

NO. 01 9 30 1991 RD.

ASSESSMENT REPORT ON THE 1991  
DIAMOND DRILLING PROGRAM  
VICTORIA OPTION  
PROJECT 146

Situated 25 kilometres northeast of Barriere, B.C.  
in the Kamloops Mining Division

SUB-RECORDER  
RECEIVED  
DEC 19 1991  
M.R #.....\$.....  
VANCOUVER, B.C.

51° 21'N, 119° 55'W  
NTS 82M/05

Falconbridge Limited  
#202 - 856 Homer Street  
Vancouver, British Columbia

December, 1991  
Vancouver, British Columbia

**GEOLOGICAL BRANCH  
ASSESSMENT REPORT**

**21,991**

M.J. Vande Guchte, P.Geol

## **SUMMARY**

This report documents the results of a single drillhole, BC91-02A, located on the Bluff 1 claim of the Victoria Option, part of Falconbridge Limited's Birk Creek Property. BC91-02A was designed to test an offhole response delineated in last years downhole Pulse EM survey of drillhole BC90-02. The geophysical response was thought to represent the possible downdip extension of the Uke Trend mineralization, exposed at surface in the Uke showing. Extending of BC90-02 (BC91-02A) intersected no significant mineralization. Local, weak Zn and Pb mineralization is typically associated with variably silicified intervals and commonly hosted in thin quartz and quartz-carbonate veins and stringers.

Numerous graphitic argillite horizons were intersected in the upper portion of the 1991 drillhole extension providing a source for the downhole geophysical anomaly. The downdip extension of the Uke Trend has either been "cutoff" by faulting, folding or has no depth extent. The latter would be the more likely scenario, the Uke surface showing representing a "pod" of vein-type mineralization.

## **CONCLUSIONS**

- 1) The Uke Trend appear to have a low potential to host significant base metal mineralization.
- 2) A majority of the mineralization examined in drill core does not resemble mineralization of VMS origin. Mineralization is typically association with variably silicified intervals and commonly hosted in thin quartz and quartz+/-carbonate veins and stringers. The mineralization is strongly suggestive of remobilized or vein-type origin.

## **RECOMMENDATIONS**

No further work is recommended for the Victoria Option property at this time. A change in the Vancouver office exploration mandate, combined with less than encouraging result, places a low priority on further exploration for this property.

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## **INTRODUCTION**

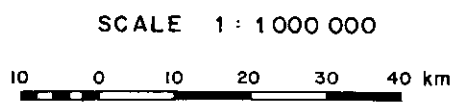
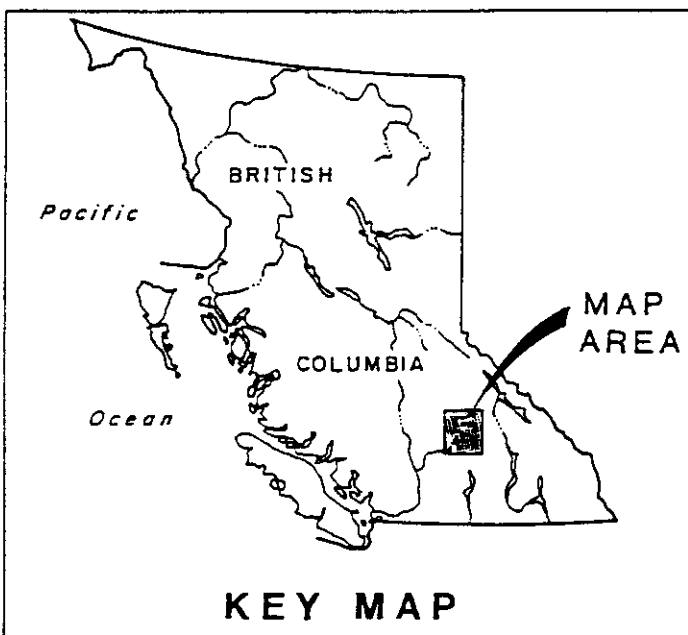
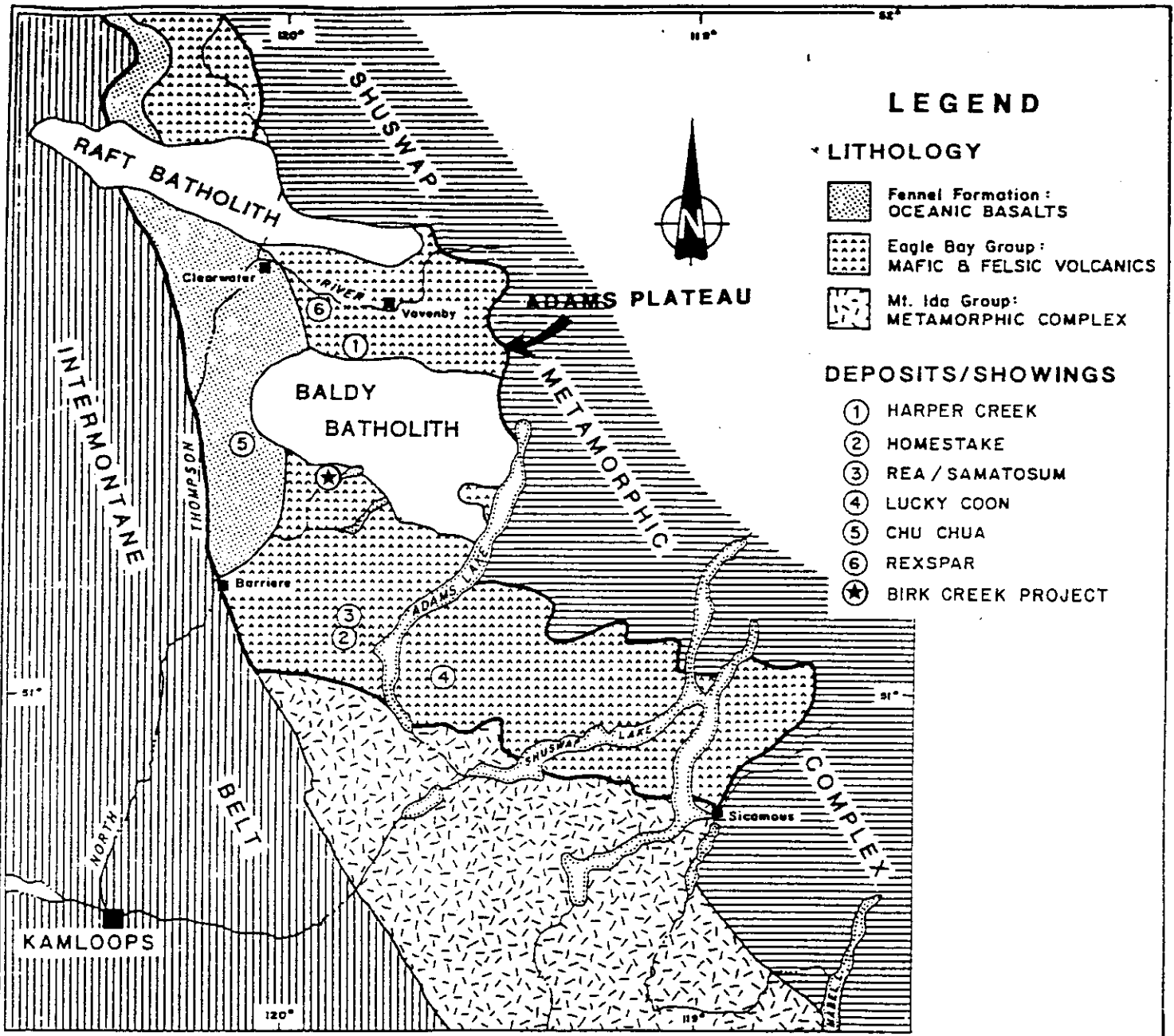
The Victoria Option, forming part of Falconbridge's Birk Creek property, consists of four contiguous mineral claims located 80 kilometres north-northeast of Kamloops, British Columbia (Figure 1). In 1988, Falconbridge acquired the Victoria property from Victoria Resources Limited. Beginning in 1989, Falconbridge began to actively explore the property for volcanogenic massive sulphide-type deposits in the favourable Eagle Bay Assemblage. The Eagle Bay rocks are host to several VMS and vein-type occurrences including the nearby Samatosum and Homestake deposits. The currently mined Samatosum deposit, which occurs in mafic volcanics, contains an estimated 640,000 tonnes of 1,035 g/t Ag, 1.9 g/t Au, 1.2% Cu, 3.6% Zn and 1.7% Pb and the Homestake deposit, hosted in felsic volcanics, has geological reserves estimated at 1,000,000 tonnes of 200g/t Ag, 2.5% Pb, 4.0% Zn, 0.55% Cu and 28% barite (Schiarizza and Preto, 1987).

## **LOCATION, ACCESS, AND PHYSIOGRAPHY**

The Option area is located in the southern interior of British Columbia about 25km northeast of Barriere or 80km north-northeast of Kamloops (Figure 1). The claims are located in the Kamloops Mining Division and covered by NTS mapsheet 82M/05. The approximate geographic centre of the property is 51° 21' North Latitude and 119° 55' West Longitude.

Access to the property from Barriere is by the well maintained East and North Barriere Lake roads. The North Barriere Lake Road transects the south-east part of the property from which well marked logging roads (Birk, Mabel, and Harper Creek) provide good 4 wheel drive access to most points on the property.

Topography ranges from 640 to 1550 metres above sea level on a gentle south facing slope. Birk Creek occurs along the western margin of the property within a deeply incised stream valley. Approximately 65% of the property has been clear cut logged with remaining forest cover composed of mature stands of pine, fir, spruce and cedar. Summers are typically hot and dry with temperatures up to 30° Celsius. Winters are cold and dry with snow pack levels reaching 3-5 metres at the higher elevations.



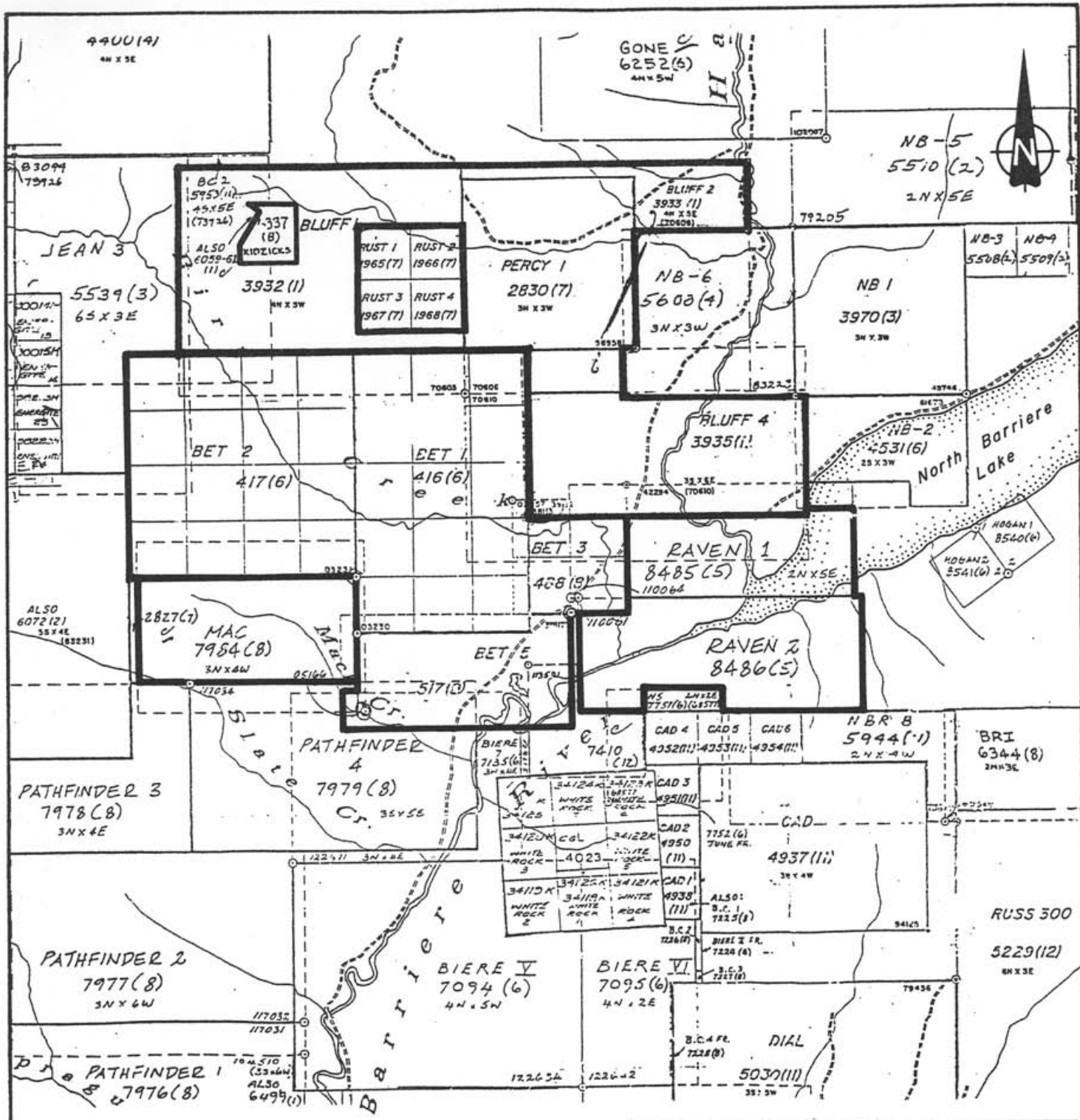
FALCONBRIDGE LIMITED			
<b>BIRK CREEK PROJECT</b>			
<b>LOCATION MAP</b>			
DATE OF WORK:	CLASS:	FIGURE NO:	
ORIGINAL BY: ADM	DATE: 12-90	PROJECT NUMBER: 146/147	<b>1</b>
REVERSED BY:	DATE:	INT.S. NO.: 82M/05W	
DRAWN BY: VJG	DATE: 12-90	MAP #: 147-1-0023	
APPROVED BY:	DATE:		

## CLAIMS STATUS

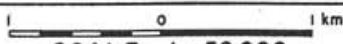
Four claims totalling 67 unit comprise the property (Figure 2) and are summarized below. Expiry dates marked by an asterix are subject to approval of this assessment report.

The VICTORIA OPTION (PN146), optioned from Victoria Resources Limited of Vancouver, B.C., consists of 4 mineral claims totalling 67 units. Falconbridge can earn a 60% interest with a \$1 million expenditure on the property by December 31, 1994.

<u>CLAIM</u>	<u>UNITS</u>	<u>RECORD NO.</u>	<u>RECORD DATE</u>	<u>EXPIRY DATE</u>
BLUFF 1	20	3932	January 25, 1982	January 25, 2002*
BLUFF 2	20	3933	January 25, 1982	January 25, 2002*
BLUFF 4	18	3935	January 22, 1982	January 22, 2002*
PERCY 1	9	2830	July 21, 1980	July 21, 2002*



FALCONBRIDGE LIMITED: Mac Claim, Raven 1 and 2 Claims  
 VICTORIA RESOURCES OPTION: Bluff 1, 2, 4 and Percy 1 Claims  
 BABIY/RUST OPTION: Rust 1-4 Claims  
 BET / COMINCO OPTION: Bet 1, 2, 3 and 5 Claims

FALCONBRIDGE LIMITED			
BIRK CREEK PROPERTY			
<b>CLAIM MAP</b>			
 SCALE 1 : 50 000			
DATE OF WORK:	ORIGINAL BY: SC	DATE: 11-89	CLARK:
REVISY BY: RDS	DATE: 02-91	PROJECT NUMBER: 145-148	FIGURE NO: 2
DRAWN BY: VJG	DATE: 11-89	N.T.S. NO: 82M/05W	
APPROVED BY:	DATE:	MAP #: 146-1-0003	



## EXPLORATION HISTORY

Initial interest in the Birk Creek area dates back to the early 1900's when massive sulphide showings were discovered in the vicinity of Birk and Harper Creek's. The following chronologically outlines previous work carried out on the property.

### Victoria Option

#### Previous work

<b>1969-72</b>	Cambridge Mines and Ducanex conducted drilling, trenching, geochemical, and geophysical surveys.
<b>1976</b>	Kenneco conducted soil and rock geochemical surveys.
<b>1979-80</b>	Semco conducted minor exploration.
<b>1985-87</b>	Noranda conducted airborne EM and ground geophysical surveys, a soil survey, 400m trenching, 316 metres diamond drilling in 3 holes and 1,146 metres of reverse circulation drilling in 11 holes.
<b>1989</b>	Falconbridge conducted linecutting, VLF, MAG and IP surveys, and re-mapped the property at a scale of 1:5000 on a new orthophoto. Re-logged Noranda core, soil sampled areas previously not covered, located all LCP's, and compiled previous data.
<b>1990</b>	Falconbridge conducted additional linecutting, VLF, MAG, and IP surveys, mapping, trenching (500 m), limited soil sampling, and drilled 4 diamond drill holes (1310.97 m).

#### Significant results

Three mineralized trends have been outlined on the property as a result of recent work. These include the extensions to the Uke and Epiclastic mineralization identified on the Rust claims. The two Trends contain thin massive sulphide "pods" or drilled intervals, the best grading:

Uke Trend (Uke showing) - 0.62% Cu, 5.3% Pb, 4.1% Zn, 34.6 g/t Ag, 1.0 g/t Au over 2.0 metres (Noranda).

Epiclastic Trend (P82-01)- 0.43% Cu and 2.4 g/t Ag over 9.3 metres (Preussag).

A third trend, the Central Trend, is located stratigraphically above the Uke Trend. Best results from the Central Trend prior to the 1990 Falconbridge drill program are from Noranda's drilling which intersected several thin zones of 1-2% combined Pb and Zn mineralization. A 1990 Falconbridge trench (FLTR90-01) across the Central Trend uncovered two narrow sulphide bands grading 262ppm Cu, 1.19% Zn, 0.75% Pb, 8.5 g/t Ag and 33ppb Au over 1.5 metres.

In 1990 Falconbridge drilled three holes to test the Central Trend and intersected massive sulphide mineralization in two holes (BC90-01, BC90-03). BC90-05 tested the downdip potential of mineralization intersected in BC90-01 with no significant results. The southeast extension of the Epiclastic Trend was tested by drillhole BC90-06 with no significant results.

## REGIONAL GEOLOGY

Regional geology of the Birk Creek area is described in government reports and maps by Schiarizza and Preto (1987). Exploration interest has focused on the Eagle Bay Assemblage which hosts the Samatosum and Homestake deposits and other occurrences of polymetallic massive to semi-massive sulphides containing mainly silver, lead and zinc.

The Birk Creek area occurs in an area underlain by structurally complex, low grade metamorphic rocks of the Palaeozoic Eagle Bay Assemblage and Fennel Formation (Figure 1). The Eagle Bay Assemblage is comprised of Early Cambrian to Mississippian volcanic and sedimentary rocks that are intruded by late Devonian granitic orthogneiss. Devonian to Permian basaltic rocks of the Fennel Formation have been tectonically emplaced over the Eagle Bay rocks in early Mesozoic time. Cretaceous granodiorite and quartz monzonite of the Raft and Baldy batholiths and later Tertiary porphyry and lamprophyre dykes intrude both successions.

The Eagle Bay Assemblage has been subdivided by Schiarizza and Preto (1987) into 10 lithological units which are summarized in Table I. Units labelled Lower Paleozoic remain undated. Overall, the Assemblage can be divided into two distinct successions:

- 1) a Lower Paleozoic sequence of clastic metasediments, carbonate and mafic volcanic rocks and
- 2) an overlying Devonian-Mississippian sequence of intermediate to felsic metavolcanic rocks and clastic metasediments.

