FALCONBRIDGE LIMITED
701 - 1281 West Georgia Street
Vancouver, B.C. V6E 3J7

2/87

1987 FINAL REPORT

on the

GEM LAKE PROJECT

NTS 92F/11

by

J. Beekmann
J.D. Fournier

17001

ARIS SUMMARY SHEET

District Geologist, Victoria Off Confidential: 89.02.23

ASSESSMENT REPORT 17002 MINING DIVISION: Nanaimo

PROPERTY: Gem Lake
LOCATION: LAT 49 41 00 LONG 125 24 00
UTM 10 5505969 326874
NTS 092F11W
CLAIM(S): Meg 1-8
OPERATOR(S): Falconbridge
AUTHOR(S): Beekmann, J.;Fournier, J.
REPORT YEAR: 1987, 48 Pages
COMMODITIES
SEARCHED FOR: Gold,Copper
GEOLOGICAL
SUMMARY: Gold mineralization with chalcopyrite occurs within a fault breccia. The country rocks are Tertiary intrusive breccia and basaltic volcanics.

WORK
DONE: Geological
GEOL 200.0 ha
Map(s) - 1; Scale(s) - 1:5000
ROCK 47 sample(s) ;ME
TOPO 200.0 ha

MINFILE: 092F 239

LOG NO: 0225 RD.
ACTION:
48 pp.
FILE NO:

1987 FINAL REPORT

on the

GEM LAKE PROJECT

FILMED

NTS 92F/11

by

J. Beekmann
J.D. Fournier

GEOLOGICAL BRANCH
ASSESSMENT REPORT

17,002

SUB-RECORDER
RECEIVED
FEB 23 1988
M.R. # ..... $ .....
VANCOUVER, B.C.

SUMMARY

This report presents the results of 1987 field work on the Gem Lake project on Vancouver Island in southwestern British Columbia. The exploration target is structually controlled, sulphide hosted epithermal gold mineralization within the Karmutsen Formation. Mineralization of this type is known at Mt. Washington, 13km to the east.

The project area cosists of 8 two post claims located on central Vancouver Island, about 30km west of Courtenay. The claims are within the environmentally sensitive Strathcona Recreational Area, part of Strathcona Provincial Park. Only the precious metal rights are owned by Falconbridge Ltd., base metal rights are held by the Provincial Government. The precise location and orientation of the claims is not known as the claim posts where not located.

The field work, conducted between September 25, and October 2, 1987, consisted of 8 man days of prospecting and mapping. This included resampling of known mineralization at the Main Showing.

The claims are underlain by shallow northwest dipping mafic volcanic flows of the Upper Triassic Karmutsen Formation that are intruded by a Tertiary stock and an associated intrusive breccia. The best mineralization occurs in a tectonic breccia where open spaces have been filled with chalcopyrite. This breccia contains up to 3g/ton gold and 18g/ton silver.

CONCLUSIONS

The claims have potential for the occurrence of economic gold mineralization. Work completed in 1987 did not fully evaluate the claims. At Gem Lake several styles of sulphide mineralization are common, but precious metal values noted to date are associated only with structurally controlled chalcopyrite. At present, the only area that appears to have potential for economic mineralization is a 450 square metre area called the Main Showing, a mineralized tectonic breccia. This showing contains up to 3g/ton gold and 18g/ton silver, hosted by chalcopyrite. However the possibility exists that further prospecting will locate new showings of interest. The precise location of the claim boundaries is very important because as they presently stand the Main Showing is only 50m from the edge of the property.

RECOMMENDATIONS

Further surface evaluation is recommended. The program should be conducted early enough to allow late season drilling if suitable targets are located. The following should be part of further work done at Gem Lake.

1) The true claim boundaries should be determined by locating and marking the claim posts.

2) Further prospecting and mapping should be undertaken. In particular:

i) The trench west of the lake discussed by McDougall (1961) should be inspected keeping in mind the possibility of a strike extention onto the property.
ii) The forested areas west and east of Gem Lake should be searched for outcrop and possible mineralization.
iii) The contacts of the quartz diorite stock should be prospected.
iv) If possible the cliffs at the southern end of the cirque should be prospected.

3) If during prospecting and mapping some areas are found that would lend themselves to soil sampling this should be done. In particular the area east of Gem Lake should be considered.

4) The Main Showing should be systematically mapped and sampled, ropes or rope ladders might be useful to provide access to some of the steeper areas.

5) An effort should be made to locate the old drill collars and plot them as accurately as possible. With this information proper projections of the holes can be made and considerable information salvaged.

6) A MAG/VLF geophysical survey should be conducted over the talus covered cirque bottom to delineate the east-west faults associated with the Main Showing.

TABLE OF CONTENTS

TABLES

FIGURES

APPENDICES

INTRODUCTION

Location Access and Terrain

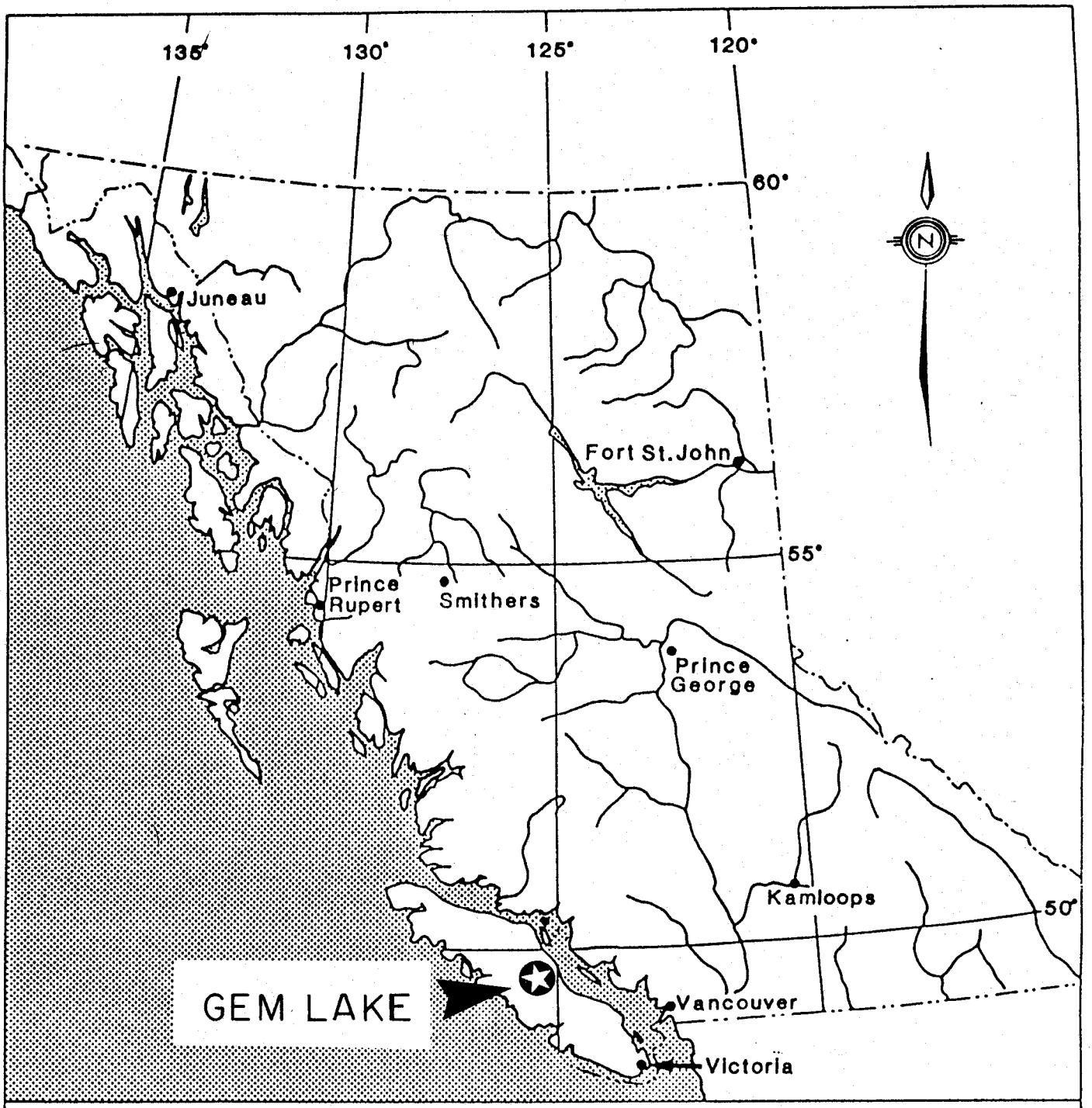
The Meg Group of claims at the southern end of Gem Lake, is located within the Nanaimo Mining District in the Forbidden Plateau area, NTS 92F/11 at about 49 41' and 125 24' (Figure 1). The claims lie within the boundary of Strathcona Park and are designated as a recreational area in which mineral exploration is permitted. Area supply centers are Courtenay and Campbell River, respectively 30 kilometres east, and 38 kilometres northeast of the property.

Access is by helicopter, and the most practical site for mobilization and demobilization is a logging road just west of the Mount Washington ski resort, 13 km east of the claims.

The property is located in a cirque, and the elevation varies from 1078 to 1700 Metres above mean sea level. The terrain consists of cliffs, benches, and talus slopes with minor vegetated areas. Overall, the terrain is steep and rugged, but most areas are nevertheless accessible by foot.

History

The first reported occurrence of mineralization in the Gem Lake area is described by Gunning (1930). He reports the presence of pyrite, pyrrhotite, chalcopyrite and molybdenite in fractures and veins, but suggests that without any appreciable amount of precious metals the deposit would be sub-economic. A highgrade, non typical, sample of chalcopyrite assayed 4.07 % Cu, 15.2 g Ag, and 9.3 g Au. Between 1930 and 1960 no significant amount of work was done on the property. In April 1960, while carrying out a helicopter reconnaissance program, Falconbridge rediscovered the Gem Lake mineralization and staked the Meg group of claims. Following this renewed interest in the Gem Lake area, exploration work consisting of prospecting, trenching, reconnaissance mapping, 1600 feet of drilling in 7 holes, Mag, EM, and SP geophysical surveys was carried out between 1960 and 63. The project focussed primarily on finding copper reserves. Some copper bearing zones were found, however low grades, and the fact that the base metal rights were owned by the C.P.R. reduced the attractiveness of the property. Falconbridge owns the precious metal rights. Only trace amounts of gold and silver were found in most samples. Gold bearing mineralization is nevertheless present on the property. McDougall (1961) reports very high grade pods of chalcopyrite spottily distributed along a strongly developed fault or shear. These pods assayed up to 15.5 g Au. The 1974 expansion of Strathcona



0 100 200 300 400 500

kilometres

Falconbridge Limited

LOCATION MAP

GEM LAKE PROJECT
PROJECT NUMBER 011
NTS: 92 F/11

Figure: 1

Park to include Gem Lake eventually prevented further work on the property until 1987.

Summary Of Work In 1987

The objective of the 1987 exploration program was to assess the potential for gold and silver mineralization on the Meg claims. In the four days spent at Gem Lake (Sep. 25, 30, Oct. 1 and 2) parts of the property were prospected, mapped at 1:5000 and all mineralization encountered was sampled. A total of 47 samples were collected.

Property Status

See Figure 2 for a map of the claims, and TABLE I for a list of the claims and their anniversary dates.

