84-1227-13233

GEOLOGICAL BRANCH
ASSESSMENT REPORT

13,233

10/85

REPORT ON

GEOLOGY AND GEOCHEMISTRY

ON THE

GOWAN 1 CLAIM

GOWAN 1 2276 (10)

NEW WESTMINSTER MINING DIVISION

N.T.S. 92J/1

50°03.5'N 122°17.6'W

Owner & Operator: Noranda Exploration Company, Limited
(No Personal Liability)
Box 2380
Vancouver, B.C.
V6B 3T5

Submitted By : R.G. Wilson
Project Geologist
December, 1984

Province of British Columbia

Ministry of Energy, Mines and Petroleum Resources

ASSESSMENT REPORT TITLE PAGE AND SUMMARY

TYPE OF REPORT/SURVEY(S)	TOTAL COST
GEOLOGY AND GEOCHEMISTRY	2,627.43

AUTHOR(S) Rob G. Wilson SIGNATURE(S)

DATE STATEMENT OF EXPLORATION AND DEVELOPMENT FILED October 23, 1984 YEAR OF WORK 84

PROPERTY NAME(S) Gowan 1

COMMODITIES PRESENT Au, Ag

B.C. MINERAL INVENTORY NUMBER(S), IF KNOWN

MINING DIVISION New Westminster NTS 92J/1

LATITUDE 50°03.5'N LONGITUDE 122°17.6'W

NAMES and NUMBERS of all mineral tenures in good standing (when work was done) that form the property [Examples: TAX 1-4, FIRE 2 (12 units); PHOENIX (Lot 1706); Mineral Lease M 123; Mining or Certified Mining Lease ML 12 (claims involved)]:

Gowan 2276(10) 9 Units

OWNER(S)

(1) Noranda Exploration Co. Ltd.
(No Personal Liability)

(2)

MAILING ADDRESS

P.O. Box 2380
Vancouver, B.C. V6B 3T5

OPERATOR(S) (that is, Company paying for the work)

(1) Noranda Exploration Co., Ltd.
(No Personal Liability)

(2)

MAILING ADDRESS

As Above

SUMMARY GEOLOGY (lithology, age, structure, alteration, mineralization, size, and attitude):

The Gowan property consists of 2 packets of volcanics which have been disrupted by an intrusive stock and its related dikes. One group of volcanics are lapilli tuffs and volcanic breccias of intermediate composition while the other is a sequence of intermediate metavolcanics (and metasediments?) that are weakly foliated to slightly gneissose.

The intrusive has a composition of a quartz-monzonite to quartz diorite and its (OVER)

REFERENCES TO PREVIOUS WORK None Known

(over)

emplacement is probably the latest lithologic event on the property.

Mineralization, restricted to the metavolcanic unit, is pyrite, arsenopyrite and hematite ? the oxidation of which has formed a distinctive gossan against a grey background of country rock.

TYPE OF WORK IN THIS REPORT	EXTENT OF WORK (IN METRIC UNITS)	ON WHICH CLAIMS	COST APPORTIONED
GEOLOGICAL (scale, area)			
Ground	1:2500, .5 Square Kilometres	GOWAN 1	920.33
Photo			
GEOPHYSICAL (line-kilometres)			
Ground			
Magnetic			
Electromagnetic			
Induced Polarization			
Radiometric			
Seismic			
Other			
Airborne			
GEOCHEMICAL (number of samples analysed for ....)			
Soil	39 Cu., Pb., Zn., Ag., Mo., Au., As	GOWAN 1	)
Silt	1 Cu., Pb., Zn., Ag., Mo., Au., As	GOWAN 1	) 1,707.10
Rock	16 Cu., Pb., Zn., Ag., Mo., Au., As	GOWAN 1	)
Other			
DRILLING (total metres; number of holes, size)			
Core			
Non-core			
RELATED TECHNICAL			
Sampling/assaying			
Petrographic			
Mineralogic			
Metallurgic			
PROSPECTING (scale, area)			
PREPARATORY/PHYSICAL			
Legal surveys (scale, area)			
Topographic (scale, area)			
Photogrammetric (scale, area)			
Line/grid (kilometres)			
Road, local access (kilometres)			
Trench (metres)			
Underground (metres)			
		TOTAL COST	2,627.43

FOR MINISTRY USE ONLY	NAME OF PAC ACCOUNT	DEBIT	CREDIT	REMARKS:
Value work done (from report)				
Value of work approved				
Value claimed (from statement)				
Value credited to PAC account				
Value debited to PAC account				
Accepted ..... Date	Rept. No.			Information Class

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LIST OF FIGURES

INTRODUCTION

LOCATION AND ACCESS

The Gowan 1, 2276 (10) a nine unit claim is located 46 km SE of Pemberton, B.C. and 15 km east of the Lillooet River (Figures 1 & 2). The property is helicopter accessible, the round trip ferry time from Pemberton being 40 minutes by Hughes 500D helicopter.

Abundant landing sites exist on the property and an excellent camp location exists beside the lake at the SW corner of the claim block.

An established logging road (presently washed out in several locations) exists to within 3 km and 1,500' elevation below the claim.

TOPOGRAPHY AND PHYSIOGRAPHY

The Gowan 1 claim lies within the Coast Mountains physiographic region, above treeline at an elevation of 5,500 to 7,000' A.S.L. It is situated between the headwaters of Rogers and Gowan Creeks and the Nehatlatch River.

The ground is rugged with several cliff areas and steep talus slopes averaging 30^{o} alternating with flat, terrace like benches. Two permanent icefields lie to the southeast of the property.

PREVIOUS WORK

No known mineral showings exist in the immediate vicinity of the Gowan 1 claim and no apparent previous work has been carried out on this ground.