Table I : Stratigraphy of the Eagle Bay Assemblage

<u>AGE</u>	<u>UNIT</u>	<u>LITHOLOGY</u>
Mississippian	EBP	Slate, phyllite, siltstone
Dev. - Miss.	EBF	Intermediate volcanoclastic
Devonian	EBA	Intermediate-Felsic volcanic and volcanoclastic (phyllite/schist)
L. Paleozoic	EBM	Greenstone, chlorite schist, quartzite, phyllite, bedded chert
L. Paleozoic	EBK	Calc-silicate schist, skarn
L. Paleozoic	EBL	Limestone, calc-silicate schist
L. Paleozoic	EBS	Phyllite, grit, quartzite, limestone
L. Cambrian	EBQ	Quartzite, grit, phyllite, schist
L. Cambrian	EBG	Calcareous chlorite schist, limestone
L. Cambrian	EBH	Quartzite, chlorite-muscovite quartz schist, grit

Unit names, ages, and descriptions from Schiarizza and Preto (1987)

Abbreviations: Dev.-Devonian, Miss.-Mississippian, L.-Lower

## **PROPERTY GEOLOGY**

Regional mapping by Schiarizza and Preto indicate the Birk Creek project area is underlain by intermediate to felsic volcanics of unit EBA and lesser amounts of units EBF and EBP. Unit EBA at Birk Creek is truncated to the southeast by a northeast trending fault along the North Barriere Lake valley, and intruded by the Baldy Batholith to the north. Schiarizza and Preto (1987) proposed a thrust fault along Birk Creek at the contact between the unit's EBA and EBP. 1990 mapping and drilling in the vicinity of Birk Creek suggested a conformable contact.

Property-scale geological mapping of the various Birk Creek claim groups was completed by Daley (1983), Shevchenko (1988), Clemmer (1989), and McLaughlin and Russel (1990). The 1990 geology plan maps of the Birk Creek property are included in Appendix D of this report and shown at 1:5000 scale (Figure 3e) and at 1:10,000 scale (Figure 4). A stratigraphic column depicting the stratigraphy and mineralized trends is illustrated in Figure 5.

In general, the rocks underlying the property represent a distal volcanic environment consisting primarily of "reworked" pyroclastics of intermediate composition and interbedded argillite. Sediment contents increase to the southeast suggesting a paleo-basin environment in this direction with a volcanic centre postulated to have occurred to the northwest. This latter volcanic feature may have since been "replaced" by the Cretaceous Baldy Batholith. The following further describes lithology, mineralized trends and structure which have been taken, with minor revisions, from Clemmer (1989) and McLaughlin and Russel (1990). A brief discussion of alteration and metamorphism based on previous and the present work program concludes this section.

### **Lithology**

Lithologies in the Birk Creek area trend west-northwest and dip gently to the southwest. Mapping in 1989 divided the underlying Devonian-Mississippian stratigraphy into four informally named stratigraphic units. With the addition of the Bet claims to the Birk Creek property in 1990 several modifications were incorporated into the stratigraphy. Property geology and informally named divisions are based on the 1990 stratigraphy and discussed below from oldest to youngest.

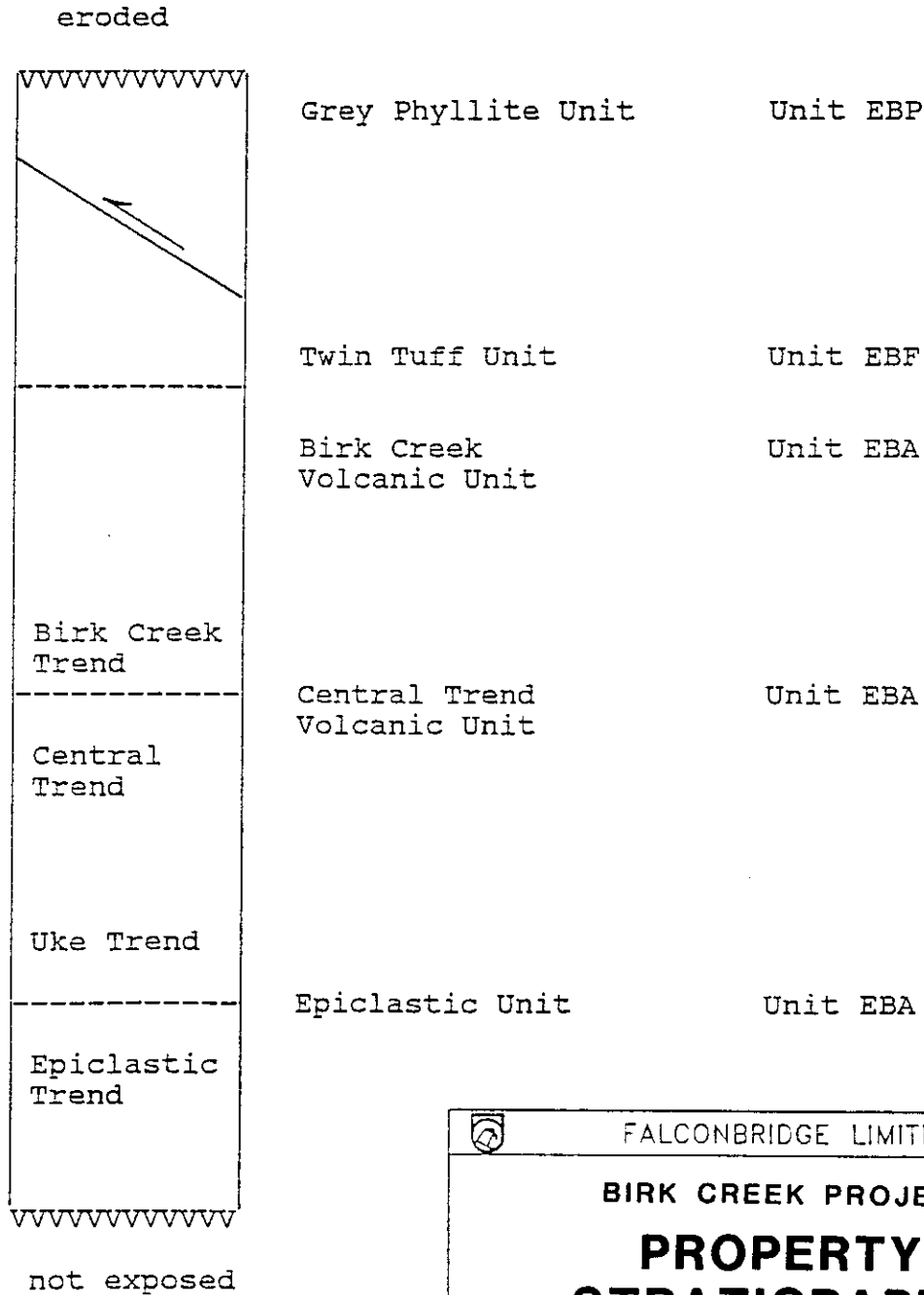
#### **Lower Cambrian**


##### **Tshinakin Limestone unit (Unit EBG)**

This limestone subunit of Unit EBG forms massive white-brown cliffs on the southern edge of the property. A north-east trending fault (Barriere River Fault) separates the limestone from younger EBA volcanics and sediments. No significant mineralization is evident within this Unit.

Falconbridge  
Stratigraphy

Regional Stratigraphy  
(Schiarizza & Preto, 1987)



 <b>FALCONBRIDGE LIMITED</b>				
<b>BIRK CREEK PROJECT</b>				
<b>PROPERTY STRATIGRAPHIC COLUMN</b>				
DATE OF WORK:	CLAIMS:	<b>FIGURE NO. 5</b>		
ORIGINAL BY: <b>ADM</b>	DATE: <b>12-90</b>			PROJECT NUMBER: <b>146 / 147</b>
REVISIED BY:	DATE:			N.T.S. NO.: <b>82 M / 5</b>
DRAWN BY:	DATE:			MAP #: <b>147-1-0106</b>
APPROVED BY:	DATE:			

## **Devonian**

### **Epiclastic Unit (informally named subunit of EBA)**

The Epiclastic Unit is exposed on the eastern edge of the property and extends onto the adjacent NB claims. It consists of interbedded, variably reworked andesite to dacitic ash and lapilli tuff, mafic tuff, quartz-eye rhyolite tuff, calcareous argillite, chert, limestone and quartzite. The reworked intermediate tuff make up the majority of the Unit and commonly contain up to 30% argillaceous material and <5 to 50%, 5 to 50 mm siliceous volcanic and chert fragments. A re-interpretation of these fragmental units in 1990 suggested a cataclastic origin rather than an epiclastic origin. The harder "beds" typically forming clasts within the softer groundmass. The mafic tuff is poorly exposed on the property and underlies the intermediate epiclastic tuff. Dacitic tuff and quartz-eye rhyolite tuff make up less than 10% of the Unit and occur as 5 to 25 metre thick beds. The upper section of the Epiclastic Unit is marked by 10 to 30 metres of grey calcareous argillite and limestone. The contact with the overlying Central Trend Volcanic Unit appears conformable. To the north, the unit is truncated by the Baldy Batholith. A majority of the Unit is affected by the contact aureole of the Baldy Batholith and contains 1 to 5% pyrrhotite and 5 to 10% biotite. Tops indicate the section is right way up. About 300 metres of the unit is exposed on the property, but total thickness is unknown.

The Epiclastic Unit appears to have been deposited in an unstable tectonic environment as evidenced by the presence of argillaceous, fragmental epiclastic material. A distal felsic and mafic volcanic source is indicated by the presence of mafic and felsic pyroclastics (Clemmer, 1989).

### **Central Trend Volcanic Unit (informally named subunit of EBA)**

The Central Trend volcanic rocks which conformably overlies the Epiclastic Unit was initially named by Clemmer (1989) as the Lower Volcanic Unit. The Unit is largely composed of variably reworked intermediate to dacitic ash and lapilli tuff, argillaceous tuff and lesser felsic tuff and sediment. Argillite, appear to be more common in the lower part of the unit to the southeast. The volcanics similarly show an increasing argillaceous component in this direction. Argillite is typically siliceous and/or calcareous, locally graphitic, and occur in beds up to 50 metres thick. With increasing proximity to the Baldy Batholith (northwest direction) the volcanics (and sediments) become increasingly biotite spotted and pyrrhotite-bearing. Thickness of the Unit is estimated as up to 500 metres.

The Central Trend Volcanic Unit marks the onset of significant intermediate-dacitic volcanism and cessation of mafic volcanism. Volcanics on the property appear to be increasingly reworked to the southeast, with an overall increasing sediment component in this direction. A distal, basal environment is postulated for the Central Trend volcanic and sediment rocks.

### **Birk Creek Volcanic Unit (informally named subunit of EBA)**

The Birk Creek Volcanic Unit is interpreted to conformably overlie the Central

Trend Volcanic Unit (McLaughlin and Russel, 1990). The Unit is described as a monotonous sequence of dacitic quartz and quartz-feldspar phyric ash tuff with occasional interbedded lapilli tuff and lesser argillite. Intermediate pyroclastic and sediment forms the base of the section and is described as a 5 to 10 metre thick intercalated sequence of limestone, calcareous argillite, intermediate-felsic tuff, and cherty tuff. Interbedded to interlaminated pyrite-rich lenses up to 3 metres thick occur along this basal contact and presumably were the focus of early exploration activity along the Birk Creek. Unit thickness is unknown.

The Unit is thought to represent a facies change from the fine grained, reworked volcanics/sediments of the Central Trend to coarser grained, more "proximal" dacitic volcanism. However, a lack of coarse fragmentals, flows, and/or subvolcanic intrusive units still suggests a distal depositional environment.

### **Devonian-Mississippian**

#### **Twin Tuff Unit (informally named subunit of EBF)**

The Twin Tuff Unit was initially named the Upper Volcanic Unit by Clemmer (1989). The Unit is composed of intermediate feldspar and/or mafic phyric ash and lapilli tuff, and lesser intermediate quartz-feldspar phyric tuff. Thin graphitic argillite beds occur throughout the section. Regionally, unit EBF conformably overlies unit EBA with local, unconformable contacts observed (Schiarizza and Preto, 1987). The latter appears to be the case on the Birk Creek property. Thickness on the Birk Creek property is estimated to be at least 200 metres.

The Twin Tuff volcanics mark a change in volcanism to a more andesitic composition. Interbedded to intercalated sediment and pyroclastic units suggest a distal depositional environment.

### **Mississippian**

#### **Grey Phyllite Unit (EBP)**

The grey phyllite unit, exposed along and west of Birk Creek, is composed of a sequence of argillite, siltstone, wacke and quartzite deposited by turbidite flows. Tops indicate the unit to be right way up. Regionally, the Unit conformably overlies unit EBF, however, on the property the contact may be faulted.

### **Cretaceous**

#### **Intrusive rocks**

Granite to granodiorite of the Cretaceous Baldy Batholith intruded Eagle Bay stratigraphy in the north-northeast area of the property. Undeformed, fine to medium grained, intermediate to felsic dykes and sills cut the Eagle Bay rocks at Birk Creek and are thought to be related to the Batholith.

## Economic Geology

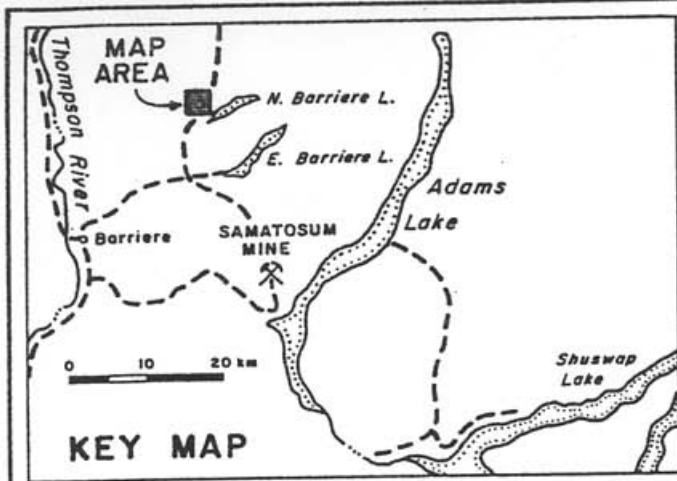
Four mineralized trends termed; the Epiclastic, Uke, Central and Birk Creek Trends occur on the property (Figure 6). Each trend has been identified by a combination of either multi-element soil geochemistry, IP anomalies, mapping, surface showings and/or drilling and are summarized in Table II. Mineralization along the trends consists of local thin, bedded(?) intervals to "small pods" of massive sulphides or stringer-like mineralization commonly contained in quartz+/-carbonate veins or stringers. A fifth Trend, the Harper Creek trend, is based solely on a strong IP anomaly and coincident anomalous Cu and Zn soil geochemistry. Further descriptions on the mineralized trends and significant results can be found in Clemmer (1989), and McLaughlin and Russel (1990).

Table II : Summary of the Mineralized Trends

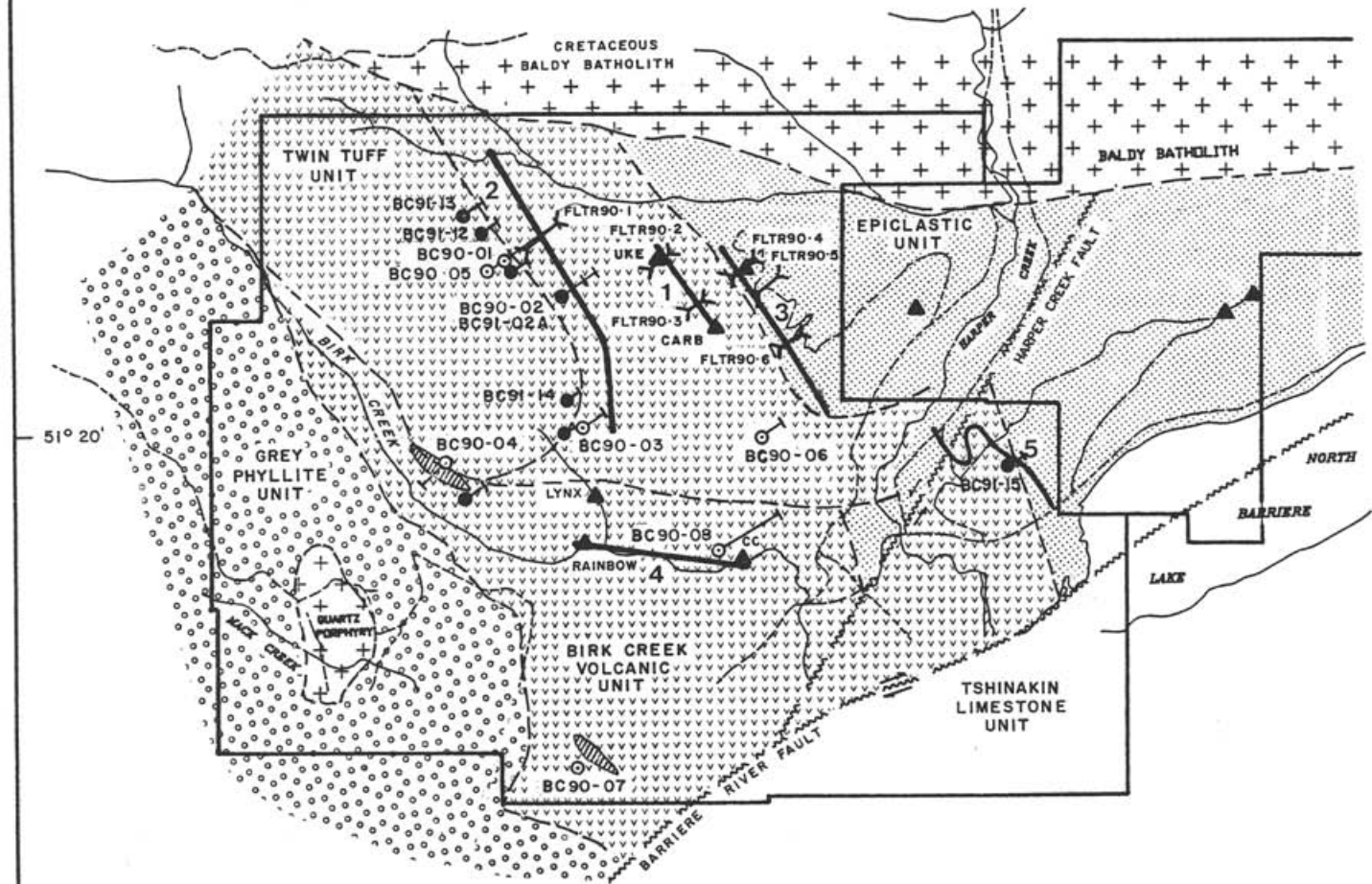
<u>TREND</u>	<u>TYPE</u>	<u>HOST ROCK</u>	<u>L O C A T I O N    O F</u> <u>MINERALIZATION</u>
Epiclastic	Cu	Intermediate volcanic rocks, sediments	Drilling
Uke	Cu,Pb,Zn	Intermediate to felsic volcanic rocks	Surface showing, drilling
Central	Zn,Pb,Cu	Intermediate to felsic volcanic rocks	Drilling, surface showing
Birk Creek	Zn, Pb	Intermediate to felsic volcanics, argillite	Surface showings, drilling

## Structure

Lithologies underlying the property appear to have undergone a lengthy deformational history. Previous data suggests that the Eagle Bay rocks in the Birk Creek area consist of a gentle southeast dipping homoclinal sequence that forms the south limb of an antiformal structure, later cut by the Baldy Batholith. A well developed schistosity in most units coupled with folding and extensive faulting (observed in drill core) has imposed severe constraints on interpretation of structure on the property. Regionally described deformation, in particular faulting, presumably has strongly influenced the rock units underlying the Birk Creek property.