CLAIM STATUS

Claim	Units	Record No.	Location Date	Record Date	Expiry Date*
MEG #1	1	15035	April 30, 1960	May 3, 1960	May 3, 1988
MEG #2	1	15036	April 30, 1960	May 3, 1960	May 3, 1988
MEG #3	1	15037	April 30, 1960	May 3, 1960	May 3, 1988
MEG #4	1	15038	April 30, 1960	May 3, 1960	May 3, 1988
MEG #5	1	15039	April 30, 1960	May 3, 1960	May 3, 1988
MRG #6	1	15040	April 30, 1960	May 3, 1960	May 3, 1988
MEG #7	1	15041	May 02, 1960	May 3, 1960	May 3, 1988
MEG #8	1	15042	May 02, 1960	May 3, 1960	May 3, 1988

* 1987 field work will be filed for assessment

TABLE I: List of Meg claims and their aniversary dates

Special Procedures Associated With Working In A Park

As of a result of Gem Lake being located within the boundaries of Strathcona park, strict environmental regulations have to be adhered to when working on the property. These regulations are outlined in the work permit attached in APPENDIX A. A special effort was made to

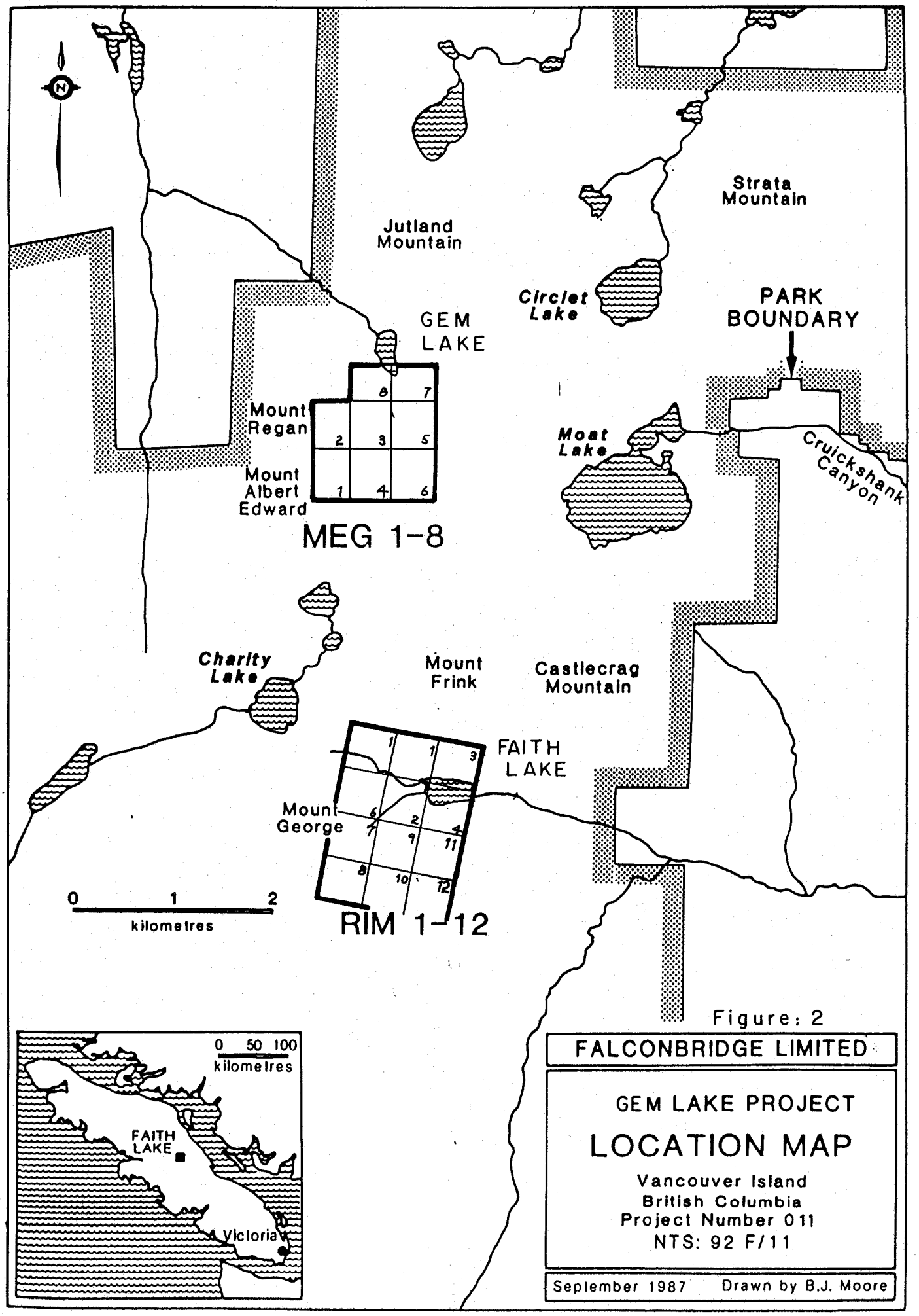


Figure: 2

FALCONBRIDGE LIMITED

GEM LAKE PROJECT

LOCATION MAP

Vancouver Island
British Columbia
Project Number 011
NTS: 92 F/11

September 1987 Drawn by B.J. Moore

fully cooperate with the park authorities. This included a clean-up of previous exploration camps.

REGIONAL GEOLOGY

Vancouver Island, except for it's southernmost tip, is part of the allochthonous Insular Belt. It consists of a variable assortment of volcanic, sedimentary, metamorphic and plutonic rocks that form the following sequence; a pre-Devonian volcanic arc terrane, Devonian to Permian carbonate, clastic and minor volcanic rocks, late Triassic oceanic basalts, Jurassic intrusions and lesser volcanic and clastic rocks, a late Cretaceous clastic basin and several Tertiary units, most notably a series of hypabyssal intrusions (Muller, 1981).

The Gem Lake area is underlain by the Upper Triassic basalts of the Karmutsen Formation and a small hypabyssal intrusion. The basalts are presumed to be directly related to the initial rifting of the Insular Belt away from a continental margin far south of its present latitude (Muller, 1981). The Karmutsen basalts comprise up to 6000m of K-poor "ocean floor" tholeiite. Carlisle (1974) has divided the formation into 3 members; about 2600m of pillow lava overlain by about 800m of pillow breccia and aquagene tuff capped by about 2900m of massive flows with minor interbedded pillow lava, breccia and sedimentary layers. The formation as a whole is thought to represent a predominantly subaqueous emergent volcanic sequence. The age of the Karmutsen Formation is bracketed by the underlying Landinian Buttle Lake Formation and by Karnian fossils in the upper member of the Karmutsen Formation.

After the Triassic rifting the Insular Belt has undergone a series of compressive deformational events. In the Jurassic there is evidence for shortening during the collision of the Insular Belt with North America. The most clearly expressed structural style is due to northeasterly directed underthrusting of the Pacific Rim and Olympic Terranes in Cretaceous to Tertiary time. This resulted in northeast inclined blocks separated by steep northwest trending reverse faults and northeast trending sinistral strike-slip faults (Muller, 1981). More recent writers have increasingly recognized shallow easterly directed structures(thrust faults and tensional detachement zones) to be of regional importance, particularly in the localization of gold bearing mineralization, eg. Mt. Washington (McDougall, 1987).

The Mt. Washington gold prospect operated by Better Resourses Ltd. is situated within the Karmutsen Formation and Cretaceous sediments of the Comox Formation. It consists of a shallow dipping mineralized fault structure in close spatial association with a Tertiary intrusive complex (McDougall, 1987).

PROPERTY GEOLOGY

General

The property is underlain by basaltic and andesitic flows of the Upper Triassic Karmutsen Formation. During Tertiary time this unit was intruded by a quartz diorite stock, several felsite dykes, and an intrusive breccia. The rock units were then faulted synchronous with several generations of quartz veining.

Lithology and Stratigraphy

General

Figure 3 shows the rock units that occur on the property, their relationships (to the extent to which they are known) and regional correlatives where possible. Each of these units will be discussed below.

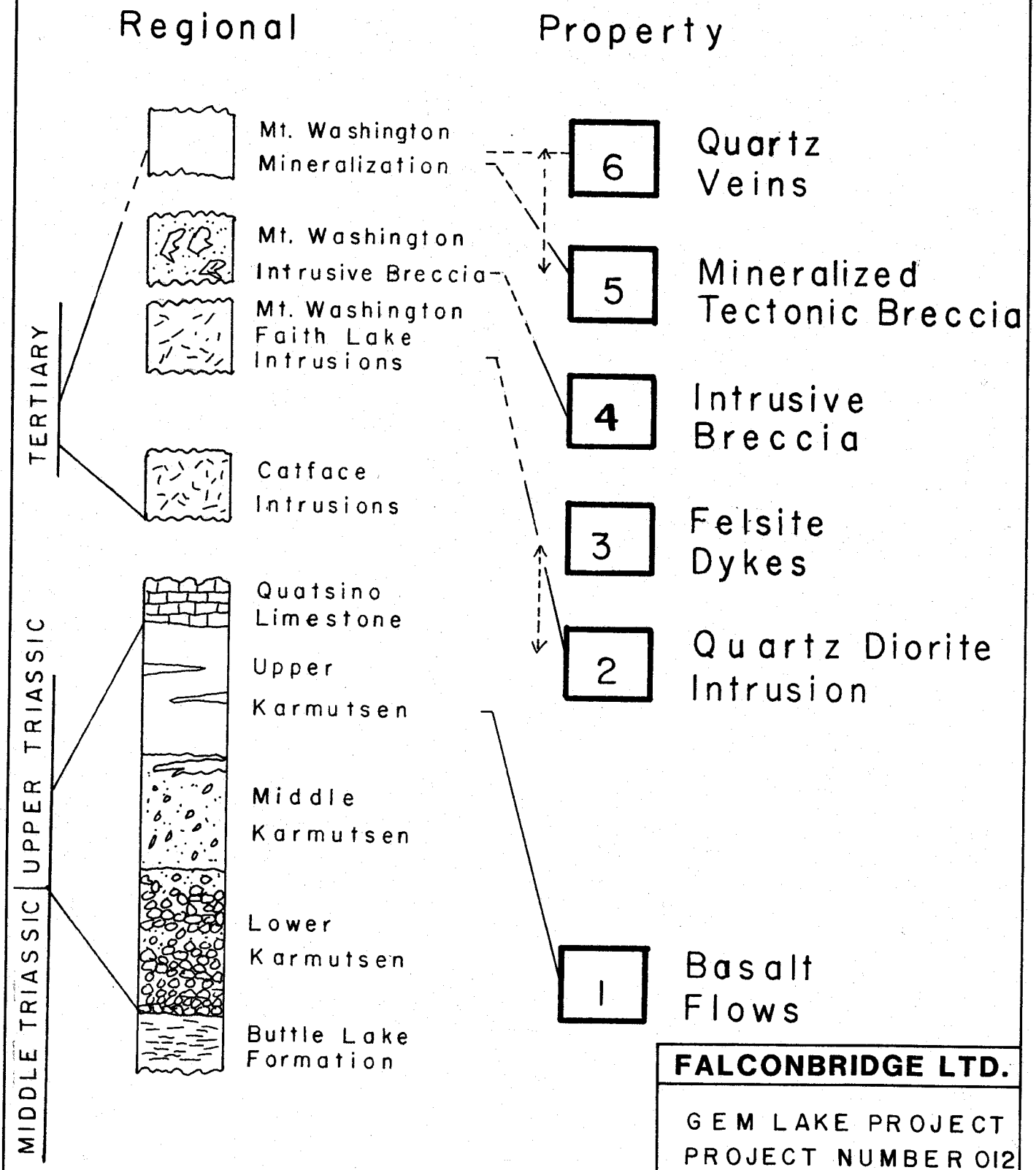
Basalt Flows (unit 1)

This unit is the most widespread of all the units. It underlies about 80% of the property and consists of tholeiitic generally amygdaloidal, often feldspar porphyritic basalts and andesites. Several chemical analyses of these flows are included in APPENDIX C. Grain size varies from fine grained to very fine grained. Rocks lower in the cirque tend to be finer grained and contain a smaller percentage of amygdales than those at higher elevations. Flows are 1-5m thick with sharp interflow contacts. These flows are thought to be flows of the Upper Karmutsen as defined by Carlisle (1974). This unit is cut by diabase sills and dykes such as are common throughout the Karmutsen (P. Wilton pers. com., 1987)

Hornblende Quartz diorite (unit 2)

This unit outcrops as a small stock on the slopes east and southeast of the lake. In addition dykes of this lithology are common on the property. It consists of 5% euhedral hornblende 1-10mm in size in a matrix of equant 1mm sized feldspar and quartz crystals with about

STRATIGRAPHY



FALCONBRIDGE LTD.

