

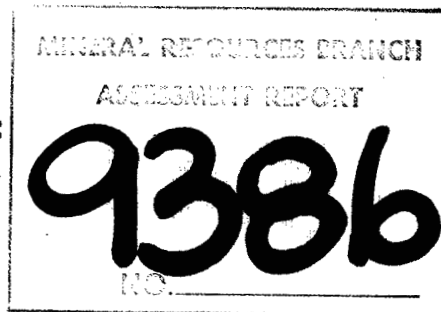
REPORT ON AN ECONOMIC GEOLOGICAL APPRAISAL
 OF THE
 SNOWFLAKE GROUP OF MINERAL CLAIMS
 ASPEN GROVE AREA
 NICOLA MINING DIVISION
 BRITISH COLUMBIA

*Snowflake
Tule mineral
claims.*

CLAIMS:

SNOWFLAKE, SNOWFLAKE
 2 - 7, 9 + 10, AND TULE
 10 MINERAL CLAIM (88
 UNITS)

LOCATION:



THE SNOWFLAKE GROUP OF
 CLAIMS LIES 5 KM. N.E.
 OF ASPEN GROVE, B.C.

LAT. 49°58'; LONG. 120°
 36'; N.T.S. 92H/15E

WRITTEN BY:

MURRAY MORRISON

OWNER:

MR. FRED GINGELL &
 MR. R.W. YORKE-HARDY

OPERATOR:

SNOWFLAKE MINING CO. LTD.

DATE STARTED:

JUNE 8, 1981

DATE COMPLETED:

JUNE 14, 1981

CURRENT DATE:

JUNE 30, 1981
 KELOWNA, B.C.

ILLUSTRATIONS

LOCATION & CLAIM MAP FIGURE SF-81-1	PAGE 1A
PERCUSSION DRILLING RESULTS (1973, 78 & 79) SURFACE MINERAL OCCURRENCES AND ROCK GEOCHEMISTRY FOR CU, AG AND AU MAP SF-81-2	POCKET
SNOWFLAKE CLAIM GROUP GEOLOGY MAP SF-81-3	POCKET

TABLE OF CONTENTS

SUMMARY	PAGE 1
INTRODUCTION	PAGE 2-3
CLAIM STATUS	PAGE 4-5
LOCATION AND ACCESS	PAGE 5
TOPOGRAPHY AND VEGETATION	PAGE 5
HISTORY OF PREVIOUS WORK	PAGE 5-6
GEOLOGY	PAGE 6-7
1981 WORK PROGRAM	PAGE 8
- GENERAL	PAGE 8
- COLLECTION OF ROCK GEOCHEMICAL SAMPLES	PAGE 8-9
- SAMPLING PROCEDURE	PAGE 8-9
- TESTING PROCEDURE	PAGE 9
RESULTS OF THE 1981 WORK PROGRAM	PAGE 9
- ADDITIONAL NOTES ON LOCAL GEOLOGY	PAGE 9-10
- INTRUSIVE ROCKS	PAGE 9-10
- FAULTING	PAGE 10-11
- MINERALIZATION	PAGE 11-16
- REVIEW OF PAST SURVEYS	PAGE 16
- VLF-EM	PAGE 16
- GROUND MAGNETICS	PAGE 16
- COPPER AND SILVER SOIL GEOCHEMISTRY	PAGE 16-17
- INDUCED POLARIZATION	PAGE 17
- PERCUSSION DRILLING	PAGE 18
- DISCUSSION OF SURFACE ROCK GEOCHEM RESULTS	PAGE 19-20
- DISCUSSION OF MINERALIZATION AND ORE GENESIS	PAGE 20-22
CONCLUSIONS	PAGE 23
- ROCK GEOCHEM SUMMARY	PAGE 23
- GENERAL	PAGE 23-24
RECOMMENDATIONS	PAGE 25
REFERENCES	PAGE 26
APPENDIX "A" - STATEMENT OF QUALIFICATIONS	PAGE 27
APPENDIX "B" - STATEMENT OF EXPENDITURES	PAGE 28
SNOWFLAKE CLAIM GROUP	

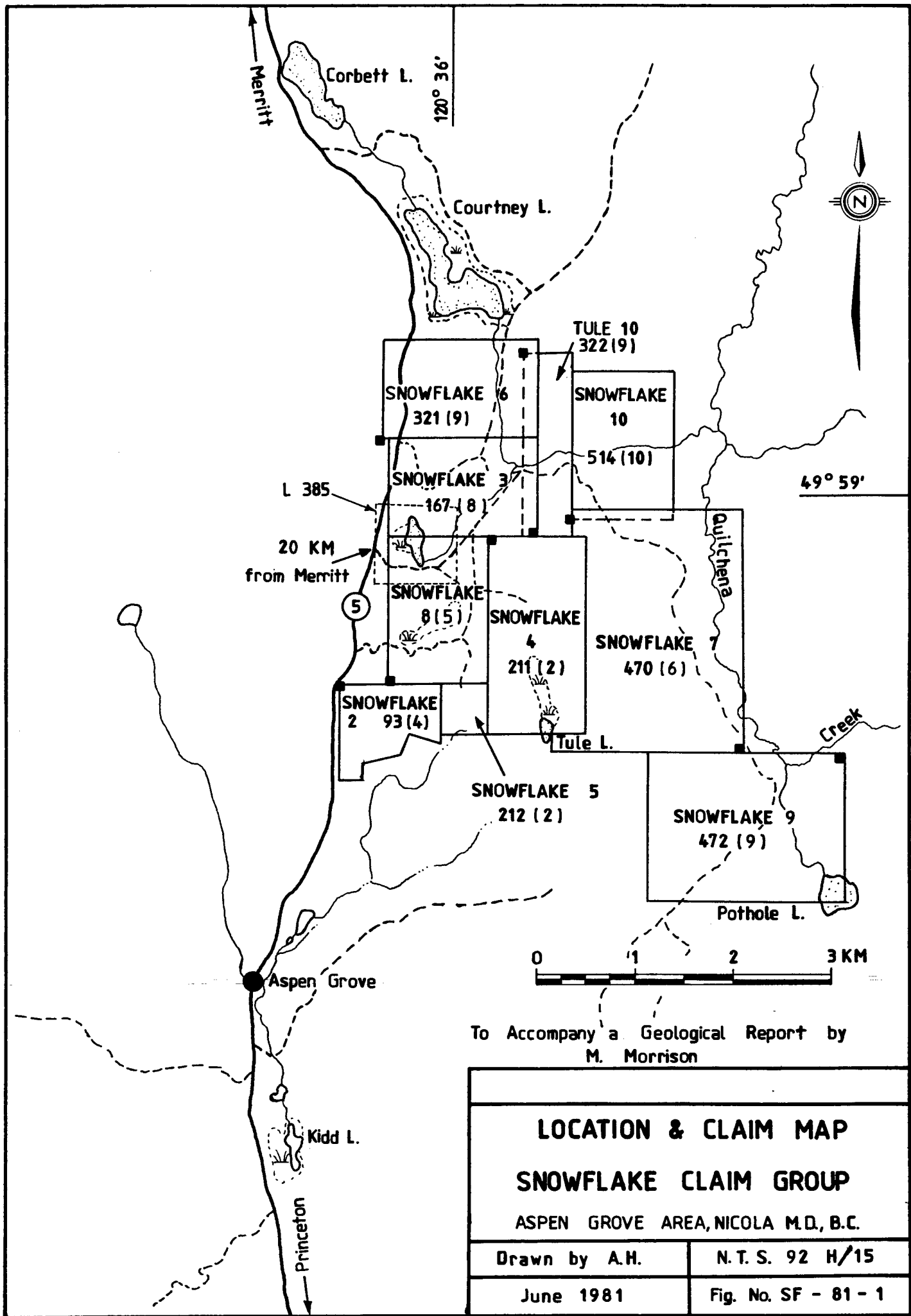
SUMMARY

THE SNOWFLAKE GROUP OF MINERAL CLAIMS MADE UP OF THE SNOWFLAKE, SNOWFLAKE 2-7, 9+10, AND TULE 10 CLAIMS (88 UNITS IN TOTAL), CENTERED 5 KILOMETRES NORTHEAST OF ASPEN GROVE, B.C., WAS EXAMINED BY THE WRITER JUNE 8-14, 1981. THE CLAIMS ARE OWNED BY FRED GINGELL OF BURNABY, B.C. AND R.W. YORKE-HARDY OF VERNON, B.C. ASSESSMENT WORK FOR 1981 WAS DONE ON THE CLAIMS AT THE REQUEST OF SNOWFLAKE MINING CO. LTD.

A STUDY WAS MADE OF ALL RECENT PREVIOUS SURVEYS ON THE PROPERTY, AND A FIELD EXAMINATION WAS CARRIED OUT WITH A FOCUS ON AREAS OF KNOWN COPPER MINERALIZATION. A STUDY OF THE DATA OBTAINED FROM 53 OLD PERCUSSION DRILL HOLES DRILLED ON THE PROPERTY WAS MADE, AND SEVERAL OF THE DRILL SITES WERE VISITED. DURING THIS YEAR'S PROGRAM, 52 ROCK GEOCHEMICAL SAMPLES WERE COLLECTED AND ANALYZED FOR COPPER, SILVER, AND GOLD.

A STUDY OF THE ROCK GEOCHEMICAL DATA SHOWS THAT COPPER AND SILVER VALUES ARE ANOMALOUS IN ROCKS SURROUNDING THE TWO LARGEST KNOWN MINERALIZED COPPER AREAS ON THE PROPERTY, AND THAT SILVER MAY BE USEFUL IN DEFINING ORE ENVIRONMENTS ELSEWHERE ON THE SNOWFLAKE PROPERTY.

A STUDY OF GEOLOGY AND PERCUSSION DRILL DATA, INDICATES THAT A POTENTIAL AREA OF ECONOMIC COPPER MINERALIZATION MAY OCCUR NEAR THE CENTRE OF THE SNOWFLAKE #3 MINERAL CLAIM (SEE MAP SF-81-2). UNFORTUNATELY, THIS POTENTIAL TARGET LIES VERY CLOSE TO THE BORDER OF DISTRICT LOT #385, AND THE OWNERSHIP OF BASE METAL RIGHTS TO THIS LOT IS UNCERTAIN (SEE "CLAIM STATUS" SECTION OF THIS REPORT). THIS PROBLEM OF BASE METAL MINERAL RIGHTS OWNERSHIP WILL HAVE TO BE RESOLVED BEFORE DRILLING IS CARRIED OUT ON THE PROPOSED TARGET ZONE.