119° 55'



51° 20'

SCALE 1 : 50,000



**LEGEND**

- SYMBOLS**
- ▲ Massive Sulphide Showing
  - ~ Fault
  - - - Roads
  - - - Geological Contact
  - - - Creeks, Rivers
  - - - Property Boundaries
- 1 Uke Trend
  - 2 Central Trend
  - 3 Epiclastic Trend
  - 4 Birk Creek Trend
  - 5 Harper Creek Trend

- LITHOLOGY**
- [Stippled pattern] Mafic to Intermediate Volcanics and Sediments
  - [V-shaped pattern] Felsic-intermediate Volcanics and Sediments
  - [Dotted pattern] Grey Phyllite
  - 1990 Drill Hole
  - ⊃ Trench
  - [Hatched pattern] IP Anomaly

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**BIRK CREEK PROJECT**

**COMPILATION MAP**

DATE OF WORK:	CLASS:	<b>6</b>
DRAWN BY: V.J.G.	PROJECT NUMBER: 146/147	
APPROVED BY:	S.I.T.S. NO.: 82M/05	
DATE: 12-90	MAP #: 147-1-0003	
DATE: 10-91		



## **Alteration and Metamorphism**

Alteration patterns typical of VMS type deposits are not clearly evident on the property. Visible alteration of the rock units consists primarily of silicification, carbonatization, sericitization, spotty biotite-carbonate-chlorite(?) +/- pyrrhotite hornfels, and minor chlorite alteration. Biotite development is common, but increases coincident with hornfelsing, towards the Baldy Batholith. A wide, contact aureole appears to surround the granitic intrusion affecting rock units up to several (?) kilometres away. A widespread recrystallization, initiating a generation of fluids and CO<sub>2</sub>, is thought to be reflected in the carbonatization, silicification, biotization, and hornfelsing of the surrounding rock units. This low grade contact metamorphism presumably influenced the alteration patterns presently seen on the property today. Any pre-Cretaceous alteration presumably has been partially to completely overprinted or modified by this later event. Similarly, base metal mineralization is thought to be remobilized and locally concentrated as a result of fluid generation during the Cretaceous event. Mineralization of Cu, Pb, and/or Zn is typically confined to variably silicified intervals over several metres to several 10's of metres. A notable sulphide zoning of the Cu and Zn mineralization is evident on the property. Overall, Zn contents of each mineralized trend show an increase away from the Batholith and Cu contents show a similar increase towards the Batholith. This Cu-Zn zoning can be interpreted to reflect a decrease of fluid temperatures away from the Batholith, hence affecting sulphide solubilities and precipitates.

## **EXPLORATION PROGRAM**

This assessment report documents the results of a single drill hole, BC91-02A, located on the Bluff 1 claim of the Victoria Option. The drillhole location is shown on Figure 6 and on the geology plan maps. A summary drill log, and 1:5000 and 1:1000 sections showing geology and geophysics are given in Appendix A. Drill log with analytical results are in Appendix B. Summary of the exploration costs is given on Table III in Appendix C.

Diamond drill site preparation was completed by Ultra Diversified Construction using a Catapillar 235 excavator. Diamond drilling was completed by Atlas Contract Drilling Limited of Kamloops, B.C. between June 18 and June 22, 1990 using a Longyear Super 38 drill. All drillcore from the 1990 and 1991 drilling programs is stored in metal racks on the property. Reclamation of all the drill sites and roads on the Victoria Option was completed in September by Rick Janzen of Clearwater, B.C. using a Case 680E rubber-tired backhoe. Roads, sumps, drill pads and trenches were recontoured and revegetated with particular attention paid to construction of water bars and ditches on roads to minimize their erosion.

All work was permitted under Annual Work Approval Number: KAM 91-1500011-1070 from the Ministry of Energy, Mines and Petroleum Resources. Reclamation was bonded under Falconbridge Limited's Reclamation Permit MX-General-5. All timber harvesting, site preparation, and road access was arranged through J. Pellizom of Tolko Industries Limited, Louis Creek Division, British Columbia. A water permit was not required since all water sources used are unscheduled.

## 1991 DRILLING RESULTS

<u>Hole #</u>	<u>Section</u>
BC91-02A	228+00N

A deep test of the Uke Trend was initiated by an offhole response delineated in the 1990 downhole Pulse EM survey in drillhole BC90-02. The extension of BC90-02 (BC91-02A) from 236.22m to 478.84m intersected no significant mineralization. Weak Pb, Zn, and Cu mineralization is typically associated within locally silicified zones and commonly hosted in quartz and quartz-carbonate veins and stringers. Numerous graphitic argillite horizons were intersected in the upper portion of the 1991 drillhole extension and is interpreted as the source for the 1990 downhole geophysical anomaly. The downdip extension of the Uke Trend has either been "cutoff" by faulting, folding or has no depth extent. The latter would be the more likely scenario, the Uke surface showing representing a "pod" of vein-type mineralization.

## GEOCHEMISTRY

A total of 51 samples were collected for geochemical analysis and 14 samples collected for whole rock analysis. Analytical costs are shown in Table III.

Mineralized core was split over intervals not exceeding 2.0 metres and sent to Bondar Clegg & Company Limited in North Vancouver. Samples were analyzed for 28 elements using ICP aqua-regia (HNO<sub>3</sub>-HCl) digestion methods. Gold was determined by fire assay-flame atomic absorption methods and barium results were obtained using XRF analysis. Samples with Cu, Pb, or Zn values greater than 3000 ppm, Au values greater than 1000 ppb, and Ag values greater than 30 ppm were assayed.

Samples for whole rock analyses were sent to Cominco Research Laboratory in Vancouver and analyzed for major and minor element (plus LOI) using the XRF method. Samples consisted of 1cm core chips taken every 30cm over a maximum 3.0 metre interval. These samples were collected to identify zones of alteration and also to classify rock types.

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**APPENDIX A**

**Summary Drill Log  
1:5000 scale Drill Section  
1:1000 scale Drill Section**

**SUMMARY LOG AND DESCRIPTION  
BC91-02A (PROPOSED HOLE B-1)**

**LOCATION:** 227+90N, 407+25E, 1302.0M asl.; Bluff 1 claim

**AZIMUTH:** 055°                      **DIP:** -60°

**SECTION:** 227+90N

**TOTAL DEPTH:** 478.84m              **PROPOSED DEPTH:** 436.22m  
(Extending BC-90-02 from 236.22m to 478.84m)

**STARTED:** June 18, 1991    **COMPLETED:** June 22, 1991

**REVISED:** September 27, 1991

**LOGGED BY:** Mike Vande Guchte

**PURPOSE:**

Hole BC91-02A was designed to test an off hole response delineated in last years downhole geophysical survey. Interpretation of this survey indicate a conductive body at 75 to 100 metres below the current drilled depth. The prospective target was thought to represent the downdip extension of the Uke Trend.

**RESULTS:**

BC91-02A initially began in a quartz vein at 236.22 metres and quickly passed into a thick sequence of variably argillaceous to non-argillaceous intermediate ash tuff units to a depth of 399.30 metres. Numerous, variably graphitic argillite horizons, up to 10 metres thick, occur throughout this upper intermediate sequence. Below 399.30m to 413.85m the hole intersected a section of variably silicified felsic tuff before passing into the underlying succession of variably hornfelsed, locally silicified intermediate ash units. Local, mafic tuff or intrusive(?) units occur within this latter intermediate package and mark the end of the hole at 478.84 metres.

Weak to moderate hornfels, beginning as biotite and progressing to biotite-carbonate-chlorite(?) +/-pyrrhotite alteration typically accompany the intermediate volcanic units. Weak to moderate silicification occurs sporadically throughout the drillhole. The silicified intervals typically host weak mineralization of sphalerite, galena, and/or chalcopyrite commonly contained in quartz and/or quartz-carbonate veins and stringers.

**CONCLUSIONS:**

No significant mineralization was encountered in the extension of BC-90-02. Numerous, weak to moderately graphitic argillite units were intersected directly below the previously drill depth. These graphitic horizons are viewed as the source responsible for the offhole response indicated in last years geophysical survey. The downdip extension of the Uke Trend mineralization has either been "cutoff" by folding and/or faulting or has no depth extent. The latter would be the more likely, the Uke surface showing representing a "pod" of vein-type mineralization.

**DIRECT DRILLING COSTS:**    \$11,256.76    or    \$46.47/m

## SUMMARY LOG:

- 236.22 - 236.70m : Quartz vein**
- 236.70 - 244.05m : Intermediate lapilli ash tuff**
- 244.05 - 246.20m : Argillite**
- 246.20 - 253.40m : Hornfelsed Intermediate lapilli ash tuff**
- 253.40 - 254.60m : Argillaceous tuffaceous sediments**
- 254.60 - 255.50m : Hornfelsed Intermediate ash tuff**
- 255.50 - 256.05m : Argillite**
- 256.05 - 257.75m : Argillaceous tuffaceous sediments**
- 257.75 - 258.40m : Intermediate lapilli ash tuff**
- 258.40 - 266.55m : Graphitic Argillite**
- 266.55 - 279.00m : Intermediate lapilli ash tuff**
  - local hornfels
- 279.00 - 280.00m : Argillite**
- 280.00 - 281.00m : Felsic ash tuff**
- 281.00 - 288.60m : Sheared graphitic argillite**
  - silicified
- 288.60 - 289.50m : Fault zone**
- 289.50 - 309.60m : Intermediate ash tuff**
  - locally silicified
- 309.60 - 314.20m : Intermediate ash tuff**
  - spotty biotite
- 314.20 - 321.05m : Intermediate ash tuff**
- 321.05 - 323.05m : Argillaceous intermediate ash tuff**
- 323.05 - 327.45m : Intermediate ash tuff**
  - spotty biotite
- 327.45 - 337.10m : Argillaceous intermediate ash tuff**
- 337.10 - 345.35m : Quartz phyric intermediate ash tuff**
  - silicified/carbonatized
- 345.35 - 355.85m : Argillite**
- 355.85 - 359.70m : Intermediate ash tuff**
  - spotty biotite/carbonate
- 359.70 - 360.55m : Argillite**
- 360.55 - 378.70m : Intermediate ash tuff**
  - spotty biotite/carbonate
- 378.70 - 387.95m : Hornfelsed Intermediate ash tuff**
- 387.95 - 392.70m : Hornfelsed Felsic ash tuff**
- 392.70 - 399.30m : Hornfelsed Felsic lapilli ash tuff**
- 399.30 - 403.55m : Felsic ash tuff**
  - silicified
- 403.55 - 413.85m : Hornfelsed Felsic lapilli ash tuff**
  - locally silicified
- 413.85 - 449.55m : Hornfelsed Intermediate ash tuff**
- 449.55 - 458.95m : Mafic ash tuff - intrusive ?**
- 458.95 - 461.85m : Intermediate lapilli ash tuff**
  - spotty biotite
- 461.85 - 465.00m : Intermediate ash tuff**

-spotty biotite

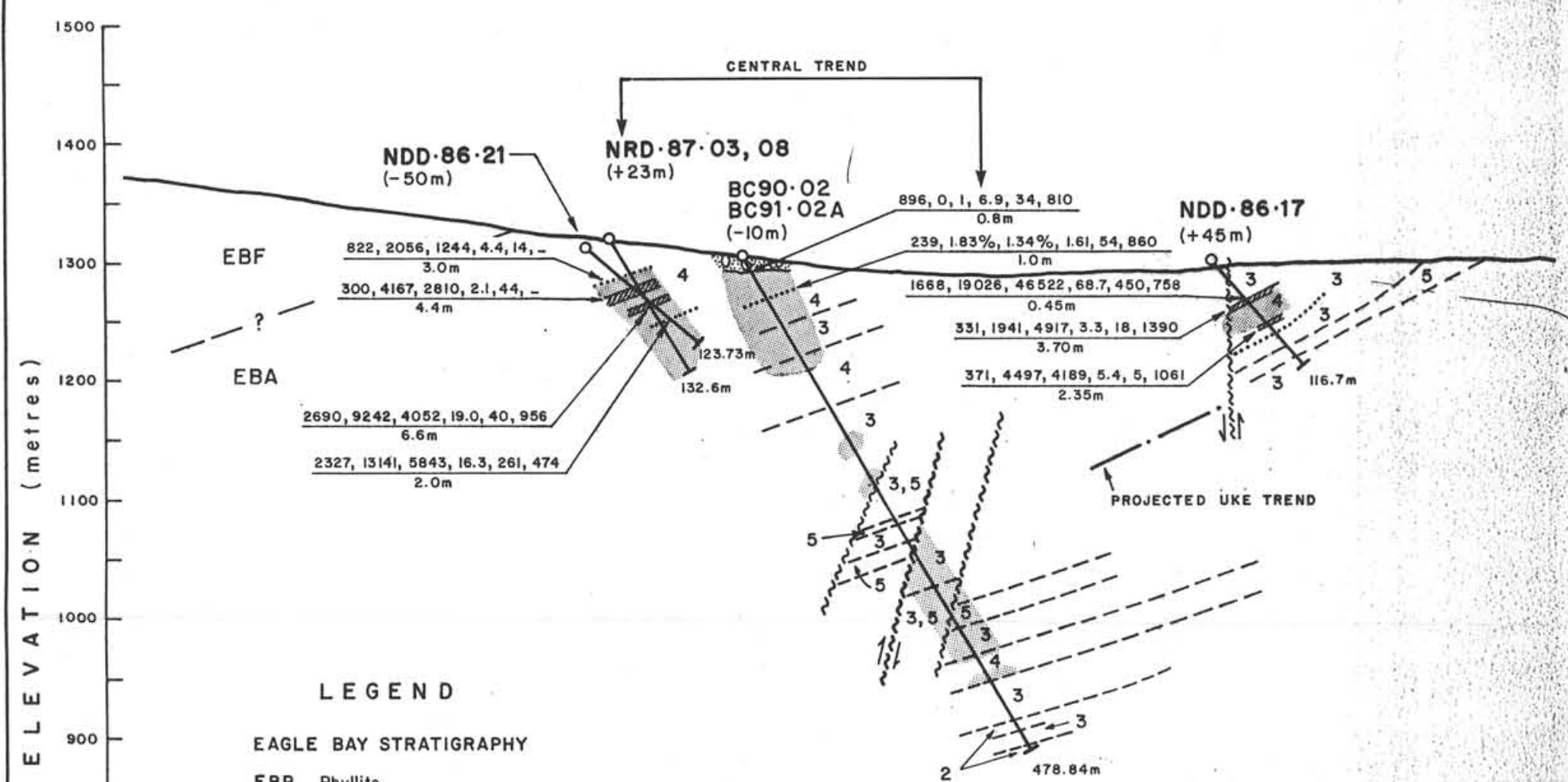
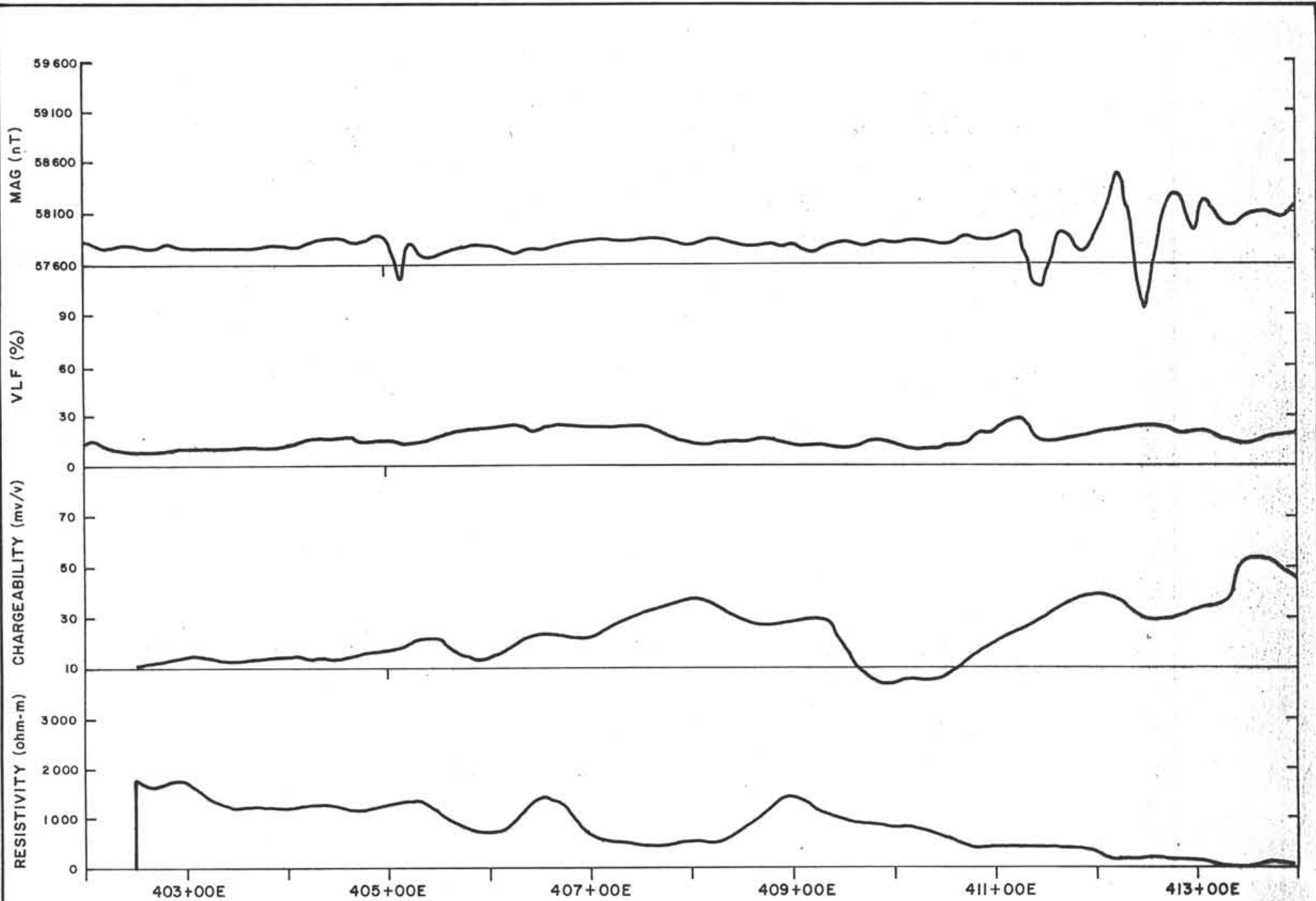
**465.00 - 478.30m : Hornfused Intermediate lapilli ash tuff**

-locally silicified

**478.30 - 478.84m : Hornfused Mafic ash tuff**

**478.84m      End of Hole** (Hole lined with plastic pipe)

Geochemical samples : 51, Whole rock samples : 14



**LEGEND**

**EAGLE BAY STRATIGRAPHY**

- EBP Phyllite
- EBF Intermediate Volcanics
- EBA Felsic to Intermediate Volcanics

**MAJOR ROCK UNITS**

- 10 Late Mafic Intrusions
- 9 Felsic Intrusions
- 8 Intermediate Intrusions
- 7 Mafic Intrusions
- 6 Ultramafic Intrusions
- 5 Sediments
- 4 Felsic Volcanics
- 3 Intermediate Volcanics
- 2 Mafic Volcanics
- 1 Ultramafic Volcanics

**SIGNIFICANT INTERSECTIONS**

Cu (ppm), Zn (ppm), Pb (ppm), Ag (ppm), Au (ppb), Ba (ppm)  
Interval (metres)

- < 0.8% Na<sub>2</sub>O - felsics
- < 0.4% Na<sub>2</sub>O - intermediates
- Mineralized interval
- Geological contact
- Fault

