LOG NO: 0627	RD.
ACTION:	
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GEOCHEMICAL

AND

DIAMOND DRILLING

ASSESSMENT

OF THE

HEARNE HILL BRECCIA PIPE

GEOLOGICAL BRANCH
ASSESSMENT REPORT

20,084

PROPERTY NAME: HEARNE HILL

MINERAL CLAIMS:

NAME OF CLAIM	EXPIRY DATE
HEARNE 1 AND 2	APRIL 4
HEARNE 3 TO 20	MAY 31
HEARNE 21 TO 26	JULY 10

LOCATION: OMINECA MINING DIVISION
NTS 93M 1W
LAT. 55° 11'
LONG. 126° 16'
ELEVATION: 3600 FEET (1100 METERS)

OWNER: DAVID CHAPMAN
OPERATOR: NORANDA MINERALS LIMITED

PETER L. OGRYZLO, B.Sc.

MARCH 1990

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1. INTRODUCTION

Diamond drilling has intersected a small but relatively high grade copper deposit on Hearne Hill. Although the deposit is related to porphyry copper mineralization, it represents a style of mineralization that is new to the Babine region. The deposit is in the form of a breccia pipe with a true width of 45 feet (14 meters) and a strike length of 150 to 200 feet (45 to 60 meters). It has been tested to a depth of 190 feet (60 meters). Both grade and width appear to improve with depth, and the deposit remains open at depth. Because the deposit dips into the hillside, the possibility of developing an open pit appears limited. The deposit should be considered as a potential underground operation.

Further diamond drilling is recommended to test the vertical extent of the deposit.

1.1 WORK DONE:

Following acquisition of the property in July 1989, a program of line-cutting, soil sampling, and backhoe trenching was recommended. Soil sampling results confirmed surveys by previous operators. The level of confidence was sufficient to eliminate the trenching program and proceed directly to a diamond drill program. Six NQ diamond drill holes were bored for a total of 1537 feet (468 meters). The first four holes intersected the mineralized breccia. Hole H89-1 was particularly well mineralized, with an intersection of 75 feet (22.9 meters) with an average grade of 2.75% Cu. The hole was lost in material grading > 5% Cu.

Most of the assessment work was performed on the Hearne 2 two post mineral claim, with a very small part of the work performed on the Hearne 10 two post mineral claim.

2. PROPERTY DESCRIPTION

2.1 PROPERTY NAME: Hearne Hill

2.2 LOCATION:

NTS	93M 1W
Lat.	55° 11'
Long.	126° 16'
Elevation:	3600 feet (1100 meters)

The discovery showing is approximately 2.2 km southeast of the center of the sub-economic Morrison Lake porphyry copper deposit controlled by Noranda Exploration.

2.3 CLAIMS: All mineral dispositions are in the form of twenty six two post claims covering 530 hectares.

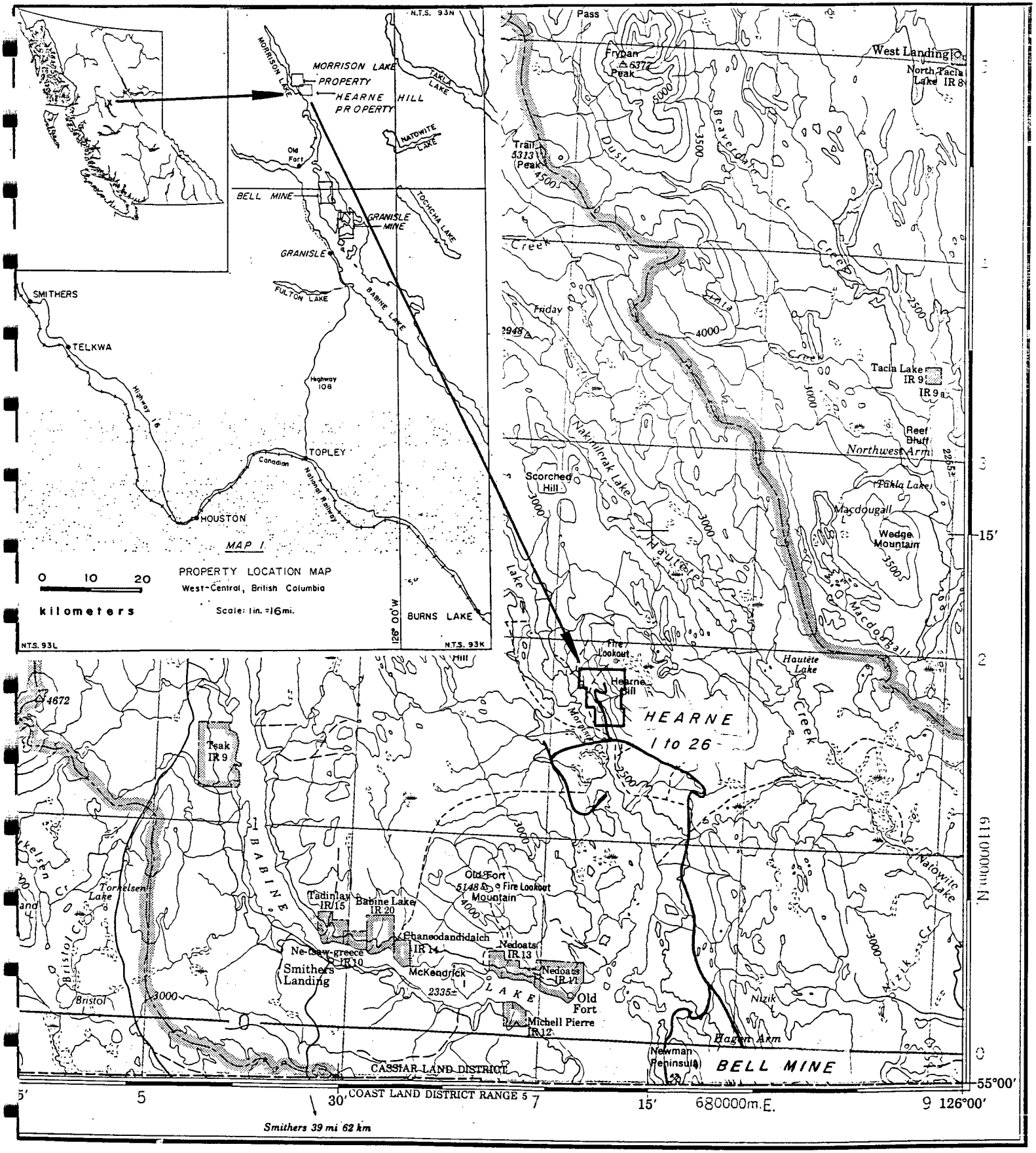
Name of claim	Expiry date
Hearne 1 and 2	April 4
Hearne 3 to 20	May 31
Hearne 21 to 26	July 10

The claims are owned by Mr. David Chapman of Smithers, B.C., subject to an option agreement dated July 21, 1989 between David J. Chapman, Peter F. Bland and Noranda Minerals (Bell Mine).

2.4 DESCRIPTION:

Copper mineralization occurs in a breccia pipe on Hearne Hill. The deposit strikes N10E and dips 70° to the east. Chalcopyrite and pyrite plug the porosity between angular clasts of Biotite Feldspar Porphyry. Porosity is commonly 5% to 10%. Chalcocite may be seen as rims on chalcopyrite in each cavity. The largest observed cavity filled with chalcopyrite is in the order of two feet (60 centimeters) and grades 16% Cu. Copper grades are highest adjacent to the hangingwall, which may have acted as a trap for the mineralization. Grades drop dramatically towards the footwall, where the porosity is plugged with dolomite and rock flour.

There appears to have been little movement or milling of the clasts. The breccia fragments appear to have simply accumulated as a subterranean talus that caved from the roof in a large cavern or steeply dipping pipe. The formation of the pipe is uncertain. It is possible that the void resulted from solution of the rock by circulating corrosive fluids related to the porphyry copper mineralization seen elsewhere on Hearne Hill.



LOCATION MAP

HEARNE HILL PROPERTY

NTS 93 M

SCALE 1:250,000

3. PHYSIOGRAPHY

Hearne Hill is located in the rolling uplands of the Nechako plateau, which forms a large portion of the intermontane belt of central British Columbia. In the Babine region, the plateau is broken by a series of normal faults into a basin and range topography. The downfaulted trenches are occupied by large bodies of fresh water. The most notable of these is Babine Lake, which is some 200 km in length and averages 5 km in width. The uplands are heavily forested, with mature stands of balsam fir and Engelman spruce. Alpine areas are rare, although some subalpine meadows occur on the upper slopes of Old Fort Mountain.

The western slope of Hearne Hill is formed by a prominent scarp of the Morrison fault, a major structural feature that extends for about 100 km. Relief is moderate to high, with elevations extending from 2335 feet (712 meters) on the shore of Babine Lake to over 4400 feet (1340) meters at the summit of Hearne Hill. The hillside is covered with an open stand of mature aspen and willow, with a dense undergrowth of peavine and thimbleberry.

4. ACCESS

Road access is available from the Bell Mine. The Northwood Pulp and Timber logging road on the eastern side of Babine Lake provides year round access to within 4 km of the property. A four wheel drive exploration road intersects the Northwood road at Km 40, a distance of 21 km north from the minesite. The intersection is approximately one km east of the Morrison bridge. Access is then by four wheel drive for an additional distance of 4 km north to the 3600 foot elevation on Hearne Hill.

The Bell Mine and concentrator is accessible from Smithers, B.C. by 150 kilometers of paved road to the Village of Granisle. Access is then a further 11 km by gravel road to the Noranda Minerals ferry slip on the western shore of Babine Lake. Year round access to the Bell minesite is by a further 3.5 kilometer ferry crossing of Babine Lake. Hydroelectric power is available at the Bell mine from a 138 KVA submarine cable and substation. The Village of Granisle services the Bell Mine with general store, clinic, hotel, and post office. Accommodation was provided for the linecutting and diamond drill crews at the Houston Forest Products campsite. The campsite is 10 km from the Hearne Hill property and is located at the north western end of Hatchery Arm. Rail service is available at the Topley siding of the Canadian National Railways transcontinental line, which is 65 kilometers from the Bell plantsite. The Topley siding serves as the concentrate loading facility for the Bell mine.

5. PREVIOUS WORK

The Babine Lake region has been actively explored since the 1920's. Commercial production began with the commissioning of the Granisle Mine in 1966, followed by the commissioning of the Bell Mine in 1972. The Granisle Mine is currently dormant, and removal of the concentrator was well underway in late 1989. The Bell Mine produces ore at a rate of some 17,000 tons per day from an open pit mine. Some 180 tons per day of copper-gold concentrate are extracted from the mine production.

The presence of copper mineralization has been known for some time on Hearne Hill. Previous work on the property has been extensive. A geochemical survey was done in the late 1960's (Dirom, 1967). The geochemical survey was followed up by bulldozer trenching that unearthed the breccia boulders still visible in the trench at the 3600 foot (1100 meter) elevation. These boulders are identified as the "discovery showing" on previous and current maps. Further exploration consisted of induced polarization and magnetic surveys, which culminated in diamond drilling. The operator at the time was the Texas Gulf Sulphur Company. Twelve diamond drill holes totalling some 6000 feet were completed. The results of the diamond drilling revealed the probable occurrence of a Babine style porphyry copper deposit similar to the Bell, Morrison, and Granisle deposits. The copper grades revealed by the program suggested the grade for the deposit would be in the order of 0.20% Cu. The drilling failed to intersect the mineralized breccia, although the lower portion of HH-1 (1967) now appears to be in the dolomite cemented footwall portion of the pipe. Copper grades were not considered to be sufficiently high to support exploitation of the deposit. The property essentially lay dormant until the present, although Canadian Superior Exploration briefly pursued a program of percussion drilling. Results of this program are not known.
The deposit was acquired by the present owner Mr. Dave Chapman in 1989. A limited program of trenching on the old showings with a skidder mounted backhoe rekindled interest in the property.

6. GEOCHEMICAL SURVEY

A geochemical survey was undertaken to provide tighter control on the location of the higher grade breccia mineralization exposed in the discovery trench. In addition, the survey provided the opportunity to tie the current program into the results of earlier surveys. Previous operators had established a survey grid on the property in 1967, clearing the baseline with a crawler tractor. Line spacing for the 1967 survey was 800 feet (244 meters). Although the baseline was extensively overgrown, the grid hubs from this period were still in place, and were used as control for the present survey.

Survey lines were laid out with transit and stadia. Lines were cut at a spacing of 200 feet (61 meters), with samples taken every 50 feet (15.2 meters). The object of the survey was to utilize the 1967 data as much as possible, and to fill in between the lines. Eight hundred feet (250 meters) of baseline was cut, followed by 4000 feet (1220 meters) of section line. An additional 2000 feet (600 meters) of compass line was flagged, chained, and sampled.

Soils on the property exhibit a podzolic profile typical of boreal forests. A humus layer or A horizon is particularly well developed where the forest cover is comprised of aspen and willow. The B horizon may in places be thin or absent. The C horizon is represented by fractured and weathered bedrock, or by glacial silts. The Babine region is notorious for the masking of anomalies by thick till blankets or by glaciolacustrine clays. Other than some glacial outwash gravels and silts, glacial deposits were not observed on the property.

Samples were taken of B horizon soils with the use of a split spoon soil auger. Samples were taken at a depth of between 20 and 50 cm. In situations where B horizon material was too thin or too coarse to be sampled with the auger, pits were dug by hand with a grub hoe, and the C horizon was sampled. One profile was sampled to show the distribution of metallic elements with depth over the showing.

6.1 PROFILE OVER DISCOVERY SHOWING

Horizon	Sample#	From	To(cm)	Description	Cu ppm
A_o	110802	0	6	Litter, leaves, twigs	316
A_1	110803	6	21	Black topsoil	400
B_2	110804	21	60	Fine silt 50% Pebbles 50%, rounded to angular. Red to yellow lim. stain	1704
C	110805	60	353	Pebbles 10%, pale grey, rounded, 2-3cm dia. Cobbles 5%, angular, 10cm by 10cm, mineralized limonite, malachite. Pebbles,angular,lim, 30% Silt, grey, 50% Some weathered bx at bottom	22681
D	110806	353		Bedrock. Breccia, white kaol clasts BFP,cpy,mal,az.	18052

One hundred and seventeen samples were collected, five of which were from the soil profile. The samples were packed in kraft paper bags, dried, and forwarded to Acme Analytical Laboratories of Vancouver, B.C.

Multielement analysis was performed by Inductively Coupled Plasma emission spectroscopy (ICP). Analytical procedure was as follows: a .500 gram sample was digested with 3 ml 3-1-2- HCl-HNO3-H20 at 95 degrees C for one hour, and then was diluted to 10 ml with water. The leach was partial for Mn Fe Sr Ca P La Cr Mg Ba Ti B W and limited for Na K and Al. Au* analysis was by acid leach from a 10 gram sample, and was reported in ppb.

6.2 INTERPRETATION OF RESULTS

Most of the soils observed on the western flank of Hearne Hill appear to be residual; that is to say, the soils have been derived by the in situ weathering of the underlying rock material. The only exception noted was a thick (at least 5 meter) lens of gravel exposed along a stream bank 100 meters north of the showing. The gravel appears to be glacial outwash, and does not appear to have any significant extent. Although Pleistocene glacial ice probably reached a depth of over 2000 meters in the Babine valley, there was no other evidence of glaciation observed on the property. Mass transport of any underlying anomalies will therefore be limited to downslope gravitational movement.

The abundance of calcite and dolomite in the breccia cement also suggests that the distribution of copper in soils will be limited. The mobility of copper is restricted in alkaline or reducing environments. Since there was no evidence of physical or geomorphic transport of the copper anomaly, it was concluded that the anomaly was virtually in situ.

An examination of the frequency distribution of the logarithm of Cu values reveals a distinctly bimodal pattern (Figure 1.) Two overlapping distributions with lognormal characteristics are apparent. The first and lower distribution is due to natural background values, probably modified by the weakly developed porphyry Cu mineralization associated with the Eocene biotite feldspar porphyry intrusion. The second and higher distribution is due to the much higher grade mineralization associated with the breccia pipe. This distribution reveals a slight positive skew, probably due to interference from overlapping anomalies from a porphyry copper source and from a breccia source. The gap between the two distributions is around 175 ppm Cu, which is also the geometric mean.

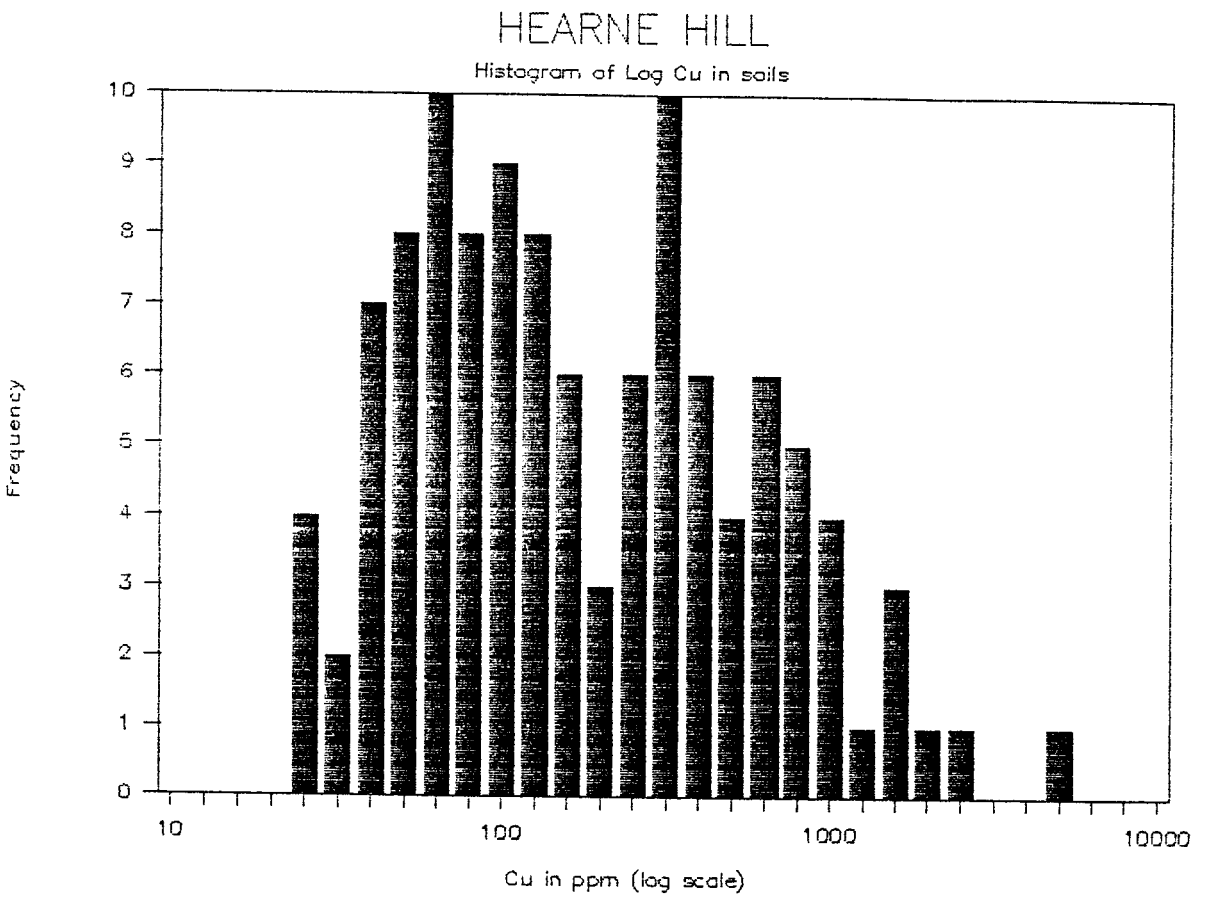

HEARNE HILL
Histogram of Log Cu in soils
Frequency
0
1
2
3
4
5
6
7
8
9
10
10
100
1000
10000
Cu in ppm (log scale)

FIGURE 1

6.3 SUMMARY STATISTICS for Cu in ppm

	Background population	Anomalous population	Entire population
Mean	85	778	380
Standard deviation	45	870	663
Geometric mean	73	571	177
Mode	65	350	NA

The mode of the first and lower population was chosen as the background value at 65 ppm, with the anomalous threshold at 175 ppm, which is approximately the mode of the lower population plus two standard deviations. This threshold coincides with the gap between the two populations. Sample density was not sufficient to separate the weakly developed porphyry copper system from the higher grade breccia mineralization.