INTRODUCTION

THE SNOWFLAKE GROUP OF MINERAL CLAIMS MADE UP OF THE SNOWFLAKE, SNOWFLAKE 2-7, 9+10, AND TULE 10 CLAIMS (88 UNITS IN TOTAL) IS CENTERED 5 KILOMETRES NORTHEAST OF ASPEN GROVE, B.C. (LAT. 49°58'; LONG. 120°36'; N.T.S. 92H/15E). THE CLAIMS ARE OWNED BY MR. FRED GINGELL OF BURNABY AND MR. R.W. YORKE-HARDY OF VERNON, B.C. AT THE REQUEST OF SNOWFLAKE MINING CO. LTD., A WORK PROGRAM WAS CARRIED OUT ON THE PROPERTY TO SATISFY ASSESSMENT WORK REQUIREMENTS FOR 1981.

A PROGRAM INVOLVING A GENERAL OVERALL ECONOMIC GEOLOGICAL APPRAISAL WAS CARRIED OUT ON THE COPPER PROPERTY BY THE WRITER FROM JUNE 8 TO 14, 1981. A REVIEW WAS MADE OF ALL RECENT SURVEYS ON THE PROPERTY, WHICH INCLUDED SOIL GEOCHEMISTRY, AND VLF-EM, MAGNETICS, AND INDUCED POLARIZATION GEOPHYSICS. A STUDY WAS ALSO MADE OF THE RESULTS OF 53 PERCUSSION DRILL HOLES. MANY MINERALIZED SHOWINGS ON THE PROPERTY WERE VISITED, AND SEVERAL ROCK GEOCHEMICAL SAMPLES WERE COLLECTED FROM WIDELY SEPARATED AREAS ON THE PROPERTY. THE ROCK SAMPLES WERE ANALYZED FOR CU, AU AND AG AS A TEST TO SEE IF SURFACE ROCK GEOCHEMISTRY WAS USEFUL IN DELINEATING ORE ENVIRONMENTS ON THE PROPERTY.

MAP SF-81-2 ACCOMPANYING THIS REPORT SHOWS ROCK GEOCHEM SITES, AND THE VALUES OBTAINED AT EACH SITE. THE MAP ALSO SHOWS THE MAIN COPPER SHOWINGS THAT WERE EXAMINED BY THE WRITER. ALL OLD PERCUSSION DRILL HOLE SITES HAVE BEEN PLOTTED ON THE MAP, AND SYMBOLS HAVE BEEN USED TO DENOTE THE DEGREE OF COPPER MINERALIZATION ENCOUNTERED IN EACH HOLE. THE GEOLOGY FOR THE SNOWFLAKE PROPERTY HAS BEEN TRACED FROM PRETO'S, ET AL. 1974 1"= $\frac{1}{4}$ MILE MAP OF THE ASPEN GROVE AREA. THIS GEOLOGY, WITH SLIGHT MODIFICATIONS,

HAS BEEN PLOTTED ON MAP SF-81-3 ACCOMPANYING THIS REPORT.

IN THE TEXT OF THIS REPORT, THERE IS DISCUSSION ON A REVIEW OF THE EARLIER GEOCHEMICAL AND GEOPHYSICAL SURVEYS, A STUDY OF THE PERCUSSION DRILL DATA, AN EXAMINATION OF MINERALIZED ZONES, AND THE RESULTS OF THE 1981 ROCK GEOCHEMICAL SURVEY. SOME SUGGESTIONS REGARDING ORE GENESIS ARE PRESENTED, AND RECOMMENDATIONS FOR FURTHER WORK ARE MADE.

CLAIM STATUS

THE SNOWFLAKE GROUP OF CLAIMS, COMPRISING 88 UNITS, IS OWNED JOINTLY BY MR. FRED GINGELL OF BURNABY, B.C., AND MR. R.W. YORKE-HARDY OF VERNON, B.C. THE GROUP IS LOCATED IN THE NICOLA MINING DIVISION OF BRITISH COLUMBIA. THE CLAIMS INCLUDED IN THE SNOWFLAKE GROUP ARE AS FOLLOWS:

<u>CLAIM NAME</u>	<u>UNITS</u>	<u>RECORD #</u>	<u>DATE RECORDED</u>	<u>EXPIRY DATE</u>	<u>OWNER</u>
SNOWFLAKE	6	8	MAY 13, 1975	MAY 13, 1985	F. GINGELL
SNOWFLAKE 2	4	93	APRIL 14, 1976	APRIL 14, 1986	R.W. YORKE-HARDY
SNOWFLAKE 3	6	167	AUG. 20, 1976	AUG. 20, 1984	R.W. YORKE-HARDY
SNOWFLAKE 4	8	211	FEB. 11, 1977	FEB. 11, 1985	F. GINGELL
SNOWFLAKE 5	2	212	FEB. 11, 1977	FEB. 11, 1985	F. GINGELL
SNOWFLAKE 6	6	321	SEPT. 16, 1977	SEPT. 16, 1984	F. GINGELL
SNOWFLAKE 7	20	470	JUNE 15, 1978	JUNE 15, 1983	F. GINGELL
SNOWFLAKE 9	20	472	JUNE 15, 1978	JUNE 15, 1982	F. GINGELL
SNOWFLAKE 10	12	514	OCT. 25, 1978	OCT. 25, 1983	F. GINGELL
TULE 10	4	322	SEPT. 16, 1977	SEPT. 16, 1984	F. GINGELL

THERE IS UNCERTAINTY REGARDING THE OWNERSHIP OF THE BASE METAL MINERAL RIGHTS FOR LOT 385. THE LOT IS COVERED BY PORTIONS OF THE SNOWFLAKE AND SNOWFLAKE 3 MINERAL CLAIMS. LOT 385 HAS BEEN PLOTTED ON FIG. SF-81-1 AS IT IS SHOWN ON N.T.S. MAP 92H/15.

LOT 385 WAS ORIGINALLY DEEDED TO THE DOUGLAS LAKE CATTLE COMPANY WITH BASE METAL MINERAL RIGHTS ATTACHED. SINCE THE ORIGINAL DEED, THE SURFACE RIGHTS, POSSIBLY WITH THE BASE METAL RIGHTS, HAVE BEEN SOLD SEVERAL TIMES. RECORDS OF EARLY TRANSACTIONS HAVE BEEN DESTROYED.

THE DOUGLAS LAKE CATTLE COMPANY CLAIM TO HOLD THE BASE METAL RIGHTS BUT OTHER COMPANIES (CRAIGMONT AND COMINCO) FEEL THAT THE BASE METAL RIGHTS WERE ORIGINALLY SOLD WITH THE LAND AND HAVE SUBSEQUENTLY REVERTED TO THE CROWN. THERE IS NO WAY OTHER THAN LEGAL ACTION OF SETTLING THIS DISPUTE.

LOCATION AND ACCESS

THE SNOWFLAKE GROUP OF CLAIMS IS LOCATED EAST OF HIGHWAY 5, 20 KILOMETRES SOUTH OF MERRITT, OR 5 KILOMETRES NORTH OF ASPEN GROVE. ACCESS FROM HIGHWAY 5 IS VIA TWO DIRT ROADS SHOWN ON FIG. SF-81-1 ACCOMPANYING THIS REPORT. THE NORTHERN ROAD HAS A LOCKED GATE, AND PERMISSION FOR USE OF THIS ROAD MUST BE OBTAINED FROM THE DOUGLAS LAKE CATTLE COMPANY.

TOPOGRAPHY AND VEGETATION - (AS PER D.T. MEHNER, COMINCO)

THE PROPERTY COVERS ROLLING RANCLANDS WITH OPEN PASTURE LAND AND STANDS OF ASPEN, FIR, AND PINE. ELEVATIONS RANGE FROM 1040 M TO ABOUT 1160 M WITH GOOD OUTCROP IN AREAS ABOVE 1100 M. WATER FOR DRILLING IS AVAILABLE FROM MANY SMALL LAKES AND PONDS.

HISTORY OF PREVIOUS WORK - (AS PER D.T. MEHNER, COMINCO) (WITH RECENT ADDITIONS)

A NUMBER OF COMPANIES HAVE WORKED ON THE SNOWFLAKE PROPERTY

OVER THE YEARS, BUT ONLY SINCE 1958 HAS THIS WORK BEEN FILED WITH THE GOVERNMENT. IN 1958, GRANBY CARRIED OUT A GROUND MAGNETIC SURVEY (ASSESSMENT REPORT 250) OVER THE PROPERTY. BETWEEN 1958 AND 1968, HARRY NESBITT, A LOCAL PROSPECTOR, STAKED THE PROPERTY AND DRILLED 2 DEEP HOLES AND 2 SHALLOW HOLES. ASHLAND OIL OPTIONED THE GROUND IN 1968, AND DID I.P. GROUND MAGNETICS, AND MAPPING (ASSESSMENT REPORT 1842). THEN RIO TINTO ACQUIRED THE GROUND IN 1971 AND CARRIED OUT MAPPING AND GROUND MAGNETIC SURVEYS (ASSESSMENT REPORT 3555). IN 1972, CRAIGMONT OPTIONED THE PROPERTY AND DRILLED 19 PERCUSSION HOLES INTO PORTIONS OF THE I.P. ANOMALIES LOCATED BY ASHLAND OIL. F. GINGELL AND R.W. YORKE-HARDY ACQUIRED THE GROUND IN 1975-76 AND CARRIED OUT COPPER-SILVER SOIL GEOCHEMICAL AND V.L.F.-E.M. SURVEYS (ASSESSMENT REPORTS 5875 AND 6260) OVER PORTIONS OF THE PROPERTY. COMINCO OPTIONED THE GROUND FROM THEM IN FEBRUARY, 1978 AND DID SOME MAPPING AND TRENCH SAMPLING FOLLOWED BY A 4200' (1280 METRE) 14 HOLE PERCUSSION DRILL PROGRAM. IN 1979, COMINCO CARRIED OUT FURTHER GROUND MAGNETIC AND I.P. SURVEYS ON THE PROPERTY, AND DRILLED ANOTHER 20 PERCUSSION DRILL HOLES OF 1643 METRES IN TOTAL.

