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**GEOCHEMICAL AND GEOLOGICAL INVESTIGATION**  
**MORNING AND APEX MINERAL CLAIM GROUP**  
**TAYLOR RIVER-SPROAT LAKE AREA**  
**ALBERNI MINING DIVISION**  
**PORT ALBERNI, B.C.**  
**NTS 92 F/6 W**  
**LATITUDE 49°<sup>19</sup>' NORTH, LONGITUDE 125°<sup>13</sup>' WEST**  
**17.9' 16.1'**

**FILMED**

Prepared for  
**REGINALD W. HUNCHUK**

*Owner: G. von Rosen*

**ARCTEX ENGINEERING SERVICES**

*Operator:* **Locke B. Goldsmith, P.Eng.**  
**Consulting Geologist**

**Paul Kallock**  
**Geologist**

May 10, 1987

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

**15,910**

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**GEOCHEMICAL AND GEOLOGICAL INVESTIGATION  
MORNING AND APEX MINERAL CLAIM GROUP  
TAYLOR RIVER-SPROAT LAKE AREA  
PORT ALBERNI, B.C.**

**SUMMARY**

The Morning-Apex mineral claim group consists of six reverted crown-granted claims, totalling approximately 83.76 hectares. They are located in west-central Vancouver Island near Sproat Lake. On April 26, 1987, the Morning claim was investigated. Rock and soil samples were collected near the No. 6 vein adits. Historically, the property has seen underground exploration and diamond drilling in search of gold mineralization which occurs in northeast-trending quartz-pyrite veins. Current work shows the No. 6 vein, which is hosted in basalt of the Triassic Karmutsen Formation, to carry quantities of gold up to 10,000 ppb (parts per billion). Additional work, including geological mapping, rock geochemical sampling, geophysics (induced polarization) with possible subsequent diamond drilling is recommended. An evaluation of veinlet zones which could host large tonnages of low-grade gold mineralization should be conducted in the next exploration programme. A first-phase budget of \$37,400 is recommended, with estimates of \$247,400 in the next three phases.

## INTRODUCTION

The Morning-Apex mineral claims are located 4.8 km west of Sproat Lake, immediately north of Taylor River on west-central Vancouver Island, B.C. The claims lie within the Alberni Mining Division, NTS map sheet 92 F/6 W, latitude 49°19' north, longitude 125°15' west. Elevation of the property ranges from 75 m at Taylor River to 800 m on the upper Apex claim.

The property includes six reverted crown-granted mineral claims totalling approximately 83.76 hectares (207 acres) as follows:

<i>Claim Name</i>	<i>Lot No.</i>	<i>Record No.</i>	<i>Units</i>	<i>Date of Record</i>
Morning	975	240(7)	1	July 14, 1984
Morning 1	976	190(5)	1	May 1, 1984
Morning 2	977	191(5)	1	"
Apex	978	192(5)	1	"
Apex Fr. 3	980	192(5)	<1	"
Apex Fr.	979	193(5)	<1	"

The claims can be reached via the Port Alberni-Tofino Highway No. 4, some 37 km westerly from Port Alberni. Various logging roads and trails cross the claims a short distance from the highway. A four-wheel drive vehicle is required to get within 100 metres of the lower adit on the Morning claim. Access to the Apex showings was not attempted.

A geological reconnaissance, a soil sampling survey, and rock chip sampling of several veins was undertaken on the Morning claim. This report details the work.

The history of the property has been summarized by von Rosen (1982) who relies on Fawley (1962) for history prior to 1962. It is as follows:

"Operations to 1962 are described by Allan P. Fawley, P.Eng., in a report to Sileurian Chieftain Mining Company Ltd. dated January, 1962, and are summarized as follows:"

1899	<i>Discovery and staking.</i>
1907-1923	<i>Underground work, one adit 345-365 feet and 2 short adits; trenching.</i>
1932	<i>B.C. Department of Mines, Bulletin No. 1 by G.A. Clothier description of workings and vein structure and mineralization.</i>
1933	<i>Dickinson and Johnson exploration. Original maps not on hand.</i>
1959	<i>Report by B.W.W. McDougall, P.Eng. based on examination made in 1945; describes geology and results from 45 samples.</i>
1960	<i>Drilling No. 1 Zone Apex vein.</i>