Results were plotted at a scale of 1:1200. A strong anomaly is directly associated with the mineralization in the discovery trench. The distribution of Cu values supported work by the previous operators, and provided an upslope cutoff for the mineralization exposed in the trench. The increased detail of the survey, accompanied by the interpretation of the untransported nature of the anomaly, led to the conclusion that further geophysical or physical assessment was not necessary to pursue diamond drill targets.

The increased detail also revealed a second anomaly near the 300 N by 300 E (30000 N by 30000 E) hub. Rocks exposed in this area show no indication of breccia style mineralization. Typical porphyry mineralization consisting of bornite and chalcopyrite filling fractures in a biotitized BFP was noted.

A third anomaly was revealed at 290 N by 302 E (29000 N by 30200 E). This anomaly may possibly be associated with breccia type mineralization and warrants further examination.

7. DIAMOND DRILL PROGRAM , FALL 1989

Six diamond drill holes were bored for a total of 1537 feet (468 meters). The objective in choosing locations was primarily to see if the mineralization exposed at surface had any vertical continuity, and secondly to establish the attitude of the mineralization. Diamond drill logs are included in Appendix II.

Four holes intersected the mineralization. Intersections on the hangingwall and footwall provided sufficient information for the solution of three point problems. Additional points were available from the mapped positions of the hangingwall and footwall at surface. Hole H89-1 was lost in mineralization at 270 feet (82 meters) when the rods stuck in a mud seam. The last core run was recovered, including the mud seam which graded 3.32% Cu. Holes H89-1 and H89-2 were plotted on Section "297" for comparison with hole HH-1 (TGS, 1967). Intersections of interest are tabulated as follows:

SUMMARY OF RESULTS

HOLE NUMBER	FROM feet(meters)	TO feet(meters)	WIDTH feet(meters)	%Cu
H89-1	190.0(57.9)	227.5(82.3)	37.5(11.4)	1.34
	227.5(69.3)	270.0(82.3)	42.5(12.9)	3.61
H89-2	45.0(13.7)	65.0(19.8)	20.0(6.1)	1.84
	65.0(19.8)	85.0(25.9)	20.0(6.1)	2.68
	85.0(25.9)	130.0(39.6)	45.0(13.7)	1.10
H89-3	60.0(18.3)	77.5(23.6)	17.5(5.1)	2.11
H89-4	97.5(29.7)	160.0(48.8)	62.5(19.1)	0.78

The overall trend of the deposit is N 10°E. The geometry of the deposit indicates that the hangingwall dips approximately 60° to the east and the footwall dips approximately 70° to the east. This suggests that the deposit may widen with depth.

All core was split and crushed at the Bell minesite. Analyses were performed at the Bell Mine laboratory. Analysis was performed by standard acid digestion followed by atomic absorption spectrophotometry. The split core is currently under covered storage at the Bell plantsite.

8. GEOLOGY, MINERALIZATION, and ALTERATION

8.1 GEOLOGICAL SETTING:

Hearne Hill is underlain by volcanic rocks of the lower to middle Jurassic Hazelton Group (Richards, 1973). The volcanic rocks on the property have been tentatively associated with the submarine Kotsine facies of the Sinemurian Telkwa formation (Tipper and Richards, 1976). The volcanic rocks are characterized by waterlain grey lapilli-crystal tuffs, which have been intruded by porphyritic intrusions of the 50 my Eocene Babine igneous suite. Mapping by Texas Gulf geologists indicates the Eocene biotite-feldspar porphyry (BFP) intrusives are in the form of a series of northeasterly trending dykes. The intrusives are compositionally equivalent to a diorite or a quartz diorite. The BFP that is exposed on the 300N baseline near 300E is a dark, hard, biotitized BFP similar to rocks observed in the Morrison Lake deposit. There is no well defined intrusive center of the BFP similar to the centers noted at the Bell Mine (Carson et al 1976) and at the Morrison deposit (Carson and Jambour, 1976). Porphyry copper related mineralization consists of chalcopyrite and minor bornite filling fractures, minor disseminations of chalcopyrite, and traces of molybdenite. The style of mineralization suggests a relatively deep setting for the environment of emplacement.

The principal structural element in the area is the northwesterly trending Morrison fault. This is a major structural break extending for several hundred kilometers. The fault separates the older lower Jurassic rocks in the highlands to the east from the downfaulted younger middle and upper Jurassic rocks in the Morrison Lake valley. The steep southwest facing slope of Hearne Hill appears to be the escarpment of the Morrison fault. Considering the proximity and similarity of settings of the Morrison and Hearne deposits, there is a possibility that the two deposits were previously joined. The Morrison deposit may represent a downfaulted segment, with the more erratic Hearne mineralization representing the root of the original deposit.

8.2 MINERALIZATION

Two styles of mineralization are present. These are:

1. Chalcopyrite, bornite and molybdenite occur as fracture fillings and disseminations in the biotite feldspar porphyry and the adjacent volcanics in widespread but erratic amounts. This mineralization is due to a large but weakly developed porphyry copper system.

2. Chalcopyrite may been seen filling open spaces between rock fragments in a clast supported breccia. Open space in the breccia prior to mineralization comprised 5% to 20 % of the volume of the rock. Interclast porosity remains at 2% to 8% of the volume of the rock. Pyrite may also be seen as breccia cement, but is subordinate to chalcopyrite. Pyrite disappears as breccia cement at depth, with chalcopyrite along with lesser chalcocite being the only sulphide species present.

Supergene processes have redistributed the copper grades. The oxidized breccias in the surface trenches reveal limonite cement replacing sulphide open space filling. Malachite and azurite may also be seen as breccia cement. Chalcocite may be seen as rims on chalcopyrite in most breccia cavities, and rarely may be seen almost completely replacing masses of pyrite. Total sulphide content in the breccia is 10% to 15%, of which up to 1% may be comprised of chalcocite.

There is compelling evidence that the mineralization has been derived by solution and redistribution of the porphyry copper mineralization found in the carbonate cemented clasts that collected against the footwall. Although these clasts are lithologically identical to the wallrocks, copper grades in the footwall breccia are in the order of 0.01 % Cu to 0.3 % Cu as compared to 0.10 %Cu to 0.20 % in the adjacent rocks from which they were apparently derived. The carbonate open space filling appears to post date the sulphide open space filling.

8.3 STRUCTURE

Contacts between the breccia and the wall rocks appear sharp. Weakly developed sheeting may be seen in the hanging wall volcanics exposed in the surface trench. Clast size is remarkably uniform, ranging from 2 cm to 10 cm in size, with rare blocks to 30 cm in size. Fragments are subangular to subround, and are invariably rotated. Rock flour is a minor constituent of the matrix. Rock flour is more commonly seen plugging porosity against the footwall, and is interpreted as being minor fragments sifting down through the breccia. The rock flour is most probably derived from attrition of the breccia fragments. The breccia is entirely matrix supported.

The breccia clasts are lithologically identical to the enclosing wallrocks, making the breccia virtually monolithologic. Sericitized and bleached biotite feldspar porphyry clasts form the bulk of the pipe. Sericitized volcanics form a lesser component of the breccia. The only control on the location of the pipe appears to be the contact between the biotite feldspar porphyry and the volcanics. It should be noted that the volcanics have been mapped as "hybrid diorite" in earlier assessment reports.

8.4 ALTERATION

Descriptions of alteration in drill core are largely dependant on host rock lithology. The effects of hydrothermal alteration are most easily seen and reported upon in the Eocene biotite feldspar porphyry intrusives. This is possibly due to a combination of lithology and grain size. Fine grained rocks, particularly felsic volcanics, in general reveal far less visible alteration.

In the biotite feldspar porphyry intrusive, plagioclase reveals alteration first, with fresh phenocrysts progressively replaced with sericite. Biotite is chloritized, and matrix minerals are bleached to a pale grey cast. Sericitization is frequently accompanied by pyritization.

The most pervasive alteration is confined to the breccia pipe and the immediately adjacent wall rocks. It was not possible to determine if alteration preceded or followed brecciation. Although brecciation may have been confined to the softer, more altered rocks, it appears more likely that alteration was restricted to the more porous, brecciated rocks. The intensively leached nature of the footwall rocks supports the thesis that alteration followed brecciation.

In the breccia pipe, the effects of hydrothermal alteration are visible as pervasive bleaching of biotite feldspar porphyry clasts. Silicification accompanies bleaching, but there was little evidence of stockwork development. Plagioclase is completely altered to sericite, and biotite appears as pale brown relicts or "ghosts". Volcanic clasts are sericitized to a lesser extent.

Bleaching diminishes away from the pipe, although discontinuous zones of quartz sericite and sericite chlorite alteration were traversed by drill core.

The development of hydrothermal biotite was observed in outcrop near the 300N by 300 E hub. Chalcopyrite, bornite and molybdenite occur as fracture fillings and disseminations in a hard, dark, biotitized biotite feldspar porphyry.

9. DISCUSSION

Breccias have been reported at the Bell Mine (Carson et al, 1976) and at the Granisle Mine (Kirkham, 1971). The breccias at Bell are associated with late stage diatremes, and are of the "pebble dyke" variety. Pipes are from 1 to 3 meters in diameter, and wall rocks are sometimes sheeted. In the pipes, rounded clasts are cemented with rock flour and sulphides. Sulphide content is high, but mineralization rarely reaches economic limits. Breccias at Granisle are intermineral in nature, and appear related to magmatic activity.

The Hearne Hill breccia is unlike the Bell or Granisle breccias. As a first approximation, it is several orders of magnitude larger than any breccia body observed in either mine. It appears to be an intrusion related magmatic-hydrothermal breccia as classified by Sillitoe (1985). Sillitoe (1985) suggests a continuum between intrusion-related and porphyry related breccias, with the latter exhibiting more explosive related characteristics such as fragment rounding and attrition. The Hearne Hill breccia is unquestionably associated with a porphyry copper deposit, but there appears to be little evidence of violent magmatic or hydrothermal activity. Solution and collapse appear to have been the dominant processes in breccia formation.

There are implications attendant upon accepting this model for the Hearne Hill breccia. Deposits of this nature have been described at Los Bronces/Rio Blanco in Chile (Warnaars et al, 1985, Sillitoe and Sawkins, 1971); and at Cananea in Mexico (Bushnell, 1988). These deposits show more complex mineralogy and are on a larger scale than the Hearne Hill deposit. Tourmaline is common in the Chilean and Mexican deposits.
No evidence of tourmaline open space filling has been found at Hearne Hill. Nevertheless, descriptions of the Chilean and Mexican breccias are remarkably similar to the breccias observed on Hearne Hill. The Chilean and Mexican deposits are commonly elliptical in plan, with vertical dimensions several times greater than horizontal dimensions. Economic mineralization is distributed in irregular but concentric shells, or in an ore ring. The ring may be as thin as one meter wide at Cananea-Duluth (Bushnell, 1988), thickening to 10 meters wide in the nose of the ellipse. The mode of formation of the breccias in all these deposits has been interpreted as the formation of a void, followed by collapse. Subsequent mineralization has been by circulating magmatic-hydrothermal fluids.

10. CONCLUSIONS

The Hearne Hill deposit has the potential for the development of a small but nonetheless economically viable deposit of copper mineralization.

Diamond drilling is recommended to pursue known mineralization. Possible extensions of the deposit should be pursued by detailed geochemical and geophysical surveys extending from the known survey areas.

If these programs succeed, the rest of the Hearne Hill intrusion should be re-evaluated as a target for similar breccia deposits.

STATEMENT OF COSTS

PROJECT: HEARNE HILL
Hearne 1 to 26 claims

DATES: August 1, 1989 to March 1, 1990

DRILLING:	
Labor:	
Geologist - 13 days @ $300/day	$ 3,900.00
Contractors:	
D-6 cat - 8.25 hrs @ $120/hr	$ 990.00
Lowbed - mob-demob - 8 hrs @ $115/hr	$ 920.00
Drilling - 1537 ft	$40,538.00
Water truck - 6.5 days @ $750/day	$ 4,875.00
Surveying:	
2 days @ $250/day	$ 500.00
Analysis:	
Sample prep - 125 man hrs @ $12/hr	$ 1,500.00
Assays - 413 Au/Cu @ $5/sample	$ 2,065.00
GRID PREPARATION & TRAIL CLEARING:	
Labor	$ 961.00
Transportation	$ 571.95
Food, accommodation, supplies, misc.	$ 404.28
GEOCHEMISTRY:	
Labor	$ 961.00
Transportation	$ 571.95
Food, accommodation, supplies, misc.	$ 595.34
Analysis - 30 element ICP, 117 samples @ $11.50/sample	$ 1,345.00
REPORT PREPARATION:	$ 1,000.00
TOTAL COSTS:	**$61,698.52**

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AUTHOR'S QUALIFICATIONS

I, Peter Lawrence Ogryzlo, certify that I received the degree of Bachelor of Science from McGill University in 1969.

I was continuously employed in mineral exploration and mining geology from 1969 until 1977. I have been an independent explorationist and geological consultant from 1977 until the present.

Period	Employer	Position
1969-1972	Patino Mines Limited	Exploration geologist
1972-1977	Noranda Mines Limited	Mine geologist Noranda Mines Ltd. Bell Copper Division
1977-1986	Independently exploring and developing mineral properties in North central British Columbia, geological consulting.	
1986-1990	Noranda Minerals Ltd.	Private contractor. Consulting on exploration slope stability and mine design for the Bell Mine.

APPENDIX I

GEOCHEMICAL RESULTS

ACME ANALYTICAL LABORATORIES LTD. 852 E. HASTINGS ST. VANCOUVER B.C. V6A 1R6 PHONE(604)253-3158 FAX(604)253-1716

GEOCHEMICAL ANALYSIS CERTIFICATE

ICP - .500 GRAM SAMPLE IS DIGESTED WITH 3ML 3-1-2 HCL-HNO3-H2O AT 95 DEG. C FOR ONE HOUR AND IS DILUTED TO 10 ML WITH WATER.
THIS LEACH IS PARTIAL FOR MN FE SR CA P LA CR MG BA TI B W AND LIMITED FOR NA K AND AL. AU DETECTION LIMIT BY ICP IS 3 PPM.
- SAMPLE TYPE: P1-P4 SOIL P5 ROCK AU* ANALYSIS BY ACID LEACH/AA FROM 10 GM SAMPLE.