GEOLOGY - (AS PER KERR-DAWSON & ASSOCIATES LTD, WITH MINOR MODIFICATIONS)

THE ASPEN GROVE AREA IS WITHIN A TERRAIN COMMONLY REFERRED TO AS THE NICOLA BELT, A EUGEOSYNCLINAL UPPER TRIASSIC ISLAND-ARC ROCK ASSEMBLAGE. MASSIVE ANDESITIC FLOWS AND COARSE PYROCLASTIC ROCKS PREDOMINATE IN THE CENTRAL PART OF THE AREA AND A SEQUENCE OF LAYERED AND MASSIVE VOLCANOGENIC ROCKS PREDOMINATE ALONG THE EASTERN MARGIN. THE SOUTHWESTERN SECTION OF THE AREA IS UNDERLAIN BY INTERCALATED VOLCANICLASTIC ROCKS, FLOWS, AND CALCARIOUS SEDIMENTARY ROCKS THAT ARE PARTLY COVERED BY COARSE VOLCANIC BRECCIA.

A SEQUENCE OF MASSIVE RED TO PURPLE AND GREEN AUGITE PORPHYRY FLOWS, COARSE VOLCANIC BRECCIA AND DIORITIZED VOLCANICS IS PRESENT IN THE CENTRAL PART OF THE REGION. THIS SEQUENCE MAY INDICATE THE EXISTENCE OF A CENTRAL ZONE OF PARTLY SUBAERIAL VOLCANIC CENTRES.

INTRUSIVE ROCKS WITHIN THE AREA ARE MAINLY DIORITIC AND APPEAR TO BE IN PART COMAGMATIC WITH THE NICOLA VOLCANIC ROCKS BECAUSE OF SIMILAR COMPOSITION AND GRADATIONAL RELATIONSHIPS. SEVERAL SMALL AREAS OF MONZONITE AND/OR SYENITE ARE FOUND WITHIN THE BELT.

THE STRUCTURE OF THE ASPEN AREA IS DOMINATED BY TWO REGIONAL, NORTHERLY-TRENDING FAULTS ABOUT 4 KILOMETRES APART. THEY ARE LINKED BY MANY SPLAYS AND A TERRAIN SHATTERED BY BRITTLE FRACTURE. IN CONTRAST, FOLDING IS OBSCURE AND MAY BE SLIGHT EXCEPT FOR DRAG NEAR FAULTS.

THE SNOWFLAKE PROPERTY IS UNDERLAIN BY A SEQUENCE OF FLOWS, VOLCANIC FRAGMENTALS AND RELATED VOLCANICLASTIC SEDIMENTS INTRUDED BY A MASS OF DIORITE-MONZONITE ON THE WEST-CENTRAL PORTION OF THE PROPERTY, AND BY PLUGS OF DIORITE, DIORITE PORPHYRY, AND DIORITE-MENZONITE ON THE EASTERN SIDE OF THE PROPERTY.

1981 WORK PROGRAM

A. GENERAL

IN APPRAISING THE ECONOMIC POTENTIAL OF THE SNOWFLAKE PROPERTY, A REVIEW WAS MADE OF ALL RECENT SURVEYS CARRIED OUT ON THE PROPERTY. THIS REVIEW WAS FOLLOWED-UP BY A FIELD EXAMINATION OF AREAS OF KEY INTEREST. SURVEYS REVIEWED, INCLUDED SOIL GEOCHEMISTRY, VLF-EM, MAGNETOMETRE AND INDUCED POLARIZATION. A STUDY WAS MADE OF DATA FROM 53 PERCUSSION DRILL HOLES, AND SEVERAL OF THESE DRILL SITES WERE LOCATED AND EXAMINED. SEVERAL AREAS OF SURFACE MINERALIZATION WERE ALSO EXAMINED, AND 52 ROCK GEOCHEM SAMPLES WERE COLLECTED FOR ANALYSIS FROM MANY WIDELY SPACED AREAS ON THE PROPERTY.

THE WRITING ON GRID STAKES FROM PEST SURVEYS ON THE PROPERTY WAS BARELY DISCERNIBLE, AND MUCH TIME WAS SPENT IN FIXING POSITIONS FOR OUR SURVEYS AND STUDIES BY MEASURING WITH A BELT CHAIN. CONVERSIONS FROM THE FEET OF THE OLD SURVEYS TO METRES WERE MADE BEFORE PLOTTING POSITIONS ON MAP SF-81-2 ACCOMPANYING THIS REPORT.

COMMENTS ON SOME OF THE LOCAL GEOLOGY, THE MINERALIZED ZONES, THE OLD SURVEYS, THE PERCUSSION DRILLING, AND THE 1981 ROCK GEOCHEM VALUES ARE ALL GIVEN IN THE SECTION OF THIS REPORT TITLED, "RESULTS OF THE 1981 WORK PROGRAM".

B. COLLECTION OF ROCK GEOCHEMICAL SAMPLES

- SAMPLING PROCEDURE:

ROCK GEOCHEMICAL SAMPLES WERE SELECTED FROM 52 SITES ON THE SNOWFLAKE PROPERTY. THE COLLECTION OF SAMPLES WAS DESIGNED TO TEST THE BACKGROUND FOR COPPER, GOLD, AND

SILVER IN VARIOUS ROCK TYPES ON THE PROPERTY, WITH A PARTICULAR FOCUS ON THE RED AND GREEN ANDESITE BRECCIAS. THE GEOCHEM PROGRAM WAS ALSO USED TO TEST FOR POSSIBLE INCREASES IN THE THREE ELEMENTS TOWARDS INTRUSIVE CONTACTS OR MAPPED FAULTS. SAMPLES WERE ALSO TAKEN IN VISIBLY MINERALIZED AREAS TO GIVE A QUANTITATIVE VALUE TO THE MINERALIZATION.

A 1.5 TO 2 KG. SAMPLE WAS COLLECTED AT EACH SITE BY BREAKING SEVERAL ROCK CHIPS OF 3 CM. SIZE FROM BEDROCK OVER A 100 SQUARE METRE AREA. AN ATTEMPT WAS MADE TO GET ROCK AS FRESH (UNWEATHERED) AS POSSIBLE. CHIPS SHOWING EPIDOTE OR CALCITE VEINING WERE NOT EXCLUDED FROM THE SAMPLES.

- TESTING PROCEDURE:

THE SAMPLES WERE ANALYZED BY THE KAMLOOPS RESEARCH AND ASSAY LABORATORIES LTD. TRANS-CANADA HIGHWAY WEST, KAMLOOPS, B.C. THE SAMPLES TO BE TESTED FOR COPPER, SILVER, AND GOLD WERE CRUSHED TO MINUS 80 MESH; THEN A MEASURED AMOUNT OF CRUSHED MATERIAL WAS DIGESTED IN HOT ACID, IN THE CASE OF COPPER AND SILVER, AND SUBMITTED TO FIRE ASSAY, IN THE CASE OF GOLD. THE ELEMENTS WERE THEN QUANTITATIVELY DETERMINED BY ATOMIC ABSORPTION. VALUES REPORTED IN PARTS PER MILLION (PPM) FOR COPPER AND SILVER, AND PARTS PER BILLION (PPB) FOR GOLD ARE PLOTTED ON MAP SF-81-2.

RESULTS OF THE 1981 WORK PROGRAM

A. ADDITIONAL NOTES ON LOCAL GEOLOGY

- INTRUSIVE ROCKS

PRETO'S ROCK UNIT 8B LOCATED ON THE WEST-CENTRAL PORTION OF THE PROPERTY IS A FINE TO MEDIUM GRAINED DIORITE PLUG, WITHIN WHICH, THERE ARE ZONES OF AUGITE AND HORNBLLENDE

PORPHYRITIC DIORITE. THE INTRUSIVE GRADES INTO ANDESITE ROCKS ON THE WEST, WHERE A FINE GRAINED ANDESITE-DIORITE HYBRID IS DEVELOPED.

SOUTHEAST OF MINERAL ZONE 2 (SEE MAP SF-81-2) THE DIORITE IS INTRUDED BY A MONZONITE PLUG (PRETO'S ROCK UNIT #9). THIS INTRUSIVE CONTACT IS ALSO GRADATIONAL WITH A TRANSITION ZONE OF 100 TO 200 METRES WIDE COMPOSED OF A DIORITE-MONZONITE HYBRID.

A PLUG OF FINE TO MEDIUM GRAINED HORNBLENDE DIORITE, (PRETO'S ROCK UNIT 8A) INTRUDES RED ANDESITE BRECCIA NEAR THE EASTERN SIDE OF THE PROPERTY. CONTACTS THERE, APPEAR TO BE SHARP.

POORLY EXPOSED INTRUSIVE ROCK OF DIORITE, PORPHYRITIC DIORITE, AND DIORITE-MONZONITE COMPOSITION IS SUSPECTED OF UNDERLYING MUCH OF THE VOLCANIC ROCK ON THE STEEP WESTERN BANK OF QUILCHENA CREEK ON THE EASTERN SIDE OF THE PROPERTY. THE EVIDENCE OF CONTACT METAMORPHISM IN SURFACE VOLCANIC ROCKS, SCATTERED OUTCROPPINGS OF INTRUSIVE ROCK AND SOME PERCUSSION DRILL INTERSECTIONS THAT WERE NOTED TO BE ENTIRELY WITHIN INTRUSIVE ROCK, ALL BUT CONFIRM THE PRESENCE OF A LARGE BODY OF INTRUSIVE ROCK IN THE AREA.

- FAULTING

FAULTING IS WIDESPREAD ON THE SNOWFLAKE PROPERTY. PRETO'S MAP SHOWS THE AREAS OF MAJOR FAULT MOVEMENT, BUT WELL FRACTURED ROCK AND SLICKENSIDE SURFACES ARE COMMON TO ALL ROCK TYPES IN ALL REGIONS ON THE PROPERTY. SMALL EPIDOTE VEINLETS 0.1 TO 1 CM. THICK, FILL FRACTURES AND FAULTS, WHICH ARE EVERYWHERE TIGHT. THERE IS MUCH EVIDENCE OF ROCK MOVEMENT, BUT NOWHERE IS THE MOVEMENT GREAT. THE ROCK

HAS BEEN SHATTERED, BUT NOT DISPLACED.