- 1961 *V.B. Bjorkman, P.Eng., general description plus logs of D.D. holes 2-5, inclusive in No. 1 Zone. Laid out holes on No. 3 Zone which were mistakenly drilled at the wrong locations and missed the zone. Holes 2 and 3 logged by A.P. Fawley.*
- 1961 *Holes A-1 to A-6 and A-9 drilled on No. 2 Zone under the supervision of A.P. Fawley for Sileurian Chieftain.*
- 1972 *One hole (72-1) drilled by M. Zunic for Lou-Mex (No. 2 Zone).*
- 1973 *Two holes (73-2 and 73-3) drilled by M. Zunic for Lou-Mex (No. 2 Zone).*
- 1974 *July, August holes 74-1 and 74-2 drilled by Highland Mercury (Lou-Mex option) on Zone 2.*
- 1975 *Hibernian (Lou-Mex option) enlarged and timbered No. 6 adit to 6' x 7', and extended 30'.*
- 1976 *Highland Mercury (Lou-Mex option) extended drift to 487' and crosscut diamond drill station.  
Harold M. Jones, P.Eng.: Geological Report on AJ Claims: Assessment Report.*
- 1978 *Acquisition of reverted crown grants by G. von Rosen.*
- 1979 *G. von Rosen, P.Eng.: Geophysical Report on Apex-Mornig Group: Assessment Report.*
- 1980 *Option of property by International Giant Mining Corporation from Gearex Management Ltd. (G. von Rosen): Physical assessment work.*
- 1982 *Addendum agreement between International Giant Mining and Gearex. Retained interest sold to Ted Radomski. Agreement between International Giant and International Phasor Telecom.*

## GEOLOGY

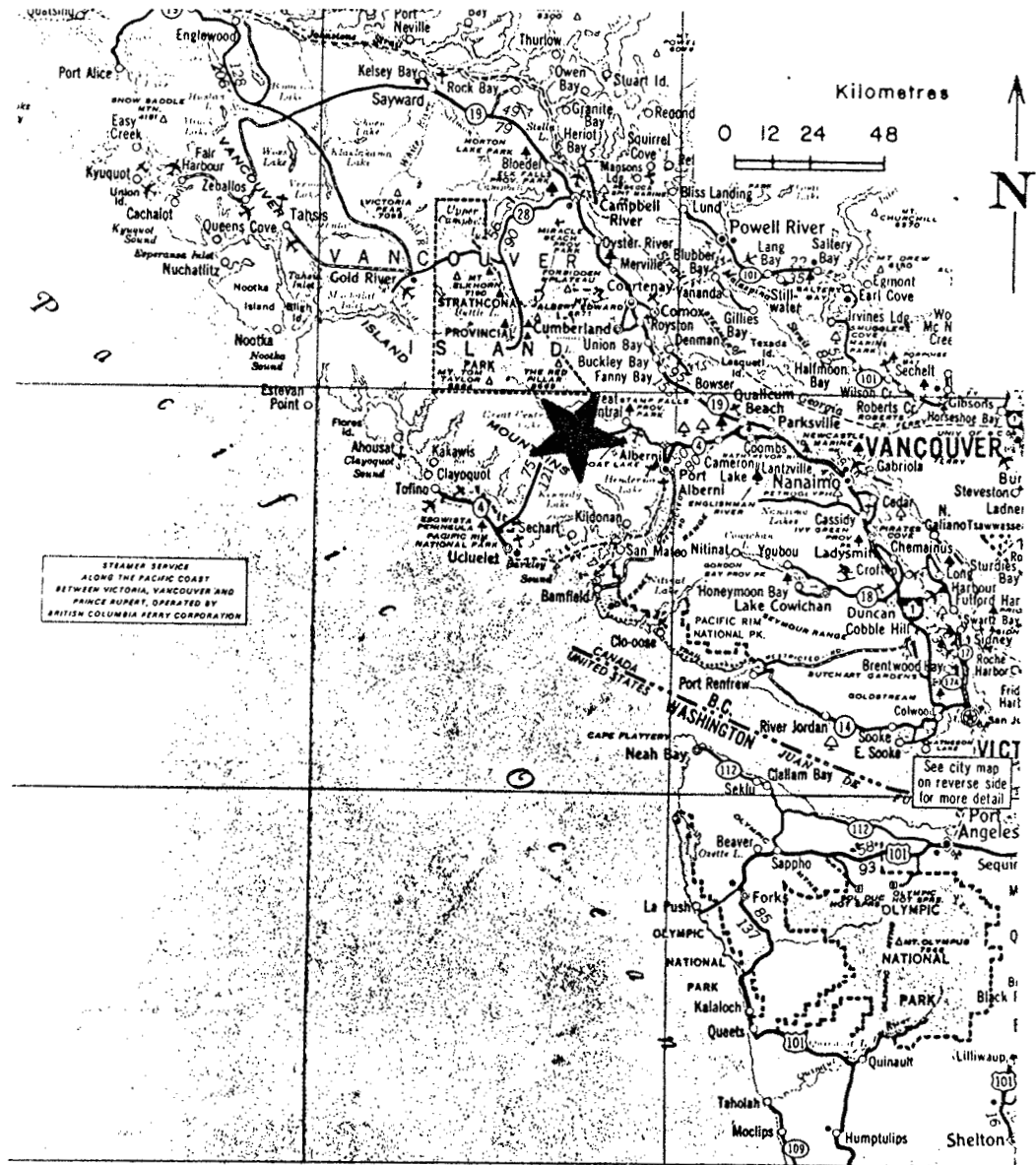
The Karmutsen Formation of upper Triassic age underlies much of the Morning-Apex claim group. Regionally this formation consists of 6,000 m of tholeitic volcanics including pillow basalts, breccias and bedded flows. Basalt is host to mineralized veins in the map area.