DATE RECEIVED: AUG 21 1989 DATE REPORT MAILED: Aug 28/89 SIGNED BY. C. Leong. .D.TOYE, C.LEONG, J.WANG; CERTIFIED B.C. ASSAYERS

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SAMPLE#	Mo PPM	Cu PPM	Pb PPM	Zn PPM	Ag PPM	Ni PPM	Co PPM	Mn PPM	Fe %	As PPM	U PPM	Au PPM	Th PPM	Sr PPM	Cd PPM	Sb PPM	Bi PPM	V PPM	Ca %	P %	La PPM	Cr PPM	Mg %	Ba PPM	Ti %	B PPM	Al %	Na %	K %	W PPM	Au* PPB
L298E 299+50N	9	1085	31	250	.9	31	12	604	5.50	49	5	ND	1	96	1	3	2	79	.29	.055	11	39	.67	475	.11	4	1.72	.01	.14	1	67
[illegible]8E 299+00N	8	471	27	354	.3	21	14	971	5.02	60	5	ND	1	81	1	2	2	63	.34	.071	7	22	.30	380	.05	2	1.48	.01	.08	1	26
.8E 298+50N	4	84	15	264	.2	11	10	879	2.97	11	5	ND	1	31	1	4	3	50	.16	.057	7	16	.18	274	.04	5	1.16	.01	.06	1	11
L298E 298+00N	8	279	12	113	.1	18	10	290	4.59	29	5	ND	1	46	1	3	4	69	.31	.065	6	25	.52	181	.06	2	1.55	.01	.13	1	32
L298E 297+50N	4	354	10	193	.4	23	11	279	4.06	25	5	ND	1	55	1	3	2	60	.24	.048	7	23	.51	179	.06	5	1.69	.01	.07	1	7
L298E 297+00N	3	362	10	188	.1	22	11	296	4.10	22	5	ND	1	61	1	2	2	60	.26	.050	7	22	.53	188	.06	6	1.69	.01	.07	1	18
L299E 303+00N	10	319	19	146	.4	20	11	502	4.31	31	5	ND	1	35	1	2	2	73	.24	.051	7	25	.41	237	.05	5	1.50	.01	.07	1	9
L299E 302+50N	8	343	24	171	.3	22	11	360	4.70	47	5	ND	1	25	1	2	3	74	.17	.045	8	25	.40	203	.03	4	1.87	.01	.08	1	4
L299E 302+00N	15	946	15	148	.5	26	11	360	4.41	23	5	ND	3	32	1	4	2	81	.22	.070	11	34	.63	206	.11	3	1.67	.01	.10	1	6
L299E 301+50N	9	304	14	105	.2	26	12	300	5.47	9	5	ND	2	24	1	2	2	105	.11	.045	5	49	.60	124	.15	4	1.33	.01	.16	1	72
L299E 301+00N	7	633	13	149	.3	27	14	247	5.97	13	5	ND	3	31	1	2	2	93	.18	.080	7	42	.89	148	.18	4	2.04	.01	.08	1	76
L299E 300+50N	7	1022	19	295	.3	22	12	901	5.52	19	5	ND	1	40	1	2	2	81	.24	.106	10	30	.65	222	.10	4	2.22	.01	.05	1	130
L301E 303+00N	9	71	12	125	.2	14	7	221	3.79	19	5	ND	1	23	1	2	3	75	.17	.029	7	20	.28	166	.03	2	1.43	.01	.04	1	8
L301E 302+50N	6	53	13	184	.1	12	8	339	3.47	18	5	ND	1	28	1	2	4	68	.21	.029	5	18	.28	148	.04	3	1.29	.01	.07	1	3
L301E 302+00N	4	810	13	158	.1	44	13	268	5.01	25	5	ND	1	44	1	2	2	99	.29	.066	12	49	.91	214	.12	6	2.40	.01	.14	1	14
L301E 301+50N	9	403	23	173	.1	29	14	928	5.05	143	5	ND	1	59	1	3	2	72	.34	.047	11	32	.60	267	.07	6	1.53	.01	.20	1	10
L301E 301+00N	4	73	9	155	.2	16	7	183	3.23	18	5	ND	2	26	1	2	2	65	.16	.033	7	19	.32	179	.06	2	1.16	.01	.07	1	10
L301E 300+50N	3	194	13	304	.1	31	16	720	4.46	13	5	ND	2	46	1	2	2	89	.21	.064	9	44	.80	259	.21	2	1.96	.01	.08	1	25
L302E 299+50N	5	244	15	227	.2	34	13	307	4.42	21	5	ND	1	77	1	2	2	86	.33	.036	8	43	.75	329	.15	4	1.86	.01	.15	1	18
[illegible]02E 299+00N	7	174	18	234	.1	20	10	408	4.23	19	5	ND	1	52	1	2	3	71	.25	.034	7	30	.43	222	.08	2	1.43	.01	.07	1	14
L302E 298+50N	3	293	30	101	.1	26	13	435	4.55	37	5	ND	1	38	1	2	2	63	.34	.042	7	24	.54	156	.04	6	1.90	.01	.05	1	35
L302E 298+00N	8	732	14	109	.1	33	14	551	5.15	30	5	ND	1	41	1	2	2	67	.40	.055	11	49	.82	229	.10	6	1.58	.01	.13	1	12
L302E 297+50N	5	329	16	150	.1	24	14	1014	4.70	24	5	ND	1	42	1	2	2	63	.33	.068	11	26	.55	216	.04	6	1.90	.01	.09	1	4
L302E 297+00N	2	45	9	125	.1	15	10	526	3.66	16	5	ND	1	33	1	2	2	66	.24	.055	7	22	.26	258	.05	2	1.22	.01	.06	1	4
L302E 296+50N	2	49	11	101	.1	20	10	395	3.58	20	5	ND	1	23	1	2	2	59	.23	.041	6	21	.40	140	.05	2	1.43	.01	.08	1	6
L302E 296+00N	3	166	17	179	.2	21	10	253	4.45	21	5	ND	3	33	1	2	2	76	.25	.070	7	34	.52	221	.13	3	1.62	.01	.10	1	27
L302E 295+50N	4	503	12	276	.1	40	18	410	5.38	9	5	ND	3	42	1	2	2	106	.51	.175	13	68	1.50	296	.36	2	2.10	.01	.28	1	25
L302E 295+00N	8	726	13	251	.1	25	15	530	5.05	25	5	ND	1	43	1	2	3	63	.31	.054	7	40	.81	220	.16	3	1.95	.01	.08	1	5
L302E 294+50N	6	388	35	295	.6	20	17	1433	6.19	64	5	ND	1	37	1	2	2	66	.46	.060	9	26	.25	171	.03	2	1.72	.01	.08	1	9
L302E 294+00N	12	764	51	184	.7	23	12	799	5.72	65	5	ND	1	19	1	2	2	54	.20	.059	12	22	.40	75	.02	3	1.81	.01	.07	1	10
L302E 293+50N	8	290	9	154	.1	19	10	252	4.12	29	5	ND	1	36	1	2	3	63	.24	.079	7	24	.35	154	.04	4	1.60	.01	.04	1	12
L302E 293+00N	6	549	16	151	.3	15	12	631	4.65	34	5	ND	1	47	1	2	2	60	.37	.085	9	22	.35	194	.04	6	1.46	.01	.09	1	4
L302E 292+50N	21	367	20	126	.3	54	23	842	8.54	15	6	ND	2	95	1	2	9	71	.44	.117	15	145	1.13	338	.07	2	2.31	.02	.22	4	5
L302E 291+50N	11	246	11	119	.1	4	17	1195	9.99	9	5	ND	1	151	1	2	2	26	.52	.188	17	5	.44	81	.07	10	.82	.04	.41	1	19
L303E 299+50N	7	1725	15	118	.1	26	11	741	4.23	28	5	ND	1	40	1	2	2	59	.45	.059	16	25	.61	216	.08	4	1.41	.01	.09	1	4
L303E 299+00N	15	2796	16	129	.2	33	18	814	6.03	39	5	ND	1	36	1	2	2	71	.51	.097	18	43	1.12	315	.19	2	1.73	.01	.31	1	63
STD C/AU-S	18	62	39	132	6.9	68	31	1019	4.08	40	18	8	38	50	18	15	22	61	.49	.089	40	55	.88	179	.07	35	1.98	.06	.14	13	51

SAMPLE#	Mo PPM	Cu PPM	Pb PPM	Zn PPM	Ag PPM	Ni PPM	Co PPM	Mn PPM	Fe %	As PPM	U PPM	Au PPM	Th PPM	Sr PPM	Cd PPM	Sb PPM	Bi PPM	V PPM	Ca %	P %	La PPM	Cr PPM	Mg %	Ba PPM	Ti %	B PPM	Al %	Na %	K %	W PPM	Au* PPB
L303E 298+50N	14	1722	32	141	.4	28	20	1132	5.73	46	5	ND	3	37	1	2	2	61	.48	.081	18	30	.72	278	.08	4	1.68	.01	.13	2	33
L303E 298+00N	5	666	14	114	.2	33	14	420	6.40	23	5	ND	1	18	1	2	2	90	.19	.082	10	114	1.10	116	.16	7	1.71	.01	.12	1	55
L303E 297+50N	5	663	12	110	.1	36	15	325	5.89	16	5	ND	3	23	1	2	2	79	.28	.064	10	79	1.31	104	.20	6	1.81	.01	.18	1	73
L303E 297+00N	3	69	12	118	.1	17	12	567	4.43	20	5	ND	1	18	1	2	2	74	.17	.058	7	25	.38	236	.04	2	1.66	.01	.08	1	12
L303E 296+50N	4	127	13	158	.1	24	14	365	4.70	27	5	ND	2	34	1	2	2	82	.15	.054	8	35	.54	165	.08	2	1.87	.01	.06	1	5
L303E 296+00N	2	82	9	143	.1	15	11	426	3.85	18	5	ND	1	31	1	2	2	64	.24	.046	7	23	.31	195	.05	8	1.44	.01	.05	1	29
L303E 295+50N	3	65	12	171	.1	15	13	597	4.37	25	5	ND	1	26	1	2	2	71	.28	.069	6	25	.36	222	.04	2	1.47	.01	.10	1	2
L303E 295+00N	32	5576	100	466	1.1	47	75	4863	27.40	313	5	ND	1	39	2	8	3	68	.51	.243	49	16	.12	304	.01	2	1.69	.01	.07	1	114
L303E 294+50N	8	1787	29	427	.7	44	25	1063	8.66	90	5	ND	3	26	2	2	2	76	.35	.103	16	45	.83	189	.10	2	1.99	.01	.26	1	45
L303E 294+00N	6	505	10	101	.1	31	13	602	4.43	36	5	ND	1	32	1	2	2	63	.31	.045	11	32	.62	197	.07	4	1.71	.01	.09	1	25
L303E 293+50N	17	667	10	86	.1	28	13	546	4.19	19	5	ND	1	56	1	2	2	63	.32	.049	12	34	.68	161	.09	2	1.60	.01	.11	1	28
L303E 293+00N	23	304	6	139	.1	50	24	624	10.00	18	5	ND	2	93	1	2	2	72	.30	.111	13	115	1.26	360	.08	2	2.19	.02	.43	1	14
L303E 292+00N	43	443	5	158	.1	10	39	1260	12.97	15	5	ND	1	162	1	2	3	39	.37	.253	17	9	.62	461	.09	2	1.53	.03	.34	1	30
L303E 291+50N	15	758	8	193	.3	97	40	1766	10.37	38	5	ND	2	62	1	2	2	121	.63	.128	12	254	2.60	807	.19	2	3.15	.03	.98	1	40
L304E 310+00N	1	50	15	154	.1	19	15	2038	3.65	16	5	ND	1	124	1	2	2	55	1.10	.085	8	19	.44	436	.03	4	1.45	.01	.11	1	10
L304E 309+50N	1	52	17	169	.1	17	16	2524	3.72	18	5	ND	1	133	1	2	2	57	1.17	.091	9	19	.43	489	.03	2	1.48	.01	.12	1	5
L304E 309+00N	4	156	10	139	.2	23	15	1221	4.57	16	5	ND	1	69	1	2	2	59	.94	.103	36	21	.58	354	.02	4	2.06	.01	.09	1	5
L304E 308+50N	2	25	10	126	.6	15	12	563	4.61	16	5	ND	2	28	1	2	2	74	1.38	.059	8	19	.43	157	.04	3	1.63	.01	.09	3	3
L304E 308+00N	2	38	13	123	.2	23	15	613	4.94	21	5	ND	1	32	1	2	3	76	.44	.049	8	25	.56	194	.05	2	2.02	.01	.06	1	2
L304E 307+50N	2	27	8	130	.2	17	11	345	4.63	21	5	ND	1	19	1	2	2	77	.20	.049	6	23	.44	142	.04	3	1.83	.01	.06	1	3
L304E 307+00N	2	37	11	153	.2	22	12	422	4.45	19	5	ND	1	29	1	2	3	73	.27	.033	6	25	.51	200	.04	2	1.97	.01	.06	1	2
L304E 306+50N	5	38	9	170	.1	18	12	488	4.45	24	5	ND	1	30	1	2	2	75	.29	.036	6	22	.40	176	.04	2	1.68	.01	.07	1	1
L304E 306+00N	3	23	12	113	.1	10	8	1297	3.42	9	5	ND	1	31	1	2	3	61	.32	.080	7	15	.15	213	.02	2	1.02	.01	.10	1	28
L304E 305+50N	4	43	11	156	.1	16	11	351	4.61	13	5	ND	1	17	1	2	3	78	.17	.063	7	25	.38	110	.04	2	2.08	.01	.10	1	3
L304E 305+00N	4	34	9	101	.1	12	8	235	3.75	11	5	ND	1	30	1	2	2	68	.21	.050	5	18	.29	153	.03	2	1.22	.01	.05	1	2
L304E 304+50N	4	45	7	109	.4	17	9	248	4.00	13	5	ND	2	23	1	2	2	71	.19	.056	6	21	.29	139	.03	4	1.77	.01	.06	1	1
L304E 304+00N	2	64	12	105	.1	16	9	476	4.20	20	5	ND	1	18	1	2	2	70	.17	.103	5	20	.35	184	.03	2	1.59	.01	.05	1	1
L304E 303+50N	4	31	11	140	.4	17	10	330	4.72	23	6	ND	2	16	1	2	2	82	.13	.075	6	25	.37	152	.03	2	2.11	.01	.06	1	1
L304E 303+00N	5	27	11	94	.2	12	6	149	3.19	8	5	ND	1	16	1	2	3	61	.15	.064	6	17	.15	131	.03	3	1.15	.01	.04	1	1
L304E 302+50N	3	124	6	126	.2	17	11	423	3.55	20	5	ND	2	20	1	2	2	61	.20	.046	6	18	.36	172	.04	4	1.39	.01	.04	1	4
L304E 302+00N	2	107	9	254	.1	12	8	1191	3.36	8	5	ND	1	22	1	2	2	54	.26	.037	7	17	.22	293	.03	6	1.23	.01	.07	1	3
L304E 301+50N	3	142	14	134	.1	22	11	325	4.64	27	5	ND	1	21	1	2	2	68	.25	.046	6	26	.46	183	.04	2	1.82	.01	.06	1	3
L304E 301+00N	4	139	11	134	.2	17	11	439	3.72	19	5	ND	1	18	1	2	2	63	.18	.032	6	20	.34	231	.04	2	1.44	.01	.05	1	198
L304E 300+50N	16	608	16	167	.4	16	15	543	5.10	21	5	ND	1	20	1	2	3	59	.19	.121	8	21	.41	183	.06	2	1.89	.01	.05	1	40
L304E 299+50N	7	661	27	135	.1	19	12	523	4.57	38	5	ND	1	23	1	2	2	59	.24	.058	7	23	.47	168	.05	4	1.67	.01	.08	1	22
L304E 299+00N	9	1723	91	166	.2	21	25	1540	8.19	116	5	ND	1	29	1	17	2	49	.48	.152	22	26	.54	239	.06	5	1.33	.01	.16	1	78
STD C/AU-S	18	63	36	132	6.5	67	31	1021	4.11	41	22	6	37	50	18	19	21	60	.49	.089	39	55	.89	180	.07	36	2.00	.06	.13	12	53

SAMPLE#	Mo PPM	Cu PPM	Pb PPM	Zn PPM	Ag PPM	Ni PPM	Co PPM	Mn PPM	Fe %	As PPM	U PPM	Au PPM	Th PPM	Sr PPM	Cd PPM	Sb PPM	Bi PPM	V PPM	Ca %	P %	La PPM	Cr PPM	Mg %	Ba PPM	Ti %	B PPM	Al %	Na %	K %	W PPM	AU* PPB
L304E 298+50N	6	136	15	96	.8	14	6	272	3.78	32	5	ND	1	14	1	2	3	57	.10	.091	6	17	.26	113	.03	2	1.07	.01	.11	2	67
L304E 298+00N	5	307	9	92	.1	23	13	402	4.41	17	5	ND	1	21	1	2	2	59	.23	.061	7	27	.70	122	.09	4	1.49	.01	.07	1	35
L304E 297+50N	2	49	13	131	.1	18	12	542	4.64	30	5	ND	1	23	1	2	2	68	.37	.086	10	20	.35	291	.03	2	1.49	.01	.07	1	95
L304E 297+00N	2	52	9	120	.1	13	11	473	3.76	20	5	ND	2	23	1	2	3	59	.21	.034	5	21	.35	182	.03	3	1.48	.01	.06	1	4
L304E 296+50N	2	42	8	92	.1	9	7	544	3.04	14	5	ND	1	37	1	2	2	59	.37	.032	5	15	.14	163	.04	3	.67	.01	.08	1	151
L304E 296+00N	2	49	10	178	.2	16	13	1259	3.53	19	5	ND	1	66	1	2	2	56	.67	.072	5	18	.30	306	.03	3	1.07	.01	.07	1	1
L304E 295+50N	3	159	21	182	.1	25	14	802	4.69	29	5	ND	1	26	1	2	2	62	.32	.052	11	28	.57	173	.04	3	1.73	.01	.06	1	9
L304E 294+50N	2	290	15	122	.1	24	14	719	4.15	20	5	ND	1	53	1	2	2	57	.42	.054	9	26	.53	178	.04	2	1.51	.01	.07	1	3
L304E 294+00N	4	233	11	106	.5	25	16	896	4.02	24	5	ND	3	48	1	2	2	58	.42	.055	13	29	.57	177	.04	4	1.43	.01	.11	1	7
L304E 293+00N	4	96	10	154	.1	19	20	1049	6.32	9	5	ND	1	75	1	2	3	43	.48	.157	11	17	.32	230	.05	2	1.02	.01	.15	1	4
4E 292+50N	3	75	11	155	.1	9	18	1234	5.46	11	5	ND	1	75	1	2	2	40	.42	.124	8	12	.27	153	.04	4	.87	.01	.10	1	4
L304E 291+50N	4	112	8	237	.2	3	19	1171	9.80	8	5	ND	1	77	2	2	2	31	.37	.195	9	3	.08	503	.03	2	.55	.01	.15	2	5
L304E 291+00N	6	105	14	231	.4	17	16	741	4.59	28	5	ND	2	28	1	2	2	69	.25	.055	6	23	.33	206	.04	4	1.40	.01	.08	1	3
L304E 290+50N	5	112	10	329	.1	17	15	716	4.59	23	5	ND	1	24	1	2	2	59	.21	.053	6	23	.34	207	.04	5	1.42	.01	.07	1	9
L304E 290+00N	7	125	17	230	.2	17	16	1002	4.45	22	5	ND	1	31	1	2	2	56	.28	.057	6	23	.32	234	.04	4	1.38	.01	.08	1	2
L306E 299+50N	1	61	13	166	.1	20	14	1329	3.54	16	5	ND	1	55	1	2	2	55	.75	.110	6	20	.36	360	.02	5	1.33	.01	.07	1	1
L306E 299+00N	3	128	14	139	.2	23	16	1634	3.93	22	5	ND	1	46	1	2	2	57	.70	.092	7	22	.38	315	.02	6	1.35	.01	.08	1	150
L306E 298+50N	2	62	9	148	.2	15	11	936	4.00	26	5	ND	1	33	1	2	2	63	.61	.083	6	20	.36	244	.03	5	1.29	.01	.06	1	1
L306E 298+00N	2	42	10	130	.1	18	11	601	4.10	26	5	ND	1	29	1	2	2	63	.41	.061	6	21	.39	207	.03	3	1.43	.01	.05	1	1
L306E 297+50N	2	64	9	111	.1	19	12	537	3.95	19	5	ND	1	32	1	2	4	57	.42	.053	5	21	.45	165	.03	3	1.47	.01	.06	1	1
L306E 297+00N	2	36	11	154	.1	18	11	563	3.58	16	5	ND	1	27	1	2	2	51	.34	.053	6	20	.37	180	.03	2	1.43	.01	.09	1	1
L306E 296+50N	1	60	7	107	.1	23	11	448	4.00	23	5	ND	1	26	1	2	2	57	.33	.053	6	22	.47	146	.03	3	1.61	.01	.09	2	1
L306E 296+00N	4	347	12	89	.1	18	10	573	3.73	24	5	ND	1	50	1	2	2	53	.36	.036	10	20	.43	153	.03	2	1.32	.01	.07	1	12
L306E 295+50N	2	79	8	91	.1	22	11	412	3.93	21	5	ND	1	35	1	2	2	57	.27	.037	5	22	.48	119	.03	4	1.57	.01	.05	1	2
L306E 295+00N	3	59	10	168	.2	22	13	914	3.93	17	5	ND	1	86	1	2	2	60	.62	.042	5	23	.41	206	.04	4	1.35	.01	.09	1	4
L306E 294+50N	1	94	7	146	.1	135	30	1403	7.39	5	5	ND	1	59	1	2	2	131	.65	.046	3	231	2.44	762	.07	2	3.79	.01	.77	2	2
L306E 294+00N	4	247	6	184	.5	8	16	981	7.97	8	5	ND	1	163	2	2	2	31	.57	.267	21	10	.34	177	.04	5	.72	.04	.35	1	7
L306E 293+50N	2	72	12	132	.1	13	11	637	4.15	14	5	ND	1	46	1	2	2	58	.33	.105	6	20	.34	190	.03	4	1.25	.01	.07	1	9
L306E 293+00N	2	101	10	127	.1	19	12	601	4.61	20	5	ND	1	40	1	2	2	64	.30	.092	6	24	.45	141	.03	4	1.64	.01	.05	1	2
L306E 292+50N	2	70	11	111	.1	14	12	929	4.37	14	5	ND	1	41	1	2	2	53	.46	.112	7	21	.35	354	.03	4	1.18	.01	.06	1	1
L306E 292+00N	4	89	15	126	.1	14	16	1053	5.48	94	5	ND	1	65	1	2	2	46	.60	.136	6	16	.36	346	.02	6	1.30	.02	.09	1	6
L306E 291+50N	4	104	13	164	.1	20	21	1219	5.09	23	5	ND	1	43	1	2	2	70	.59	.072	6	34	.53	313	.04	3	1.59	.01	.07	1	3
L306E 291+00N	3	92	12	92	.1	21	13	641	3.96	28	5	ND	1	55	1	2	2	57	.53	.069	5	20	.44	271	.02	4	1.60	.01	.04	1	4
L306E 290+50N	4	175	10	153	.2	30	25	3673	4.72	14	5	ND	1	68	1	2	2	78	.50	.074	12	20	.66	376	.05	6	2.14	.01	.07	1	5
L306E 290+00N	2	133	7	177	.2	29	38	1994	5.87	9	5	ND	1	96	1	2	2	100	.61	.117	6	16	1.08	430	.09	2	2.32	.01	.18	1	3
STD C/AU-S	18	63	37	132	6.6	71	30	1023	4.09	41	22	7	37	50	18	18	23	60	.49	.090	39	55	.88	174	.07	39	1.99	.06	.14	12	49