ALL COPPER MINERALIZATION WHERE EXAMINED ON THE PROPERTY IS FRACTURE AND FAULT CONTROLLED, YET NOT ALL OF THE FRACTURED AND FAULTED ROCK HAS VISIBLE COPPER MINERALIZATION.

B. MINERALIZATION

NINE ZONES OF NOTEABLE MINERALIZATION WERE VISITED ON THE PROPERTY. THESE ZONES HAVE BEEN NUMBERED AND PLOTTED ON MAP SF-81-2 ACCOMPANYING THIS REPORT. A BRIEF DESCRIPTION OF EACH ZONE FOLLOWS:

ZONE ONE:

ZONE ONE IS LOCATED JUST EAST OF A LONG SHALLOW SWAMP IN THE WEST-CENTRAL PART OF THE PROPERTY. THE ZONE HAS BEEN EXPLORED BY SEVERAL OLD CAT TRENCHES, AND BY DIAMOND AND PERCUSSION DRILLING. SURFACE MINERALIZATION CONSISTS OF CHALCOPYRITE DISSEMINATED THROUGH A HYBRID, HORNFELSIC, ANDESITIC ROCK THAT APPEARS TO HAVE BEEN INTRUDED BY A PORPHYRITIC DIORITE THAT LIES TOWARDS THE EAST. A ZONE OF MINOR CARBONATE ALTERATION WAS NOTED IN A TRENCH NEAR THE CHALCOPYRITE ZONE. THE BEST COPPER ASSAY ON SURFACE OBTAINED BY EARLIER WORKERS WAS 1.6% OVER 3 METRES. THE BEST INTERSECTIONS OF THREE PERCUSSION DRILL HOLES DRILLED IN THE AREA EQUALLED: 0.12% CU OVER 25 M, 0.07% CU OVER 34 M, AND 0.05 TO 0.06% CU OVER 92M.

ZONE TWO:

ZONE TWO HAS BEEN THE SITE OF EXTENSIVE BULLDOZER TRENCHING (1960'S?). THE ROCK EXPOSED IS A WELL FRACTURED, AND FAULTED FINE TO MEDIUM GRAINED, CHLORITE ALTERED DIORITE-ANDESITE HYBRID. NATIVE COPPER UP TO 0.2% OVER 20 METRES IN ONE OF THE NORTHERLY TRENCHES APPEARS TO HAVE A CLOSE

SPACIAL ASSOCIATION WITH ZONES OF 2 TO 3% EPIDOTE AND CALCITE VEINING. TWO ZONES OF CARBONATE ALTERATION UP TO 3 METRES WIDE WERE NOTED CUTTING THE HYBRID ROCK 30 TO 50 METRES NORTH OF THE MAIN ZONE OF NATIVE COPPER MINERALIZATION. ONE OLD VERTICAL DIAMOND DRILL HOLE WAS DRILLED NEAR THE CARBONATE ALTERATION ZONES. BULLDOZER TRENCHING AND STRIPPING EXTENDS 200 METRES SOUTHEAST OF THE MAIN NATIVE COPPER ZONE, BUT IT APPEARS THAT NONE OF THE 53 PERCUSSION DRILL HOLES DRILLED ON THE PROPERTY WERE DRILLED IN THE IMMEDIATE VICINITY OF THE NATIVE COPPER ZONE.

ROCK GEOCHEM SAMPLE 8134 (626 PPM CU, 1.2 PPM AG, AND 140 PPB AU) WAS COLLECTED FROM A BULLDOZER TRENCH 20 METRES SOUTH OF THE MAIN NATIVE COPPER SHOWING. THE SAMPLE CONTAINED SOME NATIVE COPPER.

ZONE THREE:

AT ZONE THREE, AN OLD BULLDOZER TRENCH CUTS INTO THE WEST BANK OF A CREEK RUNNING N 20°E. THERE IS NO DISTINCT OUT-CROP EXPOSED BY THE TRENCH, BUT FLOAT IN THE BOTTOM OF THE TRENCH IS COMPOSED OF FAULTED ANDESITE, SHOWING A MODERATE DEGREE OF CARBONATE ALTERATION AND MALACHITE MINERALIZATION. AN ASSAY BY EARLIER WORKERS GAVE A VALUE OF 0.29% CU OVER 45 METRES. CALCITE VEINING EQUALS UP TO 10%, AND QUARTZ VEINING UP TO 1% LOCALLY.

ROCK GEOCHEMICAL SAMPLES COLLECTED FROM THE TRENCH GAVE THE FOLLOWING VALUES: -

#8101 (370 PPM CU, 1.0 PPM AG, AND 80 PPB AU) THE SAMPLE WAS SELECTED FROM A BRECCIA MATERIAL WITH 10% CRUSTIFORM CALCITE VEINLETS UP TO 1 CM. THE SAMPLE RESEMBLED TUFF PIPE MATERIAL.

#8103 (2060 PPM CU 2.1 PPM AG, AND 145 PPB AU) THE SAMPLE WAS TAKEN FROM GENERAL CARBONATE ALTERED ANDESITIC ROCK WITH MALACHITE STAINING. THE SAMPLE WAS TAKEN OVER A LENGTH OF 15 M IN THE CENTRE OF THE TRENCH.

ZONE FOUR:

ZONE FOUR IS LOCATED NEAR THE SOUTHWEST CORNER OF THE SNOWFLAKE CLAIM, OR 800 METRES SOUTHWEST OF ZONE ONE. AT ZONE FOUR, DUMP MATERIAL FROM AN OLD OPEN CUT AND ADIT IS MADE UP OF MAINLY FRESH PURPLE ANDESITE BRECCIA WITH 1 TO 2% EPIDOTE AND CALCITE FILLING TIGHT FRACTURES. CHALCO-CITE AND MALACHITE MINERALIZATION EQUALS MUCH LESS THAN 1% IN THE DUMP MATERIAL, ALTHOUGH IT IS SUSPECTED THAT GOOD COPPER GRADE MATERIAL MAY HAVE BEEN MINED FROM SMALL SHEAR ZONES BY EARLY WORKERS.

ZONE FIVE:

ZONE FIVE IS LOCATED 700 METRES EAST OF THE SOUTH END OF TULE LAKE. AT ZONE FIVE, THERE IS A VERTICAL SHAFT AND AN INCLINED ADIT, WHICH WAS DRIVEN TOWARDS THE SHAFT FROM THE WEST. BOTH THE SHAFT AND INCLINED ADIT ARE FILLED WITH WATER. IT APPEARS THAT BOTH WERE DESIGNED TO FOLLOW A 15 TO 100 CM. WIDE FAULT ZONE S 50° W/90 TO 75 SE WHICH CUTS RED ANDESITE BRECCIA. WALL ROCK IS MINERALIZED WITH CHALCOCITE AND MALACHITE IMMEDIATELY ADJACENT THE FAULT, AND IT IS SUSPECTED THAT GOOD GRADE COPPER MINERALIZATION MAY HAVE BEEN REMOVED FROM THE FAULT ZONE. ROCK ON THE WASTE DUMP IS A FRESH RED ANDESITE BRECCIA CUT BY ONLY 1% CALCITE AND EPIDOTE VEINING, WITH NO NOTEABLE COPPER MINERALIZATION.

ZONE SIX:

ZONE SIX LIES JUST 100 METRES SOUTHEAST OF ZONE FIVE. AT

ZONE SIX, SEVERAL BULLDOZER TRENCHES CUT EAST-WEST ACROSS A NORTHWESTERLY-TRENDING FAULTED CONTACT BETWEEN GREEN ANDESITE BRECCIA AND RED ANDESITE BRECCIA. THE ROCK IN THE TRENCHES IS MODERATELY FRACTURED AND FAULTED, AND IS CUT BY MINOR (LESS THAN 1%) CALCITE AND QUARTZ VEINLETS. THERE IS WEAK LIMONITE STAINING GENERALLY, AND SOME MALACHITE STAINING LOCALLY. MINOR CHALCOPYRITE MINERALIZATION (MUCH LESS THAN 1%) IS LOCATED 1 TO 2 METRES ON EITHER SIDE OF THE RED ANDESITE - GREEN ANDESITE CONTACT.

ZONE SEVEN:

ZONE SEVEN IS LOCATED IN THE CENTRAL AREA OF THE SNOWFLAKE #7 MINERAL CLAIM ON THE EASTERN SIDE OF THE PROPERTY. A 200 METRE CURVING TRENCH EXCAVATED IN THE 60'S(?) HAS EXPOSED FINE GRAINED TUFF BEDS DIPPING IRREGULARLY SOUTHWEST THAT HAVE BEEN INTRUDED BY PORPHYRITIC DIORITE SILLS(?). THE UPPERMOST BED EXPOSED BY THE TRENCHING, IS A HIGHLY SILICEOUS VERY FINE GRAINED TUFF(?) WHICH CONTAINS 1% PYRITE AND PYRRHOTITE, AND A TRACE OF MALACHITE. ROCK GEOCHEM SAMPLE 8121 (415 PPM CU, 1.1 PPM AG, AND 30 PPB AU) WAS COLLECTED FROM THIS 2 METRE THICK TUFF BED.

MUCH OF THE TRENCH BELOW THE TUFF BED EXPOSES THE PORPHYRITIC DIORITE WHICH IS FRACTURED, AND FAULTED WITH A GENERAL 1 TO 2% PYRITE AND PYRRHOTITE CONTENT. AT SHEAR INTERSECTIONS, PYRITE AND PYRRHOTITE EQUAL 5% OVER ZONES OF UP TO 30 CM. ROCK GEOCHEM SAMPLE 8120 (316 PPM CU, 1.9 PPM AG, AND 90 PPB AU) WAS SELECTED FROM ONE SUCH ZONE WITH 10% COMBINED IRON SULPHIDES, AND A TRACE OF MALACHITE MINERALIZATION. SOME ZONES OF FAULT GOUGE UP TO 4 CM. IN WIDTH WERE NOTED IN THE TRENCHED ROCK.

ANOTHER PORPHYRITIC DIORITE DYKE OR SILL OUTCROPS 200 METRES

WEST OF THE TRENCH AT ZONE SEVEN. ROCK GEOCHEM SAMPLE 8122 (90 PPM CU, 1.1 PPM AG, AND 60 PPB AU) WAS COLLECTED FROM DYKE MATERIAL CONTAINING 1 TO 3% PYRITE.