GEM LAKE PROJECT
PROJECT NUMBER 012
NTS: 92F/11

WORK BY	DRAWN BY	DATE:

Figure: 3

NCI - 556

about 15% interstitial granophyric material. APPENDIX C contains a chemical analysis of a sample of this lithology. Although no contact relationships were observed this unit is assumed to intrude unit 1. Because of similarities in setting, texture, and mineralogy, this unit is correlated with small stocks at Faith Lake and Mt. Washington. The stocks at Faith Lake, and Mt. Washington, are 39+/-7 and 35+/-6 MY old respectively (Wanless et al, 1967 & 1968).

Felsite Dykes (unit 3)

These occur in the headwalls at the southern end of the cirque. They are 1-5m wide and consist of a very fine grained felsic material with about 1% black material. This dark material is thought to be pyrrhotite after hornblende. APPENDIX C contains a chemical analysis of a sample of this lithology. These dykes cut unit 1 and by analogy with a similar unit at Faith Lake (Beekmann and Fournier 1987) are thought to be younger than unit 2.

Polymict Intrusive Breccia (unit 4)

This unit forms the butresses on the southeastern walls of the cirque. It consists of 30-70% clasts of: volcanic material, quartz diorite, and felsite, in decreasing order of abundance. The percentage of the clasts which make up any one lithology varies widely. The average clast size is 5 cm, however the clasts vary in size from <1cm to >1m. The fragments are angular or rarely subangular. The matrix consists of: 15-40% hornblende, feldspar and quartz as well as small rock fragments set in a very fine groundmass. The feldspar and hornblende are euhedral, and equant; the quartz occurs as subrounded quartz eyes. The groundmass is dark to light gray and magnetic. This unit both grades into and contains clasts of the quartz diorite (unit 2). This observation and the interpretation that the felsite dykes, clasts of which occur in this breccia, are younger than the quartz diorite implies a close temporal relationship between all 3 units. This breccia is very similar to the Washington breccia at Mt. Washington which is also associated with a Tertiary stock.

Mineralized Tectonic Breccia (unit 5)

This unit occurs in the southeastern part of the cirque and is known as the Main Showing. It consists of a tectonic breccia that has been mineralized with chalcopyrite along fractures and in open spaces. The host rock varies and is either unit 1 or unit 4. Neither of these

shows any widespread alteration. This unit will be discussed in detail in a later section.

Quartz Veins (unit 6)

These occur over the entire property. The veins are <1cm to 15cm wide and are of two types: those that contain magnetite and those that contain sulphides (typically chalcopyrite and pyrrhotite). Most veins are clearly dilational. Veins were observed to cut units 1, 2, 4, and 5. The veins and their mineralization will be discussed in detail in a later section.

Structure

The rocks at Gem Lake form a gently northwest dipping homocline cut by steep east/west and north/south striking faults. These faults are young features, which cut both the felsite dyke} and the intrusive breccia. At the main showing southeast of the lake they form a tectonic breccia that is mineralized with chalcopyrite. Faults were observed that contain multiple generations of mineralized quartz veins with the older generations deformed by movement along the fault. The faulting is therefore, at least in part, of the same age as the mineralization. No other structures were observed at Gem Lake.

Mineralization

General

The mineralization at Gem Lake can be divided into 5 types; quartz veins with magnetite, quartz veins with pyrrhotite and chalcopyrite, pods of massive pyrrhotite and minor chalcopyrite, pyrrhotite and chalcopyrite as fracture coatings and disseminations and a tectonic breccia with abundant chalcopyrite filling open spaces. Each of these will be discussed in greater detail below.

Quartz/Magnetite Veins

Dilational quartz veins .1 to 10cm in size with varying amounts of magnetite are common close to the intrusive breccia and occur throughout the property. These veins postdate the intrusive breccia, but their age relative to sulphide mineralization is not known. The

highest gold and silver values obtained were .5 and 8g/ton respectivly.

Disseminated Pyrrhotite and Chalcopyrite

Disseminations, filled amygdales and fracture coatings of chalcopyrite and pyrrhotite are common. The total sulphide content of this style of mineralization is generally below 3% and pyrrhotite is usually the dominant sulphide. This style of mineralization appears to be a replacement of mafic minerals by sulfides. The controls for the mineralization are variable, ie. the contact with the quartz diorite stock, faults, and flow contacts appear to control the mineralization in many instances. In other cases the rock is gossanous and mineralized but the control for the mineralizing fluids is not apparent. Typical gold and silver values for this style of mineralization are .1 and 4g/ton respectivaly. One exposure assayed .56 and 14.3g/ton respectivlly.

Massive Sulphide Pods

Several pods of massive pyrrhotite with up to 5% chalcopyrite where discovered. The contacts of these pods are gradational with the disseminated style of mineralization discussed above. It appears the pods are a stronger expression of the same process of replacment that resulted in the disseminated style of mineralization. The largest of these pods outcrops over an area 2m x 4m in size. In this instance no controls for the mineralization were observed. With one exception gold values for this style of mineralization were below .2g/ton, the exception assayed 1.1g/ton. Silver was generally below 5g/ton and always below 10g/ton.

Quartz/Chalcopyrite Veins

Quartz veins whith 1-20% pyrrhotite and chalcopyrite occur throughout the property. They are dilational medium to course grained veins .5-15cm wide. The quartz is generally comb textured and the sulphides occur in the interstices. The relative amount of pyrrhotite to chalcopyrite varies, but the percentage of chalcopyrite is usually greater than that of pyrrhotite. These veins typically contain .3 and 10g/ton gold and silver respectively. High values were 7.8 and 40g/ton gold and silver.

Mineralized Tectonic Breccia

On the bluffs southeast of Gem Lake,a tectonic breccia mineralized with chalcopyrite is exposed over an area measuring about 15 x 30m (the Main Showing). The tectonic breccia is associated with several parallel, steeply dipping, east west trending faults. The country rocks have been fractured and open spaces were created by rotation of fragments during faulting. The chalcopyrite is both disseminated throughout the tectonic breccia fragments and occupies the open spaces created between these fragments by the faulting. The host rocks are not pervasively altered by the brecciation and mineralization, however in areas of intense shearing fault gouge has been formed. The host rock for most of the mineralization observed was the intrusive breccia (unit 4). However the intrusive breccia is not related to the mineralization (other than in its role as a host rock) which clearly postdates it. Nor is the mineralization restricted to the intrusive breccia, a portion of it is hosted by the basalt flows of unit 1. Four samples of this style mineralization were collected gold and silver values ranged from .64 to 3.0g/ton and from 9.8 to 49g/ton respectively.

GEOCHEMISTRY

There is a strong correlation between copper mineralization and high precious metal values, of the five samples that assayed over 1g/ton gold, four are from chalcopyrite rich mineralization.

Au, Ag, As, Pt, and Pd geochemical results are listed in APPENDIX D. Samples are grouped by mineralization type. APPENDIX C contains the results of the 3, twentyfive element, neutron activation analysis performed on a selection of mineralization types. These were done to determine if the mineralization styles can be characterized by trace element signatures of the five samples that were analysed for platinum and palladium, and the three that underwent the twentyfive element analysis, two samples contain anomalous values: a sample of the quartz/magnetite style mineralization contains 80PBB platinum and 2.5g/ton cerium, and a sample of the chalcopyrite rich tectonic breccia contains 360PBB molybdenum.

Scatter diagrams of gold or silver verses arsenic show no correlation. However a scatter diagram of gold verses silver shows a strong correlation between the two.

REFERENCES

BEEKMANN, J. and FOURNIER, J.D. 1987. Report On The PIM Claim Group, Faith Lake, NTS 92F/11. Unpublished Falconbridge Ltd. report, 16 p.

CARLISE, D. and SUSUKI, T. 1974. Emergent basalt and submergent carbonate-clastic sequences including the Upper Triassic Dilleri and Welleri Zones on Vancouver Island. Can. J. Earth Sci., 11, pp. 254-279

MCDOUGALL, J.J. 1961. Preliminary Report on Gem Lake (MEG Group) Copper Prospect, NTS 92F/11. Unpublished Falconbridge Ltd. report, 11 p.

MCDOUGALL, J.J. 1961. Report on Gem Lake (MEG Group) Copper Prospect NTS 92F/11. Unpublished Falconbridge Ltd. report, 2 p.

MCDOUGALL, J.J. 1963. Summary Report Gem Lake Copper, NTS 92F/11. Unpublished Falconbridge Ltd. report, 6 p.

MULLER, J.E. 1981. Insular and Pacific Belts, in Field Guides to Geology and Mineral Deposits. Calgary 81 Joint Annual Meeting, ed. Thompson, R.I. and Cook, D.G. Geological Association of Canada-Mineral Association of Canada - Canadian Geophysical Union. p.p. 316-323.

SALT, D.J. 1962. Reconnaissance Geophysical Survey, MEG Group, Gem Lake NTS 92/F11. Unpublished Falconbridge Ltd. report, 1 p.

SALT, D.J. 1963. Report on Self Potential Survey MEG Group, Gem Lake, NTS 92/F11. Unpublished Falconbridge Ltd. report, 1 p.

WANLESS, R.K., STEVENS, R.D., LANCHANCE, G.R. and EDMONDS, C.M. 1968. Age determinations and geological studies; K-Ar Isotopic Ages, Report 7. Geol. Surv. Can., Pap. 66-17

WANLESS, R.K., STEVENS, R.D., LANCHANCE, G.R. and EDMONDS, C.M. 1968. Age determinations and geological studies; K-Ar Isotopic Ages, Ages, Report 7. Geol. Surv. Can., Pap. 67-2 part A

STATEMENT OF QUALIFICATIONS

I, Jean-Denis Fournier, an employee of Falconbridge Limited, with offices at 701-1281 West Georgia St. Vancouver B.C., do hereby declare that:

1. I am a geologist, graduate of the University of Alberta, Edmonton, Alberta, in 1987 with a B.Sc. degree in Geology

2. I have practiced my profession as exploration geologist continuously since graduation, in Canada.

3. I am a registered Geologist In Training with the Association of Professional Engineers, Geologists and Geophysicists of Alberta.

4. I am a associate member of the G.A.C.

5. I carried out the work described in the report.

Dated at Vancouver, B.C., this 20 th day of December, 1987.

Jean-Denis Fournier B.Sc.

STATEMENT OF EXPENDITURES

Labour	
J. Beekmann 4 days @ $117/day	$468.00
J. D. Fournier 4 days @ $112/day	$448.00
B. Anderson 3 days @ $95/day	$285.00
	$1,201.00
Room and Board	
11 days @ $30.00/man/day	$330.00
Travel	
Okanagan Helicopters	$5,335.42
Truck and Ferry charges	135.73
	$5,471.15
Analytical Costs	
47 samples @ $13.48/s	$633.45
Orthophoto	
Triathlon Mapping Corp.	$2,150.00
Total Expenditure	$9,785.60

APPENDIX A

WORK PERMIT

Province of British Columbia

Ministry of Environment and Parks
PARKS AND OUTDOOR RECREATION DIVISION

Resource Use Permit

PERMIT NO. 1875

This Park Use Permit (hereinafter called the "Permit") dated for reference the 8 th day of SEPTEMBER, 19 87,

MADE IN PURSUANCE OF THE PARK ACT

Strathcona
Recreation Area

BETWEEN HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA, represented by the Minister of Environment and Parks (the "Province")

AND Falconbridge Ltd.