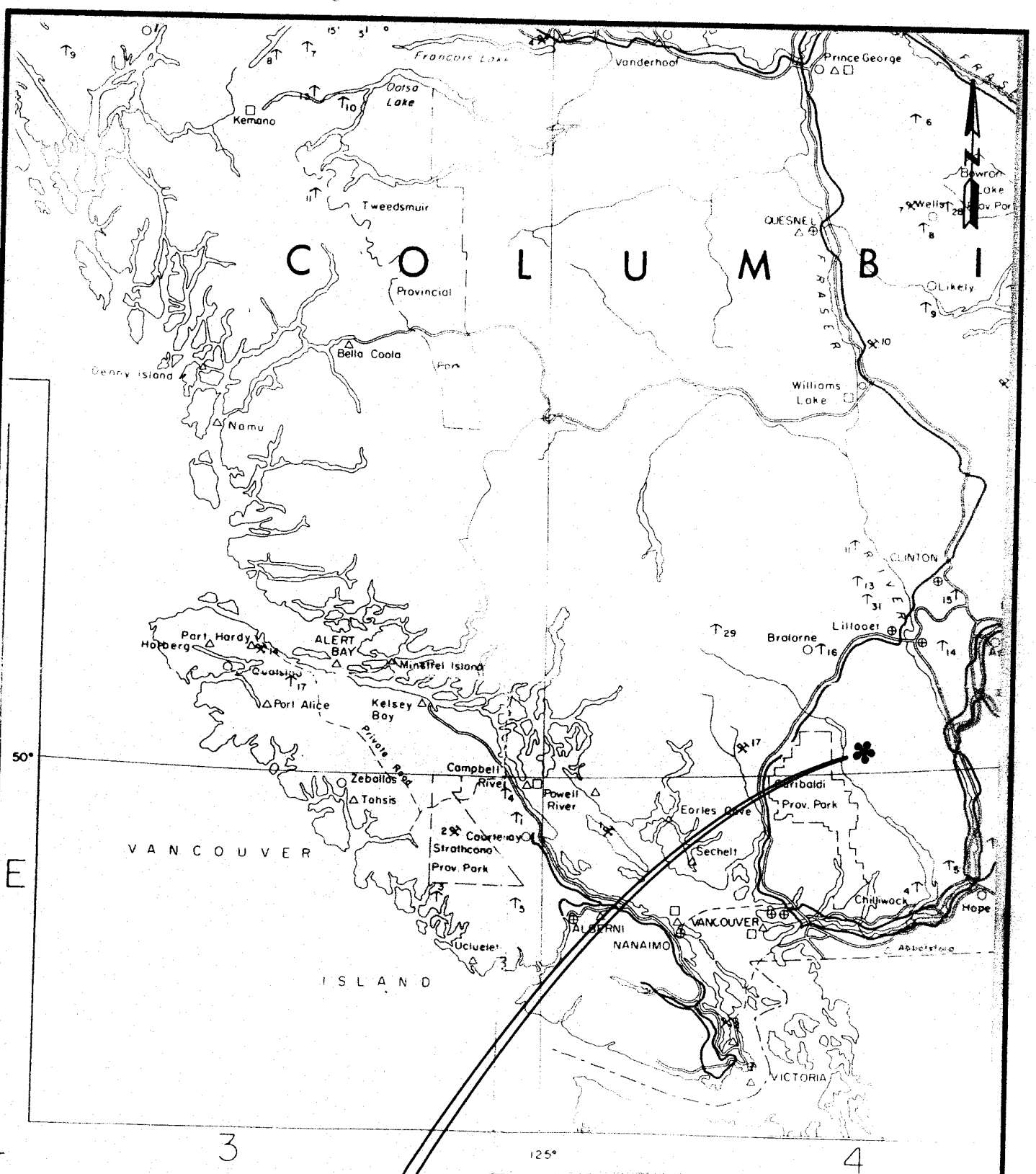
OWNER - OPERATOR

The Gowan 1 claim is 100% owned and operated by:

Noranda Exploration Company, Limited,
P.O. Box 2380,
Vancouver, B.C.
V6B 3T5

ECONOMIC POTENTIAL

The economic potential of this property has not been assessed due to the preliminary nature of the exploration. At present several arsenic and a few gold rock and soil geochemical anomalies exist on the property. Therefore the exploration potential of this property is considered good.



PROPERTY LOCATION

REVISED

LILLOOET PROJECT

GOWAN 1 CLAIM

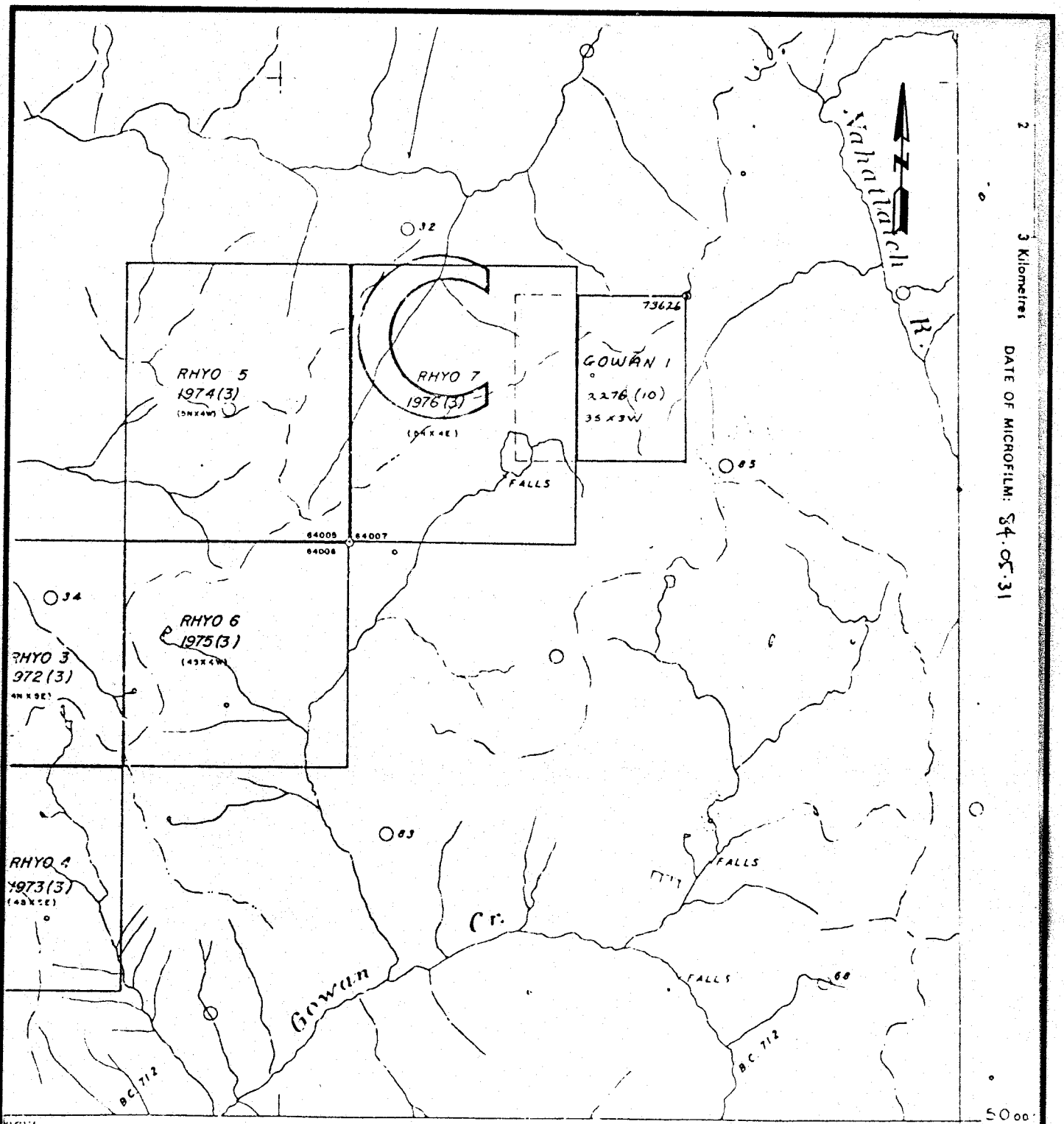
PROPERTY LOCATION

PROJ. No. 19
N.T.S. 92J/1W
DWG. No. 2

SURVEY BY: R.G.W. DATE: Dec. /84
DRAWN BY: SCALE: 1: 50,000

NORANDA EXPLORATION
OFFICE: Vancouver

VANCAL 11927



TITLES REFERENCE MAP 92J/1W

REVISED	LILLOOET PROJECT
	GOWAN 1 CLAIM
	CLAIMS LOCATION
PROJ. No. 19	SURVEY BY: R.G.W. DATE: Dec. /84
N.T.S. B.C.	DRAWN BY: SCALE: 1:50,000
DWG. No. 1	NORANDA EXPLORATION
	OFFICE: Vancouver

VANCAL 11927

SUMMARY OF WORK DONE

GEOLOGY

Geological mapping at a scale of 1:2,500 was completed along traverse lines for a total area of .5 square kilometers.

GEOCHEMISTRY

A geochemical survey which consisted of silt, soil and rock chip sampling was completed on a portion of the Gowan 1 claim. The total number of samples are listed below:

Silts: 1 sample analyzed for Cu,Pb,Zn,Ag,Mo,Au,As

Soils: 39 samples analyzed for Cu,Pb,Zn,Ag,Mo,Au,As

Rocks: 16 samples analyzed for Cu,Pb,Zn,Ag,Mo,Au,As

CLAIMS WORKED

All work was performed within or beside the boundaries of the Gowan 1 claim.

DETAILED TECHNICAL DATA AND INTERPRETATION

GEOLOGY

Purpose

Geological mapping at a scale of 1:2,500 was completed in conjunction with sampling to define the geological boundaries of the geological units found on the Gowan 1 claim.