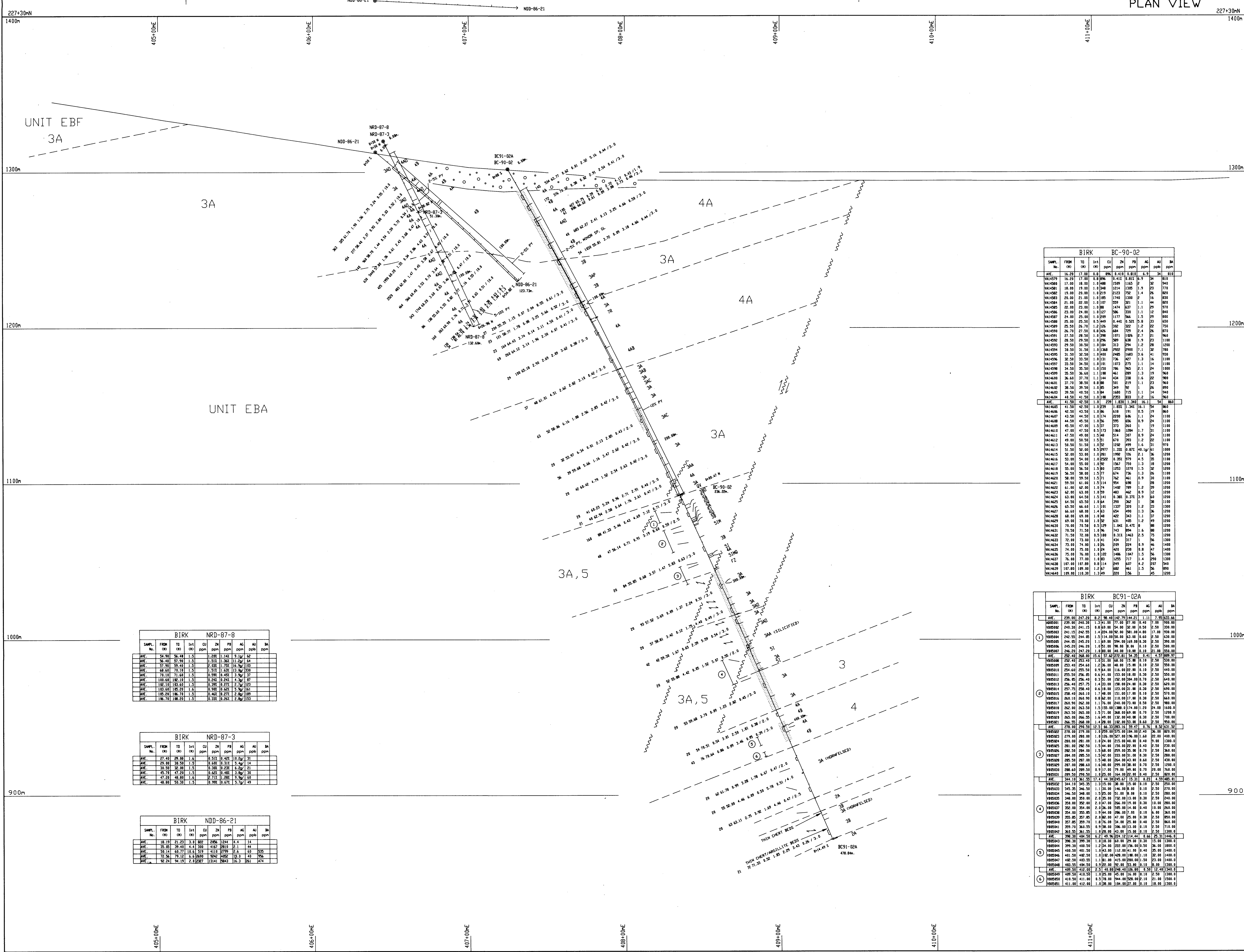
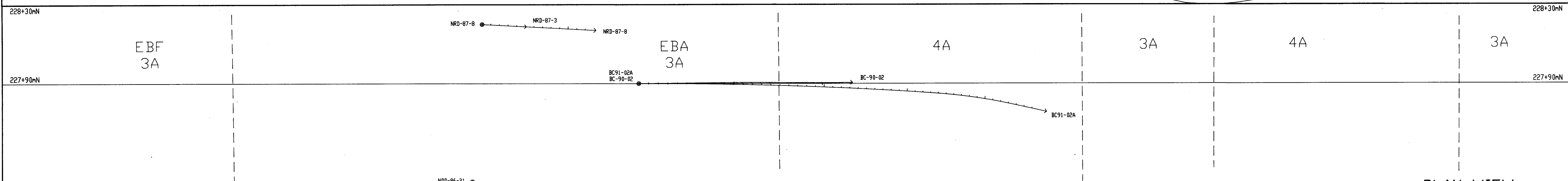
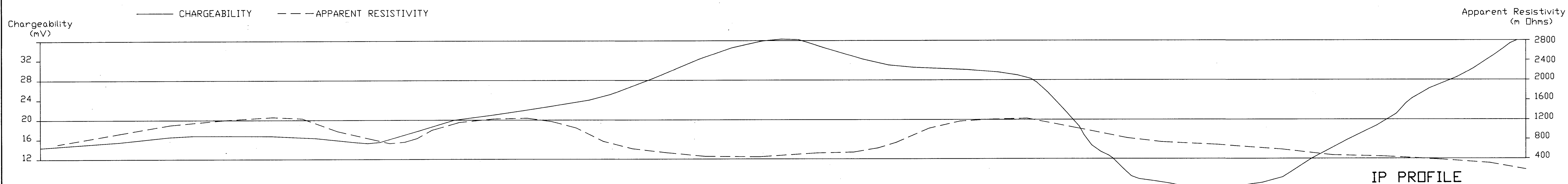
SCALE 1:5000



**FALCONBRIDGE LIMITED**  
**BIRK CREEK**  
**SECTION 228+00N**  
 LOOKING 325°  
**HOLES NDD-86-17,21, NRD-87-03, 08, BC90-02, BC91-02A**  
 (BC91-02A IS AN EXTENSION OF BC90-02)

DATE OF WORK: June 1991	PROJECT: Birk Creek
DRAWN BY: M.V.G. DATE: 05-91	PROJECT: 146
REVISION BY: M.V.G. DATE: 10-91	
DRAWN BY: V.J.G. DATE: 05-91	W.T.S. NO.: 82 H/8W
APPROVED BY:	MAP # 147-5-0074





**BIRK NRD-87-8**

SAMP. No.	FROM (m)	TO (m)	TS (%)	SI (%)	CU (ppm)	ZN (ppm)	FE (ppm)	AS (ppm)	BA (ppm)
NRD87-8-1	1.0	1.5	1.00	1.50	9.5	52			
NRD87-8-2	1.5	2.0	1.00	1.50	10.5	55			
NRD87-8-3	2.0	2.5	1.00	1.50	11.5	58			
NRD87-8-4	2.5	3.0	1.00	1.50	12.5	62			
NRD87-8-5	3.0	3.5	1.00	1.50	13.5	66			
NRD87-8-6	3.5	4.0	1.00	1.50	14.5	70			
NRD87-8-7	4.0	4.5	1.00	1.50	15.5	74			
NRD87-8-8	4.5	5.0	1.00	1.50	16.5	78			
NRD87-8-9	5.0	5.5	1.00	1.50	17.5	82			
NRD87-8-10	5.5	6.0	1.00	1.50	18.5	86			
NRD87-8-11	6.0	6.5	1.00	1.50	19.5	90			
NRD87-8-12	6.5	7.0	1.00	1.50	20.5	94			
NRD87-8-13	7.0	7.5	1.00	1.50	21.5	98			
NRD87-8-14	7.5	8.0	1.00	1.50	22.5	102			
NRD87-8-15	8.0	8.5	1.00	1.50	23.5	106			
NRD87-8-16	8.5	9.0	1.00	1.50	24.5	110			
NRD87-8-17	9.0	9.5	1.00	1.50	25.5	114			
NRD87-8-18	9.5	10.0	1.00	1.50	26.5	118			
NRD87-8-19	10.0	10.5	1.00	1.50	27.5	122			
NRD87-8-20	10.5	11.0	1.00	1.50	28.5	126			
NRD87-8-21	11.0	11.5	1.00	1.50	29.5	130			
NRD87-8-22	11.5	12.0	1.00	1.50	30.5	134			
NRD87-8-23	12.0	12.5	1.00	1.50	31.5	138			
NRD87-8-24	12.5	13.0	1.00	1.50	32.5	142			
NRD87-8-25	13.0	13.5	1.00	1.50	33.5	146			
NRD87-8-26	13.5	14.0	1.00	1.50	34.5	150			
NRD87-8-27	14.0	14.5	1.00	1.50	35.5	154			
NRD87-8-28	14.5	15.0	1.00	1.50	36.5	158			
NRD87-8-29	15.0	15.5	1.00	1.50	37.5	162			
NRD87-8-30	15.5	16.0	1.00	1.50	38.5	166			
NRD87-8-31	16.0	16.5	1.00	1.50	39.5	170			
NRD87-8-32	16.5	17.0	1.00	1.50	40.5	174			
NRD87-8-33	17.0	17.5	1.00	1.50	41.5	178			
NRD87-8-34	17.5	18.0	1.00	1.50	42.5	182			
NRD87-8-35	18.0	18.5	1.00	1.50	43.5	186			
NRD87-8-36	18.5	19.0	1.00	1.50	44.5	190			
NRD87-8-37	19.0	19.5	1.00	1.50	45.5	194			
NRD87-8-38	19.5	20.0	1.00	1.50	46.5	198			
NRD87-8-39	20.0	20.5	1.00	1.50	47.5	202			
NRD87-8-40	20.5	21.0	1.00	1.50	48.5	206			
NRD87-8-41	21.0	21.5	1.00	1.50	49.5	210			
NRD87-8-42	21.5	22.0	1.00	1.50	50.5	214			
NRD87-8-43	22.0	22.5	1.00	1.50	51.5	218			
NRD87-8-44	22.5	23.0	1.00	1.50	52.5	222			
NRD87-8-45	23.0	23.5	1.00	1.50	53.5	226			
NRD87-8-46	23.5	24.0	1.00	1.50	54.5	230			
NRD87-8-47	24.0	24.5	1.00	1.50	55.5	234			
NRD87-8-48	24.5	25.0	1.00	1.50	56.5	238			
NRD87-8-49	25.0	25.5	1.00	1.50	57.5	242			
NRD87-8-50	25.5	26.0	1.00	1.50	58.5	246			
NRD87-8-51	26.0	26.5	1.00	1.50	59.5	250			
NRD87-8-52	26.5	27.0	1.00	1.50	60.5	254			
NRD87-8-53	27.0	27.5	1.00	1.50	61.5	258			
NRD87-8-54	27.5	28.0	1.00	1.50	62.5	262			
NRD87-8-55	28.0	28.5	1.00	1.50	63.5	266			
NRD87-8-56	28.5	29.0	1.00	1.50	64.5	270			
NRD87-8-57	29.0	29.5	1.00	1.50	65.5	274			
NRD87-8-58	29.5	30.0	1.00	1.50	66.5	278			
NRD87-8-59	30.0	30.5	1.00	1.50	67.5	282			
NRD87-8-60	30.5	31.0	1.00	1.50	68.5	286			
NRD87-8-61	31.0	31.5	1.00	1.50	69.5	290			
NRD87-8-62	31.5	32.0	1.00	1.50	70.5	294			
NRD87-8-63	32.0	32.5	1.00	1.50	71.5	298			
NRD87-8-64	32.5	33.0	1.00	1.50	72.5	302			
NRD87-8-65	33.0	33.5	1.00	1.50	73.5	306			
NRD87-8-66	33.5	34.0	1.00	1.50	74.5	310			
NRD87-8-67	34.0	34.5	1.00	1.50	75.5	314			
NRD87-8-68	34.5	35.0	1.00	1.50	76.5	318			
NRD87-8-69	35.0	35.5	1.00	1.50	77.5	322			
NRD87-8-70	35.5	36.0	1.00	1.50	78.5	326			
NRD87-8-71	36.0	36.5	1.00	1.50	79.5	330			
NRD87-8-72	36.5	37.0	1.00	1.50	80.5	334			
NRD87-8-73	37.0	37.5	1.00	1.50	81.5	338			
NRD87-8-74	37.5	38.0	1.00	1.50	82.5	342			
NRD87-8-75	38.0	38.5	1.00	1.50	83.5	346			
NRD87-8-76	38.5	39.0	1.00	1.50	84.5	350			
NRD87-8-77	39.0	39.5	1.00	1.50	85.5	354			
NRD87-8-78	39.5	40.0	1.00	1.50	86.5	358			
NRD87-8-79	40.0	40.5	1.00	1.50	87.5	362			
NRD87-8-80	40.5	41.0	1.00	1.50	88.5	366			
NRD87-8-81	41.0	41.5	1.00	1.50	89.5	370			
NRD87-8-82	41.5	42.0	1.00	1.50	90.5	374			
NRD87-8-83	42.0	42.5	1.00	1.50	91.5	378			
NRD87-8-84	42.5	43.0	1.00	1.50	92.5	382			
NRD87-8-85	43.0	43.5	1.00	1.50	93.5	386			
NRD87-8-86	43.5	44.0	1.00	1.50	94.5	390			
NRD87-8-87	44.0	44.5	1.00	1.50	95.5	394			
NRD87-8-88	44.5	45.0	1.00	1.50	96.5	398			
NRD87-8-89	45.0	45.5	1.00	1.50	97.5	402			
NRD87-8-90	45.5	46.0	1.00	1.50	98.5	406			
NRD87-8-91	46.0	46.5	1.00	1.50	99.5	410			
NRD87-8-92	46.5	47.0	1.00	1.50	100.5	414			
NRD87-8-93	47.0	47.5	1.00	1.50	101.5	418			
NRD87-8-94	47.5	48.0	1.00	1.50	102.5	422			
NRD87-8-95	48.0	48.5	1.00	1.50	103.5	426			
NRD87-8-96	48.5	49.0	1.00	1.50	104.5	430			
NRD87-8-97	49.0	49.5	1.00	1.50	105.5	434			
NRD87-8-98	49.5	50.0	1.00	1.50	106.5	438			
NRD87-8-99	50.0	50.5	1.00	1.50	107.5	442			
NRD87-8-100	50.5	51.0	1.00	1.50	108.5	446			

## LEGEND

**EAGLE BAY STRATIGRAPHY**

EBP Phyllite  
 EBF Intermediate Volcanics  
 EBA Felsic to Intermediate Volcanics

**MAJOR ROCK UNITS**

10 Late Mafic Intrusions  
 9 Felsic Intrusions  
 8 Intermediate Intrusions  
 7 Mafic Intrusions  
 6 Ultramafic Intrusions  
 5 Sediments  
 4 Felsic Volcanics  
 3 Intermediate Volcanics  
 2 Mafic Volcanics  
 1 Ultramafic Volcanics

### ROCK UNIT LETTER QUALIFIERS

The second letter indicates the type of rock; if omitted a dash should be inserted if a third letter is used.

A Tuff  
 B Lapilli Tuff  
 C Tuff Breccia  
 D Massive Flow  
 E Pillowed Flow  
 F Flow Breccia  
 G Pillow Breccia  
 H Intrusive  
 I Argillite  
 J Siltstone  
 K Wacke  
 L Conglomerate  
 M Chert  
 N Iron Formation  
 O Limestone  
 P Exhalite/Sulphides  
 Q Tuffaceous Sediments  
 R Fine Grained  
 S Medium Grained  
 T Coarse Grained

The third and fourth letters are placed in alphabetical order; they are optional and further define the rock.

A Quartz Phyrlic  
 B Feldspar Phyrlic  
 C Quartz-Feldspar Phyrlic  
 D Mafic Phyrlic  
 E Mafic-Feldspar Phyrlic  
 F Amygdaloidal  
 G Spherulitic  
 H Variolitic  
 I Leucocratic  
 J Melanocratic  
 K Bedded  
 L Chloritic  
 M Graphitic  
 N Calcareous  
 O Argillaceous  
 P Siliceous/Cherty  
 Q Sheared  
 R Massive  
 S Lithic  
 T Dolomitic

### OTHER

ms Massive sulphides  
 ls Laminated to banded sulphides  
 ss Stringer sulphides  
 ds Disseminated sulphides

u Unconformity  
 FZ Fault zone  
 FB Fault breccia  
 CAS Casing  
 QV Quartz vein  
 OB Overburden  
 py Pyrite  
 cpy Chalcocopyrite  
 po Pyrrhotite  
 sp Sphalerite  
 ga Galena

### SYMBOLS

Overburden  
 Bedding  
 Foliation  
 Fault, attitude  
 Fracture  
 Stratigraphic top  
 Fold axis  
 Geological contact (inferred)  
 Visual estimate of sulphide content

1.5X Py

0.8% Na2O - felsic rocks  
 0.4% Na2O - intermediate rocks

**BIRK BC-90-02**

SAMP. No.	FROM (m)	TO (m)	TS (%)	SI (%)	CU (ppm)	ZN (ppm)	FE (ppm)	AS (ppm)	BA (ppm)
BC90-02-1	1.0	1.5	1.00	1.50	9.5	52			
BC90-02-2	1.5	2.0	1.00	1.50	10.5	55			
BC90-02-3	2.0	2.5	1.00	1.50	11.5	58			
BC90-02-4	2.5	3.0	1.00	1.50	12.5	62			
BC90-02-5	3.0	3.5	1.00	1.50	13.5	66			
BC90-02-6	3.5	4.0	1.00	1.50	14.5	70			
BC90-02-7	4.0	4.5	1.00	1.50	15.5	74			
BC90-02-8	4.5	5.0	1.00	1.50	16.5	78			
BC90-02-9	5.0	5.5	1.00	1.50	17.5	82			
BC90-02-10	5.5	6.0	1.00	1.50	18.5	86			
BC90-02-11	6.0	6.5	1.00	1.50	19.5	90			
BC90-02-12	6.5	7.0	1.00	1.50	20.5	94			
BC90-02-13	7.0	7.5	1.00	1.50	21.5	98			
BC90-02-14	7.5	8.0	1.00	1.50	22.5	102			
BC90-02-15	8.0	8.5	1.00	1.50	23.5	106			
BC90-02-16	8.5	9.0	1.00	1.50	24.5	110			
BC90-02-17	9.0	9.5	1.00	1.50	25.5	114			
BC90-02-18	9.5	10.0	1.00	1.50	26.5	118			
BC90-02-19	10.0	10.5	1.00	1.50	27.5	122			
BC90-02-20	10.5	11.0	1.00	1.50	28.5	126			
BC90-02-21	11.0	11.5	1.00	1.50	29.5	130			
BC90-02-22	11.5	12.0	1.00	1.50	30.5	134			
BC90-02-23	12.0	12.5	1.00	1.50	31.5	138			
BC90-02-24	12.5	13.0	1.00	1.50	32.5	142			
BC90-02-25	13.0	13.5	1.00	1.50	33.5	146			
BC90-02-26	13.5	14.0	1.00	1.50	34.5	150			
BC90-02-27	14.0	14.5	1.00	1.50	35.5	154			
BC90-02-28	14.5	15.0	1.0						

**APPENDIX B**

**Drill Log, Tabulated Analytical Results and Analytical Certificates**

FALCONBRIDGE LTD  
DIAMOND DRILL LOG  
Property : BIRK

Hole # : BC91-02A      Zone # :      Contractor : ATLAS DRILLING LTD.      Date started : 6/18/1991  
Township: KAMLOOPS      Range:      Claim # :BLUFF 1      Date completed: 6/22/1991  
Lot :      Section: 227+90W      Location :  
Level : SURFACE  
Collar coordinate :      Line : 227+90 W      Latitude: 22790.00 N      Azimuth: 55° 0' 0"  
Reference frame :      Station: 407+25 E      Departure: 40725.00 E      Dip : -60° 0' 0"  
Elevation: 1302.00      Length : 478.84 M

Surveyed by:

Deviation tests :

Depth	Dip	Azimuth
0.00 M	-60° 0' 0"	55° 0' 0"
337.10 M	-66°30' 0"	59° 0' 0"
438.90 M	-66° 0' 0"	67°30' 0"

Remarks :

Water flow :  
Cimented :