(the "Permittee")

WITNESSES THAT WHEREAS the Province has agreed to grant to the Permittee a permit over the land and improvements (hereinafter referred to as the "Permit Area") described in the schedule below entitled **Permit Description Schedule;**

NOW, THEREFORE, in consideration of the money to be paid by the Permittee, and the the terms, conditions and provisions of this Permit, the parties agree as follows:

ARTICLE I—GRANT OF PERMIT

1.01 The Province, on the terms, conditions and provisions set forth herein, hereby grants to the Permittee permission to enter Strathcona Recreation Area (the "Park") and to enter and use the Permit Area for the purposes described in the schedule below entitled **Management Plan Schedule** (the "Management Plan").

ARTICLE II—DURATION

2.01 The duration of this Permit and the permission granted hereby shall be for a term of Two (2) Months commencing on September 1, 1987 (the "Commencement Date") and ending on October 31, 1987, unless cancelled, terminated or renewed in accordance with the terms and provisions hereof.

ARTICLE III—FINANCIAL

3.01 The Permittee shall pay to the Province:

(a) the "Permit Fee"; and,

(b) the "Rent"

as defined and prescribed in the schedule below entitled **Financial Schedule.**

3.02 Notwithstanding the Financial Schedule the Province may, by notice to the Permittee 30 days prior to each anniversary of the Commencement Date, increase the Permit Fee and the Rent by an amount solely determined by the Province at its discretion, and the Permittee shall pay the increased amount.

3.03 The Permittee shall pay interest to the Province on the money payable by the Permittee and owing to the Province hereunder, at the rate of interest prescribed by the *Financial Administration Act* in respect of money owing to the Province, said interest to be calculated from the date that the money becomes payable to the Province.

ARTICLE IV—INDEMNITY AND INSURANCE

4.01 The Permittee shall indemnify and save harmless the Province from and against any and all losses, claims, damages, actions, causes of action, costs, fees and expenses that the Province may sustain, incur, suffer or be put to by reason of any act or omission of the Permittee or of any servant, employee, officer, director, shareholder or client of the Permittee.

4.02 The Permittee shall, during the duration of this Permit, provide, maintain and pay for insurance in such form and amounts and with such deductibles as prescribed in the schedule below entitled **Insurance Schedule.**

4.03 Notwithstanding the Insurance Schedule the Province may, by notice to the Permittee, require the Permittee to change the form, amount, deductible or other term of an insurance policy required hereunder, and the Permittee shall change the insurance policy accordingly.

4.04 The Permittee shall deliver to the Province, upon demand, copies of insurance policies required to be maintained by the Permittee and evidence of payment of the premiums for the aforesaid insurance policies.

ARTICLE V—TRANSFER

5.01 The Permittee shall not assign, transfer, sublet, mortgage or grant any of the rights or privileges granted by this Permit without the prior written consent of, and on the terms and conditions determined by, the Province.

ARTICLE VI—COVENANTS OF THE PERMITTEE

6.01 The Permittee covenants with the Province:

(a) to pay the Permit Fee and other money payable under this Permit when due at the address of the Province noted below or at such place as the Province may specify from time to time;

(b) to pay and discharge when due all taxes, levies, charges and assessments now or hereafter assessed, levied or charged which relate to operations of the Permittee and the Permit Area;

(c) to observe, abide by and comply with all laws, bylaws, orders, directions, ordinances and regulations of any competent governmental authority in any way affecting the Permit Area, the Park or the use and occupation thereof;

(d) to advise its clients, servants, employees and agents of the laws and regulations respecting provincial parks and recreation areas and the conditions of this Permit respecting conduct in the Permit Area.

(e) to keep the Permit Area in a safe, clean and sanitary condition to the satisfaction of the Province and to make safe, clean and sanitary any portion of the Permit Area that the Province may direct by notice in writing to the Permittee;

(f) to report to the Province, as soon as practicable, in writing and in detail any accidents requiring medical attention which occur in the Permit Area;

(g) to comply with all orders and directions made verbally or in writing by a park officer, as defined in the *Park Act*, relating to the Park, the Permit or the Permit Area;

(h) not to construct, erect, place, repair, maintain or alter any building, fixture, equipment, structure or improvement of any kind whatsoever on the Permit Area without the prior written consent of the Province;

(i) to take all reasonable precautions to prevent and suppress fires in the Permit Area;

(j) not to misrepresent in any way by advertisement, sign, circular, pamphlet, letterhead or other advertising medium, the status of its rights under this Permit and not to post or distribute advertising matter in any way connected with this Permit without the consent of the Province;

(k) not to interfere with free public access through, across and upon the Permit Area, unless otherwise specified in the Management Plan;

(l) not to interfere or disrupt the activities and operations of other permittees or users in the Park;

(m) to use and occupy the Permit Area only in accordance with the provisions of this Permit;

(n) not to commit or allow any wilful or voluntary waste, damage or destruction in or upon the Permit Area;

(o) to pay for or repair, as determined by the Province, any damage caused to the property of the Province by the Permittee, its servants, agents, licensees, or clients;

(p) upon the expiration, cancellation or termination of this Permit:

(i) to peaceably quit and deliver up possession of the Permit Area and the improvements thereon to the Province, in a safe, clean and sanitary condition and in a state of good repair, and

(ii) to deliver possession of all equipment, furnishings, fixtures and chattels owned by the Province in a state of good repair and working order.

and to the extent necessary, this covenant shall survive the expiration, cancellation or termination of this Permit;

(q) to comply with all of the provisions of the Management Plan; and

(r) to establish, maintain and, upon request, provide to the Province books of account, balance sheets and income statements as prescribed in the Financial Schedule.

ARTICLE VII—RIGHTS OF THE PROVINCE

7.01 The Province retains all rights in respect of the Park and Permit Area which are not expressly granted to the Permittee hereby, including, without limitation:

(a) the right at all times for its authorized representatives, servants and agents to have unimpeded access over and along all portions of the Permit Area;

(b) the right at all times to construct, repair, alter and maintain buildings, equipment, structures and improvements upon the Permit Area; and

(c) the right to grant further rights in respect of the Park and Permit Area, provided that such rights shall not unreasonably impede, obstruct or compete with the rights of the Permittee granted herein.

ARTICLE VIII—NOTICE

8.01 Where service of a notice or a document is required under this Permit the notice or document shall be in writing and shall be deemed to have been served if delivered, or if sent by prepaid registered mail addressed, as follows:

(a) to the Province:

Strathcona District Manager
Rathtrevor Beach Park
Box 1479
PARKSVILLE, B.C.
V0R 2S0
(604) 248-3931

the duly authorized representative having responsibility for management of all matters concerning the Park, or

Regional Director
South Coast Region
1610 Indian River Drive
NORTH VANCOUVER, B.C.
V7G 1L3
(604) 929-1291

the duly authorized representative having responsibility for the execution, adjudication and administration of this Permit; and

(b) to the Permittee:

Falconbridge Ltd.
#701 - 1281 West Georgia Street
VANCOUVER, B.C.
V6E 3J7

and if the notice or document is mailed it shall be deemed to be served on the eighth day after its deposit with Canada Post.

8.02 Either party may, by notice in writing to the other, specify another address for service of notices and documents under this Permit and where another address is specified under this section, notices and documents shall be mailed to that address in accordance with this Article.

8.03 Notwithstanding section 8.01, any written notice or document to be served or given by the Province to the Permittee under this Permit shall be effectively given or served by posting the same in a conspicuous place on the Permit Area.

ARTICLE IX—RENEWAL

9.01 The Province may, at its discretion, offer a further permit to the Permittee by notice in writing on the terms and conditions, and for a period, specified in the notice where:

(a) the term of this Permit is for one year or more; and

(a) the Permittee is not in default hereunder.

9.02 The Permittee shall have a period of thirty (30) days from the date of receipt of the notice referred to in Section 9.01 to accept a further permit by endorsing his acceptance on the notice and delivering it to the Province.

ARTICLE X—PERFORMANCE GUARANTEE

10.01 Upon the request of the Province, the Permittee shall deliver to the Province a performance guarantee as security for the performance by the Permittee of all the terms and conditions of this Permit (herein called the "Performance Guarantee").

10.02 The terms, conditions and provisions of the Performance Guarantee shall be as prescribed in the schedule below entitled **Performance Guarantee Schedule.**

ARTICLE XI—MISCELLANEOUS

11.01 This Permit may be inspected by the public at such times and at such places as the Province may determine.

11.02 Notations of change will be recorded on the schedule below entitled **Endorsements Schedule.**

11.03 Time is of the essence in this agreement.

11.04 No term, condition, covenant or other provision herein shall be considered to have been waived by the Province unless such waiver is expressed in writing by the Province.

11.05 During the term of this Permit, the Permittee shall be an independent contractor and not the servant, agent, employee or partner of the Province.

11.06 All employees hired by the Permittee shall remain at all times the employees of the Permittee and not of the Province and the Permittee shall be solely responsible for the arrangement of reliefs and substitutions, pay, supervision, discipline, unemployment insurance, worker's compensation, leave and all other matters arising out of the relationship of employer and employee.

11.07 The Province shall not be liable for any loss, damage, cost or expense resulting from the disruption of the Permittee's property or the operation contemplated by this Permit which result from strikes, flooding or other acts of God, vandalism, or any other interference to the Permittee's operation or property.

ARTICLE XII—CANCELLATION

12.01 In the event that

(a) the Permittee defaults in the payment of the Permit Fee or other money payable under this Permit, and the default continues for 7 days after the giving of written notice of the default by the Province to the Permittee;

(b) the Permittee fails to perform or observe any of the terms or conditions of this Permit, other than the payment of money hereunder, and the failure is not remedied within a period specified by the Province;

(c) the Permit Area is damaged or destroyed by any cause whatsoever;

(d) the Park is closed by the Province;

(e) the Permittee files a petition in bankruptcy, is adjudged bankrupt, is petitioned into bankruptcy, makes an assignment for the benefit of his creditors, becomes insolvent or takes the benefit or protection of any statute for bankrupt or insolvent debtors;

(f) any of the Permittee's assets are seized in execution from the Permit Area;

(g) the Permittee performs any act which, in the opinion of the Province, affects the good standing or reputation of the Park, or adversely affects any other permit holder within the Park

the Province may cancel this Permit immediately by written notice to the Permittee.

12.02 In the event that the Permittee and the Province mutually agree in writing to terminate this Permit, it shall be deemed to be terminated and, except as otherwise provided in this Permit, the parties shall be released and discharged from and of their obligations hereunder.

12.03 The obligation of the Permittee

(a) to pay the Permit Fee and other money payable under this Permit; and

(b) to comply with sections 4.01, 6.01(e), 6.01(j), 6.01(o), 6.01(p) and 6.01(r)

shall survive the expiration, cancellation or termination of this Permit.

12.04 The Permittee shall not be entitled to any compensation from the Province, whether for damages or otherwise, in respect of a cancellation or termination of this Permit.

ARTICLE XIII—INTERPRETATION

13.01 In this Permit, unless the context otherwise requires, the singular includes the plural and the masculine includes the feminine, a corporation and body politic.

13.02 The captions and headings contained in this Permit are for convenience only and are not to be construed as defining or in any way limiting the scope or intent of the provisions hereof.

13.03 Where in this Permit there is a reference to an enactment of the Province of British Columbia or of Canada, that reference shall include a reference to any subsequent enactment of like effect, and unless the context otherwise requires, all statutes referred to herein are enactments of the Province of British Columbia.

13.04 If any section of this Permit or any part of a section is found to be illegal or unenforceable, that part or section, as the case may be, shall be considered separate and severable and the remaining parts or sections, as the case may be, shall not be affected thereby and shall be enforceable to the fullest extent permitted by law.