Regional Geology

The Pemberton (east half) Map Area was mapped by J.A. Roddick and W.W. Hutchinson of the G.S.C. in 1970 during a brief (one month) stop in this area. A compilation of their work and others (1916-1953) formed the basis of Paper 73-17 including Map 13-1973. Additional more recent studies by G.J. Woodsworth, J.A. Jeletzky, H.W. Tupper and N.L. Green were compiled by G.J. Woodsworth (1977) to form Open File 482 (1977) (N.T.S. 92J) Geology - Pemberton Map Area. A section of this map in the vicinity of the Gowan 1 is shown on Figure 3.

The east side of Lillooet Lake is underlain mainly by plutonic rocks of the Coast Range Intrusive Complex. These rocks range from diorite to quartz diorite in composition and have largely not been dated.

A small body of Paleozoic (?) banded amphibolitic gneiss lies to the south east of the property and a body of Miocene Miarolitic granodiorite and

STRATIFIED AND HIGH-LEVEL PLUTONIC ROCKS

PLEISTOCENE AND RECENT

22 — Unconsolidated alluvial, fluvial, and glacial deposits

PLEISTOCENE TO RECENT

21 — GARIBALDI GROUP: Basalt to rhyodacite flows and pyroclastics, minor intercalated sediments; 21a, olivine basalt flows of Pleistocene age

MIOCENE OR YOUNGER(?)

20 — Rhyolite and dacite breccia, tuff, and flows, minor sediments; 20a, andesitic volcanic breccia and conglomerate, lesser basalt; 20b, REXMOUNT PORPHYRY: dacitic porphyry (intrusive equivalent of 20?)

MIOCENE

19 — Quartz monzonite, minor granite; 19a, miarolitic granodiorite and syenodiorite

18 — Basalt flows; minor dacite

MIOCENE(?) AND OLDER(?)

17 — Andesitic to basaltic flows and breccia, minor dacite; 17a, basalt flows with interbedded conglomerate and siltstone

EOCENE(?)

16 — Shale, siltstone, sandstone, arkose, and conglomerate

15 — Miarolitic granite; 15a, dacitic volcanics and porphyries (possibly equivalent to 19a?)

MID TO UPPER CRETACEOUS

14 — KINGSVALE GROUP: 14a, arkose, greywacke, shale, minor conglomerate; 14b, andesitic flows and pyroclastics

LOWER CRETACEOUS

13 — TAYLOR CREEK GROUP: Chert-pebble conglomerate, black limy shale, green tuff, volcanic breccia, andesite and basalt

12 — JACKASS MOUNTAIN GROUP: 12a, interbedded carbonaceous argillite and greywacke, minor conglomerate and coal; 12b, greywacke, pebble conglomerate, argillite and gritty sandstone; 12c, argillite, conglomerate, and greywacke; 12d, massive greenish greywacke, argillite, gritty sandstone and pebble conglomerate

11 — GAMBIER GROUP: Andesitic to dacitic tuff, breccia, agglomerate; andesite, argillite, conglomerate, lesser marble, greenstone, and phyllite

10 — FIRE LAKE GROUP: Greenstone, chlorite schist, conglomerate, andesite, greywacke

UPPER JURASSIC AND LOWER CRETACEOUS

9 — RELAY MOUNTAIN GROUP: Greywacke, siltstone, argillite

UPPER TRIASSIC TO MIDDLE JURASSIC

8 — TYAUGHTON GROUP: Shale, siltstone, greywacke

UPPER TRIASSIC

7 — CADWALLADER GROUP (undivided; includes Hurley, Pioneer and Noel strata, may include older and younger rocks): andesitic breccia, tuff, and flows, greenstone; lesser slate, argillite, phyllite, conglomerate, limestone, rhyolitic breccia and flows

6 — HURLEY FORMATION: Thin-bedded argillite, phyllite, limestone, tuff, conglomerate, andesite, minor chert

5 — PIONEER FORMATION: Greenstone, andesitic to basaltic flows and pyroclastics; 5a, BRALORNE INTRUSIONS (in part): augite diorite, gabbro, greenstone (intrusive and dioritized equivalents of 5)

4 — NOEL FORMATION: Thin-bedded argillite, chert, conglomerate and greenstone

TRIASSIC AND JURASSIC AND OLDER(?)

ub — Ultramafic rocks: Serpentine, harzburgite, perioditite, diorite

3 — BRIDGE RIVER (FERGUSSON) GROUP: Greenstone, basalt, chert, argillite, phyllite; minor limestone, serpentine, and serpentinized perdotite; 3a, more metamorphosed equivalents of 3, mainly biotite schist

PALEOZOIC(?)

2 — Metasedimentary rocks, mainly micaceous quartzite, biotite-hornblende schist; minor garnet and staurolite schist; 2a, hornblende-biotite-garnet schist, amphibolite, quartz diorite, garnet-cordierite gneiss, and migmatite

1 — Granitoid gneiss, migmatite complexes, amphibolite, quartz diorite, and schist

PLUTONIC ROCKS
(mostly of unknown age)

qm — Quartz monzonite

gd — Granodiorite

qd — Quartz diorite

di — Diorite; dioritic complexes containing diorite, quartz diorite, amphibolite, greenstone, and dyke swarms

gb — Gabbro

MAP SYMBOLS

Geological boundary (defined, approximate, assumed)

Bedding (horizontal, inclined, vertical)

Foliation, schistosity (inclined, vertical, dip unknown, absent)

Fault (defined, approximate, assumed)

Fossil locality

Radiometric ages

● Age in millions of years
System: k=potassium-argon, u=uranium-lead
Minerals: b=biotite, h=hornblende, m=muscovite, w=whole rock, z=zircon
Laboratory: (u)=U.B.C. All others are G.S.C.

◆ Whole-rock K-Ar age determination (age given in years) for Garibaldi Group rocks. Data from N.L. Green (Ph.D. thesis in preparation) and Anderson (1975)