Middle to late Jurassic Island Intrusions are also present in the claim area. Dykes of diorite or quartz diorite intrude basalt.

Regional faults transect the vicinity in a northwesterly direction. However, a strong system of northeasterly faults is most important at the claims. The Apex and No. 6 Vein structures are coincident with these northeast-trending shear zones. Approximately 10 km to the west in the Kennedy River area northeast-trending veinlet zones which contain appreciable quantities of gold are currently being explored by Kerr Addison Mines.

## MINERALIZATION

The northeast-trending veins consist largely of quartz and breccia fragments of country rock. Shearing with clay gouge is common along the walls. Mineralization



### PROPERTY LOCATION MAP



**MORNING APEX CLAIM GROUP TAYLOR RIVER AREA**  
 ALBERNI MINING DIVISION : N.T.S. 92F/6W : Lat. 49° 19' N, Long. 125° 16' W

To accompany report by L.B. GOLDSMITH, P.Eng., Consulting Geologist, and Paul Kallock, Geologist

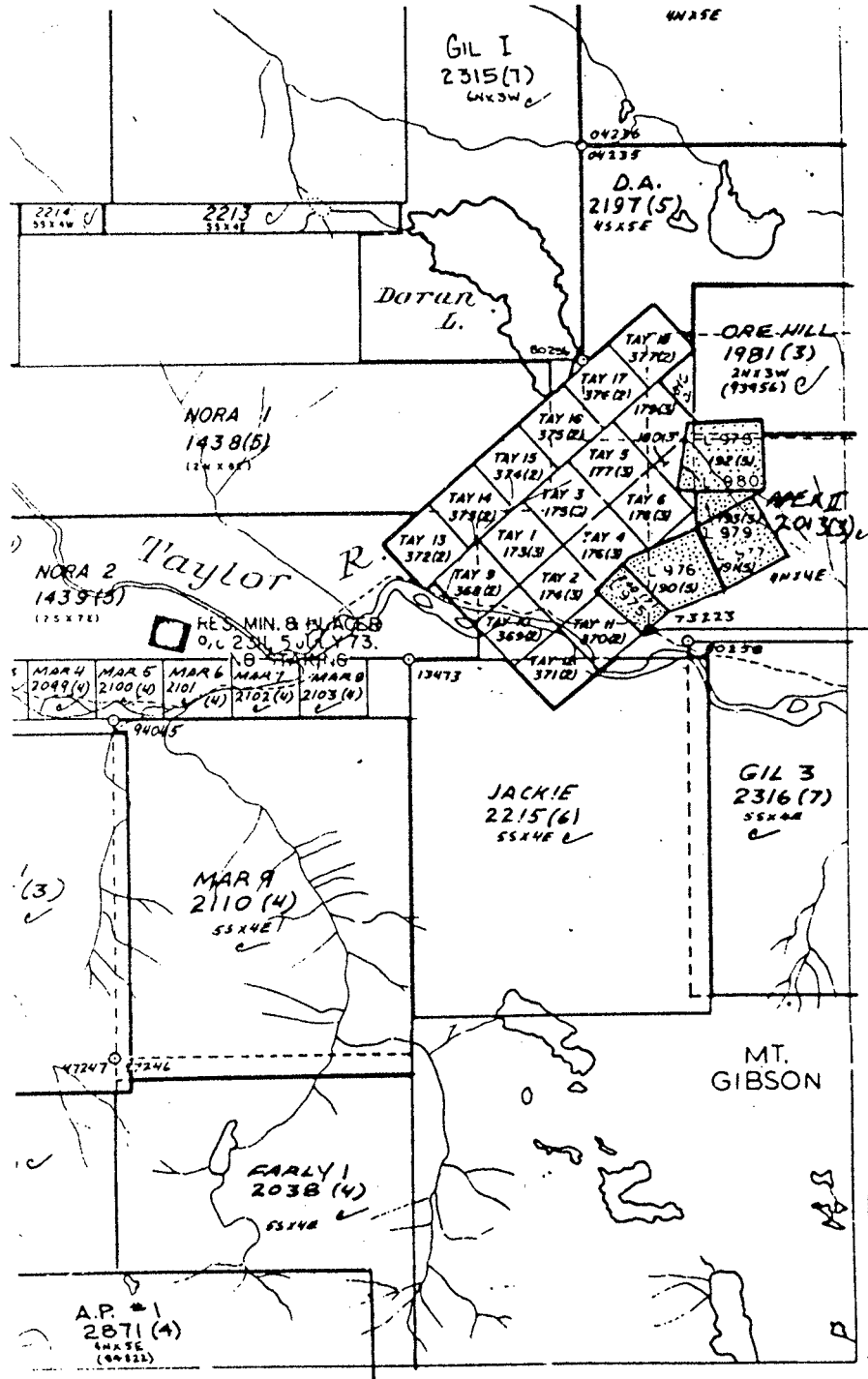
ARCTEX ENGINEERING SERVICES MAY 1987

# CLAIM MAP

0 500 1000

1:50,000

metres



**MORNING APEX CLAIM GROUP TAYLOR RIVER AREA**  
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To accompany report by L.B. GOLDSMITH, P.Eng., Consulting Geologist, and Paul Kallock, Geologist  
 ARCTEX ENGINEERING SERVICES MAY 1987

includes pyrite with lesser amounts of chalcopyrite, sphalerite and galena. Gold and silver occur with the sulphides.

There are two important mineralized structures on the property: the Apex vein which is at 366 m elevation (1200 ft) and strikes  $N70^{\circ}E 80^{\circ}S$ , and the No. 6 Vein at 152-183 m elevation (500-600 ft) which strikes  $N55^{\circ}E 90^{\circ}$  (McIntyre, 1980). It is the No. 6 Vein which was investigated during April 1987. Rock chip samples of the vein at surface were collected and a limited soil sampling survey was undertaken in the immediate vicinity.

The No. 6 Vein is sharply defined where it is exposed; furthermore, there are numerous narrow quartz veinlets and patches with or without chlorite, epidote or limonite, in other parts of the survey area.

## ROCK GEOCHEMISTRY

A map showing the location of rock chip samples collected from the No. 6 Vein is included as page 6.

The first sample (4+75N 2+70E) was collected along a road-cut below the lower adit. Although it has a similar orientation to the No. 6 Vein, a direct connection is questionable. It contained 450 ppb Au.

The lower adit of the No. 6 Vein is open and appears to be in good shape although only a short section near the portal was examined.