IN WITNESS WHEREOF, the parties hereto have executed this Permit as of the day and year first above written.

SIGNED, SEALED AND DELIVERED by the Minister of Environment and Parks or his duly authorized representative on behalf of Her Majesty the Queen in Right of the Province of British Columbia in the presence of:

K. Maier
Witness Signature

Duly Authorized Representative

Sept. 8/87.

SIGNED, SEALED AND DELIVERED by the Permittee in the presence of

Witness signature

Richard Moore
Signature of Permittee

August 28, 1987
Date

Signature of Permittee

the Common Seal of _____

was hereunto affixed in the presence of:

Authorized Signatory

C/S

Authorized Signatory

PERMIT DESCRIPTION SCHEDULE

See Attached Sketch

MANAGEMENT PLAN SCHEDULE

As Attached

FINANCIAL SCHEDULE

Permit Fee: $60.00 payable in advance

INSURANCE SCHEDULE

As Attached

PERFORMANCE GUARANTEE SCHEDULE

As Attached

Letter of Credit No. 2D/116/998

ENDORSEMENTS SCHEDULE

As Attached

Gem Lake Property: Notice of Work dated May 8, 1987

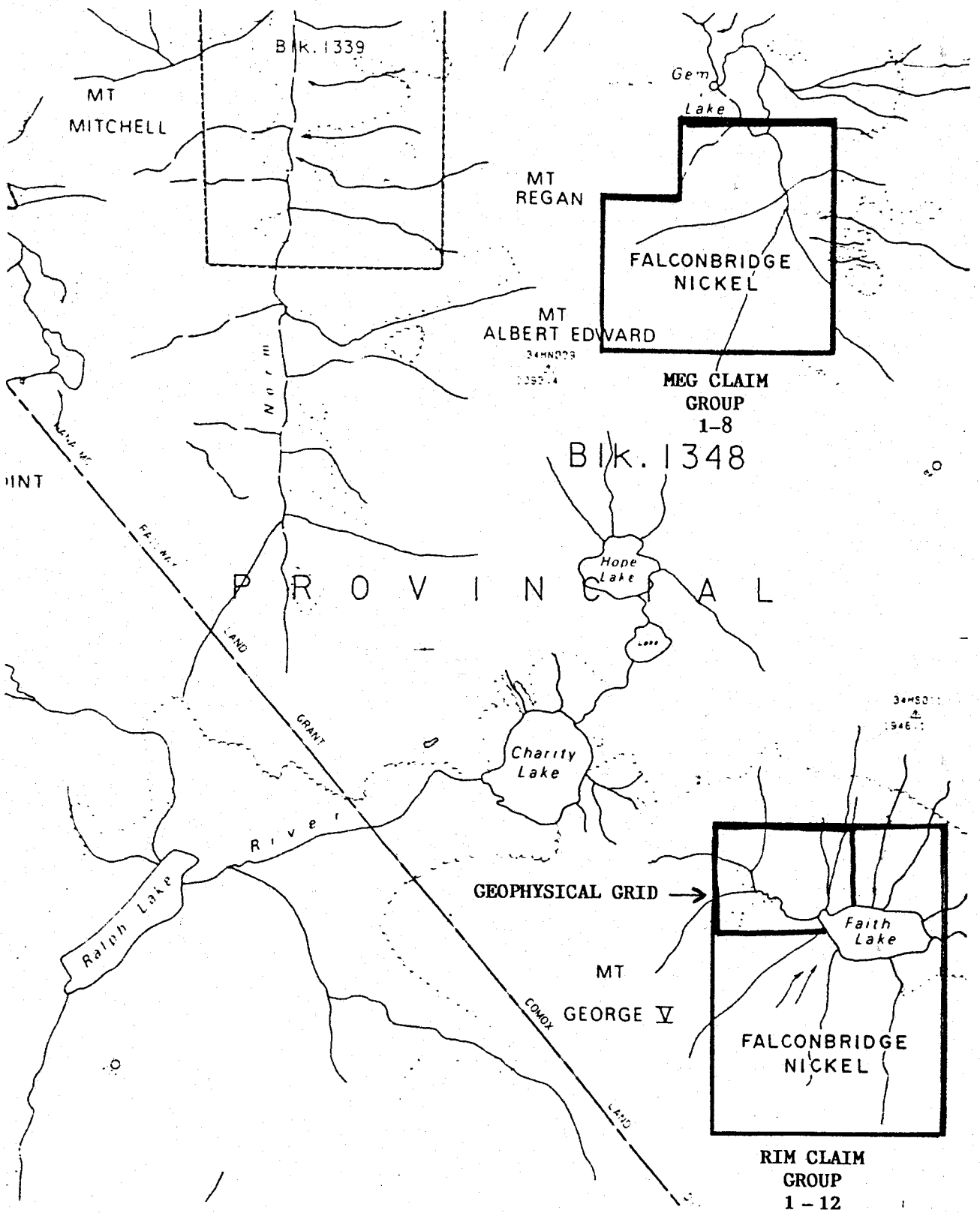
Faith Lake Property: Notice of Work dated May 7, 1987

Province of British Columbia

Ministry of Environment and Parks
PARKS AND OUTDOOR RECREATION DIVISION

Permit Description Schedule

PERMIT No. 1875



C10/N/1

Province of British Columbia
Ministry of Environment and Parks
PARKS AND OUTDOOR RECREATION DIVISION

Management Plan Schedule

PERMIT No. 1875

PURPOSE:

To allow mineral exploration on Mineral Titles Meg and Rim. The work shall be limited to:

1. Geophysical survey
2. Geochemical survey
3. Fly camp
4. Clean out existing pits

SPECIAL CONDITIONS:

1. Prior to initiating the assessment program, the Permittee shall meet on site with the District Manager and discuss the details of the program, including but not limiting start dates, helicopter flights, campsites, flagging, clearing, etc., the cost of this meeting as well as subsequent meetings to discuss amendments to the work plan shall be the responsibility of the Permittee.

2. The Permittee shall designate a representative to be responsible for liaison with the District Manager.

3. The Permittee is responsible for all aspects of public safety in his Permit Area.

4. The District Manager may designate helicopter access routes, pick up points and landing sites.

   a) There shall be no clearing of landing pads except as authorized by the District Manager.

   b) The District Manager may designate restricted access areas.

5. The Permittee shall not use, nor permit to be brought into the Park, any explosives.

6. All garbage and debris resulting from the granting of this Permit shall be removed from the Park by the Permittee.

7. Grid System

   a) There shall be no brushing or clearing except as approved by the District Manager.

   b) All temporary marking shall be done with blue biodegradable flagging tape (Frederick Goertz Ltd., Vancouver). No blazing of trees is allowed except under conditions approved by the District Manager. No tape or blazes are to be used within ten metres of a trail.

   c) All slash and debris shall be disposed of in a manner satisfactory to the District Manager and may include requirement to cut and leave "flat lying" and/or cut and scattered.

d) There shall be no brushing within the ten metres of existing hiking trails.

8. Upon expiry and non-renewal, the Permittee will have ninety (90) days to remove or dispose of improvements from the Permit Area and restore the area as specified by the District Manager.

9. Camp

No camp except as approved by the District Manager shall be established in the Permit Area.

10. The Permittee shall provide a report detailing his activities within sixty (60) days upon completion of the program.

11. If, during periods of extremely dry weather, the Province considers the operation to constitute an unacceptable fire hazard to the Park, the Province may, after consultation with the Permittee, order the operation suspended.

12. No new construction is permitted except as approved by the District Manager.

13. The standards of all work allowed under this Permit must be to the standards found in "Guidelines for Mineral Exploration (1982)" unless otherwise set in this Permit or approved by the District Manager.

14. The District Manager will indicate clean-up requirements on work previously completed, including removal of any unnecessary equipment or debris. The Permittee shall clean up the area to the satisfaction of the District Manager.

Province of British Columbia

Ministry of Environment and Parks
PARKS AND OUTDOOR RECREATION DIVISION

Insurance Schedule

PERMIT No. 1875

Insurance to be provided, maintained and paid for by the Permittee shall include:

— Comprehensive General Liability Insurance protecting the Province, the Permittee and their respective servants, agents and employees (without any rights of cross-claim or subrogation against the Province) against claims for personal injury, death, property damage, products liability or third party or public liability, arising from the use of the Permit Area by the Permittee or his servants, agents, clients or employees, up to an amount not less than One Million DOLLARS ($ 1,000,000.00) inclusive of any one occurrence.

— The Permittee shall ensure that also named insured is "Her Majesty the Queen in right of the Province of British Columbia as represented by the Minister of Environment and Parks".

— The Permittee shall ensure that the policy carries a cross-liability clause.

— The Permittee shall ensure that the policy gives 30 days notice of cancellation to the Province.

Province of British Columbia

Ministry of Environment and Parks
PARKS AND OUTDOOR RECREATION DIVISION

Performance Guarantee Schedule

PERMIT No. 1875

(1) The Performance Guarantee to be provided by the Permittee shall be in a form satisfactory to the Province and in the sum of $ 5,000.00.

(2) The Performance Guarantee may be claimed and drawn down by the Province,

(a) to pay the Permit Fee, Rent and any other money payable by the Permittee and owing to the Province hereunder;

(b) to pay any costs incurred by the Province as a result of the failure of the Permittee to observe or perform a term, covenant, or condition of this Permit.

(3) Should the Performance Guarantee at any time fall below $ 5,000.00, the Permittee shall forthwith deliver to the Province sufficient money to replenish the Performance Guarantee to the amount stipulated in Section 1 of this schedule.

(4) On the expiration, termination or cancellation of this Permit, the Province shall return the remainder of the Performance Guarantee to the Permittee, less all amounts claimed by the Province under Section 2 of this schedule.

APPENDIX B

AU, AG, AND AS GEOCHEMICAL RESULTS

GEM ROCK SAMPLES ANALYZED BY BONDAR-CLEGG

TYPE OF ANALYSIS	FA / AA	FireAssay	AA	FireAssay	FireAssay
ELEMENT	AU	AU	AG	AG	AS
UNITS	PPB	OPT	PPM	OPT	PCT
AF05319	940		17.0		<0.01
AF05320	3000		18.0		<0.01
AF05321	640		9.8		<0.01
AF05322	1200		24.0		<0.01
AF05324	7800		6.0		<0.01
AF05325	320		7.1		<0.01
AF05326	320		3.7		<0.01
AF05328	3300		>50.0	1.43	<0.01
AF05329	480		7.6		<0.01
AF05330	150		4.8		<0.01
AF05362	65		1.4		<0.01
AF05363	1300		29.0		0.01
AF05364		0.036		0.32	0.30
AF05365		0.002		0.07	0.06
AF05366		0.002		0.05	0.01
AF05368		0.002		0.07	<0.01
AF05369		<0.002		0.15	<0.01
AF05370		<0.002		0.05	<0.01
AF05371	120		3.0		<0.01
AF05372	560		8.9		<0.01
AF05374	300		41.0		<0.01
AF05375		0.008		0.16	<0.01
AF05376		0.008		0.71	<0.01
AF05377	15		1.4		<0.01
AF05378	<5		0.6		<0.01
AF05379		0.002		0.11	<0.01
AF05380		0.002		0.02	<0.01
AF05382	5		0.5		<0.01
AF05383	70		1.9		<0.01
AF05384		0.018		0.46	<0.01
AF05385		0.002		0.19	<0.01
AF05386		0.004		0.10	<0.01
AF05387		<0.002		0.04	<0.01
AF05388	95		5.1		<0.01
AF05389	20		0.9		<0.01
AF05390	130		4.6		<0.01
AF05391	110		3.1		<0.01
AF05392		0.002		0.21	0.03
AF05393		0.006		0.47	0.58
AF05394		0.026		0.13	0.14
AF05395		0.056		0.53	<0.01

