NTS 94C/3W,4E
Lat 56°10'N
Long 125°32'W

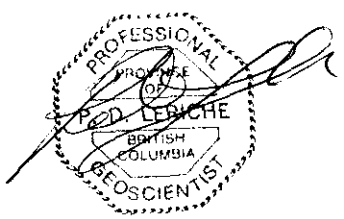
GEOLOGICAL and GEOCHEMICAL REPORT
on the
ATEN PROPERTY
Johanson Lake area
Omineca Mining District
British Columbia

for

SWANNELL MINERALS CORPORATION
200 - 890 West Pender Street
Vancouver, B.C., V6C 1K4
Tel: (604) 687-5257 Fax: (604) 685-6493

by

Peter Leriche, P.Geo.
Nigel Luckman, B.A.Sc.



RELIANCE GEOLOGICAL SERVICES INC.
241 East 1st Street
North Vancouver, B.C. V7L 1B4
Tel: (604) 984-3663 Fax: (604) 988-4653

20 November 1991

SUMMARY

At the request of the Swannell Minerals Corporation, Reliance Geological Services carried out an exploration program consisting of rock and stream sediment surveys and reconnaissance geological mapping on the ATEN property during October 1991.

The ATEN property comprises six contiguous mineral claims totalling 104 units in the Johanson Lake area of the Omineca Mining Division. The property is situated approximately 70 kilometers northwest of Germansen Lake, B.C., and is accessible by helicopter.

The claims lie in the regionally extensive Mesozoic Quesnel Belt. In the Johanson Lake district, Triassic Takla volcanic rocks are intruded by Triassic-Jurassic alkaline stocks and Cretaceous Hogem Batholith. The alkalic plutons of the Quesnel Belt commonly host porphyry copper-gold deposits.

The claims are underlain by porphyritic andesite flow and tuff units intruded by monzonite stocks. Mineralization consists of chalcopyrite, malachite and pyrite in fracture zones in monzonite.

Previous work consisted of regional aeromagnetic and silt sampling surveys completed in the early 1970's. The aeromagnetic survey defined four anomalies around a monzonite stock in the centre of the property. Silt samples from a stream draining the area of the intrusion were anomalous in copper.

Based on anomalous results from samples from stream drainages and copper/gold mineralization in rocks, 1991 exploration identified three target areas. Samples from two different areas of the property returned assays up to 2.82% and 2.83% copper.

Further work consisting of grid establishment, geological mapping, soil and talus fine sampling has been recommended to test target areas for follow-up work.

TABLE OF CONTENTS
ATEN PROPERTY

1. INTRODUCTION

This report was prepared at the request of Swannell Minerals Corporation to describe and evaluate the results of a geological and geochemical program carried out by Reliance Geological Services Inc on the ATEN claim group in the Johanson Lake area of the Omineca Mining District, British Columbia.

The field work was undertaken for the purpose of evaluating the potential of the property to host porphyry copper/gold deposits.

Field work was carried out on October 13th and 14th, 1991, by George King (geologist), Tom Hannon (geotechnician), Brian Chore (geo-technician), and Nigel Luckman (geological engineer), under the supervision of Peter Leriche, B.Sc., P.Geo.

This report is based on published and unpublished information and the maps, reports and field notes of the crew listed above.

2. LOCATION, ACCESS and PHYSIOGRAPHY

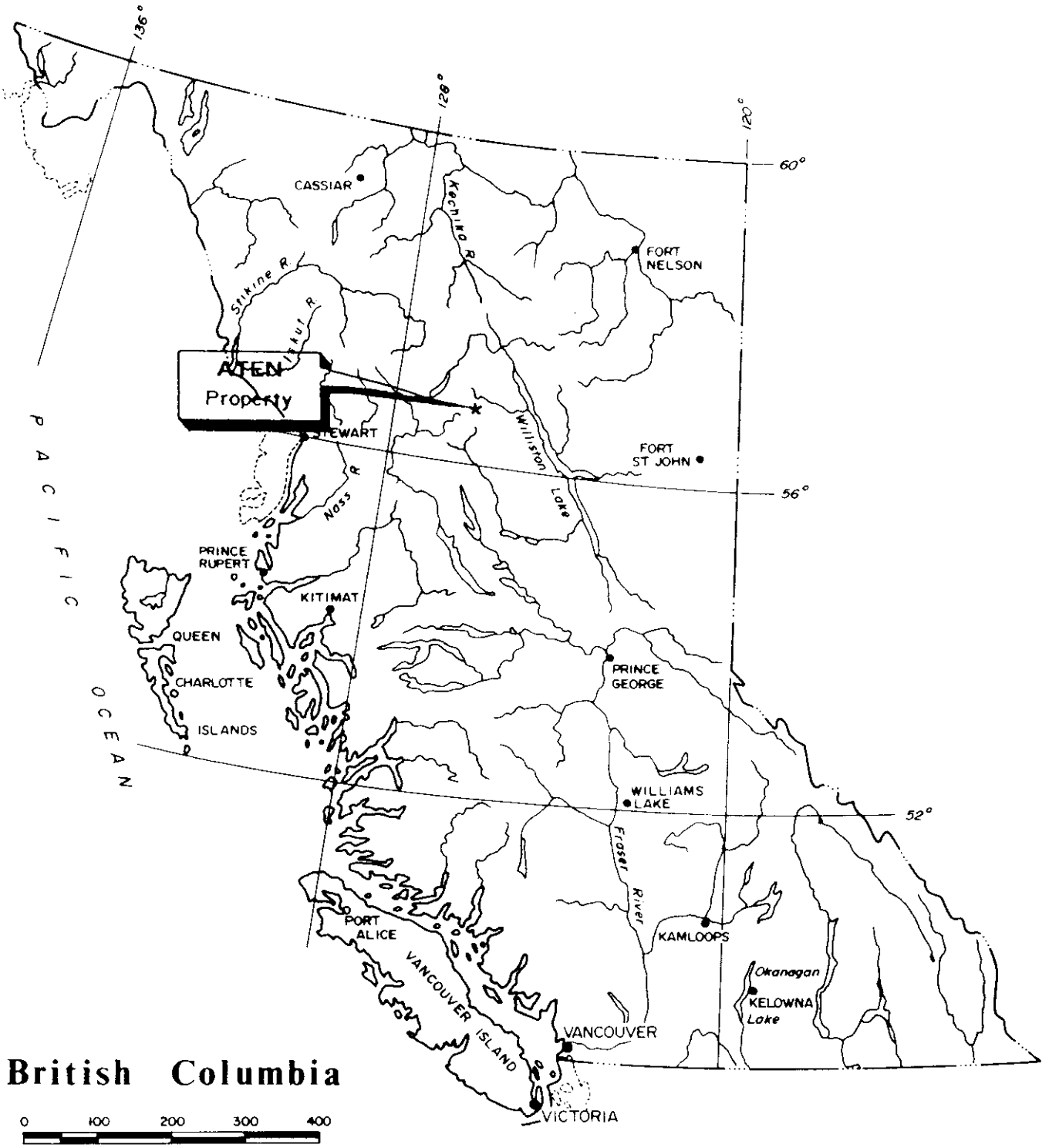
The ATEN property is situated in the Omineca Mining Division in the Johanson Lake area, approximately 225 kilometers northwest of Fort St James (Figures 1 and 2).

The claims are located on Map Sheet NTS 94C/3W,4E, at latitude 56° 10' North, longitude 125° 32' West, and between UTM 6231000 m and 6225000 m North, and UTM 341000 m and 349000 m East.

Road access is via the Omineca Mining Road from Fort St James to Germansen Landing (approximately 155 km), then by helicopter from the base at Germansen Landing (approximately 70 km).

The property is on mountainous terrain with moderate to steep slopes rising from approximately 1320 meters to 2074 meters. The area is sparsely forested with spruce and pine. Scrub fir and alpine vegetation occur above tree-line (± 1600 meters).

Recommended work season is mid-June to early October.



British Columbia

0 100 200 300 400

kilometres

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
P. D. LERICHE
GEOSCIENTIST

SWANNELL MINERALS CORPORATION		
ATEN PROPERTY		
General Location Map		
Scale noted above	N.T.S	Drawn by
Date NOV.91	Geologist	Figure 1
RELIANCE GEOLOGICAL SERVICES INC.		