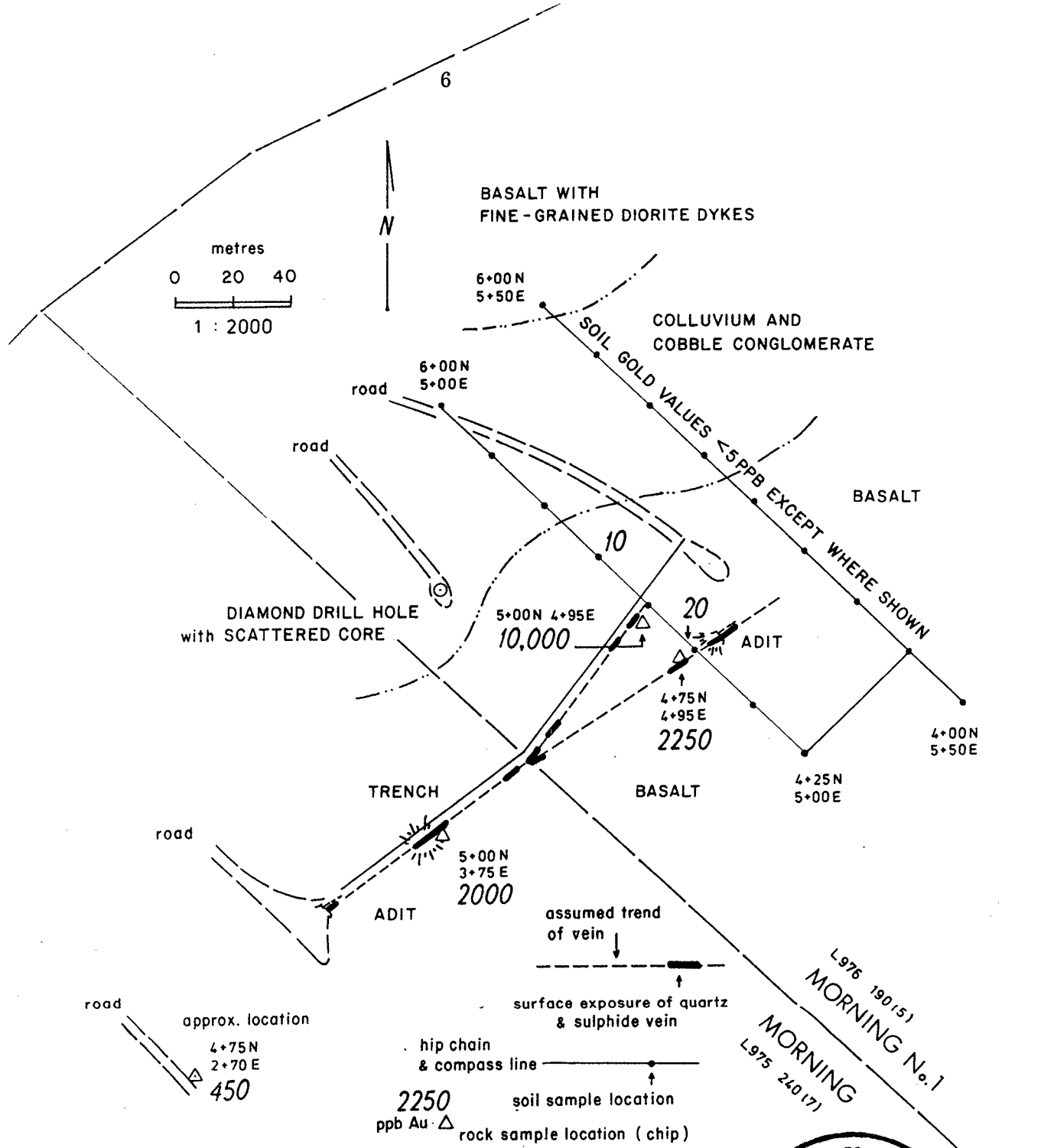
On the surface, 45 m upslope from the portal, the No. 6 Vein was sampled (5+00N 3+75E) and found to contain 2000 ppb Au. At a distance of approximately 90 m upslope from the adit, the vein bifurcates. Samples were collected from each branch of the vein at 5+00N 4+95E and at 4+75N 4+95E. They contained 10,000 ppb Au and 2250 ppb Au respectively. Each vein displayed quartz with limonite and traces to 5% pyrite.