APPENDIX B

GEM LAKE GEOCHEMISTRY

SAMPLE #	AU(PPB)	AG(PPM)	AS(PPM)	PD(PPB)	PT(PPB)
MINERALIZED TECTONIC BRECCIA					
AE05319	940.00	17.00	<100.00		
AE05320	3000.00	18.00	12.00	20.00	15.00
AE05321	640.00	9.80	<100.00		
AE05322	1200.00	24.00	<100.00		
AE05328(float)	3300.00	49.00	<100.00		
MAGNETITE/QUARTZ VEIN MINERALIZATION					
AE05329	480.00	7.60	<100.00	15.00	15.00
AE05362	90.00	<5.00	20.00	80.00	<15.00
DISSEMINATED STYLE OF MINERALIZATION					
AE05377	15.00	1.40	<100.00		
AE05378	<5.00	0.60	<100.00		
AE05380	68.60	0.70	8.00	10.00	<15.00
AE05382	5.00	0.50	<100.00		
AE05383	70.00	1.90	<100.00		
AE05384	617.10	15.80	<100.00		
AE05387	<68.60	1.40	<100.00		
AE05388	95.00	5.10	<100.00		
AE05389	20.00	0.90	<100.00		
AE05390	130.00	4.60	<100.00		
MASSIVE PYRRHOTITE STYLE MINERALIZATION					
AE05314(float)	1028.50	17.50	<100.00		
AE05330(float)	150.00	4.80	<100.00		
AE05364(float)	1234.30	11.00	3000.00	6.00	20.00
AE05365(float)	68.60	2.40	600.00		
AE05366(float)	68.60	1.70	100.00		
AE05369(float)	<68.60	5.10	<100.00		
AE05370(float)	<68.60	1.70	<100.00		
AE05379	68.60	3.80	<100.00	<2.00	<15.00
AE05385	68.60	6.50	<100.00		
AE05386	137.10	3.40	<100.00		
AE05392	68.60	7.20	300.00		

APPENDIX B

GEM LAKE GEOCHEMISTRY

SAMPLE #	AU(PPB)	AG(PPM)	AS(PPM)	PD(PPB)	PT(PPB)
AE05393	205.70	16.10	5800.00		
		CPY/QUARTZ VEIN MINERALIZATION			
AE05324	7800.00	6.00	<100.00		
AE05325	320.00	7.10	<100.00		
AE05326	320.00	3.70	<100.00		
AE05363	1300.00	29.00	100.00		
AE05368	68.60	2.40	<100.00		
AE05371	120.00	3.00	<100.00		
AE05372	560.00	8.90	<100.00		
AE05374	300.00	41.00	<100.00		
AE05375	274.30	5.50	<100.00		
AE05376	274.30	24.30	<100.00		
AE05391	110.00	3.10	<100.00		
AE05394	891.40	4.50	1400.00		
AE05395	1920.00	18.20	<100.00		

APPENDIX C

LITHOGEOCHEMICAL RESULTS

==== F A L C O N B R I D G E L T D =====
=== EXPLORATION DIVISION ===

REPORT #2000

SAMPLE ID # AF05323 WHOLE ROCK GEOCHEMICAL ANALYSIS

LAB REPORT # 29779 FIELD NUMBER : 87011JB080 PROJECT # 1011
TOWNSHIP : LOT : 0 CONCESSION : PROVINCE : BRITISH COLUMBIA
NTS : 92F11 PROJECT : GEM LAKE
UTM ZONE : 10 GRID COORDINATES : E : 326430.0 N : 5506140.0 EL : 0.0
SAMPLE TYPE : GRAB SAMPLE

FIELD NAME : VOLCANIC,MAFIC ,FINE,FELDSPAR PORPHYRITIC,AMYGDALOIDAL OR VESICULAR.
FINAL NAME :
ALTERATION : UNKNOWN.
MINERALIZATION : DISSEMINATED AND BLEBS,<1% ,PYRRHOTITE.
FORMATION :

SAMPLED BY : J BEEKMANN DATE : 30-SEP-87 ANALYTICAL
ANALYZED BY : XRAL DATE : 23-OCT-87 TECHNIQUE : X-RAY FLUORESCENCE

	WT %	NORMALIZED ANHYDROUS WT %	NORMALIZED ANHYDROUS CATION %
SIO2	54.20	55.01	51.56
AL203	15.50	15.73	17.38
FE203	10.50	4.03	2.84
FEO	0.00	5.96	4.68
CAO	8.11	8.23	8.27
MGO	3.45	3.50	4.89
NA2O	4.34	4.40	8.00
K2O	0.26	0.26	0.32
TIO2	2.47	2.51	1.77
P2O5	0.23	0.23	0.19
MNO	0.11	0.11	0.09
S	0.00	0.00	0.00
NIO	0.00	0.00	0.00
CR2O3	0.02	0.02	0.02
CO2	0.00	0.00	0.00
H2O+	0.00	0.00	0.00
H2O-	0.00	0.00	0.00
LOI	1.31	0.00	0.00
TOTAL	98.54	100.00	100.00

NORMS	
Q	7.65
C	0.00
OR	1.58
AB	40.02
AN	22.65
LC	0.00
NE	0.00
KP	0.00
AC	0.00
DI	10.38
HE	3.33
EN	4.59
FS	1.47
FO	0.00
FA	0.00
WO	0.00
LN	0.00
MT	4.26
IL	3.53
CR	0.02
HM	0.00
AP	0.49
PO	0.00
NS	0.00
KS	0.00
RU	0.00
AG	0.00
OL	0.00
OPX	6.06
CPX	13.71
AB*	40.02

CLASSIFICATIONS AND INDICES

NA2O+K2O 4.67 SIO2 55.01 SUBALKALINE

OL* 8.46 NE* 44.68 Q* 46.85 SUBALKALINE

CPX 69.34 OL 0.00 OPX 30.66 ALKALINE

A 26.29 F 53.99 M 19.72 THOLEITIC

AL203 15.73 NORM PLAG 36.14 CALC-ALKALINE

AN 35.25 AB* 62.29 OR 2.46 K-POOR SERIES

CI 27.57 NORM PLAG 36.14 ANDESITE

JENSEN THOLEIITIC ANDESITE
AL 54.92 FE 29.62 MG 15.46

COLOR INDEX : 27.57
HASHIMOTO INDEX : 22.96

TRACE ELEMENTS (P.P.M.) AU,RE,PT,PD,IR,OS,RH,RU,HG (P.P.B.)

RB -10.00:SR 93.00:Y -10.00:ZR 141.00:NB 43.00:BA 88.00:

COMMENTS :

==== F A L C O N B R I D G E L T D =====
=== EXPLORATION DIVISION ===

REPORT #2000

SAMPLE ID # AF05327 WHOLE ROCK GEOCHEMICAL ANALYSIS

LAB REPORT # 29779 FIELD NUMBER : 87011JB087 PROJECT # 1011
TOWNSHIP : LOT : 0 CONCESSION : PROVINCE : BRITISH COLUMBIA
NTS : 92F11 PROJECT : GEM LAKE
UTM ZONE : 10 GRID COORDINATES : E : 326670.0 N : 5506120.0 EL : 0.0
SAMPLE TYPE : GRAB SAMPLE

FIELD NAME : VOLCANIC,MAFIC ,FINE.
FINAL NAME :
ALTERATION : UNKNOWN.
MINERALIZATION : DISSEMINATED AND BLEBS,<1% ,PYRRHOTITE.
FORMATION :

SAMPLED BY : J BEEKMANN DATE : 01-OCT-87 ANALYTICAL
ANALYZED BY : XRAL DATE : 23-OCT-87 TECHNIQUE : X-RAY FLUORESCENCE

	WT %	NORMALIZED ANHYDROUS WT %	NORMALIZED ANHYDROUS CATION %		NORMS
SIO2	47.40	48.77	46.76	Q	1.91
AL2O3	13.60	13.99	15.82	C	0.00
FE2O3	17.70	3.08	2.22	OR	1.01
FEO	0.00	13.62	10.92	AB	16.93
CAO	11.10	11.42	11.73	AN	30.57
MGO	5.20	5.35	7.65	LC	0.00
NA2O	1.77	1.82	3.39	NE	0.00
K2O	0.16	0.16	0.20	KP	0.00
TIO2	1.49	1.53	1.11	AC	0.00
P2O5	0.13	0.13	0.11	DI	10.13
MNO	0.10	0.10	0.08	HE	11.63
S	0.00	0.00	0.00	EN	10.23
NIO	0.00	0.00	0.00	FS	11.75
CR2O3	0.02	0.02	0.02	FO	0.00
CO2	0.00	0.00	0.00	FA	0.00
H2O+	0.00	0.00	0.00	WO	0.00
H2O-	0.00	0.00	0.00	LN	0.00
LOI	1.77	0.00	0.00	MT	3.33
				IL	2.21
TOTAL	97.20	100.00	100.00	CR	0.02
				HM	0.00
				AP	0.29
				PO	0.00
				NS	0.00
				KS	0.00
				RU	0.00
				AG	0.00
				OL	0.00
				OPX	21.98
				CPX	21.75
				AB*	16.93

CLASSIFICATIONS AND INDICES

NA2O+K2O 1.99 SIO2 48.77 SUBALKALINE

OL* 40.39 NE* 24.89 Q* 34.73 SUBALKALINE

CPX 49.75 OL 0.00 OPX 50.25 SUBALKALINE

A 8.37 F 69.08 M 22.55 THOLEITIC

AL2O3 13.99 NORM PLAG 64.36 THOLEITIC

AN 63.02 AB* 34.90 OR 2.08 AVERAGE SERIES

CI 49.27 NORM PLAG 64.36 BASALT

JENSEN HIGH IRON THOLEIITIC BASALT
AL 41.85 FE 37.92 MG 20.23

COLOR INDEX : 49.27
HASHIMOTO INDEX : 29.40

TRACE ELEMENTS (P.P.M.) AU,RE,PT,PD,IR,OS,RH,RU,HG (P.P.B.)

RB -10.00:SR 53.00:Y -10.00:ZR 55.00:NB -10.00:BA 36.00:

COMMENTS :

==== F A L C O N B R I D G E L T D =====
=== EXPLORATION DIVISION ===

REPORT #2000

SAMPLE ID # AF05373 WHOLE ROCK GEOCHEMICAL ANALYSIS

LAB REPORT # 29779 FIELD NUMBER : 87011JD003D PROJECT # 1011
TOWNSHIP : LOT : 0 CONCESSION : PROVINCE : BRITISH COLUMBIA
NTS : 092F11 PROJECT : GEM LAKE
UTM ZONE : 10 GRID COORDINATES : E : 325720.0 N : 5506135.0 EL : 0.0
SAMPLE TYPE : GRAB SAMPLE

FIELD NAME : PLUTONIC,FELSIC OR LEUCOCRATIC ,FINE.
FINAL NAME :
ALTERATION :
MINERALIZATION : NIL.
FORMATION :

SAMPLED BY : JD FOURNIER DATE : 30-SEP-87
ANALYZED BY : XRAL DATE : 23-OCT-87
ANALYTICAL TECHNIQUE : X-RAY FLUORESCENCE

	WT %	NORMALIZED ANHYDROUS WT %	NORMALIZED ANHYDROUS CATION %
SIO2	62.50	63.44	58.77
AL203	17.70	17.97	19.62
FE203	3.66	1.94	1.35
FEO	0.00	1.60	1.24
CAO	7.73	7.85	7.79
MGO	2.21	2.24	3.10
NA2O	4.11	4.17	7.49
K2O	0.15	0.15	0.18
TIO2	0.41	0.42	0.29
P2O5	0.16	0.16	0.13
MNO	0.06	0.06	0.05
S	0.00	0.00	0.00
NIO	0.00	0.00	0.00
CR2O3	0.00	0.50	0.50
CO2	0.00	0.00	0.00
H2O+	0.00	0.00	0.00
H2O-	0.00	0.00	0.00
LOI	0.77	0.00	0.00
TOTAL	98.50	99.00	99.00

NORMS	
Q	18.29
C	0.00
OR	0.90
AB	37.46
AN	29.86
LC	0.00
NE	0.00
KP	0.00
AC	0.00
DI	5.07
HE	1.34
EN	3.66
FS	0.97
FO	0.00
FA	0.00
WO	0.00
LN	0.00
MT	2.03
IL	0.58
CR	0.75
HM	0.00
AP	0.34
PO	0.00
NS	0.00
KS	0.00
RU	0.00
AG	0.00
OL	0.00
OPX	4.63
CPX	6.41
AB*	37.46

CLASSIFICATIONS AND INDICES

NA2O+K2O 4.32 SIO2 63.44 SUBALKALINE

OL* 5.75 NE* 37.23 Q* 57.02 SUBALKALINE

CPX 58.08 OL 0.00 OPX 41.92 ALKALINE

A 43.63 F 33.73 M 22.64 THOLEIIIC

AL203 17.97 NORM PLAG 44.36 CALC-ALKALINE

AN 43.77 AB* 54.91 OR 1.32 K-POOR SERIES

CI 13.65 NORM PLAG 44.36 ANDESITE

JENSEN CALC-ALKALINE DACITE
AL 76.51 FE 11.42 MG 12.08

COLOR INDEX : 13.65
HASHIMOTO INDEX : 16.62

TRACE ELEMENTS (P.P.M.) AU,RE,PT,PD,IR,OS,RH,RU,HG (P.P.B.)