Plugged:  
Core size: NO

Logged by : M. VANDE GUCHTE

Date logged: 6/22/1991

Hole # : BC91-02A

FROM (M)	TO (M)	DESCRIPTION	Sampl.	FROM	TO	Leng. (M)	CU PPM	PB PPM	ZN PPM	BA PPM	AG PPM	AU PPB	AS PPM	NI PPM	Cu/Zn RATIO
0.00	236.22	SEE LOG FOR BC90-02													
236.22	236.70	QUARTZ VEIN QV Trace to 1% pyrite and pyrrhotite.													
236.70	244.05	ARGILLACEOUS INTERMEDIATE LAPILLI ASH TUFF 380 Medium to light grey/green, fine grained. Up to 15%, <2cm, elongated (mottled) intermediate lapilli fragments, stretched parallel to foliation. Fine grained, weakly sericitic matrix with numerous (10%) quartz veins throughout. 1-2% fine grained disseminated and fracture controlled pyrite. 239.4-243.3m: Brecciated appearance with local fault zones from 239.4-240.3m and 242.6-242.7m. Up to 15%, fine grained disseminated/fracture controlled pyrrhotite. Traces to 0.5% medium brown sphalerite(?). ALTERATION: Weak to moderate fracture, controlled silicification. MINERALIZATION: Up to 15% pyrrhotite between 239.6-242.7m. Possible trace to 0.5% sphalerite. FOLIATION: 239.0m: 65 degrees to core axis. FAULTS: 239.4-240.3m: Broken, blocky core with local fault zones with gouge at approximately 35-40 degrees to core axis. 242.6-242.7m: Brecciated appearance with local fault zones with gouge at approximately 60 degrees to core axis.	AVE. AB05001 VB05002 VB05003 VB05004	239.00 239.00 240.30 241.15 242.55	247.20 240.30 241.15 242.55 244.05	8.20 1.30 0.85 1.40 1.50	98.40 41.00 69.00 224.00 114.00	144.21 27.00 32.00 581.00 63.00	142.79 77.00 54.00 92.00 50.00	633.66 900.00 330.00 930.00 630.00	1.11 0.40 0.50 4.80 0.60	7.95 7.00 2.50 17.00 2.50	23.34 39.00 22.00 2.50 29.00	49.07 11.00 22.00 44.00 65.00	0
244.05	246.20	ARGILLITE S1 Black, finely laminated to massive, fine grained,	VB05005 VB05006	244.05 245.20	245.20 246.20	1.15 1.00	69.00 51.00	169.00 8.00	594.00 98.00	390.00 500.00	0.30 0.10	2.50 2.50	40.00 12.00	75.00 61.00	

FROM (M)	TO (M)	DESCRIPTION	Sampl.	FROM	TO	Leng. (M)	CU PPM	PB PPM	ZN PPM	BA PPM	AG PPM	AU PPB	AS PPM	NI PPM	Cu/Zn RATIO
246.20	253.40	<p>weakly graphitic on fractured surfaces. Trace to 1% fine grained pyrite/pyrrhotite occurring locally as subangular aggregates up to 1cm in length. 1-2%, &lt;1mm quartz stringers.</p> <p>BEDDING: 244.05m: 65 degrees to core axis.</p> <p>INTERMEDIATE LAPILLI ASH TUFF 3B</p> <p>Medium to light green-grey, fine grained with overall mottled siliceous appearance. Up to 10%, &lt;2cm elongated intermediate fragments stretched parallel to foliation. Fine grained, siliceous matrix with 35% quartz veining from 247.8-249.0m. Weak to moderate spotty hornfelsing increasing downhole. Poorly developed foliation with overall mottled siliceous appearance.</p> <p>ALTERATION: Weak to moderate hornfels. Weak fracture controlled silicification.</p> <p>MINERALIZATION: Trace to 1% fine grained disseminated pyrite. Trace to 2% fine grained disseminated pyrrhotite.</p> <p>FAULTS: 246.6-246.65m: Fault zone with gouge at 27 degrees to core axis.</p>	VB05007 AVE. VB05008	246.20 252.40 252.40	247.20 268.00 253.40	1.00 15.60 1.00	80.00 57.62 31.00	10.00 54.35 15.00	40.00 272.81 68.00	550.00 809.97 530.00	0.10 0.41 0.10	21.00 4.57 2.50	17.00 80.99 36.00	63.00 44.13 15.00	0
253.40	254.60	<p>ARGILLACEOUS TUFFACEOUS SEDIMENTS 50</p> <p>Medium to dark grey/black, fine grained argillaceous matrix. Up to 60%, &lt;4cm elongated, subrounded intermediate fragments throughout increasing in abundance towards the lower contact to 254.5m. Black argillite bed from 254.5-254.6m (lower contact).</p> <p>ALTERATION: Nil.</p> <p>MINERALIZATION: 1-2% fine grained, disseminated pyrite/pyrrhotite</p>	VB05009	253.40	254.60	1.20	36.00	15.00	48.00	550.00	0.10	2.50	83.00	28.00	

FROM (M)	TO (M)	DESCRIPTION	Sampl.	FROM	TO	Length (M)	CU PPM	PB PPM	ZN PPM	BA PPM	AG PPM	AU PPB	AS PPM	NI PPM	Cu/Zn RATIO
254.60	255.50	with local pyrrhotite aggregates up to 5mm. BEDDING: 254.6m: 85 degrees to core axis. FOLIATION: 254.0m: 80 degrees to core axis. INTERMEDIATE ASH TUFF 3A Medium to light grey-green, fine grained ash tuff. Overall mottled siliceous appearance with spotty hornfelsing throughout. 1-2% pyrrhotite associated with hornfelsing spots. Poorly developed foliation. ALTERATION: Weak to moderate spotty hornfelsing. MINERALIZATION: Trace to 2% fine grained disseminated pyrite/pyrrhotite.	VB05010	254.60	255.50	0.90	64.00	22.00	116.00	440.00	0.10	2.50	163.00	9.00	
255.50	256.05	ARGILLITE 5I Black, weakly graphitic argillite. Sharp upper contact with gradational lower contact over 10-15cm into intermediate ash or fine grained tuffaceous sediment sub-unit. Local up to 3cm elongated dacitic fragment occur throughout, but appears to fine uphole with up to 50% dacitic fragments over the last 20cm. Fine grained pyrrhotite/pyrite occurring locally as up to 4mm aggregates. BEDDING: 255.5m: 70 degrees to core axis.	VB05011	255.50	256.05	0.55	41.00	18.00	153.00	550.00	0.30	2.50	335.00	56.00	
256.05	257.75	ARGILLACEOUS TUFFACEOUS SEDIMENTS 5Q Medium to dark grey-black, up to 45%, <3cm elongated, subangular to subrounded intermediate (dacitic) fragments below 256.04m. Fine grained, argillaceous matrix. 1-2% fine grained disseminated pyrite/pyrrhotite.	VB05012 VB05013	256.05 256.40	256.40 257.75	0.35 1.35	51.00 33.00	304.00 24.00	152.00 158.00	640.00 620.00	0.70 0.30	2.50 2.50	458.00 57.00	19.00 24.00	













FROM (M)	TO (M)	DESCRIPTION	Sampl.	FROM	TO	Leng. (M)	CU PPM	PB PPM	ZN PPM	BA PPM	AG PPM	AU PPB	AS PPM	NI PPM	Cu/Zn RATIO
337.10	345.35	<p>ALTERATION: 332.9-334.1m: Weak spotty biotite alteration with trace to 2% pyrrhotite.</p> <p>FOLIATION: 328.0m: 85 degrees to core axis. 336.5m: 73 degrees to core axis.</p> <p>FAULTS: 329.45-329.55m: Fault with gouge at 10 degrees to core axis. 332.4-332.5m: Fault with gouge at 35 degrees to core axis. 332.6m: Fault slip at 38 degrees to core axis. 332.75m: Fault slip at 43 degrees to core axis.</p> <p>INTERMEDIATE QUARTZ PHYRIC ASH TUFF 3AA</p> <p>Light grey-beige, medium to fine grained silicified ash. Variable up to 20%, &lt;2mm mottled carbonate spots resembling feldspars and 1-3%, &lt;2mm quartz phenocrysts. Weak to moderately well developed foliation with quartz-carbonate stringers parallel to and crosscutting foliation. Trace to 1% fine grained disseminated pyrite. Weak to moderate spotty biotization between 140.1-141.45m.</p> <p>344.1-345.35m: Brecciated zone with argillaceous matrix. Approximately 90-95%, up to 5cm subangular fragments of quartz-feldspar phyric felsic tuff.</p> <p>ALTERATION: Moderate to strong pervasive silicification Weak pervasive sericitization. Weak spotty biotization between 140.1-141.45m.</p> <p>FAULTS: 338.6-338.8m: Fault zone with gouge at 38 degrees to core axis. 339.8m: Fault slip at 53 degrees to core axis.</p>	AVE. V805032	344.10 344.10	361.55 345.35	17.45 1.25	44.30 15.00	15.31 15.00	245.67 38.00	485.01 250.00	0.23 0.10	4.59 2.50	29.77 29.00	29.13 7.00	0

FROM (M)	TO (M)	DESCRIPTION	Sampl.	FROM	TO	Leng- (M)	CU PPM	PB PPM	ZN PPM	BA PPM	AG PPM	AU PPB	AS PPM	NI PPM	Cu/Zn RATIO
345.35	355.85	ARGILLITE 51  Medium to dark grey/black argillite with finely interlaminated/interbedded siltstone and local silty/argillaceous volcanic tuff interbeds between 349.05-349.2m, 350.4-350.77m, and 350.9-351.2m. Trace to 3% pyrite as fine disseminations to irregular shaped aggregates up to 1cm. Brecciated over the first 4m (to approximately 349.35m) with up to 5%, <3cm subangular to subrounded argillite fragments in a silty/argillaceous matrix. Local, broken-blocky sections throughout this interval. Orientation of this shear zone is uncertain (estimated at 40-45 degrees to core axis).  ALTERATION: Weak fracture controlled quartz-carbonate.  BEDDING: 350.4m: 55 degrees to core axis.  FAULTS: Brecciated zone with estimated shear orientation at 40-45 degrees to core axis.	VB05033	345.35	346.50	1.15	30.00	8.00	146.00	270.00	0.10	2.50	17.00	37.00	
			VB05034	346.50	348.00	1.50	25.00	8.00	51.00	280.00	0.10	2.50	13.00	26.00	
			VB05035	348.00	350.00	2.00	35.00	13.00	732.00	240.00	0.30	2.50	18.00	36.00	
			VB05036	350.00	352.00	2.00	47.00	19.00	266.00	280.00	0.30	10.00	20.00	25.00	
			VB05037	352.00	354.00	2.00	36.00	14.00	505.00	260.00	0.40	10.00	26.00	48.00	
			VB05038	354.00	355.85	1.85	44.00	7.00	286.00	360.00	0.10	6.00	10.00	48.00	
355.85	359.70	INTERMEDIATE ASH TUFF 3A  Medium to light grey-brown, medium to fine grained, biotite - carbonate altered ash tuff. Moderate pervasive/spotty biotite and moderate spotty (<2mm spots) carbonate rimmed by biotite. Locally magnetic with trace to 1% pyrrhotite and trace to 1% fine grained disseminated pyrite. Poorly developed foliation with overall coarser grained appearance.  ALTERATION: Moderate spotty/pervasive biotization. Moderate spotty carbonatization.	VB05039	355.85	357.85	2.00	82.00	25.00	47.00	850.00	0.30	2.50	65.00	19.00	
			VB05040	357.85	359.70	1.85	76.00	25.00	34.00	860.00	0.40	2.50	66.00	19.00	
359.70	360.55	ARGILLITE 51  Dark grey/black, finely laminated argillite with interbedded/interlaminated argillaceous silt	VB05041	359.70	360.55	0.85	38.00	13.00	306.00	710.00	0.10	2.50	23.00	40.00	



FROM (M)	TO (M)	DESCRIPTION	Sampl.	FROM	TO	Leng. (M)	CU PPM	PB PPM	ZN PPM	BA PPM	AG PPH	AU PPB	AS PPM	NI PPM	Cu/Zn RATIO
392.70	399.30	<p>Light grey, fine grained, spotty hornfelsed ash tuff. Up to 20%, 1-8mm dark grey-green spots with biotite and pyrrhotite. Poorly developed foliation.</p> <p>389.35-389.8m: Feldspar phyric felsic dyke. Medium to light grey, medium grained with up to 10%, &lt;3mm mottled feldspar crystals. Contacts at 90 degrees to core axis.</p> <p>ALTERATION: Moderate spotty hornfels (biotite/pyrrhotite).</p> <p>FELSIC LAPILLI ASH TUFF 4B</p> <p>Medium to light grey, medium grained lapilli ash tuff. Up to 15%, &lt;2cm elongated, siliceous felsic fragments stretched parallel to a poorly developed foliation. 2-3%, up to 2cm pyritic felsic fragments over the last 20cm (399.1-399.3m). Up to 25%, &lt;4mm dark grey hornfelsing spots with biotite and pyrrhotite. Trace to 1% fine grained pyrite.</p> <p>392.7-392.95m: Intermediate ash tuff. Medium grey, fine grained with 2%, &lt;1cm felsic lapilli fragments.</p> <p>ALTERATION: Moderate spotty hornfels (biotite/pyrrhotite).</p>	AVE. VB05043	398.30 398.30	404.50 399.30	6.20 1.00	49.96 18.00	114.44 29.00	224.12 60.00	1446.0 1300.00	0.66 0.30	25.31 15.00	77.11 61.00	3.68 4.00	0
399.30	403.55	<p>FELSIC ASH TUFF 4A</p> <p>Medium to light grey, medium to fine grained felsic ash tuff. Up to 3%, &lt;1mm quartz and feldspar microphenocrysts. Occasional, up to 1cm elongated felsic lapilli fragment. Up to 3% fine grained disseminated and fracture controlled pyrite. Traces sphalerite with quartz at 399.6, 400.8m and 402.4m. Poorly developed foliation. Minor crosscutting quartz-carbonate veins/stringers.</p> <p>ALTERATION:</p>	VB05044 VB05045 VB05046 VB05047	399.30 400.50 401.50 402.50	400.50 401.50 402.50 403.55	1.20 1.00 1.00 1.05	34.00 43.00 102.00 81.00	156.00 41.00 428.00 280.00	222.00 112.00 428.00 415.00	1800.00 1400.00 1400.00 1400.00	0.50 0.40 1.10 1.50	36.00 35.00 32.00 23.00	97.00 102.00 104.00 73.00	4.00 3.00 3.00 4.00	











HOLE NUMBER: BC91-02A

## GEOCHEM. SHEET

DATE: 21-October-1991

Sample	From (M)	To (M)	Length (M)	SiO2 wt%	TiO2 wt%	Al2O3 wt%	Fe2O3 wt%	MgO wt%	CaO wt%	Na2O %wt	K2O wt%	P2O5 wt%	MnO wt%	Rb ppm	Sr ppm	Y ppm	Zr ppm	Ni ppm	Ba ppm	Cu ppm	Zn ppm	LOI wt%	Cu/Zn Ratio	Zn/Na Ratio	ISHIKA A.I.	ALUM A.I.	ACNK A.I.
VB06001	240.00	243.00	3.00	41.33	0.71	20.74	5.83	7.12	5.46	0.43	4.69	0.23	0.24	144	208	26	166	48	995	160	88	9.01	64	4886	66	196	1.32
VB06002	249.00	251.50	2.50	56.14	0.50	17.61	6.21	8.60	0.71	0.91	3.19	0.09	0.07	97	101	20	111	20	509	48	47	5.29	50	19361	87	366	2.82
VB06003	273.00	276.00	3.00	55.85	0.63	16.77	6.49	5.83	0.68	3.57	1.47	0.12	0.10	52	64	20	103	20	334	20	84	8.27	19	42500	63	293	1.93
VB06004	299.00	302.00	3.00	57.52	0.51	15.46	6.49	2.24	3.69	0.09	1.37	0.10	0.14	43	100	20	88	20	220	20	93	10.76	17	967	48	300	1.85
VB06005	316.00	319.00	3.00	58.81	0.49	15.21	4.23	4.40	3.42	0.12	1.75	0.10	0.09	45	149	20	113	20	252	20	57	10.90	25	2105	63	287	1.83
VB06006	324.00	327.00	3.00	59.30	0.54	16.50	5.89	5.59	1.67	0.65	2.39	0.09	0.10	68	124	20	109	20	392	42	42	6.77	50	15476	77	350	2.46
VB06007	342.00	344.00	2.00	55.88	0.55	14.89	5.76	3.07	4.42	0.05	1.52	0.10	0.10	56	83	20	111	20	290	20	52	13.15	27	961	50	248	1.52
VB06008	369.00	372.00	3.00	59.68	0.45	13.89	5.44	2.82	3.70	0.09	1.23	0.09	0.13	26	115	30	164	20	613	20	53	11.66	27	1698	51	276	1.69
VB06009	390.00	392.00	2.00	70.51	0.38	14.52	3.66	1.81	0.54	3.01	2.50	0.10	0.06	80	88	30	273	20	1208	20	54	2.78	27	55740	54	240	1.68
VB06010	399.50	402.50	3.00	70.64	0.39	13.53	4.29	0.95	0.86	0.09	3.46	0.09	0.01	122	74	31	211	20	1662	43	76	5.25	36	1184	82	306	2.47
VB06011	421.00	423.00	2.00	61.78	0.47	15.99	5.70	6.67	0.99	3.28	1.78	0.10	0.09	63	146	20	114	20	609	20	62	3.31	24	52903	66	264	1.75
VB06012	431.65	432.00	0.35	52.00	0.51	17.40	4.73	5.78	4.46	6.09	0.50	0.09	0.13	21	317	25	124	20	105	20	55	7.67	26	110727	37	157	0.93
VB06013	442.20	444.70	2.50	63.11	0.47	15.85	5.56	4.46	2.75	3.92	1.69	0.10	0.12	51	170	20	110	20	678	20	63	2.02	24	62222	47	189	1.19
VB06014	472.00	475.00	3.00	71.33	0.26	13.14	4.01	3.43	0.52	1.85	2.29	0.10	0.08	69	74	20	169	20	1162	21	72	2.78	22	25694	70	281	2.03

HOLE NUMBER: BC91-02A

GEOCHEM. SHEET

PAGE: 1

**DIAMOND DRILL CORE LITHOGEOCHEMICAL RECORD  
(MINOR ELEMENTS)**

SAMPLE NUMBER	FROM	TO	BA (ppm)	CU (ppm)	ZN (ppm)	AG (ppm)	AU (ppb)	CO (ppm)	NI (ppm)	PB (ppm)	AS (ppm)	CD (ppm)	MN (ppm)	CUZN	ROCK	ALT
VB05001	259.00	240.30	900.0	47.0	77.0	0.4	7.0	22.0	77.0	27.0	39.0	0.5	758.0	55.	TIBA	EQW
VB05002	240.30	241.15	330.0	69.0	54.0	0.5	2.5	10.0	22.0	32.0	22.0	0.5	1494.0	56.	TIBA	EQW
VB05003	241.15	242.55	950.0	224.0	92.0	4.6	17.0	13.0	44.0	581.0	2.5	0.5	1369.0	71.	TIBA	EQW
VB05004	242.55	244.05	630.0	114.0	50.0	0.6	2.5	6.0	65.0	63.0	29.0	0.5	1011.0	70.	TIBA	EQW
VB05005	244.05	245.20	390.0	69.0	594.0	0.3	2.5	5.0	75.0	169.0	40.0	3.4	171.0	10.	SATG	EQW
VB05006	245.20	246.20	500.0	51.0	98.0	0.1	2.5	4.0	61.0	8.0	12.0	0.5	130.0	34.	SATG	EQW
VB05007	246.20	247.20	550.0	80.0	40.0	0.1	21.0	6.0	65.0	10.0	17.0	0.5	200.0	67.	TIBA	EQW
VB05008	252.40	253.40	530.0	31.0	68.0	0.1	2.5	11.0	15.0	15.0	36.0	0.5	307.0	31.	SW-A	NA-
VB05009	253.40	254.60	550.0	36.0	48.0	0.1	2.5	12.0	28.0	15.0	83.0	0.5	265.0	43.	SW-A	NA-
VB05010	254.60	255.50	440.0	64.0	116.0	0.1	2.5	11.0	9.0	22.0	163.0	0.5	606.0	36.	TIAA	SMW
VB05011	255.50	256.05	550.0	41.0	153.0	0.3	2.5	11.0	56.0	18.0	335.0	1.3	223.0	21.	SATGA	NA-
VB05012	256.05	256.40	640.0	51.0	152.0	0.7	2.5	13.0	19.0	304.0	458.0	0.5	399.0	25.	TIA	NA-
VB05013	256.40	257.75	620.0	33.0	158.0	0.3	2.5	13.0	24.0	24.0	57.0	0.5	318.0	17.	SW-A	NA-
VB05014	257.75	258.40	690.0	18.0	123.0	0.3	2.5	14.0	10.0	31.0	23.0	0.5	214.0	13.	TIBA	NA-
VB05015	258.40	260.10	570.0	48.0	151.0	0.1	2.5	10.0	54.0	17.0	114.0	0.5	240.0	24.	SATGA	EQW
VB05016	260.10	260.90	660.0	62.0	110.0	0.3	2.5	15.0	15.0	17.0	46.0	0.5	611.0	36.	TIA	EQW
VB05017	260.90	262.00	960.0	76.0	240.0	0.5	2.5	7.0	74.0	73.0	121.0	0.5	246.0	24.	SATGA	EQW
VB05018	262.00	263.50	1600.0	155.0	1083.0	1.2	24.0	7.0	76.0	174.0	49.0	9.6	118.0	10.	SATGA	EQW
VB05019	263.50	265.00	1200.0	71.0	368.0	0.7	2.5	7.0	80.0	69.0	31.0	2.3	133.0	16.	SATGA	EQW
VB05020	265.00	266.55	700.0	49.0	132.0	0.3	2.5	6.0	68.0	40.0	16.0	0.5	198.0	27.	SATGA	EQW
VB05021	266.55	268.00	950.0	28.0	102.0	0.6	2.5	14.0	13.0	53.0	25.0	0.5	441.0	22.	TIBA	SMW
VB05022	278.00	279.00	820.0	259.0	575.0	2.4	36.0	13.0	10.0	184.0	70.0	1.6	111.0	31.	TIBA	SMW
VB05023	279.00	280.00	400.0	126.0	527.0	1.6	22.0	5.0	51.0	196.0	26.0	2.7	153.0	19.	SATA	EQW