The upper adit of the No. 6 Vein is 8 m long and follows the  $N55^{\circ}E 85^{\circ}N$  trending vein. The vein is 1.0 m wide and consists of quartz with up to 25% pyrite. On the footwall there are 15-20 cm of clay gänge. On the hangingwall there are 5 cm of gouge. The structure is hosted in dark green fine-grained volcanics.

## SOIL GEOCHEMICAL SURVEY

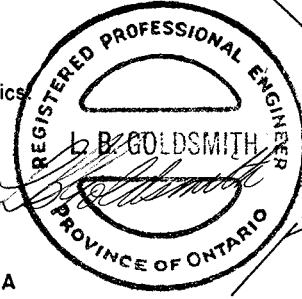
Locations of soil samples are shown on the map on page 6. Two northwest-trending survey lines were established near the upper adit. A line separation of 50 m with 25 m sample stations allowed collection of 17 soil samples.





Area of undetermined thickness of overburden.   
 Other areas near vein show abundant exposure of intermediate to mafic volcanics.

**GEOLOGY AND  
 ROCK & SOIL GEOCHEMISTRY OF THE  
 MORNING APEX CLAIM GROUP** TAYLOR RIVER AREA  
 ALBERNI MINING DIVISION : N.T.S. 92F/6W : Lat. 49° 19' N, Long. 125° 16' W



To accompany report by L.B. GOLDSMITH, P.Eng., Consulting Geologist, and Paul Kallock, Geologist  
 ARCTEX ENGINEERING SERVICES MAY 1987

Samples were obtained with a short spade. Depth varied from 10 to 25 cm. Most soil was brown to reddish-brown. Along road cuts in the western part of the survey area, a greenish-brown indurated conglomerate or gravel bed could be seen which is 2-3 m thick, hence residual soil development over bedrock was severely restricted. Elsewhere abundant outcrop has thin soil development.

Analytical procedures and laboratory certificates are included in the Appendix. Chemex Labs of Vancouver, B.C., performed the gold determinations.

Only two soil samples contained detectable gold (greater than 5 ppb). Sample 4+75N 5+00E, a few metres below the upper adit, returned 20 ppb Au. Sample 5+25N 5+00E contained 10 ppb Au.

## CONCLUSIONS

Quartz-pyrite vein mineralization at the Morning-Apex claim group is associated with northeast-trending shear zones which transect volcanics of the Triassic Karmutsen Formation.

The No. 6 Vein was sampled on surface and found to contain gold in values up to 10,000 ppb. During the survey other smaller and more irregular siliceous veinlets were observed but not sampled. Zones of veinlets may have the potential to constitute low-grade bulk tonnages of gold mineralization.

Residual soil development has not been extensive at the property. Soil sampling near the upper No. 6 adit did not detect anomalous gold. Additional soil surveys may be of limited value.

## RECOMMENDATIONS

Detailed geological mapping of the Morning-Apex claim group should be carried out. Particular emphasis should be given to zones of silicification or other alteration such as chloritization or epidotization. Areas of pyritization should also be noted. In addition, a detailed litho-geochemical survey should be undertaken. The No. 6 vein (including both northeast-trending forks) should be sampled at regular intervals. Furthermore, other areas, such as along the road below the lower adit should be carefully examined and sampled for possible bulk-tonnage gold occurrences similar to the veinlet zones which are currently undergoing exploration by Kerr Addison Mines in the Kennedy River area.

**REFERENCES**

- Fawley, A.P. 1962. Report of Sileurian Chieftain Mining Company.
- McIntyre, J.F. 1980. Summary Engineering Report, Taylor River Gold Property, Sproat Lake, B.C. Report for International Giant Mining Corporation.
- Muller, J.E. 1977. Geology of Vancouver Island. G.S.C. Open File 463.
- von Rosen, G. 1982. Recommendation Report, Apex-Morning Gold Property, Taylor River, B.C. Report for International Phasor Telecom Ltd.