ZONE EIGHT:

ZONE EIGHT IS LOCATED 200 METRES NORTHEAST OF ZONE SEVEN, WHERE A ROAD CUT, AND AN OLD BULLDOZER TRENCH EXPOSE AN AREA OF WELL FAULTED AND FRACTURED, CHLORITE ALTERED DIORITE. TWO ZONES OF MODERATE CARBONATE ALTERATION, ONE UP TO 15 METRES WIDE, STRIKE WEST TO NORTHWEST WITH THE FAULTING. THE CARBONATE ZONES ARE CUT BY 3% CALCITE AND QUARTZ VEINLETS, WHILE UP TO 1% MALACHITE IS PRESENT IN THE FAULTED DIORITE OVER 1 TO 2 SQUARE METRE AREAS NEAR THE CARBONATE ZONES.

ROCK GEOCHEM SAMPLE 8149 (120 PPM CU, 1.4 PPM AG, AND 30 PPB AU) WAS TAKEN FROM WEATHERED, ALTERED, SLIGHTLY HEMATITE STAINED DIORITE WITH 2% CALCITE VEINLETS, AND LESS THAN 0.5% MALACHITE.

ROCK GEOCHEM SAMPLE 8150 (18 PPM CU, 0.9 PPM AG, AND 25 PPB AU) WAS TAKEN FROM A 15 METRE WIDE, RUSTY, MODERATELY CARBONATE ALTERED ZONE 10 METRES WEST OF THE ROAD.

ZONE NINE:

ZONE NINE IS LOCATED 200 METRES NORTHEAST OF ZONE EIGHT, AN OLD BULLDOZER TRENCH EXPOSES FAULTED CALCAREOUS VOLCANIC SEDIMENTS THAT HAVE BEEN METAMORPHOSED, AND INTRUDED BY DIORITE. EPIDOTE AND CALCITE OCCURS AS VEINING EQUALLING UP TO 5%, AND AS LAYERS OF UP TO 50 CM. THICK. WEAK MALACHITE MINERALIZATION IS WIDESPREAD, AND CHALCOPYRITE, UP TO 0.5% IS ASSOCIATED WITH THE EPIDOTE SKARN ZONES. GARNET IS ALSO PRESENT.

THREE HUNDRED METRES NORTHEAST OF ZONE NINE, THERE IS EXTENSIVE CAT TRENCHING. ONE PERCUSSION DRILL HOLE DRILLED IN THE AREA INTERSECTED 91 METRES OF 0.07% CU.

C. REVIEW OF PAST SURVEYS

A GOOD DEAL OF TIME WAS SPENT REVIEWING SEVERAL RECENT SURVEYS CARRIED OUT ON THE SNOWFLAKE PROPERTY. SOME OBSERVATIONS ARE NOTED BELOW:

- VLF-EM

A VLF-EM SURVEY CONDUCTED ON THE SNOWFLAKE, AND SNOWFLAKE 3 AND 4 CLAIMS IN 1976 SHOWED UP SEVERAL LINEAR ANOMALIES. SEVERAL PERCUSSION DRILL HOLES HAVE BEEN DRILLED INTO THESE LINEAR ANOMALOUS ZONES, OR VERY NEAR THE, AND ONLY THE ANOMALY RUNNING BETWEEN MINERAL ZONES 1 AND 2 ON MAP SF-81-2 HAS SIGNIFICANT COPPER MINERALIZATION ASSOCIATED WITH IT.

- GROUND MAGNETICS

A GROUND MAGNETOMETRE SURVEY HAS PROVEN USEFUL IN CONFIRMING THE POSITION OF THE DIORITE PLUG MAPPED ON THE WESTERN SIDE OF THE PROPERTY. HOWEVER, IT IS NOTED THAT THE BEST COPPER MINERALIZATION FOUND TO DATE ON THE PROPERTY IS ONLY PARTIALLY COINCIDENT WITH THE BORDER OF THE MAGNETIC HIGH.

- COPPER AND SILVER SOIL GEOCHEMISTRY

IN 1976, A COPPER AND SILVER SOIL GEOCHEMICAL PROGRAM WAS CARRIED OUT ON THE SNOWFLAKE, AND SNOWFLAKE 3 AND 4 MINERAL CLAIMS. A LARGE AREA OF 100 TO 400 PPM CU RUNNING FROM

ZONE 1 TO 2 (ON MAP SF-81-2), AND MEASURING 350 BY 1100 METRES WAS OUTLINED BY THE SURVEY. THE WESTERN SIDE OF THE ANOMALY COVERS A NARROW LINEAR AREA WITH PROVEN SUBSURFACE DRILLED COPPER INTERSECTIONS THAT RUNS BETWEEN ZONES 1 & 2. THE WIDE BAND OF THE ANOMALY EXTENDING EAST IS POSSIBLY EXPLAINED BY SOME DISPERSION OF COPPER FROM THE KNOWN MINERALIZED AREA. A GOOD DEAL OF ROCK SOUTHEAST OF ZONE 2 HAS BEEN STRIPPED AND TRENCHED, AND VERY LOW GRADE COPPER HAS BEEN EXPOSED. THIS VISIBLE COPPER NO DOUBT, ACCOUNTS FOR SOME OF THE ANOMALOUS VALUES IN SOIL. A PERCUSSION DRILL HOLE POSITIONED AT THE CENTRE OF THE LARGE COPPER SOIL INTERSECTED ONLY 0.03% CU OVER 35 METRES.

AN AREA LYING TO THE WEST AND NORTHWEST OF ZONE 3 GAVE UP LOW COPPER VALUES IN SOIL, ALTHOUGH SOME GOOD GRADE COPPER (0.29%) IS LOCATED AT ZONE 3. IT WAS NOTED IN A BULLDOZER TRENCH THAT A GRAY CLAY LAYER 1 TO 2 METRES THICK, OVERLIES BEDROCK IN THE AREA. COPPER WOULD PROBABLY NOT PASS THROUGH SUCH A BARRIER TO REACH SURFACE SOIL EVEN IF IT DID OCCUR IN SUBSTANTIAL AMOUNTS IN BEDROCK.

SILVER SOIL GEOCHEMISTRY FROM THE 1976 SURVEY DOESN'T CORRELATE WELL WITH THE AREAS OF KNOWN COPPER MINERALIZATION.

- INDUCED POLARIZATION

TO DATE, THE MAIN ZONE OF SUBSURFACE (DRILLED) COPPER MINERALIZATION LIES BETWEEN SURFACE MINERALIZATION NOTED AT ZONES 1 AND 2 ON MAP SF-81-2. THE SUBSURFACE MINERALIZATION IS COINCIDENT WITH THE WEST FLANK OF AN I.P. ANOMALY. HOWEVER, THERE ARE SEVERAL I.P. ANOMALIES ON THE PROPERTY, AND RECENT DRILLING OF THE FLANKS OF SEVERAL OF THESE HAS FAILED TO FIND SIGNIFICANT COPPER MINERALIZATION AT ANY OF THEM.

- PERCUSSION DRILLING

A TOTAL OF 53 PERCUSSION DRILL HOLES AVERAGING 80 METRES IN DEPTH WERE DRILLED AT SEVERAL LOCATIONS ON THE PROPERTY DURING THREE DIFFERENT DRILLING PROGRAMS IN 1973, 78 AND 79. ROCK GEOCHEM VALUES FOR COPPER WERE COLLECTED FOR ALL HOLES DRILLED. 1978 DRILL HOLE CUTTINGS WERE ANALYZED FOR ZINC, TUNGSTEN, GOLD, AND SILVER IN ADDITION TO COPPER, WHILE 1979 CUTTINGS WERE ANALYZED FOR ZINC, MOLYBDENUM, GOLD, AND SILVER IN ADDITION TO COPPER. A GREAT DEAL OF INFORMATION WAS GAINED FROM THE DRILLING, AND THE WRITER HAS RELIED HEAVILY ON THE RESULTS OF THIS DRILLING IN APPRAISING THE CONOMIC GEOLOGICAL POTENTIAL OF THE PROPERTY. MUCH OF THE DRILLING WAS DONE AS A FOLLOW-UP TO INDUCED POLARIZATION SURVEYS.

THE RESULTS OF THE DRILLING HAVE BEEN SUMMARIZED ON MAP SF-81-2, AND SYMBOLS HAVE BEEN USED TO GIVE A QUICK VISUAL PICTURE OF THE AMOUNT OF COPPER INTERSECTED IN EACH DRILL HOLE. ARBITRARY DIVISIONS HAVE BEEN MADE AS FOLLOWS (SEE MAP SF-81-2 FOR SYMBOLS USED):

- (A) AT LEAST 15 METRES OF 0.1% CU, OR BETTER.
- (B) 0.03% CU OVER THE LENGTH OF THE HOLE, OR AT LEAST 12 METRES OF 0.05% CU.
- (C) 0.02% CU OVER THE LENGTH OF THE HOLE.
- (D) 0.05% CU OVER 3 TO 6 METRES (MODERATE, BUT ERRATIC MINERALIZATION).
- (E) LESS THAN 0.02% CU OVER THE LENGTH OF THE HOLE.

ALTHOUGH THE DRILL HOLES ARE WELL SPREAD OUT ACROSS THE PROPERTY, IT IS QUICKLY APPARENT ON VIEWING THE MAP THAT THE REGION BETWEEN ZONES 1 AND 2 IS THE KEY MINERALIZED AREA FOUND ON THE PROPERTY UP TO THE PRESENT TIME. THE ONLY OTHER AREA OF SIGNIFICANT MINERALIZATION IS AT ZONE 9. BOTH AREAS ARE NEAR INTRUSIVE CONTACTS.

D. DISCUSSION OF SURFACE ROCK GEOCHEM RESULTS

THE RESULTS OF THIS YEAR'S ROCK GEOCHEM SAMPLES CAN NOT BE TREATED STATISTICALLY BECAUSE THE SAMPLES WERE TAKEN FROM A VARIETY OF GEOLOGICAL BACKGROUNDS, SOME OF WHICH ARE KNOWN TO BE MINERALIZED WITH COPPER; AND SOME WHICH ARE NOT. HOWEVER, GOOD COMPARISONS CAN BE MADE BETWEEN AREAS OF KNOWN COPPER MINERALIZATION, AND AREAS, AS YET, NOT KNOWN TO BE MINERALIZED.

