

**EVALUATION  
of the  
BRALORNE MINE  
Bridge River Area, British Columbia**

**18 August, 1988**

**C.R. Saunders, P.Eng.**

**Consultant**

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### SUMMARY

The Bralorne property, comprising 4,188 acres in southwestern British Columbia, has had a lengthy history of productive gold mining. From 1928 to 1971, the mines which constitute the property produced 8,000,000 tons of ore at an average grade of 0.51 oz gold per ton from vein gold deposits.

The geological setting and mineral controls consist of Permian and Triassic volcanic and sedimentary units that have been intruded by Jurassic and younger stocks, sills and dykes of compositions ranging from peridotite to soda granite.

Current reserves accessible without a shaft are 256,000 tons @ 0.37 oz gold per ton; total reserves are about one million tons at approximately 0.25 oz gold per ton. The exploration potential of the property is excellent; it is **approaching mineability status.**

The property has been valued on the basis of old workings, historical records and mineral rights (deemed value), on the cost of exploration conducted since 1980, and on the next proposed exploration program. The Appraised Value is **\$18,500,000.**

## INTRODUCTION

This report has been commissioned by Cathedral Gold Corporation. Its purpose is to place an Appraised Value on the mineral assets of the Bralorne property. The author is familiar with the property, having visited it in 1973 and written a short report about its mineral potential in 1985.

The Bralorne property is located in southwestern British Columbia (122°48.5'W Long., 50°46.5'N Lat.), about 100 miles north of Vancouver and 40 miles west of Lillooet (Figure 1). It is accessible by an all year gravel road from Lillooet.

The property consists of 133 Crown granted claims, two reverted Crown grants, one located mineral claim and two placer leases for a total of 4,188 acres (1,695 hectares), (Figure 2).

### History

The Bralorne area was an active mining camp from the time placer gold was discovered in the Bridge River in 1863 until 1971 when mining ceased at the Bralorne Mine. ~~The vein deposits, which had been the source of the placer gold, were not discovered until 1897.~~ Desultory development was carried on over the next 30 years until, in 1928, the Pioneer Mine was put into production. The Bralorne Mine commenced operations in 1932 after consolidation of the Lorne and Bradian mines. The Bralorne and Pioneer mines were merged in 1959. Total production from the Bralorne Camp, during the period 1928 to 1971, was 8,000,000 tons which yielded 4,100,000 ounces of gold representing an average recovered grade of 0.51 oz gold per ton.

Increasing costs of production (deep mining, high temperatures) and low gold prices resulted in closure of the Bralorne Mine in 1971. Limited exploration was done in 1973 and 1974, and an unsuccessful attempt made to reopen the mine in 1974 and 1975. In 1975, the mine was shut down completely and much of the equipment removed from the mine and mill site.

E & B Explorations Inc. optioned the property in 1980 and commenced a systematic program of rehabilitation on portions of the mine in order to complete an exploration program and engineering studies. A surface drilling program was conducted in 1980 and 1981. A major drilling program with some drifting was completed during the period September to December 1984. No further work has been done until this year (1988), other than site maintenance and minor rehabilitation in 1987. Surface diamond drilling and rehabilitation of some underground workings in preparation for diamond drilling is currently underway.