**COST STATEMENT, 1987 PROGRAMME****Personnel:**

L.B. Goldsmith, 1/8 April 24, 1/8-26, 1/8-28; total 3/8 days @ \$400/day	\$150.00	
P. Kallock, April 26, 3/4-27; total 1-3/4 days @ \$330/day	<u>577.50</u>	
	727.50	

**Accommodation, Food:**

\$10.25 divided by 2-7/8 days = \$4.82/man/day		10.25
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**Travel:**

Ferry 41.00		
Vehicle, 296.2 km @ \$.30/km	88.87	
Gas	<u>37.60</u>	
	167.47	
\$167.47 divided by 1-3/4 days = \$61.41/day		167.47

**Analyses:**

4 rock samples cost	39.00	
17 soil samples cost	<u>134.75</u>	
	173.75	173.75
21 samples cost \$173.75 = \$8.27/sample		

**Report:**

Drafting, prints, typing, photocopying, report materials		<u>212.15</u>
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TOTAL		\$1291.12
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APPENDIX

## ROCK SAMPLE DESCRIPTIONS

- 4+75N 2+70E 0.15 m chip sample across N35°E65° N shear zone, abundant quartz, minor limonite and clay, hosted in moderately silicified volcanics.  
*450 ppb Au*
- 4+75N 4+93E 1.3 m chip sample across quartz vein which contains 3 to 5% pyrite and strong limonite.  
*2250 ppb Au*
- 5+00N 3+75E 1.5 m chip sample across quartz vein including zones of fragments of silicified host rock, moderate limonite.  
*2000 ppb Au*
- 5+00N 4+95E 0.75 m chip sample across quartz and limonite vein containing traces of pyrite hosted in basalt.  
*10,000 ppb Au*

Gold F.A.-A.A. Combo Method ppb:

For low grade samples and geochemical materials, 10 gram samples are fused in litharge, carbonate and siliceous flux with the addition of 10 mg of Au-free Ag metal and cupelled. The silver bead is parted with dilute HNO<sub>3</sub> and then treated with aqua regia. The salts are dissolved in dilute HCl and analyzed for Au on an atomic absorption spectrophotometer.

Detection limit: 5 ppb

Copper, Lead, Zinc, Silver ppm:

1.0 gm sample is digested with perchloric-nitric acid (HClO<sub>4</sub>-HNO<sub>3</sub>) for approximately 2 hours. The digested sample is cooled and made up to 25 mls with distilled water. The solution is mixed and solids are allowed to settle. Copper, lead, zinc and silver are determined by atomic absorption techniques. Silver and lead are corrected for background absorption.

Detection limit: Copper, Zinc - 1 ppm  
Silver - 0.2 ppm  
Lead - 2 ppm

Arsenic ppm:

A 1.0 gm sample is digested with a mixture of perchloric and nitric acid to strong fumes of perchloric acid. The digested solution is diluted to volume and mixed. An aliquot of the digest is acidified, reduced with KI and mixed. A portion of the reduced solution is converted to arsine with NaBH<sub>4</sub> and the arsenic content determined using flameless atomic absorption.

Detection limit: 1 ppm



# Chemex Labs Ltd.

Analytical Chemists • Geochemists • Registered Assayers  
212 BROOKSBANK AVE., NORTH VANCOUVER,  
BRITISH COLUMBIA, CANADA V7J-2C1  
PHONE (604) 984-0211

## CERTIFICATE OF ANALYSIS A8713935

To: ARCTEX ENGINEERING

301 - 1855 BALSAM ST.  
VANCOUVER, B.C.  
V6K 3M3

Project: MORNING-APEX  
Comments: CC: PAUL KALLOCK

Page No. : 1  
Tot. Pages: 1  
Date : 05-MAY-87  
Invoice #: I-8713935  
P.O. #: NONE

SAMPLE DESCRIPTION	PREP CODE	Au ppb FA+AA										
4+75N 2+70E	205	---	450									
4+75N 4+95E	205	---	2250									
5+00N 3+75E	205	---	2000									
5+00N 4+95E	205	---	10000									