- COPPER

ROCK GEOCHEM RESULTS FOR COPPER SHOW A CLUSTER OF HIGH VALUES (100-2060 PPM) IN THE AREA OF MINERAL ZONES 2 & 3 (ON MAP SF-81-2). THESE VALUES COME FROM AREAS WHERE SAMPLING AND DRILLING BY EARLIER WORKERS HAS ALREADY CONFIRMED THE PRESENCE OF COPPER MINERALIZATION.

ANOTHER CLUSTER OF HIGH COPPER VALUES IN ROCK SAMPLES FORMS A 400 METRE SEMI-CIRCLE WEST OF MINERAL ZONE 7. VALUES RANGE FROM 90 TO 415 PPM, BUT ARE NOTEABLY LOW IN THE TWO CARBONATE ALTERED SAMPLES, 8119 AND 8150. THIS AREA HAS ALSO BEEN EXPLORED BY EARLIER WORKERS, AND COPPER MINERALIZATION HAS BEEN LOCATED IN TRENCHES AND DRILL HOLES.

NO SIGNIFICANT COPPER ROCK GEOCHEM ANOMALIES SHOWED UP IN A 1 KM. RADIUS NORTHEAST OF TULE LAKE IN SPITE OF FAIRLY DETAILED SAMPLING.

- SILVER

SILVER VALUES FROM ROCK GEOCHEM SAMPLES SHOW A SUBTLE DIFFERENCE BETWEEN UNMINERALIZED AREAS, AND THE TWO MAJOR

AREAS OF MINERALIZATION ON THE SNOWFLAKE PROPERTY (EG. THE WEST AREA WHICH INCLUDES MINERAL ZONES 1, 2 AND 3, AND THE EAST AREA WHICH INCLUDES MINERAL ZONES 7, 8 AND 9) IN UNMINERALIZED AREAS, THE SILVER CONTENT RANGES FROM 0.8 TO 1.2 PPM, WHILE IN THE TWO AREAS OF KNOWN COPPER MINERALIZATION, THE SILVER CONTENT RANGES FROM 1.2 TO 1.5 PPM GENERALLY. IN SAMPLES WITH HIGH COPPER CONTENT, IT IS NOTED THAT THE SILVER CONTENT IS ALSO HIGH (EG. SAMPLE 8135, WHICH HAS 1.8 PPM AG, AND 700 PPM CU).

- GOLD

GOLD IN ROCK GEOCHEM SAMPLES HAS A MORE ERRATIC DISTRIBUTION THAN SILVER ON THE SNOWFLAKE PROPERTY. SOME OF THE SAMPLES WITH VERY HIGH COPPER CONTENT HAVE A CORRESPONDINGLY HIGH GOLD CONTENT (EG. SAMPLE 8135 WITH 380 PPB AU, 700 PPM CU, AND SAMPLE 8103 WITH 145 PPB AU, 2060 PPM CU). HOWEVER, THERE ARE EXCEPTIONS SUCH AS SAMPLE 8121 (30 PPB AU, 415 PPM CU).

SOME ROCK GEOCHEM SAMPLES WITH ERRATIC GOLD CONTENT INCLUDE SAMPLE 8105 (105 PPB), 8123 (295 PPB), 8130 (135 PPB), AND 8147 (320 PPB). ROCK CHIPS MAKING UP THE FIRST TWO SAMPLES, CONTAINED A SMALL AMOUNT OF HEMATITE, WHILE ROCK CHIPS MAKING UP THE LATTER TWO SAMPLES, CONTAINED A SMALL AMOUNT OF LIMONITE.

E. DISCUSSION OF MINERALIZATION AND ORE GENESIS

THE NINE ZONES OF COPPER MINERALIZATION ON THE SNOWFLAKE PROPERTY THAT HAVE BEEN LISTED EARLIER IN THIS REPORT, CAN BE GROUPED INTO THREE CLASSIFICATIONS AS FOLLOWS:

(A) MINERALIZATION ASSOCIATED WITH FAULTING AND SHEARING

- IN RED AND GREEN ANDESITE BRECCIAS (ZONES 4, 5 AND 6).
- (B) MINERALIZATION IN VOLCANIC OR VOLCANIC HYBRID ROCKS NEAR INTRUSIVE CONTACTS (ZONES 1, 2, 7 AND 9).
 - (C) MINERALIZATION IN VOLCANIC OR VOLCANIC HYBRID ROCKS WHERE THERE IS A CLOSE ASSOCIATION WITH CARBONATE ALTERATION (ZONES 1, 2, 3 AND 8).

THE FIRST CATEGORY OF MINERALIZATION WAS THE TYPE EXPLORED BY WORKERS IN THE PRE-1940'S. AT ZONES 4 AND 5 CHALCOCITE ORE OF 1 TO 10% WAS APPARENTLY MINED FROM NEAR-SURFACE FAULTS AND SHEAR ZONES OF 1 METRE OR LESS IN WIDTH. THE RICH ORE APPARENTLY DIDN'T GO TO DEPTH, AND THE ORE ZONES HAD SHARP BOUNDARIES.

MINERALIZATION OF THE SECOND CATEGORY (ZONES 1, 2, 7 AND 9) APPEARS TO REPRESENT AN ENRICHMENT OF COPPER NEAR INTRUSIVE CONTACTS. THE COPPER MAY HAVE BEEN REMOBILIZED IN THE COUNTRY ROCK BY THE HEAT OF THE INTRUDING ROCK. AT ZONES 1 AND 2, AND IN THE INTERVENING AREA, PERCUSSION DRILLING RESULTS FROM RECENT DRILLING PROGRAMS SEEMS TO INDICATE THAT A NARROW (80 METRE WIDE) HALO OF COPPER MINERALIZATION IS ARCHED AROUND THE DIORITE CONTACT. DRILLING BOTH WITHIN THE HALO (OR IN THE DIORITE PROPER) AND OUTSIDE THE HALO (OR WITHIN THE ANDESITE PROPER) YIELDED LOW COPPER VALUES. IT WOULD SEEM THAT THE BEST COPPER MINERALIZATION IS CONTROLLED BY THE CONTACT AUREOLE, AND THAT FAULTING IS ONLY A SECONDARY CONTROL.

AT ZONE 9, THE CONTACT AUREOLE HAS A CALCAREOUS ROCK UNIT AS AN ADDED FEATURE. CHALCOPYRITE MINERALIZATION FAVORS THE CALCAREOUS UNIT.

THE MOST INTERESTING MODE OF MINERALIZATION IS TYPE THREE (ZONES 1, 2, 3 AND 8), WHERE CARBONATE ALTERATION IS ASSO-

CIATED WITH NARROW FAULT ZONES, WHICH APPEAR TO TRANSECT INTRUSIVE-VOLCANIC CONTACTS. IN MOST OF THESE AREAS, THE COPPER IS NOT FOUND DIRECTLY WITHIN THE ALTERED ROCK, BUT IS INSTEAD, NEAR AT HAND.

IT IS POSSIBLE THAT THE AREAS OF CARBONATE ALTERATION REPRESENT THE LAST GASEOUS PHASE OF A COOLING MAGMA, AND THAT THIS PHASE INTRODUCED PRIMARY COPPER MINERALIZATION INTO SURROUNDING ROCKS. THE CARBONATE ALTERATION MAY ALSO INDICATE THE EXISTENCE OF OTHER INTRUSIVE PLUGS, NOT YET EXPOSED BY EROSION.

CONCLUSIONS

A. ROCK GEOCHEM SUMMARY

THIS YEAR'S SURVEY INDICATES THAT HIGH COPPER AND SILVER VALUES FROM ROCK GEOCHEM SAMPLES CORRELATE WELL WITH AREAS OF KNOWN COPPER MINERALIZATION ON THE PROPERTY. IT APPEARS THAT IN THE CASE OF SILVER 1.2 PPM IS THE THRESHOLD WHICH DIVIDES NON-ECONOMIC MINERAL ENVIRONMENTS FROM ECONOMIC MINERAL ENVIRONMENTS.

GOLD ROCK GEOCHEM VALUES ARE ERRATIC IN NATURE, AND HIGH GOLD VALUES CORRELATE WITH HIGH COPPER VALUES ONLY IN SOME INSTANCES.

NO NEW ECONOMIC MINERAL ENVIRONMENTS WERE OUTLINED BY OUR SURVEY. HOWEVER, MUCH OF THE SNOWFLAKE PROPERTY HAS NOT BEEN SURVEYED, AND A SURVEY USING THE COMBINATION OF COPPER AND SILVER IN ROCK GEOCHEM SAMPLES MAY PROVE USEFUL IN EVALUATING THE OVERALL POTENTIAL OF THE PROPERTY.

B. GENERAL

A STUDY OF THE PLOT OF SURFACE MINERALIZATION SITES, PERCUSSION DRILL HOLE DATA, AND ROCK GEOCHEM DATA ON MAP SF-81-2 QUICKLY SHOWS THAT THERE ARE TWO MAIN MINERALIZED AREAS ON THE SNOWFLAKE PROPERTY. THE LARGER AREA ON THE WEST SIDE OF THE PROPERTY INCLUDES MINERAL ZONES 1, 2 AND 3, WHILE THE SMALLER ZONE ON THE EASTERN SIDE OF THE PROPERTY INCLUDES MINERAL ZONES 7, 8 AND 9. THE BEST PERCUSSION DRILL INTERSECTIONS ON THE WESTERN SIDE OF THE PROPERTY ARE FROM THE HOLE LOCATED 100 METRES NORTHWEST OF ZONE 2 (0.15% CU FROM 5 TO 85 METRES), AND THE HOLE LOCATED 300 METRES NORTHWEST OF ZONE 1 (0.21% CU FROM 70 TO 100

METRES). ON THE EASTERN SIDE OF THE PROPERTY, THE PERCUSSION DRILL HOLE LOCATED 300 METRES NORTH OF ZONE 9 AVERAGED 0.07% CU TO 91 METRES.

THE WESTERN MINERALIZED ZONE OCCURS ALONG THE WESTERN CONTACT OF A DIORITE INTRUSIVE, WHILE THE EASTERN ZONE APPEARS TO OCCUR AT THE EASTERN CONTACT OF ANOTHER DIORITIC INTRUSIVE BODY. IN BOTH AREAS, FAULTING IS PRESENT, AND IS BELIEVED TO PLAY A LARGE PART IN LOCALIZING THE COPPER MINERALIZATION. ECONOMIC MINERALIZATION HAS NOT BEEN FOUND TO DATE WITHIN EITHER THE WESTERN OR EASTERN MINERALIZED AREAS, BUT IT APPEARS THAT A GOOD DRILL TARGET DOES EXIST ON THE WESTERN SIDE OF THE PROPERTY NORTHWEST OF ZONE 2.