3. PROPERTY STATUS

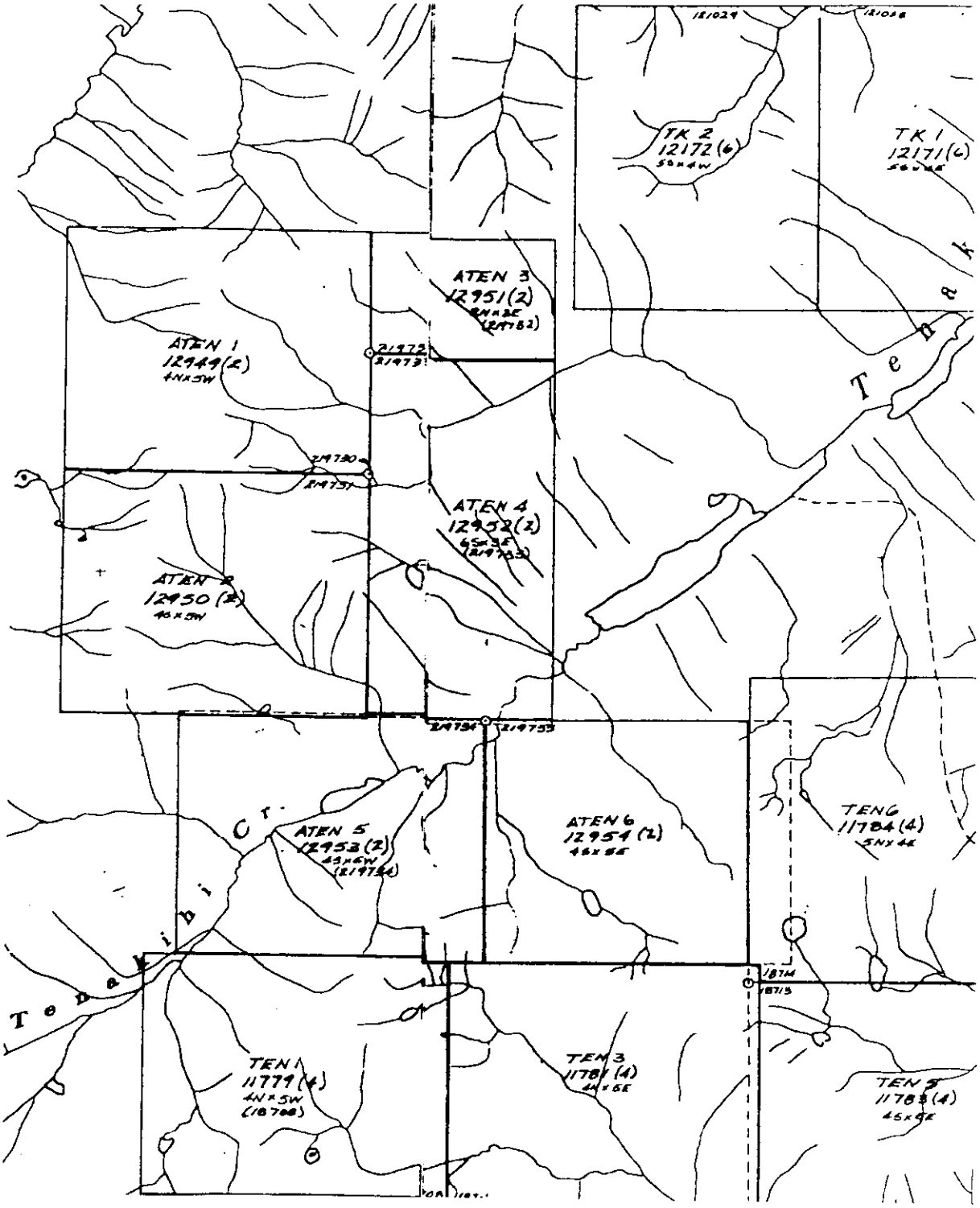
The property consists of 6 contiguous mineral claims (Figure 2) in the Omineca Mining Division. The claims are registered in the name of Major General Resources Ltd, and have been optioned to Swannell Minerals Corporation.

Details of the claims are as follows:

Claim	Record Number	Units	Record Date	Expiry Date
ATEN 1	12949	20	8 Feb 1991	8 Feb 1992
ATEN 2	12950	20	8 Feb 1991	8 Feb 1992
ATEN 3	12951	6	8 Feb 1991	8 Feb 1992
ATEN 4	12952	18	8 Feb 1991	8 Feb 1992
ATEN 5	12953	20	8 Feb 1991	8 Feb 1992
ATEN 6	12954	20	8 Feb 1991	8 Feb 1992
Total		104 units		

The total area covered by the claims is 2550 hectares, or 6298 acres, allowing for overlap.

The writers are not aware of any particular environmental, political or regulatory problems that would adversely affect mineral exploration and development on the ATEN property.



PROFESSIONAL ENGINEER
PROVINCE OF
P. D. LERICHE
BRITISH COLUMBIA
GEOSCIENTIST

3A

SWANNELL MINERALS CORPORATION

ATEN PROPERTY

CLAIM MAP

Scale 1:50,000	N.T.S. 94C/4E,3W	Drawn by
Date NOV.91	Geologist	Figure 2

RELIANCE GEOLOGICAL SERVICES INC.

4. REGIONAL GEOLOGY

(from Rebagliati, 1991)

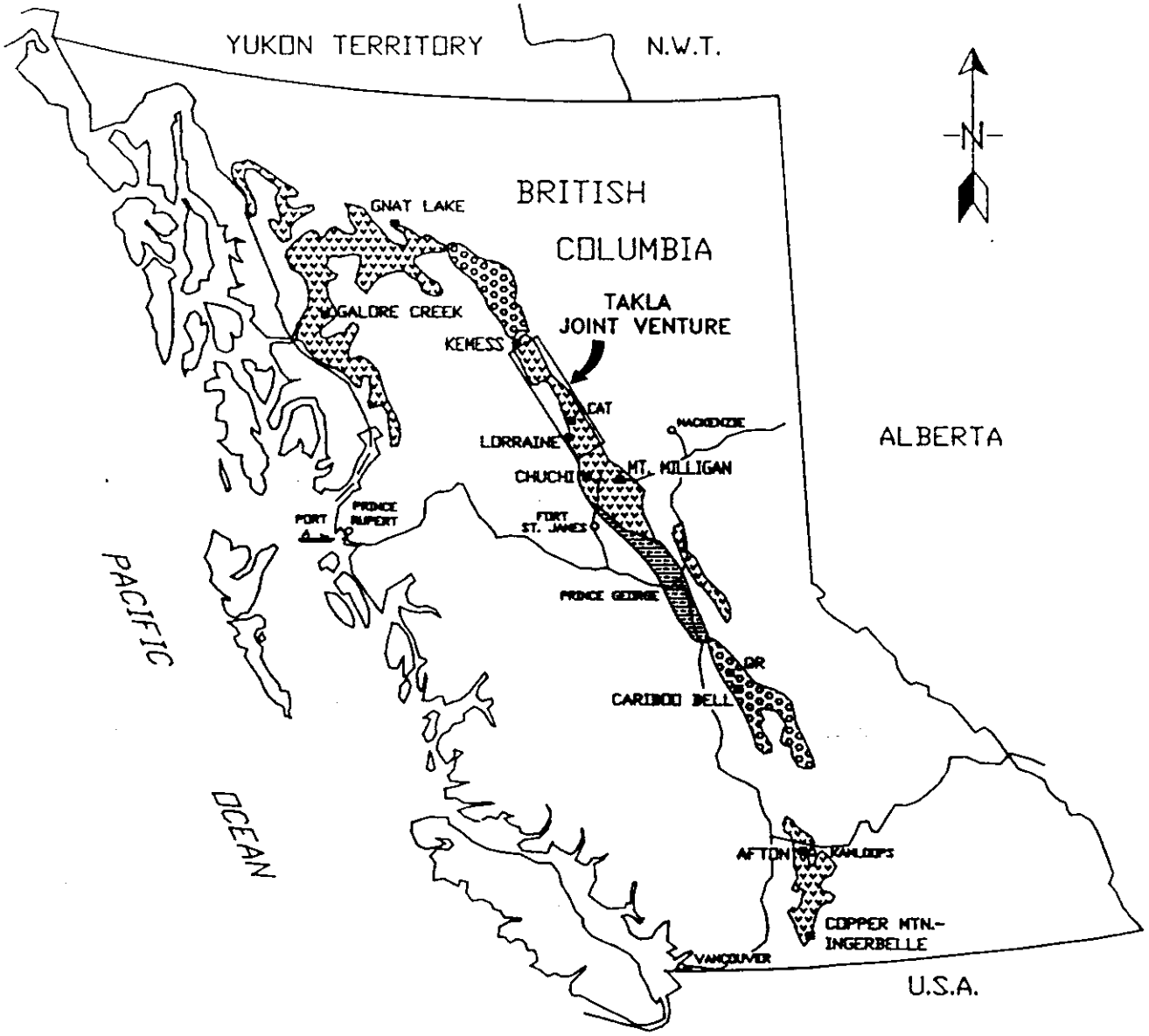
"The ATEN property lies within the regionally extensive early Mesozoic Quesnel Belt. This 35 km wide belt extends northwesterly for 1200 km and includes equivalent rocks of the Upper Triassic-Lower Jurassic Takla, Nicola, and Stuhini Groups (Mortimer, 1986) (Figures 3 and 4). To the west, deformed and uplifted Permian Cache Creek Group rocks are separated from the Quesnel Belt by the Pinchi Fault Zone. To the east, the Manson Fault Zone separates this belt from the uplifted Proterozoic/ early Palaeozoic Wolverine Metamorphic Complex, and the Mississippian-Permian Slide Mountain and Cache Creek Groups (Garnet, 1978).

In the Mt. Milligan - Johanson Lake district, the Takla Group volcanics are dominated by subaqueous alkalic to subalkalic dark green tuffs and volcanic breccias of andesitic and basaltic composition, interbedded with pyroxene porphyritic flow rocks of similar composition. Intercalated bedded tuffs and argillites are subordinate. Black argillites interfinger with volcanic rocks to the east and west of the central volcanic core. Locally, thick successions of maroon coloured lahars suggest the presence of emergent subaerial volcanic centres.

The volcanic-sedimentary strata of the Quesnel Belt are locally intruded by alkaline syenite, monzonite, and diorite batholiths, stocks and dykes. In the Quesnel Belt, most intrusions are considered coeval and comagmatic with late Triassic-early Jurassic volcanism. Many of the stocks lie along linear trends which are interpreted to reflect fault zones which have localized volcanism and associated stock emplacement.

The Hogem Batholith of Early Jurassic to Cretaceous age is the largest body of intrusive rock within the Omineca Mountains (Armstrong and Garnett 1973) (Figure 4). Takla Group volcanic and sedimentary strata are intruded by the north-south elongate batholith which is, in part, truncated along its western margin by the Pinchi Fault. Numerous satolithic plutons flank the eastern margins of the batholith.

The complexity of the Hogem Batholith is characterized by rock units ranging in composition from diorite to granite. Lithologic changes are rapid to gradational at all scales of mapping.



LEGEND

- ALKALINE VOLCANIC ROCKS
- SUBALKALINE VOLCANIC ROCKS
- MAINLY SEDIMENTARY ROCKS
- GOLD AND / OR COPPER DEPOSIT

After Fox et. al. 1976

4A

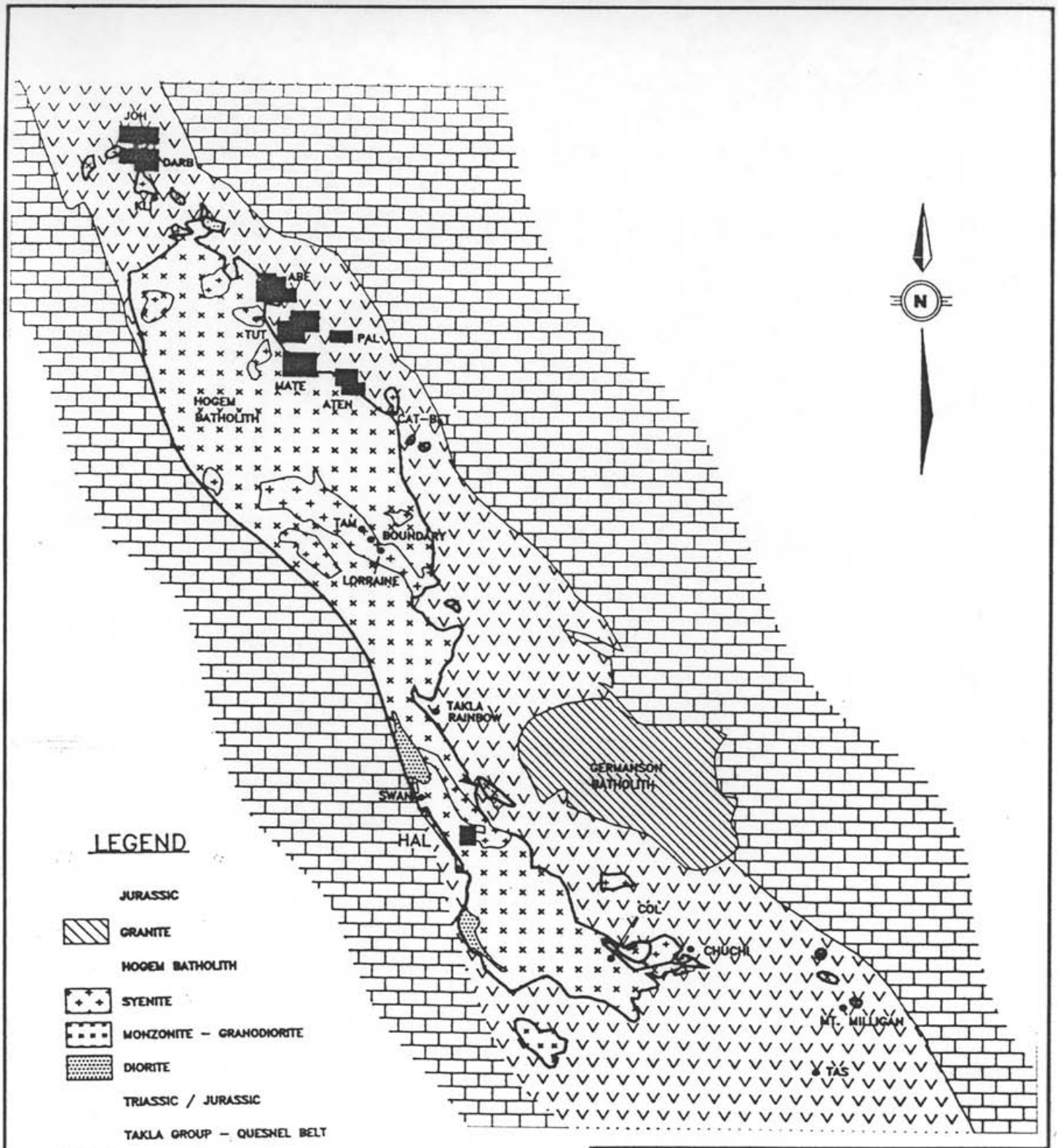
SWANNELL MINERALS CORPORATION

ATEN PROPERTY

QUESNEL BELT
UPPER TRIASSIC & LOWER JURASSIC VOLCANIC ROCKS, SIGNIFICANT GOLD AND / OR COPPER DEPOSITS, ASSOCIATED WITH ALKALIC PLUTONS

Scale AS SHOWN	N.T.S.	Drawn by
Date NOV.91	Geologist	Figure 3

RELIANCE GEOLOGICAL SERVICES INC.



LEGEND

- JURASSIC
- GRANITE
- HOGEM BATHOLITH
- SYENITE
- MONZONITE – GRANODIORITE
- DIORITE
- TRIASSIC / JURASSIC
- TAKLA GROUP – QUESNEL BELT
- BASALT – ANDESITE
- PERMIAN
- LIMESTONE – SHALE
- TAKLA JOINT VENTURE PROPERTY
- PORPHYRY DEPOSITS

SCALE

0 25 50

KILOMETRES

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
R. D. LERICHE
GEOSCIENTIST

4B

SWANNELL MINERALS CORPORATION

ATEN PROPERTY

REGIONAL GEOLOGY

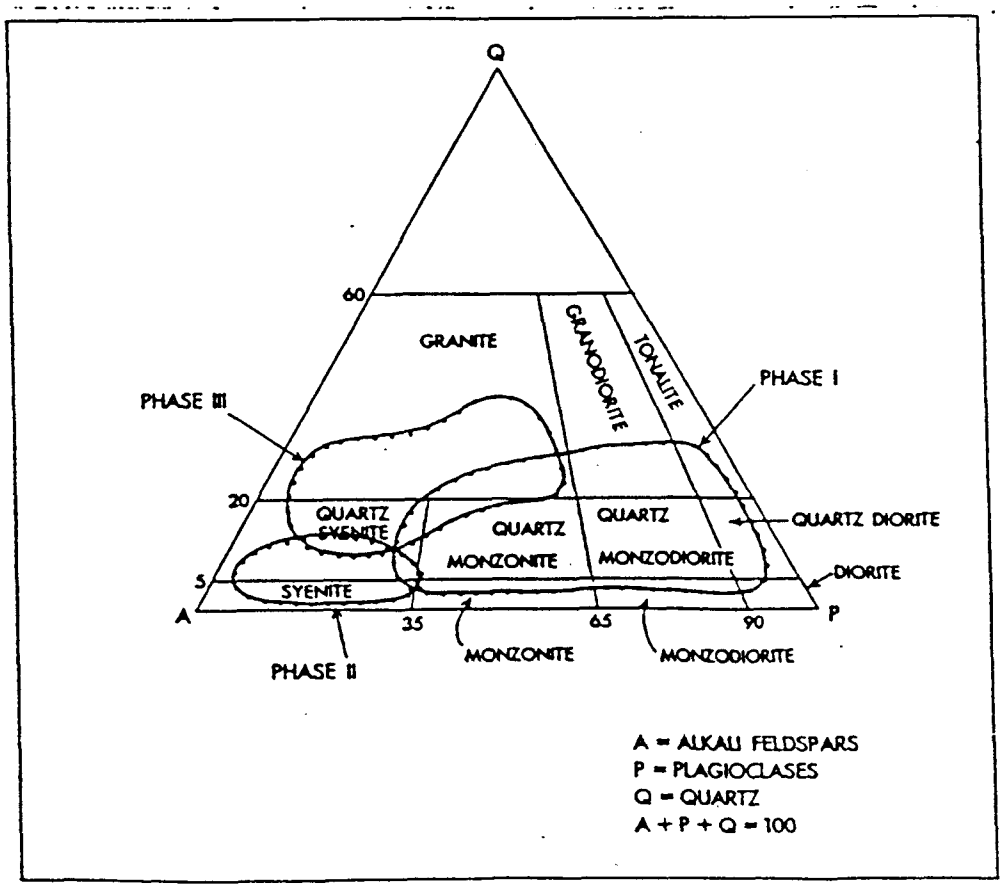
Scale as shown	N.T.S.	Drawn by
Date NOV.91	Geologist	Figure 4

RELIANCE GEOLOGICAL SERVICES INC.