GEOLOGY BY

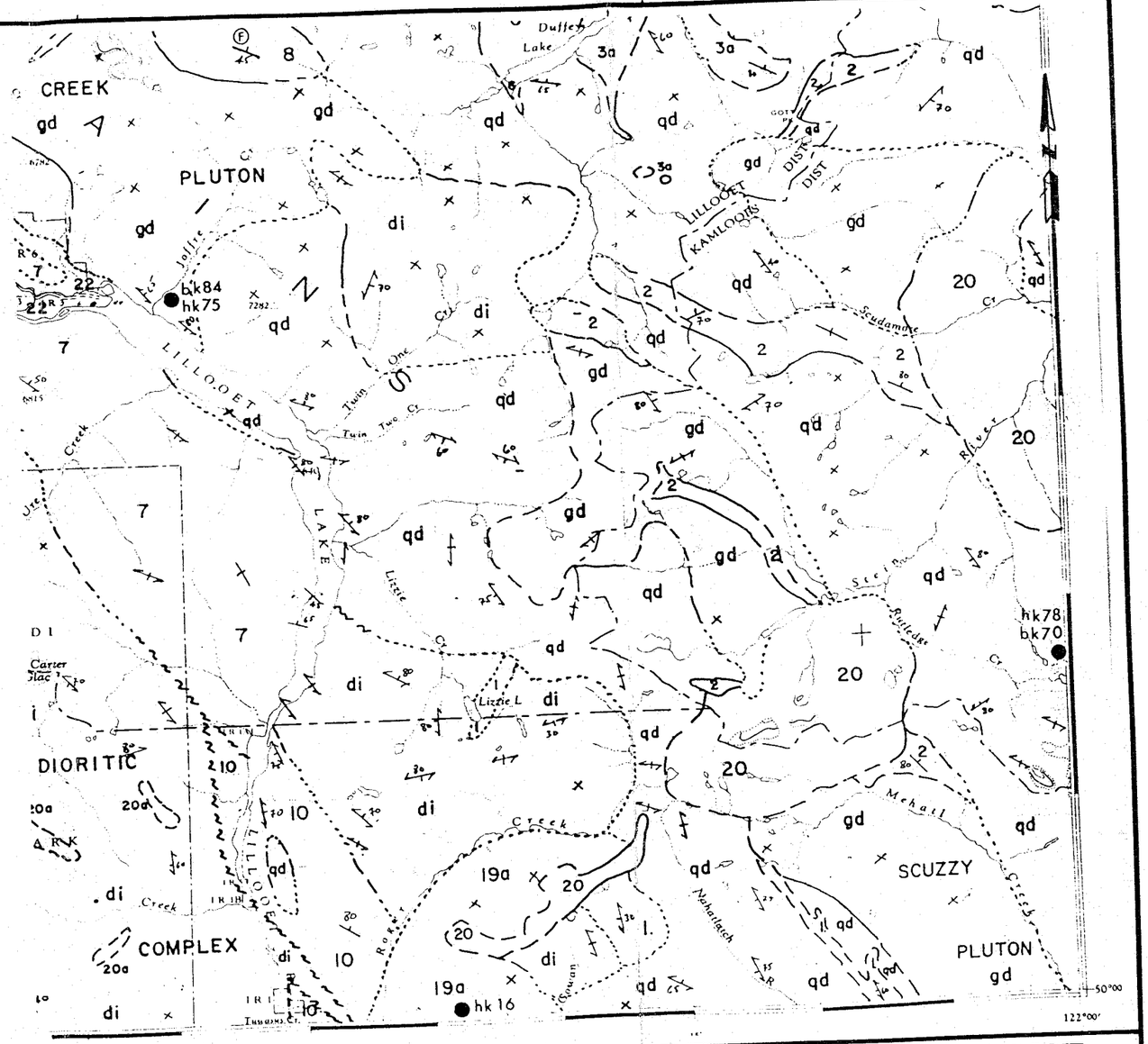
J.A. Roddick and G.J. Woodsworth (1970, 1974), W.W. Hutchison (1970), and from earlier reports (see references)

ADDITIONAL DATA FROM

J.A. Jeletzky (Camelsfoot Range), H.W. Tipper (Gun Creek), and N.L. Green (Cheakamus River area).

COMPILED BY

G.J. Woodsworth (1977)



Scale 1:250,000

Miles 4 0 4 8 12 Miles

Kilometres 6 0 6 12 18 Kilometres

REVISED	LILLOOET PROJECT
	GOWAN 1 CLAIM
	REGIONAL GEOLOGY
PROJ. No. 19	SURVEY BY: R.G.W. DATE: Dec./84
N.T.S. 92J/1	DRAWN BY: SCALE: 1:250,000
DWG. No. 3	NORANDA EXPLORATION
	OFFICE: Vancouver

P.J.A.

O.F. 482

VANCAL 11925

syenodiorite occurs to the north. The property is regionally mapped to be underlain by a northeast-southwest trending unit of rhyolite and dacite breccia, tuff, and flows, and minor sediments of Miocene or younger (?) age.

No regional faults have been mapped in this area and no mineralogical showings have been noted by G.S.C. personnel.

Local Geology

The Gowan 1 property is more geologically complex than regional mapping has suggested. It is underlain by 4 rock units: 1 granitic intrusive; 4) intermixed volcanic breccia, metavolcanics and metasediments; 3) intermediate volcanic breccia lapilli tuff. Appendix 3 is a thin section petrographic report completed by Vancouver Petrographics Ltd. on representative rocks from the Gowan 1 property.

Granitic Intrusive (Unit 1)

The central portion of the examined ground is underlain by a grey to dark grey, medium grained, equigranular, granitic rock of quartz monzonite to granodiorite composition. It is generally massive, non-altered, non-fractured and non-mineralized.

A NE-SW striking dike of intrusive rock of similar composition to that described above intrudes and forms a contact between a volcanic breccia and a lapilli tuff.

(Lapilli) Tuff (Unit 2)

The ground north of the intrusive dike is underlain by a (lapilli) tuff of intermediate to mafic composition. It weathers purple-grey to green, with a soft fine grained, purple, matrix. Tuff fragments are angular to subrounded and consists of feldspar, chlorite altered mafics and groundmass fragments.

The unit is generally non mineralized, and while clay-chlorite alteration is present, it not intense. The ground could not be mapped further to the north due to time constraints and 50 metre high cliffs.

Volcanic Breccia (Agglomerate) (Unit 3)

A small area immediately south of the intrusive dike is underlain by a volcanic breccia (agglomerate) of intermediate overall composition. It is grey-green to purple, and consists of angular to subrounded clasts from 1-60 cm diameter, average 5-10 cm. Clast compositions are andesitic to rhyolitic ash flows and tuffs, lapilli tuffs, crystal tuffs and quartz diorite intrusives. Thin section studies also identified trachyte and latite fragments and plagioclase crystals.

The unit is weakly mineralized with pyrite and hematite which occur as fine grained disseminations generally less than 1%. The rocks are pervasively epidote (chlorite) altered in both fragments and matrix.

Metavolcanics (+ Metasediments ?) (Unit 4)

This group of rocks lies north and south of, and was presumably intruded by, the granitic intrusive. The rocks are rusty weathering, fine grained grey, finely layered and weakly foliated. In several zones the rocks are gneissose and appear to have been sediments.

The overall composition of the volcanics is intermediate and by thin section study is mainly composed of plagioclase and diopside with minor quartz and potassium feldspar. Epidote and chlorite alteration was noted in thin section while silicification was noted in other hand samples.

The unit is very gossanous, and is easily recognized against the grey background rocks. Pyrite, arsenopyrite, and hematite ? are the main opaque minerals seen in this unit, and occur as fine grained disseminations which are mostly altered to limonite.

Included in this unit is a highly silicified dacite porphyry ? which occurs as dike-like forms on the western edge of the map. The rocks are so altered by quartz that only a guess of the original composition can be made. This rock is also rusty, but is more orangy than red-brown in alteration colour. A more detailed description of a thin section of this rock is given in Appendix 3 as sample 24248.

Pendants of the metavolcanic are seen within the intrusive dike to the north of the volcanic breccia. These rocks are also rusty weathering and appear to be thermally altered by the dike rock.

Interpretation

The Gowan property consists of 2 packets of volcanics which have been disrupted by an intrusive stock and its related dikes. One group of volcanics are lapilli tuffs and volcanic breccias of intermediate composition while the other is a sequence of intermediate metavolcanics (and metasediments ?) that are weakly foliated to slightly gneissose.

The intrusive has a composition of a quartz-monzonite to quartz diorite and its emplacement is probably the latest lithologic event on the property.

Mineralization is restricted to the metavolcanic unit being pyrite, arsenopyrite and hematite ? the oxidation of which has formed a distinctive gossan against a grey background of country rock.

GEOCHEMISTRY

Purpose

Reconnaissance rock and soil geochemical samples were collected from the Gowan 1 claim to determine if the gossanous rocks carried anomalous values of economic mineralization. In addition a minor grid was established for sampling purposes over a small gossan where previous sampling had returned anomalous values in Mo. Ag, As and Au.

Techniques

Both soil and rock samples were collected during the Gowan 1 geochemical survey. B horizon soil samples were collected from 25 cm deep mattock dug holes and placed in brown Kraft bags. These soil bags were partly air dried prior to being packed for shipment. Rock samples were either collected as whole grab samples or as rock chip samples across a measured width and placed in 6 mil poly bags for shipment. A silt sample was collected from the active zone of the stream and placed in a brown Kraft bag. Silt samples once collected are treated as per soil samples.