IN THE AREA NORTHWEST OF ZONE 2, THREE FAULTS CONVERGE. TWO OF THESE INFERRED FAULTS HAVE SIMPLY BEEN REPLOTTED ON MAP SF-81-2 FROM MAPS COMPILED BY EARLIER WORKERS. THE THIRD N 20 E STRIKING INFERRED FAULT ALIGNS WITH A STEEP SIDED CREEK THAT CUTS A FAULTED AND CARBONATE ALTERED ROCK AT ZONE 3.

THE DRILL HOLE 100 METRES NORTHWEST OF ZONE 2 NOTED ABOVE INTERCEPTED SIGNIFICANT COPPER MINERALIZATION, AS DID THE HOLE DRILLED 50 METRES EAST OF ZONE 3 (0.04% CU 12 TO 76 METRES, 0.07% CU FROM 76 TO 91 METRES). DURING AN EXAMINATION OF THE PROPERTY, IT WAS ALSO NOTED THAT SURFACE ROCKS NORTHWEST OF ZONE 2, BECOME MORE AND MORE FRACTURED AND CARBONATE ALTERED BEFORE DISAPPEARING BENEATH OVERBURDEN IN THE CREEK VALLEY

ALL DATA INDICATES THAT A GOOD UNTESTED EXPLORATION TARGET EXISTS WHERE ALL THREE FAULTS CONVERGE. PROPOSED DRILL HOLES HAVE BEEN PLOTTED ON MAP SF-81-2 IN THIS AREA.

RECOMMENDATIONS

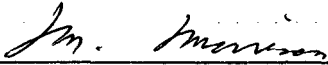
THE DRILLING OF THREE PERCUSSION DRILL HOLES OF 100 METRES DEPTH NORTH AND WEST OF MINERAL ZONE 2 IS RECOMMENDED. THE PROPOSED SITES ARE PLOTTED ON MAP SF-81-2. AN AVERAGE OF ½ DAY'S BULLDOZER WORK WOULD BE REQUIRED TO BUILD ACCESS ROADS TO EACH DRILL SITE.

DETAILED GEOLOGICAL MAPPING AT A SCALE OF 1:2,500 SHOULD BE CARRIED OUT ON THE EASTERN SIDE OF THE PROPERTY IN THE AREA OF MINERAL ZONES 7, 8 AND 9 BEFORE ANY DRILL SITES ARE SELECTED.

NOTE:

THE MOST PROMISING EXPLORATION TARGET ON THE PROPERTY OCCURS ON, OR NEAR, DISTRICT LOT 385, AND THE OWNERSHIP OF THE BASE METAL RIGHTS OF THIS LOT, SHOULD BE DETERMINED BEFORE ANY DRILLING IS COMMENCED (SEE "CLAIM STATUS" SECTION OF THIS REPORT).

SUBMITTED BY,



MR. MURRAY MORRISON
GEOLOGIST
JUNE 30, 1981

REFERENCES

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- MEHNER, D.T. REPORT ON PERCUSSION DRILLING ON THE GROVE PROPERTY(SNOWFLAKE MINERAL CLAIMS), ASPEN GROVE AREA, NICOLA, M.D., B.C. COMINCO LTD. DECEMBER 6, 1979.
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- RICE, H.M.A. GEOLOGY AND MINERAL DEPOSITS OF THE PRINCETON MAP AREA, B.C. GEOLOGICAL SURVEY OF CANADA, MEM. 243, 1960.
- SCOTT, A.R. GEOPHYSICAL REPORT - INDUCED POLARIZATION AND MAGNETOMETRE GEOPHYSICAL SURVEYS, GROVE PROPERTY, SNOWFLAKE CLAIMS, ASPEN GROVE AREA, NICOLA M.D., B.C. COMINCO LTD. JULY, 1979.
- YORKE-HARDY, R.W. GEOCHEMICAL REPORT COVERING THE SNOWFLAKE CLAIM, ASPEN GROVE AREA, NICOLA M.D., B.C. JUNE 10, 1976.

APPENDIX A

STATEMENT OF QUALIFICATIONS

I, MURRAY MORRISON, OF THE CITY OF KELOWNA, IN THE PROVINCE OF BRITISH COLUMBIA, DO HEREBY STATE THAT:

1. I GRADUATED FROM THE UNIVERSITY OF BRITISH COLUMBIA IN 1969 WITH A B.SC. DEGREE IN GEOLOGY.
2. I HAVE BEEN WORKING IN ALL PHASES OF MINING EXPLORATION IN CANADA FOR THE PAST THIRTEEN YEARS.
3. DURING THE PAST TWELVE YEARS, I HAVE INTERMITTENTLY HELD RESPONSIBLE POSITIONS AS A GEOLOGIST WITH VARIOUS MINERAL EXPLORATION COMPANIES IN CANADA.
4. OVER THE PAST NINE YEARS I HAVE EXAMINED MANY MINERAL PROPERTIES WITHIN THE NICOLA MINING DIVISION.
5. I PERSONALLY CARRIED OUT THE 1981 PROGRAM OUTLINED IN THIS REPORT.
6. I HAVE NO DIRECT OR INDIRECT INTEREST IN THE SNOW-FLAKE CLAIM GROUP, NOR DO I EXPECT TO RECEIVE ANY INTEREST THEREIN.

JUNE 30, 1981
KELOWNA, B.C.



MURRAY MORRISON

APPENDIX B

STATEMENT OF EXPENDITURES - SNOWFLAKE CLAIM GROUP

STATEMENT OF EXPENDITURES IN CONNECTION WITH THE GEOLOGICAL EXAMINATION CARRIED OUT ON THE SNOWFLAKE, SNOWFLAKE 2 - 7, 9 + 10, AND TULE 10 MINERAL CLAIMS, N.T.S. 92H/15, ASPEN GROVE AREA, B.C. FOR THE YEAR 1981.

FIELDWORK - GEOLOGICAL EXAMINATION OF THE PROPERTY, AND COLLECTION OF ROCK GEOCHEM SAMPLES:

GEOLOGIST 7 DAYS @ \$150/DAY	\$1,050.00
MEALS AND LODGING 7 DAYS FOR 1 MAN @ \$40/DAY	280.00
TRUCK(4 X 4, INCLUDING GASOLINE) 7 DAYS @ \$55/DAY	385.00
MATERIALS (FLAGGING, BELT CHAIN THREAD, ETC.)	<u>35.00</u>
	\$1,750.00

LABORATORY COSTS:


52 ROCK GEOCHEM SAMPLES ANALYZED FOR AU, AG AND CU @ \$10.25/SAMPLE	\$ 533.00
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REPORT PREPARATION:

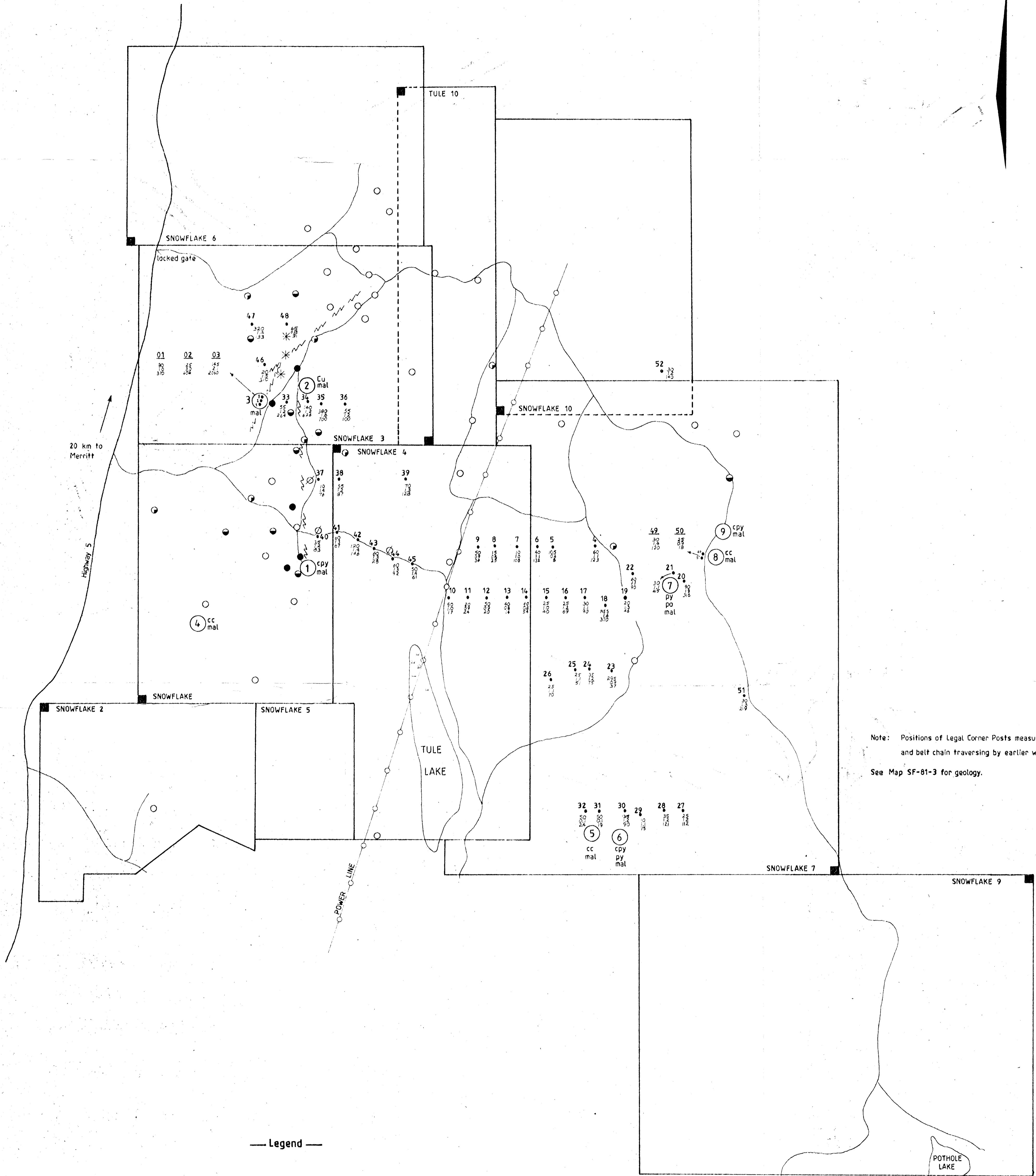
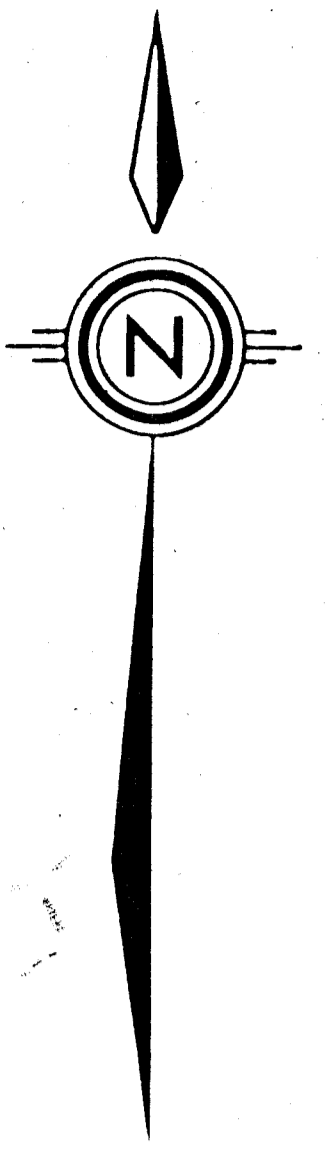
GEOLOGIST 4 DAYS @ \$150/DAY	\$ 600.00
DRAFTING 4 DAYS @ \$100/DAY	400.00
TYPING	133.00
COPYING MAPS AND REPORTS (TWO COPIES)	<u>26.00</u>
	\$1,159.00