SAMPLE#	Mo PPM	Cu PPM	Pb PPM	Zn PPM	Ag PPM	Ni PPM	Co PPM	Mn PPM	Fe %	As PPM	U PPM	Au PPM	Th PPM	Sr PPM	Cd PPM	Sb PPM	Bi PPM	V PPM	Ca %	P %	La PPM	Cr PPM	Mg %	Ba PPM	Ti %	B PPM	Al %	Na %	K %	W PPM	AU* PPB
110802	15	316	7	271	1.2	13	8	2346	1.19	10	5	ND	2	156	2	2	3	14	2.18	.095	3	8	.18	484	.02	8	.42	.01	.09	1	72
110803	18	400	11	216	.9	22	12	1745	2.93	12	5	ND	1	101	1	2	2	36	1.17	.117	5	17	.38	387	.03	5	.92	.01	.09	1	62
110804	45	1704	14	102	.7	27	20	600	5.48	78	5	ND	1	36	1	2	2	56	.33	.079	9	21	.37	122	.03	2	1.73	.01	.06	1	45
110805	331	22681	233	182	6.3	41	24	1038	10.07	489	5	ND	3	27	1	6	5	55	.28	.072	26	16	.42	246	.03	2	1.37	.01	.08	1	760
130801	3	162	10	81	.6	26	9	606	3.18	8	5	ND	2	24	1	2	2	50	.26	.039	8	23	.37	205	.01	2	1.87	.01	.04	1	8
130802	4	102	10	112	.1	23	22	399	5.70	20	5	ND	1	12	1	2	2	64	.05	.112	6	24	.23	197	.01	2	2.83	.01	.06	2	6
130803	1	28	8	212	.4	16	12	1389	2.91	8	5	ND	1	23	1	2	2	41	.44	.079	6	19	.19	207	.02	6	1.15	.01	.11	1	1
130804	1	39	8	81	.3	23	10	435	3.59	16	5	ND	1	23	1	2	2	51	.30	.029	5	22	.34	122	.03	6	1.20	.01	.04	1	3
130805	1	36	10	210	.1	15	18	1691	6.47	9	5	ND	1	41	1	2	2	69	.97	.117	4	18	.65	167	.02	2	1.78	.01	.10	1	1
130806	1	23	2	47	.5	6	4	170	3.51	7	5	ND	2	188	1	2	2	6	3.32	.073	2	3	.64	191	.01	20	.18	.01	.02	1	2
130807	1	52	7	110	1.0	26	8	520	2.29	7	5	ND	1	61	1	2	3	37	.93	.086	13	21	.31	321	.01	2	2.13	.01	.05	1	3
130808	1	21	6	59	.1	15	5	170	2.47	7	5	ND	1	19	1	2	2	40	.17	.049	6	16	.25	95	.03	2	1.06	.01	.03	1	1
130809	1	36	8	83	.1	24	9	339	3.37	12	5	ND	1	26	1	2	2	49	.22	.036	7	20	.37	119	.04	4	1.23	.01	.04	1	4
130810	1	94	10	118	.6	54	15	833	4.72	13	5	ND	1	97	1	2	2	68	.86	.065	33	34	.69	441	.01	2	3.48	.01	.09	1	1
130811	1	58	10	108	.3	37	15	1468	4.95	20	5	ND	1	73	1	2	4	57	.65	.037	10	32	.62	243	.01	5	2.06	.01	.08	1	1
130812	1	28	8	90	.1	24	9	260	3.45	9	5	ND	1	21	1	2	2	50	.14	.024	5	25	.32	98	.02	2	1.51	.01	.03	1	1
130813	1	28	10	140	.3	25	10	466	3.34	8	5	ND	1	28	1	2	2	52	.36	.032	6	24	.37	168	.02	2	1.72	.01	.03	1	1
130814	1	104	2	78	.1	88	21	431	7.23	15	5	ND	1	9	1	2	2	106	.22	.033	2	114	1.38	60	.01	2	2.42	.01	.05	1	1
130815	1	29	8	111	.2	19	10	780	3.49	8	5	ND	1	18	1	2	2	69	.28	.068	5	34	.35	129	.03	3	1.44	.01	.03	1	2
130816	1	27	16	202	.1	20	10	274	3.83	8	5	ND	1	22	1	2	2	66	.20	.045	5	27	.33	120	.02	2	1.69	.01	.03	1	2
130817	1	38	8	109	.1	22	9	255	4.01	11	5	ND	1	19	1	2	2	58	.08	.058	5	21	.28	117	.02	3	1.47	.01	.03	1	2
130818	1	54	14	127	.1	29	14	503	4.78	13	5	ND	1	34	1	2	3	68	.26	.070	4	29	.39	195	.02	5	1.49	.01	.05	1	3
130819	1	42	8	78	.3	32	11	411	3.60	7	5	ND	1	37	1	2	2	54	.44	.031	13	27	.37	186	.02	3	1.87	.01	.05	1	3
130820	1	31	6	50	.1	20	7	226	2.67	9	5	ND	1	65	1	2	2	38	1.36	.031	7	17	.25	234	.02	6	1.16	.01	.02	1	2
130821	1	30	6	63	.1	23	8	354	3.21	11	5	ND	1	34	1	2	2	45	.55	.030	7	24	.29	179	.03	5	1.19	.01	.03	1	3
130822	1	32	8	117	.1	25	11	441	3.32	11	5	ND	1	42	1	2	2	56	.57	.045	7	25	.39	227	.02	4	1.69	.01	.03	1	1
130823	1	20	9	78	.4	21	6	253	2.39	5	5	ND	1	68	1	2	2	40	.92	.034	6	21	.32	197	.01	3	1.31	.01	.05	1	2
130824	1	21	7	66	.1	20	7	444	2.29	8	5	ND	1	36	1	2	2	38	.28	.037	7	21	.25	203	.02	5	1.13	.01	.09	1	2
130825	1	17	6	66	.1	21	8	354	2.66	6	5	ND	1	35	1	2	2	39	.26	.034	6	19	.36	132	.03	5	1.12	.01	.04	1	5
STD C/AU-S	19	63	37	132	6.6	65	30	1021	4.02	39	22	6	36	49	18	18	22	59	.49	.088	39	53	.88	182	.07	39	1.98	.06	.14	12	49

SAMPLE#	Mo PPM	Cu PPM	Pb PPM	Zn PPM	Ag PPM	Ni PPM	Co PPM	Mn PPM	Fe %	As PPM	U PPM	Au PPM	Th PPM	Sr PPM	Cd PPM	Sb PPM	Bi PPM	V PPM	Ca %	P %	La PPM	Cr PPM	Mg %	Ba PPM	Ti %	B PPM	Al %	Na %	K %	W PPM	AU* PPB
L302E 292+00N	8	159	10	84	.1	2	9	969	5.06	13	5	ND	3	40	1	2	2	17	.51	.186	11	2	.36	543	.05	7	.63	.03	.24	2	25
L302E 291+00N	5	394	7	64	.1	3	17	944	5.93	2	5	ND	2	11	1	2	2	17	.69	.170	12	1	.40	75	.04	6	.49	.03	.19	1	10
L302E 290+50N	76	1257	5	82	.4	8	14	557	5.04	3	5	ND	2	41	1	2	2	19	.42	.174	10	1	.19	100	.02	4	.52	.03	.10	1	45
L302E 290+00N	2	245	7	77	.1	2	8	944	5.16	6	5	ND	2	29	1	2	2	19	.49	.152	9	2	.42	141	.04	3	.71	.03	.21	1	18
L303E 295+00N	14	965	15	80	.1	15	24	1488	3.60	61	5	ND	2	48	1	3	2	9	.31	.122	15	4	.04	83	.01	6	.57	.01	.13	1	8
L304E 293+50N	2	140	3	48	.1	2	9	636	5.25	3	5	ND	1	28	1	2	2	21	.27	.128	11	2	.12	79	.03	6	.43	.03	.10	1	2
110801	1	20	6	57	.2	4	7	1225	3.92	5	5	ND	1	45	1	2	2	41	1.69	.039	6	4	.94	25	.01	3	.38	.03	.03	1	1
110806	216	18052	78	211	4.1	27	10	1098	4.87	125	5	ND	1	29	1	3	4	17	.55	.060	14	4	.13	100	.01	2	.64	.01	.14	1	440
110820	5	36	6	252	.1	6	3	2361	4.87	3	5	ND	3	89	1	2	2	5	2.67	.009	11	6	.08	28	.01	4	.13	.01	.09	1	1
STD C/AU-R	18	59	39	133	7.0	69	31	1016	4.16	43	18	8	39	50	19	15	22	60	.51	.090	40	55	.90	179	.07	36	2.05	.06	.13	12	490
110802	15	316	7	271	1.2	13	8	2346	1.19	10	5	ND	2	156	2	2	3	14	2.18	.095	3	8	.18	484	.02	8	.42	.01	.09	1	72
110803	18	400	11	216	.9	22	12	1745	2.93	12	5	ND	1	101	1	2	2	36	1.17	.117	5	17	.38	387	.03	5	.92	.01	.09	1	62
110804	45	1704	14	102	.7	27	20	600	5.48	78	5	ND	1	36	1	2	2	56	.33	.079	9	21	.37	122	.03	2	1.73	.01	.06	1	45
110805	331	22681	233	182	6.3	41	24	1038	10.07	489	5	ND	3	27	1	6	5	55	.28	.072	26	16	.42	246	.03	2	1.37	.01	.08	1	760
130801	3	162	10	81	.6	26	9	606	3.18	8	5	ND	2	24	1	2	2	50	.26	.039	8	23	.37	205	.01	2	1.87	.01	.04	1	8

APPENDIX II

DIAMOND DRILL LOGS

Note: All elevations set relative to 300 N by 300 E Hub set at 3600. Base elevation set at Morrison bridge at 2400 by Gischard altimeter

noranda MINES LIMITED BELL COPPER DIVISION

Collared Sep 24 1989	Completed Sept 25 1989	Core Size NQ	Logged by P.L. Ogryzlo	Project No 247	Date 24/09
FIELD COORDINATES			SURVEYED COORDINATES		Sheet 1 of
Lat. 29500	Elev.	Dip −45°	Lat. 29515.9	Elev. 3576.4	Dip −46	Hole No H 89-1
Dep. 30195	Depth 270'	Bearing 140°	Dep. 30193.4	Depth 270	Bearing 140	

Footage	Rec'y	Rock Type/Alteration	Mineralization	% Sulp.	MIF	From-To Sample No.	Li.	% Cu	OPT Au	CuOx%
0-7'	50	Casing - Road Fill				0-7'	7.0	N/S	N/S	N/S
7'-12		Broken ground, BFP, 1 lm.				1301 7-10	3.0	0.09	0.0026	N/A
						1302 10-15	5.0	0.16	0.0023	N/A
12-24	95	Biotite feldspar porphyry. Euh-books Black BT. 1mm x 1mm, Euh plag.				1303 15-20	5.0	0.03	0.0032	N/A
		2mm x 1mm in med grey matrix. BT, plag fresh - Massive.								
		Fractures 0.5/ft. min lim.	Py diss, Some hem.	1%						
24-26	90	BFP, bleached, silicified BT → chlor		tr		1304 20-25	5.0	0.08	0.0026	N/A
26-38	95	Broken ground. Bleached, silicified BFP, weathered. Veins + veinlets of	lim, Mn stain, Py, malachite on shears	1%		1305 25-30	5.0	0.21	0.0029	N/A
		Dolomite cementing broken angular fragments of alt. BFP.		1%		1306 30-35	5.0	0.13	0.0023	N/A
38-40	100	Angul. fragments of BFP cemented by dolomite.	Py 1% Hem 3%	1		1307 35-40	5.0	0.12	0.0029	N/A
40-45	98	Light grey BFP, plag → ser, BT → ser Hard, silicified. Bt. cementer	cpy fracture Filling 1% cpy diss 0.5%	3%		1308 40-45	5.0	0.17	0.0038	N/A
45-50	98	with hematite, Frags 1-2 cm.	Hematite, specularite 5%	1%		1309 45-50	5.0	0.06	0.0029	N/A
50-55	98	Veinlts of calcite, dolomite	Hem F.g. 1% py diss. 3%	1%		1310 50-55	5.0	0.11	0.0026	N/A
55-60	78			1%		1311 55-60	5.0	0.11	0.0042	N/A
60-65	100	Angular xenoliths dk fg rk,	cpy vnlts tr-1%	1%		1312 60-65	5.0	0.13	0.0032	N/A

noranda MINES LIMITED BELL COPPER DIVISION

Collared	Completed	Core Size NQ	Logged by PLO	Project No	Date 24/01/89
FIELD COORDINATES			SURVEYED COORDINATES		Sheet 2 of 4
Lat.	Elev.	Dip	Lat.	Elev.	Dip	Hole No H89-1
Dep.	Depth	Bearing	Dep.	Depth	Bearing	

Footage	Rec'y	Rock Type/Alteration	Mineralization	% Sulp.	MIF	INTERVAL Sample No.	Lt.	% Cu	OPT Au	%CuOx	
65-70	100	68-78 Lt. g-l-y BFP dyke. Euhedral lag 2mm x 3mm → sericite	Py, cpy fracture filling with dolomite.	Tr.		1313 65-70	5.0	0.22	0.0032	N/A	
70-75	96	BT bleached white, alt. to sericite	72' vnlt. min py, cpy, chalcocite	2		1314 70-75	5.0	0.18	0.008	N/A	70-88
75-80	100	78-97 Bleached + silicified fragmental rk, pyroclastic		1		1315 75-80	5.0	0.08	0.0035	N/A	
80-85	100	Intermediate volcanic. Pale grey when fresh, disseminated hematite.	cpy, py fracture filling	2		1316 80-85	5.0	0.09	0.0032	N/A	80-82
85-90	100		"	2		1317 85-90	5.0	0.11	0.0029	N/A	
90-95	100		"	3		1318 90-95	5.0	0.08	0.0032	N/A	90-71
95-100	100	97-99 Felsic volcanic bx.	96' - 1" qz-cpy vnlt. py Tr-1%, cpy tr.	2		1319 95-100	5.0	0.35	0.0050	N/A	
100-105	100	Intermediate volcanics med-to dk. grey, massive, rarely feldspar phyric		1		1320 100-105	5.0	0.15	0.0026	N/A	100-90
105-110	100		cpy tr-1%	1		1321 105-110	5.0	0.13	0.0032	N/A	
110-115	100	Banded, probably lapilli tuff. Dolomite vnlts		<1		1322 110-115	5.0	0.08	0.0025	N/A	110-75
115-120	100	Some bands felsic volcanics		<1		1323 115-120	5.0	0.05	0.0020	N/A	
120-125	100		galenite dol. vnlts	1		1324 120-125	5.0	<0.01	0.0026	N/A	120-61
125-130	98	Contact. BFP, intense ser. alt. med grey, flag relicts from tuff				125-127.5 1325 2.5 <0.01 0.0029 N/A 127.5-130 1326 2.5 <0.01 0.0037 N/A					
130-135	98	Aphanitic, chloritic brecciated section, clasts cemented by buff dolomite	Porous			130-132.5 1327 2-5 <0.01 0.0023 N/A 132.5-135 1328 2-5 <0.01 0.0028 N/A					130-89
135-140	98					135-137.5 1329 2.5 <0.01 0.0026 N/A 137.5-140 2.5 <0.01 0.0029					

noranda MINES LIMITED BELL COPPER DIVISION

Collared	Completed	Core Size NQ	Logged by PLO	Project No	Date 25/09/89
FIELD COORDINATES			SURVEYED COORDINATES		Sheet 3 of 4
Lat.	Elev.	Dip	Lat.	Elev.	Dip	Hole No. H 89-1
Dep.	Depth	Bearing	Dep.	Depth	Bearing	