A total of 1 silt, 39 soil and 16 rock samples were collected on the Gown 1 claim and sent for analysis to Noranda's geochemical laboratory at 1050 Davie Street, in Vancouver, B.C. Appendix 1 is a flow sheet of the analytical techniques of analysis used by the Noranda laboratory. Appendix II is a list of all rock samples collected together with their rock types and geochemical results.

Results - Gold

Background values for soil samples was 10 ppb, the geochemical detection limit. A total of 1 anomalous (380 ppb) and 8 mildly anomalous (20-30 ppb) values were received from soil sampling. These values occur on the north side of the 2 western most lines and suggests a discrete source for the anomaly. The anomalous zone is downslope from rocks with intense developed gossan, a possible source area for the gold.

Rock samples taken from the gossan unfortunately had only background values in Au. The source rocks for the anomalous soils therefore have not been determined by present sampling. Downslope 200 m from the soil zone two rock samples collected from a slightly rusty quartz altered porphyritic (quartz) dacite returned anomalous values of 630 and 440 ppb Au. This area deserves follow-up investigation by detailed mapping and sampling.

Soil and rock sampling elsewhere on the property returned low Au results not worthy of follow-up.

Results - Silver

Silver background soil values are 0.2 ppm with mildly anomalous values being 1.2 - 1.4 ppm and an anomalous value of 2.6 ppm. The anomalous silver soils are generally coincident with the anomalous gold zone but the rocks above this zone partially explain the results. Rock geochemical results of 1.2 - 1.4 g AG indicate that the source is likely within the uphill gossan.

More importantly however, is that the two gold anomalous rock samples are also anomalous in silver. The samples with values of 630 and 440 ppb Au have values of 18.0 and 12.0 g Ag respectively. It is noteworthy that these samples are anomalous in As and Mo as well. Results for the same two samples are 4000 and 3600 ppm As and 20 and 90 ppm Mo respectively.

Results - Copper, Zinc, Lead, Molybdenum and Arsenic

Soil geochemical results for Cu, Zn, Pb, Mo, and As are generally low and sporadic. Anomalous values for the 5 do however, tend to cluster and are coincidental with the anomalous Au-Ag results.

Copper is the least anomalous element having a background of 40 ppm and only 1 anomalous value of 150 ppm. Lead and zinc each have 3 anomalies; lead with values of 220, 68 and 56 ppm against a background of 10 ppm Pb, and zinc with values of 670, 330 and 200 ppm against a background of 100 ppm Zn. Molybdenum has 8 anomalies from 10 to 38 ppm against a background of 8 ppm Mo and Arsenic is the most scattered element with 14 anomalies between 200 and 380 ppm against a sporadic background between <2 and 190 ppm As.

Rock sample results for these 5 elements are not anomalous except for Mo and As mentioned in Results - Silver above.

Interpretation

A zone of anomalous soils exists on the north-western part of the mini grid which are anomalous in Au, Ag, As, and Mo. The anomalies form a fan shaped zone in a downslope direction indicating a potential discrete source for the anomalies. Rock sampling in this area did not identify that source.

Two rock samples from different outcrops downslope from this zone are anomalous in Au and Ag with values up to .6 g Au and 18 g Ag. Further sampling of this zone is required to determine its full extent.

Other sampled areas did not return anomalous values and are considered to be of limited exploration potential.

CONCLUSIONS

- The Gowan 1, a 3 x 3 (9 unit) claim is situated near the headwaters of Gowan and Rogers Creeks and the Nehatlatch River.

- The property is underlain by 2 groups of volcanics, an extrusive intermediate tuff-breccia and a weakly foliated intermediate meta-volcanic. Both volcanics have been intruded by medium grained, equigranular granitics of quartz-monzonite to granodiorite compositions.

- Mineralization, in the form of pyrite, arsenopyrite, and ? hematite occurs principally within the metavolcanics and causes a distinctive gossan easily recognized against the background rocks.

- Soil samples taken in the vicinity of the gossan outlined a fan shaped anomaly with an apparent source in the gossan.

- Rock sampling to date within the gossan has not located this source area.

- Other rock sampling in a slightly rusty, highly quartz altered porphyritic (quartz) diorite returned values to .6 g Au and 18 g Ag.

- Further detailed mapping and sampling is required to identify and delineate the extent of the sources of these anomalies.

STATEMENT OF COSTS

NORANDA EXPLORATION COMPANY, LIMITED

STATEMENT OF COST

DATE OCTOBER 1984

PROJECT - GOWAN CLAIMS
TYPE OF REPORT Geochem

a) **Wages:**

No. of Days -	4 mandays	
Rate per Day -	$127.70	
Dates From -	October 1984	
Total Wages	4 X $127.70	$ 510.78

b) **Food and Accommodation:**

No. of Days -	4	
Rate per Day -	$34.75	
Dates From -	October 1984	
Total Cost -	4 X $34.75	$ 139.00

c) **Transportation:**

No. of Days -	4	
Rate per Day -	$176.75	
Dates From -	October 1984	
Total cost	4 X $176.75	$ 707.00

d) **Analysis** $ 787.55

e) **Cost of Preparation of Report**

Author	$ 127.70
Drafting	$ 127.70
Typing	$ 127.70

f) Other: Field Supplies $ 100.00

Total Cost $2,627.43

NORANDA EXPLORATION COMPANY, LIMITED

DETAILS OF ANALYSES COSTS

Project: GOWAN CLAIMS

Element	No. of Determinations	Cost per Determination	Total
Cu	56	1.60	89.60
Pb	56	.60	33.60
Zn	56	.60	33.60
Mo	56	.60	33.60
Ag	56	.60	33.60
As	56	1.50	84.00
Au	56	3.50	196.00
5 Thin Sections		56.71	283.55
TOTAL COSTS			$787.55

UNIT COSTS

Unit Costs for Geochem

No. of Days -	4	
No. of Units -	56 Samples	
Unit Costs -	46.92 / Sample	
Total Cost -	56 X 46.92	$2,627.43
Total Cost		$2,627.43

AUTHORS QUALIFICATIONS

I Rob. G. Wilson of the City of Vancouver, Province of British Columbia, do hereby certify that:

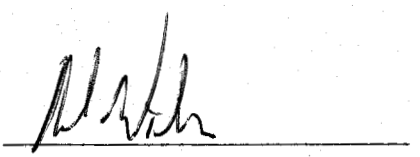
- I am a geologist residing at 3328 West 15th. Avenue, Vancouver B.C.

- I graduated from the University of British Columbia in 1976 with a BSc degree in Geology.

- I have worked in mineral exploration since 1973 and have practised my profession as a geologist since 1976.

- I am presently a Project Geologist with Noranda Exploration Company, Limited.

- I am a member of the Geological Association of Canada (Cordillera Division).



Rob Wilson

APPENDIX I

ANALYTICAL METHOD DESCRIPTIONS FOR

GEOCHEMICAL ASSESSMENT REPORTS

ANALYTICAL METHOD DESCRIPTIONS FOR GEOCHEMICAL ASSESSMENT REPORTS

The methods listed are presently applied to analyse geological materials by the Noranda Geochemical Laboratory at Vancouver.

Preparation of Samples

Sediments and soils are dried at approximately 80°C and sieved with a 80 mesh nylon screen. The -80 mesh (0.18 mm) fraction is used for geochemical analysis.

Rock specimens are pulverized to -120 mesh (0.13 mm). Heavy mineral fractions (panned samples * from constant volume), are analysed in its entirety, when it is to be determined for gold without further sample preparation.

Analysis of Samples

Decomposition of a 0.200 g sample is done with concentrated perchloric and nitric acid (3:1), digested for 5 hours at reflux temperature. Pulps of rock or core are weighed out at 0.4 g and chemical quantities are doubled relative to the above noted method for digestion.