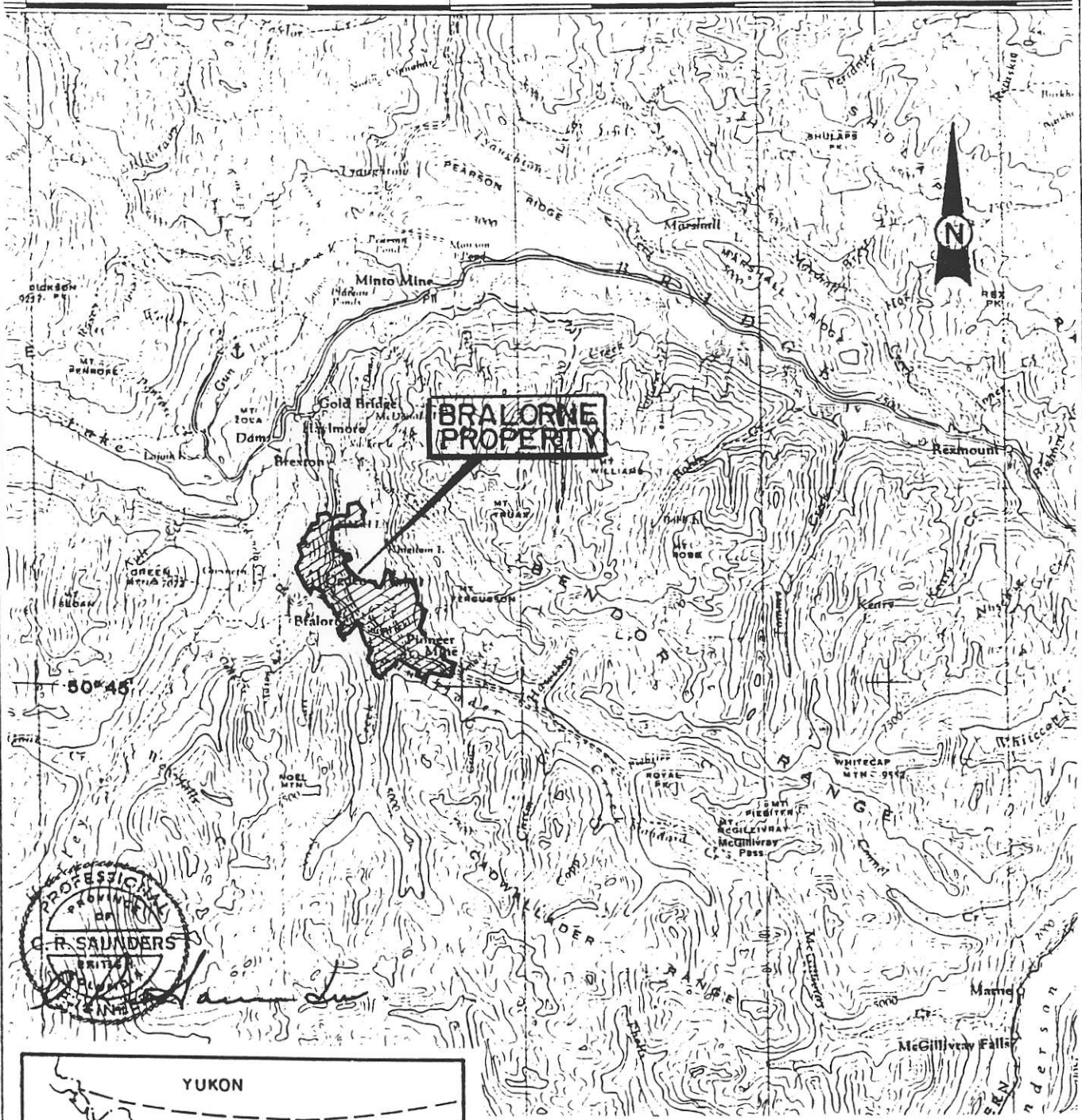
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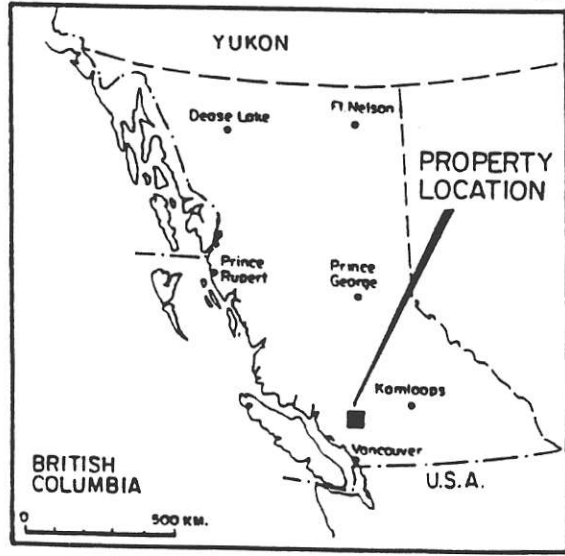
123°00'