Footage	Rec'y	Rock Type/Alteration	Mineralization	Porosity	% Sulp.	MIF	From - To Sample No.	Lt.	% Cu	OPT Au	%CuOx	
140-145	98	clast - size 1cm x 1cm to 7 10cm	py - chlor vnlt.	1%	2		140 1331 - 142.5 142.5 1332 - 145	2.5 2.5	<0.01 <0.01	0.0025 0.0029	N/A N/A	140- 74-
145-150	98	rare clasts of med. grey volcanic.		2%	1-2		145 1333 - 147.5 147.5 1334 - 150	2.5 2.5	<0.01 <0.01	0.0035 0.0026	N/A N/A	
150-155	95	Breccia. Clast supported. Porosity partially occluded		2%	1-2		150 1335 - 152.5 152.5 1336 - 155	2.5 2.5	<0.01 <0.01	0.0031 0.0026	N/A N/A	150- 87-
155-160	95	by rhombic dolomite, calcite.		4%	1-2		155 1337 - 157.5 157.5 1338 - 160	2.5 2.5	<0.01 <0.01	0.0032 0.0031	N/A N/A	
160-164	95	Breccia clasts M-g. pale grey BFP, intense sericite alteration.		5%	1		160 1339 - 162.5 162.5 1340 - 165	2.5 2.5	<0.01 <0.01	0.0026 0.0031	N/A N/A	160- 87-
165-170	90			5%	1		165 1341 - 167.5 167.5 1342 - 170	2.5 2.5	<0.01 <0.01	0.0032 0.0031	N/A N/A	
170-175	98	More massive BFP, Bx.		3%	1		170 1343 - 172.5 172.5 1344 - 175	2.5 2.5	<0.01 0.01	0.0023 0.0029	N/A N/A	170- 92-
175-180	100	Pale green chlorite		1%	1		175 1345 - 177.5 177.5 1346 - 180	2.5 2.5	0.01 0.01	0.0029 0.0032	N/A N/A	
180-185	100			2	1		180 1347 - 182.5 182.5 1348 - 185	2.5 2.5	0.03 0.01	0.0029 0.0029	N/A ø	180- 90-
185-190	100		py	2	2		185 1349 - 187.5 187.5 1350 - 190	2.5 2.5	0.02 0.13	0.0029 0.0026	N/A ø	
190-195	100	Breccia. Porosity partially occluded by cpy, dolomite	cpy 1-2%,	4	2		190 1251 - 192.5 192.5 1252 - 195	2.5 2.5	0.64 0.32	0.0029 0.0046	N/A 0.004	190-2 100
195-200	100		cpy 1-3%	4	3		195 1253 - 197.5 197.5 1254 - 200	2.5 2.5	1.08 1.68	0.0041 0.0043	N/A N/A	
200-205	100		cpy 2-4%	3	4		200 1255 - 202.5 202.5 1256 - 205	2.5 2.5	2.36 2.84	0.0046 0.0053	N/A 0.007	200- 100-
205-210	100		cpy-1 2-4% chalcocite rim min,	3	4		205 1257 - 207.5 207.5 1258 - 210	2.5 2.5	2.44 1.08	0.0740 0.0064	N/A N/A	
210-215	100		cpy-	3	4		210 1259 - 212.5 1260	2.5	0.80	0.0079	N/A	210-2

noranda MINES LIMITED BELL COPPER DIVISION

Collared	Completed	Core Size	Logged by	Project No	Date 25/09/89
FIELD COORDINATES			SURVEYED COORDINATES		Sheet 4 of 4
Lat.	Elev.	Dip	Lat.	Elev.	Dip	Hole No H 89-1
Dep.	Depth	Bearing	Dep.	Depth	Bearing	

Footage	Rec'y	Rock Type/Alteration	Mineralization	Porosity	% Sulp.	MIF	From To Sample No.	Lt.	% Cu	OPT Au	%CuOx	RQD
215-220	98	Bx of 1cm to 10cm clasts of BFP, white,	Abundant cpy	3	5		215-217.5 1261 217.5-220 1262	2.5 2.5	0.24 1.48	0.0108 0.0067	N/A N/A	
220-225	99	intense sericite alteration	occluding porosity	5	5-7		220-222.5 1263 222.5-225 1264	2.5 2.5	0.64 1.52	0.0070 0.0114	N/A 0.0035	220-225 89%
225-230	98	Dolomite, calcite cement.	Tr bn, tr Chalcocite	3	5-7		225-227.5 1265 227.5-230 1266	2.5 2.5	1.96 2.60	0.0111 0.0218	N/A N/A	
230-235	99	~~238~~		5	5-7		230-232.5 1267 232.5-235 1268	2.5 2.5	3.16 4.08	0.0150 0.0175	N/A 0.0075	230-235 85%
235 240	98	238.5-239.5 large clasts of felsic volcanic		1	2-5		235-237.5 1269 237.5-240 1270	2.5 2.5	3.28 2.36	0.0114 0.0119	N/A N/A	
240 245	98			75	5-7		240-242.5 1271 242.5-245 1272	2.5 2.5	3.08 3.88	0.0111 0.0150	0.015 N/A	240-245 76%
245 250	99			5	6-8		245-247.5 1273 247.5-250 1274	2.5 2.5	3.48 3.12	0.0250 0.0175	N/A N/A	
250 255	98			5	6-8		250-252.5 1275 252.5-255 1276	2.5 2.5	3.64 4.36	0.0099 0.0408	N/A 0.009	250-255 72%
255 260	99		chalcocite, limonite	4	6-8		255-257.5 1277 257.5-260 1278	2.5 2.5	3.28 2.84	0.0834 0.0641	N/A N/A	
260 265	98		Abundant cpy	5	8-10		260-262.5 1279 262.5-265 1280	2.5 2.5	4.12 4.84	0.0088 0.0082	N/A 0.014	260-265 64.0%
265-267.5	98		cpy 8-10%, chalcocite	3	8-10		1281 265-267.5	2.5	4.88	0.0169	N/A	
267.5-269.5	98			8	8-10		1282 267.5-269.5	2.0	4.32	0.0425	N/A	
269.5-269.7	—	clay seam. Abundant fg. sulphide		0	5%		1283 269.5-269.7	0.2	3.32	0.0128	N/A	
269.7-270	—	Bx- cpy in porosity		0	5%		1284 269.7-270	0.3	5.60	0.0080	0.006	
270		E.N.P. Rods stuck. Hole abandoned. Rods left in hole.										

noranda MINES LIMITED BELL COPPER DIVISION

Collared Sept 25/89	Completed Sept 26 89	Core Size NQ	Logged by P.L. OGILVIE	Project No 247	Date 26/09/89
FIELD COORDINATES			SURVEYED COORDINATES		Sheet 1 of 6
Lat. 29335	Elev.	Dip -50°	Lat. 29327.47	Elev. 3573.22	Dip -53°	Hole No HB9-2
Dep. 30305	Depth	Bearing 320°	Dep. 30321.23	Depth 250	Bearing 320°	

Footage	Rec'y	Rock Type/Alteration	Mineralization Pyrite	% Sulp.	MIF	FROM TO Sample No.	Lt.	% Cu	OPT Au	CuOx	RQD Lith
0-5		Casing. Road Fill				0-5	5.0	N/S	N/S	N/S	0-5 N/A
5-10	70	M.g. Biotite Feldspar porphyry. Dark grey, poorly min.		-		1351 5-7.5	2.5	0.04	0.0036	N/A	5-10 56.0
		weathered limonite staining.		-		1352 7.5-10	2.5	0.08	0.0044	0.05	
10-15	70			-		1353 10-12.5	2.5	0.05	0.0023	N/A	10-20 90.0
				-		1354 12.5-15	2.5	0.05	0.0032	0.025	
15-20	90			-		1355 15-17.5	2.5	0.05	0.0040	N/A	
				-		1356 17.5-20	2.5	0.16	0.0039	0.025	
20-25	100	21'-51.2' BFP Euhedral		-		1357 20-22.5	2.5	0.08	0.0015	N/A	20-30 98.0
		biotite, fresh.		-		1358 22.5-25	2.5	0.12	0.0032	0.015	
25-30	100	Plag alt to sericite.		-		1359 25-27.5	2.5	0.08	0.0031	N/A	
		plag 1mm x 2mm in f.g.		-		1360 27.5-30	2.5	0.08	0.0032	0.010	
30-35	80	grey matrix.		-		1361 30-32.5	2.5	0.16	0.0032	N/A	30-40 90.0
				-		1362 32.5-35	2.5	0.08	0.0033	0.005	
35-40	90			-		1363 35-37.5	2.5	0.08	0.0032	N/A	
						1364 37.5-40	2.5	0.24	0.0043	0.050	

noranda MINES LIMITED BELL COPPER DIVISION

Collared	Completed	Core Size	Logged by PLO	Project No	Date 26/09/89
FIELD COORDINATES			SURVEYED COORDINATES		Sheet 2 of 6
Lat.	Elev.	Dip	Lat.	Elev.	Dip	Hole No
Dep.	Depth	Bearing	Dep.	Depth	Bearing	H 89-2

Footage	Rec'y	Rock Type/Alteration	Mineralization	% Sulp.	MIF	From TO Sample No.	Lt.	% Cu	OPT Au	CuOx	RQD
40-42	45	3' cavity 42'-45'		-		1365 40-42	2.0	0.24	0.0039	N/A	40-5 27.5
42-45	C	3' CAVITY	Porosity 100%	-		Cavity 42-45 NO SAMPLE	3.0	N/S	N/S	N/S	
45-50	90		49.5 - 51.2 massive	-		45-47.5 1366 47.5-49.5 1367	2.5 2.0	0.40 1.94	0.0105 0.0146	0.03 N/A	
			cpy, minor cc, mo	50		1368 49.5-51.2	1.7	16.00	0.2280	0.08	
50-55	90	51.2'-58' F.g. grey volcanic		-		1369 51.2-52.5	1.3	1.00	0.0081	N/A	506 72.0
				-		1370 52.5-55.0	2.5	0.52	0.0030	0.015	
55-60	90	58' Begin lt. grey BFP,	some limonite	1		1371 55.0-57.5	2.5	0.12	0.0032	N/A	
		plag + bt. completely altered	staining	1		1372 57.5-60.0	2.5	0.48	0.0036	0.055 37	
60-65	90	to sericite in f-g sericite		1		1373 60.0-62.5	2.5	0.12	0.0039	N/A	60- 70.
		92. matrix.	Porosity	1		1374 62.5-65.0	2.5	0.12	0.0036	0.02	
65-70	90	Begin breccia.	3	4		1375 65.0-67.5	2.5	2.36	0.0078	N/A	
		Angular clast of BFP	3	4		1376 67.5-70.0	2.5	2.40	0.0090	0.025	
70-75	90	altered to sericite embedded	cpy. occluding porosity, cementing	2	3	1377 70.0-72.5	2.5	1.68	0.0107	N/A	70- 83
		in rock flour matrix	clasts.	2		1378 72.5-75.0	2.5	3.08	0.0082	0.035	
			~~Dolomite~~								

noranda MINES LIMITED BELL COPPER DIVISION

Collared	Completed	Core Size	Logged by PLD	Project No	Date 26/04/84
FIELD COORDINATES			SURVEYED COORDINATES		Sheet 3 of 6
Lat.	Elev.	Dip	Lat.	Elev.	Dip	Hole No H 84-2
Dep.	Depth	Bearing	Dep.	Depth	Bearing	

Footage	Rec'y	Rock Type/Alteration	Mineralization	% Sulp.	MIF.	Sample No.	Lt.	% Cu	OPT Au	CuOx	RQD
75-80	85	Some matrix supported by cpy and dolomite	8 cpy, cc tr	4		1379 75.0-77.5	2.5	5.44	0.0107	N/A	
		occluding porosity	8 lim staining dolomite	5		1380 77.5-80.0	2.5	2.66	0.0145	0.225	
80-85	85	volcanic clasts form around 50% of clasts	4	5		1381 80.0-82.5	2.5	1.76	0.0090	N/A	80-79
			4	5		1382 82.5-85.0	2.5	2.06	0.0090	0.0215	
85-90	90	rhombic dolomite lining cavities.	5 malachite staining	3		1383 85.0-87.5	2.5	1.09	0.0093	N/A	
		clast size 0.5 x 1 cm	6 with limonite	4		1384 87.5-90.0	2.5	1.02	0.0116	0.0215	
90-95	95	to 2 cm x 2 cm.	2	4		1385 90.0-92.5	2.5	1.66	0.0204	N/A	90-83
			3	3		1386 92.5-95.0	2.5	1.08	0.0087	0.02	
95-100	95		3	2		1387 95.0-97.5	2.5	0.84	0.0087	N/A	
			2	2		1388 97.5-100.0	2.5	0.81	0.0075	0.0088	
100-105	85	Massive Grey porphyrytic volcanic	0 poorly min. No brecciation	1		1389 100.0-102.5	2.5	0.10	0.0085	N/A	100-87
			5	2		102.5-105.0 1390	2.5	0.88	0.0064	0.0225	
105-110	00	Breccia clasts of BFI and volcanit	2	4		105.0-107.5 1391	2.5	1.74	0.0099	N/A	
		in rock flour matrix.	0	1		107.5-110.0 1392	2.5	0.70	0.0053	0.019	

noranda MINES LIMITED BELL COPPER DIVISION

Collared	Completed	Core Size	Logged by	Project No	Date 21/01/19
FIELD COORDINATES			SURVEYED COORDINATES		Sheet 4 of 6
Lat.	Elev.	Dip	Lat.	Elev.	Dip	Hole No 87-2
Dep.	Depth	Bearing	Dep.	Depth	Bearing	

Footage	Rec'y	Rock Type/Alteration	Mineralization	Porosity	% Sulp.	MIF.	Sample No.	Lt.	% Cu	OPT Au	CuOx	REQ Lit
110-115	100	Bx, BFP, volcanic	cpl in veinlets	8	3		110.0-112.5 1393	2.5	1.36	0.0085	N/A	110-12 93-(
		clasts. Rock flour to 50%	cavities.	8	3		112.5-115.0 1394	2.5	0.80	0.0032	N/A	
115-120	98	of Rock, forms matrix.	limonite, Mn stain	0	2		115.0-117.5 1395	2.5	1.68	0.0032	0.065	
			on fracture	1	2		117.5-120.0 1396	2.5	0.84	0.0032	N/A	
120-125	100			0	2		120.0-122.5 1397	2.5	1.36	0.0044	N/A	120- 91-
				2	3		122.5-125.0 1398	2.5	1.60	0.0026	0.005	
125-130	100	larger grey volcanic	cpl	1	2		125.0-127.5 1399	2.5	1.02	0.0032	N/A	
		clasts.		0			1400 127.5-130.0	2.5	1.20	0.0023	N/A	
130-135	98		Polomite lining	8			1401 130.0-132.5	2.5	0.0C	0.0023	0.001	130- 93
			large cavities.	8			1402 132.5-135.0	2.5	0.1C	0.0029	N/A	
135-140	98			8			1403 135.0-137.5	2.5	0.16	0.0023	N/A	
				8			1404 137.5-140.0	2.5	0.10	0.0018	0.001	
140-145	100	End mineralized bx.					1405 140.0-142.5	2.5	0.2+	0.021	N/A	140- 93
		↳					142.5-145.0 1406	2.5	0.12	0.0029	N/A	

noranda MINES LIMITED BELL COPPER DIVISION

Collared	Completed	Core Size	Logged by P.C.	Project No	Date 26/9/89
FIELD COORDINATES			SURVEYED COORDINATES		Sheet 5 of 6
Lat.	Elev.	Dip	Lat.	Elev.	Dip	Hole No 84-2
Dep.	Depth	Bearing	Dep.	Depth	Bearing	

Footage	Rec'y	Rock Type/Alteration	Mineralization	Porosity	% Sulp.	MIF	Sample No.	Lt.	% Cu	OPT Au	CuOx	Rock Lt.
145-150	100	Fine bx and rock flour.	Poorly mineralized	0	–		145.0-147.5 1407	2.5	0.04	0.0032	0.0005	
				0	–		147.5-150.0 1408	2.5	0.04	0.0029	N/A	
150-155	100			0	–		150.0-152.5 1409	2.5	0.06	0.0025	N/A	150-91
				1	–		152.5-155.0 1410	2.5	0.08	0.0028	0.0005	
155-160	100	coarse bx, more cavities		0	–		155.0-157.5 1411	2.5	<0.01	0.0035	N/A	
		lined with dolomite		2	–		157.5-160.0 1412	2.5	<0.01	0.0036	N/A	
160-165	100	clast supported bx.		4	–		160.0-162.5 1413	2.5	0.02	0.0032	0.0005	160-97
				4	–		162.5-165.0 1414	2.5	<0.01	0.0032	N/A	
165-170	98	167' Massive grey volcanic		0	–		165.0-167.5 1415	2.5	<0.01	0.0028	N/A	
				0	–		167.5-170.0 1416	2.5	<0.01	0.0032	0.0005	
170-175	100	172' Clast supported bx.		0	–		170.0-172.5 1417	2.5	0.02	0.0026	N/A	170-97
				5	–		1418 172.5-175.0	2.5	<0.01	0.0032	N/A	
175-180	100			3	–		1419 175.0-177.5	2.5	0.02	0.0030	<0.0005	
							177.5-180.0 1420	2.5	0.01	0.0023	N/A	

noranda MINES LIMITED BELL COPPER DIVISION

Collared	Completed	Core Size	Logged by PLO	Project No	Date 26/9/84
FIELD COORDINATES			SURVEYED COORDINATES		Sheet 6 of
Lat.	Elev.	Dip	Lat.	Elev.	Dip	Hole No 84-2
Dep.	Depth	Bearing	Dep.	Depth	Bearing	