The concentrations of Ag, Cd, Co, Cu, Fe, Mn, Mo, Ni, Pb, V and Zn can be determined directly from the digest (dissolution) with a conventional atomic absorption spectrometric procedure. A Varian-Techtron, Model AA-5 or Model AA-475 is used to measure elemental concentrations.

Elements Requiring Specific Decomposition Method:

Antimony - Sb: 0.2 g sample is attacked with 3.3 ml of 6% tartaric acid, 1.5 ml conc. hydrochloric acid and 0.5 ml of conc. nitric acid, then heated in a water bath for 3 hours at 95°C. Sb is determined directly from the dissolution with an AA-475 equipped with electrodeless discharge lamp (EDL).

Arsenic - As: 0.2 - 0.3 g sample is digested with 1.5 ml of perchloric 70% and 0.5 ml of conc. nitric acid. A Varian AA-475 equipped with an As-EDL is used to measure arsenic content in the digest.

Barium - Ba: 0.1 g sample digested overnight with conc. perchloric, nitric and hydrofluoric acid; Potassium chloride added to prevent ionization. Atomic absorption using a nitrous oxide-acetylene flame determines Ba from the aqueous solution.

Bismuth - Bi: 0.2 g - 0.3 g is digested with 2.0 ml of perchloric 70% and 1.0 ml of conc. nitric acid. Bismuth is determined directly from the digest with an AA-475 complete with EDL.

Gold - Au: 10.0 g sample is digested with aqua regia(1 part nitric and 3 parts hydrochloric acid). Gold is extracted with MIBK from the aqueous solution. AA is used to determine Au.

Magnesium - Mg: 0.05 - 0.10 g sample is digested with 4 ml perchloric/nitric acid (3:1). An aliquot is taken to reduce the concentration to within the

range of atomic absorption. The AA-475 with the use of a nitrous oxide flame determines Mg from the aqueous solution.

Tungsten - W: 1.0 g sample sintered with a carbonate flux and thereafter leached with water. The leachate is treated with potassium thiocyanate. The yellow tungsten thiocyanate is extracted into tri-n-butyl phosphate. This permits colourimetric comparison with standards to measure tungsten concentration.

Uranium - U: An aliquot from a perchloric-nitric decomposition, usually from the multi-element digestion, is buffered. The aqueous solution is exposed to laser light, and the luminescence of the uranyl ion is quantitatively measured on the UA-3 (Scintrex).

* N.B. If additional elemental determinations are required on panned samples, state this at the time of sample submission. Requests after gold determinations would be futile.

LOWEST VALUES REPORTED IN PPM

Ag - 0.2	Mn - 20	Zn - 1	Au - 0.01
Cd - 0.2	Mo - 1	Sb - 1	W - 2
Co - 1	Ni - 1	As - 1	U - 0.1
Cu - 1	Pb - 1	Ba - 10	
Fe - 100	V - 10	Bi - 1	

EJvL/ie
March 14, 1984

APPENDIX II

ROCK DESCRIPTIONS AND RESULTS

NORANDA EXPLORATION COMPANY, LIMITED

N.T.S. 92J/1

PROPERTY GOWAN 1

DATE OCTOBER 5, 1984

SAMPLE REPORT

SAMPLE NO.	LOCATION & DESCRIPTION	TYPE	WIDTH	ASSAYS							SAMPLE BY
				Cu ppm	Zn ppm	Pb ppm	Ag ppm	Mo ppm	As ppm	Au ppb	
R12795	Metavolcanics	CHIP	30cm	88	58	2	1.4	2	240	10	IKH
R12796	Metasediments, some quartz vein material	CHIP	20cm	26	36	2	1.0	18	140	10	"
R12797	Quartz rich metasediment	CHIP	20cm	10	58	2	0.8	10	180	10	"
R12798	Andesitic? Lapilli Tuff	CHIP	1.5cm	44	47	2	0.2	L2	L4	10	"
R12799	Metasediments	CHIP	3m	26	22	2	0.2	2	L4	10	"
R12800	Metavolcanic	GRAB	10cm	30	18	2	0.2	26	L4	10	"
R57346	Siliceous metavocanic	GRAB		50	36	2	0.2	2	L4	10	"
R57347	Altered metasediments	CHIP	2m	42	70	2	0.2	L2	L4	10	"
R64859	Silicified Porphyry dike	RANDOM GRAB	1m	6	6	2	0.2	L2	L4	10	RGW
R24243	Altered intrusive dike and metavolcanic pendant	RANDOM GRAB	1m	12	20	2	0.2	6	190	30	"
R24244	Altered intrusive dike and metavolcanic pendant	RANDOM GRAB	1m	4	4	4	0.2	L2	900	80	"
R24245	Altered intrusive dike and metavolcanic pendant	RANDOM GRAB	1m	12	24	2	0.4	L2	150	20	"
R24246	Intermediate Volcanic breccia	GRAB		16	72	2	0.4	L2	L4	10	"
R24248	Quartz altered porphyrtic (quartz) dacite	RANDOM GRAB	2m	6	6	12	18.	20	4000	630	"
R24249	Quartz altered porphyrtic (quartz) dacite	CHIP	1m	12	10	28	12.	90	3600	440	"
R24250	Intrusive dike?	RANDOM CHIP	2m	12	12	2	0.2	L2	24	10	"

APPENDIX III

VANCOUVER PETROGRAPHICS LTD.

THIN SECTION PETROGRAPHIC REPORT

Vancouver Petrographics Ltd.

JAMES VINNELL, Manager
JOHN G. PAYNE, Ph. D. Geologist

P.O. BOX 39
8887 NASH STREET
FORT LANGLEY, B.C.
V0X 1J0

PHONE (604) 888-1323

Invoice 4842

Report for: Rob Wilson,
Noranda Exploration Co. Ltd.,
P.O. Box 2380,
Vancouver, B.C.,
V6B 3T5.

October 17, 1984

Samples: 12797, 12798, 12800, 24242, 24248.

Summary:

12798 is a volcanic breccia consisting of latite, trachyte, rhyolite and andesite fragments, along with plagioclase crystals, within a fine cryptocrystalline matrix. The matrix and the plagioclase crystals have been altered with epidote. Chlorite occurs in patches in the matrix and volcanic fragments.

24242 is a medium grained granite consisting of a hypidiomorphic-granular intergrowth of microcline, plagioclase and quartz.

24248 consists almost entirely of quartz which has replaced a porphyritic (quartz) dacite.

12797 and 12800 are weakly foliated intermediate metavolcanic rocks with sulphides intergrown with plagioclase (which is the dominant mineral in both samples). Biotite is the mafic mineral in 12797; diopside occurs in 12800. Patches of K-spar/epidote alteration occur in this rock and may be associated with the mineralization.

A. L. Littlejohn

A. L. Littlejohn, M.Sc.

24242: GRANITE.

This sample is a medium grained equigranular intusive rock consisting of a hypidiomorphic-granular intergrowth of feldspars and quartz. It is a leucocratic granite with only minor biotite. It is fairly fresh and essentially unaltered apart from minor limonite near a thin fracture and chloritisation of the biotite. Minerals are:

microcline	45%	
plagioclase	25	
quartz	30	
biotite	minor	(altered)
hematite	minor	(+ limonite)
sericite	trace	

Finely perthitic microcline forms rounded to irregularly shaped grains 0.5 to 2.0mm in size, averaging about 1.0mm, which tend to partly enclose somewhat smaller subhedral plagioclase grains and shapeless to subrounded quartz grains. Between these grains there are a few small patches and narrow zones consisting of an intergrowth of quartz and feldspars with grain size about 0.3mm. A few small quartz and plagioclase inclusions occur in the microcline. Occasionally there are small patches of myrmekite (vermicular intergrowth of quartz and plagioclase) at the edges of the large microcline grains. The microcline and plagioclase are slightly cloudy due to incipient sericitisation and rarely there are ragged sericite flakes up to 0.05mm in size occuring in small clusters within the microcline.