45'

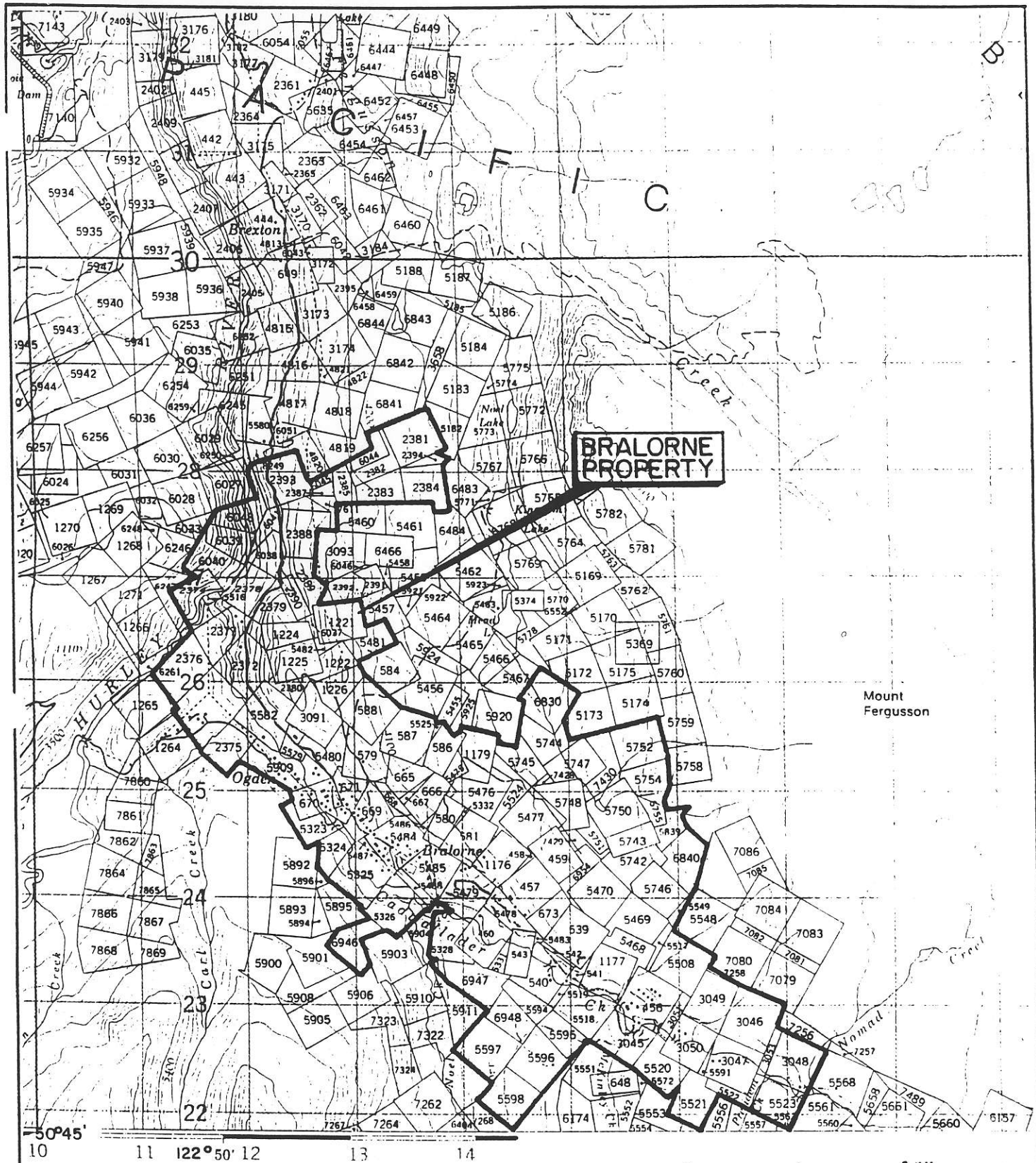
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<b>CATHEDRAL GOLD CORPORATION</b>			
<b>BRALORNE PROPERTY</b>			
<b>LOCATION MAP</b>			
CADWALLADER CREEK, B.C.		N.T.S. 92J-15	
SCALE : 1 : 250,000	AUG. 1988	FIG. 1	



**BRALORNE  
PROPERTY**

50°45' 10 11 122°50' 12 13 14

0 1 2 KM.



ORCAN MINERAL ASSOCIATES LTD. CONSULTANTS  
VANCOUVER, CANADA

**CATHEDRAL GOLD CORPORATION**

**BRALORNE PROPERTY**

**PROPERTY MAP**

CADWALLADER CREEK, B.C.

N.T.S. 92J-15

SCALE: 1:50,000

AUG. 1988

FIG. 2



*L. Saunders*

## GEOLOGICAL SETTING

The Bridge River District lies immediately northeast of the eastern margins of the **Coast Plutonic Complex**. The oldest geological unit in the area is the Permian age Fergusson Series consisting of cherts, argillites and andesitic to basaltic flows with minor associated limestone (Figure 3). The Fergusson rocks are overlain conformably (?) by the Pioneer Formation of Upper Triassic age, which comprises metamorphosed andesites and some associated subvolcanic intrusives. Immediately overlying the Pioneer units, and also of Upper Triassic age, is the Hurley-Noel Formation. It is primarily composed of fine to coarse lithic sedimentary rocks (locally limey) and minor intercalated andesitic flows. All younger rocks, ranging in age from Jurassic to Tertiary, are intrusives, most of which are collectively termed the 'Bralorne Intrusives'. These range in composition from ultrabasic to acidic: peridotite, gabbro and hornblendite, diorite, quartz diorite, quartz and feldspar porphyries, soda granite, albitite.

The sedimentary/volcanic rocks have been folded and faulted, and invaded by the intrusive units. **A major, deep-seated regional fault zone, the Cadwallader system, has been the avenue for much of the intrusion, and forms the principal regional ore control in the Bridge River District.** The fault is defined by serpentinite up to several hundred feet in thickness in the property area and along much of its defined length.

The Bralorne, Pioneer and several other mines lie within a lens of the sedimentary/volcanic/intrusive units formed at a flexure in the Cadwallader Fault, the easterly lens-bounding fault being termed the Fergusson Fault.



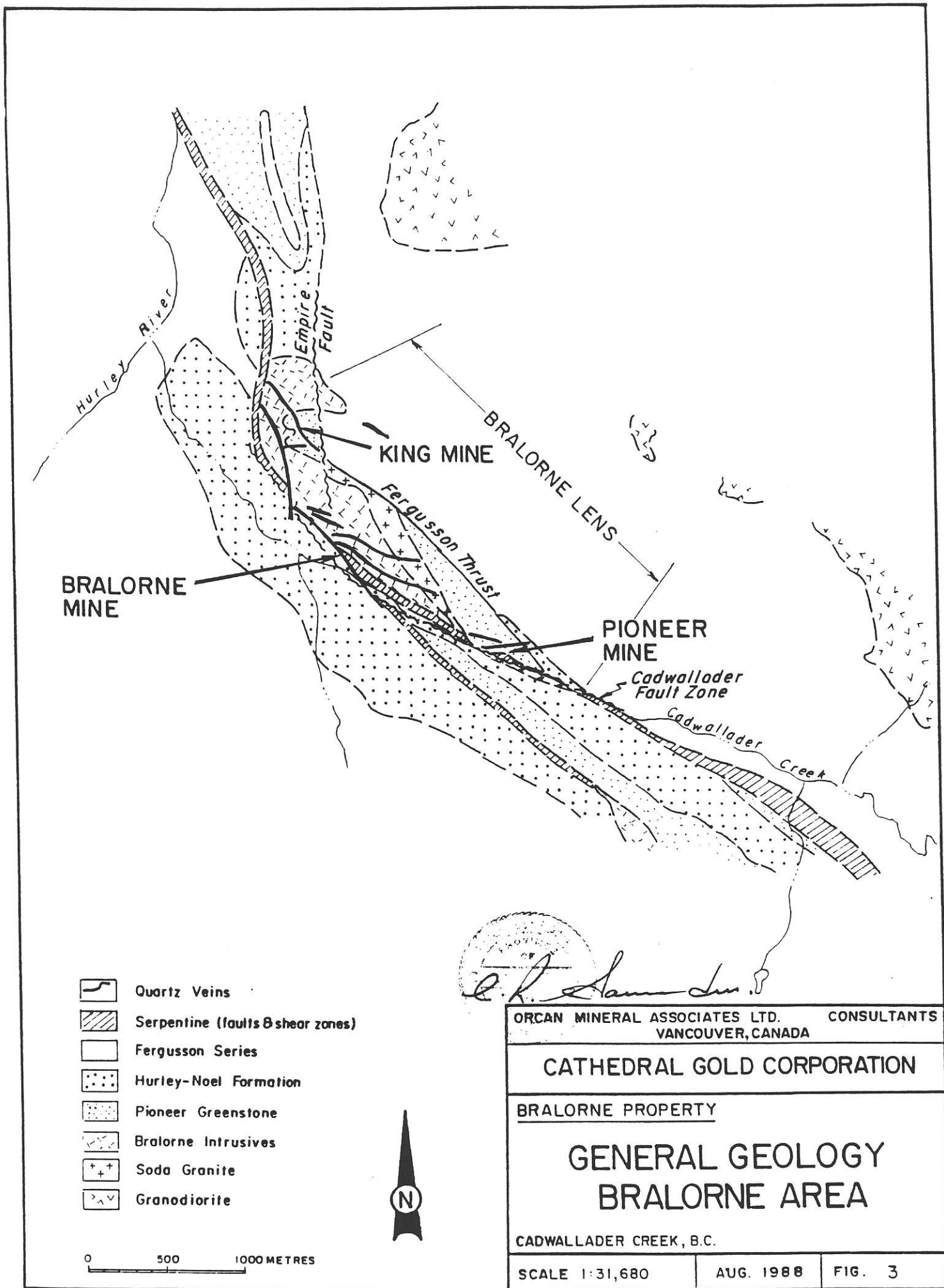
## MINERAL OCCURRENCES

### Mineralization

The Bralorne deposits consist of gold-bearing quartz veins within fault and shear structures developed within the 'Bralorne Lens', the structures obviously being related to movement on the Cadwallader Fault. More than 50 veins have been located and explored to a greater or lesser extent, with about 20 having provided some ore production. The veins occur in the volcanics, to a lesser extent in the sediments, and in all of the intrusive rocks except serpentine and gabbro. They show some spatial relationship to the sodic intrusive rocks ('soda granite'). The gold-bearing veins are present within a zone that is 2,500 feet wide, 18,000 feet long and over 5,000 feet in vertical extent. The most common strike directions are east-west (with northerly dips of 60° to 80°), and north-south (with westerly dips of 45° to 60°). The veins consist of quartz and contain minor amounts of sulphides, tellurides and fine gold. Widths vary from two to five feet with local swellings, at junctures of veins, up to 20 feet.

Ore controls can be classified as Regional, District and Local. Regional controls consist of the deep-seated Cadwallader fault system; intrusion, along the fault zone, of basic to acidic stocks, lenses and dykes; and hydrothermal vein-forming deposition probably related to late-phase intrusion. District controls comprise a marked change in strike of the regional fault and formation of a fractured lens (the Bralorne Lens) within the concave arc formed by the strike change; the presence within the lens of competent rocks capable of sustaining faults and fractures; opening, dilation and decreased pressure in some faults and fractures due to preferential stress release; and incursion of gold-bearing hydrothermal solutions. Local controls include multiple fracturing at vein junctures, locally preferred vein orientations, and offsetting by post-ore faults. ~~Any areas within the Bralorne Lens to which these control features~~ can be applied must be considered as potential hosts for veins of ore grade mineralization.





BRALORNE MINE

KING MINE

PIONEER MINE

- Quartz Veins
- Serpentine (faults & shear zones)
- Fergusson Series
- Hurley-Noel Formation
- Pioneer Greenstone
- Bralorne Intrusives
- Soda Granite
- Granodiorite

0 500 1000 METRES



*C. H. ...*

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VANCOUVER, CANADA

CATHEDRAL GOLD CORPORATION

BRALORNE PROPERTY

GENERAL GEOLOGY  
BRALORNE AREA

CADWALLADER CREEK, B.C.

SCALE 1:31,680

AUG. 1988

FIG. 3

### EXPLORATION POTENTIAL

The Bralorne Lens, as defined by the serpentinite of the Cadwallader Fault to the southwest and the Fergusson Thrust (mainly) to the northeast, hosts the old mines which now constitute the Bralorne property, and thereby essentially all of the **productive veins in the district**. However, the lens has never been completely explored. It seems that the old mines were always 'ore rich' and consequently there was little requirement for routine exploration. Exploration that was done was somewhat 'ad hoc', serving mainly to test for vein branches and extensions within or quite near the main vein zones as they were routinely being developed and mined. **Thus, except for the mined areas with their associated local exploration, the properties were not thoroughly explored - certainly not on a planned, routine basis.** Until proven otherwise, the unexplored areas within the Bralorne Lens should be considered as good exploration targets.

A number of other features enhance the exploration potential of the Bralorne Lens as well.

Depth continuity of the veins is substantial and does not appear to have been **delimited by previous mining.** Mineralized ore grade veins have been mined for more than 5,000 feet of vertical extent. Information from the lowest level suggests that the mineralization continues to even greater depths. Furthermore, there does not appear to have been any noticeable change in mineralogy with depth, although this aspect has received little discussion in the available literature.

Some ore limits on veins, as defined by stope outlines, may not be related to assay boundaries; mining may have been halted in some places because more accessible, cheaper or higher grade ore was readily available elsewhere. Changing economic conditions, primarily the price of gold relative to costs, may have precluded the later rehabilitation and mining of these areas. For similar reasons, the vertical limits of other veins also may be artificial. The deciding factor may have been accessibility. The potential tonnage to be developed may have been relatively small and/or lower grade compared to other potential tonnage more readily available elsewhere in the mines.

Previous mining was done to a cut-off grade of 0.30 ounces gold per ton and consequently blocks of low grade 'ore' remain within and, more commonly, on the periphery of old stopes. This material comprises much of the deeper ore reserves. This low grade material can be mined provided (1) it does not have to support much development cost, (2) that when included with other mine ore, the overall mine grade is sufficient for a profitable operation, and (3) it does not displace too much higher grade in the concentrator feed at any one time. In other words, if the recovered value of such material can support its own costs related to minor local development, mining, transportation to the mill, crushing and concentrating, it can and should be included in the ore reserves. In many mines, such low grade ore is essential to the volume requirements of the operation; the same may prove true at Bralorne. Exploration beyond known veins, as well as in undeveloped areas, may locate more of this material.

High grade sections on veins, although generally small, were not uncommon in the old mines. Such bonanzas can have a profound effect on the total mine grade and on the profitability of an operation. This positive feature cannot be overlooked at Bralorne.

Post mineralization faulting has offset certain veins, and in some cases the offset portion has not been located. (In a number of cases, a vein of one name is the offset extension of a vein of a different name.) An attempt should be made to locate offset veins.

In summary, it is apparent that the Bralorne property has considerable exploration potential.

## EVALUATION

### Methodology

For evaluation purposes, mineral properties can be divided into two categories: those with reserves and those without reserves. Those with reserves can be subdivided into properties with economic reserves and properties with subeconomic reserves.

The evaluation of properties which have no reserves is an imprecise undertaking because of the risks inherent to mineral exploration, and because there are no established rules for doing such evaluations. The method employed by Orcan has been developed and refined over a number of years through the determination of several hundred valuations.

For properties with no reserves, the evaluation procedure incorporates 'Basic Expenditures' and an 'Exploration Premium'; it emulates common Canadian mining deals. As well, it relies heavily on the economic and exploration experience of the evaluator.