TABLE 1

SOUTHERN HOGEM BATHOLITH: INTRUSIVE ROCK DIVISIONS

INTRUSIVE PHASES	PHASE DIVISIONS	UNIT	ROCK VARIETIES
PHASE III LOWER CRETACEOUS		9	LEUCOCRATIC GRANITE, Alaskite
PHASE II MIDDLE JURASSIC TO LOWER JURASSIC	CHUCHI SYENITE	8	LEUCOCRATIC SYENITE, Quartz Syenite
	DUCKLING CREEK SYENITE COMPLEX	7	LEUCOCRATIC SYENITE
		6	FOLIATED SYENITE
PHASE I LOWER JURASSIC TO UPPER TRIASSIC	HOGEM GRANODIORITE	5	GRANODIORITE, QUARTZ MONZONITE, minor Tonalite, Quartz Diorite, Quartz Monzonite, Granite
	HOGEM BASIC SUITE	4	MONZONITE to Quartz Monzonite
		3	MONZODIORITE to Quartz Monzodiorite
		2	NATION LAKES PLAGIOCLASE PORPHYRY (a) Monzonite (b) Monzodiorite
		1	DIORITE, minor Gabbro, Pyroxenite, Hornblendite



Hogem batholith intrusive phases in relation to general plutonic rock classification (after I.U.G.S., 1973).

Garnett, who used the I.U.G.S. classification of 1973 as shown in Table 1 on the following page, described three phases within the Hogem Batholith.

The earliest, Phase I, contains the more basic phases, including pyroxenite, gabbro, diorite, monzodiorite, monzonite, and the 'Hogem Granodiorite', and accounts for two-thirds of all rock types mapped. The Hogem Granodiorite is a distinctive leucocratic felsic division, predominantly quartz diorite in composition, but also comprising quartz monzodiorite, quartz monzonite and, more rarely, quartz diorite, tonalite and granite.

The Phase II syenites, such as the Duckling Creek complex, (with migmatitic, compositionally banded, and intrusive varieties) and the leucocratic Chuchi (quartz) syenite, are reported to be intrusive into Phase I rocks.

Phase III rocks include leucocratic varieties (including aplites, pegmatite, varieties of granite, quartz syenite and alaskite). These rocks may be represented by leucocratic late-stage dykes cutting units of Phases I and II.

Numerous porphyry copper prospects occur throughout the Hogem Batholith.

The alkalic plutons of the Quesnel Belt commonly host porphyry copper deposits, which are increasingly being recognized as an important source of gold. It has also been recently recognized that related failed porphyry systems (those that did not form copper deposits) also have the potential to generate disseminated gold deposits (eg: QR and the 66 Zone at Mt Milligan).

The volcanic strata on all of the ATEN property claims are intruded by alkalic plutons. Some of these plutons are reported to display some of the geological characteristics which are related to the formation of gold-rich porphyry copper deposits in the Quesnel Belt."

Many auriferous porphyry copper prospects are under active exploration within the Quesnel Belt, and the following deposits have been identified:

Gold-Copper Porphyry Deposits
Quesnel Belt
British Columbia

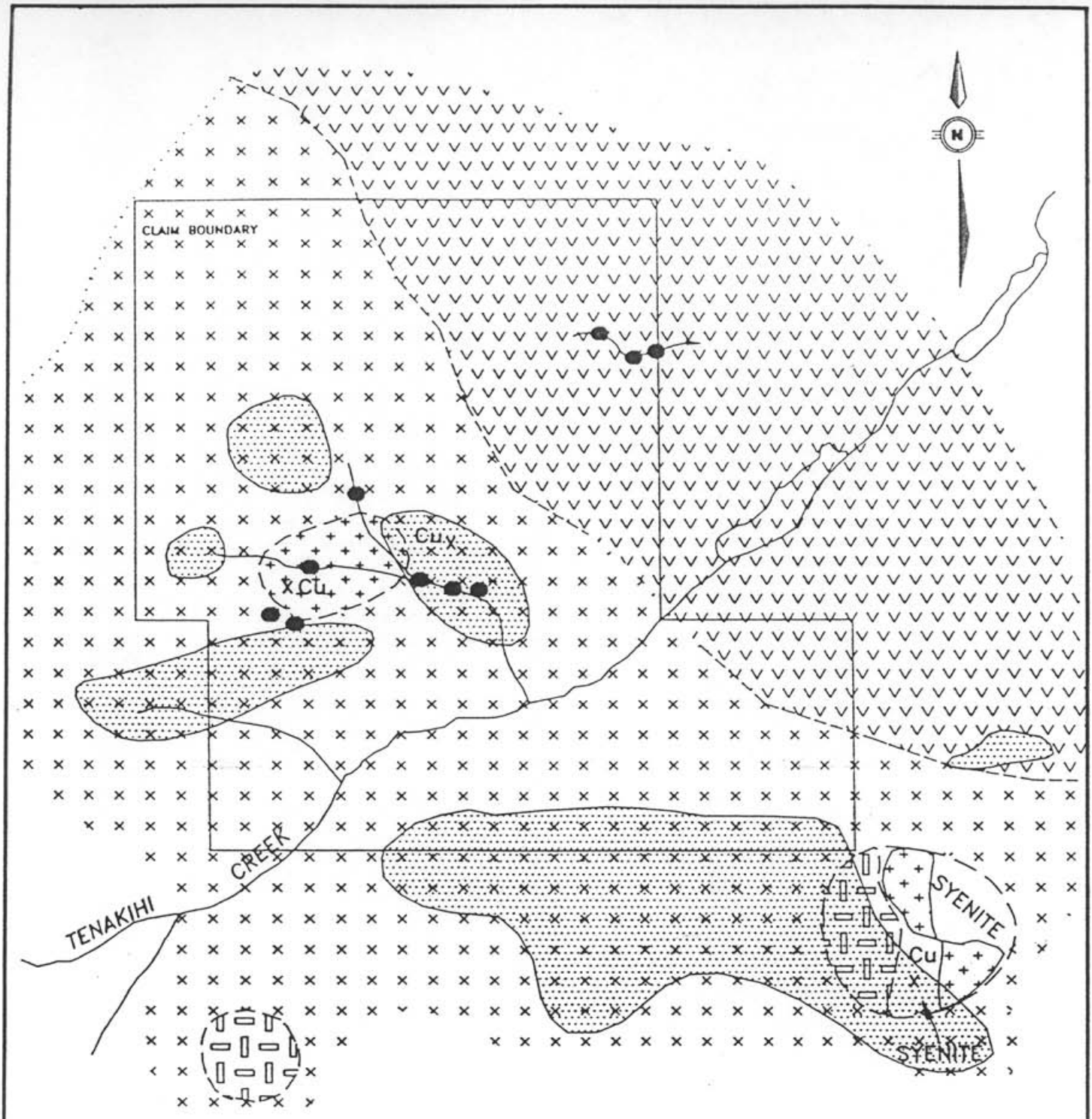
Property	No. of Deposits	Reserves/Mineral Inventory Copper($x10^6$lbs)	Gold ($x10^6$oz)
In Production:			
Copper Mountain (Cassiar)	5	1,600	.910
Afton (Teck)	2	680	.970
Exploration/Development Stage			
Mt Polley (Imperial Metals)	2	875	2.000
Galore Creek (Hudsons Bay et al)	8	3,000	1.750
Red Chris (Noranda)	2	550	.450
QR (QPX)	4	-0-	.200
Lorraine (Kennco)	2	150	.100
Mt Milligan (Continental Gold/Placer Dome)	2	1,680	6.376
Kemess (El Condor)	2	770	2.445

5. PREVIOUS WORK

The UMEX-Wenner Gren Joint Venture carried out a program of aeromagnetic surveying and silt sampling on the ground now covered by the ATEN claim group.

A small monzonitic stock in the centre of the property was found to be surrounded by four magnetic anomalies (Figure 5).

Silt samples from the stream that drains the area underlain by the intrusion were anomalous in copper. Two copper occurrences associated with quartz-carbonate veins in or near the monzonite stock were found. No samples were assayed for gold.