Biotite forms ragged flakes 0.1 to 0.5mm in length which occur between the quartz and feldspars. They have been bleached and some have been altered to fine chlorite. Hematite has developed within the biotite. There are also small cubic hematite grains within the feldspars and these ahve altered to limonite. Small ragged patches of limonite occur in the microcline near a thin fracture.

24248: SILICIFIED ROCK (DACITE PORPHYRY ??)

This sample consists mainly of a mass of vuggy quartz which has replaced a porphyritic (quartz) dacite. The identity of the original rock is uncertain and is based on the presence of a few quartz grains, foreign to the typical quartz, which are associated with patches of sericite and kaolinite and with minor fine plagioclase. Minerals are:

quartz	96%
quartz "phenocrysts"	1
sericite + kaolinite	3 (sericite dominant)
plagioclase	trace
Fe-Ti oxide	trace

The bulk of the sample consists of a mass of shapeless, sometimes slightly elongated, quartz grains 0.03 to 0.3mm in size. Size distribution is patchy and there are sinuous zones of more or less equigranular quartz. The finer material tends to occur in the core of coarser patches. The finer grained quartz is often intergrown with small amounts of extremely fine sericite. There are a few small patches of sericite mixed with kaolinite in the core of some patches. Small vugs are lined with idiomorphic quartz grains up to 0.4mm in size.

Most of the sericite and kaolinite occur in one part of the sample where variation in quartz grain size occur in narrow sinuous zones and small patches; vugs are more common. The clays tend to be concentrated in thin zones between areas of different grain size. Patches of sericite and kaolinite up to 2mm in size occur in places. These are speckled with extremely fine Fe-Ti oxides and are sometimes stained with limonite. Some sericite is concentrated in tabular patches up to 0.5mm in size (after plagioclase laths ?). Within this part of the rock there are small patches consisting of an aggregate of shapeless plagioclase grains about 0.1mm in size. Quartz has permeated this material and a network of fine sericite (derived from the plagioclase ?) occurs between the quartz grains. There are several squat subidiomorphic quartz grains about 1mm in size occuring within the plagioclase patches and within the quartz patches. Veinlets of the fine quartz cut through some of these grains which appear to be remnant phenocrysts.

12798: ALTERED (EPIDOTE-CHLORITE) LATITE BRECCIA.

This sample is a volcanic breccia consisting of plagioclase crystals and volcanic fragments (rhyolite, trachyte, latite, andesite) within a fine grained cryptocrystalline matrix. Pervasive epidote (and chlorite) alteration has occured in the matrix and the fragments. Composition is:

volcanic fragments	35%
plagioclase fragments	12
cryptocrystalline matrix	25
epidote	20
chlorite	8
opaque (hematite)	minor
quartz fragments	minor
Fe-Ti oxide	minor

Volcanic fragments are subrounded and range in size from 0.4 to 4.0mm, averaging about 2mm. (Larger fragments in hand specimen). A variety of types are present. The commonest is latite consisting of a mass of fine lath-like feathery K-spar grains up to 0.1mm in length with euhedral plagioclase phenocrysts within this groundmass. Plagioclase phenocrysts are up to 0.5mm in size, although most are smaller. The groundmass has a flow texture. Trachytes are similar but lack the phenocrysts. Most of these fragments are small and are probabaly pieces of the latite grooundmass. There are a few rhyolite fragments consisting of a mass of extremely fine K-spar intergrown with quartz. Andesites make up about a third of the fragments and consist of an aggregate of euhedral plagioclase laths up to 0.5mm in size crowded within a fine grained plagioclase matrix. All the volcanic fragments have been incipiently altered by extremely fine chlorite between the feldspars. Extremely fine Fe-Ti oxides are associated with the chlorite. Chlorite also occurs in rounded to shapeless patches up to 0.5mm in size where it forms a mass of fine flakes less than 0.05mm in size.

Plagioclase fragments appear to be derived from the porphrytic latites and andesites. They forms euhedral to subhedral grains from 0.1 to 1.0mm in size, averaging abut 0.7mm, occuring throughout the matrix. Most have been quite highly altered by epidote which forms subrounded to subprismatic grains up to 0.3mm in size. A few plagioclase fragments have been completely altered. Fine epidote sometimes occurs in the plagioclase in the volcanic fragments (mainly andesites) but rarely in the groundmass. There is a large rounded patch of epidote about 1mm in size which may have been a fragment. Quartz fragments are also present and are rounded to subangular ranging in size from 0.1 to 1.0mm, averaging about 0.3mm. They are unaltered.

The matrix of the rock consists of an extremely fine cryptocrystalline material which has altered to extremely fine epidote in a diffuse interconnected patchwork. The fine grains often coalesce into rounded grains up to 0.1mm in size scattered within the finer material. Chlorite forms very fine ragged flakes occuring in rounded patches up to 0.5mm in size. Epidote and chlorite are rarely intergrown. Extremely fine Fe-Ti oxides are disseminated throughout the matrix. Subcubic opaque grains (probabaly hematite) up to 0.1mm in size are scattered about the matrix and occasionally occur in fragments.

12800: INTERMEDIATE METAVOLCANIC.

This sample is a medium grained rock consisting mainly of an intergrowth of plagioclase and diopside. There is a weak foliation due to concentration of the diopside in thin indistinct layers. Opaques (Fe-sulphide ?) are intergrown with the plagioclase and in places is replacing it. The opaques are associated with K-spar and epidote alteration. Limonite stain occurs throughout the rock from the oxidation of the opaques. Minerals are:

plagioclase	47%
diopside	22
quartz	7
opaque	7
K-spar	8
epidote	4
sphene	4
tremolite	1
chlorite	minor

Plagioclase forms a mosaic of subhedral to subrounded grains 0.1 to 0.3mm in size. Subrounded quartz grains about 0.2mm in size are intergrown with the plagioclase in small elongated layer-like patches and it often occurs in aggregates of several grains.

Diopside forms rounded grains 0.05 to 0.2mm in size and a few subprismatic grains up to 0.4mm in size. They occur throughout the rock between the plagioclase grains and are often concentrated in thin indistinct layers. Very fine diopsides occur within the plagioclase grains in some layers. Sphene is often associated with the diopside and forms rounded grains less than 0.05mm in size occuring in elongated aggregates up to 0.5mm in size which tend to occur around diopside clusters along the foliation.

The opaque forms rounded grains about 0.1mm in size and ragged, somewhat elongated grains up to 0.5mm in size which occur intergrown with the plagioclase throughout the rock. Small aggregates and clusters often occur along the foliation. In a few layers the opaque forms a fine network around plagioclase grains and which is replacing the feldspar. The opaque aggregates and clusters are often contained within ragged patches where the plagioclase has been altered with fine K-spar mixed with epidote. These patches are elongated along the foliation and may be a few millimeters in size. The K-spar and epidote are usually very fine grained but in places grains up to 0.4mm in size are present. Epidote sometimes forms a thin rim around the opaques. Alteration has also resulted in the development of tremolite and chlorite in one thin layer. The chlorite forms fine flakes occuring in rounded partly interconnected patches up to 0.3mm in size which are intergrown with the plagioclase. These are probabaly altered diopside. The tremolite forms thin ragged bladed grains up to 0.4mm in length which are intergrown with the chlorite and occur between and within the plagioclase grains.