CERTIFICATION : Hart Buchler





# Chemex Labs Ltd.

Analytical Chemists • Geochemists • Registered Assayers  
 212 BROOKSBANK AVE., NORTH VANCOUVER,  
 BRITISH COLUMBIA, CANADA V7J-2C1  
 PHONE (604) 984-0221

## CERTIFICATE OF ANALYSIS A8713936

To : ARCTEX ENGINEERING

301 - 1855 BALSAM ST.  
 VANCOUVER, B.C.  
 V6K 3M3

Page No. : 1  
 Tot. Pages: 1  
 Date : 05-MAY-87  
 Invoice # : I-8713936  
 P.O. # : NONE

Project : MORNING-APEX  
 Comments: CC: PAUL KALLOCK

SAMPLE DESCRIPTION	PREP CODE		Au ppb FA+AA										
4+00N 5+50E	201	--	^ 5										
4+25N 5+00E	201	--	^ 5										
4+25N 5+50E	201	--	^ 5										
4+50N 5+00E	201	--	^ 5										
4+50N 5+50E	201	--	^ 5										
4+75N 5+00E	201	--	^ 20										
4+75N 5+50E	201	--	^ 5										
5+00N 5+00E	201	--	^ 5										
5+00N 5+50E	201	--	^ 5										
5+25N 5+00E	201	--	^ 10										
5+25N 5+50E	201	--	^ 5										
5+50N 5+00E	201	--	^ 5										
5+50N 5+50E	201	--	^ 5										
5+75N 5+00E	201	--	^ 5										
5+75N 5+50E	201	--	^ 5										
6+00N 5+00E	201	--	^ 5										
6+00N 5+50E	201	--	^ 5										

CERTIFICATION : Hart Buchler

ENGINEER'S CERTIFICATE

LOCKE B. GOLDSMITH

1. I, Locke B. Goldsmith, am a Registered Professional Engineer in the Province of Ontario and the Northwest Territories, and a Registered Professional Geologist in the State of Oregon. My address is 301, 1855 Balsam Street, Vancouver, B.C.
2. I have a B.Sc. (Honours) degree from Michigan Technological University and have done postgraduate study in Geology at Michigan Tech, University of Nevada, and the University of British Columbia. I am a graduate of the Haileybury School of Mines and am a Certified Mining Technician. I am a member of the Society of Economic Geologists, the AIME, and the Australasian Institute of Mining and Metallurgy, and a Fellow of the Geological Association of Canada.
3. I have been engaged in mining exploration for the past 26 years.
4. I have co-authored the report entitled, "Detailed Soil Geochemistry and Geological Investigation of Selected Areas within the Fred and Rita Mineral Claims, Slocan Mining Division, Kaslo, B.C." dated December 14, 1984. The report is based upon fieldwork and research supervised by the author.
5. I have no ownership in the property, nor in the stocks of Red Diamond Mines Ltd.
6. I consent to the use of this report in a prospectus, or in a statement of materials facts related to the raising of funds.

Respectfully submitted,



*Locke B. Goldsmith*  
Locke B. Goldsmith, P.Eng.  
Consulting Geologist

Vancouver, B.C.


## GEOLOGIST'S CERTIFICATE


PAUL KALLOCK

I, Paul Kallock, do state: that I am a geologist with Arctex Engineering Services, 301, 1855 Balsam Street, Vancouver, B.C.

## I Further State That:

1. I have a B.Sc. degree in Geology from Washington State University, 1970. I am a Fellow of the Geological Association of Canada.
2. I have engaged in mineral exploration since 1970, both for major mining and exploration companies, and as an independent geologist.
3. I have co-authored the report entitled, "Detailed Soil Geochemistry and Geological Investigation of Selected Areas within the Fred and Rita Mineral Claims, Slocan Mining Division, Kaslo, B.C." The report is based on my fieldwork carried out on the property, and on previously accumulated geologic data.
4. I have no direct or indirect interest in any manner in either the property or securities of Red Diamond Mines Ltd., or its affiliates, nor do I anticipate to receive any such interest.
5. I consent to the use of this report in a prospectus, or in a statement of material facts related to the raising of funds.

  
Paul Kallock  
Geologist



Vancouver, B.C.