**DIAMOND DRILL CORE LITHOGEOCHEMICAL RECORD  
(MINOR ELEMENTS)**

SAMPLE NUMBER	FROM	TO	BA (ppm)	CU (ppm)	ZN (ppm)	AG (ppm)	AU (ppb)	CO (ppm)	NJ (ppm)	PR (ppm)	AS (ppm)	CD (ppm)	MN (ppm)	CUZN	ROCK	ALT
VB05024	280.00	281.00	1500.0	24.0	215.0	0.4	9.0	14.0	10.0	40.0	39.0	0.5	334.0	10.	TFA	PSW
VB05025	281.00	282.50	230.0	44.0	150.0	0.4	2.5	5.0	56.0	22.0	17.0	0.5	606.0	23.	SATG	EQW
VB05026	282.50	284.00	360.0	68.0	259.0	0.7	2.5	8.0	68.0	35.0	19.0	2.0	670.0	21.	SATG	EQM
VB05027	284.00	285.50	280.0	42.0	303.0	0.3	2.5	4.0	66.0	31.0	5.0	2.4	815.0	11.	SATG	EQM
VB05028	285.50	287.00	430.0	48.0	264.0	0.6	2.5	6.0	76.0	43.0	40.0	2.1	402.0	15.	SATG	EQW
VB05029	287.00	288.60	1200.0	48.0	299.0	0.7	2.5	8.0	56.0	38.0	62.0	3.0	514.0	14.	SATG	EQW
VB05030	288.60	289.50	760.0	17.0	79.0	0.7	20.0	8.0	25.0	49.0	170.0	0.5	728.0	18.	SATG	EQM
VB05031	289.50	290.50	820.0	25.0	164.0	0.4	2.5	17.0	13.0	22.0	40.0	0.5	306.0	13.	TFA	PSW
VB05032	344.10	345.35	250.0	15.0	38.0	0.1	2.5	10.0	7.0	15.0	29.0	0.5	924.0	29.	TFADA	PSW
VB05033	345.35	346.50	270.0	30.0	146.0	0.1	2.5	5.0	37.0	8.0	17.0	1.0	375.0	17.	SATL	PQW
VB05034	346.50	348.00	280.0	25.0	51.0	0.1	2.5	5.0	26.0	8.0	13.0	0.5	331.0	33.	SATL	PQW
VB05035	348.00	350.00	240.0	35.0	732.0	0.3	2.5	7.0	36.0	13.0	18.0	9.0	427.0	5.	SATL	PQW
VB05036	350.00	352.00	280.0	47.0	266.0	0.3	10.0	22.0	25.0	19.0	20.0	1.7	821.0	15.	SATL	PQW
VB05037	352.00	354.00	260.0	36.0	505.0	0.4	10.0	9.0	48.0	14.0	26.0	6.5	408.0	7.	SATL	PQW
VB05038	354.00	355.65	360.0	44.0	286.0	0.1	6.0	5.0	48.0	7.0	10.0	3.4	379.0	13.	SATL	PQW
VB05039	355.85	357.85	850.0	82.0	47.0	0.3	2.5	18.0	19.0	25.0	65.0	0.5	879.0	64.	TFA	PHM
VB05040	357.85	359.70	860.0	76.0	54.0	0.4	2.5	21.0	19.0	25.0	66.0	0.5	1003.0	69.	TJA	PHM
VB05041	359.70	360.55	710.0	38.0	306.0	0.1	2.5	5.0	40.0	13.0	23.0	3.5	565.0	11.	SATL	EQW
VB05042	360.55	361.55	1300.0	28.0	43.0	0.1	2.5	6.0	4.0	15.0	26.0	0.5	582.0	39.	TFAF	SMW
VB05043	398.30	399.30	1300.0	18.0	60.0	0.3	15.0	6.0	4.0	29.0	61.0	0.5	193.0	23.	TEBA	SMH
VB05044	399.30	400.50	1800.0	34.0	222.0	0.5	36.0	6.0	4.0	156.0	97.0	0.5	80.0	13.	TFA	PSW
VB05045	400.50	401.50	1400.0	43.0	112.0	0.4	35.0	5.0	3.0	41.0	102.0	0.5	236.0	28.	TFA	PSW
VB05046	401.50	402.50	1400.0	102.0	428.0	1.1	32.0	6.0	3.0	108.0	104.0	1.2	260.0	19.	TFA	PSW

**DIAMOND DRILL CORE LITHOGEOCHEMICAL RECORD  
(MINOR ELEMENTS)**

SAMPLE NUMBER	FROM	TO	BA (ppm)	CU (ppm)	ZN (ppm)	AG (ppm)	AU (ppb)	CO (ppm)	NJ (ppm)	PB (ppm)	AS (ppm)	CD (ppm)	MN (ppm)	CUZN	ROCK	ALT
VB05047	402.50	403.55	1400.0	61.0	415.0	1.5	23.0	7.0	4.0	280.0	73.0	0.5	282.0	16.	TFA	PSW
VB05048	403.55	404.50	1300.0	22.0	92.0	0.1	8.0	6.0	4.0	53.0	19.0	0.5	404.0	19.	TFBA	SMH
VB05049	409.50	410.50	1300.0	25.0	45.0	0.1	2.5	6.0	5.0	16.0	14.0	0.5	365.0	36.	TFBA	SMH
VB05050	410.50	411.00	1500.0	78.0	944.0	2.1	21.0	6.0	6.0	528.0	37.0	3.7	76.0	8.	TEAA	PSW
VB05051	411.00	412.00	1300.0	38.0	104.0	0.1	18.0	7.0	5.0	57.0	46.0	0.5	253.0	27.	TFB	SMH

# XRF - Analysis

From : Cominco Lab.                      Job no. X91-97                      Reported 07-23-1991  
 Location : Falconbridge Ltd. Project name BIRK CREEK                      no. 605-608-146/147  
 73 samples Shipped from M.VANDE-GUCHTE                      Shipment no. COM91-01/02

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	Field number	CaO %	K2O %	P2O5 %	SiO2 %	Al2O3 %	MgO %	Na2O %	Fe2O3 %	TiO2 %	MnO %	LOI %	Total %
1	V806001	5.46	4.69	0.23	41.33	20.74	7.12	0.43	5.83	0.71	0.24	9.01	95.80
2	V806002	0.71	3.19	0.09	56.14	17.61	8.60	0.91	6.21	0.50	0.07	5.29	99.33
3	V806003	0.68	1.47	0.12	55.85	16.77	5.83	3.57	6.49	0.63	0.10	8.27	99.78
4	V806004	3.69	1.37	0.10	57.52	15.46	2.24	0.09	6.49	0.51	0.14	10.76	98.37
5	V806005	3.42	1.75	0.10	58.81	15.21	4.40	0.12	4.23	0.49	0.09	10.90	99.52
6	V806006	1.67	2.39	0.09	59.30	16.50	5.59	0.65	5.89	0.54	0.10	6.77	99.49
7	V806007	4.42	1.52	0.10	55.88	14.89	3.07	0.05	5.76	0.55	0.10	13.15	99.50
8	V806008	3.70	1.23	0.09	59.68	13.89	2.82	0.09	5.44	0.45	0.13	11.66	99.18
9	V806009	0.54	2.50	0.10	70.51	14.52	1.81	3.01	3.66	0.38	0.06	2.78	99.87
10	V806010	0.86	3.46	0.09	70.64	13.53	0.95	0.09	4.29	0.39	0.01	5.25	99.56
11	V806011	0.99	1.78	0.10	61.78	15.99	6.67	3.28	5.70	0.47	0.09	3.31	100.16
12	V806012	4.46	0.50	0.09	52.00	17.40	5.78	6.09	4.73	0.51	0.13	7.67	99.38
13	V806013	2.75	1.69	0.10	63.11	15.85	4.46	3.92	5.56	0.47	0.12	2.02	100.05
14	V806014	0.52	2.29	0.10	71.33	13.14	3.43	1.85	4.01	0.26	0.08	2.78	99.80
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15	V806015	6.22	3.16	0.47	48.24	13.12	3.16	0.26	9.22	2.44	0.09	12.25	98.64
16	V806016	12.46	1.93	0.26	45.84	12.58	3.50	0.39	7.31	1.47	0.08	12.48	98.30
17	V806017	3.11	1.95	0.09	55.18	14.06	7.58	0.45	6.79	0.44	0.14	9.41	99.20
18	V806018	6.35	0.58	0.09	47.68	10.44	8.97	0.43	8.43	0.39	0.26	13.74	97.38
19	V806019	2.52	0.90	0.08	75.32	6.38	4.53	0.02	3.90	0.45	0.11	5.91	100.12
20	V806020	0.35	2.34	0.09	67.25	14.21	6.49	0.11	4.10	0.52	0.06	4.53	100.07
21	V806021	0.67	1.44	0.10	72.36	10.24	6.15	0.10	3.74	0.48	0.06	4.94	100.29
22	V806022	0.19	1.91	0.08	62.31	13.78	8.60	0.09	6.31	0.50	0.08	6.48	100.33
23	V806023	2.20	1.13	0.08	58.29	11.78	7.13	1.08	6.37	0.47	0.13	10.18	98.84
24	V806024	0.55	0.50	0.09	71.32	9.35	7.26	0.05	5.27	0.45	0.06	5.05	99.95
25	V806025	1.52	0.46	0.17	62.69	8.72	7.76	0.03	9.47	1.03	0.12	6.98	98.96
26	V806026	2.16	1.79	0.16	56.45	14.65	8.17	0.52	7.74	0.63	0.15	7.21	99.73
27	V806027	1.39	4.23	0.18	71.03	14.52	0.70	3.24	3.46	0.43	0.06	0.63	99.88
28	V806028	1.22	3.86	0.09	67.69	14.89	1.16	1.24	4.84	0.47	0.05	3.12	98.65
29	V806029	1.26	6.99	0.12	55.22	21.13	2.27	0.57	5.24	0.60	0.05	5.22	98.67
30	V806030	1.94	3.44	0.08	68.87	13.50	2.15	0.69	2.74	0.21	0.06	4.85	98.53
31	V806031	6.22	4.13	0.11	58.08	14.22	2.20	0.17	3.49	0.39	0.10	8.51	97.62
32	V806032	2.19	3.63	0.08	67.98	13.98	1.89	0.84	2.73	0.21	0.06	5.35	98.94
33	V806033	4.57	2.86	0.08	65.19	13.06	1.60	1.88	2.61	0.21	0.08	6.00	98.14
34	V806034	1.58	4.19	0.09	59.53	14.69	0.19	0.12	4.23	0.31	0.01	4.57	99.54
35	V806035	0.34	3.90	0.03	71.97	13.71	0.38	0.07	4.58	0.38	0.01	4.31	99.60
36	V806036	1.79	3.39	0.09	68.01	14.10	1.51	0.34	3.60	0.31	0.10	5.10	98.94
37	V806037	0.31	3.83	0.09	59.94	14.55	0.23	0.24	5.39	0.41	0.01	4.67	99.68
38	V806038	1.56	3.57	0.08	65.82	14.29	1.12	0.24	5.54	0.42	0.09	5.50	98.43
39	V806039	0.67	2.28	0.08	60.97	15.37	8.80	0.09	4.98	0.46	0.14	5.87	99.71
40	V806040	0.41	1.62	0.07	59.16	14.20	10.04	0.12	6.30	0.44	0.14	6.63	99.63
41	V806041	0.36	2.15	0.07	63.46	13.73	7.62	0.09	5.56	0.42	0.11	6.55	100.32
42	V806042	4.75	2.58	0.10	54.41	14.25	5.10	0.45	6.07	0.47	0.15	9.06	97.41
43	V806043	2.08	3.24	0.10	54.80	14.82	6.02	0.58	6.37	0.52	0.11	10.33	98.98
44	V806044	4.44	3.65	0.10	55.83	16.41	2.10	1.20	6.67	0.50	0.08	6.81	97.80
45	V806045	1.85	3.65	0.08	61.83	15.92	2.47	0.28	6.78	0.45	0.07	6.91	99.39
46	V806046	3.98	2.63	0.08	57.95	15.73	4.17	1.29	7.38	0.50	0.10	6.22	99.13
47	V806047	2.60	2.90	0.08	55.79	15.64	5.31	0.12	7.98	0.47	0.13	7.64	98.66
48	V806048	0.52	3.05	0.07	58.54	16.41	5.31	0.19	7.29	0.49	0.15	6.75	99.89
49	V806049	1.45	2.73	0.09	61.75	15.13	5.01	0.19	7.28	0.47	0.12	5.13	99.41
50	V806050	1.39	4.25	0.08	71.88	14.40	0.79	3.25	3.43	0.43	0.05	0.56	99.95



# XRF - Analysis

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 To : Falconbridge Ltd. Project name BIRK CREEK                      no. 605-608-146/147  
 73 samples Shipped from M.VANDE-GUCHTE                      Shipment no. COM91-01/02  
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Field number	CaO %	K2O %	P2O5 %	SiO2 %	Al2O3 %	MgO %	Na2O %	Fe2O3 %	TiO2 %	MnO %	LOI %	Total %	
51	V806051	0.82	2.65	0.08	58.03	16.70	7.30	0.19	8.09	0.52	0.17	5.27	99.83
52	V806052	0.70	3.16	0.08	62.45	14.93	4.21	0.57	8.29	0.47	0.10	5.01	99.98
53	V806053	0.22	1.99	0.08	65.50	13.46	5.78	0.16	8.10	0.41	0.11	4.58	100.39
54	V806054	3.64	3.38	0.11	60.95	15.29	4.01	0.37	6.13	0.51	0.21	4.54	99.14
55	V806055	0.36	3.13	0.07	61.13	11.88	1.28	0.17	5.64	0.37	0.03	15.48	99.54
56	V806056	4.94	2.93	0.08	57.76	16.79	4.88	1.36	6.22	0.48	0.12	3.90	99.46
57	V806057	2.22	0.50	0.09	59.35	16.35	5.11	5.70	6.80	0.54	0.09	3.42	100.17
58	V806058	3.77	2.49	0.08	62.78	15.47	3.45	2.50	5.24	0.47	0.07	2.87	99.19
59	V806059	2.15	3.43	0.08	65.49	15.96	0.85	2.02	4.23	0.44	0.02	4.78	99.45
60	V806060	3.87	4.01	0.08	61.05	14.92	1.62	0.66	6.32	0.46	0.08	5.97	99.04
61	V806061	0.19	2.69	0.09	52.72	17.29	6.19	0.13	12.81	0.54	0.09	7.39	100.13
62	V806062	2.05	3.30	0.09	65.18	14.11	3.30	0.19	6.26	0.41	0.13	4.84	99.86
63	V806063	0.85	3.92	0.11	50.92	20.64	7.28	0.09	8.14	0.63	0.17	6.62	99.38
64	V806364	0.49	2.66	0.08	68.21	12.97	3.50	0.10	6.19	0.41	0.09	4.75	99.45
65	V806365	0.57	2.82	0.08	67.28	13.11	3.48	0.14	6.93	0.39	0.08	5.00	99.88
66	V806066	0.36	3.91	0.08	60.52	17.15	3.53	0.09	7.62	0.49	0.08	5.90	99.73
67	V806067	0.86	2.87	0.07	67.78	13.12	2.92	0.09	6.37	0.36	0.13	5.13	99.70
68	V806068	0.45	2.24	0.08	62.93	14.41	7.03	0.09	7.32	0.44	0.18	5.19	100.36
	V806069	0.72	2.44	0.08	64.83	13.71	5.95	0.18	6.13	0.45	0.21	4.53	99.23
70	V806070	0.81	2.34	0.07	59.72	13.57	5.80	0.09	5.92	0.40	0.13	11.48	100.34
71	V806071	0.93	3.21	0.09	64.33	15.89	5.25	0.29	5.65	0.45	0.09	4.44	100.62
	V806072	0.94	3.98	0.10	58.20	16.85	4.11	0.33	8.13	0.48	0.07	6.38	99.57
73	V806073	3.90	3.42	0.09	62.02	15.86	3.97	0.96	4.71	0.43	0.08	3.53	98.98

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 to : Falconbridge Ltd. Project name BIRK CREEK no. 605-608-146/147  
 73 samples Shipped from M.VANDE-GUCHTE Shipment no. COM91-01/02  
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Field number	Ba ppm	Cu ppm	Zn ppm	Ni ppm	Rb ppm	Sr ppm	Y ppm	Zr ppm	Nb ppm	
1	V806001	995.	160.	88.	48.	144.	208.	26.	166.	20.
2	V806002	509.	48.	47.	20.	97.	101.	20.	111.	20.
3	V806003	334.	20.	84.	20.	52.	64.	20.	103.	20.
4	V806004	220.	20.	93.	20.	43.	100.	20.	88.	20.
5	V806005	252.	20.	57.	20.	45.	149.	20.	113.	20.
6	V806006	392.	42.	42.	20.	68.	124.	20.	109.	20.
7	V806007	290.	20.	52.	20.	56.	83.	20.	111.	20.
8	V806008	613.	20.	53.	20.	26.	115.	30.	164.	20.
9	V806009	1208.	20.	54.	20.	80.	88.	30.	273.	20.
10	V806010	1662.	43.	76.	20.	122.	74.	31.	211.	21.
11	V806011	609.	20.	62.	20.	63.	146.	20.	114.	23.
12	V806012	105.	20.	55.	20.	21.	317.	25.	124.	20.
13	V806013	678.	20.	63.	20.	51.	170.	20.	110.	20.
14	V806014	1162.	21.	72.	20.	69.	74.	20.	169.	20.
15	V806015	632.	51.	105.	42.	90.	199.	36.	260.	33.
16	V806016	447.	30.	95.	51.	63.	265.	36.	198.	26.
17	V806017	451.	20.	120.	20.	59.	90.	20.	73.	20.
18	V806018	98.	79.	577.	20.	25.	136.	20.	100.	20.
19	V806019	204.	70.	130.	20.	33.	51.	20.	161.	20.
20	V806020	606.	35.	189.	20.	68.	42.	20.	79.	20.
21	V806021	370.	66.	254.	20.	46.	38.	29.	153.	20.
22	V806022	498.	20.	193.	20.	48.	32.	20.	85.	20.
23	V806023	240.	87.	930.	20.	41.	120.	20.	94.	23.
24	V806024	146.	20.	278.	20.	20.	62.	24.	157.	20.
25	V806025	146.	327.	3730.	20.	25.	53.	20.	121.	20.
26	V806026	483.	57.	327.	42.	60.	72.	30.	132.	21.
27	V806027	512.	20.	80.	20.	178.	120.	23.	175.	20.
28	V806028	1903.	22.	66.	20.	153.	110.	36.	251.	22.
29	V806029	2632.	24.	64.	20.	267.	76.	34.	277.	20.
30	V806030	1490.	20.	33.	20.	119.	83.	20.	138.	20.
31	V806031	2203.	24.	48.	20.	130.	168.	26.	101.	21.
32	V806032	1424.	20.	30.	20.	122.	90.	20.	140.	20.
33	V806033	861.	23.	40.	20.	80.	242.	20.	142.	20.
34	V806034	1116.	21.	37.	20.	84.	47.	21.	224.	20.
35	V806035	480.	20.	124.	20.	108.	45.	20.	99.	21.
36	V806036	526.	20.	63.	20.	111.	93.	21.	102.	20.
37	V806037	513.	20.	50.	20.	114.	73.	20.	125.	20.
38	V806038	946.	235.	1250.	20.	102.	92.	20.	84.	20.
39	V806039	498.	59.	1520.	20.	64.	54.	20.	84.	20.
40	V806040	444.	20.	251.	20.	56.	34.	20.	62.	21.
41	V806041	643.	20.	94.	20.	60.	39.	20.	89.	20.
42	V806042	632.	28.	92.	20.	55.	124.	20.	97.	20.
43	V806043	1085.	22.	264.	20.	93.	151.	20.	107.	20.
44	V806044	756.	26.	73.	20.	68.	173.	22.	97.	20.
45	V806045	683.	20.	44.	20.	84.	114.	20.	95.	20.
46	V806046	570.	26.	207.	20.	57.	244.	20.	99.	20.
47	V806047	683.	66.	310.	20.	72.	69.	20.	91.	20.
48	V806048	320.	59.	980.	20.	82.	55.	20.	77.	20.
49	V806049	936.	1120.	271.	20.	66.	55.	20.	90.	20.
50	V806050	517.	20.	31.	20.	136.	131.	20.	171.	20.