Footage	Rec'y	Rock Type/Alteration	Mineralization	% Sulp.	MIF	Sample No.	Lt.	% Cu	OPT Au	CuOx	
180-185	100			-		180.0-182.5 1421	2.5	0.01	0.0028	N/A	18 9
	100	184' begin massive BFP.	minor cpy	-		182.5-185.0 1422	2.5	0.35	0.0026	0.0005	
185-190	100	Light to dark grey	fracture filling	-		185-190 1423	5.0	0.03	0.0023	N/A	
190-195	100	some fresh black Bt.		-		190-195 1424	5.0	0.07	0.0032	N/A	19 91
195-200	100	196' Begin Massive		1		195-200 1425	5.0	0.09	0.0029	N/A	
200-205	100	grey volcanic and minor		-		1426 200-205	5.0	0.04	0.0026	N/A	200
205-210	100	volcanic bx.		-		1427 205-210	5.0	0.17	0.0044	N/A	
210-215	100	211 bx to 218 with		1		1428 210-215	5.0	0.03	0.0026	N/A	210 98
215-220	100	dolomite cement 218 Dcy-grey BFP,	hematite	-		1429 215-220	5.0	0.06	0.0032	N/A	
220-225	100	Massive, fresh books	20 minor fractures	2		1430 220-225	5.0	0.41	0.0073	N/A	220 98
225-230	100		filled with cpy			1431 225-230	5.0	0.11	0.0029	N/A	
230-235	100					1432 230-235	5.0	0.09	0.0032	N/A	230 94
235-240	100			-		1433 235-240	5.0	0.09	0.0023	N/A	
240-245	100			-		1434 240-245	5.0	0.12	0.0026	N/A	240 99
245-250	100	247' Minor Bx, some volcanic frags. End Casing left.	Py, dol, cpy fracture filling	2		1435 245-250	5.0	0.50	0.047	N/A	

noranda MINES LIMITED BELL COPPER DIVISION

Collared Sept. 26/89	Completed Sept 28/89	Core Size NQ	Logged by P.L. Ogryzlo	Project No	Date 28/01/89
FIELD COORDINATES			SURVEYED COORDINATES		Sheet 1 of 5
Lat. 29300	Elev. 3600	Dip -50	Lat. 29311.12	Elev. 3572.4	Dip -50	Hole No H89-3
Dep. 30315	Depth	Bearing 270	Dep. 30323.30	Depth 239	Bearing 270	

Footage	Rec'y	Rock Type/Alteration	Mineralization	% Sulp.	M1F	Sample No.	Lt.	% Cu	OPT Au	CuOx	RQD
0-25		Casing. Road fill, soil		b		0-25.0	25.0	N/S	N/S	N/S	
25-30	50	Dark, medium and light grey volcanic Hard, fractured		tr		1436 25.0-30.0	5.0	0.220	0.0044	N/A	25-40
	75	filled with hematite.		tr							
30-35	98	Some limonite staining from weathering.		Tr		30.0-32.5 1437	2.5	0.100	0.0038	N/A	30-82
	98	Rare fractures filled	qz+py filling fractures	tr		32.5-35.0 1438	2.5	0.100	0.0041	N/A	
35-40	100	with qz. and py.		tr		1439 35.0-37.5	2.5	0.080	0.0023	N/A	
	100	Volcanics ~~and~~ trace spotted texture, xl size 0.5mm + 0.5mm		Tr		1440 37.5-40.0	2.5	0.160	0.0035	N/A	
40-45	100	feldspar phyric		tr		1441 40.0-42.5	2.5	0.120	0.0026	0.005	40-56
	100			tr		1442 42.5-45.0	2.5	0.040	0.0026	N/A	
45-50	85	49-50 Black f.g. Volcanic		tr		1443 45.0-47.5	2.5	0.180	0.0268	N/A	
	85			tr		1444 47.5-50.0	2.5	0.140	0.0032	N/A	
50-55	90	50- Felspar phyric volcanic, grey.		tr		1445 50.0-52.5	2.5	0.080	0.0035	N/A	50-75
55-60	90			1		1446 52.5-55.0	2.5	0.080	0.0035	0.020	
	80			1		1447 55.0-57.5	2.5	0.100	0.0032	N/A	
	80					1448 57.5-60.0	2.5	0.240	0.0029	N/A	

noranda MINES LIMITED BELL COPPER DIVISION

Collared	Completed	Core Size	Logged by	Project No	Date 28 09/89
FIELD COORDINATES			SURVEYED COORDINATES		Sheet 2 of 5
Lat.	Elev.	Dip	Lat.	Elev.	Dip	Hole No
Dep.	Depth	Bearing	Dep.	Depth	Bearing	H 89-3

Footage	Rec'y	Rock Type/Alteration	Mineralization	Porosity	% Sulp.	MIF	Sample No.	Lt.	% Cu	OPT Au	CuO_x	Rock Type
60-65	60	60-62.0 Broken ground Felsic volcanic, breccia,	weathered, lim. stain py, cpy, tr mo, cc	N.A.	8		1449 60.0-62.5	2.5	1.00	0.0055	N/A	60-67
	75	62.0 Breccia. Angular clasts of mag. BFP with qz-ser alteration,		8	10		1450 62.5-65.0	2.5	4.68	0.0117	N/A	
65-70	85	grey volcanics and felsic	cpy, py and dolomite occluding	6	10		1451 65.0-67.5	2.5	2.38	0.0050	N/A	
	85	volcanics.	porosity.	6	10		1452 67.5-70.0	2.5	1.760	0.0053	0.025	
70-75	90	Clast size 1cm x 0.5 cm to	Sulphides show angular	10	10		1453 70.0-72.5	2.5	1.400	0.0065	N/A	70-80
	90	2 cm by 2 cm.		8	8		1454 72.5-75.0	2.5	1.880	0.1021	N/A	
75-80	80	75'-4" BFP, possibly large clast.		8	8		1455 75.0-77.5	2.5	1.640	0.0102	N/A	
	80			8	8		1456 77.5-80.0	2.5	0.640	0.0075	N/A	
80-85	50	79.6-85 Badly Broken ground, oxidized,	malachite, lim.	NA	4		1457 80.0-82.5	2.5	0.360	0.0041	N/A	80-82
	50			NA	4		1458 82.5-85.0	2.5	0.360	0.0038	0.115	
85-90	80	86', Begin massive pale grey BFP, qz-ser alteration.		0	1		1459 85.0-87.5	2.5	0.080	0.0032	N/A	
	100			0	1		1460 87.5-90.0	2.5	0.160	0.0038	N/A	
90-95	95	92' Intrusive contact. Begin medium grey volcanic	2 cm veins of cpy, weathered, oxidized	2	1		1461 90.0-92.5	2.5	0.360	0.0047	N/A	90-95
	95	feldspar phyric.		0	4		1462 92.5-95.0	2.5	1.320	0.0055	N/A	

noranda MINES LIMITED BELL COPPER DIVISION

Collared	Completed	Core Size NQ	Logged by PLO	Project No	Date 28/09/87
FIELD COORDINATES			SURVEYED COORDINATES		Sheet 3 of 5
Lat.	Elev.	Dip	Lat.	Elev.	Dip	Hole No 89-3
Dep.	Depth	Bearing	Dep.	Depth	Bearing	

Footage	Rec'y	Rock Type/Alteration	Mineralization	% Sulp.	MIF	Sample No.	Lt.	% Cu	OPT Au	CuOx	
95-100	95	94- light grey fragmental lithic tuff.		2		1463 95.0-97.5	2.5	0.200	0.0035	N/A	
	95	97.5-100 minor breccia zones,	cpy filling porosity in calcite	3		1464 97.5-100.0	2.5	0.800	0.0052	0.010	
100-105	95	angular fragments felsic volcanic embedded in calcite	vnlts and stringers of py	3		1465 100.0-102.5	2.5	0.360	0.0029	N/A	100 9x
	95	101 Intrusive contact. BFP, oxidized.	lim, py in vnlts.	2		1466 102.5-105.0	2.5	0.520	0.0152	N/A	
105-110	95	104 Crystal tuff, 105 BFP		2		1467 105.0-107.5	2.5	0.280	0.0035	N/A	
	99		cpy. py diss in BFP	2		1468 107.5-110.0	2.5	0.360	0.0038	N/A	
110-115	100	Xenoliths of felsic volcanic in BFP		2		1469 110.0-112.5	2.5	0.560	0.0041	N/A	110- 9x
	100	113 Begin massive BFP	py diss and in vnlts	2		1470 112.5-115.0	2.5	0.090	0.0029	0.005	
115-120	100			2		1471 115.0-117.5	2.5	0.200	0.0038	N/A	
	95	128-129 qz vn with qz filling cavity.		2		1472 117.5-120.0	2.5	0.240	0.0032	N/A	
120-125	100	Massive BFP, pale grey to white,		2		1473 120.0-122.5	2.5	0.080	0.0034	N/A	120- 97
	100	Euhedral plag. 1mm x 2mm silt- to pale green, soft, sericitized- Rare fresh BT.		2		1474 122.5-125.0	2.5	0.050	0.0032	N/A	
125-130	100			2		1475 125-130	5.0	0.080	0.0035	N/A	
	100			2							

noranda MINES LIMITED BELL COPPER DIVISION.

Collared	Completed	Core Size NQ	Logged by PLO		Project No	Date 24/04/89
FIELD COORDINATES			SURVEYED COORDINATES			Sheet 4 of 5
Lat.	Elev.	Dip	Lat.	Elev.	Dip	Hole No
Dep.	Depth	Bearing	Dep.	Depth	Bearing	HB2-3

Footage	Rec'y	Rock Type/Alteration	Mineralization	% Sulp.	MIF	Sample No.	Lt.	% Cu	OPT Au	CuOx	RQD
130-135	100	BFP, sericite alteration diminishing, grading to	11m staining adjacent	1		1476 130.0-135	5.0	0.160	0.0035	0.005	130-135 100
135-140	100	Biotite Feldspar porphyry,	to fractures	1		1477 135-140	5.0	0.120	0.0050	N/A	
140-145	100	fresh, medium grey, massive		1		1478 140-145	5.0	0.120	0.0040	N/A	140-145 99
145-150	100	Euhedral plag. phenocrysts		tr		1479 145-150	5.0	0.015	0.0032	N/A	
150-155	100	showing some alteration, fresh	Py sparsely disseminated	-		1480 150-155	5.0	0.080	0.0041	N/A	150-155 97
155-160	100	euhedral black bt. in	115 Fluorite? in cavity.	-		1481 155-160	5.0	0.040	0.0035	N/A	
160-165	100	aphanitic grey matrix.		1		1482 160-165	5.0	0.060	0.0041	0.005	160-165 99
165-170	100	Some greenish chlorite patches.	Py disseminated	1		1483 165-170	5.0	0.228	0.0044	N/A	
170-175	100	169-172 - pale bleached	Py fracture filling	1		1484 170-175	5.0	0.14	0.0041	N/A	170-175 96
175-180	100	massive BFP		-		1485 175-180	5.0	0.04	0.0032	N/A	
180-185	100	Dark grey massive BFP		-		1486 180-185	5.0	0.04	0.0035	N/A	180-185 98
185-190	100	Some bleaching	Py diss.	1		1487 185-190	5.0	0.04	0.0041	N/A	
190-195	100			1		1488 190-195	5.0	0.10	0.0034	0.005	190-195 96
195-200	98	198-202. BFP chilled contact,	cpy blebs, cpy-py.	1		1489 195-200	5.0	0.08	0.0032	N/A	
200-205	100	f-g, xenoliths of volcanics	on fracture			1490 200-205	5.0	0.34	0.0064	N/A	200-205 98
		202.									

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Collared Sept 26/89	Completed Sept 26/89	Core Size NQ	Logged by PLO	Project No 247	Date 29/09/89
FIELD COORDINATES			SURVEYED COORDINATES		Sheet 5 of 5
Lat.	Elev.	Dip	Lat.	Elev.	Dip
Dep.	Depth	Bearing	Dep.	Depth	Bearing

Hole No H 89-3

Footage	Rec'y	Rock Type/Alteration	Mineralization	% Sulp.	MIF	Sample No.	Lt.	% Cu	OPT Au	CuOx	RQD
205-210	100	202.5 Begin f-g; felsic to intermediate volcanic,	Hematite stringers,	.1		1491 205-210	5.0	0.36	0.0047	N/A	
210-215	100	section welded bx. and lapilli tuff, feldspar-phyric.	Some py. Calcite veilts.	tr		1492 210-215	5.0	0.18	0.0035	N/A	210-[illegible] 99
215-220	100			tr		1493 215-220	5.0	0.12	0.0032	N/A	
220-225	98			–		1494 220-225	5.0	0.14	0.0032	0.01	220-[illegible] 95
225-230	100			–		1495 225-230	5.0	0.24	0.0035	N/A	
230-235	100			–		1496 230-235	5.0	0.28	0.0050	N/A	230-2[illegible] 91
235-239		End.		–		1497 235-239	4.0	0.20	0.0035	N/A	
		Casing left in hole.									

noranda MINES LIMITED BELL COPPER DIVISION

Collared Sept 26/89	Completed Sept 27/89	Core Size NQ	Logged by P.L. Ogryzlo	Project No. 247	Date 04/09/89
FIELD COORDINATES			SURVEYED COORDINATES		Sheet 1 of 5
Lat. 29300	Elev.	Dip 90	Lat. 29313.94	Elev. 3572.23	Dip. -88°
Dep. 30315	Depth	Bearing	Dep. 30326.45	Depth 230	Bearing 270.0°

Hole No. H 89-4

Footage	Rec'y	Rock Type/Alteration	Mineralization	% Sulp.	MIF	Sample No.	Lt.	% Cu	OPT Au	CuOx	PGE Lab
0-35		Casing. Road Fill.				0-35	35.0	N/S	N/S	N/S	
35-40	50	Oxidized broken rock. Mostly bleached BFP	weathered, lim. stain			1001 35.0-37.5	2.5	0.34	0.0047	N/A	
	50					1002 37.5-40.0	2.5	0.34	0.0050	N/A	
40-45	60	40'- Bleached BFP, pale grey		2		1003 40.0-42.5	2.5	0.04	0.0026	0.005	40-5 41.0
	40			2		1004 42.5-45.0	2.5	0.02	0.0032	N/A	
45-50	70			1		1005 45.0-47.5	2.5	0.02	0.0020	N/A	
	70		lim. stain, clay	-		1006 47.5-50.0	2.5	0.02	0.0023	N/A	
50-55	60	52-60 Oxidized, broken, weathered -	lim, mo in cavity.	1		1007 50.0-52.5	2.5	0.16	0.0029	N/A	50-6 29.5
	60	minor volcaniclastics				1008 52.5-55.0	2.5	0.10	0.0035	N/A	
55-60	60					1009 55.0-57.5	2.5	0.16	0.0038	0.045	
	60					1010 57.5-60.0	2.5	0.30	0.0038	N/A	
60-65	70	63'- Medium grey volcanic, bleached - Feldspar-phyric,	Hematite stringers.			1011 60.0-62.5	2.5	0.20	0.0032	N/A	60-7 28.5
	70	Feldspar - altered tuff.				1012 62.5-65.0	2.5	0.10	0.0038	N/A	
65-70	75					1013 65.0-67.5	2.5	0.14	0.0023	N/A	
						1014 67.5-70.0	2.5	0.22	0.0023	N/A	

noranda MINES LIMITED BELL COPPER DIVISION

Collared	Completed	Core Size NQ	Logged by P.L. Ogryzlo	Project No 247	Date 29/09/89
FIELD COORDINATES			SURVEYED COORDINATES		Sheet 2 of 5
Lat.	Elev.	Dip	Lat.	Elev.	Dip	Hole No H 89-4
Dep.	Depth	Bearing	Dep.	Depth	Bearing	

Footage	Rec'y	Rock Type/Alteration	Mineralization	% Sulp.	MIF	Sample No.	Li.	% Cu	OPT Au	CuOx	Rad Lab
70-75	85		Fractures filled with hematite.			1015 70.0-72.5	2.5	0.18	0.0020	0.025	70-80 58.5
	85					1016 72.5-75.0	2.5	0.22	0.0023	N/A	
75-80	85					1017 75.0-77.5	2.5	0.28	0.0044	N/A	
	85					1018 77.5-80.0	2.5	0.40	0.0050	N/A	
80-85	90	80-96. Highly altered sericite pyrite rock, gritty texture	Py. disseminated.	5		1019 80.0-82.5	2.5	0.26	0.0044	N/A	80-90 79.0
	90	Appears to be altered volcanic.		5		1020 82.5-85.0	2.5	0.16	0.0029	N/A	
85-90	90			5		1021 85.0-87.5	2.5	0.04	0.0020	0.005	
	90			5		1022 87.5-90.0	2.5	0.14	0.0020	N/A	
90-95	95		Py stringers.	3		1023 90.0-92.5	2.5	0.18	0.0029	N/A	90-100 72.0
	95			3		1024 92.5-95.0	2.5	0.28	0.0044	N/A	
95-100	95	181 - 97. Broken ground	limonite, clay, ground sulphide	5		1025 95.0-97.5	2.5	0.36	0.0035	N/A	
	80	97-100 Breccia cemented with cpy	cpy > py.	5		1026 97.5-100.0	2.5	1.60	0.0061	N/A	
100-105	95	100-105 BFP, intense sericite alteration, white		5		1027 100.0-102.5	2.5	0.48	0.0047	0.020	100-110 74.0
	95			2		1028 102.5-105.0	2.5	0.76	0.0056	N/A	

noranda MINES LIMITED BELL COPPER DIVISION

Collared	Completed	Core Size	Logged by		Project No.	Date 29/09/89
FIELD COORDINATES			SURVEYED COORDINATES			Sheet 3 of 5
Lat.	Elev.	Dip	Lat.	Elev.	Dip	Hole No. H89-4
Dep.	Depth	Bearing	Dep.	Depth	Bearing	

Footage	Rec'y	Rock Type/Alteration	Mineralization	Porosity	% Sulp.	MIF	Sample No.	Lt.	% Cu	OPT Au	CuCx	Rock Type
100-105	100				5		1028 100-105	2.5				
	100											
105-110	85	105-111 - Breccia, angular clasts cemented with cpy, dolomite	cpy, py occluding porosity with	2	3		1029 1050-1075	2.5	0.70	0.0050	N/A	
	90	111-117 Bleached BFP,	dolomite, calcite	2	5		1030 107.5-110.0	2.5	0.68	0.0047	N/A	
110-115	95	Some breccia		1	5		1031 110.0-112.5	2.5	0.44	0.0035	N/A	110-12 80.(
	95	117 Breccia, Angular clasts of intermediate volcanics,		0	3		1032 112.5-115.0	2.5	0.52	0.0064	N/A	
115-120	98	clasts 1cm x 1cm to	py, cpy occluding porosity in angular	0	5		1033 115.0-117.5	2.5	0.68	0.0044	0.01	
	98	2cm x 5cm in size.	cavities. Calcite also in cavities	2	5		1034 117.5-120.0	2.5	0.70	0.0038	N/A	
120-125	98	Ra-e clasts of BFP altered to Sericite.		4	6		1035 1200-122.5	2.5	0.82	0.0029	N/A	120-13 97.(
	99			6	6		1036 122.5-125.0	2.5	1.32	0.0105	N/A	
125-130	98			4	2-4		1037 125.0-127.5	2.5	0.60	0.0038	N/A	
	98			5	6-8		1038 1275-130.0	2.5	1.06	0.0050	N/A	
130-135	100			6	6-8		1039 130.0-132.5	2.5	0.58	0.0032	0.005	130-14 77.0
	97			6	5		1040 132.5-135.0	2.5	0.26	0.0117	N/A	

noranda MINES LIMITED BELL COPPER DIVISION

Collared	Completed	Core Size NQ	Logged by PLO	Project No 247	Date 29/09/89
FIELD COORDINATES			SURVEYED COORDINATES		Sheet 4 of 5
Lat.	Elev.	Dip	Lat.	Elev.	Dip	Hole No
Dep.	Depth	Bearing	Dep.	Depth	Bearing	H 89-4