TOTAL OF SUB-TOTALS:	\$3,442.00
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I HEREBY CERTIFY THAT THE ABOVE STATEMENT IS A TRUE STATEMENT OF MONIES EXPENDED IN CONNECTION WITH THE GEOLOGICAL EXAMINATION CARRIED OUT JUNE 8-14, 1981.



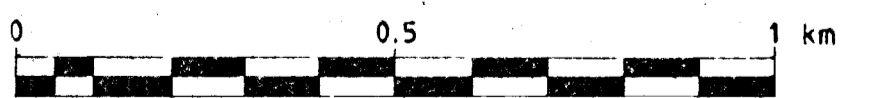
MURRAY MORRISON, GEOLOGIST.



Note: Positions of Legal Corner Posts measured by compass and belt chain traversing by earlier workers.
See Map SF-81-3 for geology.

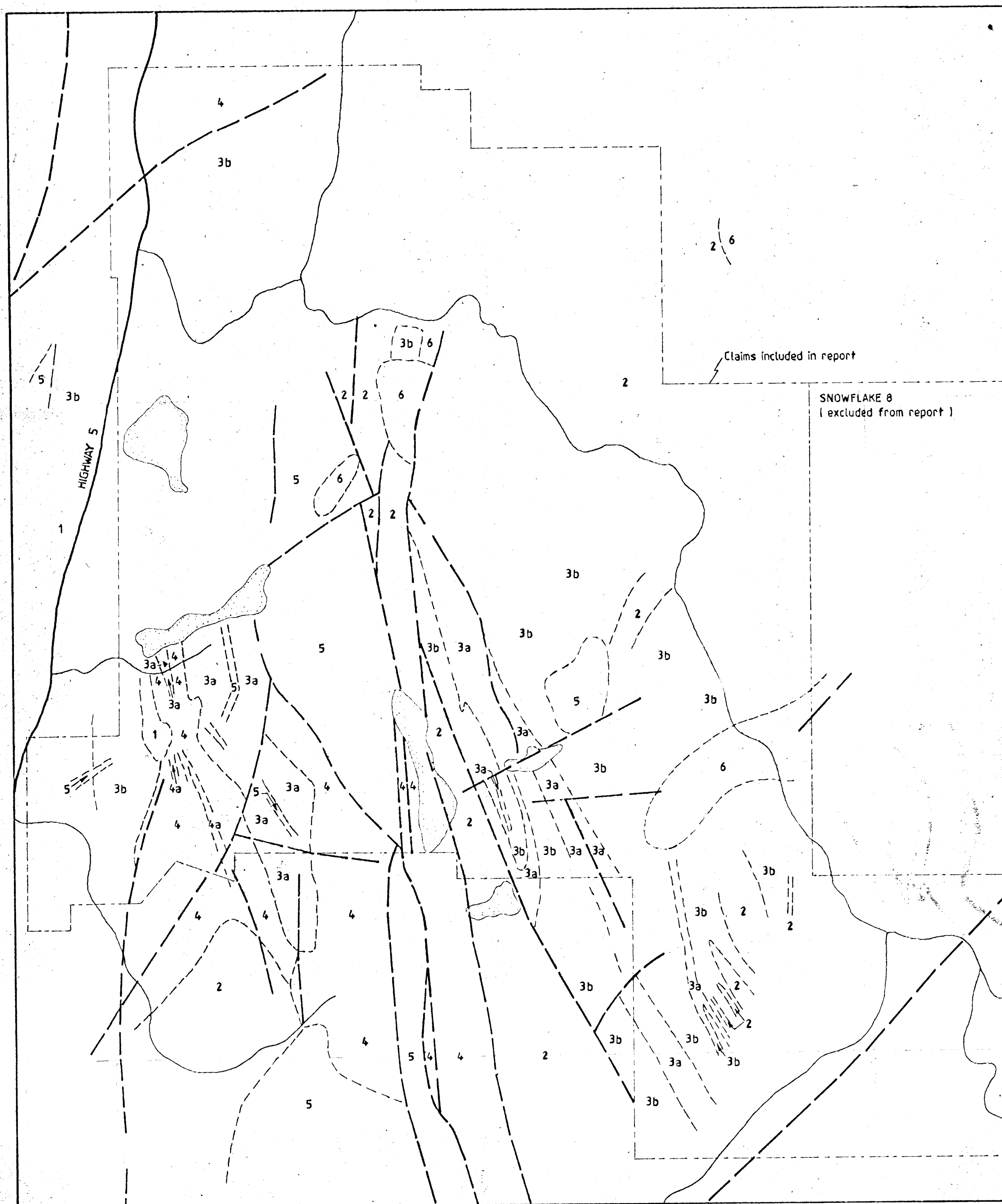
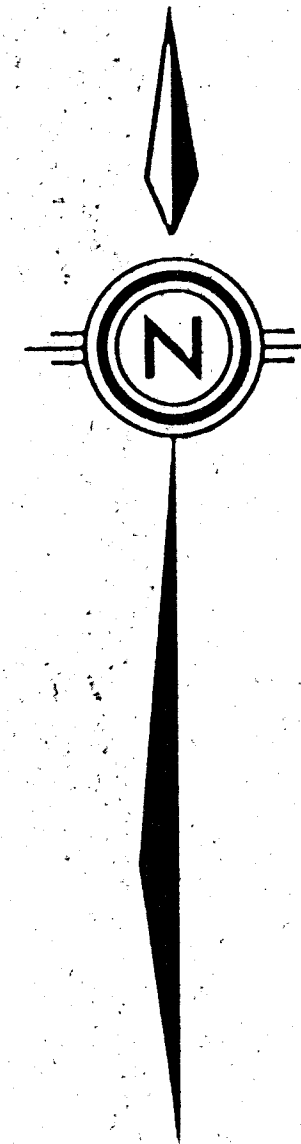
— Legend —

- | | | | |
|-----|--|-----|--|
| | dirt roads | | old percussion drill holes |
| | swampy lakes | | at least 15 metres of 0.1% Cu, or better. |
| | legal corner posts | | 0.03% Cu over the length of the hole, or at least 12 metres of 0.05% Cu. |
| | inferred faults | | 0.02% Cu over the length of the hole. |
| | rock geochem sample site for sample no 81-26 | | 0.05% Cu over 3 to 6 metres (erratic mineralization). |
| | — parts per billion gold | | less than 0.02% Cu over the length of the hole. |
| | — " " million silver | | proposed drill holes |
| | — " " " copper | | |
| | mineral zone described in the accompanying report. | | |
| cc | — chalcocite | cpy | — chalcopyrite |
| mal | — malachite | po | — pyrrhotite |
| py | — pyrite | | |
| Cu | — native copper | | |



MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
9386
NO.

<i>M. Morrison</i> To Accompany a Geological Report by M. Morrison.		
SNOWFLAKE CLAIM GROUP ASPEN GROVE AREA, NICOLA M.D., B.C.		
PERCUSSION DRILLING RESULTS (1973, 78, 79), SURFACE MINERAL OCCURRENCES, AND ROCK GEOCHEMISTRY FOR Cu, Ag & Au.		
Drawn by M.M.	June 1981	N.T.S. 92 H/15
Drafted by A.H.	Scale 1 : 10 000	Map : SF-81-2



— GEOLOGY —

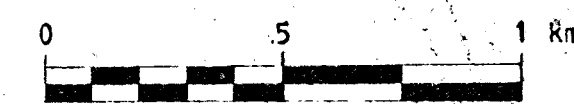
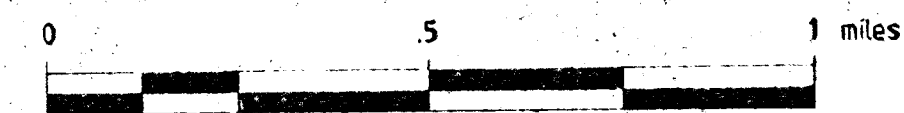
(after V. A. Preto, et al. with modifications.)

NICOLA GROUP
UPPER TRIASSIC (CENTRAL BELT)

- 6 Monzonite
- 5 Diorite
- 4 Augite basalt and tuff (green and red)
- 4a Tuff and volcanic siltstone
- 3 Volcaniclastic rocks
- 3a Red
- 3b Green
- 2 Augite andesite
- 1 Argillite

— LEGEND —

- Geological contact
- - - Fault
- ~ Highway
- ~ Dirt roads
- - - Property boundary
- Lake



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GEOLOGY

Traced from : Preto	June 1981	N.T.S. 92 H/15
Drafted by : A. H.	Scale 1" = 1/4 mile	Map SF-81-3