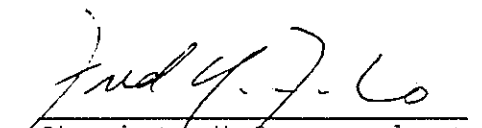
BC91-02A

XRF - Analysis

rom : Cominco Lab. Job no. X91-97 Reported 07-23-1991  
 o : Falconbridge Ltd. Project name BIRK CREEK no. 605-608-146/147  
 73 samples Shipped from M.VANDE-GUCHTE Shipment no. COM91-01/02  
 Page 2

Field number	Ba ppm	Cu ppm	Zn ppm	Ni ppm	Rb ppm	Sr ppm	Y ppm	Zr ppm	Nb ppm	
51	VB06051	976.	42.	1500.	20.	65.	45.	20.	99.	20.
52	VB06052	883.	131.	699.	20.	93.	66.	20.	86.	20.
53	VB06053	587.	155.	1110.	20.	58.	31.	20.	79.	20.
54	VB06054	1165.	43.	898.	20.	99.	75.	20.	91.	20.
55	VB06055	877.	87.	960.	20.	85.	34.	20.	56.	20.
56	VB06056	551.	24.	74.	20.	65.	201.	26.	90.	20.
57	VB06057	131.	22.	67.	20.	20.	175.	20.	76.	20.
58	VB06058	598.	32.	62.	20.	59.	128.	20.	102.	20.
59	VB06059	681.	20.	52.	20.	70.	102.	20.	88.	20.
60	VB06060	846.	20.	31.	20.	94.	144.	20.	94.	20.
61	VB06061	622.	100.	146.	20.	72.	38.	20.	101.	20.
62	VB06062	885.	20.	331.	20.	84.	52.	20.	95.	20.
63	VB06063	1121.	31.	1040.	20.	110.	32.	20.	111.	20.
64	VB06364	927.	58.	1540.	20.	80.	25.	20.	75.	20.
65	VB06365	885.	46.	1510.	20.	81.	45.	20.	75.	20.
66	VB06066	1201.	130.	74.	20.	96.	48.	20.	89.	20.
67	VB06067	841.	160.	3470.	20.	88.	36.	20.	60.	20.
68	VB06068	612.	44.	284.	20.	61.	47.	20.	73.	20.
	VB06069	644.	25.	659.	20.	71.	59.	20.	72.	20.
70	VB06070	605.	28.	683.	20.	63.	52.	20.	34.	25.
	VB06071	909.	37.	108.	20.	93.	79.	20.	70.	20.
	VB06072	1225.	38.	63.	20.	100.	91.	20.	88.	20.
73	VB06073	691.	20.	40.	20.	104.	162.	20.	91.	20.

Certified by

  
 Chemist, X-Ray analyst.

Bondar-Clegg & Company Ltd.  
130 Pemberton Ave.  
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V7P 2R5  
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# Geochemical Lab Report

A DIVISION OF INCHCAPE INSPECTION & TESTING SERVICES

FAL CONBRIDGE LIMITED  
MR. MIKE VANDE-GUCHTE  
P.O. BOX 1056  
BARRIERE, B.C.  
VOE 1E0

+ + + + +

A DIVISION OF INCHCAPE INSPECTION & TESTING SERVICES

REPORT: V91-00757.0 ( COMPLETE )

REFERENCE INFO: SHIPMENT #BC91-01

CLIENT: FALCONBRIDGE LIMITED  
 PROJECT: 605-146

SUBMITTED BY: M. VANDF-GUCHTE  
 DATE PRINTED: 10-JUL-91

ORDER	ELEMENT	NUMBR OF ANALYSES	LOWER DETECTION LIMIT	EXTRACTION	METHOD
1	Au_10g Gold - Fire Assay	52	5 PPM	Fire-Assay	Fire Assay AA
2	Ag Silver	52	0.2 PPM	HNO3-HCl Hot Extr.	Ind. Coupled Plasma
3	Cu Copper	52	1 PPM	HNO3-HCl Hot Extr.	Ind. Coupled Plasma
4	Pb Lead	52	2 PPM	HNO3-HCl Hot Extr.	Ind. Coupled Plasma
5	Zn Zinc	52	1 PPM	HNO3-HCl Hot Extr.	Ind. Coupled Plasma
6	Mo Molybdenum	52	1 PPM	HNO3-HCl Hot Extr.	Ind. Coupled Plasma
7	Ni Nickel	52	1 PPM	HNO3-HCl Hot Extr.	Ind. Coupled Plasma
8	Co Cobalt	52	1 PPM	HNO3-HCl Hot Extr.	Ind. Coupled Plasma
9	Cd Cadmium	52	1.0 PPM	HNO3-HCl Hot Extr.	Ind. Coupled Plasma
10	Bi Bismuth	52	5 PPM	HNO3-HCl Hot Extr.	Ind. Coupled Plasma
11	As Arsenic	52	5 PPM	HNO3-HCl Hot Extr.	Ind. Coupled Plasma
12	Sb Antimony	52	5 PPM	HNO3-HCl Hot Extr.	Ind. Coupled Plasma
13	Fe Iron	52	0.01 PCT	HNO3-HCl Hot Extr.	Ind. Coupled Plasma
14	Mn Manganese	52	1 PPM	HNO3-HCl Hot Extr.	Ind. Coupled Plasma
15	Te Tellurium	52	10 PPM	HNO3-HCl Hot Extr.	Ind. Coupled Plasma
16	Ba Barium	52	20 PPM		X-Ray Fluorescence
17	Cr Chromium	52	1 PPM	HNO3-HCl Hot Extr.	Ind. Coupled Plasma
18	V Vanadium	52	1 PPM	HNO3-HCl Hot Extr.	Ind. Coupled Plasma
19	Sn Tin	52	20 PPM	HNO3-HCl Hot Extr.	Ind. Coupled Plasma
20	W Tungsten	52	20 PPM	HNO3-HCl Hot Extr.	Ind. Coupled Plasma
21	La Lanthanum	52	1 PPM	HNO3-HCl Hot Extr.	Ind. Coupled Plasma
22	Al Aluminum	52	0.01 PCT	HNO3-HCl Hot Extr.	Ind. Coupled Plasma
23	Mg Magnesium	52	0.01 PCT	HNO3-HCl Hot Extr.	Ind. Coupled Plasma
24	Ca Calcium	52	0.01 PCT	HNO3-HCl Hot Extr.	Ind. Coupled Plasma
25	Na Sodium	52	0.01 PCT	HNO3-HCl Hot Extr.	Ind. Coupled Plasma
26	K Potassium	52	0.01 PCT	HNO3-HCl Hot Extr.	Ind. Coupled Plasma
27	Sr Strontium	52	1 PPM	HNO3-HCl Hot Extr.	Ind. Coupled Plasma
28	Y Yttrium	52	1 PPM	HNO3-HCl Hot Extr.	Ind. Coupled Plasma

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# Geochemical Lab Report

A DIVISION OF INCHCAPE INSPECTION & TESTING SERVICES

REPORT: V91-00757.0 ( COMPLETE )

REFERENCE INFO: SHIPMENT #BC91-01

CLIENT: FALCONBRIDGE LIMITED  
PROJECT: 605-146

SUBMITTED BY: M. VANDE-GUCHTE  
DATE PRINTED: 10-JUL-91

SAMPLE TYPES	NUMBER	SIZE FRACTIONS	NUMBER	SAMPLE PREPARATIONS	NUMBER
D DRILL CORE	51	2 -150	51	CRUSH, SPLIT 0-10 #	52
P PREPARED PULP	1	4 AS REC'D	1	CHROMI STEEL PULVER.	52

REPORT COPIES TO: MR. NILS VON FERSEN  
MR. GLEN FLETT  
MR. MIKE VANDE-GUCHTE

INVOICE TO: MR. NILS VON FERSEN

A DIVISION OF INCHCAPE INSPECTION & TESTING SERVICES

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SAMPLE NUMBER	ELEMENT UNITS	Au_10g PPB	Ag PPM	Cu PPM	Pb PPM	Zn PPM	Mo PPM	Ni PPM	Co PPM	Cd PPM	Bi PPM	As PPM
D2 VB05001		7	0.4	41	27	77	4	11	22	<1.0	11	39
D2 VB05002		<5	0.5	69	32	54	11	22	10	<1.0	11	22
D2 VB05003		17	4.8	224	581	92	13	44	13	<1.0	12	<5
D2 VB05004		<5	0.6	114	63	50	16	65	6	<1.0	10	29
D2 VB05005		<5	0.3	69	169	594	13	75	5	3.4	6	40
D2 VB05006		<5	<0.2	51	8	98	12	61	4	<1.0	<5	12
D2 VB05007		21	<0.2	80	10	40	13	63	6	<1.0	5	17
D2 VB05008		<5	<0.2	31	15	68	4	15	11	<1.0	9	36
D2 VB05009		<5	<0.2	36	15	48	6	28	12	<1.0	8	83
D2 VB05010		<5	<0.2	64	22	116	2	9	11	<1.0	8	163
D2 VB05011		<5	0.3	41	18	153	11	56	11	1.3	7	335
D2 VB05012		<5	0.7	51	304	152	3	19	13	<1.0	8	458
D2 VB05013		<5	0.3	33	24	158	5	24	13	<1.0	9	57
D2 VB05014		<5	0.3	18	31	123	2	10	14	<1.0	9	23
D2 VB05015		<5	<0.2	48	17	151	10	54	10	<1.0	<5	114
D2 VB05016		<5	0.3	62	17	110	3	15	15	<1.0	11	46
D2 VB05017		<5	0.5	76	73	240	14	74	7	<1.0	<5	121
D2 VB05018		24	1.2	155	174	1388	18	76	7	9.6	<5	49
D2 VB05019		<5	0.7	71	69	368	17	88	7	2.3	6	31
D2 VB05020		<5	0.3	49	40	132	17	68	6	<1.0	<5	16
D2 VB05021		<5	0.6	28	53	102	5	13	14	<1.0	11	25
D2 VB05022		36	2.4	259	184	575	4	10	13	1.6	<5	70
D2 VB05023		22	1.6	126	196	527	12	51	5	2.7	<5	26
D2 VB05024		9	0.4	24	40	215	3	10	14	<1.0	8	39
D2 VB05025		<5	0.4	44	22	150	11	56	5	<1.0	7	17
D2 VB05026		<5	0.7	68	35	259	14	68	8	2.0	10	19
D2 VB05027		<5	0.3	42	31	333	11	66	4	2.4	<5	5
D2 VB05028		<5	0.6	48	43	264	15	76	6	2.1	8	40
D2 VB05029		<5	0.7	48	38	299	16	56	8	3.0	11	62
D2 VB05030		20	0.7	17	49	79	6	25	8	<1.0	12	170
D2 VB05031		<5	0.4	25	22	164	4	13	17	<1.0	14	40
D2 VB05032		<5	<0.2	15	15	38	2	7	10	<1.0	10	29
D2 VB05033		<5	<0.2	30	8	146	17	37	5	1.0	6	17
D2 VB05034		<5	<0.2	25	8	51	8	26	5	<1.0	7	13
D2 VB05035		<5	0.3	35	13	732	8	36	7	9.0	9	18
D2 VB05036		10	0.3	47	19	266	5	25	22	1.7	14	20
D2 VB05037		10	0.4	36	14	505	16	48	9	6.5	10	26
D2 VB05038		6	<0.2	44	7	286	15	48	5	3.4	5	10
D2 VB05039		<5	0.3	82	25	47	4	19	18	<1.0	15	65
D2 VB05040		<5	0.4	76	25	34	4	19	21	<1.0	15	66

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SAMPLE NUMBER	ELEMENT UNITS	Sb PPM	Fe PCT	Mn PPM	Te PPM	Ba PPM	Cr PPM	V PPM	Sn PPM	W PPM	La PPM	Al PCT
D2 VB05001		10	4.97	758	17	900	45	51	<20	<20	3	2.99
D2 VB05002		6	2.83	1494	14	330	72	40	<20	<20	12	1.26
D2 VB05003		<5	3.33	1369	<10	930	51	84	<20	<20	18	1.94
D2 VB05004		7	1.85	1011	<10	630	81	99	<20	<20	13	1.47
D2 VB05005		<5	2.18	171	<10	390	91	58	<20	<20	9	0.96
D2 VB05006		5	1.80	130	<10	500	89	56	<20	<20	9	1.04
D2 VB05007		<5	2.12	200	<10	550	91	92	<20	<20	10	1.42
D2 VB05008		12	3.21	307	12	530	52	47	<20	<20	5	2.54
D2 VB05009		6	3.26	265	<10	550	42	38	<20	<20	5	1.59
D2 VB05010		9	3.20	606	<10	440	28	38	<20	<20	2	2.26
D2 VB05011		7	2.71	223	<10	550	50	35	<20	<20	9	0.69
D2 VB05012		<5	3.60	399	<10	640	31	18	<20	<20	4	0.82
D2 VB05013		<5	3.49	318	<10	620	44	21	<20	<20	5	0.72
D2 VB05014		6	3.65	214	11	690	32	16	<20	<20	5	0.68
D2 VB05015		<5	2.70	240	<10	570	58	37	<20	<20	8	0.67
D2 VB05016		11	3.61	611	17	660	47	43	<20	<20	2	1.80
D2 VB05017		<5	2.18	246	<10	980	79	55	<20	<20	8	0.67
D2 VB05018		8	2.03	118	<10	1600	69	69	<20	<20	8	0.59
D2 VB05019		<5	1.98	133	<10	1200	91	47	<20	<20	8	0.57
D2 VB05020		<5	1.66	198	<10	700	89	37	<20	<20	6	0.54
D2 VB05021		10	3.07	441	<10	950	42	22	<20	<20	5	0.98
D2 VB05022		<5	2.72	111	<10	820	66	10	<20	<20	4	0.53
D2 VB05023		8	1.32	133	<10	400	112	24	<20	<20	6	0.35
D2 VB05024		6	3.75	334	<10	1300	36	14	<20	<20	3	0.72
D2 VB05025		8	1.70	606	<10	230	237	69	<20	<20	9	0.48
D2 VB05026		10	2.10	670	12	360	151	101	<20	<20	7	0.67
D2 VB05027		<5	1.41	815	<10	280	176	69	<20	<20	6	0.50
D2 VB05028		10	1.72	402	11	430	127	71	<20	<20	8	0.64
D2 VB05029		12	2.38	514	15	1200	99	71	<20	<20	5	0.64
D2 VB05030		10	2.39	728	15	760	115	52	<20	<20	2	0.37
D2 VB05031		9	4.56	806	17	820	53	28	<20	<20	4	0.68
D2 VB05032		9	2.69	924	16	250	58	52	<20	<20	6	1.12
D2 VB05033		6	1.69	375	<10	270	146	76	<20	<20	5	0.41
D2 VB05034		8	1.38	331	<10	280	144	52	<20	<20	6	0.48
D2 VB05035		8	1.77	427	<10	240	137	71	<20	<20	6	0.74
D2 VB05036		15	4.53	821	<10	280	66	70	<20	<20	3	1.04
D2 VB05037		12	2.75	408	13	260	80	114	<20	<20	4	0.72
D2 VB05038		<5	1.48	379	<10	360	79	176	<20	<20	7	0.82
D2 VB05039		19	4.01	879	25	850	100	105	<20	<20	4	3.79
D2 VB05040		20	3.97	1003	25	860	88	106	<20	<20	4	3.84



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PROJECT: 605-146

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SAMPLE NUMBER	FLEMENT UNITS	Mg PCT	Ca PCT	Na PCT	K PCT	Sr PPM	Y PPM
D2 VB05001		3.01	1.71	0.05	1.07	52	4
D2 VB05002		3.03	6.17	0.03	0.40	168	9
D2 VB05003		2.79	4.17	0.03	0.72	108	10
D2 VB05004		1.68	2.84	0.02	0.63	82	10
D2 VB05005		0.80	0.44	0.03	0.37	18	3
D2 VB05006		0.75	0.58	0.03	0.38	18	3
D2 VB05007		1.26	0.48	0.03	0.52	20	4
D2 VB05008		2.76	0.14	0.04	0.55	10	2
D2 VB05009		1.63	0.40	0.03	0.30	20	3
D2 VB05010		2.67	1.14	0.03	0.33	63	2
D2 VB05011		1.18	0.53	0.02	0.33	41	3
D2 VB05012		2.48	0.48	0.04	0.36	50	2
D2 VB05013		1.35	0.44	0.03	0.30	31	2
D2 VB05014		1.12	0.31	0.05	0.31	21	2
D2 VB05015		1.25	0.31	0.03	0.30	26	2
D2 VB05016		4.25	0.41	0.04	0.37	38	2
D2 VB05017		1.00	0.68	0.02	0.33	36	3
D2 VB05018		0.24	0.40	0.02	0.32	18	3
D2 VB05019		0.72	0.31	0.02	0.28	17	3
D2 VB05020		1.00	0.41	0.02	0.24	21	2
D2 VB05021		2.69	0.18	0.06	0.30	21	2
D2 VB05022		0.18	0.35	0.02	0.31	16	1
D2 VB05023		0.19	0.45	0.01	0.20	21	1
D2 VB05024		1.81	0.81	0.03	0.30	60	1
D2 VB05025		0.99	2.24	0.02	0.23	71	4
D2 VB05026		1.08	2.59	0.02	0.33	84	4
D2 VB05027		1.04	2.49	0.01	0.24	71	4
D2 VB05028		0.79	1.68	0.02	0.29	89	4
D2 VB05029		1.55	2.76	0.02	0.27	213	3
D2 VB05030		2.30	5.17	0.02	0.17	365	3
D2 VB05031		2.16	1.94	0.04	0.31	119	3
D2 VB05032		1.32	3.51	0.01	0.11	63	6
D2 VB05033		0.80	2.15	0.01	0.16	42	4
D2 VB05034		0.53	1.85	0.02	0.17	39	4
D2 VB05035		0.57	1.89	0.01	0.16	36	5
D2 VB05036		0.96	3.18	0.01	0.16	48	6
D2 VB05037		0.58	2.13	<0.01	0.12	43	4
D2 VB05038		0.48	1.74	<0.01	0.15	39	4
D2 VB05039		2.02	3.88	0.21	1.12	114	4
D2 VB05040		2.04	4.79	0.20	1.22	110	4