Footage	Rec'y	Rock Type/Alteration	Mineralization Porosity	% Sulp.	MIF	Sample No.	Lt.	% Cu	OPT Au	CuOx	RQD
135-140	95		1	6		1041 135.0-137.5	2.5	0.24	0.0020	N/A	
140-145	95		1	1		1042 137.5-140.0	2.5	0.32	0.0020	N/A	
140-145	95		1 py and cpy filling between clasts.	6		1043 140.0-142.5	2.5	0.78	0.0041	N/A	140-15 70.0
	95		5 Chalcocite	1		1044 142.5-145.0	2.5	1.11	0.0055	N/A	
145-150	95	Sulphides in inter breccia porosity decreasing	5 Coating py.	1		1045 145.0-147.5	2.5	1.62	0.0023	0.01	
	95		5	5		1046 147.5-150.0	2.5	0.58	0.0082	N/A	
150-155	95		3	3		1047 150.0-152.5	2.5	0.50	0.0055	N/A	150-16 80.0
	98		5	3		1048 152.5-155.0	2.5	0.38	0.0029	N/A	
155-160	98		5	3		1049 155.0-157.5	2.5	0.64	0.0041	N/A	
	98		6	3		1050 157.5-160.0	2.5	0.94	0.0032	N/A	
160-165	98	160 BFP, white, altered to sericite, Massive.	1	2		1051 160.0-162.5	2.5	0.40	0.0026	0.005	160-170 88.0
	98		0	2		1052 162.5-165.0	2.5	0.10	0.0035	N/A	
165-170	98		2 167' Marcasite cockscomb with dolomite in	4		1053 165.0-167.5	2.5	0.22	0.0029	N/A	
	95		1 cavities	2		1054 167.5-170.0	2.5	0.16	0.0061	N/A	
						No samples were taken for 1055, 1056 1057 68 samples in order					

noranda MINES LIMITED BELL COPPER DIVISION

Collared	Completed	Core Size	Logged by PLO	Project No	Date
FIELD COORDINATES			SURVEYED COORDINATES		Sheet 5 of 5
Lat.	Elev.	Dip	Lat.	Elev.	Dip	Hole No H 89-4
Dep.	Depth	Bearing	Dep.	Depth	Bearing	

Footage	Rec'y	Rock Type/Alteration	Mineralization	% Sulp.	MIF	Sample No.	Lt.	% Cu.	OPT Au	CuOx	
170-175			Py fracture filling	3		1058 170.0-175	2.5	0.06	0.0029	N/A	170-18 83-(
		Bleached BFP. play altered	Py stringers and	5		1059 172.5-175.0	2.5	0.24	0.0026	N/A	
175-180		to sericite, Pale green. Bt. bleached. Massive BFP	minor bx filing	3		1060 175-180	5.0	0.22	0.0058	0.005	
180-185		Bleaching diminished, BFP with fresh hooks black Bt.		1		1061 180-185	5.0	0.22	0.0032	N/A	180-19 79-
185-190		Greenish grey to grey.		1		1062 185-190	5.0	0.20	0.0029	N/A	
190-195				1		1063 190-195	5.0	0.06	0.0023	N/A	190-20 88-
195-200		196 Greenish, bleached BFP		1		1064 195-200	5.0	0.06	0.0029	N/A	
200-205		202 Greenish bleached BFP 204 Begin Felsic volcanics		1		1065 200-205	5.0	0.04	0.0026	N/A	200-2 78-5
205-210		volcanic lapilli Tuff.		1		1066 205-210	5.0	0.10	0.0029	0.005	
210-215		Grain size 0.5 mm.		1		1067 210-215	5.0	0.14	0.0032	N/A	210-2 80-(
215-220				1		1068 215-220	5.0	0.38	0.0041	N/A	
220-225		224' Feldspar phyric,		3		1069 220-225	5.0	0.50	0.0143	N/A	220-2 85-(
225-230		buff to grey in color.		3		1070 225-230	5.0	0.12	0.0035	N/A	
		End. Casing left				230-232.5 1071	2.5	0.20	0.0049	N/A	
		in ground.									

noranda MINES LIMITED BELL COPPER DIVISION

Collared	Completed	Core Size NQ	Logged by P. L. Ogryzlo	Project No	Date
FIELD COORDINATES			SURVEYED COORDINATES		Sheet 1 of 4
Lat. 27912.06	Elev. 3600	Dip -45	Lat. 29207.15	Elev. 3569.47	Dip -47	Hole No
Dep. 30345	Depth	Bearing 270	Dep. 30348.46	Depth 247'	Bearing 270	H 87-5

Footage	Rec'y	Rock Type/Alteration	Mineralization	% Sulp.	MIF	Sample No.	Lt.	% Cu	OPT Au	Cu Ox	RQD
0-35		Casing. Road fill, till.				0.0-35.0	35.0	N/S	N/S	N/S	
35-40	60	Dark grey fragmental volcanic		—		35.0-37.5 1072	2.5	0.10	0.0029	0.035	35-27.
	60	"		—		37.5-40.0 1073	2.5	0.10	0.0032	N/A	
40-45	90	BFP. Medium grey. Euhedral plag slightly altered to	92- unit.	tr		40.0-42.5 1074	2.5	0.04	0.0032	N/A	40-87.
	95	kaolinite. & t. fresh, euhedral.		—		42.5-45.0 1075	2.5	0.04	0.0029	N/A	
45-50	95	Minor xenoliths grey volcanics.		—		45.0-47.5 1076	2.5	0.24	0.0075	N/A	
	95			1		47.5-50.0 1077	2.5	0.08	0.0026	N/A	
50-55	98	47'. Begin dk grey fragmental intermediate	Hematite diss and in stringers.	1		50.0-52.5 1078	2.5	0.18	0.0032	0.035	40-88.
	98	volcanic. Fragments 0.5 mm, appears to be welded tuff.	Qz, calcite veinlets.	1		52.5-55.0 1079	2.5	0.14	0.0032	N/A	
55-60	98	"		1		55.0-57.5 1080	2.5	0.12	0.0038	N/A	
	98			1		57.5-60.0 1081	2.5	0.14	0.0032	N/A	
60-65	98			1		60.0-62.5 1082	2.5	0.14	0.0035	N/A	60-76.
	98			1		62.5-65.0 1083	2.5	0.22	0.0041	N/A	
65-70	98		cpy in fractures	2		65.0-67.5 1084	2.5	0.22	0.0043	0.01	
	95					67.5-70.0 1085	2.5	0.26	0.0040	N/A	

noranda MINES LIMITED BELL COPPER DIVISION

Collared	Completed	Core Size NQ	Logged by P.L. OGRYZLO	Project No	Date
FIELD COORDINATES			SURVEYED COORDINATES		Sheet 2 of 4
Lat.	Elev.	Dip	Lat.	Elev.	Dip	Hole No H89-5
Dep.	Depth	Bearing	Dep.	Depth	Bearing	

Footage	Rec'y	Rock Type/Alteration	Mineralization	% Sulp.	MIF	Sample No.	Lt.	% Cu	OPT Au	CuOx	RQD
70-74	90	Dark grey volcanic. contd.	1.5" Q:- calcite - by vein	2		70.0-72.5 1086	2.5	0.20	0.0035	N/A	70-8 23.
	90			1		72.5-75.0 1087	2.5	0.20	0.0032	N/A	
75-80	90	Broken ground	limonite staining	-		75.0-77.5 1088	2.5	0.12	0.0026	N/A	
	90		Calcite veins	-		1089 77.5-80.0	2.5	0.12	0.0026	0.03	
80-85	95	80-81 - 1Tm - clay seam		-		1090 80.0-82.5	2.5	0.16	0.0040	N/A	80- 74
	95	81-91 light to med- grey felsic volcanic		-		1091 82.5-85.0	2.5	0.16	0.0032	N/A	
85-90	95	87-89 Breccia - Poorly developed.	Calcite veins.	-		1092 85.0-87.5	2.5	0.22	0.0025	N/A	
	95			-		1093 87.5-90.0	2.5	0.20	0.0032	N/A	
90-95	98	90-91 Breccia	limonite	-		1094 90.0-92.5	2.5	0.10	0.0035	N/A	90-1 86.
	98	91- Felsic tuff, med. grey, intermediate Tuff.		-		1095 92.5-95.0	2.5	0.12	0.0034	0.005	
95-100	98			-		95.0-97.5 1096 97.5-100.0 1097	2.5 2.5	0.10 0.12	0.0031 0.0037	N/A N/A	
100-105	85	102-106 Broken ground.	limonite on fractures, Calcite veins, hematite	-		1098 100-105	5.0	0.16	0.0044	N/A	100- 48.(
105-110	90			tr		1099 105-110	5.0	0.28	0.0041	N/A	
110-115	95		hematite stringers	1		1100 110-115	5.0	0.16	0.0035	N/A	110-12 39-5
115-120	85	118-119 broken ground		1		1101 115-120	5.0	0.14	0.0035	0.03	

noranda MINES LIMITED BELL COPPER DIVISION

Collared	Completed	Core Size	Logged by PLO	Project No	Date 22/09/89
FIELD COORDINATES			SURVEYED COORDINATES		Sheet 3 of 4
Lat.	Elev.	Dip	Lat.	Elev.	Dip	Hole No
Dep.	Depth	Bearing	Dep.	Depth	Bearing	H89-5

Footage	Rec'y	Rock Type/Alteration	Mineralization	% Sulp.	MIF	Sample No.	Lt.	% Cu	OPT Au	CO2 %	RS
120-125	90	Tuff contd. fragments 0.5 mm - XI Tuff ?	py vn	2		1102 120-125	5.0	0.22	0.004	N/A	120-130 39.
125-130	90		lim on fractures	2		1103 125-130	5.0	0.20	0.004	N/A	
130-135	90		Hem. stringers	1		1104 130-135	5.0	0.08	0.001	N/A	130-1 33-
135-140	90	137-140 fg greenish, mudstone. chloritic.		tr		1105 135-140	5.0	0.26	0.029	N/A	
140-145	95			-		1106 140-145	5.0	0.40	0.023	0.005	140-1 61.
145-150	95	149 contact mudstone/ Tuff. Flame structures,	149 - Qz-lim vnlt	tr		1107 145-150	5.0	0.16	0.037	N/A	
150-155	97	clasts on contact.		tr		1108 150-155	5.0	0.08	0.029	N/A	150-1 88-0
155-160	98	149 - 151 XI tuff 151 - 180 Alternating				1109 155-160	5.0	0.14	0.035	N/A	
160-165	100	XI tuff and mudstone, Flame structures at		tr		1110 160-165	5.0	0.08	0.031	N/A	160-17 92-0
165-170	100	contacts.	hematite stringers	-		1111 165-170	5.0	0.28	0.035	N/A	
170-175	100			-		1112 170-175	5.0	0.12	0.004	0.02	170-18 95.0
175-180	100			-		1113 175-180	5.0	0.08	0.031	N/A	
180-185	100	Tuff bleached, py-ser alteration.		4		1114 180-185	5.0	0.14	0.032	N/A	180-19 93-0
185-190	100		189 py vnlt	4		1115 185-190	5.0	0.12	0.032	N/A	
190-195	100		191 194 py vnlts	9		1116 190-195	5.0	0.16	0.032	N/A	190-200 97.0

noranda MINES LIMITED BELL COPPER DIVISION

Collared	Completed	Core Size	Logged by PLO	Project No	Date 22/09/89
FIELD COORDINATES			SURVEYED COORDINATES		Sheet 4 of 4
Lat.	Elev.	Dip	Lat.	Elev.	Dip	Hole No
Dep.	Depth	Bearing	Dep.	Depth	Bearing	H 89-5

Footage	Rec'y	Rock Type/Alteration	Mineralization	% Sulp.	MIF	Sample No.	Lt.	% Cu	OPT Au	CoOx	RQD
195-200	100	Bleached tuff;	197 py vnlt,	3		1117 195-200	5.0	0.10	0.0035	N/A	
200-205	100			B		1118 200-205	5.0	0.12	0.0041	0.015	200-21 94.0
205-210	100	Bleaching, diminished.	204 hem vnlt in cyl	2		1119 205-210	5.0	0.14	0.0029	N/A	
210-215	100	Greenish gray tl and	Lim on fractures	1		1120 210-215	5.0	0.18	0.0041	N/A	210-22 81.0
215-220	100	lapilli tuff.		1r		1121 215-220	5.0	0.24	0.0035	N/A	
220-225	100			1r		1122 220-225	5.0	0.16	0.0041	N/A	220-23 94.0
225-230	100			1r		1123 225-230	5.0	0.20	0.0026	N/A	
230-235	100			1r		1124 230-235	5.0	0.12	0.0032	0.005	230-24 87.0
235-240	100		hem vnlts	1r		1125 235-240	5.0	0.14	0.006	N/A	
240-245	100		245 py vnlts			1126 240-245	5.0	0.20	0.0026	N/A	240-24 75.0
245-248	100					1127 245-248	3.0	0.16	0.0029	N/A	
		End. Casing left.									

noranda MINES LIMITED BELL COPPER DIVISION

Collared	Completed	Core Size NQ	Logged by PLO	Project No 247	Date 30/09/79
FIELD COORDINATES			SURVEYED COORDINATES		Sheet 1 of 4
Lat. 29500	Elev. 3700	Dip -45	Lat. 29509.81	Elev. 3680.42	Dip -49	Hole No
Dep. 30380	Depth	Bearing	Dep. 30460.33	Depth 300'	Bearing 270	H89-6

Footage	Rec'y	Rock Type/Alteration	Mineralization	% Sulp.	MIF	Sample No.	Lt.	% Cu	OPT Au	Cu Ox	RQD
0-20		Casing. Till				0-20	20.0	N/S	N/S	N/S	
20-25	90	Rhyolite. buff to med. grey. Feldspar phyric.	lim stain, lim on	tr		1128 20-25	5.0	0.10	0.0035	N/A	20-30 68
25-30	90	25-33. Contact. BFP, black. Feldspar, Bt. phyric	fractures	0		1129 25-30	5.0	0.06	0.0026	N/A	
30-35	90	33-42 Rhyolite as above.		0		1130 30-35	5.0	0.10	0.0026	0.04	30- 58.
35-40	90		lim stain, lim on fractures	2		1131 35-40	5.0	0.12	0.0038	N/A	
40-45	90	42-49 Bleached BFP, pale grey.	py vnlt	2		1132 40-45	5.0	0.12	0.0032	N/A	40- 69
45-50	95	49-54 Dark grey volcanic		3		1133 45-50	5.0	0.10	0.0029	N/A	
50-55	95	Buff, silicified and bleached sections	py fracture filling	4		1134 50-55	5.0	0.10	0.0035	N/A	50- 72.
55-60	98	54-58. Bleached BFP 58-61 Grey volcanic		tr		1135 55-60	5.0	0.10	0.0029	N/A	
60-65	50	Mud catch. core lost		tr		1136 60-65	5.0	0.24	0.0058	0.03	60- 41.
65-70	95	64-69 BFP. Bleached, bleaching		1/2		1137 65-70	5.0	0.12	0.0035	N/A	
70-75	95	diminishing gradually to		1/2		1138 70-75	5.0	0.16	0.0047	N/A	70- 86.
75-80	100	BFP, dark, fresh Bt.		1/2		1139 75-80	5.0	0.12	0.0035	N/A	
80-85	100	82-85 grey volcanic.		1/2		1140 80-85	5.0	0.14	0.0035	N/A	80- 72.
85-90	100	85-98 BFP		1/2		1141 85-90	5.0	0.06	0.0026	N/A	

noranda MINES LIMITED BELL COPPER DIVISION

Collared	Completed	Core Size	Logged by		Project No	Date 30/09/89
FIELD COORDINATES			SURVEYED COORDINATES			Sheet 2 of 4
Lat.	Elev.	Dip	Lat.	Elev.	Dip	Hole No
Dep.	Depth	Bearing	Dep.	Depth	Bearing	H89-6

Footage	Rec'y	Rock Type/Alteration	Mineralization	% Sulp.	MIF	Sample No.	Lt.	% Cu	OPT Au	Cu Ox	RGT Lab
90-95	100	BFP, dark grey		1		1142 90.0-91.9 1143 91.9-94.3	1.9 2.4	0.04 0.06	0.0020 0.0023	0.005 N/A	90-1[illegible]
	100		92.5-95 Brecciated calcite py vn.	5		1144 94.3-95.0	0.7	0.02	0.0026	N/A	
95-100	100	98' contact. BFP / grey		2		1145 95-100	5.0	0.06	0.0029	N/A	
100-105	100	volcanic, intermediate in composition. Usually fined	crackled, vnlts of qz, carbonate, py, hem.	2		1146 100-105	5.0	0.18	0.0035	N/A	100-1[illegible]
105-110	100	grained, Tuffaceous. Feldspar		2		1147 105-110	5.0	0.18	0.0041	N/A	
110-115	100	phyric.		2		1148 110-115	5.0	0.14	0.0038	0.015	110-1[illegible]
115-120	100	Bleached greenish, buff.	hematite.	3		1149 115-120	5.0	0.17	0.0035	N/A	
120-125	100		calcite vnlts.	2		1150 120-125	5.0	0.08	0.0029	N/A	120-1[illegible]
125-130	100	128' BFP. Dark grey		1		1151 125-130	5.0	0.12	0.0032	N/A	
130-135	100	to greenish, earthy.		1		1152 130-135	5.0	0.09	0.0032	N/A	130-1[illegible]
135-140	98	137-140 Bleached volcanics	cpy diss., hem.	2		1153 135-140	5.0	0.14	0.0029	N/A	
140-145	100	140-162. BFP, pale grey,	py, cpy in qz.	3		1154 140-145	5.0	0.30	0.0032	0.01	140-1[illegible]
145-150	100	gradually darker.	py, hem.	3		1155 145-150	5.0	0.17	0.0035	N/A	
150-155	100		hem., calcite	2		1156 150-155	5.0	0.14	0.0041	N/A	150-1[illegible]
155-160	100			1		1157 155-160	5.0	0.10	0.0038	N/A	

noranda MINES LIMITED BELL COPPER DIVISION

Collared	Completed	Core Size	Logged by PLO	Project No	Date 30/09/89
FIELD COORDINATES			SURVEYED COORDINATES		Sheet 3 of 4
Lat.	Elev.	Dip	Lat.	Elev.	Dip	Hole No H89-6
Dep.	Depth	Bearing	Dep.	Depth	Bearing	