Basic Expenditures include costs for property acquisition and for 'Useful Exploration' that has been done. Useful Exploration is that portion of completed exploration that enhances the geological and economic understanding of the property and provides justification for proceeding with further work. The determination of what is useful work is a judgment decision based on the evaluator's experience.

The Exploration Premium is an expression of the evaluator's confidence that further exploration will advance the economic potential of the property. It is based on the estimated cost of proposed exploration and is expressed as an (approximate) percentage of such costs. The percentage commonly ranges from 0 to 100 percent although it can exceed 100 percent if a property is judged to have superior economic potential. A contributing factor in determining the premium is the calibre (economic potential) of the mineral deposit being sought.

### Valuation

In 1980, a 'deemed value' was agreed upon by joint venture partners in order to establish an earn-in formula. This figure, \$5,000,000, was accepted by the companies involved; it was a 'market value'. In our opinion, this was an appropriate figure for the assets it represented at the time it was deemed (numerous underground workings of considerable extent, old records, mineral rights, and so forth). It has been substantiated by the results of exploration that has subsequently been conducted.

All exploration expenditures since 1980 (up to 30 April, 1988) are considered to be useful because of the results obtained. The reserves below the 800 Level are not presently mineable because of the overall capital cost necessary to put the property into production but, from a purely operating cost perspective, they are economically mineable. If they were the only reserves, and if there was little prospect for locating other near-term potentially mineable reserves, they would have to be discounted somewhat. However, because there are 256,000 tons @ 0.37 oz Au/ton above the adit level, and there are good prospects for increasing this readily developable ore, the reserves below the adit level are an asset that can be appraised at full value. They should become economically mineable once a mill and surface plant are in operation.


An exploration program has been proposed by Corona Corp., the project operator, that is estimated to cost \$3,078,000. It includes underground rehabilitation, diamond drilling (surface and underground) and related support costs. Considering the positive results of previous exploration and the potential to expand reserves, particularly above the 800 Level, all of the exploration is warranted and should receive full credit in the property valuation. There is good reason to expect that further exploration, or possibly mine development, will be warranted upon completion of the proposed program.

Deemed value of old workings, records, mineral rights, etc.	\$ 5,000,000
Exploration expenditures (1980 - April, 1988)	10,531,032
Proposed exploration (100%)	<u>3,078,000</u>
	<u>\$ 18,609,032</u>
<b>Appraised Value</b>	<b><u>\$ 18,500,000</u></b>

CONCLUSIONS

Based on the results of recent exploration and on remaining mineral potential, it is concluded that the Bralorne property constitutes a worthwhile exploration project that is approaching economic mineability. From a 1980 deemed value, exploration expenditures since 1980, and a proposed exploration program, the 'Appraised Value' is calculated to be \$18,500,000.

Respectfully submitted,  
ORCAN MINERAL ASSOCIATES LTD.

  
C. Raymond Saunders, P.Eng.



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### CERTIFICATE

I, **C. Raymond Saunders**, of 666 St. Ives Crescent, North Vancouver, Canada, do hereby certify that:

1. I am a graduate of the University of British Columbia, (B.A.Sc. in Geological Engineering, 1956).
2. I am a registered Professional Engineer of the Province of British Columbia (registration number 6498).
3. From 1956 until 1967 I was engaged in mining and mining exploration in Canada for a number of companies; positions included mine geologist, mine engineer and chief geologist for underground and open pit operations. Since 1967 I have been practising as a consulting geological engineer in minerals exploration, property development and deposit evaluation in Canada and other countries.
4. I examined the Bralorne property in 1973.
5. I have not received, nor do I expect to receive, any interest, directly or indirectly, in the properties or securities of Cathedral Gold Corporation or any associate or affiliate of Cathedral Gold Corporation.
6. I do not have a direct or indirect interest in, nor do I beneficially own, directly or indirectly, any securities of Cathedral Gold Corporation or any associate or affiliate of Cathedral Gold Corporation.

Respectfully submitted,

  
C. Raymond Saunders, B.A.Sc., P.Eng.

Vancouver, Canada