RB 21.00:SR 782.00:Y -10.00:ZR 44.00:NB 13.00:BA 89.00:

COMMENTS : $PV210/85 - DYKE.

==== F A L C O N B R I D G E L T D =====
=== EXPLORATION DIVISION ===

REPORT #2000
PRINTED 28-OCT-87
10:12:19

SAMPLE ID # AF05381 WHOLE ROCK GEOCHEMICAL ANALYSIS

LAB REPORT # 29779 FIELD NUMBER : 87011JD006C PROJECT # 1011
TOWNSHIP : LOT : 0 CONCESSION : PROVINCE : BRITISH COLUMBIA
NTS : 092F11 PROJECT : GEM LAKE
UTM ZONE : 10 GRID COORDINATES : E : 326135.0 N : 5505760.0 EL : 0.0
SAMPLE TYPE : GRAB SAMPLE

FIELD NAME : PLUTONIC,FELSIC OR LEUCOCRATIC ,FINE,LOOK AT COMMENTS FILE.
FINAL NAME :
ALTERATION :
MINERALIZATION : NIL.
FORMATION :

SAMPLED BY : JD FOURNIER DATE : 01-OCT-87 ANALYTICAL
ANALYZED BY : XRAL DATE : 23-OCT-87 TECHNIQUE : X-RAY FLUORESCENCE

	WT %	NORMALIZED ANHYDROUS WT %	NORMALIZED ANHYDROUS CATION %		NORMS
SIO2	70.30	71.74	66.11	Q	26.02
AL2O3	15.70	16.02	17.40	C	0.41
FE2O3	1.67	1.70	1.18	OR	3.78
FEO	0.00	0.00	0.00	AB	51.87
CAO	3.04	3.10	3.06	AN	14.65
MGO	0.60	0.61	0.84	LC	0.00
NA2O	5.69	5.81	10.37	NE	0.00
K2O	0.63	0.64	0.76	KP	0.00
TIO2	0.23	0.23	0.16	AC	0.00
P2O5	0.10	0.10	0.08	DI	0.00
MNO	0.02	0.02	0.02	HE	0.00
S	0.00	0.00	0.00	EN	1.68
NIO	0.00	0.00	0.00	FS	0.00
CR2O3	0.01	0.01	0.01	FO	0.00
CO2	0.00	0.00	0.00	FA	0.00
H2O+	0.00	0.00	0.00	WO	0.00
H2O-	0.00	0.00	0.00	LN	0.00
LOI	1.93	0.00	0.00	MT	0.00
				IL	0.02
TOTAL	97.99	100.00	100.00	CR	0.01
				HM	1.18
				AP	0.21
				PO	0.00
				NS	0.00
				KS	0.00
				RU	0.15
				AG	0.00
				OL	0.00
				OPX	1.68
				CPX	0.00
				AB*	51.87

CLASSIFICATIONS AND INDICES

NA2O+K2O 6.45 SIO2 71.74 SUBALKALINE

OL* 1.59 NE* 39.11 Q* 59.30 SUBALKALINE

CPX 0.00 OL 0.00 OPX 100.00 SUBALKALINE

A 75.04 F 17.84 M 7.12 CALC-ALKALINE

AL2O3 16.02 NORM PLAG 22.03 CALC-ALKALINE

AN 20.84 AB* 73.78 OR 5.38 K-POOR SERIES

CI 2.89 NORM PLAG 22.03 DACITE

JENSEN CALC-ALKALINE RHYOLITE
AL 88.77 FE 6.94 MG 4.29

COLOR INDEX : 2.89
HASHIMOTO INDEX : 12.35

TRACE ELEMENTS (P.P.M.) AU,RE,PT,PD,IR,OS,RH,RU,HG (P.P.B.)

RB 32.00:SR 330.00:Y -10.00:ZR 103.00:NB 14.00:BA 200.00:

COMMENTS : 5-10 M WIDE WHITE FELSIC DYKE.

APPENDIX D

MULTIELEMENT GEOCHEMICAL RESULTS

APPENDIX D

SAMPLE DESCRIPTIONS, GEM LAKE MULTIELEMENT ANALYSES

Sample No.	Rock Description Field Name
AF05320	PLUTONIC,MAFIC OR MELANOCRATIC ,FINE. FELDSPAR PORPHYRITIC, EXPLOSIVE BRECCIA,CRACKLE BRECCIA . DISSEMINATED AND BLEBS,5-20%, CHALCOPYRITE.
AF05362	VEIN,QUARTZ,COARSE. 10-50% MAGNETITE
AF05380	KARMUTSEN FLOWS VOLCANIC,MAFIC,FINE.

Bondar-Clegg & Company Ltd.
130 Pemberton Ave.
North Vancouver, B.C.
Canada V7P 2R5
Phone: (604) 985-0681
Telex: 04-352667

BONDAR-CLEGG

Geochemical Lab Report

REPORT: 227-8574 (COMPLETE)

REFERENCE INFO:

CLIENT: FALCONBRIDGE LIMITED
PROJECT: 012

SUBMITTED BY: J. BEEKMANN
DATE PRINTED: 2-NOV-87

ORDER		ELEMENT	NUMBER OF ANALYSES	LOWER DETECTION LIMIT	EXTRACTION	METHOD
1	Au	Gold	1	5 PPB	NOT APPLICABLE	INST. NEUTRON ACTIV.
2	Sb	Antimony	1	0.2 PPM	NOT APPLICABLE	INST. NEUTRON ACTIV.
3	As	Arsenic	1	1 PPM	NOT APPLICABLE	INST. NEUTRON ACTIV.
4	Ba	Barium	1	100 PPM	NOT APPLICABLE	INST. NEUTRON ACTIV.
5	Br	Bromine	1	1 PPM	NOT APPLICABLE	INST. NEUTRON ACTIV.
6	Cd	Cadmium	1	10 PPM	NOT APPLICABLE	INST. NEUTRON ACTIV.
7	Ce	Cerium	1	10 PPM	NOT APPLICABLE	INST. NEUTRON ACTIV.
8	Cs	Cesium	1	1 PPM	NOT APPLICABLE	INST. NEUTRON ACTIV.
9	Cr	Chromium	1	50 PPM	NOT APPLICABLE	INST. NEUTRON ACTIV.
10	Co	Cobalt	1	10 PPM	NOT APPLICABLE	INST. NEUTRON ACTIV.
11	Eu	Europium	1	2 PPM	NOT APPLICABLE	INST. NEUTRON ACTIV.
12	Hf	Hafnium	1	2 PPM	NOT APPLICABLE	INST. NEUTRON ACTIV.
13	Ir	Iridium	1	100 PPB	NOT APPLICABLE	INST. NEUTRON ACTIV.
14	Fe	Iron	1	0.5 PCT	NOT APPLICABLE	INST. NEUTRON ACTIV.
15	La	Lanthanum	1	5 PPM	NOT APPLICABLE	INST. NEUTRON ACTIV.
16	Lu	Lutetium	1	0.5 PPM	NOT APPLICABLE	INST. NEUTRON ACTIV.
17	Mo	Molybdenum	1	2 PPM	NOT APPLICABLE	INST. NEUTRON ACTIV.
18	Ni	Nickel	1	50 PPM	NOT APPLICABLE	INST. NEUTRON ACTIV.
19	Rb	Rubidium	1	10 PPM	NOT APPLICABLE	INST. NEUTRON ACTIV.
20	Sm	Samarium	1	0.1 PPM		INST. NEUTRON ACTIV.
21	Sc	Scandium	1	0.5 PPM	NOT APPLICABLE	INST. NEUTRON ACTIV.
22	Se	Selenium	1	10 PPM	NOT APPLICABLE	INST. NEUTRON ACTIV.
23	Ag	Silver	1	5 PPM	NOT APPLICABLE	INST. NEUTRON ACTIV.
24	Na	Sodium	1	0.05 PCT	NOT APPLICABLE	INST. NEUTRON ACTIV.
25	Ta	Tantalum	1	1 PPM	NOT APPLICABLE	INST. NEUTRON ACTIV.
26	Te	Tellurium	1	20 PPM	NOT APPLICABLE	INST. NEUTRON ACTIV.
27	Tb	Terbium	1	1 PPM	NOT APPLICABLE	INST. NEUTRON ACTIV.
28	Th	Thorium	1	0.5 PPM	NOT APPLICABLE	INST. NEUTRON ACTIV.
29	Sn	Tin	1	200 PPM	NOT APPLICABLE	INST. NEUTRON ACTIV.
30	W	Tungsten	1	2 PPM	NOT APPLICABLE	INST. NEUTRON ACTIV.
31	U	Uranium	1	0.5 PPM	NOT APPLICABLE	INST. NEUTRON ACTIV.
32	Yb	Ytterbium	1	5 PPM	NOT APPLICABLE	INST. NEUTRON ACTIV.
33	Zn	Zinc	1	200 PPM	NOT APPLICABLE	INST. NEUTRON ACTIV.
34	Zr	Zirconium	1	500 PPM	NOT APPLICABLE	INST. NEUTRON ACTIV.
35	Pt	Platinum	2	15 PPB	FIRE-ASSAY	
36	Pd	Palladium	2	2 PPB	FIRE-ASSAY	

APPENDIX D

FALCONBRIDGE LTD - WHOLE ROCK DATABASE

GEM LAKE MULTIELEMENT ANALYSES

SAMP NO.->	AE05320	AE05362	AE05380
AU (PPB)	3000.00	90.00	68.60
SB	0.50	1.00	0.50
AS	12.00	< 100.00	8.00
BA	< 100.00	< 100.00	140.00
BR	< 5.00	< 5.00	< 5.00
CD	< 10.00	< 10.00	< 10.00
CE	64.00	2460.00	< 10.00
CS	< 1.00	< 1.00	< 1.00
CR	170.00	360.00	190.00
CO	41.00	36.00	110.00
EU	< 2.00	0.00	< 2.00
HF	3.00	5.00	< 2.00
IR (PPB)	< 100.00	< 100.00	< 100.00
FE (PCT)	16.00	39.00	14.00
LA	30.00	1570.00	< 5.00
LU	< 0.50	0.60	< 0.50
MO	341.00	81.00	20.00
NI	69.00	82.00	< 50.00
PD (PPB)	20.00	80.00	10.00
PT (PPB)	15.00	< 15.00	< 15.00
RB	< 10.00	< 10.00	22.00
SM	6.20	73.80	0.80
SC	22.00	5.10	29.00
SE	33.00	< 10.00	< 10.00
AG	18.00	< 5.00	0.70
NA (PCT)	1.60	0.26	0.56
TA	< 1.00	1.00	< 1.00
TE	< 20.00	< 20.00	< 20.00
TB	< 1.00	3.00	< 1.00
TH	0.90	< 1.10	0.50
SN	< 200.00	< 200.00	< 200.00
W	4.00	< 7.00	48.00
U	0.9	6.70	0.80
YB	< 5.0	< 5.00	< 5.00
ZN	< 200.00	< 200.00	< 200.00
ZR	< 500.00	< 500.00	< 500.00

NOTE: VALUES ARE IN PPM EXCEPT FOR AU, IR, PT, AND PD FOR WHICH THEY ARE IN PPB, AND FE AND NA FOR WHICH THEY ARE IN PCT

APPENDIX E

SCATTER DIAGRAMS

APPENDIX E

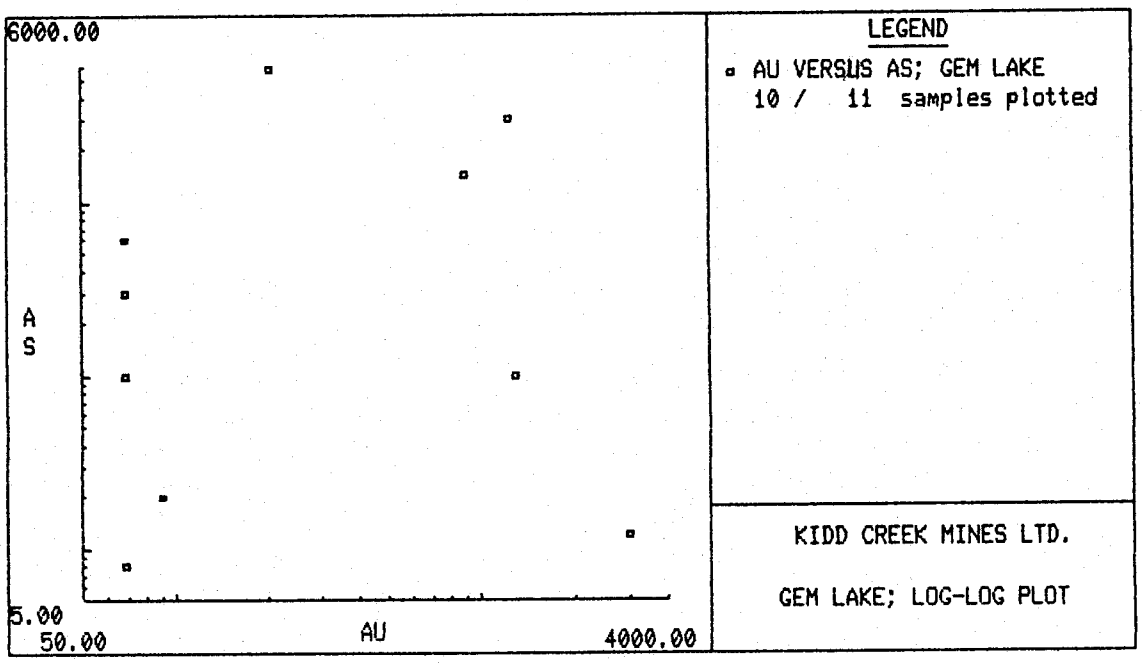


FIGURE 1: Log-log scatter plot of Au versus As

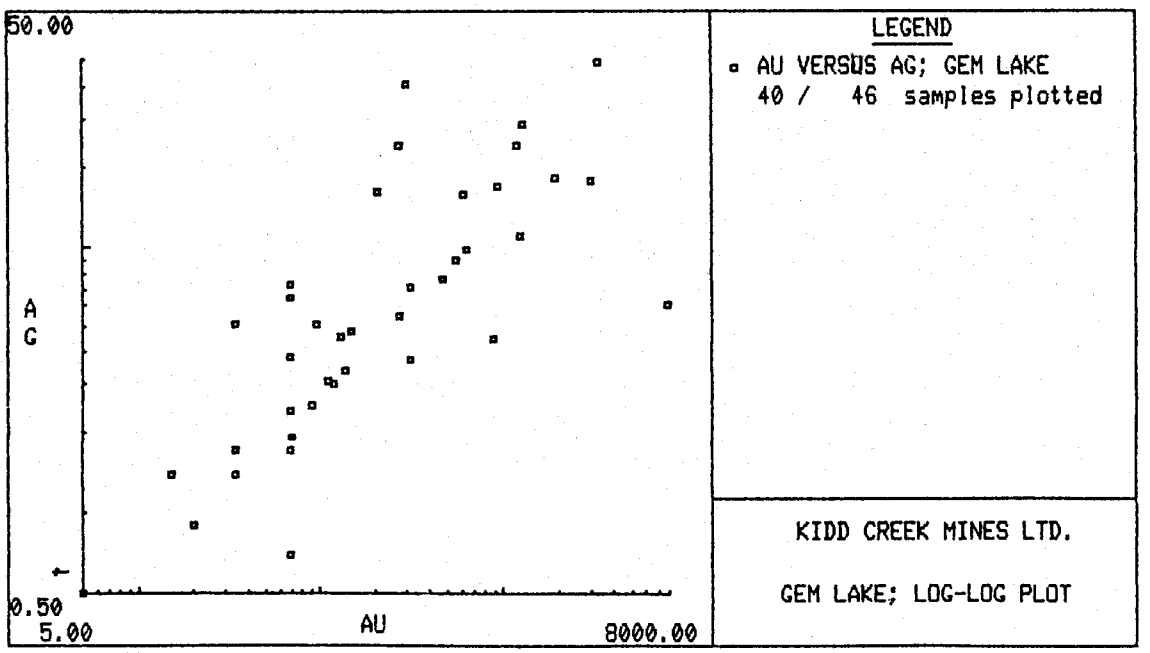


FIGURE 2: Log-log scatter plot of Ag versus Au

APPENDIX E

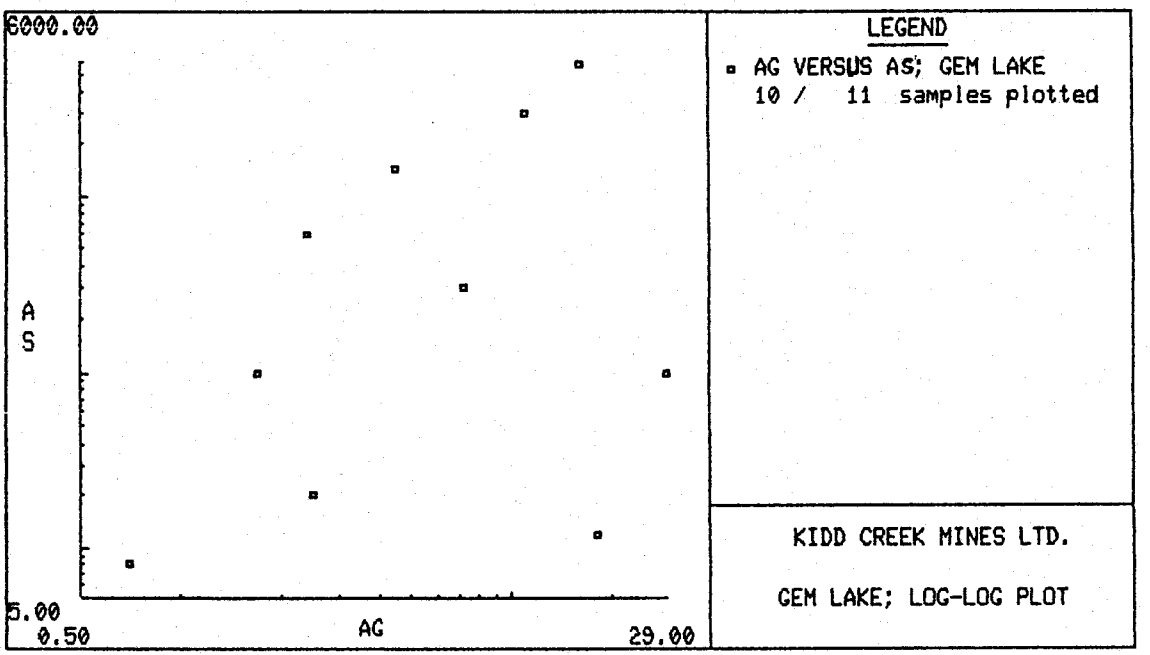


FIGURE 1: Log-log scatter plot of As versus Ag

APPENDIX F

GEOCHEMICAL METHODS

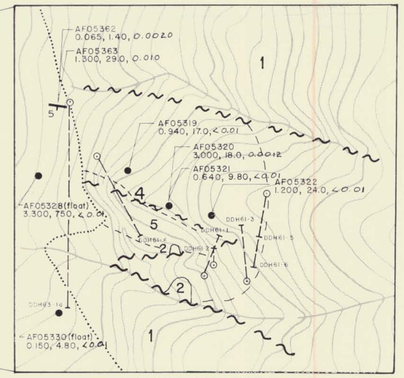
APPENDIX F
GEOCHEMICAL METHODS

All analyses for Au, Ag, and As were performed by Bondar-Clegg in Vancouver. Rock samples were crushed and pulverized to -150 mesh. The Au and Ag content of rock samples with <5% sulphides were obtained by "geochemical" methods. Silver was extracted with hot HCl-HNO3, gold was preconcentrated by fire assay. Both gold and silver analyses were completed by atomic absorption. Samples were assayed for As, in addition rock samples with >5% sulphide content, or samples where geochemistry had indicated >10,000PPB Au or >50PPM Ag were assayed for Au and Ag.

Multi element geochemistry was performed by Bondar-Clegg using a direct iradiation, instrumental neutron activation analysis of a pulverized and encapsuled sample.

Whole rock geochemistry was performed by X-Ray Laboratories of Don Mills, Ontario. A x-ray florescence technique was used.

MAP REF: NO.:
N.T.S.:



MAIN SHOWING

50 0 50 100 150 m
SCALE 1:2000

LEGEND

LITHOLOGIES

6 QUARTZ VEINS; Generally mineralized, comb textured, and less than 10cm in width

5 MINERALIZED TECTONIC BRECCIA; fault breccia with 2 to 20% chalcopyrite

4 POLYMICT INTRUSIVE BRECCIA; 30 to 70% angular clasts of felsite, quartz diorite, and volcanic rock in a dark magnetite rich matrix

3 FELSITE DYKES; 1 to 5m wide white, very fine grained dykes

2 HORNBLENDE QUARTZ DIORITE; hornblende and feldspar porphyritic, medium grained granophyric groundmass

1 BASALT FLOWS; amygdaloidal, often feldspar porphyritic balsalts and andesites

SYMBOLS

- Grab sample location
- △ Whole rock sample location
- Vein location and orientation
- Shear or fault location
- Edge of outcrop
- Lithological contact; known, assumed
- 0.7,4.5,9.7 / 35 — Au g/t, Ag g/t, As % / width, cm
- Boundary of claim group (assumed location)
- DD-64-1 Drill Hole DDH year - #

SCALE:

GEOLOGICAL BRANCH
ASSESSMENT REPORT
17,002

FALCONBRIDGE LTD.

PROPERTY: **MEG CLAIMS, GEM LAKE**

LOCATION: **VANCOUVER ISLAND**

TYPE OF MAP: **GEOLOGY, SAMPLE**

WORKING PLACE:

BASED ON: JGB, JDF

DATE OF WORK: 1987

DRAWN BY: VJG

DATE: NOV. 10, 1987

PROJECT# 011

N.T.S. NO.: 92: F/11

FIG. NO.: 4

NO. 147