SCALE

0 1 2 Km

1 : 50,000

after Rebagliati 1991

LEGEND

- DIORITE
- MONZONITE
- MAFIC INTRUSION
- HOGEM BATHOLITH (UNDIFF.)
- TAKLA VOLCANICS
- AEROMAGNETIC ANOMOLY
- COPPER SILT ANOMALY
- Mo COPPER–MOLYBDENUM SILT ANOMALY
- XCu COPPER OCCURRENCE

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA P. D. LERICHE GEOSCIENTIST

7A

SWANNELL MINERALS CORPORATION

ATEN PROPERTY

COMPOSITE PLAN
AEROMAGNETICS, GEOLOGY AND
MINERAL SHOWINGS

Scale 1 : 50,000	N.T.S. 94C/4E,3W	Drawn by
Date NOV.91	Geologist	Figure 5

RELIANCE GEOLOGICAL SERVICES INC.

6. 1991 WORK PROGRAM

Done under B.C.M.E.M.P.R. Approval Number
PRG - 1991 - 1300198 - 4 - 5644

6.1 Methods and Procedures

A program of silt and rock sampling and reconnaissance geological mapping was carried out on the ATEN property.

Reconnaissance geological mapping was performed over the property at a scale of 1:10,000 (Figure 6).

Eleven rock samples were collected, sent to Min-En Laboratories (Min-En) of North Vancouver and analyzed for gold and thirty elements, using fire assay and ICP techniques. See Appendix A for rock sample descriptions, and Appendix B for analytical reports and methods.

Thirty-one silt samples were collected from streams that drain the property, and sent to Min-En for gold and thirty element analysis using fire assay and ICP techniques.

6.2 Property Geology (Figure 6)

The property is situated on the eastern contact between the Hogem Batholith and the intruded Takla Volcanics. The Hogem Batholith has been intruded in the central area of the property by a late stage monzonite stock.

6.2.1 Lithologies

The monzonite stock (Unit 3) is medium grained, equigranular, and contains minor mafic minerals (5 - 10% hornblende and biotite). Feldspars, white to light grey in color, constitute the remainder of the rock, with plagioclase being slightly more abundant than potassium feldspar.

The composition of the Hogem Batholith (Unit 4) on the property is that of a monzonite. It is medium to coarse grained and contains up to 40% mafic minerals (biotite and hornblende). Feldspars, white to pink in color, comprise the remainder of the rock, with plagioclase and potassium feldspar in approximately equal proportions. Quartz is rare to nonexistent.

Takla volcanic rocks (Unit 1) in the northwest area of the property were not mapped during the 1991 program.

6.2.2 Alteration

Alteration observed during the 1991 program was fracture-controlled in both the Hogem Batholith and the monzonite stock. Potassium feldspar, quartz, and epidote were the most common alteration minerals. Alteration of feldspars to clay minerals was present in Hogem Batholith talus on the Aten 5 claim.

6.2.3 Mineralization

Mineralization on the property was found in the following forms:

a) Malachite ± azurite ± chalcopyrite in fracture zones in monzonite;

b) Specular hematite in veins in monzonite;

c) Disseminated pyrite in quartz veins.

6.3 Geochemistry (Figure 6)

The following samples contain significant values in copper (above 1000 ppm). Complete rock sample descriptions are given in Appendix A.

Sample #	Type	Width (cm)	Cu (ppm/ %)	Au (ppb/ oz/ton)	Description & Location
AT91-GKR01	Select	-	5438	10	West of head of stream on ATEN 2. 2-3% chalcopyrite and malachite in slickensided fracture zone in monzonite.
AT91-GKR02	Select	15	2116	15	West of head of stream on ATEN 2. Malachite and azurite staining in fracture zone in monzonite.
AT91-GKR-3	Select	-	>20000/ 2.82%	75	West of head of stream on ATEN 2. Chalcopyrite, malachite, azurite in fracture in monzonite. 33.5 ppm silver.

Sample #	Type	Width (cm)	Cu (ppm/ %)	Au (ppb/ oz/ton)	Description & Location
AT91-GKR04	Select	-	2229	25	West of head of stream on ATEN 2. Rusty to black-stained monzonite with considerable malachite staining. Minor disseminated chalcopyrite.
AT91-NR04	Select	30	>20000/ 2.83%	5	West of ATEN 2 and 4 boundary. 4% malachite in monzonite from a fracture zone.
AT91-NR06	Chip	50	1402	<5	Central area of ATEN 5 in stream valley. Potassic altered zone in monzonite containing malachite <1% and chalcopyrite <1%.

Rock sampling has revealed three areas of anomalous copper values.

Four samples taken from fracture zones in monzonite in the central area of ATEN 2 are anomalous, as is a sample taken near the eastern boundary of ATEN 2, also in a fracture zone in monzonite.

A sample taken from a stream gulley on ATEN 5 shows potassic alteration in monzonite and is anomalous in copper.

6.3.2 Stream Sediment Geochemistry

Sampled streams are labelled Streams 1 and 2.

Based on a visual inspection of the values, 200 ppm Cu and 20 ppb Au are considered anomalous. Two anomalous copper values were found (204 and 463 ppm Cu) in the southwest corner of ATEN 5. One of these also had the highest anomalous Au value (70 ppb).

Three samples with anomalous Au values were found in the lower part of Stream 2, and in streams feeding into Tenakihi Creek in the southwest corner of ATEN 5.

7. DISCUSSION OF RESULTS

The target deposit on the ATEN property is a porphyry copper/gold deposit similar to the Mt Milligan deposit 200 km to the south, and to other deposits in the Quesnel Belt.

At Mt Milligan, monzonite porphyry stocks intrude Takla andesitic volcanic rocks. The stocks and enclosing volcanics are extensively potassium metasomatized. The potassic alteration zone hosts stockwork veins and disseminated chalcopyrite, pyrite and minor bornite, and is surrounded by an asymmetric propylitic alteration zone.

To date, no extensive propylitic or potassic alteration zones have been identified on the ATEN property. Copper mineralization was found in two areas on the ATEN 2 claim, with Cu values from five samples ranging from 2116 ppm to 2.83%.

Other targets include:

a) The central area of ATEN 5 where a bedrock sample ran 1402 ppm Cu and 3 stream sediment samples returned assays anomalous in copper and/or gold.

b) The northeast corner of ATEN 4 where a stream sediment sample returned an anomalous gold assay.

c) A previously identified copper showing in the southern half of ATEN 2 (Figure 5) that was not investigated during the 1991 work program.

More than half of the property remains to be investigated.

Follow-up work on 1991 targets and the remainder of the property is warranted.

8. CONCLUSIONS

The writers conclude that the ATEN property has potential to host a porphyry copper/gold deposit for the following reasons:

a) The subject property lies within the Mesozoic Quesnel Belt, which hosts several porphyry copper/gold deposits;

b) The geological environment, monzonite stocks intruding Takla Volcanics, is favorable;

c) The 1991 work program outlined four target areas with copper mineralization in rocks and anomalous copper/gold in stream sediments.

9. RECOMMENDATIONS

Phase I

a) Establish grids and perform detailed geological mapping and sampling over areas with copper mineralization on the ATEN 2 claim;

b) Locate the source of the stream sediment anomalies in the central area of ATEN 5, and explore the extent of the mineralization indicated by sample NR06 in that same area. Take soil and talus fine samples in the valley in the central area of ATEN 5;

c) Locate the source of the gold anomaly from the Stream 2 sediment sample;

d) Systematically map and rock sample the unexplored areas of the property.

Contingent upon favourable results from Phase I, Phase II would consist of further mapping, geochemical sampling and induced polarization surveys to establish drill targets.

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CERTIFICATE

I, **PETER D. LERICHE**, of 3125 West 12th Avenue, Vancouver, B.C., V6K 2R6, do hereby state that:

1. I am a graduate of McMaster University, Hamilton, Ontario, with a Bachelor of Science Degree in Geology, 1980.

2. I am registered as a member in good standing with the Association of Professional Engineers and Geoscientists of British Columbia.

3. I am a Fellow in good standing with the Geological Association of Canada.

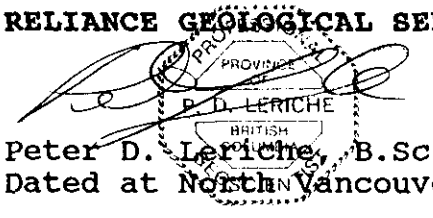
4. I have actively pursued my career as a geologist for twelve years in British Columbia, Ontario, the Yukon and Northwest Territories, Montana, Oregon, Alaska, Arizona, Nevada and California.

5. The information, opinions, and recommendations in this report are based on fieldwork carried out under my direction, and on published and unpublished literature. I have not visited the subject property.

6. I have no interest, direct or indirect, in the subject claims or the securities of Swannell Minerals Corp or any other company which has an interest in the subject claims.

7. I consent to the use of this report in a Prospectus or Statement of Material Facts for the purpose of private or public financing.

RELIANCE GEOLOGICAL SERVICES INC.



Peter D. Leriche, B.Sc., P. Geo.
Dated at North Vancouver, B.C., this 20th day of November 1991.