5000
5500
6000
6500
7000
L.C.P.
GOWAN 1
3S×3W
N
R-24246
P-24247
R-24245
R-24244
R-24243
R-24248
R-24249
R-24250
P-57340 P-57341 P-57323 P-57322
P-57339 P-57342 P-57324 P-57321
P-57338 P-57343 P-57325 P-57320
P-57337 P-57344 P-57326 P-57319
P-57336 R-12795 P-57327 R-12797 P-57309 P-57318
P-57335 P-57328 P-57310 P-57317
R-12796 R-64859
P-57334 P-57329 P-57311 P-57316
P-57333 P-57330 P-57312 P-57315
P-57332 P-57331 P-57313 P-57314
1
2
3
4
S-57350
Lake
Gowan Ck.
Falls
80
P-57349
P-57348
R-57347
R-12799
85
R-12800
R-57346
P-57345
ICEFIELD

Legend

1 GRANITIC INTRUSIVE
Medium to fine grained, relatively unaltered, of quartz monzonite to granodiorite composition. Minor roof pendants of metavolcanic & metasediments. Also forms 1-2m. wide dikes in other units.

2 (LAPILLI) TUFF
Intermediate to mafic composition, grey-purple to green weathering, soft, purple matrix. Tuff fragments are angular feldspar & chlorite altered mafics.

3 VOLCANIC BRECCIA (AGGLOMERATE)
Overall composition is intermediate. Green to purple, soft, angular to subrounded fragments of volcanic breccia to agglomerate. Clasts 1cm. to 60cm., average 5 to 10cm. of ash flow, lapilli tuff, tuff, ash tuff, & intrusive.

4 GOSSANOUS INTERMEDIATE META VOLCANICS (+METASEDIMENTS?)
Rusty weathering, grey, finely layered to weakly foliated, in places slightly gneissose, often silicified, 1-5% sulphides (py+aspy). Minor intrusive dikes. Includes zone of porphyritic (quartz) dacite replaced almost entirely by quartz.

S-57350 SILT SAMPLE LOCATION
P-57314 SOIL SAMPLE LOCATION
R-12799 ROCK SAMPLE LOCATION
GEOLOGICAL CONTACT
OUTLINE OF GOSSANOUS ROCK
CLAIM BOUNDARY
85 STRIKE & DIP OF BEDDING

GEOLOGICAL BRANCH
ASSESSMENT REPORT
13,233

SCALE
1:2500
Metres 50 0 50 100 150 200 250 Metres

REVISED	LILLOOET PROJECT
	GOWAN CLAIM
	GEOLOGY & SAMPLE LOCATIONS
PROJ. No. 19	SURVEY BY: R.G.W. & I.K.H. DATE: Dec./84
N.T.S. 92J/1	DRAWN BY: DArthur SCALE: 1:2500
DWG. No. 4	NORANDA EXPLORATION OFFICE: Vancouver

5000
5500
6000
6500
7000

□ 10,<4
△ 10,18

□ 20,150
□ 80,900
□ 30,190

△ 30,360 △ 10,80 △ 10,380 △ 10,130
△ 30,260 △ 10,30 △ 10,18 △ 10,190
△ 10,150 △ 30,380 △ 10,14 △ 10,22
△ 20,280 △ 20,250 △ 10,130 △ 10,190
△ 380,300 △ 30,240 △ 10,84
△ 20,290 △ 20,280 △ 10,190 △ 10,62
△ 10,160 △ 10,48 △ 10,68 △ 10,66
△ 10,330 △ 10,130 △ 10,150 △ 10,200
△ 10,70 △ 10,86 △ 10,360 △ 10,34

□ 630,4000
□ 440,3600
□ 10,24
□ 10,<4
□ 10,180
□ 10,350
□ 10,240
□ 10,140

○ 10,4
△ 10,42
△ 10,12
□ 10,<4

Lake
Falls
Gowan Ck.

JCEFIELD

Legend

○ 10,4 Silt Sample Results; Au(ppb), As(ppm)

△ 10,34 Soil Sample Results; " "

□ 10,<4 Rock Sample Results; " "

GEOLOGICAL BRANCH
ASSESSMENT REPORT

13,233

SCALE
1:2500

Metres 50 0 50 100 150 200 250 Metres

REVISED	LILLOOET PROJECT
	GOWAN CLAIM
	GEOCHEMISTRY
	Au & As
PROJ. No. 19	SURVEY BY: R.G.W. & I.K.H. DATE: Dec./84
N.T.S. 92J/1	DRAWN BY: SCALE: 1:2500
DWG. No. 5	NORANDA EXPLORATION
	OFFICE: Vancouver

5000
5500
6000
6500
7000
N
2,0.4
4,0.2
2,0.2
12,18.0
28,12.0
2,0.2
8,0.6 2,0.4 10,0.4 2,0.4
4,0.4 8,0.4 10,0.4 10,0.4
2,0.2 12,1.0 12,0.2 2,0.2 6,0.4
6,0.6 20,0.6 4,0.8 4,0.2
68,2.6 220,1.4 2,0.8 8,1.2 2,0.4
56,1.4 2,1.4 10,0.6 4,0.4 2,0.8
6,1.2 2,1.0 4,0.4 2,0.2 2,0.2 2,0.4
2,0.6 2,0.4 16,0.4 2,0.8
2,0.6 2,0.6 2,0.4 2,0.2
2,0.2
Lake
Gowan Ck.
Falls
2,0.2
2,0.2
2,0.2
2,0.2
2,0.2
2,0.2
2,0.2
2,0.2
ICEFIELD

Legend

⊙ 2,0.2 Silt Sample Results; Pb (ppm), Ag(ppm)

△ 2,0.2 Soil Sample Results; " "

⊡ 2,0.2 Rock Sample Results; " "

GEOLOGICAL BRANCH
ASSESSMENT REPORT

13,233

SCALE
1:2500

Metres 50 0 50 100 150 200 250 Metres

REVISED	LILLOOET PROJECT
	GOWAN CLAIM
	GEOCHEMISTRY
	Pb & Ag
PROJ. No. 19	SURVEY BY: R.G.W. & I.K.H. DATE: Dec./84
N.T.S. 92 J/1	DRAWN BY: pattie SCALE: 1:2500
DWG. No. 6	NORANDA EXPLORATION
	OFFICE: Vancouver

5000
5500
6000
6500
7000

N

16,72,<2
24,48,<2
12,24,<2
4,4,<2
12,20,6
26,68,2 28,94,4 40,130,10 28,66,6
26,72,6 28,70,<2 32,68,2 38,110,8
18,46,<2 50,120,16 40,68,<2 44,74,<2 42,74,2
34,82,6 44,120,16 30,70,6 28,66,2
52,200,12 68,330,24 10,58,10 150,670,38 42,74,2
88,58,2
44,120,8 60,130,10 36,74,4 62,100,2
26,36,18 6,6,<2
56,76,6 32,38,8 40,68,<2 60,82,2
38,54,2 32,88,8 54,100,2 90,110,6
18,32,<2 34,60,6 26,74,14 62,86,8
6,6,20
12,10,90
12,12,<2
38,74,<2
30,70,2
40,82,6
42,70,<2
50,36,2
42,58,2
26,22,2
30,18,26
Lake
Falls
Gowan Ck
ICEFIELD

Legend

⊙ 38,74,<2 Silt Sample Results; Cu(ppm), Zn(ppm), Mo(ppm)

△ 62,86,8 Soil Sample Results; " " "

⊡ 26,22,2 Rock Sample Results; " " "

GEOLOGICAL BRANCH
ASSESSMENT REPORT

13,233

SCALE
1:2500

Metres 50 0 50 100 150 200 250 Metres

REVISED	LILLOOET PROJECT
	GOWAN CLAIM
	GEOCHEMISTRY
	Cu, Zn & Mo
PROJ. No. 19	SURVEY BY: R.G.W. & I.K.H. DATE: Dec./84
N.T.S. 92 J/1	DRAWN BY: [illegible] SCALE: 1:2500
DWG. No. 7	NORANDA EXPLORATION
	OFFICE: Vancouver