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SAMPLE NUMBER	ELEMENT UNITS	Au_10g PPB	Ag PPM	Cu PPM	Pb PPM	Zn PPM	Mo PPM	Ni PPM	Co PPM	Cd PPM	Bi PPM	As PPM
D2 VB05041		<5	<0.2	38	13	306	16	40	5	3.5	7	23
D2 VB05042		<5	<0.2	28	15	43	3	4	6	<1.0	9	26
D2 VB05043		15	0.3	18	29	60	2	4	6	<1.0	8	61
D2 VB05044		36	0.5	34	156	222	1	4	6	<1.0	7	97
D2 VB05045		35	0.4	43	41	112	2	3	5	<1.0	8	102
D2 VB05046		32	1.1	102	108	428	3	3	6	1.2	13	104
D2 VB05047		23	1.5	81	280	415	3	4	7	<1.0	11	73
D2 VB05048		8	<0.2	22	53	92	2	4	6	<1.0	7	19
D2 VB05049		<5	<0.2	25	16	45	2	5	6	<1.0	5	14
D2 VB05050		21	2.1	78	528	944	3	6	6	3.7	8	37
D2 VB05051		18	<0.2	38	37	104	3	5	7	<1.0	6	46
P4 VB05052		<5	0.3	9	20	108	2	8	3	<1.0	<5	10

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SAMPLE NUMBER	ELEMENT UNITS	Sb PPM	Fe PCT	Mn PPM	Te PPM	Ba PPM	Cr PPM	V PPM	Sn PPM	W PPM	La PPM	Al PCT
D2 VB05041		<5	1.67	565	<10	710	101	256	<20	<20	7	1.24
D2 VB05042		8	2.53	582	12	1300	39	9	<20	<20	16	1.86
D2 VB05043		9	2.25	193	<10	1300	120	5	<20	<20	11	0.63
D2 VB05044		6	2.38	80	<10	1800	50	3	<20	<20	11	0.66
D2 VB05045		7	1.94	236	<10	1400	49	6	<20	<20	6	0.61
D2 VB05046		10	2.59	260	14	1400	42	6	<20	<20	5	0.56
D2 VB05047		10	2.82	282	11	1400	54	4	<20	<20	9	0.73
D2 VB05048		<5	2.38	404	<10	1300	46	5	<20	<20	11	1.10
D2 VB05049		<5	2.17	365	<10	1300	35	6	<20	<20	10	1.06
D2 VB05050		<5	2.08	76	<10	1500	44	4	<20	<20	12	0.64
D2 VB05051		7	2.41	253	<10	1300	42	5	<20	<20	12	0.97
P4 VB05052		<5	1.57	197	<10	820	12	11	<20	<20	37	0.50

Bondar-Clegg & Company Ltd.  
 130 Pemberton Ave.  
 North Vancouver, B.C.  
 V7P 2R5  
 (4) 985-0681 Telex 04-352667



**Geochemical  
 Lab Report**

A DIVISION OF INCHCAPE INSPECTION & TESTING SERVICES

DATE PRINTED: 10-JUL-91

REPORT: V91-00757.0 ( COMPLETE )

PROJECT: 605-146

PAGE 2C

SAMPLE NUMBER	ELEMENT UNITS	Mg PCT	Ca PCT	Na PCT	K PCT	Sr PPM	Y PPM
D2 VB05041		0.64	1.97	0.05	0.44	38	3
D2 VB05042		1.08	1.67	0.04	0.71	49	4
D2 VB05043		0.33	0.77	0.02	0.23	27	3
D2 VB05044		0.20	0.45	0.01	0.29	26	3
D2 VB05045		0.94	2.15	0.01	0.25	76	3
D2 VB05046		1.06	2.27	0.02	0.24	91	3
D2 VB05047		0.47	1.03	0.02	0.29	28	3
D2 VB05048		0.97	0.54	0.03	0.51	26	2
D2 VB05049		0.87	0.53	0.02	0.56	25	3
D2 VB05050		0.18	0.26	0.02	0.36	13	3
D2 VB05051		0.60	0.41	0.03	0.51	22	3
P4 VB05052		0.27	0.38	0.01	0.09	5	11

**APPENDIX C**

**Statement of Qualifications**

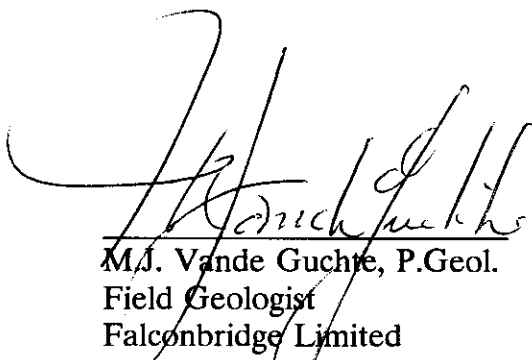
**Summary of Exploration Cost**

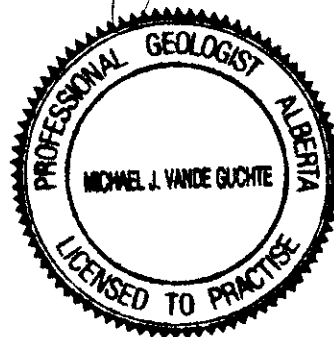
## STATEMENT OF QUALIFICATIONS

I, **Michael J. Vande Guchte**, an employee of Falconbridge Limited, with offices at #202 - 856 Homer Street, Vancouver, British Columbia, V6B 2W2 do hereby certify that:

1. I am a geologist residing at 1355 Chamberlain Drive, North Vancouver, British Columbia.
2. I graduated with a Bachelor of Science degree in Geology from the University of Alberta in 1986.
3. I have been employed in mineral exploration since 1986.
4. I am a licensed member in good standing with the Association of Professional Engineers, Geologists and Geophysicists of Alberta.

December 19/91  
Dated at Vancouver, B.C.

  
M.J. Vande Guchte, P.Geol.  
Field Geologist  
Falconbridge Limited



**Table III : SUMMARY OF EXPLORATION COSTS**

**DRILLING COSTS**

Moving/Set-up	
1 Tractor Hour @ \$60.00/hr.....	\$60.00
16 hours Labour @ \$25.00/hr.....	\$400.00
Coring	
236.60m to 300.00m @ \$38.00/m.....	\$2409.20
300.00m to 478.84m @ \$44.00/m.....	\$7868.96
Surveys	
1 Sperry-Sun @ \$50.00/survey.....	\$50.00
Consumables	
Core Boxes @ \$7.00/box + 10%.....	\$331.10
Polymer Mud @ \$125.00/pail + 10%.....	\$137.50

**SITE PREPARATION**

2 hours at \$135.00/hour.....	\$270.00
-------------------------------	----------

**ANALYTICAL**

Cominco Research Laboratories	
14 samples @ \$22.50/sample.....	\$315.00
Bondar-Clegg & Company Ltd.	
51 samples @ \$17.00/sample.....	\$867.00

**PERSONNEL**

M. Vande Guchte - geologist	
4 days @ \$150.00/day.....	\$600.00
V. Miecznik - assistant	
4 days @ \$100.00/day.....	\$400.00
Room and Board	
8 man days at \$40.00/day.....	\$320.00

**SUB-TOTAL = \$14,028.76**

**RECLAMATION (September)**

All drill pads and roads on Victoria Option.....	\$815.00
Supervision and inspection - M. Vande Guchte	
1 day @ \$150.00/day.....	\$150.00

**REPORT (October and December)**

M. Vande Guchte	
4 days @ \$150.00/day.....	\$600.00
Drafting.....	\$250.00

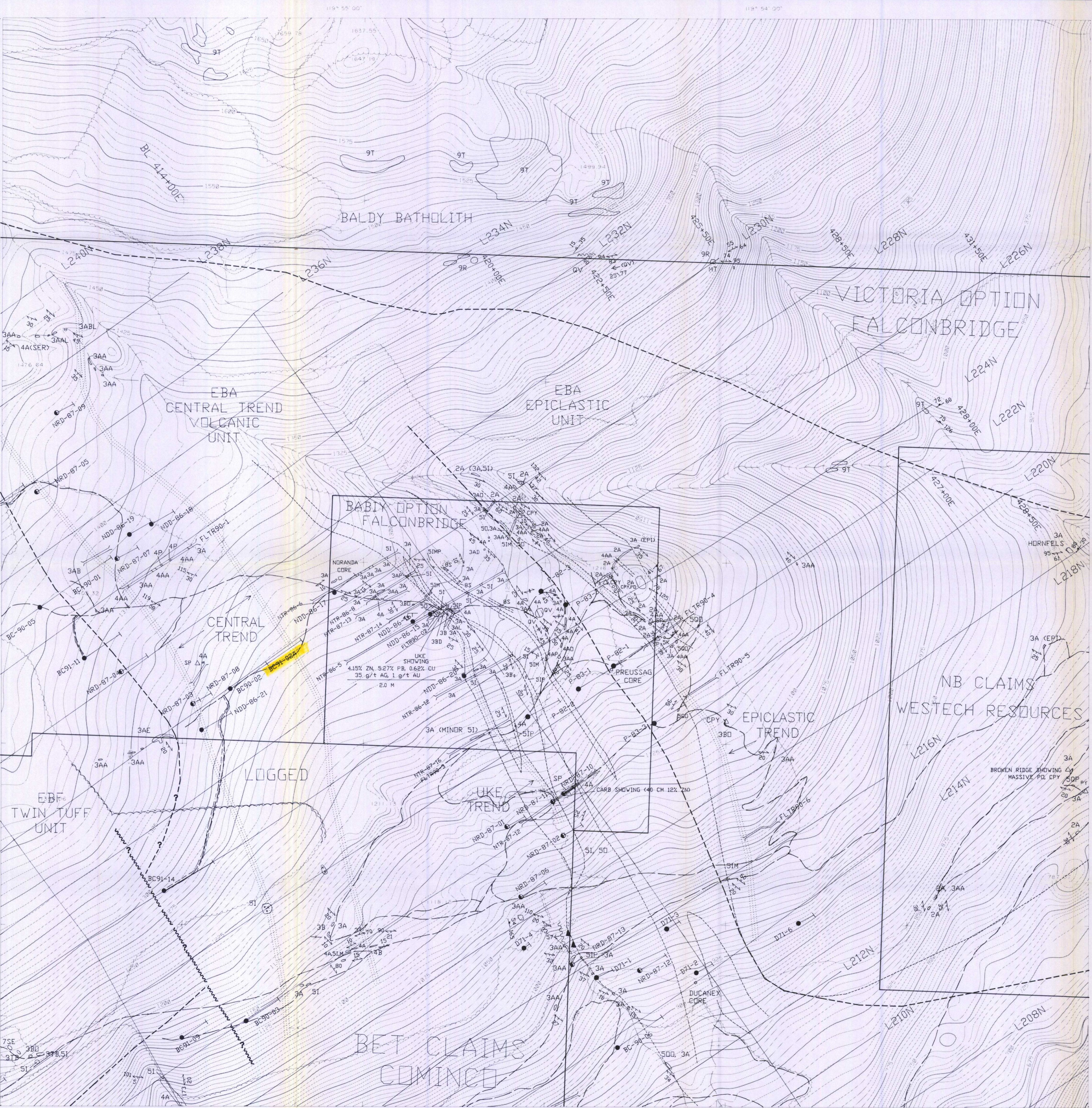
**SUB-TOTAL : \$1815.00**

**-----  
TOTAL COST: \$15,843.76**

**APPENDIX D**

**1:5000 Geology Plan Map**  
**1:10000 Geology Plan Map**





**LEGEND**

- EAGLE BAY STRATIGRAPHY**
- EBP Phyllite
  - EBF Intermediate Volcanics
  - EBA Felsic to Intermediate Volcanics
  - EBC Tahinakin Limestone Unit

- MAJOR ROCK UNITS**
- 10 Late Mafic Intrusions
  - 9 Felsic Intrusions
  - 8 Intermediate Intrusions
  - 7 Mafic Intrusions
  - 6 Ultramafic Intrusions
  - 5 Sediments
  - 4 Felsic Volcanics
  - 3 Intermediate Volcanics
  - 2 Mafic Volcanics
  - 1 Ultramafic Volcanics

**ROCK UNIT LETTER QUALIFIERS**

The second letter indicates the type of rock; if omitted a dash should be inserted if a third letter is used.

- |                  |                        |
|------------------|------------------------|
| A Tuff           | K Wacke                |
| B Lapilli Tuff   | L Conglomerate         |
| C Tuff Breccia   | M Chert                |
| D Massive Flow   | N Iron Formation       |
| E Pillowed Flow  | O Limestone            |
| F Flow Breccia   | Q Exhalite/Sulphides   |
| G Pillow Breccia | Q Tuffaceous Sediments |
| H Intrusive      | R Fine Grained         |
| I Argillite      | S Medium Grained       |
| J Siltstone      | T Coarse Grained       |

The third and fourth letters are placed in alphabetical order; they are optional and further define the rock.

- |                          |                    |
|--------------------------|--------------------|
| A Quartz Phytic          | K Bedded           |
| B Feldspar Phytic        | L Chloritic        |
| C Quartz-Feldspar Phytic | M Graphitic        |
| D Mafic Phytic           | N Calcareous       |
| E Mafic-Feldspar Phytic  | O Argillaceous     |
| F Amygdaloidal           | P Siliceous/Cherty |
| G Spherulitic            | Q Sheared          |
| H Variolitic             | R Massive          |
| I Leucocratic            | S Lithic           |
| J Melanocratic           | T Dolomitic        |

**OTHER**

- |                                  |                           |
|----------------------------------|---------------------------|
| MS Massive sulphides             | SS Stringer sulphides     |
| LS Laminated to banded sulphides | DS Disseminated sulphides |
| FZ Fault zone                    | PY Pyrite                 |
| FB Fault breccia                 | CPY Chalcocopyrite        |
| QV Quartz vein                   | PO Pyrrhotite             |
| BX Breccia                       | SP Sphalerite             |
|                                  | GA Galena                 |
|                                  | MT Magnetite              |

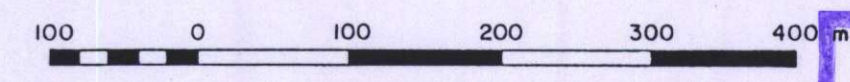
**SYMBOLS**

- Bedding
- Foliation
- Fracture
- Stratigraphic top
- Lineation
- Drag fold (M, S, Z symmetry, plunge)
- Fault, attitude
- Lithological contact
- Unit contact
- Thrust Fault
- Road built in 1991
- Outcrop
- Frost heave
- Trench
- Mineral showing
- Adit
- Claim post (Legal Corner Post)
- Diamond drill hole (vertical)
- Reverse circulation drill hole
- BC Falconbridge diamond drilling (1990-1991)
- NRD Noranda reverse circulation drilling (1987)
- NDD Noranda diamond drilling (1986)
- P Preussag diamond drilling (1982, 1983)
- D Ducanex diamond drilling (1971)
- K Kennco diamond drilling (1952)
- BET Cominco diamond drilling (1978)
- SR Scurry-Rainbow diamond drilling (1965)
- CS Canadian Superior (1976)



4	5	6
1	2	3

SCALE 1 : 5 000



**FALCONBRIDGE LIMITED**  
**BIRK CREEK PROJECT**  
 North Barriere Lake, British Columbia

**GEOLOGY**  
 SHEET 5 OF 6

**21,991**

**ASSESSMENT BRANCH**  
**ASSESSMENT REPORT**

DATE OF WORK: 1952-1982, 1989-1991	CLAIMS: BLUFF, BET & OTHERS
ORIGINAL BY: SC	DATE: NOV 1989
REVISED BY: MVG	DATE: NOV 1991
DRAWN BY: CPW	DATE: 27-NOV-91
APPROVED BY:	DATE:
	PROJECT NUMBER: 146/147
	N.T.S. NO.: 82M/SW
	MAP #: 147-1-0112

FIGURE NO: 3e



**LEGEND**

- EAGLE BAY STRATIGRAPHY**
- EBP Phyllite
  - EBA Intermediate Volcanics
  - EBA Felsic to Intermediate Volcanics
  - EBG Tshinakin Limestone Unit

- MAJOR ROCK UNITS**
- 10 Late Mafic Intrusions
  - 9 Felsic Intrusions
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  - 6 Ultramafic Intrusions
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  - 4 Felsic Volcanics
  - 3 Intermediate Volcanics
  - 2 Mafic Volcanics
  - 1 Ultramafic Volcanics

**ROCK UNIT LETTER QUALIFIERS**

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- |                  |                        |
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| C Tuff Breccia   | M Chert                |
| D Massive Flow   | N Iron Formation       |
| E Flowed Flow    | O Limestone            |
| F Flow Breccia   | P Exhalite/Sulphides   |
| G Pillow Breccia | Q Tuffaceous Sediments |
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The third and fourth letters are placed in alphabetical order; they are optional and further define the rock.

- |                          |                    |
|--------------------------|--------------------|
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| C Quartz-Feldspar Phytic | M Graphitic        |
| D Mafic Phytic           | N Calcareous       |
| E Mafic-Feldspar Phytic  | O Argillaceous     |
| F Amygdaloidal           | P Siliceous/Cherty |
| G Spherulitic            | Q Sheared          |
| H Variolitic             | R Massive          |
| I Leucocratic            | S Lithic           |
| J Melanocratic           | T Dolomitic        |

**OTHER**

- |                                  |                           |
|----------------------------------|---------------------------|
| MS Massive sulphides             | SS Stringer sulphides     |
| LS Laminated to banded sulphides | DS Disseminated sulphides |
| FZ Fault zone                    | Py Pyrite                 |
| FB Fault breccia                 | CPY Chalcopyrite          |
| QV Quartz vein                   | PO Pyrrhotite             |
| Bx Breccia                       | SP Sphalerite             |
|                                  | GA Galena                 |
|                                  | MT Magnetite              |

**SYMBOLS**

- Bedding
- Foliation
- Fracture
- Stratigraphic top
- Lineation
- Drag fold (M, S, Z symmetry, plunge)
- Fault, attitude
- Lithological contact
- Unit contact
- Intrus. Fault
- Road built in 1991
- Outcrop
- Frost heave
- Trench
- Mineral showing
- Adit
- Claim post (Legal Corner Post)

- Diamond drill hole (vertical)
- Reverse circulation drill hole
- BC Falconbridge diamond drilling (1990-1991)
- NRD Noranda reverse circulation drilling (1987)
- NDD Noranda diamond drilling (1986)
- P Druisag diamond drilling (1982, 1983)
- D Ducomex diamond drilling (1971)
- K Kennco diamond drilling (1952)
- BET Cominco diamond drilling (1978)
- SR Scurry-Rainbow diamond drilling (1965)
- CS Canadian Superior (1976)

SCALE 1:10 000

**FALCONBRIDGE LIMITED**  
**BIRK CREEK PROJECT**  
 North Barriere Lake, British Columbia

**PROPERTY GEOLOGY**

DATE OF WORK: 1952-1982, 1989-1991 CLAIMS: BET & OTHERS  
 ORIGINAL BY: SC DATE: NOV 27 1989 PROJECT NUMBER: 146/147  
 REVISED BY: MVG DATE: SEP 1991  
 DRAWN BY: PW, SW DATE: 27-NOV-91 N.T.S. NO.: 82M/SW  
 APPROVED BY: DATE: MAP #: 147-1-0107

FIGURE NO: 4

**21,991**  
 GEOLOGICAL BRANCH  
 ASSESSMENT REPORT