CERTIFICATE

I, **NIGEL B. LUCKMAN**, of 11500 Granville Avenue, Richmond, B.C., do hereby state that:

1. I am a graduate of the University of British Columbia, Vancouver, British Columbia, with a Bachelor of Applied Science Degree in Geology, 1988.

2. I have actively pursued my career as a geological engineer for three years in British Columbia, the Yukon, Montana and California.

3. The information, opinions, and recommendations in this report are based on published and unpublished literature, and my research of and field experience in the general area of the claims. I visited the subject property during the month of October, 1991.

4. I have no interest, direct or indirect, in the subject claims or the securities of any company which has an interest in the subject claims.

5. I consent to the use of this report in a Prospectus or Statement of Material Facts for the purpose of private or public financing.

RELIANCE GEOLOGICAL SERVICES INC.

N. Luckman

Nigel B. Luckman, B.A.Sc.

Dated at North Vancouver, B.C., this 20th day of November, 1991.

RELIANCE GEOLOGICAL SERVICES INC.

241 EAST 1ST STREET
NORTH VANCOUVER, B.C.
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TEL: (604) 984-3663
FAX: (604) 988-4653

ITEMIZED COST STATEMENT

ATEN PROJECT

Project preparation			$ 175
Mobilization and demobilization (includes transportation, and wages)			$ 1,890
Field Crew:			
Project Geologist (N Luckman: Oct 13,14/91)	$ 325/day x 2 days	$ 650	
Field Geologists (G King, B Chore, T Hannon: Oct 13,14/91)	$ 275/day x 6 days	$1,650	$ 2,300
Field Costs:			
Helicopter	$ 706/hr x 5.1 hrs	$3,600	
Communications	$ 40/day x 2 days	$ 80	
Food & accommodation	$ 75/day x 8 days	$ 600	
Supplies		$ 120	
Vehicles	$ 80/day x 2 days	$ 160	$ 4,560
Assays & Analysis:			
31 silt samples @ $14/sample (Aqua regia/AA for Au + 30 element ICP)		$ 434	
11 rock samples @ $17/sample (FA/AA for Au and 30 element ICP)		$ 187	$ 621
Report:			
Drafting and map preparation		$ 550	
Report writing and editing		$ 950	
Word processing, copying, binding		$ 350	$ 1,850
Administration, incl overhead and profit			$ 1,709
Sub-total			$ 13,105
plus 7% G.S.T.			$ 917
TOTAL			$ 14,022

APPENDIX A

ROCK SAMPLE DESCRIPTIONS

APPENDIX A

ROCK SAMPLE DESCRIPTIONS

ATEN PROPERTY

SAMPLE NO.	DESCRIPTION	WIDTH (cm)
AT 91 NR01	A select sample of a 1 meter wide intensely rusted zone in a monzonite.	-
AT 91 NR02	A select sample of malachite in a fracture from a float boulder of monzonite. Minor epidote and quartz in fracture.	-
AT 91 NR03	Select sample of a massive 4 cm wide specular hematite vein in monzonite.	4
AT 91 NR04	A select sample of malachite (4%) in monzonite from a 30 cm wide fracture zone.	30
AT 91 NR05	A select sample of malachite (3%) in monzonite in fractures. Minor red hematite and mafic minerals in fracture zone.	-
AT 91 NR06	A 50 cm wide chip sample from a potassic-altered zone in monzonite containing malachite (<1%) and chalcopyrite (<1%).	50
AT 91 GKR01	Monzonite. Isolated occurrence of copper mineralization, controlled by slickensided fracture. Contains 2-3% chalcopyrite, which is commonly hosted in quartz blebs. Dark brown weathered surface, intense malachite staining.	-
AT 91 GKR02	Fracture zone in monzonite. Malachite and azurite staining. Contains minor blebs of chalcopyrite. Width of fracture: 2 cm. Intense epidote alteration and moderate K-spar alteration.	15

SAMPLE NO.	DESCRIPTION	WIDTH (cm)
AT 91 GKR03	Mineralized fracture zone in monzonite. Sample taken across and adjacent to 1 cm wide fracture zone which is filled by chalcopyrite. Intense azurite and malachite staining.	
AT 91 GKR04	Monzonite. Dark to rusty brown to black (manganese oxide stained weathered surface). Considerable malachite staining. Trace disseminated chalcopyrite	-
AT 91 GKR05	Sample from 5 cm wide quartz vein hosted in talus block of intensely clay altered monzonite. Contains up to 30% semi-massive to massive graphite; also 1-2% blebs and disseminations of pyrite.	(from talus)

APPENDIX B

ANALYTICAL RESULTS and PROCEDURES

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R E P O R T S U M M A R Y Report:[9100495 R]

A N A L Y T I C A L R E P O R T

Origin Inception Date:[Nov 05, 1991]

Client:[	200	Reliance Geological Services Ltd.	]
Contact:[		Peter Leriche	]
Project:[	0	748-ATEN	]
Amount/Type:[	42	Rock -Rock Reject Stored 3 Mon	]
[		-Soil Reject Discarded	]

Analytical Requisition

Geochemical:[	Au ICP(AqR)30	]	
Assay:[	Au(FA/AAS 20g) Cu	]	ICP:[30]
Comments:[	FA/Grav for any Au > 1000 ppb		]

Delivery Information Reporting Date:[Nov 13, 1991]

Principal Destination (Hardcopy,Fascimile,Invoice)

Company:[	Reliance Geological Services Ltd.]
Address:[	241 East 1st Street]
City/Province:[	North Vancouver, BC]
Country/Postal:[	V7L 1B4]
Attention:[	Peter Leriche]
Fascimile:[	(604)988-4653]

Secondary Destination (Hardcopy)

Company:[	]
Address:[	]
City/Province:[	]
Country/Postal:[	]
Attention:[	]
Fascimile:[	]

2 data pages in this report. Approved by: _____

B.C. Certified Assayers

iPL CODE: 911119-16:04:10

Report: 9100495 R Reliance Geological Services Ltd. Project: 748-ATEN Page 1 of 2 Section 1 of 3

Sample Name	Type	Au ppb	Au ppb	Au oz/st	Cu %	Ag ppm	Cu ppm	Pb ppm	Zn ppm	As ppm	Sb ppm	Hg ppm	Mo ppm	Tl ppm	Bi ppm	Cd ppm
AT91 GKR 01	Rock	10	--	--	--	5.2	5438	3	37	10	7	<3	3	<10	<2	0.2
AT91 GKR 02	Rock	15	--	--	--	1.7	2116	<2	60	11	6	<3	7	<10	<2	<0.1
AT91 GKR 03	Rock	75	--	--	2.82	33.5	>20000	8	116	12	<5	<3	13	16	<2	0.5
AT91 GKR 04	Rock	25	--	--	--	1.2	2299	<2	31	13	<5	<3	6	<10	<2	0.2
AT91 GKR 05	Rock	5	--	--	--	0.9	278	7	78	<5	18	<3	6	10	<2	1.8
AT91 NR 01	Rock	5	--	--	--	0.7	169	5	102	<5	<5	<3	3	<10	<2	0.3
AT91 NR 02	Rock	145	--	--	--	0.7	797	<2	2030	<5	<5	<3	3	<10	<2	5.2
AT91 NR 03	Rock	5	--	--	--	0.1	50	<2	12	18	<5	<3	5	<10	<2	<0.1
AT91 NR 04	Rock	5	--	--	2.83	0.2	>20000	<2	84	10	<5	<3	5	<10	<2	0.5
AT91 NR 05	Rock	<5	--	--	--	0.3	738	<2	50	10	8	<3	5	<10	<2	<0.1
AT91 NR 06	Rock	<5	--	--	--	0.6	1402	8	19	<5	<5	<3	1	<10	<2	<0.1
AT91 BL 01	Silt	--	5	--	--	0.9	186	6	89	14	<5	<3	3	<10	<2	0.3
AT91 BL 02	Silt	--	35	--	--	0.3	142	3	82	12	<5	<3	4	<10	<2	0.4
AT91 BL 03	Silt	--	5	--	--	0.4	120	5	89	13	<5	<3	8	<10	<2	0.4
AT91 BL 04	Silt	--	<5	--	--	0.2	112	5	79	9	<5	<3	6	<10	<2	0.3
AT91 BL 05	Silt	--	5	--	--	0.4	144	4	99	10	<5	<3	5	<10	<2	0.7
AT91 BL 06	Silt	--	<5	--	--	<0.1	90	<2	62	9	<5	<3	4	11	<2	0.3
AT91 BL 07	Silt	--	10	--	--	<0.1	74	10	60	7	<5	<3	3	<10	<2	0.9
AT91 BL 08	Silt	--	5	--	--	<0.1	115	<2	55	13	<5	<3	5	<10	<2	0.3
AT91 BL 09	Silt	--	5	--	--	0.3	115	17	52	7	<5	<3	4	<10	<2	1.1
AT91 BL 10	Silt	--	5	--	--	0.2	125	3	47	10	<5	<3	5	<10	<2	0.2
AT91 BL 11	Silt	--	5	--	--	<0.1	88	3	48	6	<5	<3	4	<10	<2	0.3
AT91 BL 12	Silt	--	20	--	--	1.9	167	14	90	168	6	3	4	<10	<2	1.0
AT91 BL 13	Silt	--	70	--	--	0.7	204	8	91	63	<5	<3	4	<10	<2	1.1
AT91 BL 14	Silt	--	5	--	--	0.1	62	<2	43	16	<5	<3	4	<10	<2	0.5
AT91 GKL 01	Silt	--	5	--	--	<0.1	137	2	95	14	<5	<3	7	<10	<2	0.4
AT91 GKL 02	Silt	--	5	--	--	0.2	166	4	88	23	<5	<3	8	<10	<2	0.4
AT91 GKL 03	Silt	--	5	--	--	<0.1	70	<2	78	8	5	<3	4	<10	<2	0.1
AT91 TL 01	Silt	--	15	--	--	0.3	154	7	69	9	6	<3	11	<10	<2	<0.1
AT91 TL 02	Silt	--	<5	--	--	<0.1	96	<2	62	6	<5	<3	4	<10	<2	0.3
AT91 TL 03	Silt	--	<5	--	--	<0.1	107	4	63	9	<5	<3	6	<10	<2	0.4
AT91 TL 04	Silt	--	<5	--	--	0.3	117	6	69	8	<5	<3	8	<10	<2	0.4
AT91 TL 05	Silt	--	5	--	--	0.2	115	4	136	92	5	<3	2	<10	<2	0.6
AT91 TL 06	Silt	--	15	--	--	<0.1	79	<2	104	48	<5	<3	4	<10	<2	0.1
AT91 TL 07	Silt	--	5	--	--	<0.1	66	3	98	40	<5	<3	3	<10	<2	0.1
AT91 TL 08	Silt	--	30	--	--	<0.1	88	2	121	50	5	<3	3	<10	<2	0.2
AT91 TL 09	Silt	--	10	--	--	0.1	84	6	116	37	<5	<3	4	<10	<2	0.4
AT91 TL 10	Silt	--	15	--	--	1.5	463	<2	81	35	<5	<3	12	<10	<2	3.7
AT91 TL 11	Silt	--	25	--	--	0.2	113	5	80	32	<5	<3	5	<10	<2	0.3
Minimum Detection		5	5	0.005	0.01	0.1	1	2	1	5	5	3	1	10	2	0.1
Maximum Detection		10000	10000	1000.000	100.00	100.0	20000	20000	20000	10000	1000	10000	1000	1000	10000	10000.0
Method		FA/AAS	GeoSp	FAGrav	Assay	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP

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Sample Name	Co ppm	Ni ppm	W ppm	Ba ppm	Cr ppm	V ppm	Mn ppm	La ppm	Sr ppm	Zr ppm	Sc ppm	Ti %	Al %	Ca %	Fe %	Mg %	K %
AT91 GKR 01	9	10	6	371	122	56	690	3	287	2	3	0.03	1.90	1.30	>5.00	0.61	0.16
AT91 GKR 02	16	15	<5	231	51	143	1035	18	134	3	7	0.07	2.76	1.12	>5.00	2.16	0.12
AT91 GKR 03	33	32	<5	3	64	116	1611	5	101	4	7	0.09	2.40	0.86	>5.00	1.82	0.10
AT91 GKR 04	47	20	26	163	38	108	1160	2	29	3	3	0.01	2.65	0.93	>5.00	1.49	0.44
AT91 GKR 05	85	15	<5	37	139	26	3150	10	51	15	3	<0.01	0.34	3.50	>5.00	0.99	0.20
AT91 NR 01	23	11	<5	1495	38	102	1092	11	117	3	8	<0.01	0.76	2.72	>5.00	0.85	0.27
AT91 NR 02	22	13	<5	38	74	114	1896	6	154	2	8	0.11	3.11	2.40	>5.00	2.16	0.06
AT91 NR 03	32	13	75	29	44	158	98	<2	21	3	7	0.02	0.44	0.06	>5.00	0.20	0.01
AT91 NR 04	29	12	5	29	25	102	917	8	13	2	8	0.01	2.58	0.88	>5.00	1.81	0.21
AT91 NR 05	27	21	<5	7	94	74	921	4	370	3	6	0.06	2.79	1.22	>5.00	1.70	0.02
AT91 NR 06	6	3	<5	53	126	10	174	10	29	2	1	0.03	0.58	0.25	1.20	0.25	0.19
AT91 BL 01	18	16	<5	544	14	102	1283	18	82	2	7	0.02	2.60	1.02	4.92	1.02	0.14
AT91 BL 02	18	11	<5	199	10	158	1033	17	36	1	5	0.04	1.39	0.90	>5.00	0.85	0.09
AT91 BL 03	16	10	<5	545	7	106	1614	19	98	2	7	0.01	2.43	1.07	4.78	0.90	0.11
AT91 BL 04	18	9	<5	226	8	172	1154	16	54	1	6	0.04	1.57	0.98	>5.00	0.98	0.08
AT91 BL 05	17	11	<5	402	8	128	1186	19	93	1	5	0.02	1.93	1.27	4.98	0.96	0.08
AT91 BL 06	17	11	<5	162	11	273	882	12	41	1	5	0.06	1.42	0.85	>5.00	1.03	0.08
AT91 BL 07	18	9	<5	270	5	141	1407	8	44	1	5	0.06	1.36	0.75	4.15	0.98	0.08
AT91 BL 08	17	10	<5	128	6	240	974	12	39	1	5	0.06	1.50	0.81	>5.00	0.94	0.07
AT91 BL 09	16	7	<5	148	6	126	2099	10	45	<1	3	0.03	1.52	0.79	3.67	0.77	0.06
AT91 BL 10	12	7	<5	143	2	144	554	11	51	<1	4	0.03	1.64	0.83	3.77	0.65	0.06
AT91 BL 11	13	8	<5	88	7	122	682	11	30	1	4	0.06	1.09	0.71	3.83	0.73	0.06
AT91 BL 12	17	8	<5	266	3	128	939	14	65	1	5	0.04	1.63	1.18	4.82	1.06	0.12
AT91 BL 13	18	8	<5	195	3	113	1846	15	104	1	4	0.03	2.34	1.39	4.50	1.22	0.12
AT91 BL 14	11	6	<5	180	5	95	867	8	55	1	3	0.04	1.08	0.83	4.59	0.68	0.06
AT91 GKL 01	26	10	<5	302	1	146	1982	13	64	1	9	0.02	2.29	0.92	>5.00	1.17	0.12
AT91 GKL 02	28	12	<5	331	5	159	3301	12	81	1	8	0.04	3.06	1.06	>5.00	1.31	0.12
AT91 GKL 03	19	9	<5	101	4	172	1227	10	39	1	5	0.08	1.76	0.95	>5.00	1.28	0.10
AT91 TL 01	14	10	<5	637	7	85	816	15	74	5	7	<0.01	2.02	0.99	>5.00	0.74	0.12
AT91 TL 02	17	8	<5	211	5	101	1419	12	43	1	6	0.02	1.43	0.65	4.31	0.88	0.07
AT91 TL 03	18	9	<5	197	5	109	1403	14	34	1	6	0.02	1.31	0.65	4.67	0.79	0.09
AT91 TL 04	17	9	<5	356	8	127	1391	17	63	1	6	0.01	1.77	0.91	4.91	0.76	0.07
AT91 TL 05	21	26	<5	78	62	157	1055	6	88	1	5	0.05	2.07	1.76	4.14	1.37	0.05
AT91 TL 06	26	33	<5	83	58	128	1083	4	58	2	9	0.09	2.50	1.08	4.59	1.73	0.07
AT91 TL 07	24	33	<5	78	60	130	1035	4	52	3	9	0.11	2.48	1.13	4.51	1.78	0.08
AT91 TL 08	27	36	<5	114	59	129	1074	5	72	2	9	0.08	2.54	1.19	4.85	1.79	0.07
AT91 TL 09	23	28	<5	86	50	131	724	8	54	1	8	0.05	2.25	1.02	4.22	1.33	0.05
AT91 TL 10	13	8	<5	413	8	128	5441	27	177	4	12	0.03	4.62	2.20	4.51	0.61	0.04
AT91 TL 11	19	9	<5	459	3	157	668	7	81	1	5	0.02	2.36	0.95	4.97	1.28	0.08
Minimum Detection	1	1	5	2	1	2	1	2	1	1	1	0.01	0.01	0.01	0.01	0.01	0.01
Maximum Detection	10000	10000	1000	10000	10000	10000	10000	10000	10000	10000	10000	1.00	5.00	10.00	5.00	10.00	10.00
Method	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP

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Sample Name	Na %	P %
AT91 GKR 01	0.02	0.08
AT91 GKR 02	0.03	0.15
AT91 GKR 03	0.03	0.15
AT91 GKR 04	0.02	0.08
AT91 GKR 05	0.01	0.01
AT91 NR 01	0.03	0.17
AT91 NR 02	0.03	0.14
AT91 NR 03	0.01	<0.01
AT91 NR 04	0.05	0.26
AT91 NR 05	0.01	0.06
AT91 NR 06	0.07	0.02
AT91 BL 01	0.02	0.22
AT91 BL 02	0.02	0.27
AT91 BL 03	0.02	0.27
AT91 BL 04	0.02	0.27
AT91 BL 05	0.02	0.25
AT91 BL 06	0.03	0.25
AT91 BL 07	0.04	0.17
AT91 BL 08	0.02	0.22
AT91 BL 09	0.03	0.18
AT91 BL 10	0.02	0.20
AT91 BL 11	0.03	0.18
AT91 BL 12	0.02	0.21
AT91 BL 13	0.02	0.21
AT91 BL 14	0.03	0.16
AT91 GKL 01	0.02	0.22
AT91 GKL 02	0.03	0.20
AT91 GKL 03	0.04	0.22
AT91 TL 01	0.01	0.19
AT91 TL 02	0.03	0.21
AT91 TL 03	0.02	0.22
AT91 TL 04	0.02	0.22
AT91 TL 05	0.02	0.13
AT91 TL 06	0.05	0.09
AT91 TL 07	0.05	0.10
AT91 TL 08	0.04	0.10
AT91 TL 09	0.03	0.15
AT91 TL 10	0.02	0.30
AT91 TL 11	0.02	0.14
Minimum Detection	0.01	0.01
Maximum Detection	5.00	5.00
Method	ICP	ICP

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Sample Name	Type	Au ppb	Au ppb	Au oz/st	Cu %	Ag ppm	Cu ppm	Pb ppm	Zn ppm	As ppm	Sb ppm	Hg ppm	Mo ppm	Tl ppm	Bi ppm	Cd ppm
AT91 TL 12	Silt	--	5	--	--	0.6	149	9	61	6	<5	<3	3	<10	<2	1.1
AT91 TL 13	Silt	--	5	--	--	0.2	135	<2	37	17	<5	<3	5	<10	<2	0.4
AT91 TL 14	Silt	--	5	--	--	0.1	102	<2	61	29	<5	<3	17	<10	<2	0.4
Minimum Detection		5	5	0.005	0.01	0.1	1	2	1	5	5	3	1	10	2	0.1
Maximum Detection		10000	10000	1000.000	100.00	100.0	20000	20000	20000	10000	1000	10000	1000	1000	10000	10000.0
Method		FA/AAS	GeoSp	FAGrav	Assay	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP

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Sample Name	Co ppm	Ni ppm	W ppm	Ba ppm	Cr ppm	V ppm	Mn ppm	La ppm	Sr ppm	Zr ppm	Sc ppm	Ti %	Al %	Ca %	Fe %	Mg %	K %
AT91 TL 12	10	8	<5	627	3	101	939	14	120	1	2	0.01	1.69	1.56	3.44	0.55	0.06
AT91 TL 13	16	8	<5	169	3	148	638	12	64	1	4	0.07	1.41	0.89	4.23	0.81	0.06
AT91 TL 14	17	11	<5	422	3	290	1422	37	64	2	7	0.06	1.59	0.92	>5.00	1.02	0.04
Minimum Detection	1	1	5	2	1	2	1	2	1	1	1	0.01	0.01	0.01	0.01	0.01	0.01
Maximum Detection	10000	10000	1000	10000	10000	10000	10000	10000	10000	10000	10000	1.00	5.00	10.00	5.00	10.00	10.00
Method	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP

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Sample Name	Na %	P %
AT91 TL 12	0.02	0.20
AT91 TL 13	0.04	0.18
AT91 TL 14	0.02	0.22
Minimum Detection	0.01	0.01
Maximum Detection	5.00	5.00
Method	ICP	ICP

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Method of ICP Multi-element Analyses

(a) 0.50 grams of sample is digested with diluted aqua regia solution by heating in a hot water bath for 90 minutes, then cooled, bulked up to a fixed volume with demineralized water, and thoroughly mixed.

(b) The specific elements are determined using an Inductively Coupled Argon Plasma spectrophotometer. All elements are corrected for inter-element interference. All data are subsequently stored onto computer diskette.

* Aqua regia leaching is partial for Al, Ba, Ca, Cr, Fe, K, Mg, Mn, Na, P, Sn, Sr and W.

QUALITY CONTROL

The machine is calibrated using six known standards and a blank. Another blank, which was digested with the samples, and a standard are tested before any samples to confirm the calibration. A maximum of 20 samples are analysed, and then a standard, also digested with the samples, is run. A known standard with characteristics best matching the samples is chosen and tested. Another 20 samples are analysed, with the last one being a random reweigh of one of the samples. The standard used at the beginning is rerun. This procedure is repeated for all of the samples.

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Method of Gold analysis by Fire Assay / AAS

(a) 20.0 to 30.0 grams of sample is mixed with a combination of fluxes in a fusion pot. The sample is then fused at high temperature to form a lead "button".

(b) The precious metals are extracted by cupellation. Any Silver is dissolved by nitric acid and decanted. The gold bead is then dissolved in boiling concentrated aqua regia solution heated by a hot water bath.

(c) The gold in solution is determined with an Atomic Absorption Spectrometer. The gold value, in parts per billion, is calculated by comparision with a set of known gold standards.

QUALITY CONTROL

Every fusion of 24 pots contains 22 samples, one internal standard or blank, and a random reweigh of one of the samples. Samples with anomalous gold values greater than 500 ppb are automatically checked by Fire Assay/AA methods. Samples with gold values greater than 10000 ppb are automatically checked by Fire Assay/Gravimetric methods.

INTERNATIONAL PLASMA LABORATORY LTD

2036 Columbia Street
Vancouver, B.C.
Canada V5Y 3E1
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Method of Coppper assay by Titration Analysis

(a) 0.25 to 2.00 grams of sample was digested with multiple acids (HCl, HNO3, H2SO4 & HF) until dried. The sample was then boiled with Bromine water to dissolve any soluble matter.

(b) Ammonium acetate, sodium fluoride and potassium iodide were added to the sample solution as complexing reagents. The concentration of copper was determined by titrating against the sodium thiosulphate solution, using a starch solution as an indicator.

(c) The result, in percentage, was calculated by standardizing the normality of the sodium thiosulphate solution with a known copper standard.

UNMAPPED

ATEN 3

UNMAPPED

ATEN 4

1?

TL01 154/15

TL02 96/<5

TL08 88/30

TL07 66/5

TL06 79/15

ATEN 1

ATEN 2

TL03 107/<5

TL04 117/<5

TL05 115/5

STREAM 2

TL09 84/10

△ NR02 797/145

△ NR01 169/5

BL01 186/5

△ GKR01 5438/70

△ GKR02 2416/15

△ GKR03 >20000(2.82)/75

△ GKR04 2299/25

BL02 142/35

△ NR03 50/5

△ NR04 >20000(2.83)/5

△ NR05 738/<5

BL03 120/5

BL04 112/<5

STREAM 1

BL05 144/5

BL11 88/5

BL10 125/5

BL09 115/5

BL06 90/<5

BL08 115/5

1?

BL07 74/10

TL12 149/5

TL13 135/5

TL14 102/5

BL14 62/8

△ NR06 1402/<5

TL11 113/25

BL12 167/20

BL13 204/70

TL10 463/15

Tenakin Creek

UNMAPPED

GKL03 70/5

GKL02 166/5

GKL01 137/5

△ GKR05 278/5

ATEN 5

ATEN 6

GEOLOGICAL BRANCH
ASSESSMENT REPORT

22,123

P. D. LERICHE
PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
GEOSCIENTIST

0 100 200 500 750 1000 METRES

LEGEND

GEOLOGY

UPPER TRIASSIC-LOWER JURASSIC

1 TAKLA GROUP

1A Andesite porphry & fine grained flows

1B Andesite tuffs

INTRUSIVE ROCKS

2 Diorite

3 Monzonite

JURASSIC-CRETACROUS

HOGEM BATHOLITH

4 Granite, Granodiorite, Monzonite, Diorite

AGE UNKNOWN

5 Mafic Intrusions
Pyroxenite

Approximate Contact

Assumed Contact

Fault/Shear Zone

500 Contour(100m Interval)

Lake

Creek

Road

△ Rock Sample Location
Cu ppm(%)/Au ppb(oz/ton)/Mo ppm(%)

■ Stream Sediment Sample Location
Cu ppm/Au ppb/Mo ppm

Mo given if >100ppm for rocks,
>15ppm for stream sediments

N

SWANNELL MINERALS CORPORATION

ATEN PROPERTY

OMINECA M.D., B.C.

GEOLOGY & GEOCHEMISTRY

Scale 1:10,000	N.T.S. 94·C/3W,4E	Drawn by
Date November 1991	Geologist	Figure 6

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RELIANCE GEOLOGICAL SERVICES INC.