Footage	Rec'y	Rock Type/Alteration	Mineralization	% Sulp.	MIF	Sample No.	Lt.	% Cu	OPT Au	CuOx	Pb
160-165	100	162-172. Dark grey massive intermediate volcanic. Feldspar phyric	Hem in units,	—		1158 160-165	5.0	0.12	0.0032	N/A	160-165 97.
165-170	100			—		1159 165-170	5.0	0.09	0.0035	N/A	
170-175	100	172-194		—		1160 170-175	5.0	0.17	0.0032	0.01	170-175 99.
175-180	100	Biotite feldspar porphyry.		—		1161 175-180	5.0	0.19	0.0032	N/A	
180-185	100	Dark grey to Black. Feldspar 1mm x 2mm, relatively fresh		—		1162 180-185	5.0	0.8	0.0029	N/A	180-185 99.
185-190	100	with fresh books of black bt.	calcite vnlt	tr		1163 185-190	5.0	0.16	0.0026	N/A	
190-195	100	190 xenolith of dk grey volcanic. 194-209 -		tr		1164 190-195	5.0	0.20	0.0029	N/A	190-195 99.
195-200	100	Buff to grey, intermediate volcanic	1-2% cpy vnlts.	2		1165 195-200	5.0	0.14	0.0032	N/A	
200-205	100			2		1166 200-205	5.0	0.19	.0034		200-205 99.
205-210	100	209-299.		1		1167 205-210	5.0	0.15	.0029		
210-215	100	BFP, light to dark grey.	Little visible	1		1168 210-215	5.0	0.04	.0029		210-215 99.
215-220	100	Massive. Bt and plag fresh, little alteration.	mineralization.	tr		1169 215-220	5.0	0.02	.0025		
220-225	100			—		1170 220-225	5.0	0.01	.0023		220-225 99.
225-230	100			—		1171 225-230	5.0	0.01	.0023		
230-235	100					1172 230-235	5.0	0.05	.0023		230-235 99.5

noranda MINES LIMITED BELL COPPER DIVISION

Collared	Completed	Core Size NQ	Logged by PLO	Project No 247	Date 30/09/89
FIELD COORDINATES			SURVEYED COORDINATES		Sheet 4 of 4
Lat.	Elev.	Dip	Lat.	Elev.	Dip	Hole No
Dep.	Depth	Bearing	Dep.	Depth	Bearing	BB9-6

Footage	Rec'y	Rock Type/Alteration	Mineralization	% Sulp.	MIF	Sample No.	Lt.	% Cu	OPT Au	CuQ	Rec't
235-240		Fresh dark BFP.		—		1173 235-240	5.0	0.01	.0044		
240-245				—		1174 240-245	5.0	[illegible]	.0029		240-92.
245-250		249-255 Bleached BFP		1		1175 245-250	5.0	0.02	.0020		
250-255		255-289. Dark gray BFP.		—		1176 250-255	5.0	[illegible]	[illegible]		250-93.
255-260		rare bleached sections	258 cpy vn/t.	1		1177 255-260	5.0	[illegible]	[illegible]		
260-265		where sulphides are present.		—		1178 260-265	5.0	0.03	.0215		260-92-
265-270			266 py, cpy in chlor	2		1179 265-270	5.0	0.03	.0013		
270-275				—		1180 270-275	5.0	0.02	.0034		270-99.
275-280				1		1181 275-280	5.0	0.02	.0020		
280-285				1	—	1182 280-285	5.0	0.05	.0020		280-92-(
285-290		289-294 Bleached felsic volcanic	287 calcite vn with py-1	2		1183 285-290	5.0	0.07	.0023		
290-295		294-End. Bleached BFP. some fresh Bt.		1+		1184 290-295	5.0	0.30	.0037		290-53-6
295-300				1+		1185 295-300	5.0	0.10	.0023		
		END. casing pulled									

30,000 E

30,500 E

29,500 N

TP-1

TP-2

TP-3

TP-4

TP-5

TP-6

TP-7

SECTION 297

DDH H-H1

DDH 89-1

DDH 89-2

DDH 89-3

DDH 89-4

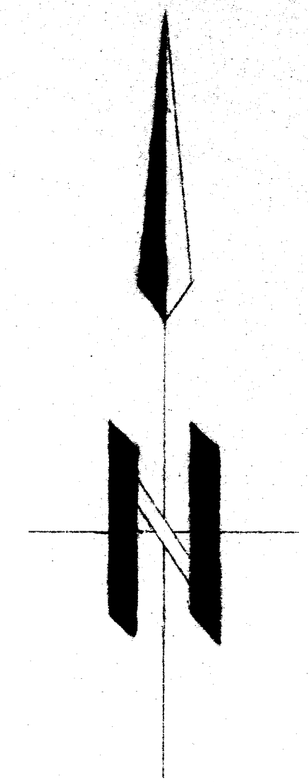
DDH 89-5

DDH 89-6

Projection of mineralized breccia to 3576 el (trench)

FW -70

HW -60



feet
0 50 100
0 10 20 30
meters

LEGEND

- △ SURVEY STATION
- ○ D.D.H COLLAR
- □ L.C.P.
- ○ H90-N,-45,360 Proposed diamond drill hole

GEOLOGICAL BRANCH ASSESSMENT REPORT

20,084

noranda minerals inc.

BELL MINE

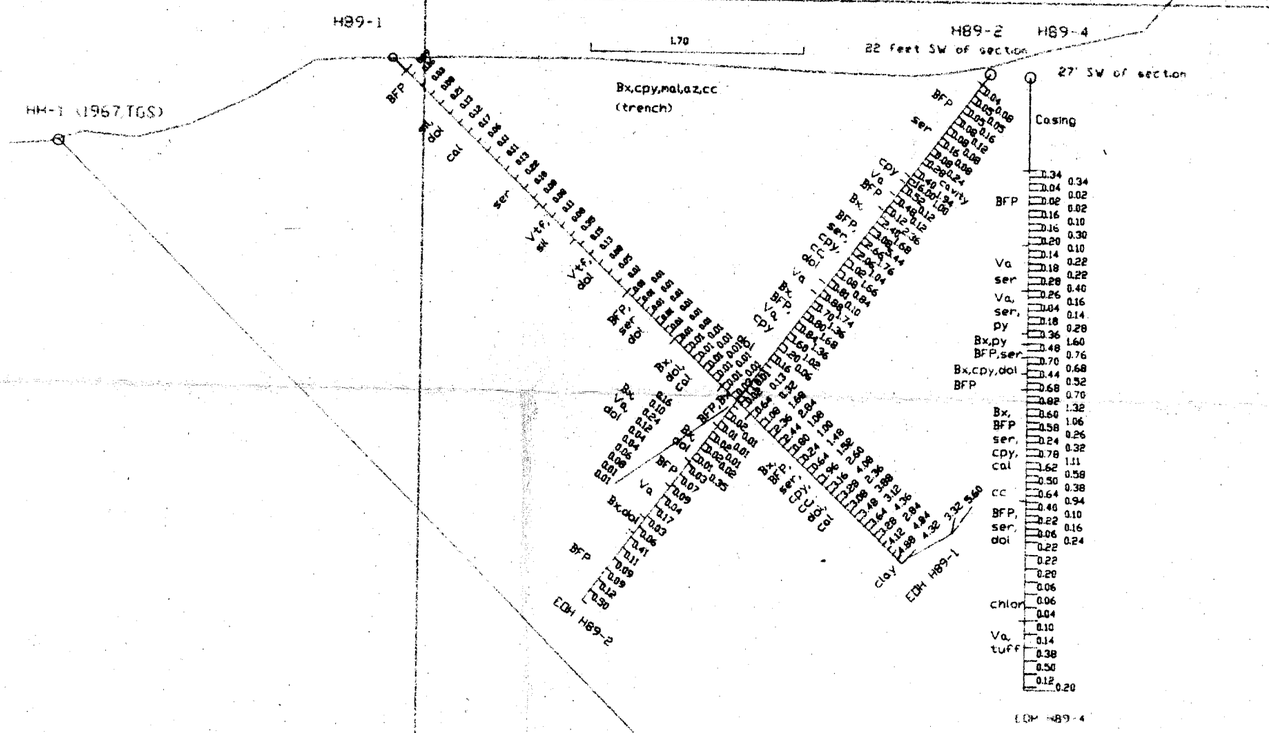
HEARNE HILL
1989 D.D.H. PICK-UP

Scale: 1"=50'	**Date:** OCT-30-89
Drawn: J.S.	**Dwg.#:** HH-2

30,200E

3600

3400 Et



LEGEND

EOCENE - Babine igneous suite

BFP	Biotite Feldspar Porphyry
Bx	Breccia zone

JURASSIC - Hazelton Group

Sinemurian(?) Telkwa Formation

mostly submarine

Va	felsic to intermediate volcanics
Vb	mafic volcanics
Vtf	pyroclastics, tuff
Ss	sediments, mostly green mudstones, tuffaceous

3600

3400

feet

0 50 100

0 10 20 30

metere

Section looking N 50 E

Elevations relative to 300N by 300E hub set at 3600

Elevations in feet by Gishard altimeter

set to 2400 feet at Morrison bridge

GEOLOGICAL BRANCH
ASSESSMENT REPORT

20,084

noranda minerals inc.

BELL MINE

HEARNE HILL

Section "297" (TGS)

Scale: 1:600	Date: 11/17/1989
Drawn: PLO	Dwg.#:

HEARNE 8

HEARNE 10

N

50
52
156
25
38
27
37
38
23
43
34
45
64
31
27
124
107
142
139
608

319
343
946
304
633
1022

71
53
810
403
73
194

LCP HEARNE 10
HEARNE 9

300 N BL
(30,000 N)

300E
(30,000E)

302E

244
174
293
732
329
45
49
166
503
726
388
764
290
549
367
159
246
394
1257
245

1725
2796
1722
666
663
69
127
82
65
5576
178
505
667
304
443
738

304E

661
1723
136
307
49
62
42
49
189
190
238
96
75
112
105
112
125

306E

61
128
62
42
64
36
60
347
79
59
94
247
72
101
70
89
104
92
175
133

HEARNE 2
HEARNE 1

1085
471
84
279
354
362

Discovery
Showing

X

Soil Profile

HORIZON	DEPTH cm	Cu
A_o	0 - 6	316
A_1	-21	400
B_2	-68	1704
C	-353	22681
D		18 052

LEGEND

Cut line, Cu in ppm

.23 Compass line, Cu in ppm

Diamond drill access road

Anomalous Cu in soils
using 175 ppm Cu threshold

10 0 10 20 30 40 50
meters

GEOLOGICAL BRANCH
ASSESSMENT REPORT

20,084

noranda minerals inc.

BELL MINE
GRANISLE, B.C.

HEARNE HILL
Cu in Soils

SCALE: 1:1200	DATE: 14·03·90
DRAWN: PL O	DWG. No.

26,000 E

30,000 E

34,000 E

HEARNE HILL

30,000 N

26,000 N

22,000 N

HEARNE 4
10443 (5)

HEARNE 6
10445 (5)

HEARNE 8
10447 (5)

HEARNE 10
10449 (5)

HEARNE 12
10451 (5)

HEARNE 7
10446 (5)

300N by 300 E
HUB

HEARNE 3
10442 (5)

HEARNE 5
10444 (5)

HEARNE 2
10268 (4)

HEARNE 11
10450 (5)

HEARNE 1
10267 (4)

HEARNE 9
10448 (5)

HEARNE 19
10458 (5)

HEARNE 15
10454 (5)

HEARNE 13
10452 (5)

HEARNE 17
10456 (5)

HEARNE 20
10459 (5)

HEARNE 20
10457 (5)

HEARNE 16
10455 (5)

HEARNE 14
10453 (5)

HEARNE 25
10673 (7)

HEARNE 23
10671 (7)

HEARNE 21
10669 (7)

HEARNE 26
10674 (7)

HEARNE 24
10672 (7)

HEARNE 22
10670 (7)

MORRISON CREEK

METERS
100 0 100 200 300 400
500 0 500 1000 1500
FEET

GEOLOGICAL BRANCH
ASSESSMENT REPORT

20,084

noranda minerals inc.
BELL MINE
HEARNE HILL PROPERTY
MINERAL CLAIMS

Scale: 1 : 12000	Date: NOV. 12,1989
Drawn: P.L. OGRYZLO	Dwg.#:

30,200 E

30,400 E

30,600 E

30,800 E

3800 El

3800

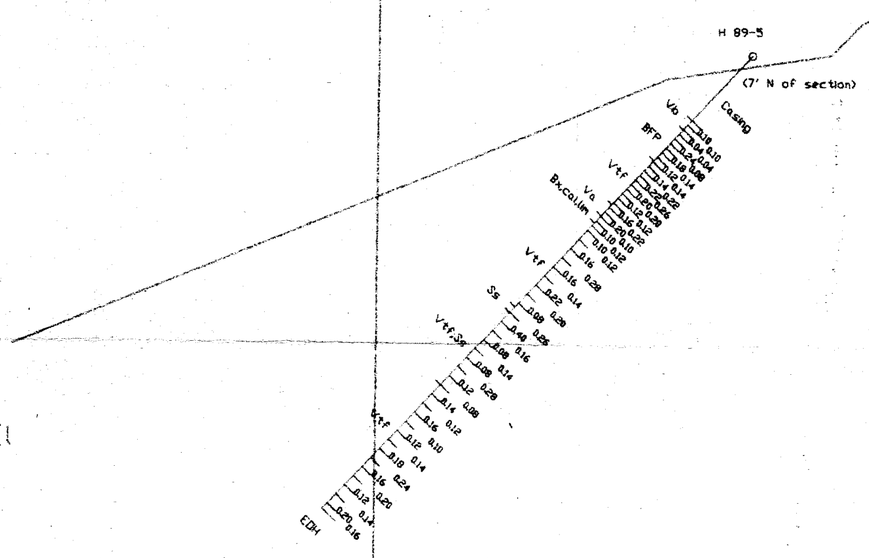
3600 El

3600

3400 El

3400

3200 El



LEGEND

EOCENE - Babine igneous suite

BFP Biotite Feldspar Porphyry

Bx Breccia zone

JURASSIC - Hazelton Group

Sinemurian(?): Telkwa Formation

mostly submarine

Va felsic to intermediate volcanics

Vb mafic volcanics

Vtf pyroclastics, tuff

Ss sediments, mostly green mudstones, tuffaceous

feet

0 50 100

0 10 20 30

meters

Elevations in feet

Elevations relative to 300N by 300E hub set at 3600 feet.
Elevation by Gishard altimeter set to 2400 feet at Morrison bridge.

SECTION LOOKING NORTH

GEOLOGICAL BRANCH
ASSESSMENT REPORT

20,084

noranda minerals inc.

BELL MINE

HEARNE HILL
Section 29,200 N

Scale: 1:600	Date: 28/01/1990
Drawn: PLD	Dwg.#:

30,200 E

30,400 E

30,600 E

30,800 E

3800 El

3800

3600 El

3600

3400 El

3400

3200 El

3000 El

H 89-6
9.8' N of section

Casing

(TP 5)

H 89-1
15' N of section

HH-1 (1967)
50' N of section

H89-1
50' S of section

HH-1 (1967)
50 S of section

EOH

LEGEND

EOCENE - Babine igneous suite

BFP Biotite Feldspar Porphyry

JURASSIC - Hazelton Group
Telkwa Formation

Va felsic to intermediate volcanics

Vb mafic volcanics

Vtf pyroclastics, tuff

feet
0 50 100
0 10 20 30
meters

Elevations in feet

Elevations relative to 300N by 300E hub set at 3600 feet
Elevation by Bishard altimeter set to 2400 feet at Morrison bridge.

SECTION LOOKING NORTH

GEOLOGICAL BRANCH
ASSESSMENT REPORT

20,084

noranda minerals inc.
BELL MINE

HEARNE HILL
Section 29,500 N

Scale: 1:600	Date: 17/01/1990
Drawn: PLD	Dwg #:

30,200 E

30,400 E

30,600 E

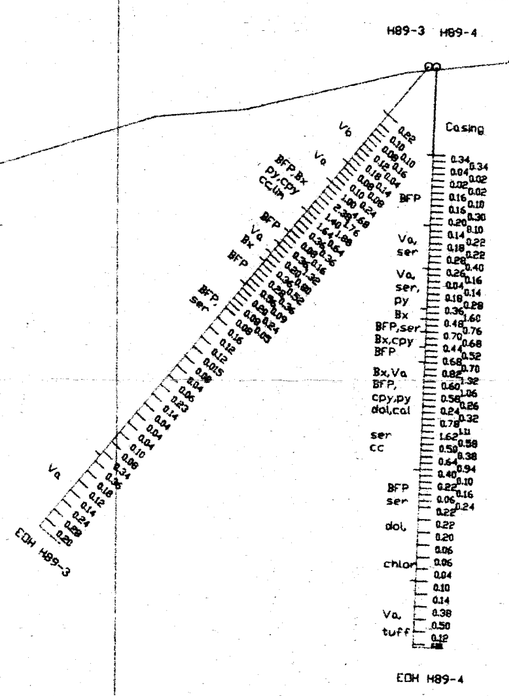
30,800 E

3800 El

3800

3600 El

3600



3400 El

3400

3200 El

3000 El

LEGEND

EOCENE - Babine igneous suite

BFP	Biotite Feldspar Porphyry
Bx	Breccia zone

JURASSIC - Hazelton Group
Sinemurian(?) Telkwa Formation
mostly submarine

Va	felsic to intermediate volcanics
Vb	mafic volcanics
Vtf	pyroclastics, tuff
Ss	sediments, mostly green mudstones, tuffaceous

feet
0 50 100
0 10 20 30
meters

Elevations in feet

Elevations relative to 300N by 300E hub set at 3600 feet.
Elevation by Gishard altimeter set to 2400 feet at Morrison bridge.

SECTION LOOKING NORTH

noranda minerals inc.
RELL MINE
HEARNE HILL
Section 29,300 N

Scale: 1:600	Date: 17/11/1989
Drawn: PLO	Dwg.#: