CORDIALE RESOURCES INC.

BRAGG-NEWMAN PROPERTY

BRAGG AND NEWMAN TOWNSHIPS, ONTARIO

REVERSE CIRCULATION OVERBURDEN DRILLING AND HEAVY MINERAL GEOCHEMICAL SAMPLING

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1.0 SUMMARY

This report details the findings of a reverse circulation overburden drilling/heavy mineral geochemical sampling program that was conducted by Cordiale Resources Inc. on its Bragg-Newman property in the Burntbush - Casa-Berardi region of northeastern Ontario. The objective of the drilling was to evaluate the gold potential of the property by testing the overburden for dispersed mineralization indicative of subcropping shear-hosted deposits and by testing the bedrock, especially along VLF conductor axes, for zones of intense deformation and/or alteration that could host deposits at depth or along strike from the drill holes. Nineteen vertical holes were drilled. Total costs averaged $156.76/metre ($47.78/foot).

The Bragg-Newman property is underlain not by the usual greenschist facies, volcanic-dominated rocks of the Abitibi Greenstone Belt but by an east-west trending, amphibolitized, turbidite-dominated belt of Pontiac-type rocks. This is a decidedly negative feature as the Pontiac rocks in the Abitibi region have no history of mineral production whereas the Abitibi rocks are very productive, with the closest deposits occurring 75 km east of Bragg-Newman at Golden Pond in a shear zone related to the Pontiac-Abitibi contact. This contact appears to extend only 50 km westward from Golden Pond to the Burntbush River where a north-south fault terminates the Abitibi block.

The Pontiac rocks on Bragg-Newman consist entirely of turbidites and, judging by the VLF/magnetic trend, strike east-west. A possible southeast-trending fault is indicated by a buried bedrock valley and by shearing in Hole 06. All other bedrock samples are unsheared, suggesting that the VLF data are unreliable. Gold values in all samples are subanomalous and there is no evidence of the silicification, Fe/Mg carbonatization, sulphidization and tourmalinization that normally accompany gold mineralization.

Overburden thickness in the drill area averages 23 metres. Except for rare occurrences of Early Wisconsinan glaciolacustrine clay of Lake Ojibway I in the buried valley, all of the preserved Quaternary strata are of Late Wisconsinan to Holocene age. The direction of Late Wisconsinan ice flow was south-southeast. Matheson Till deposited by this ice is predominantly bedrock-derived and therefore a good sampling medium but is discontinuous due to interruption by two buried eskers. The till and eskers are successively overlain by glaciolacustrine clay of Lake Ojibway II, by a thin layer of Cochrane Till related to an ice re-advance, and by a discontinuous surface layer of Holocene-age peat.

The gold content of the overburden heavy mineral concentrates is very low, reflecting the position of the property north of the Abitibi Greenstone Belt. Only six gold anomalies were obtained and all six are nugget or cluster anomalies related to the sampling procedure rather than dispersal train anomalies indicative of significant bedrock mineralization.

In view of the uniformly negative results obtained from the reverse circulation drilling program, it is recommended that no further gold exploration be done on the property.

2.0 INTRODUCTION

2.1 Project Outline

From February 14 to 20, 1988, Cordiale Resources Inc. ("Cordiale") conducted a 19 hole reverse circulation drilling program for the purpose of heavy mineral geochemical sampling of Quaternary overburden and chip sampling of the Precambrian bedrock subcrop on its Bragg-Newman mineral property in the Burntbush - Casa-Berardi region on the northwestern edge of the Abitibi Greenstone Belt in northeastern Ontario. The property is 70 km northeast of the town of Cochrane, 65 km south of Placer-Dome's Detour gold mine, 25 km west of the Newmont-Golden Shield gold occurrences in Noseworthy and Hoblitzell Townships, and 75 km west of the three Golden Pond gold deposits that Inco and Golden Knight are developing for production in Casa-Berardi Township, Quebec (Figs. 1, 2).

The principal objectives of the drilling program were to test the overburden-covered property for glacially dispersed mineralization indicative of subcropping shear-hosted gold deposits of the Golden Pond type and to delineate zones of intense bedrock deformation and/or alteration that could host deposits at depth or along strike. The program was of reconnaissance scale with an emphasis on positioning holes close to or on favourable geological and/or geophysical targets.

Cordiale contracted Heath and Sherwood Drilling (1986) Inc. ("Heath and Sherwood") of Kirkland Lake, Ontario to perform the drilling and Overburden Drilling Management Limited ("ODM") of Nepean, Ontario to manage the program. Geologists S. Averill and D. Holmes of ODM prepared the hole layout in consultation with G. Prior of Norwin Resources Inc., representative of Cordiale. Geologists I. Poliquin and K. Day together with geotechnician H. Eder spotted, logged (Appendix A) and sampled the drill holes and supervised the drilling and road preparation.

Twenty-four drill holes were proposed but due to budget considerations only nineteen holes were drilled, all of which penetrated the entire overburden section and were extended approximately 1.5 metres into bedrock. In total, 176 overburden and 19 bedrock samples were collected (Table 1).

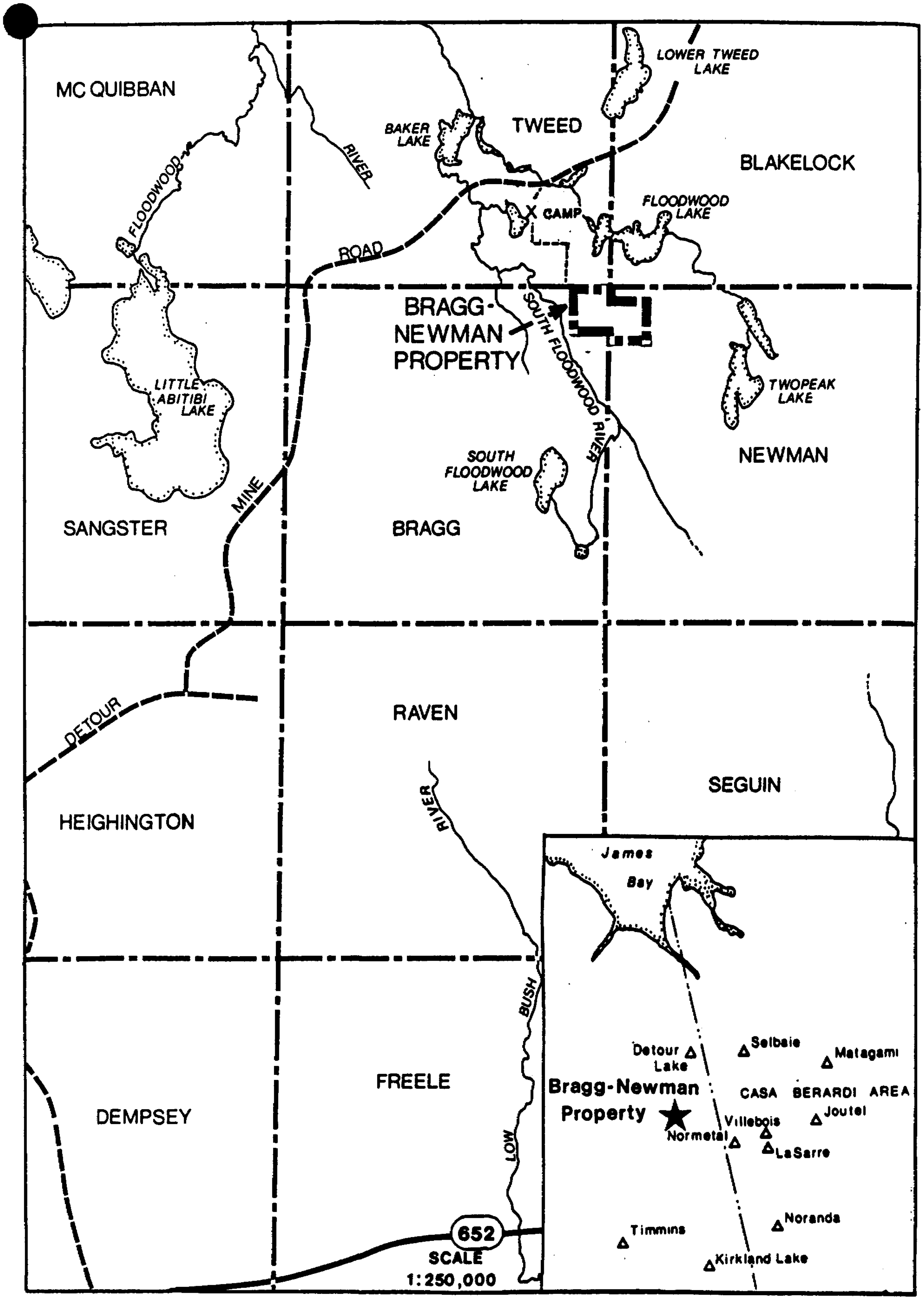


Figure 1 - Bragg-Newman Property Location

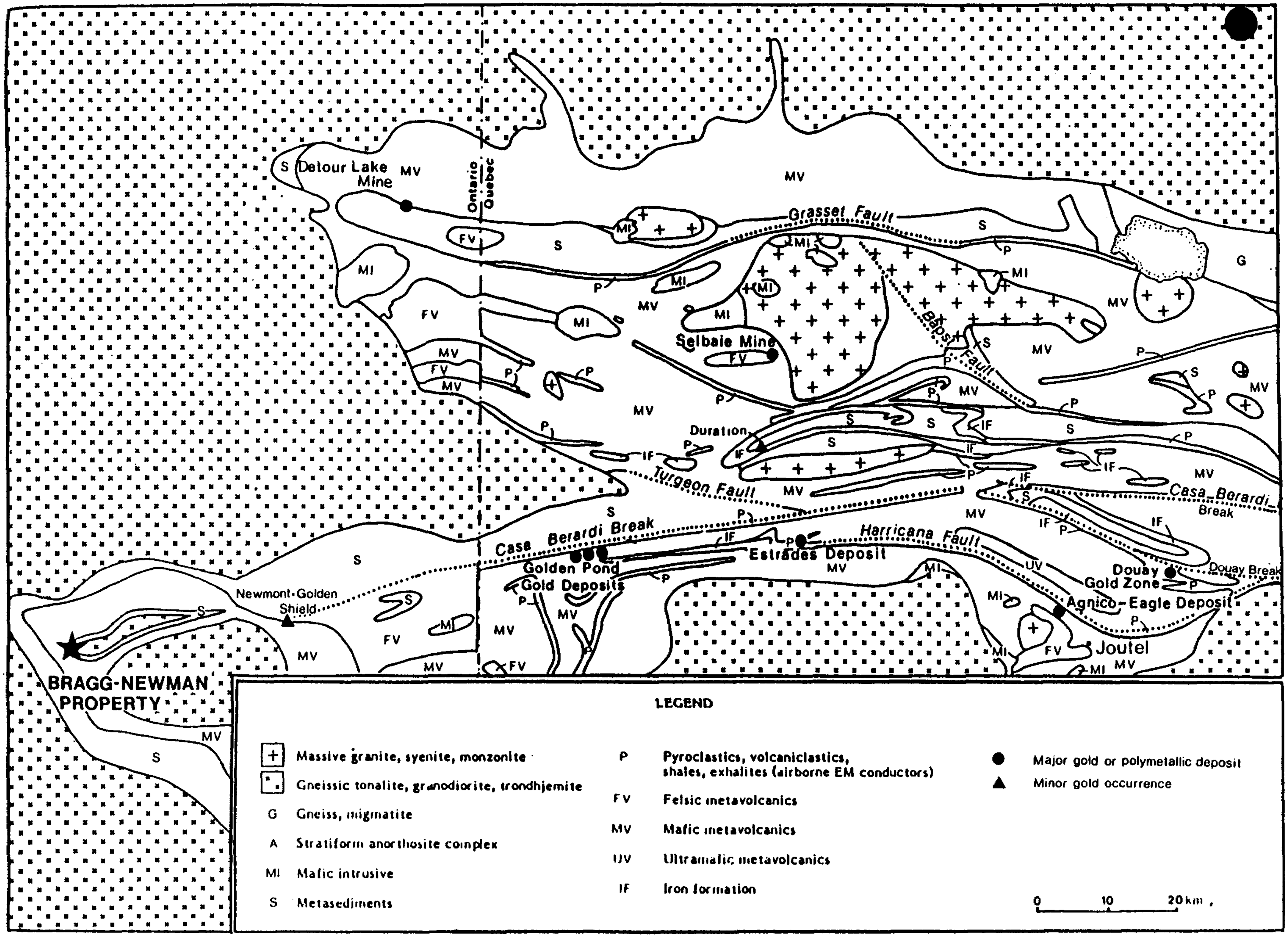


Figure 2 - Regional Geological Setting of the Bragg-Newman Property

(Source: Lacroix, 1987 in Quebec; OGS, 1986 in Ontario)

Hole Number	Grid Co-ordinates	Metres Drilled: Overburden	Metres Drilled: Bedrock	Hole Depth (metres)	Samples Collected: Overburden	Samples Collected: Bedrock
CBN-88-01	3+00E;25+75N	30.2	1.3	31.5	16	1
02	1+00E;20+25N	42.0	1.5	43.5	17	1
03	5+00E;20+00N	35.6	1.4	37.0	16	1
04	10+00E;23+25N	12.6	1.6	14.2	2	1
05	12+00E;18+25N	27.8	1.7	29.5	10	1
06	9+00E;15+50N	34.5	2.0	36.5	12	1
07	2+00E;11+50N	14.5	1.5	16.0	2	1
08	2+00E; 6+25N	11.2	1.4	12.6	2	1
09	6+00E; 7+25N	11.8	1.4	13.2	7	1
10	11+00E; 6+75N	10.0	1.5	11.5	4	1
11	14+00E; 8+25N	6.0	1.5	7.5	2	1
12	14+00E; 4+50N	3.0	1.5	4.5	2	1
13	14+00E;11+50N	21.0	1.5	22.5	4	1
14	16+00E;14+50N	29.5	1.5	31.0	16	1
15	17+00E; 6+50N	36.6	1.6	38.2	11	1
16	17+00E; 0+00	19.5	1.5	21.0	11	1
17	20+00E;14+00N	34.2	2.3	36.5	15	1
18	21+00E; 6+50N	38.6	1.4	40.0	24	1
19	23+00E;10+00N	23.0	1.5	24.5	3	1
		441.6	29.6	471.2	176	19

Table 1 - Drilling and Sampling Statistics

Heavy mineral concentrates (Appendix B) were prepared from the overburden samples at ODM's laboratories in Rouyn-Noranda, Quebec and Nepean, Ontario. Gold particles sighted during processing were measured to determine their individual contributions to the overall gold content of the concentrates and were classified according to their distance of glacial transport (Appendix C). Subsamples of the heavy mineral concentrates were analyzed for gold, copper, zinc, silver and arsenic (Appendix D). Subsequently the 1/4 splits of some concentrates that yielded gold anomalies were panned and submitted for check analysis (Appendix E).

The bedrock chip samples were logged under a binocular microscope (Appendix F) and were analyzed for the major oxides (Appendix G); their lithologies and chemistry were then used to map the property geology (Plan 1) in relation to established or inferred Archean stratigraphy (Plan 1, Fig. 2). Subsamples of the bedrock chips were analyzed for gold, copper, zinc, silver and arsenic (Appendix G).

This report documents the work performed and results obtained. A detailed analysis of local Archean and Quaternary stratigraphy is included and used in the interpretation of the bedrock and heavy mineral geochemistry.

2.2 Principles of Deep Overburden Geochemistry in Glaciated Terrain

During the Pleistocene epoch of the Quaternary period, the crowns of all ore bodies that subcropped beneath the continental ice sheets of North America were eroded and dispersed down-ice in the glacial debris. The dispersal mechanisms were systematic (Averill, 1978) and the resulting ore "trains" in the overburden are generally long, thin and narrow but most importantly are several hundred times larger than the parent ore bodies. These large trains can be used very effectively to locate the remaining roots of the ore bodies.

Because the dispersal trains originated at the base of the ice, they are either partly or entirely buried by younger, nonanomalous glacial debris. Most trains are confined to the bottom layer of debris deposited during glacial recession -- the basal till. In fact, the sampling of glacial overburden for exploration purposes is commonly referred to as "basal till sampling". It is important to note, however, that in areas affected by multiple glaciations the bottom layer of debris in the overburden section may be only the lowermost of several stacked basal tills, and that a dispersal train may occur at any level within any one of the basal till horizons. Consequently, the term "basal till sampling" is not synonymous with the collection of samples from the base of the overburden section. Moreover, the term is not strictly correct because significant glacial dispersal trains can occur in formations other than basal till.

From the foregoing statements, it can be seen that glacial dispersion and glacial stratigraphy are interdependent. Consequently, the effectiveness of overburden sampling as an exploration method is related to the ability of the sampling equipment to deliver stratigraphic information from the unconsolidated glacial deposits. In areas of deep overburden, including most of the Abitibi Greenstone Belt drills must be used. Most drills have been designed to sample bedrock and are unsuitable for overburden exploration, but in the last fifteen years rotasonic coring rigs and reverse circulation rotary rigs have been developed to sample the overburden as well as the bedrock. Both drills provide accurate stratigraphic information throughout the hole and also deliver large samples that compensate for the natural inhomogeneity of glacial debris.

Reverse circulation rotary rigs are much more widely used in the Abitibi than are rotasonic coring rigs. They employ dual-tube pipe and a tricone bit with the outer pipe acting as a casing to contain the drill water for recirculation and to prevent contamination of samples by material caving from overlying sections. Air and water are injected at high pressure through the annulus between the outer and inner pipes to deliver a continuous sample of the entire overburden section through the small inner pipe (Fig. 3). The sample is disturbed but returns to surface instantly, and the precise positions of stratigraphic contacts can be identified. Full sample recovery is possible in all formations regardless of porosity or consistency, although sample loss due to blow-out commonly occurs in the first 1 to 3 metres of the hole until a sediment seal is made around the outer pipe.

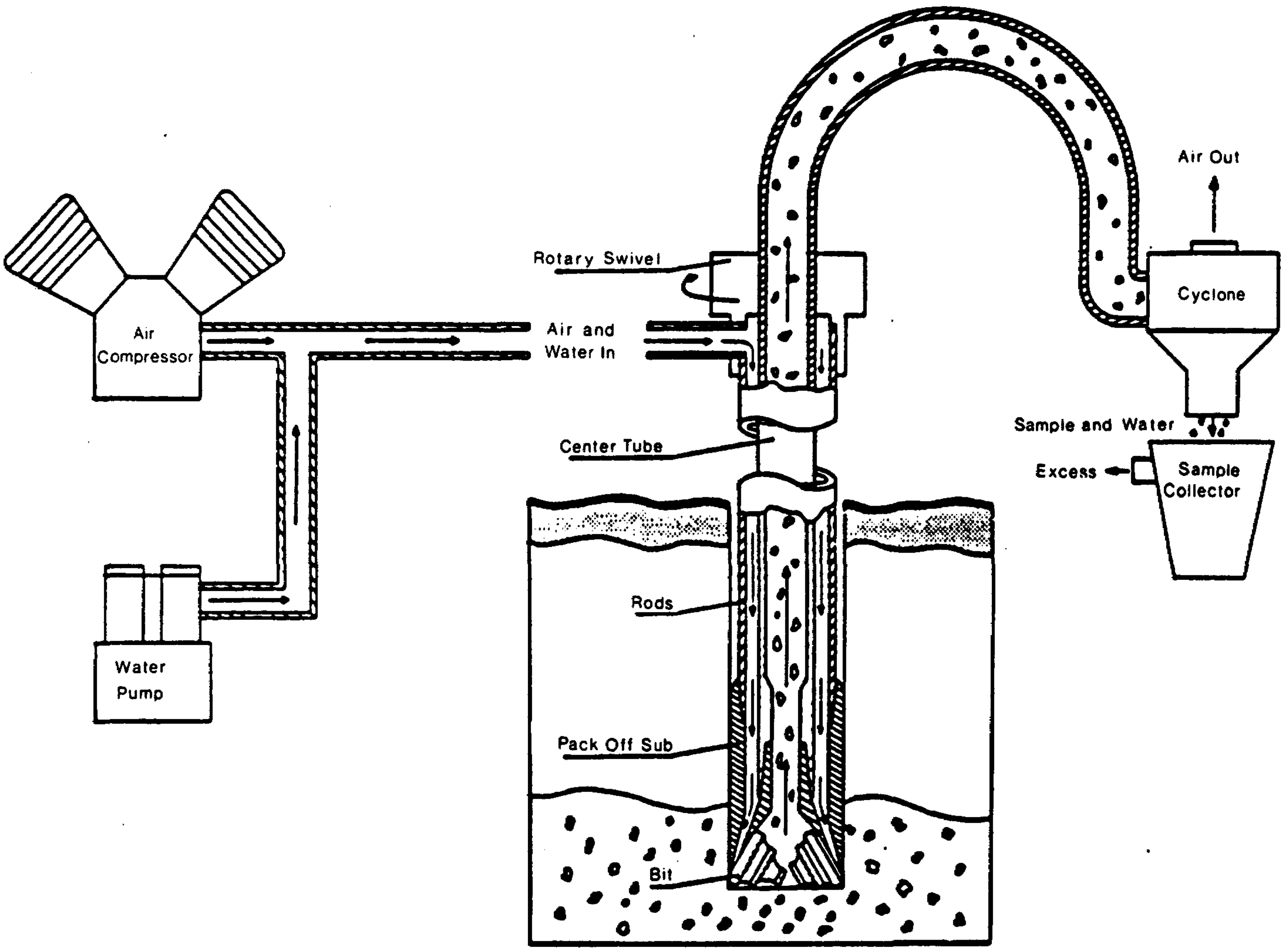


Figure 3 - Schematic Diagram of a Typical Reverse Circulation Rotary Drilling System

Reverse circulation holes are normally extended 1.5 metres into bedrock. Cuttings of maximum 1 cm size are obtained. These cuttings are used to determine the bedrock stratigraphy, structure and geochemistry and are also compared to the till clasts to help determine ice flow directions and glacial dispersal patterns.

Most of the glacial overburden in Canada is fresh, and metals in the overburden occur in primary, mechanically dispersed minerals rather than in secondary chemical precipitates. While ore mineral dispersal trains are very large, they are also weak due to dilution by glacial transport and are difficult to identify from a normal "soil" analysis of the fine fraction of the samples. Consequently, heavy mineral concentrates are prepared to amplify the primary anomalies, and analysis of the fines is normally reserved for areas where significant post-glacial oxidation is evident. The heavy mineral concentrates are very sensitive, and special care must be taken to avoid the introduction of contaminants into the samples. On gold exploration programs, it is advantageous to separate and examine any free gold particles because most gold anomalies in heavy mineral concentrates are caused by background nugget grains that are of no interest.

2.3 Property Description and Access

The Bragg-Newman property consists of 40 contiguous unsurveyed mining claims covering 648 hectares in northeastern Bragg and northwestern Newman Townships, District of Cochrane, Ontario (Fig. 4). The property was staked in late 1985 and early 1986 for Mr. J.R. Fleming and optioned by Casau Exploration Ltd. ("Casau") in October, 1986. Casau subsequently earned a 100 percent interest in the property. In December, 1986 Cordiale Resources Ltd. negotiated a working option for the property and has now earned a 75 percent interest subject to an option in favour of Casau to earn back a 25 percent interest by completing a $100,000 expenditure before July 1, 1989 (J.C. Stephen, J.C. Stephen Explorations Ltd., pers. comm., June 2, 1988).

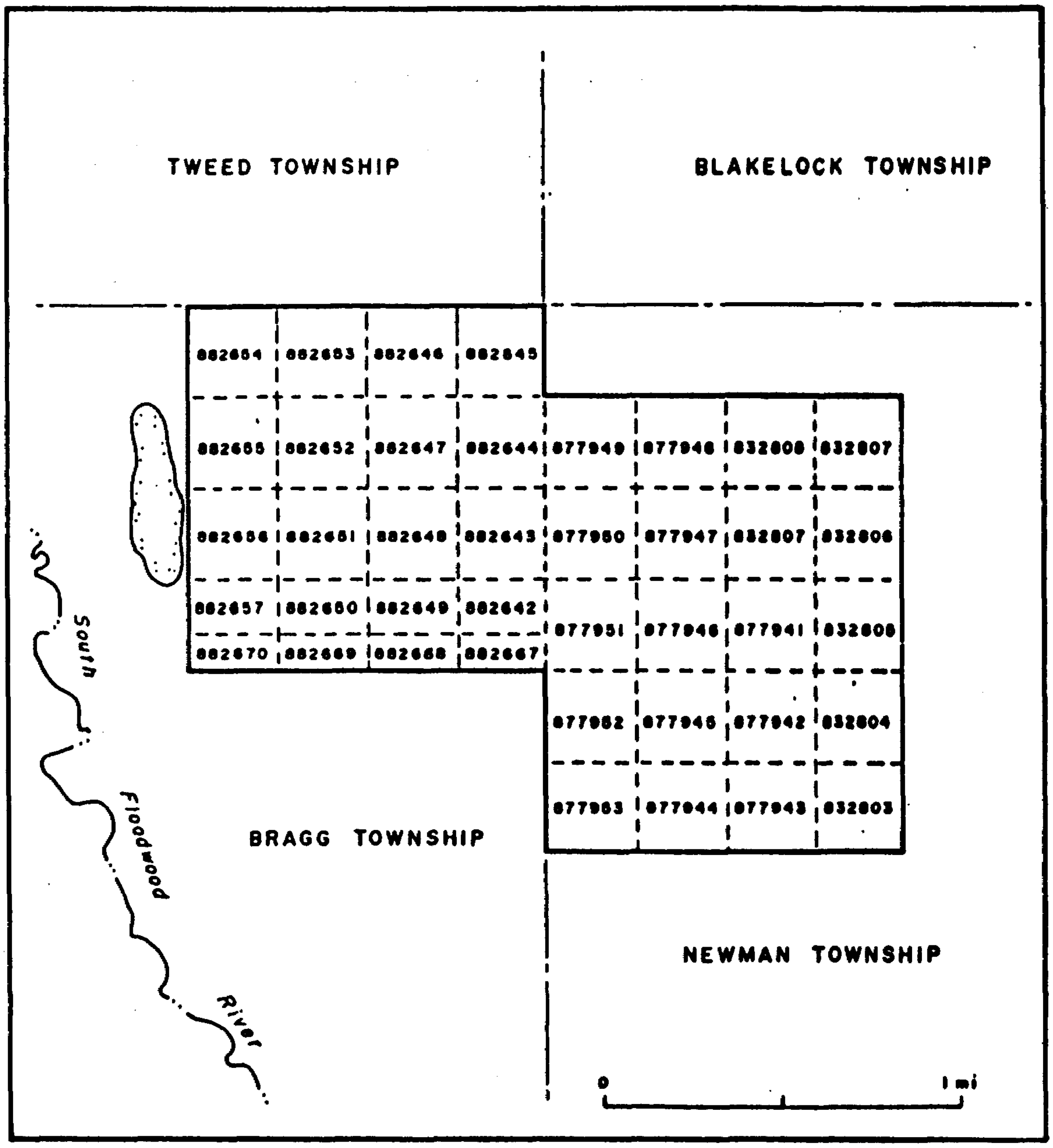


Figure 4 - Bragg-Newman Property Claim Map

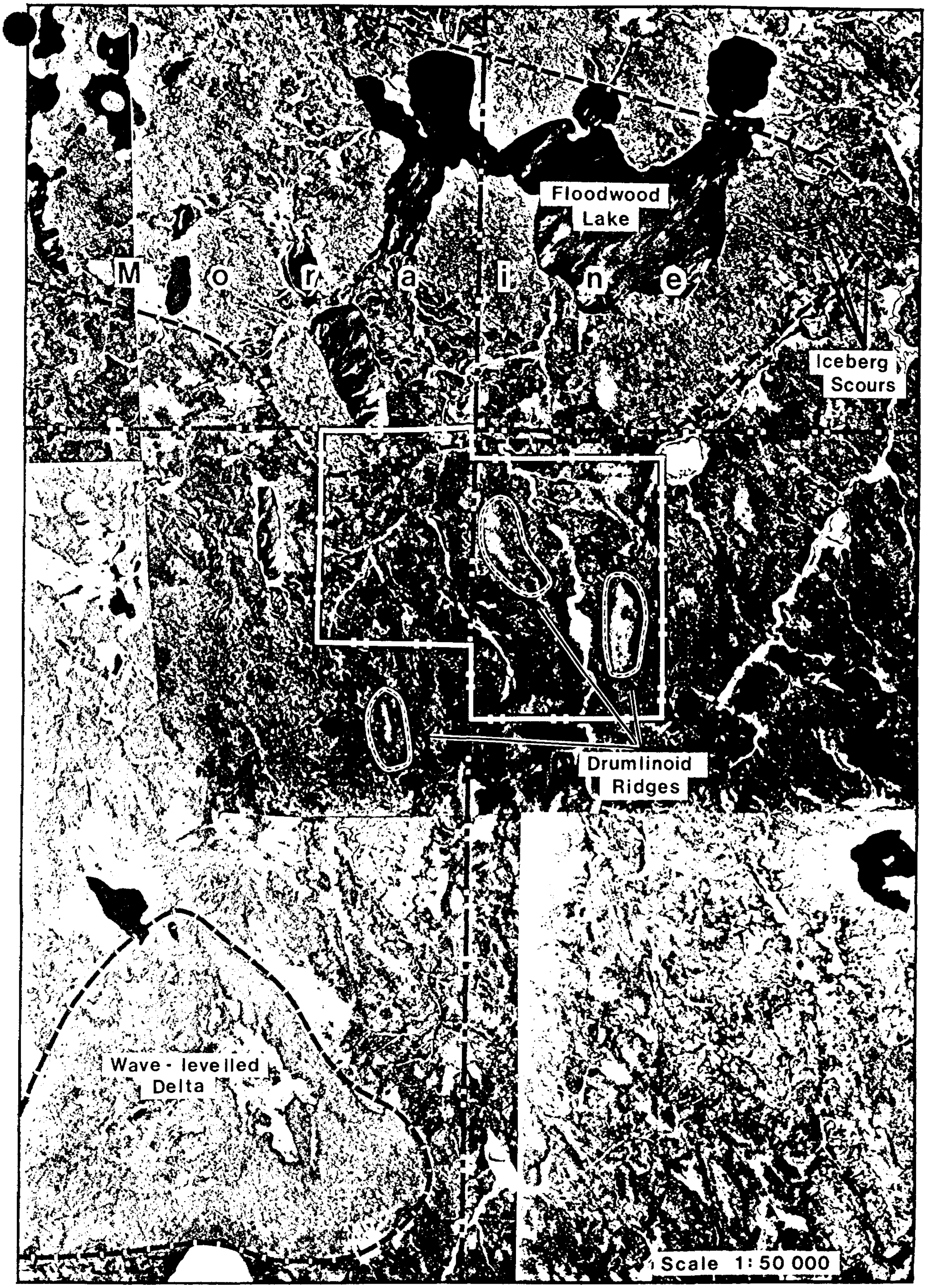


Figure 5 - Surficial Features of the Bragg-Newman Area

The property is reached by following the all-weather Detour Mine road 65 km northward from its junction with Highway 652 (Fig. 1). At this point, a spur road leads 1.2 km southward to a gravel pit where the drill camp was established. A winter road cut in 1985-86 for diamond drilling operations on an adjoining property extends southward 4.0 km from the camp to the northwest corner of the property. Tractor trails were bulldozed to access the reverse circulation drill holes on the property.

2.4 Physiography and Vegetation

The Bragg-Newman property is situated in the east-central portion of the Abitibi Upland (Bostock, 1968), a north-sloping clay belt region that was covered by Lake Ojibway 10,000 years ago during Late Wisconsinan ice withdrawal. The southern boundary of the clay belt is the Hudson Bay - St. Lawrence River drainage divide, which also roughly coincides with the southern edge of the Abitibi Greenstone Belt. Average overburden thickness in the clay belt typically ranges from 10 metres in the south where Lake Ojibway was shallow to 30 metres in the north where the lake was deeper. Average overburden thickness in the 19 Bragg-Newman drill holes was 23 metres.

The topography of the property is subdued, especially when compared to that of the area immediately to the north which is covered by a lake-pocked sand and gravel moraine (Fig. 5). Surface elevations on the property vary between 292 metres above sea level on a small lake at the extreme northwestern corner to approximately 325 metres above sea level on a linear, east-southeast trending drumlinoid ridge in the centre of the property. A second, smaller drumlinoid ridge is present on the eastern edge of the property. There are no bedrock exposures on the property but just 2 km to the southeast, on the west side of the appropriately-named Twopeak Lake, is a 106 m high bedrock ridge with two summits.

The property is relatively well drained by two north-flowing creeks which border the central drumlinoid ridge and drain into Floodwood Lake on the moraine. Vegetation is predominantly a thin to thick boreal spruce forest with small stands of poplar on the drumlinoid ridges.

2.5 Previous Work

Thomson (1936) of the Ontario Department of Mines was the first to map the area encompassing the Bragg-Newman property. He worked at a scale of 1:126,720 (one inch to two miles). Bennett et al. (1966) mapped a much larger area at the same scale as part of the Ontario Department of Mines' Operation Kapuskasing. These workers showed that the property is on the nose of a fold in a thick metasediment horizon that traces the northern and southwestern margins of a major lobe of the Abitibi Greenstone Belt (Fig. 2).

Wilson (1979) mapped a 470 square km area centred on Twopeak Lake for the Ontario Geological Survey at a more detailed scale of 1:31,680 (one inch to one-half mile). Wilson implies that the area is underlain by the Abitibi Belt but his descriptions indicate a metamorphic grade much higher than expected. Mafic volcanics are described as being recrystallized, strongly foliated and lineated, amphibole-bearing rocks lacking pyroxene, chlorite and primary textural features. Two types of clastic sediments were mapped based on the predominance of either biotite or chlorite although Wilson states that the two units are otherwise similar as both contain garnet and magnetite and represent turbidite-type successions. Wilson bases his interpretation, which is shown in Fig. 6 and included in Fig. 2, mainly on airborne geophysics as the only major area of outcrop is the ridge at Twopeak Lake. He indicates that this ridge consists of mafic volcanics with very minor interflow sediment horizons, and extrapolates the volcanics northwestward across the west half of the Bragg-Newman property to the nose of the fold described by Bennett et al. (1966) and thence eastward toward Casa-Berardi. Within the volcanics and extending eastward from the centre of the property he shows an elongate granite dome flanked by 200 m of turbidites. However his only evidence for the existence of this granite dome, other than a much larger granite dome that he mapped to the east in Newman and Tomlinson Townships, is a few granite dikes intersected in diamond drill holes nearby.

The Geological Survey of Canada and the Ontario Department of Mines conducted an aeromagnetic survey across the Twopeak Lake area (1964; Fig. 7). The contours outline the major fold structure described by Wilson (1979) and by

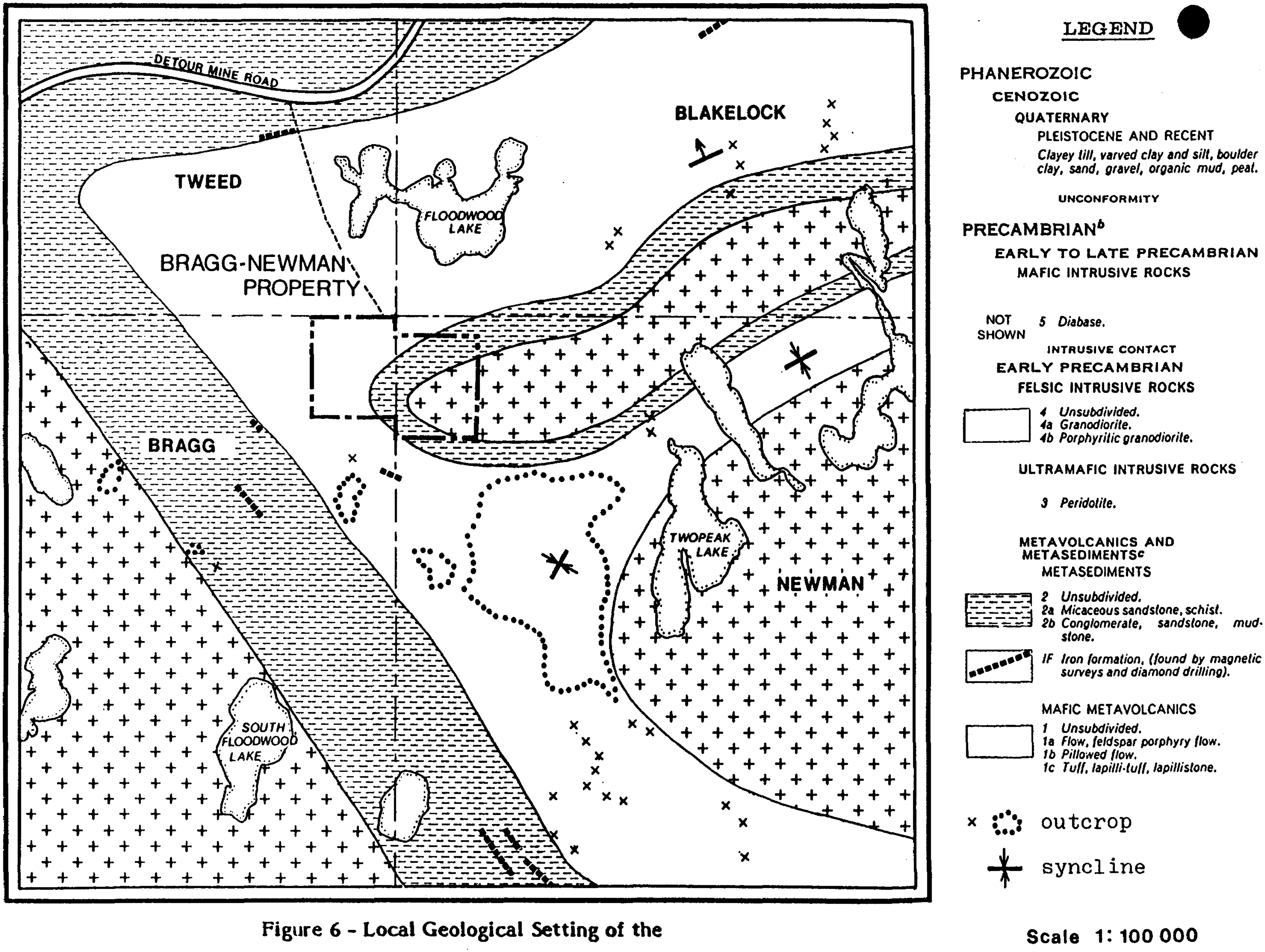


Figure 6 - Local Geological Setting of the Bragg-Newman Property (Source: Wilson, 1979)

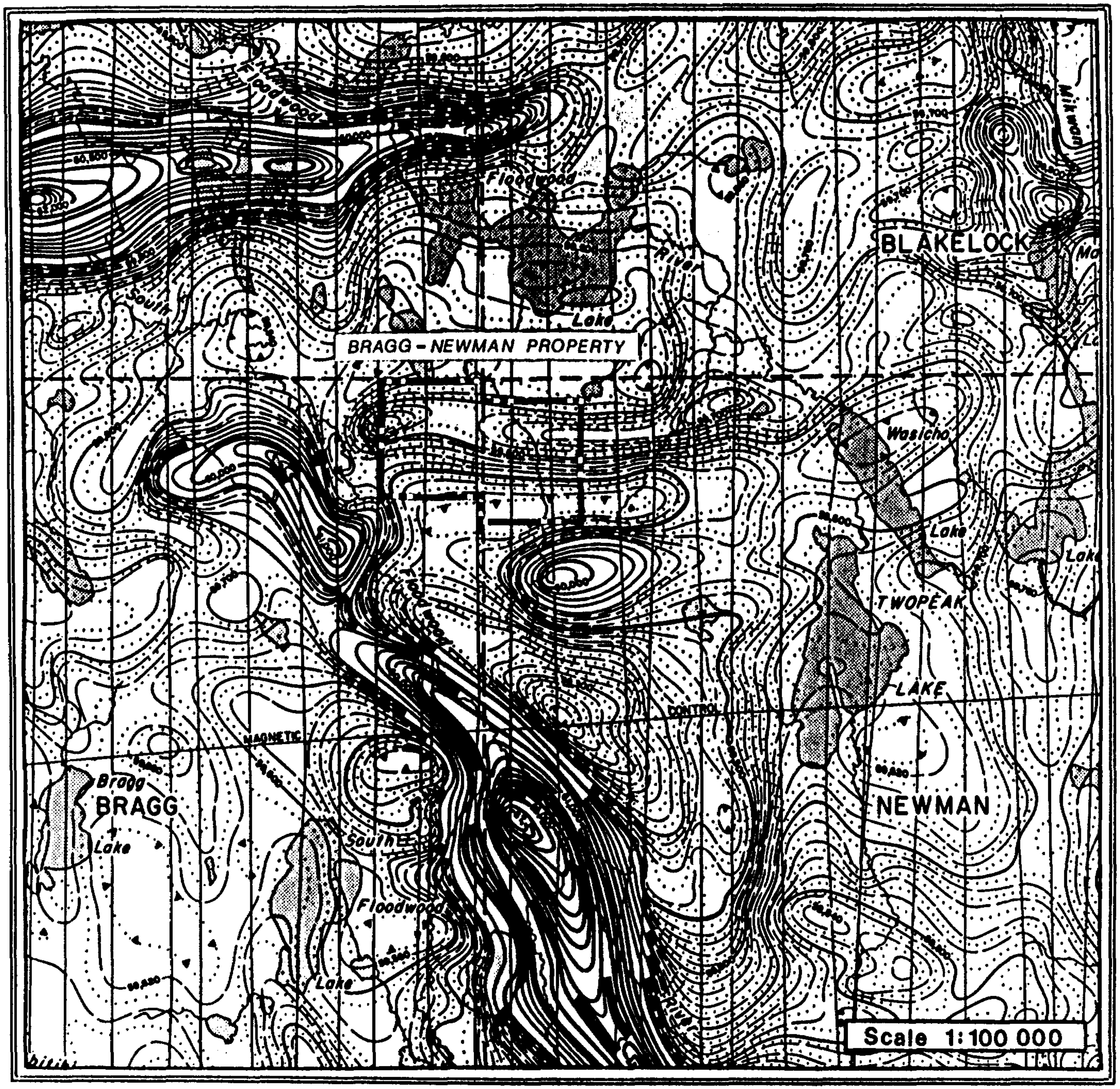


Figure 7 - Aeromagnetic Map of the Bragg-Newman Property

(Source: Geological Survey of Canada/Ontario Department of Mines, 1964)

Bennett et al. (1966). Linear, closely-spaced, high-intensity contours indicative of iron formation trace the main belt of metasediments.

Prior to Casau's optioning of the property, there is no record of any exploration work having been conducted in the area that it covers although extensive exploration for base metal massive sulphide deposits was conducted in the general vicinity from 1959 to 1977 primarily by Conwest Exploration, Noranda Exploration, and Geophysical Engineering (Teck) (Christopher, 1987). Results appear to have been uniformly negative.

Casau Explorations commissioned an airborne VLF-EM and magnetometer survey in order to select areas for ground follow-up. Following Cordiale's optioning of the property they financed a program of linecutting and ground magnetics and VLF electromagnetics using north-south grid lines at 100 m intervals. Several very weak, east-trending conductor axes were outlined, suggesting that the bedrock strata trend roughly east-west, not east-northeast as speculated by Wilson (1979). However, the quality of the VLF survey is suspect because the total field contours trend east-southeast to southeast instead of following the conductor axes. The magnetic contours in the west also suggest an east-west stratigraphic trend but the contours in the east show unmistakable evidence of interference from an unknown magnetic item carried by the operator. Christopher (1987) prepared a compilation map (Fig. 8) for Cordiale on which he shows an east-west stratigraphic trend, based on the VLF conductor axes, and two south-southeast trending faults which apparently are based on both the VLF total field contours and creek lineaments. Curiously he shows two broad iron formation horizons in areas where the airborne and ground magnetic response is relatively subdued.

To help correct the problems evident in the Casau VLF/magnetic survey, Cordiale arranged a MaxMin electromagnetic/total field magnetic survey of the east half of the property by Robert S. Middleton Exploration Services Inc. immediately following completion of the reverse circulation drilling program. Only one conductor was encountered. This conductor is in the extreme southeast corner of the property and strikes east-west (Plan 1). The magnetic axes also strike east-west.

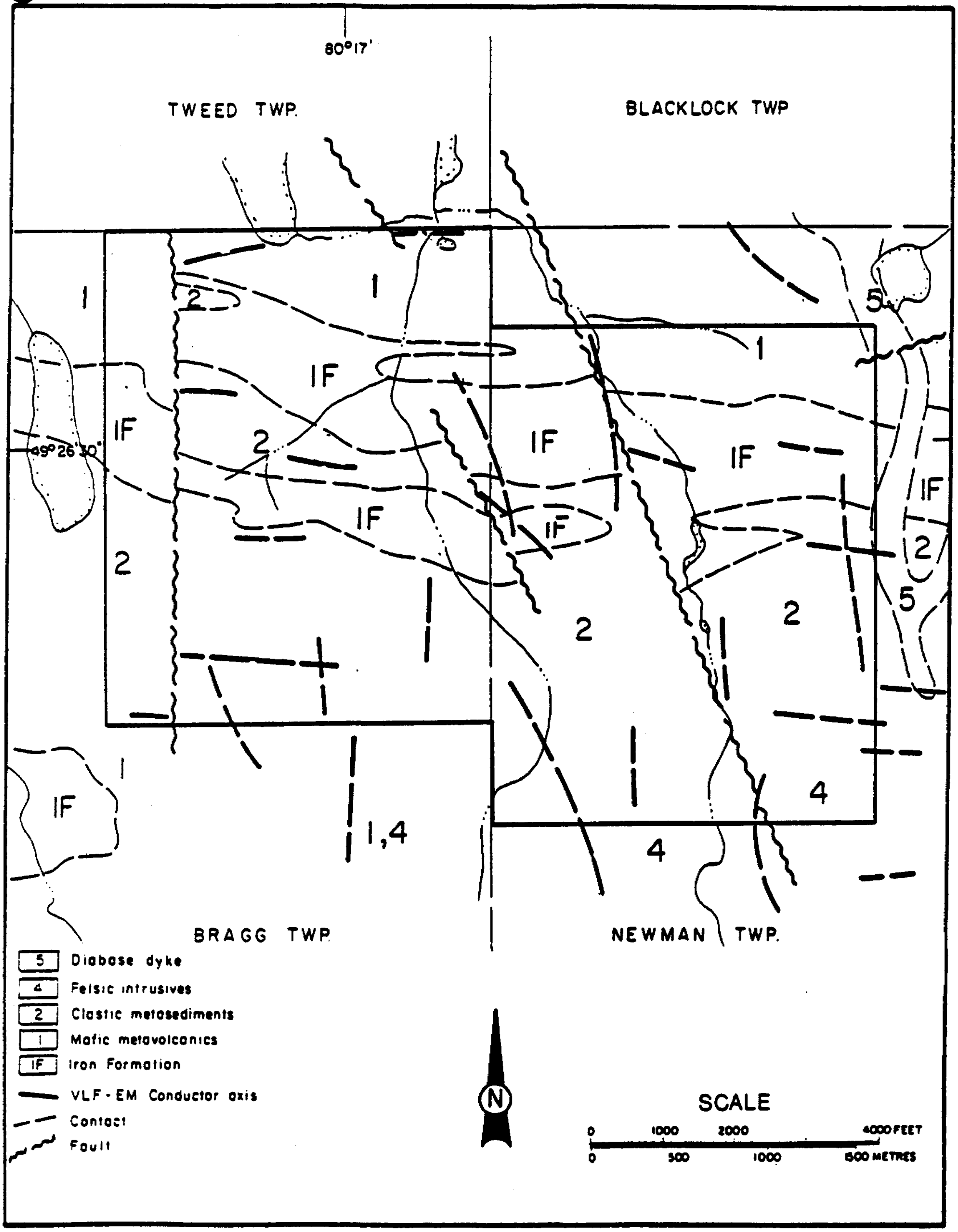


Figure 8 - Geological Compilation of the Bragg-Newman Property from Ground Geophysics (Source: Christopher, 1987)

2.6 Project Costs

Budgeted and actual costs for the 1988 drilling program are presented in Table 2. The budget figure of $75,314.00 ($156.90/metre, $47.84/foot) was based on the following assumptions:

1. Twenty-four holes totalling 480 m; average 20 m per hole.
2. Drilling productivity at 7 m per operating hour.
3. An average bit life of 60 m.
4. A total of 144 overburden samples (average 6 samples per hole).

Nineteen holes were drilled averaging 24.8 m or 24 percent over the budget estimate. Although the overburden was deeper than expected, drilling productivity was 6.0 m/hour, essentially as budgeted. Bit life averaged 79 m or 32 percent higher than the budget estimate. The total number of overburden samples was 176 or 22 percent higher than the budget estimate. Actual costs were $73,866.52, similar to the budgeted figure of $75,314.00, because the reduced number of holes drilled and the good bit performance offset the increased hole depth and number of overburden samples per hole.

3.0 DRILLING AND SAMPLING

3.1 Drill Hole Pattern

The major directions of ice flow were 170-180 degrees for the main Late Wisconsinan ice sheet and 220-240 degrees for the Late Illinoian ice sheet. VLF conductors suggestive of bedding parallel shear zones on the property trend east-west, and since any gold mineralization would be expected to occur in these shear zones, it follows that any gold dispersal trains should trend roughly perpendicular to the bedrock strata. Gold dispersal trains from known deposits oriented perpendicular to glaciation normally have a down-ice length of 400-1000 m (Table 3) and a cross-ice width of 300-400 m (including low-grade fringes related to the anomalous alteration haloes that enclose most gold deposits).

	Service	Company	Budget			Actual		
			$ Total	$/Metre	$/Foot	$Total	$/Metre	$/Foot
1.	Pre-drilling	ODM	1,000.00	2.08	0.64	1,034.00	2.19	0.67
2.	Drilling Operations and road clearing	H&S	46,670.00	97.24	29.65	45,446.20	96.45	29.40
3.	Field supervision, logging, sampling	ODM	9,630.00	20.06	6.12	8,106.50	17.20	5.24
4.	Sample shipping and processing	Various, ODM	5,312.00	13.15	4.00	7,217.57	15.32	4.67
5.	Analytical	Bondar-Clegg	3,702.00	7.70	2.35	4,062.25	8.63	2.63
6.	Report	ODM	8,000.00	16.67	5.08	8,000.00	16.97	5.17
	TOTALS		75,314.00	156.90	47.84	73,866.52	156.76	47.78

Table 2 - Budgeted and Actual Costs for the Bragg-Newman Reverse Circulation Drilling Program

PROVINCE	GOLD DEPOSIT	TRAIN LENGTH[1](m) TRACED	EST. TOTAL
Saskatchewan	Lake "X"[2]	300	300
Saskatchewan	Star Lake	300	800
Saskatchewan	Lake "Y"	500	1000
Saskatchewan	Waddy Lake[2]	600	2000
Ontario	McCool	300	400
Quebec	Cooke Mine[3]	800	1000
Quebec	Golden Pond West	300	400[4]
Quebec	Golden Pond	400	500[4]
Quebec	Golden Pond East	800	1000[4]
Quebec	Orenada	100	200
Quebec	Kiena	100	300
Quebec	Chimo	600	1000
Newfoundland	Devil's Cove	2000	2000

1 - Based on minimum 10 gold grains of similar size and shape per 8 kg sample for free gold trains and on coincident high gold and base metal assays for invisible gold trains

2 - Deposit oriented parallel to glacial ice advance

3 - Occluded gold deposit

4 - Train foreshortened and/or gapped by erosion in last ice advance

Table 3 - Heavy Mineral Gold Dispersal Trains Identified by Overburden Drilling Management Limited Laboratory

The Bragg-Newman holes were drilled 300-400 m apart along generally east-west but very irregular drill hole traverses with an average 500 m separation. The drill traverses are sub-perpendicular to both ice paths, maximizing the probability of intersecting a dispersion train. The irregularities in the traverses increase the probability of intersecting east-west trending bedrock horizons and stratigraphically-controlled buried valleys that could influence glacial dispersal patterns. In addition, the traverses were routed so as to position drill holes directly over or immediately down-ice from the strongest segments of the VLF conductor axes.

3.2 Drilling Equipment

Heath and Sherwood's drill rig employed an Acker MP drill head with a 3 metre feed cylinder. The drill, together with all its ancillary equipment including air compressor, water pump and logging and sampling facilities, was unitized and enclosed on the bed of a Nodwell Model 160 tracked carrier for all-terrain mobility and all-weather operation.

The rig employed an air compressor with a rated capacity of 300 cfm at 160 psi and a water pump having a capacity of 20 gpm at 600 psi. Water flow was normally restricted to 4-5 gpm to improve recovery of fines. The rig was equipped with a 12 volt DC Cool White fluorescent fixture that simulates natural sunlight for accurate sample logging. All equipment except the air compressor and Nodwell carrier was operated hydrostatically from a central diesel engine.

The rig carried twenty-two 10-foot drill rods. The holes were logged in metres using the approximate conversion factor of 3 metres to 10 feet. This resulted in the logged hole depth (Appendix A) being 1.6 percent less than true depth.

Heath and Sherwood supported the drill rig with a GoTrac GT-1000 muskeg tractor equipped with a 400-gallon water tank. Road clearing was subcontracted by Heath and Sherwood to Northland Exploration Ltd. of Timmins, Ontario who used a wide-pad Caterpillar bulldozer.

3.3 Logging and Sampling

The Bragg-Newman samples were collected in two 20 litre buckets coupled with a plastic tube. This procedure ensures a quiet settling environment thus reducing the loss of fines encountered if only one bucket is used and allowed to overflow. Most of the clay is still lost but a research study made by ODM (Dimock, 1985) showed that sand loss is insignificant and silt loss is reduced to 40 percent compared to 72 percent with the one-bucket system. Interestingly, fine gold is lost in direct proportion to fine minerals of low specific gravity such as quartz and feldspar because the flake shape rather than high density of fine gold is the primary factor controlling the rate of settling. Further research conducted by ODM (Kurina, 1986) on various inlet/outlet attachments on the second bucket showed an additional 33 percent of the fine material in the overflow could be retained by utilizing a horizontally curved inlet tube, which induces spiral flow, and a vertical stack skimmer on the outlet. The two-bucket system with the modified flow configuration was employed on the Bragg-Newman program.

A 10-mesh (1700 micron) screen was employed over the first bucket to separate and discard the majority of rock cuttings and thereby increase the proportion of matrix material which is used to identify and trace dispersal trains. The +10 mesh rock cuttings were constantly monitored (Appendix A) for any variations which could give clues to overburden stratigraphy, or for any clasts indicative of an environment suitable for gold or base metal mineralization. Approximately 20 percent of the cuttings were kept for future reference. The degree of sorting of the -10 mesh matrix was monitored to differentiate till from sand and gravel.

Till units were sampled continuously using an average sample interval of 1.5 metres. Glaciofluvial sand and gravel were sampled over longer, three to five metre intervals. Glaciolacustrine clay and silt were not sampled because they are of no exploration value.

In the field, both the overburden and bedrock samples were assigned an alpha-numeric code denoting the drilling project, the year, the position of the hole in the drilling sequence, and the position of the sample in the drill hole. Thus a designation such as CBN-88-10-03 indicates the third sample collected from the tenth hole drilled in 1988 on Cordiale's Bragg-Newman property

Following collection, the overburden samples were reduced to 7-9 kilograms with an aluminum scoop, packed in heavy plastic bags and shipped in 20-litre metal pails to the ODM processing laboratory in Rouyn-Noranda, Quebec.

3.4 Sample Processing

ODM's processing procedures for overburden samples are illustrated in the flow sheet of Figure 9 and may be summarized as follows:

First, a 250 gram character sample is extracted from the bulk sample using a tube-type sampler. This character sample is dried and stored for future reference. On some programs, its minus 250 mesh fraction is separated and analyzed to check for metals occluded in minerals of low specific gravity.

The remainder of the bulk sample is weighed wet and is sieved at 1700 microns (10 mesh) to separate the clasts from the mineral matrix. The +1700 micron clasts are weighed wet and the -1700 micron matrix is processed on a shaking table to obtain a preconcentrate. The table concentrate and all fractions obtained from it are weighed dry. The Bragg-Newman sample weights are listed in Appendix B.

While the samples are being tabled, special procedures developed by ODM are used to effect the separation of gold grains from other heavy minerals. These grains are picked from the deck, placed under a binocular microscope, measured to obtain an estimate of their contribution to the eventual assay of the concentrate (Table 4), and classified as delicate, irregular or abraded (Fig. 10) to determine their approximate distance of glacial transport. Photomicrographs (35 mm slides) are taken if more than 10 gold grains are present.

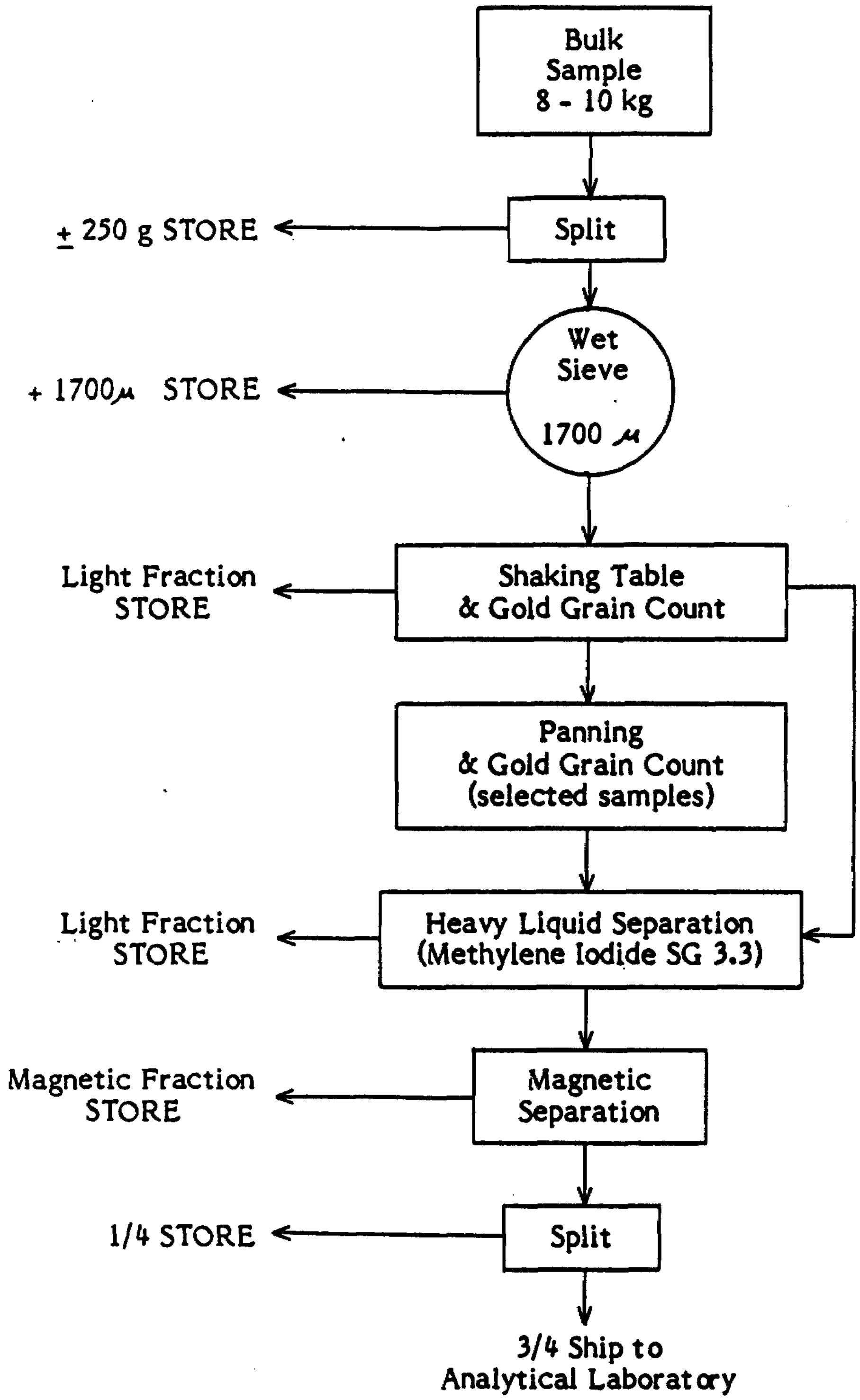


Figure 9 - Sample Processing Flow Sheet

Size Classification	Flake Diameter (microns)	ppb Au
Very Fine	50	10
"	100	100
Fine	150	330
"	200	760
Medium	300	2,400
"	400	5,400
"	500	10,000
Coarse	600	16,200
"	700	24,000
"	800	33,300
"	900	43,700
"	1,000	55,000
Very Coarse	1,000+	55,000+

Table 4 - Geochemical Contribution of One Gold Grain to a Fifteen Gram Sample

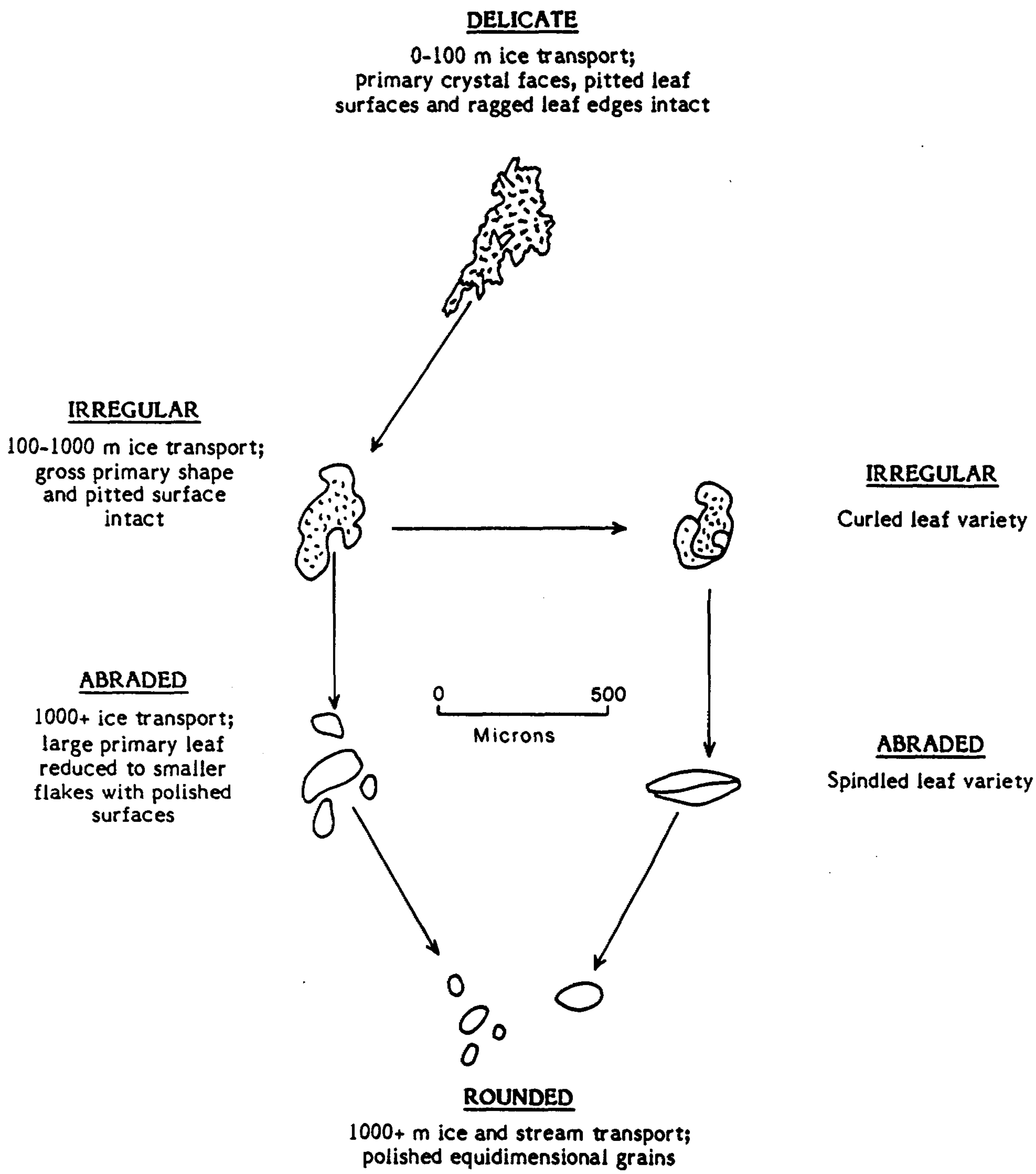


Figure 10 - Effects of Glacial Transport on Gold Particle Size and Shape
(Developed by Overburden Drilling Management Ltd.)

Magnetite, with a specific gravity of 5.2, is the heaviest of the common minerals and normally forms the top mineral band on the table above garnet and epidote/pyroxene. Common flake gold coarser than 125 microns separates completely from the magnetite and is readily counted. Fine gold, thick gold and delicate gold travel with the magnetite due to size and shape effects, and only 10 to 20 percent of such grains are readily sighted on the table. Gold particles can also be obscured by pyrite which, if it is abundant, tends to cross the table in the gold path. However, ODM has developed a special panning technique to recover the hidden particles together with some copper, lead and arsenic pathfinder minerals. Samples are normally panned if two or more gold particles are sighted on the table or if any delicate gold is seen or if the table concentrate contains more than 10 percent pyrite. The Bragg-Newman table and pan gold counts are listed in Appendix C.

After the gold grains have been examined, they are recombined with the table concentrate. This concentrate is dried and a heavy liquid separation in methylene iodide (specific gravity 3.3) is performed. The light fraction (specific gravity less than 3.3) is stored and the heavy fraction undergoes a magnetic separation to remove drill steel and magnetite. The Bragg-Newman magnetic separates were checked to ensure that they contained not more than five percent pyrrhotite. The non-magnetic heavy minerals were separated into a 3/4 analytical subsample and a 1/4 library subsample using a riffled microsplitter.

3.5 Sample Analysis

Subsamples of the bedrock chips (Appendix G) and 3/4 splits of the non-magnetic overburden heavy mineral concentrates (Appendix D) were homogenized by pulping in a shatter-box and were then analyzed for gold by fire assay with atomic absorption finish, for Cu, Zn and Ag by atomic absorption and for As by colourimetry. In addition, major element compositions of the bedrock chip samples were determined by borate fusion extraction and DC plasma detection. All analytical work was done by the Ottawa laboratory of Bondar-Clegg and Company Limited ("Bondar-Clegg") to the specifications shown in Table 5.

Sample Type	Sample Preparation	Element		Lower Detection Limit		Extraction	Method
All bedrock chips and H.M.C. 3/4s	Pulverize to -200 mesh	Cu	Copper	1	ppm	HCl-HNO_3, (1:3)	Atomic Absorption
		Zn	Zinc	1	ppm	HCl-HNO_3, (1:3)	Atomic Absorption
		Ag	Silver	0.1	ppm	HCl-HNO_3, (1:3)	Atomic Absorption
		As	Arsenic	2	ppm	HNO_3-$HClO_4$	Colourimetric
		*Au	Gold	5	ppb	Aqua Regia	FA-AA @ 10 gm weight unless otherwise indicated
Pulp and metallics H.M.C. 3/4s	Pulverize to -200 mesh; screen 150 mesh, weigh +150 and -150	Au	-150	0.01	ppm	Aqua Regia	Fire Assay AA
		Au	+150	0.01	ppm	Aqua Regia	Fire Assay AA
		Au Average					Calculated
Selected H.M.C. 1/4s	None	Au	Gold	5	ppb	None	Neutron Activation
All bedrock chips	Pulverize to -200 mesh	SiO_2	Silica (SiO_2)	0.01	pct	Borate Fusion	DC Plasma
		TiO_2	Titanium (TiO_2)	0.01	pct	Borate Fusion	DC Plasma
		Al_2O_3	Alumina (Al_2O_3)	0.01	pct	Borate Fusion	DC Plasma
		Fe_2O_3*	Total Iron (Fe_2O_3*)	0.01	pct	Borate Fusion	DC Plasma
		MnO	Manganese (MnO)	0.01	pct	Borate Fusion	DC Plasma
		MgO	Magnesium (MgO)	0.01	pct	Borate Fusion	DC Plasma
		CaO	Calcium (CaO)	0.01	pct	Borate Fusion	DC Plasma
		Na_2O	Sodium (Na_2O)	0.01	pct	Borate Fusion	DC Plasma
		K_2O	Potassium (K_2O)	0.01	pct	Borate Fusion	DC Plasma
		P_2O_5	Phosphorous (P_2O_5)	0.01	pct	Borate Fusion	DC Plasma
		LOI	Loss on Ignition	0.01	pct		Gravimetric
		Total	Whole Rock Total	0.01	pct		

*except pulp and metallics samples

Note: All weight measurements are precise to 0.01 grams

Table 5 - Bondar-Clegg Analytical Specifications

Gold grains are malleable and thus are difficult to homogenize with the rest of the sample, often forming flattened "metallics" in the pulp. To alleviate this problem and improve assay representativity, concentrates that were known to contain one or more coarse gold grains (generally over 200 microns) capable of producing an anomalous assay (over 1000 ppb) were screened at 150 mesh after pulping. Separate gold determinations were then made on the -150 mesh pulp and the +150 mesh metallics, and a weighted average assay was calculated.

Following receipt of the heavy mineral analytical results a number of unexplained gold anomalies were noted. To check the reproducability and significance of these anomalies, the 1/4 heavy mineral concentrates of samples which produced the anomalies were examined for visible gold by panning and submitted for non-destructive INA gold analysis. The results are shown in Appendix E.

4.0 BEDROCK GEOLOGY

4.1 Regional Geology

The Burntbush - Casa-Berardi area is on the northwestern edge of the Abitibi Greenstone Belt. Rocks of the Abitibi Belt are of Archean age (approximately 2700 to 2750 million years old). They comprise repeated komatiitic through tholeiitic to calc-alkalic cycles of lavas and volcaniclastics with coeval clastic and exhalative sedimentary rocks, porphyries, layered mafic-ultramafic sills, and plutons of potassium poor dioritic to tonalitic composition. These rocks have been complexly deformed, metamorphosed to the sub-greenschist to greenschist facies and intruded by late kinematic granodiorite and monzonite plutons (Gariepy et al., 1984).

The northwestern edge of the Abitibi Belt is geologically similar to the southern edge which is bordered in the Rouyn - Val d'Or area by the Bellecombe Gneiss Belt, a monotonous succession of upper greenschist to amphibolite grade turbidites with minor intercalcations of banded iron formation, amphibolitized mafic to ultramafic flows and dioritic to gabbroic sills. Felsic to intermediate volcanics are not present in the Bellecombe Belt. It has been shown that the age of metamorphism is the same for the Abitibi Belt and the Bellecombe Belt (Mortensen et al., 1988) but that the two belts represent allochthonous terranes metamorphosed at different crustal levels and subsequently juxtaposed by collision along a major, steeply north dipping suture zone -- the Cadillac - Larder lake Fault.

Most of the formations of the Bellecombe Belt have been assigned to the Pontiac Group. Volcanic and sedimentary formations in the southern part of the Abitibi Belt have also been assigned group names (MERQ-OGS, 1983), but no formal grouping has yet been made for the Burntbush - Casa-Berardi area because outcrops are sparse and exploration activity in the area was very limited until the announcement of the Golden Pond discoveries in 1984.

ODM has participated in reverse circulation programs across the Burntbush - Casa-Berardi region that total more than 1,000 holes and has available a much broader and more uniform stratigraphic and structural data base than have MERQ-OGS. The details of these programs are, of course, confidential but several general statements relevant to the Bragg-Newman program can be made:

1. Inco's Golden Pond deposits are located along the Casa Berardi Break -- an east-west trending shear zone that is hosted by rocks of the Abitibi Belt (Fig. 11). The "Abitibi Terrane" is dominated by intermediate to mafic lavas but the gold deposits occur in a small, north-facing sub-basin that is characterized by volcaniclastic rocks, clastic metasediments and banded iron formation.

2. A more major structure is present about 1 km north of and parallel to the Casa-Berardi Break. Whether this structure is a fault or an unconformity is not yet clear, but like the Cadillac - Larder Lake Fault in the Val d'Or - Rouyn area it separates the Abitibi Belt from a more highly metamorphosed belt of rocks. We call this structure the Casa-Berardi Discordance.

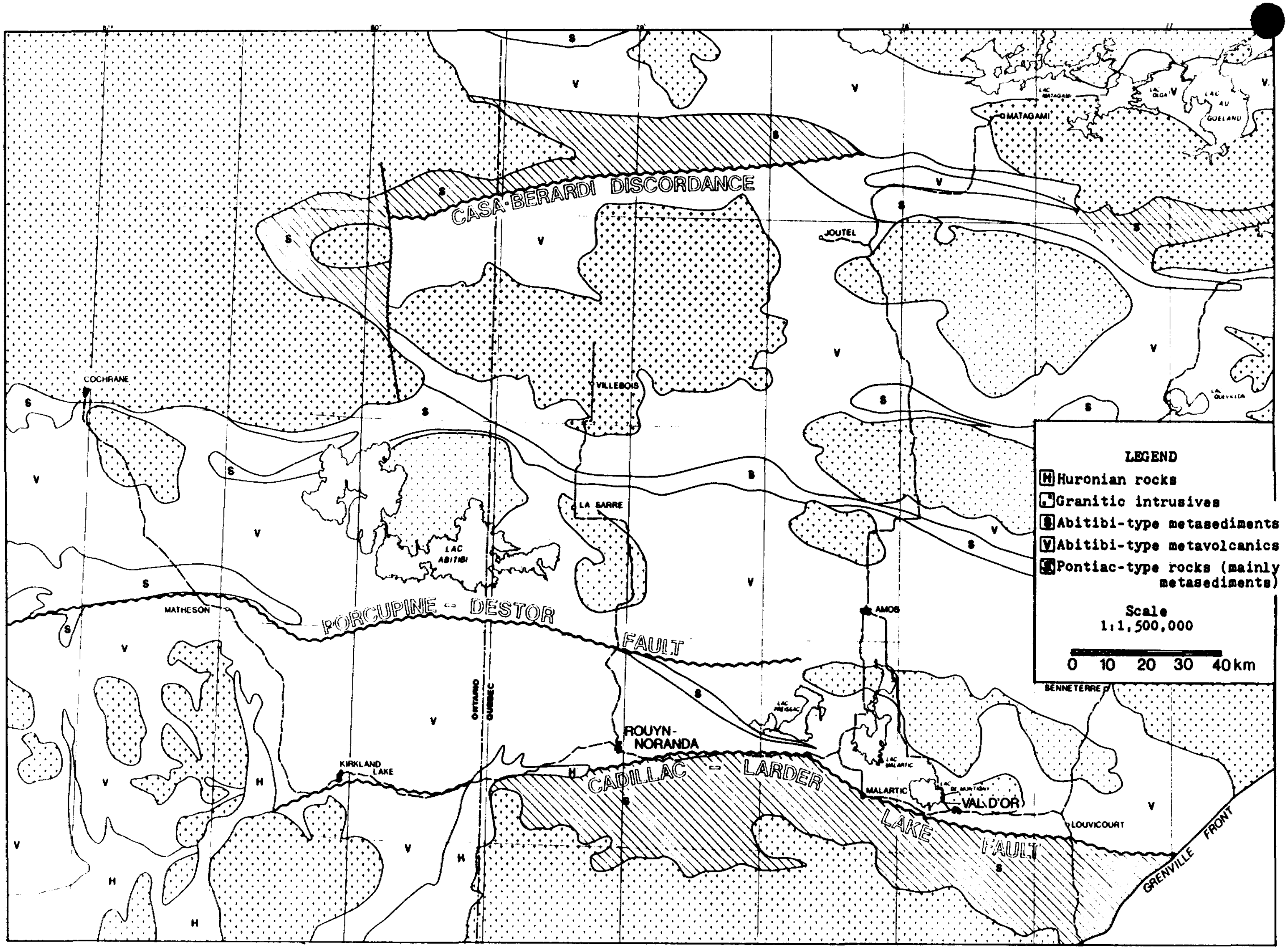


Figure 11 - Distribution of Pontiac-type Rocks in the Abitibi Region

3. The formations north of the discordance are metamorphosed to the same degree as the Pontiac Group of the Bellecombe Belt. They also comprise essentially the same lithologies in the same relative proportions -- dominant turbidites with local banded iron formation, mafic flows and diorite and gabbro sills. We refer to these formations as the "Pontiac Terrane" because we believe that they correlate with the Pontiac Group at Val d'Or. The only significant differences between the Casa-Berardi and Val d'Or packages are that ultramafic flows have not been intersected at Casa-Berardi and feldspar porphyry dikes and sills are much more common at Casa-Berardi than at Val d'Or.

4. The Pontiac Terrane is known to be at least 20 km wide and to extend along strike for at least 150 km from the Harricana River in the east to Hoblitzell Township in the west.

Hoblitzell Township adjoins Newman Township diagonally on the northeast and the Pontiac-type sediments in Hoblitzell Township are directly along strike from those mapped by Bennett et al. (1966) and Wilson (1979) in the Bragg-Newman area. This, together with the high grade of metamorphism observed by Wilson in both the sedimentary and volcanic rocks throughout the Twopeak Lake area, suggests that the Bragg-Newman property is entirely in the Pontiac Terrane. ODM has drilled the folded southern extension of the sediments in Kenning Township 24 km southeast of Bragg-Newman and again found Pontiac-type rocks. This further suggests that the entire lobe of sedimentary and volcanic rocks that lies west of the Burntbush River and has long been assumed to be part of the Abitibi Belt is actually Pontiac Terrane. If this is the case, a major north-south fault must be present in addition to the east-west trending Casa-Berardi Discordance as depicted in Figure 11. A short fault in the correct position is already indicated on the Lithostratigraphic Map of the Abitibi Subprovince (MERQ-OGS, 1983). Interestingly, a similar north-south fault covered by Proterozoic sediments is present roughly along strike on the southern edge of the Abitibi Belt where it marks the western limit of the Pontiac Group (Kalliokoski, 1987). The two faults could be complementary and/or part of a continuous fault zone.

The principal mineral deposits of the Casa-Berardi - Burntbush region are (Fig. 2):

1. Inco's three Golden Pond deposits 75 km east of the Bragg-Newman property which are typical, epigenetic, shear-hosted, quartz-carbonate vein deposits having a strong gold-arsenopyrite association. Total pre-production reserves of the three zones are approximately 10 million tons grading 0.22 ounces per ton (Inco Limited, Annual Report, 1987). Production from the Golden Pond East zone will commence in 1988.

2. Teck's Estrades deposit 30 km east of Golden Pond which is a syngenetic Cu-Pb-Zn-Ag massive sulphide deposit having strong gold values. Exploratory reserves are 2.34 million tonnes grading 0.8 percent Cu, 1.04 percent Pb, 7.39 percent Zn, 107 g/t Ag and 4.4 g/t Au (Werniuk, 1987).

3. Placer-Dome's Detour Mine in Ontario 65 km north of the Bragg-Newman property which is a shear-controlled, epigenetic, quartz-carbonate vein deposit (Marmont, 1986). Production began in 1983 with reserves of 27,733,000 tonnes grading 3.88 g/t Au, 4.66 g/t Ag and 0.205 percent Cu (Canadian Mines Handbook, 1983).

4. Newmont-Golden Shield's main gold occurrence in Noseworthy Township, Ontario, 25 km east of the Bragg-Newman property which consists of an auriferous pyritic quartz vein stockwork cutting a dacitic ash flow tuff that has been metamorphosed to upper greenschist facies (B. Archer, Newmont Exploration of Canada Ltd., pers. comm., 1988).

All of the above deposits are in Abitibi Terrane. With the exception of some of the Newmont - Golden Shield showings, the only known discovery made to date in Pontiac Terrane is the gold occurrence of Duration Mines Limited 20 km north of the Estrades deposit. This occurrence comprises quartz veins erratically mineralized with gold, chalcopyrite and molybdenite in a feldspar porphyry/turbidite contact zone (Duration Mines Limited, Annual Report, 1987).

4.2 Bedrock Geology of the Reverse Circulation Drill Holes

4.2.1 Bedrock Stratigraphy, Structure, Alteration and Topography

All of the bedrock intersections on Bragg-Newman are Pontiac-type turbidites (Plan 1). The absence of volcanic and granitic rocks indicates that the granite dome model proposed by Wilson (1979; Fig. 6) is without foundation. The iron formations proposed by Christopher (1987) are also absent.

The majority of the turbidites are graywacke. Siltstone was intersected in Holes 07, 09 and 18 but the three occurrences appear to represent thin, unrelated horizons or lenses. The lack of marker horizons precludes identification of the stratigraphic trend but it is probably east-west. All samples have been metamorphosed to produce a recrystallized biotitic (or hornblende-bearing where iron-rich) quartzofeldspathic schist that locally contains garnet metacrysts. The presence of the biotite, garnet and hornblende indicates upper greenschist/lower amphibolite facies metamorphism. Chlorite is locally present but concentrations are less than five percent suggesting formation by weak hydrothermal alteration rather than by metamorphism.

A 20-30 metre deep northwest-southeast trending bedrock valley crosses the centre of the property and probably represents the subcrop expression of a cross-cutting shear zone intersected in Hole 06 (Plan 1). This shear zone also appears to be indicated by the contoured VLF field strength values; however the VLF data may not be reliable as the axis of the same conductor trends east-west rather than northwest-southeast, and no shearing was encountered along any of the other conductor axes that were drill-tested.

Due to the high grade of metamorphism, disseminated and/or vein calcite has a maximum concentration of four percent and occurs in only nine of the nineteen samples. Evidence of significant hydrothermal alteration such as Fe/Mg carbonate, brecciated blue-gray quartz veining, tourmaline or green mica is not present in any of the samples.

4.2.2 Lithologic Descriptions

Detailed binocular lithologic descriptions of the bedrock samples were prepared (Appendix F) to confirm and amplify field descriptions with the objective of producing an accurate stratigraphic map. Particular attention was paid to primary features, and the rocks were assigned genetic names such as graywacke rather than metamorphic names such as biotite schist.

Reasonably accurate measurements of primary mineralogy, structure, texture, degree of metamorphism and alteration can be made from chip samples with a binocular microscope, but inherent limitations are present. These limitations include:

1. Inability to differentiate gray plagioclase from pale gray-brown and gray-green pyroxene where the grain size is less than 0.1 mm as in many volcanic rocks. This often impedes differentiation of intermediate volcanics from mafic volcanics in greenstone belts as extensive areas have undergone only subgreenschist facies metamorphism such that primary pyroxene is preserved. In greenschist and amphibolite facies belts where primary pyroxene has been largerly converted to green chlorite and black amphibole, respectively, intermediate and mafic units can be reliably differentiated but primary textures are often obliterated.

2. Inability to determine bedding thickness or fragment size where the dimensions of the beds or fragments are greater than the 1 cm diameter of the coarsest drill cuttings.

3. Inability to recognize tops in bedded sections.

4. Difficulty in differentiating certain primary structures such as pillow selvages from secondary veins and shears.

5. Necessity of inferring gross mineralogy of aphanitic samples from rock colour and hardness.

A summary description of the Bragg-Newman samples is presented in the following section.

4.2.2.1 Turbidites (Pontiac Group; Map Unit 1)

Turbidites were intersected in all drill holes. Sixteen of these intersections are of graywacke (Subunit 1a) and three are of siltstone (Subunit 1b).

The graywacke is usually poorly sorted, consisting of 5 to 30 percent medium sand grains (0.2-1.5 mm) in a matrix of very fine sand (0.05 to 0.1 mm) and silt (less than 0.05 mm). When present, the medium sand grains consist of plagioclase and quartz (locally blue) in approximately 4:1 proportions; lithic grains were not observed. The matrix has the same mineralogy along with 10 to 25 percent biotite. Siltstone samples also have this mineralogy but all grains are less than 0.05 mm in diameter.

Most of the turbidite samples are recrystallized gray to gray-brown schists in which all primary chlorite has been converted to biotite. Disseminated chlorite with a 3-5 percent concentration is present in Holes 15, 17 and 18 and probably results from weak hydrothermal alteration. The finer plagioclase and quartz sand and silt grains have been recrystallized to a colourless, sugary mass. The medium sand grains, however, have generally survived giving the rock a pseudoporphyritic texture. Garnet metacrysts of 0.2 mm average diameter occur in Holes 12 and 18 at respective concentrations of one and two percent. Iron-rich turbidite beds containing amphibole as well as biotite occur in Holes 08 and 10 with respective concentrations of ten and two percent.

Syngenetic pyrrhotite is present in most of the turbidite samples at concentrations ranging up to 5 percent. Pyrite is present in nine turbidite samples reaching a maximum concentration of 2 percent in Hole 01 and is probably a

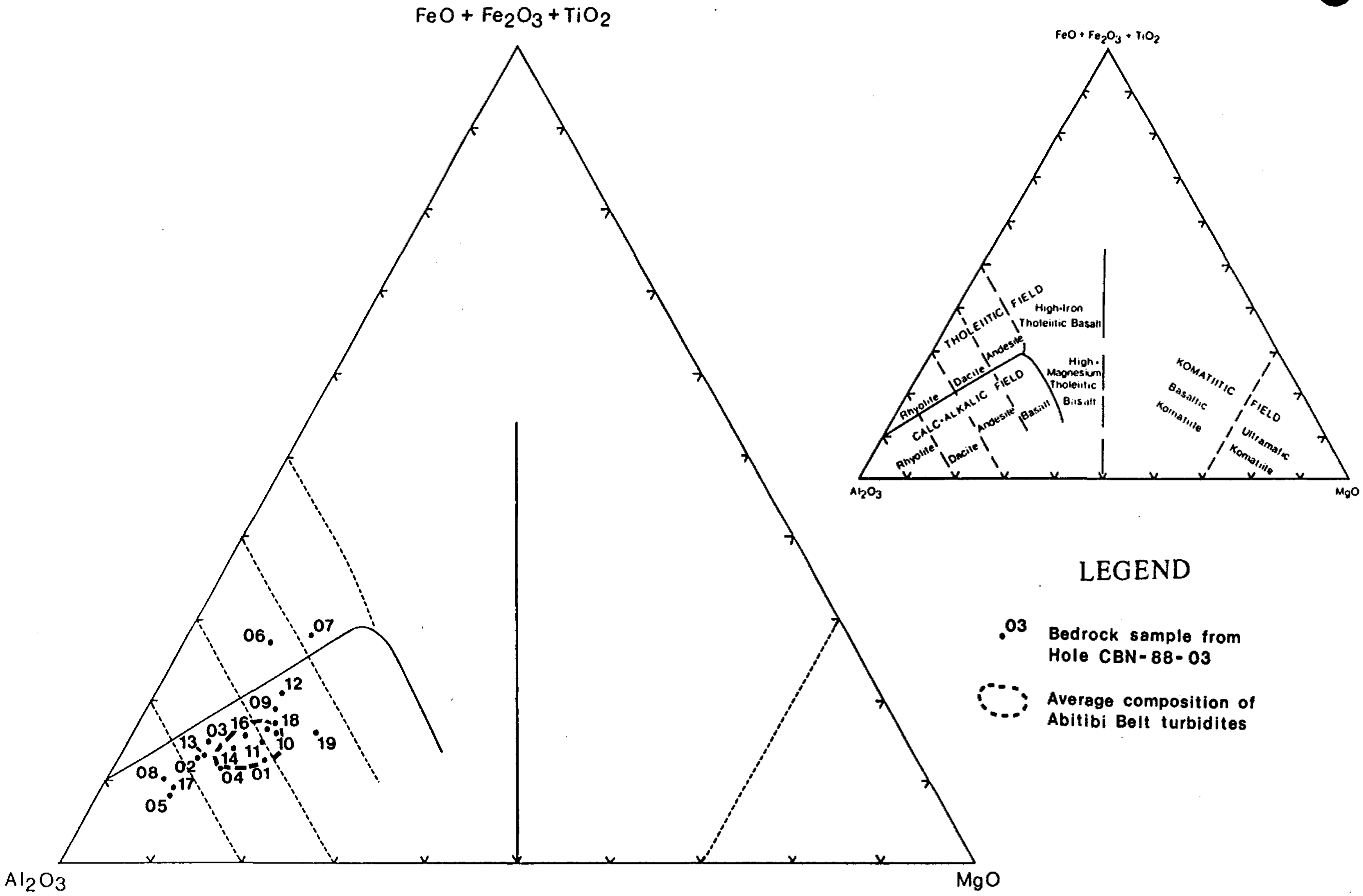


Figure 12 - Jensen Cation Plot for Bragg-Newman Turbidites

secondary mineral as it often occurs in fractures and is rarely present in samples that contain pyrrhotite. The extremely variable sulphide concentrations result in Jensen compositions (Fig. 12) that are much more variable than those of typical Abitibi Belt sediments.

Disseminated and/or vein calcite with a maximum concentration of four percent occurs in nine turbidite samples. Some bleaching and sericitization is evident in the sheared sample from Hole 06. Other forms of epigenetic hydrothermal alteration that normally accompany gold mineralization were not encountered in any of the drill holes.

4.3 Bedrock Geochemistry

All bedrock chip samples from the reverse circulation drilling program were analyzed for copper, zinc, silver, arsenic and gold. The analytical results are presented in Appendix G.

All metal values represent background concentrations, confirming the absence of source minerals recorded during binocular logging. The copper, zinc, silver, arsenic and gold values range from 9-57 ppm, 34-138 ppm, L0.1-0.4 ppm, L2-10 ppm and L5-5 ppb, respectively.

5.0 OVERBURDEN GEOLOGY

5.1 Quaternary History and Stratigraphy of the Abitibi Region

The Quaternary geology of the Abitibi region, as determined by ODM from thousands of drill holes and scanty literature, is summarized in Figure 13 and Table 6. Tills from three major glaciations and sediments from two interglacial periods are present.

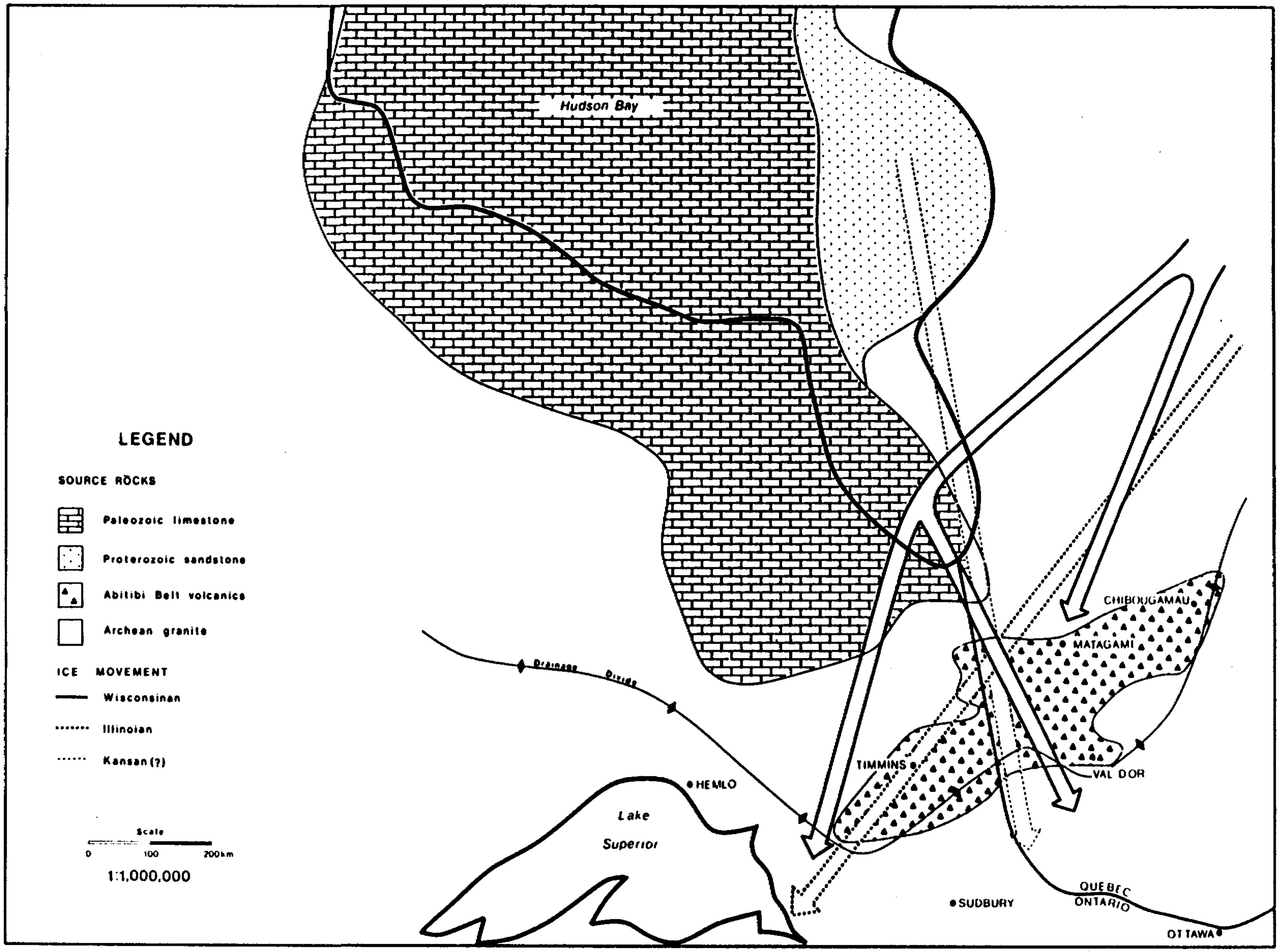


Figure 13 - Glacial History of the Abitibi Region

Present	H O L O C E N E
	7 Holocene sediments
	7c - forest-peat member
	7b - lacustrine-clay member
	7a - fluvial member
10,000 Years B.P.	P L E I S T O C E N E
	LATE WISCONSINAN
	6 Cochrane Till
	5 Ojibway II Sediments
	5e - littoral and aeolian member
	5d - Cochrane member
	5c - glaciolacustrine clay member
	5b - glaciolacustrine sand member
	5a - glaciofluvial member
	4 Chibougamau/Matheson Till
100,000 Years B.P.	**EARLY WISCONSINAN AND SANGAMON**
	3 Missinaibi Formation
	3c - Ojibway I member
	3b - forest-peat member
	3a - fluvial member
	ILLINOIAN
	2 Lower Till and Sediments
1,000,000 Years B.P.	**YARMOUTH AND KANSAN**
	1 Older Till and Sediments

Table 6 - Table of Quaternary Formations for the Abitibi Region

The oldest till was deposited by ice moving southward from Hudson Bay -- possibly 1 million years ago in Kansan time -- and is enriched in clasts of Proterozoic sandstone and Paleozoic limestone. This till is so rarely preserved that it is of no significance in exploration. The next till (Lower Till) was deposited by ice moving southwestward from New Quebec in Illinoian time more than 125,000 years ago. It is preserved in many buried valleys and contains the dispersal trains from any mineralization in these valleys. The youngest till was deposited 10,000 years ago by Late Wisconsinan ice of the Laurentide sheet that originated in New Quebec but had split into a southeast-moving Hudson mass west of Longitude 78°W (Val d'Or) and a southwest-moving New Quebec mass east of this longitude. The esker-like Harricana Interlobate Moraine was deposited at the contact between the two ice masses. The till to the west is known as Matheson Till; that to the east has not been formally named but we call it Chibougamau Till.

In Yarmouth and Sangamon time immediately following the Kansan and Illinoian glaciations, respectively, interglacial sediments including soil profiles and northward-transported fluvial gravels were deposited on the Kansan and Illinoian tills. The gravels consist mostly of recycled till debris, are oxidized, and often contain wood fragments.

In Early Wisconsinan time 100,000 years ago and in Late Wisconsinan time 10,000 years ago, the region was flooded by glacial Lakes Ojibway I and II respectively, and varved clay, silt and fine sand sheets up to 30 metres thick were deposited. The Ojibway I sediments conformably overlie the Sangamon interglacial sediments and the complete Sangamon/Early Wisconsinan package is known as the Missinaibi Formation (Skinner, 1973). The Ojibway I sediments coarsen upward because they were deposited from a transgressive ice sheet. They were overridden by the 2 km thick Wisconsinan ice sheet and are over consolidated, dry and platy whereas the Ojibway II sediments were deposited from regressive ice, fine upward and are soft. Glaciofluvial esker/delta sands and gravels were deposited by the meltwater rivers that fed both lakes.

The final glacial event in the Abitibi region was a minor southeastward re-advance of a thin lobe of ice from the Hudson mass into the north part of Lake Ojibway II, depositing Cochrane Till which consists mainly of clay recycled from the soft lake bed. When the Cochrane ice melted, Lake Ojibway II drained catastrophically to the north, exposing the Late Wisconsinan esker ridges to considerable erosion by wave and wind action until they became stabilized by vegetation.

5.2 Quaternary Geology of the Bragg-Newman Property

The Quaternary units intersected in the reverse circulation drilling on Bragg-Newman include the Early Wisconsinan portion of the Missinaibi Formation, Late Wisconsinan-age Matheson Till, Cochrane Till and Ojibway II glaciofluvial and glaciolacustrine sediments, and Holocene-age peat.

The Early Wisconsinan Missinaibi Formation deposits are preserved only in portions of the central bedrock valley where they were sheltered from Late Wisconsinan glacial and glaciofluvial erosion.

The property is 140 km west of the Harricana Interlobate Moraine and in Late Wisconsinan time it was covered first by the Hudson ice mass, then by Lake Ojibway II, and finally by a lobe of Cochrane ice which resulted in the deposition of Matheson Till, Ojibway II Sediments and Cochrane Till, respectively.

Based on regionally spaced data points, Vincent and Hardy (1979) have estimated the maximum lake level to occur at a present elevation of approximately 350 metres above sea level. This is confirmed by well developed beaches along the north side of a hill 11 km south of the property where the highest strand line is at an elevation of 350 metres above sea level. This implies an average water depth across the property of 50 metres. The double-peaked bedrock ridge west of Twopeak Lake would have stood as two small 50-55 m high islands in the lake.

The most prominent surficial feature in the immediate area is the moraine just north of the property (Fig. 5). This moraine is 3-5 km wide and extends to the west-northwest for at least 15 km. The moraine surface is pristine, consisting of hummocky sand mounds, numerous kettle lakes and a few small esker ridges which terminate at the southern edge of the moraine. The lack of a modified surface indicates a short time interval between deposition of the moraine and the draining of Lake Ojibway II.

South of the moraine the land surface is much flatter and smoother with the exception of a few south-southeasterly trending drumlinoid ridges which terminate at the moraine. The development of a prominent wave-levelled delta just north of South Floodwood Lake, of the beaches 11 km south of the property and of hundreds of iceberg scours on and east of the toe of the moraine (Fig. 5) near Floodwood Lake indicate that the terrain south of the moraine was covered by shallow water for an extended period of time. Through a combination of wave washing of high areas and in-filling of lake bottom depressions by glaciolacustrine sediments, the relatively level topography observed today was produced. In some cases sand spits are associated with the drumlinoid ridges suggesting that the ridges themselves are composed mainly of sand.

The reverse circulation drilling shows that the entire property is covered by a thin veneer of Cochrane Till indicating the Cochrane advance terminated south of the property. The drilling also confirms that the drumlinoid ridges consist of sand and gravel, although they do have a thin, discontinuous capping of Cochrane Till. The ridges are eskers, deposited coevally with Matheson Till, that have been modified by overriding Cochrane ice. The hummocky sand moraine just north of the property represents a period of stagnation during the retreat of the Cochrane ice lobe.

Some strata were mislogged in the field; in particular, sorted esker sections consisting of alternating thin beds of fine sand and course gravel were often mistaken for unsorted till due to mixing of sediment from two or more beds by the drill. Inconsistencies that became apparent while the sections were being drafted were investigated by binocular microscope examinations of the character sample splits. Wherever this led to a revision of the field classification, a note has been added to the field log (Appendix A). The intersected units are described in detail below and are shown in section in Figs. 14 to 16. The lines of section are shown on Plan 1.

5.2.1 Missinaibi Formation (Abitibi Unit 3)

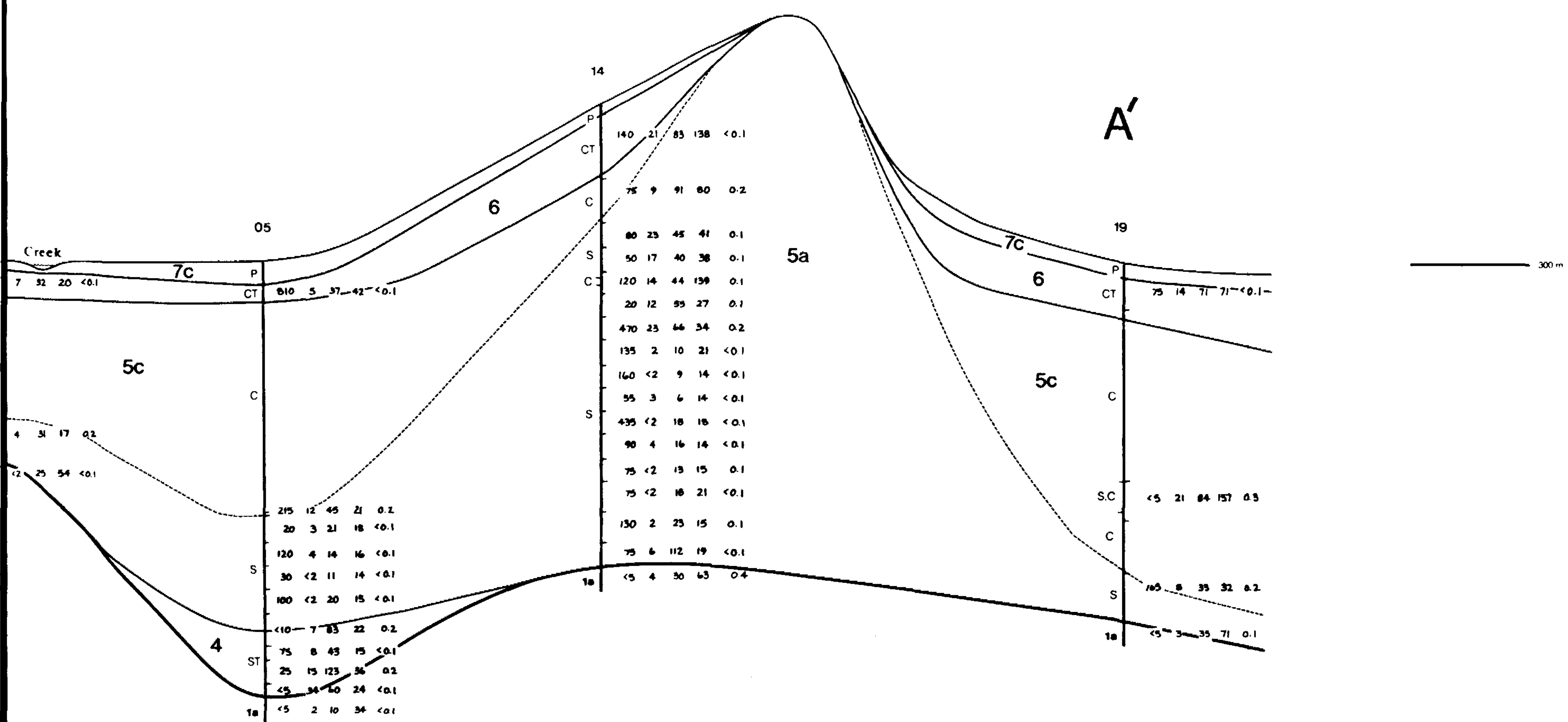
The Missinaibi Formation is both distinctive and extensive in the Abitibi region (Averill, 1986; Dilabio, 1988), but was first documented by Skinner (1973) in the Moose River Basin of the James Bay Lowland. The type section from the Moose River Basin is illustrated in Table 7 and includes, from oldest to youngest, a basal marine clay unit related to incursion of the Bell Sea, fluvial interglacial sands and gravels capped by a weathered soil profile and forest litter, and a sequence of transgressive, upward coarsening glaciolacustrine sediments.

Missinaibi sediments were intersected in Holes 01 and 17 resting on bedrock in the central fault-controlled valley. Intersections are 2.0 and 1.0 metres thick, respectively, and consist of dark gray, overconsolidated, fissile, Ojibway I glaciolacustrine clay (Subunit 3c).

5.2.2 Matheson Till (Abitibi Unit 4)

During the wasting of the Wisconsinan ice sheet, a discontinuous layer of Matheson Till was deposited on the property. This till was intersected in 12 of the 19 drill holes and in the remaining 7 holes is supplanted by glaciofluvial (esker) sediments.

The thickness of the till layer averages approximately 7 metres which is more than the 1-5 metre average over most of the Abitibi region but normal for the northern part of this region. A ripped-up sheet of Ojibway I glaciolacustrine clay occurs within the basal 4 metres of the till in Hole 03.



LEGEND

Abitibi Quaternary Stratigraphy

HOLOCENE

Present

7 Holocene Sediments
- 7c - forest-peat member
- 7b - lacustrine member
- 7a - fluvial member

PLEISTOCENE

10,000 Years B.P.

LATE WISCONSINAN

6 Cochrane Till

5 Ojibway II Sediments
- 5e - littoral and aeolian member
- 5d - Cochrane member
- 5c - glaciolacustrine clay member
- 5b - glaciolacustrine sand member
- 5a - glaciofluvial member

4 Chibougamau/Matheson Till

100,000 Years B.P.

EARLY WISCONSINAN AND SANGAMON

3 Missinaibi Formation
- 3c - Ojibway I member
- 3b - forest-peat member
- 3a - fluvial member

ILLINOIAN

2 Lower Till and Sediments

1,000,000 Years B.P.

YARMOUTH AND KANSAN

1 Older Till and Sediments

Sediment Varieties

- P Peat
- C Clay, silt
- S Sand
- G Gravel
- ST Sand-silt till; clay subordinate
- CT Clay till

Symbols

- Quaternary/bedrock unconformity
- Interglacial unconformity
- Quaternary unit boundary
- Quaternary sub-unit boundary

Geochemistry

ST 240 20 123 53 0.2 — Sand-silt till interval with 240 ppb Au, 20 ppm As, 123 ppm Cu, 53 ppm Zn, and 0.2 ppm Ag in the non-magnetic heavy mineral fraction. (S.G greater than 3.3).

Bedrock Lithology

1 Pontiac Group Turbidites
- 1b - siltstone
- 1a - greywacke

Scale: Hor. 1:10 000
Ver. 1:400

CORDIALE RESOURCES INC.

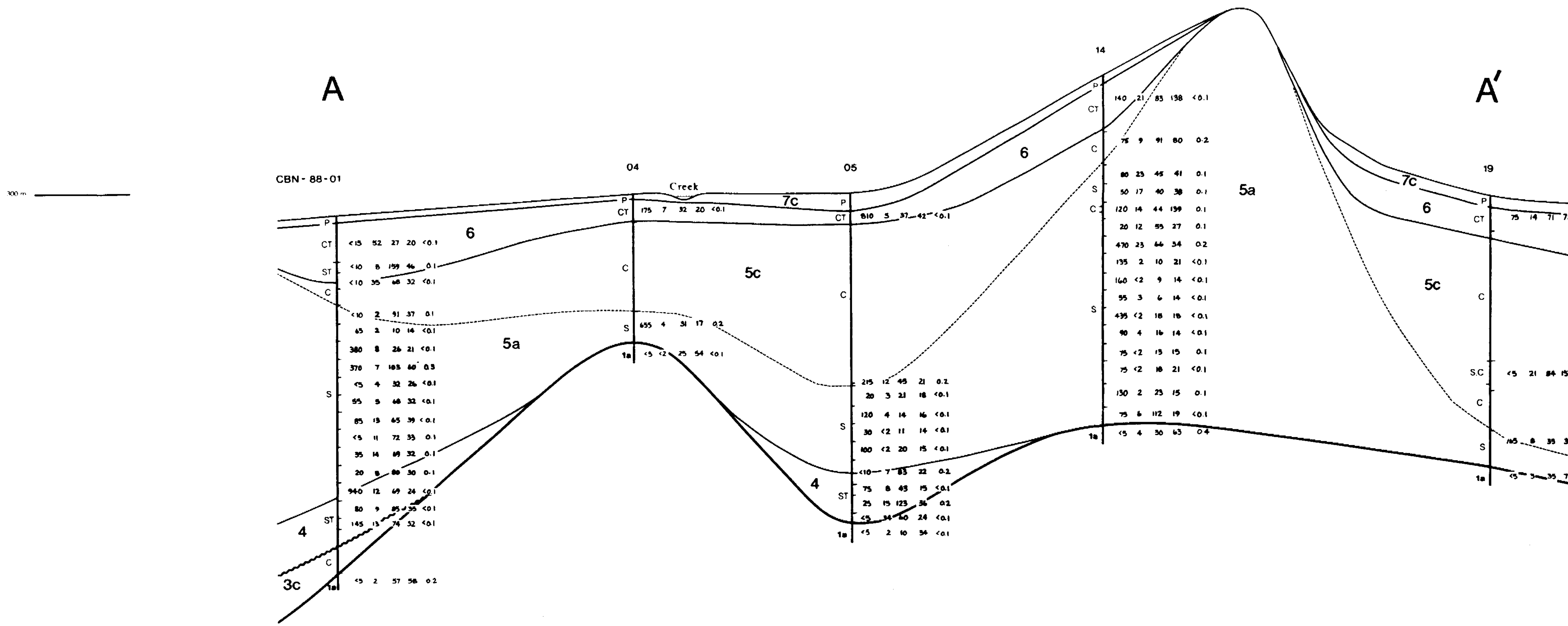
BRAGG - NEWMAN PROPERTY

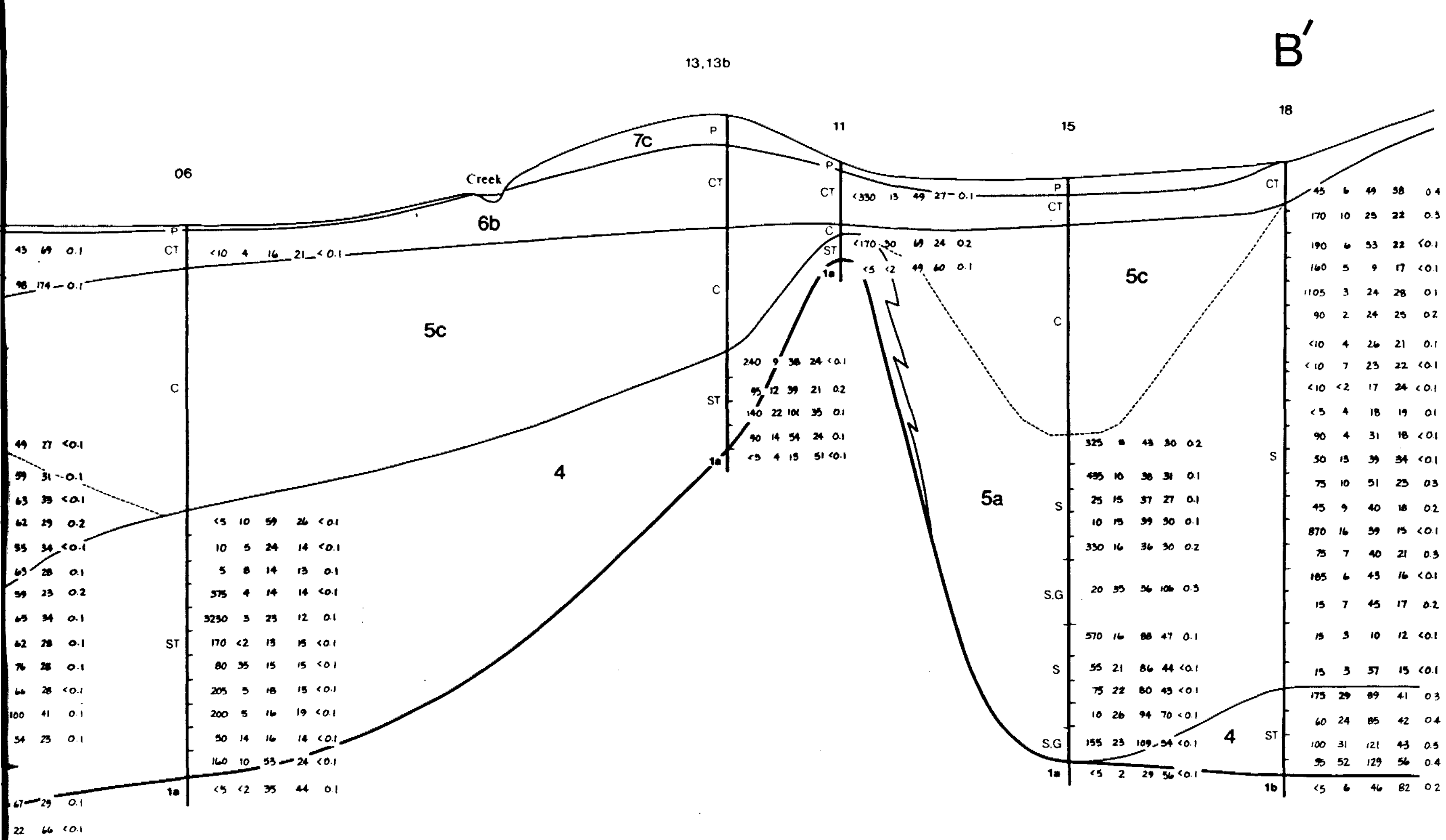
Bragg and Newman Townships

Figure 14 — Sections

A – A′

BY OVERBURDEN DRILLING MANAGEMENT LIMITED JUNE 1988


A
A′
CBN - 88 - 01
04
05
14
19
Creek
P
CT
ST
C
S
1a
6
7c
5c
5a
4
3c



LEGEND

Abitibi Quaternary Stratigraphy

Present

HOLOCENE

7 Holocene Sediments
- 7c - forest-peat member
- 7b - lacustrine member
- 7a - fluvial member

PLEISTOCENE

10,000 Years B.P. — LATE WISCONSINAN

6 Cochrane Till

5 Ojibway II Sediments
- 5e - littoral and aeolian member
- 5d - Cochrane member
- 5c - glaciolacustrine clay member
- 5b - glaciolacustrine sand member
- 5a - glaciofluvial member

4 Chibougamau/Matheson Till

100,000 Years B.P. — EARLY WISCONSINAN AND SANGAMON

3 Missinaibi Formation
- 3c - Ojibway I member
- 3b - forest-peat member
- 3a - fluvial member

ILLINOIAN

2 Lower Till and Sediments

1,000,000 Years B.P. — YARMOUTH AND KANSAN

1 Older Till and Sediments

Sediment Varieties

- P Peat
- C Clay silt
- S Sand
- G Gravel
- ST Sand-silt till; clay subordinate
- CT Clay till

Symbols

- Quaternary/bedrock unconformity
- Interglacial unconformity
- Quaternary unit boundary
- Quaternary sub-unit boundary

Geochemistry

ST 240 20 123 53 0.2 — Sand-silt till interval with 240 ppb Au, 20 ppm As, 123 ppm Cu, 53 ppm Zn, and 0.2 ppm Ag in the non-magnetic heavy mineral fraction. (S.G greater than 3.3).

Bedrock Lithology

1 Pontiac Group Turbidites
- 1b - siltstone
- 1a - greywacke

Scale: Hor. 1:10 000
Ver. 1:400

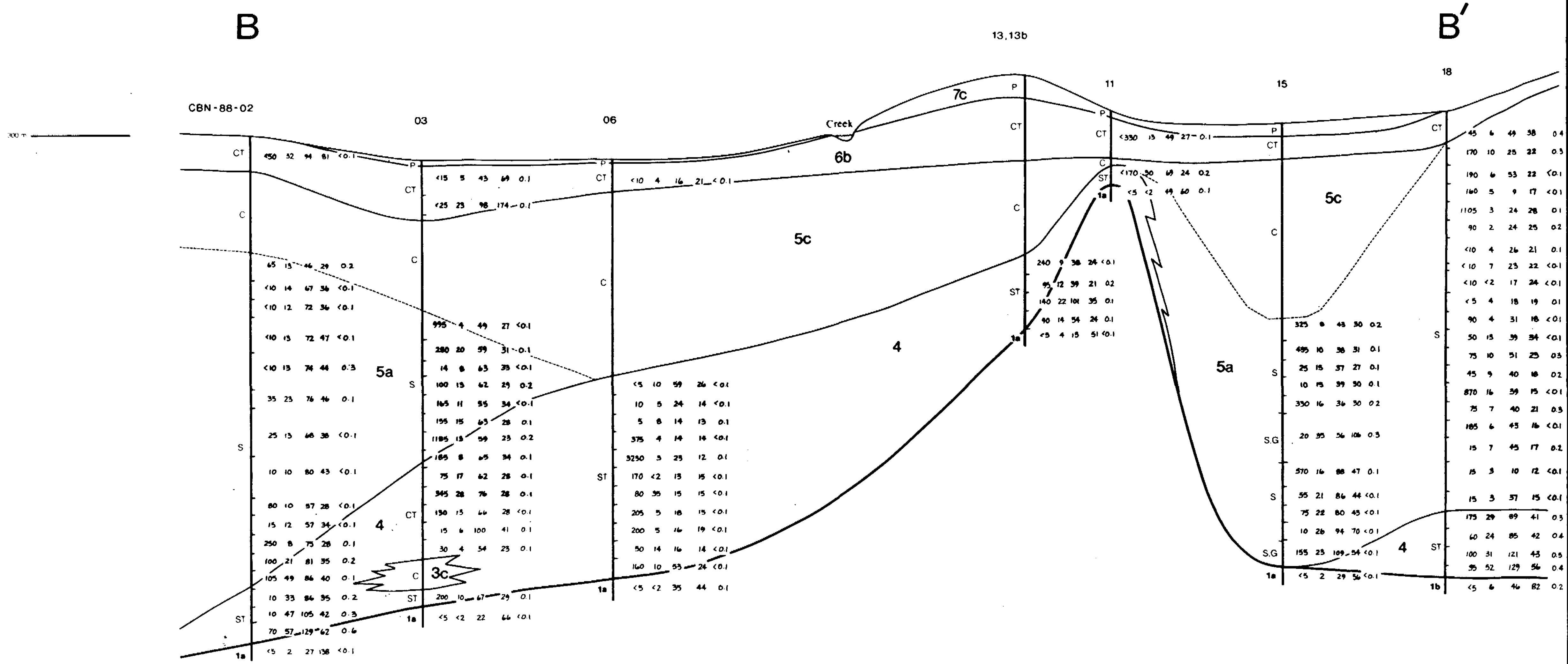
CORDIALE RESOURCES INC.

BRAGG - NEWMAN PROPERTY

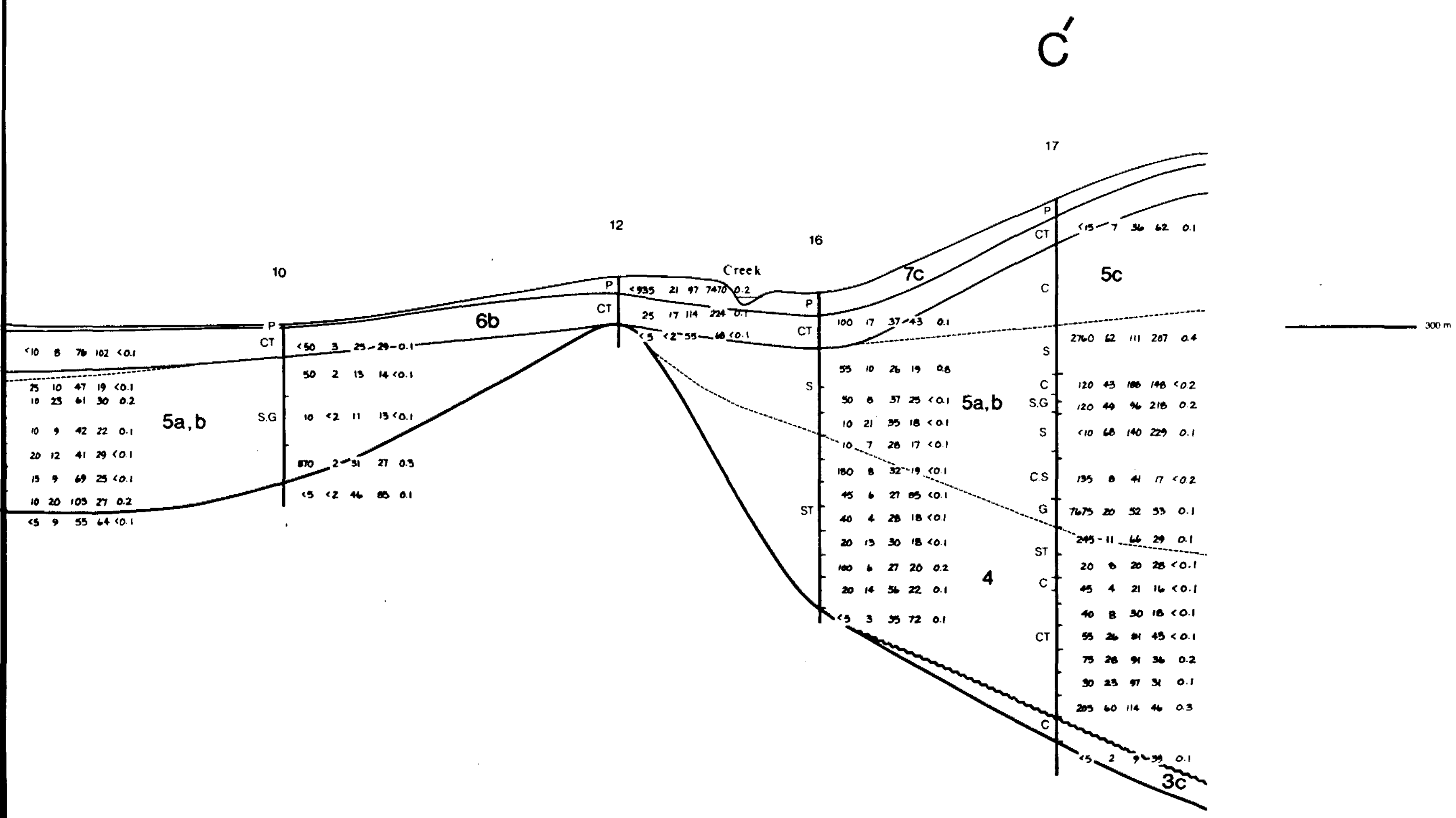
Bragg and Newman Townships

Figure 15 — Sections B - B′

BY OVERBURDEN DRILLING MANAGEMENT LIMITED JUNE 1988



B
B′
CBN-88-02
03
06
13,13b
11
15
18
Creek
7c
6b
5c
5a
4
3c



LEGEND

Abitibi Quaternary Stratigraphy

HOLOCENE

Present

[7] Holocene Sediments
7c - forest-peat member
7b - lacustrine member
7a - fluvial member

PLEISTOCENE

10,000 Years B.P. — LATE WISCONSINAN

[6] Cochrane Till

[5] Ojibway II Sediments
5e - littoral and aeolian member
5d - Cochrane member
5c - glaciolacustrine clay member
5b - glaciolacustrine sand member
5a - glaciofluvial member

[4] Chibougamau/Matheson Till

100,000 Years B.P. — EARLY WISCONSINAN AND SANGAMON

[3] Missinaibi Formation
3c - Ojibway I member
3b - forest-peat member
3a - fluvial member

ILLINOIAN

[2] Lower Till and Sediments

1,000,000 Years B.P. — YARMOUTH AND KANSAN

[1] Older Till and Sediments

Sediment Varieties

P Peat
C Clay, silt
S Sand
G Gravel
ST Sand-silt till; clay subordinate
CT Clay till

Symbols

Quaternary/bedrock unconformity
Interglacial unconformity
Quaternary unit boundary
Quaternary sub-unit boundary

Geochemistry

ST 240 20 123 53 0.2 — Sand-silt till interval with 240 ppb Au, 20 ppm As, 123 ppm Cu, 53 ppm Zn, and 0.2 ppm Ag in the non-magnetic heavy mineral fraction. (S.G greater than 3.3).

Bedrock Lithology

[1] Pontiac Group Turbidites
1b - siltstone
1a - greywacke

Scale: Hor. 1:10 000
Ver. 1:400

CORDIALE RESOURCES INC.

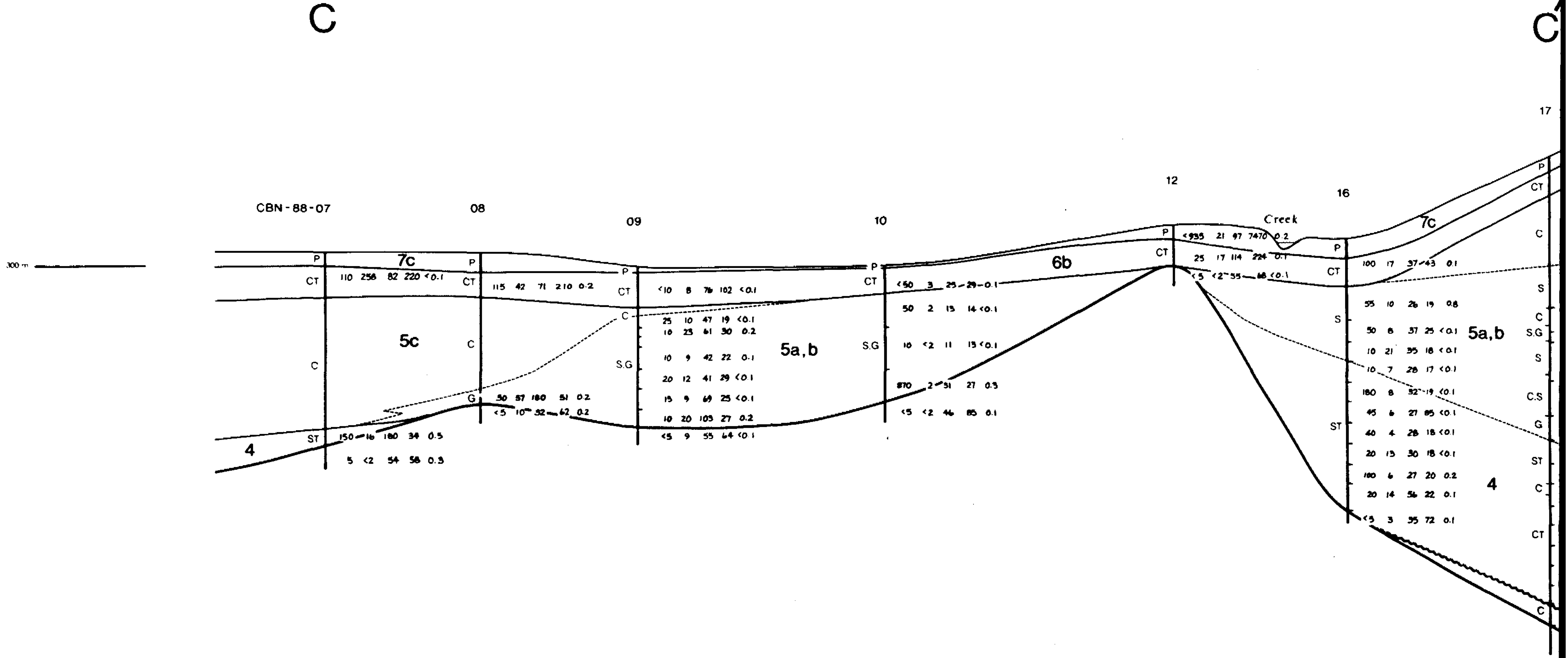
BRAGG - NEWMAN PROPERTY

Bragg and Newman Townships

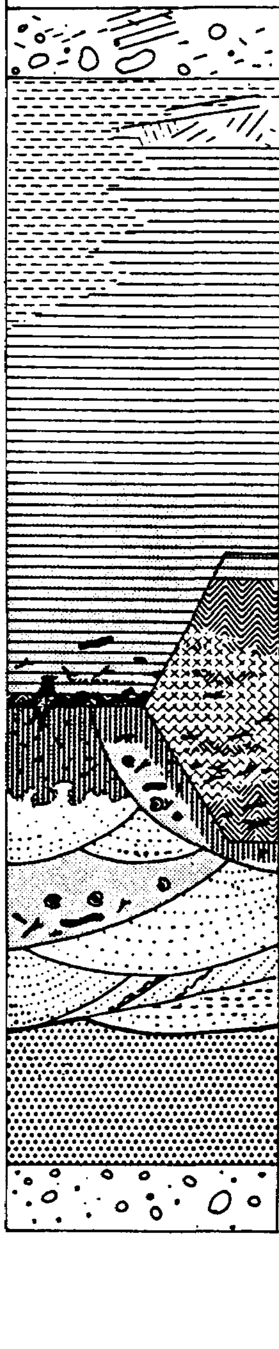
Figure 16 — Sections

C – C′

BY OVERBURDEN DRILLING MANAGEMENT LIMITED JUNE 1988



C
C'
CBN-88-07
08
09
10
12
16
17
Creek
7c
5c
5a,b
6b
4



SEDIMENTS	INTERPRETATION	ROCK STRATIGRAPHIC UNITS	
TILL	GLACIATION	ADAM TILL	
NON- TO SLIGHTLY ORGANIC, VERY CALCAREOUS SILT-CLAY RHYTHMITES COMMONLY SHEARED AND FOLDED. VERY ORGANIC, LAMINATED TO MASSIVE SILT; SLIGHTLY OR NON-CALCAREOUS.	GLACIAL OVERRIDING LITTLE OR NO REWORKING OF FOREST-PEAT-BED; GLACIER PROBABLY AN IMPORTANT SEDIMENT SOURCE. REWORKING OF FOREST-PEAT-BED TRANSGRESSION OF PROGLACIAL LAKE	LACUSTRINE MEMBER	MISSINAIBI FORMATION
LAYER OF MOSS, STUMPS, STICKS, AND OTHER PLANT FRAGMENTS RARELY FIBROUS PEAT	PEAT AND FOREST GROWTH	FOREST-PEAT-BED MEMBER	
ZONE OF WEATHERING (VERTICAL LINES) AFFECTS LOWER UNITS AS WELL SAND, SILT, GRAVEL. COMMONLY CROSS-STRATIFIED IN PLACES WITH LENSES OF FOSSILIFEROUS SEDIMENT	WEATHERING, SOIL FORMATION STREAM INCISION AND DEPOSITION	FLUVIAL MEMBER	
SAND SILT AND CLAY CONTAINS MARINE FOSSILS.	OFF-LAP OF BELL SEA MARINE INCURSION (BELL SEA) GLACIAL RETREAT	MARINE MEMBER	
TILL	GLACIATION	LOWER TILL	

Table 7 - The Missinaibi Formation of the Moose River Basin

(Source: Skinner, 1973)

The Matheson Till matrix consists largely of gray to gray-beige fine sand and silty rock flour. Recycled Ojibway I glaciolacustrine clay is a minor matrix constituent in Holes 03 and 17 where it occurs one to six metres above remnant lenses of the clay. Clasts in the till range from pebble to cobble size with occasional boulders. The clast lithologies are generally 60 percent local volcanics and sediments and 40 percent granitoid material, with the volcanic/sedimentary component increasing to 80 to 85 percent in some sections, especially near the bedrock surface. The high local clast component is indicative of intense scouring of the underlying bedrock. This coupled with the fact that the till contacts bedrock in all but two of the holes in which it is present, indicates that the till is an excellent medium for geochemical prospecting. However, the discontinuous nature of the till horizon results in uneven exploration coverage.

5.2.3 Ojibway II Sediments (Abitibi Unit 5)

The following sediments were deposited on Bragg-Newman while the area was flooded by Lake Ojibway II:

Subunit 5a: Glaciofluvial (esker) sand and gravel.

Subunit 5b: The lower ice-proximal silty sand member of the lake bed.

Subunit 5c: The upper ice-distal silty clay member of the lake bed.

Glaciofluvial sand and gravel was intersected in 15 of the 19 drill holes. It extends to bedrock in seven drill holes, six of which are along a southeast trending esker that passes through the eastern half of the property. The ridge of this esker is largely buried; its only surface expression is the two Cochrane-moulded drumlinoid riges (Fig. 5) that govern the surface drainage pattern on the property. In eight other drill holes, including Holes 01 to 03 which were drilled in the northwest corner of the property and intersected a second buried esker, the sand

and gravel overlie Matheson Till. The only surface expression of the western esker is a few Cochrane-moulded drumlinoid ridges off the property just south of Holes 09 and 10; in this area the western esker almost merges with the eastern esker in the subsurface (Fig. 16). Maximum thicknesses of the glaciofluvial sediments are 22 and 30 metres in Holes 14 and 18 near the axis of the eastern esker ridge. In Hole 14 the esker sediments rest directly on bedrock indicating that the meltwater river responsible for transporting and depositing the sediments channelled completely through the glacier and eroded all basal debris that would normally have been deposited as Matheson Till. However, the sediments consists mostly of sand rather than gravel indicating a rapid energy drop during the transition from the erosional to the depositional stage of the river. Delta development on the ridge flanks is minimal, indicating that ice withdrawal was rapid and uninterrupted.

The esker sand is well-bedded in grain sizes ranging from fine to granular and often contains pebble laminations. It is a clean, washed beige colour and the pebbles are well rounded and are occasionally polished. Pebble compositions mirror those of the Matheson Till.

The ice-proximal glaciolacustrine sand layer (Subunit 5b) that often occurs between Matheson Till and the ice-distal clays (Subunit 5c) in the Abitibi region is rare on Bragg-Newman, again indicating rapid ice withdrawal. The only example is in Hole 19 (Fig. 14) where a 3 metre sand lens occurs within the bottom 6 metres of the ice-distal clays. This sand is distinguished from the glaciofluvial sand by the incorporation of considerable silt, which imparts a grey overtone to the normal beige glaciofluvial colour.

Ice-distal glaciolacustrine clay and silt (Subunit 5c) is nearly ubiquitous on Bragg-Newman, being absent only in Holes 10, 12, 16 and 18 where it has been supplanted by the younger Cochrane Till (Unit 6). The clay reaches a maximum thickness of about 15 metres over the buried central bedrock valley and has a significant levelling effect on the terrain surface. This is well illustrated on Section C-C' (Fig. 16). The glaciolacustrine sediments were often logged as pure gray clay but undoubtedly contain subtle gray-beige silt varves.

5.2.4 Cochrane Till (Abitibi Unit 6)

The Pleistocene era ended in the Abitibi region with a re-advance of the Wisconsinan ice sheet southward from the Moose River Basin into the north part of Lake Ojibway II. This period is known as the Cochrane stage (Prest, 1964). The Cochrane ice must have been very thin, for it rarely contacted bedrock and overrode the Ojibway II sediments on the lake bottom without causing significant compaction.

The Cochrane ice deposited a 1-2 m thick layer of Cochrane Till over the Ojibway II Sediments on Bragg-Newman. Generally the ice overrode clay, and more than 90 percent of the till matrix is recycled clay. The matrix also contains sand grit that has been thoroughly homogenized with the clay. Where the ice overrode esker sediments the till matrix sometimes consists of recycled sand rather than clay. This is best illustrated in Hole 01 (Fig. 14). Clasts are usually pebble sized, and are much less abundant than in Matheson Till, normally comprising about 5 percent of the sample. Clast composition is also distinct from that of the Matheson Till, with limestone commonly comprising 20 percent of the pebbles. These limestone clasts originate in the Hudson Bay area, but were probably incorporated into the Cochrane ice from earlier Pleistocene deposits northwest of the property.

Well-developed flutings on the surface of the Cochrane Till throughout the Burntbush - Casa-Berardi region show that the azimuth of ice advance was 140 to 150 degrees. Drilling conducted by ODM on properties 60 km east of the Bragg-Newman property along the Casa-Berardi Discordance and 20 km southeast in Kenning Township did not intersect Cochrane Till, indicating that the Cochrane re-advance terminated just south of the property. The Cochrane limit is probably near a contact between glaciolacustrine clay and till that is shown on the Surficial Geology Map of Northern Ontario (OGS, 1987) and coincides with the southern boundary of Bragg and Newman Townships.

5.2.5 Holocene Sediments (Abitibi Unit 7)

Peat (Subunit 7b) deposited during the 8,000 years that have elapsed since the melting of the Cochrane ice sheet overlies Cochrane Till in 17 of the 19 drill holes. It is generally less than 1 metre thick.

6.0 OVERBURDEN GEOCHEMISTRY

6.1 Regional Gold and Base Metal Background and Anomaly Threshold Levels

The interpretation of the heavy mineral gold geochemistry of till samples is an involved process. In summary, the gold background of tills is caused mainly by grains of visible gold and these gold grains are so thinly scattered through the till and are of such a wide size range that it is impossible to obtain either a representative number of grains (cluster effect) or a representative gold assay (nugget effect; Table 4) from a sample of reasonable size. In contrast, gold dispersal trains down-ice from known ore bodies have a large concentration of gold grains of a narrow size range such that both representative gold grain counts and gold assays can be obtained. Through experience, we have established a dispersal train threshold of 10 grains of visible gold for the 8 kg samples that are normally collected on reverse circulation drills. Recognizing that some anomalies may be caused by gold occluded in sulphides or other heavy minerals rather than by free gold grains, we also investigate any anomalies over a second, 1,000 ppb threshold. The 1,000 ppb value is based on the observation that heavy mineral concentrates from most gold dispersal trains have a gold content similar to that of the source mineralization; thus 1,000 ppb in the till is suggestive of highly anomalous bedrock and values over 3,000 ppb are suggestive of ore-grade mineralization. Significant anomalies, in addition to being caused by more than 10 gold grains of a similar size or by occluded gold, also generally display vertical stratigraphic continuity within the host till horizon and may have an associated pathfinder metal, particularly arsenic or copper. Delicate or irregular gold grains are also significant as they normally indicate a proximal source (Fig. 10).

The base metal background of a heavy mineral concentrate, and particularly of our high-density methylene iodide concentrates, is higher than that of a raw till sample, ranging up to several hundred ppm, because base metals tend to substitute to a significant extent for other metal ions in the structures of heavy silicate and sulphide minerals such as pyroxene and pyrite. The established anomaly threshold level for Cu and Zn, indicating the presence of ore-type minerals such as chalcopyrite and sphalerite in potentially economic concentrations, is 800 ppm. Because till concentrates from dispersal train samples tend to grade the same as the bedrock source mineralization, massive sulphide deposits which typically grade 50,000 ppm (5 percent) combined Cu-Zn often produce anomalies over 10,000 ppm in each metal. Arsenic does not have a specific anomaly threshold because arsenic deposits are not in themselves of economic importance. However arsenic is the most important gold pathfinder so any elevated arsenic values (usually over 200 ppm) occurring sympathetically with gold are considered anomalous. Copper is also a relatively common gold pathfinder so copper values of less than 800 ppm and occurring sympathetically with gold can be anomalous.

Significant base metal anomalies, like significant gold anomalies, normally display vertical continuity in the host till and have a pathfinder association. In the case of copper and zinc, the presence of grains of banded massive pyrite-chalcopyrite-sphalerite mineralization in the concentrate is a favourable indicator whereas the presence of only coarse crystalline vein-type chalcopyrite or sphalerite is unfavourable.

6.2 Bragg-Newman Heavy Mineral Gold Anomalies

Of the 176 Bragg-Newman heavy mineral concentrates, 86 (49 percent) yielded visible gold during processing (total of 185 grains) but only one yielded the minimum 10 grains required to meet our first anomaly threshold. An additional five samples yielded measured and/or calculated gold assays greater than or equal to our second anomaly threshold of 1,000 ppb. Thus a total of six samples (3.4 percent of samples collected) met or exceeded one of our anomaly thresholds but no samples exceeded both thresholds. The six anomalous samples occur in five holes across the property (Plan 1), in either Matheson Till (2) or sand and gravel (4) sections.

In the Abitibi region, on average, 10 percent of samples that contain only background levels of gold yield anomalous results due to:

1. The chance occurrence of one or two coarse gold grains in the sample (nugget effect), or

2. The chance clustering of 10 or more fine gold grains in the sample (cluster effect).

The 10 percent Abitibi background noise is entirely attributable to the sampling procedure (i.e. samples are too small to give representative gold grain counts and gold assays). It is lower in the north and increases to 15 percent or more in the south due to the cumulative effect of glaciating a vast expanse of volcanic terrane that contains a plethora of minor gold occurrences. The fact that only 3.4 percent of the Bragg-Newman samples are anomalous reflects the position of the property in Pontiac Terrane north of the Abitibi Belt.

A systematic, three-stage screening process has been applied to each of the anomalous samples (Table 8) with the objective of eliminating high background gold noise and isolating any dispersal train anomalies that may be present.

The simplest stage in the screening -- and therefore the first one applied -- is to downgrade anomalies which have no vertical stratigraphic continuity; however no anomaly is completely eliminated until the cause of the anomaly is determined. An anomaly at the base of a till horizon or in a one-sample thick till horizon is automatically assumed to have vertical stratigraphic continuity even though it generally does not. A lack of vertical stratigraphic continuity is displayed by a single, isolated anomalous sample within or at the top of a multi-sample till horizon or at any level in a sand and gravel horizon. A gold anomaly with no vertical stratigraphic continuity is generally caused by either the nugget effect or the cluster effect. These nugget or cluster anomalies sometimes occur in consecutive samples in a drill hole and occasionally they are contiguous with a gold anomaly of another type; we refer to this as "chance" continuity and treat the anomalies as if they had no vertical continuity. To have true vertical continuity,

Gold Anomalies				Grains V.G. (*Not Panned)	1st Stage Screening (Strat. Cont.)	2nd Stage Screening (Meas. Assay: Calc. Assay)	3rd Stage Screening (Nugget Effect)	Remarks	Anomaly Class
Hole No.	Sample No.	Au Assay (ppb) Meas.	Au Assay (ppb) Calc.						
CBN-88-03	09	1,185	614	4	No (sand)	Good	Observed/ Inferred	All abraded gold, one 175x250 micron grain contributes 72% of calc. assay. Estimate 2% pyrite.	Nugget
06	06	3,230	1,002	1*	No	High	Observed	Pulp and metallics assay, mostly coarse gold detected. Single observed grain is abraded. Check panned 1/4 conc., found no V.G., no sulphides. INA check analysis = 9 ppb Au.	Nugget
07	02	150	157	10	Basal	Good	No	Nine of ten gold grains abraded. Estimate 1% pyrite.	Cluster
17	02	2,760	NA	0*	No (sand)	High	Inferred	Check panned 1/4 conc., found no V.G., estimated 10% pyrite. INA check analysis = 15 ppb Au.	Nugget
	07	7,675	270	4	No (gravel)	High	Inferred	Two of four observed gold grains abraded, estimated 2% pyrite. Check panned 1/4 conc., found three gold grains -- one abraded (75x175 microns), one irregular (50x75 microns) and one delicate (50x100 microns) -- with a calculated assay of 781 ppb Au. Estimate 3% pyrite. INA check analysis = 812 ppb Au.	Nugget
18	05	1,105	NA	0*	No (sand)	High	Inferred	Check panned 1/4 conc., found no V.G., no sulphides. INA check analysis = 400 ppb Au.	Nugget

Table 8 – Heavy Mineral Gold Anomaly Screening

contiguous anomalies must have in common at least one property of a dispersal train such as delicate gold, occluded gold or a pathfinder association. Of the six Bragg-Newman anomalies, five have no vertical stratigraphic continuity.

The second stage in the screening is used to evaluate those anomalies where sufficient visible gold was observed to explain the measured (Bondar-Clegg) assays. In its simplest form, the calculated (predicted) visible gold assays are compared to the measured assays to eliminate those anomalies in which the 1,000 ppb threshold is no longer met after the contributions of one or two observed nuggets have been subtracted from the total assays. In a sample with observed nuggets and little or no fine visible gold, either a good correlation of the two assays or a low measured assay indicates that essentially all of the gold in the concentrate is in the nuggets and the anomaly is of no significance. The correlation between a calculated and measured assay is "good" if the calculated assay is not more than twice as high as or 50 percent less than the measured assay; this allows for a doubling or halving of the normal thickness factor for flake gold particles used in the calculation.

Of the six Bragg-Newman anomalies, only two are in samples containing an observed nugget. One of the two samples (No. 03-09) shows good assay correlation and would assay less than 1000 ppb if the contribution of the nugget was subtracted from the measured assay. This anomaly also displays other properties of a nugget anomaly including less than 10 gold grains (4), predominantly abraded gold (all 4 grains), and an absence of pathfinder metals. The anomaly also lacks stratigraphic continuity and was thus downgraded by the first stage screening. The second anomaly, in Sample 06-06, gave an unexpectedly high measured assay and will be discussed under third stage screening. No samples with observed nuggets gave low measured assays.

A variation of the second stage of screening pertains to anomalies possessing ten or more gold grains but lacking a calculated or measured assay over 1,000 ppb. The objective here is to eliminate anomalies caused solely by the erratic clustering of fine background gold grains in the overburden. Unless the anomalies possess other properties of dispersal trains they are generally not significant. This is especially true if the gold grains are abraded, as we have never succeeded in tracing abraded gold to a bedrock source. If, however, the gold grains are of delicate or irregular morphology and occur in stratigraphically contiguous samples, the subanomalous heavy mineral assays could simply indicate that the source has a low grade or narrow subcrop or that the samples were obtained from the margins of a dispersal train.

Of the six anomalous samples, only one (Sample 07-02) is of the above type. This sample contains 10 gold grains, nine of which are abraded, and by chance displays basal stratigraphic continuity. The gold grains are so fine that the calculated and measured assays are very low (157 and 150 ppb, respectively).

The second-stage screening is very reliable because it is based on direct observation of the gold grains. This screening has effectively eliminated 2 of the 6 Bragg-Newman gold anomalies at the 100 percent confidence level. One of the same anomalies has no stratigraphic continuity and was thus downgraded by the first-stage screening.

The third stage in the screening is used to determine the cause of anomalies occurring in samples for which the measured assays are over 1000 ppb and are too high to be accounted for by the gold grains, if any, observed during processing. High measured assays can be caused by any one of the following:

1. A nugget that was recovered but not sighted during processing.
2. A sighted nugget for which the actual thickness is greater than the assumed thickness (0.1-0.2 X diameter) used in the assay calculation.
3. The difference in weight between the total concentrate on which the calculation is based and the portion of 3/4 concentrate that is assayed (applies only to samples in which a nugget is present, as fine gold would be evenly distributed through the sample).
4. A large number of missed fine gold grains.
5. Gold occluded in pyrite or another heavy mineral.

Unsighted nuggets normally account for about 80 percent of unexpectedly high assays, the thickness and weight factors for 10-20 percent, and fine gold and occluded gold for less than 10 percent. Only the fine gold and occluded gold anomalies are significant.

The third-stage in the screening involves a mineralogical investigation of the retained 1/4 concentrate, principally by panning, to determine the probable cause of the high assay in the 3/4 concentrate. The 3/4 concentrate itself cannot be panned as it is pulped (ground in a shatter-box) and largely consumed (by acid digestion) during analysis unless the analysis is by the non-destructive instrumental neutron activation (INA) method.

An absence or minimal amount of fine visible gold in the 1/4 concentrate precludes the occurrence of fine gold in anomalous concentrations in the 3/4 analytical split, and such anomalies can be assumed to have been caused by a missed or unusually thick nugget or by occluded gold. We have encountered occluded gold only in samples that contain arsenopyrite; however there is a significant potential for occluded gold in samples that contain other pathfinder minerals or more than 10 percent pyrite. To prove that no significant amount of occluded gold is present the 1/4 concentrate is analyzed by the non-destructive INA method. Only if the 1/4 split assay duplicates the 3/4 split assay is the presence of occluded gold suggested. The third stage screening is an indirect method as it employs the 1/4 concentrate rather than the 3/4 concentrate that was analyzed originally. However, it is essentially 100 percent reliable.

Of the six Bragg-Newman anomalous samples, four (Nos. 06-06, 17-02, 17-07 and 18-05) unexpectedly gave measured assays that are over 1000 ppb and greater than twice the predicted assays and thus require third stage screening. These four samples yielded a total of five grains of visible gold during initial processing and three of these grains were of abraded morphology. Check panning of the 1/4 concentrates yielded no visible gold in Samples 06-06, 17-02 and 18-05 and three gold grains -- one abraded, one irregular and one delicate -- in Sample 17-07. These three grains are so fine that the calculated assay for the 1/4 concentrate is only 781 ppb. Pyrite levels in the concentrates range up to 10 percent but the 1/4 concentrate INA check analyses for all four samples either match or are lower than the visible gold analyses indicating that occluded gold is not present. All of these anomalies also lack stratigraphic continuity and thus were downgraded by the first stage screening.

In summary the second and third stage screening processes, which are essentially 100 percent reliable, have eliminated two and four of the six Bragg-Newman anomalies, respectively. The first stage screening, which is less reliable, has further downgraded five of the same anomalies.

6.3 Bragg-Newman Heavy Mineral Copper, Zinc, Arsenic and Silver Anomalies

The heavy mineral anomaly threshold for copper and zinc is 800 ppm and for silver it is 2 ppm. Arsenic is anomalous only if it occurs at elevated concentrations in association with gold. Of the 176 Bragg-Newman heavy mineral concentrates that were analyzed for these elements, none are anomalous in copper, one (Sample 12-01) is anomalous in zinc and none are anomalous in arsenic or silver. The highest copper, zinc, arsenic and silver values are 188 ppm, 7,470 ppm, 258 ppm and 0.8 ppm, respectively. A limited screening process, similar to that previously used for gold anomalies, can be employed to separate background noise from those anomalies which are, or may be, related to significant mineralized sources. As with gold anomalies, one screening method is to downgrade anomalies which do not have vertical stratigraphic continuity, although no anomalies are eliminated on this basis alone. The Sample 12-01 zinc anomaly occurs in the upper one metre of a two metre section of Cochrane Till and therefore lacks stratigraphic continuity.

A second screening method is the direct mineralogical examination of anomalous concentrates. The retained 1/4 concentrates are visually examined under a binocular microscope to ascertain the causes of the anomalies. In addition, small incorporated rock chips in the 1/4 concentrates are checked for indicators of the style of mineralization. This could not be done for Sample 12-01 because only

1.6 grams of concentrate were obtained due to the clay-rich character of the Cochrane till and the entire concentrate was needed for geochemical analysis. By extension the amount of sphalerite required to produce the 7,470 ppm assay is very small. This, together with the lack of stratigraphic continuity and the occurrence of the zinc in far-travelled Cochrane till that does not contact bedrock on the property, indicates that the anomaly is of no significance.

7.0 CONCLUSIONS

The objective of the Bragg-Newman reverse circulation drilling/heavy mineral geochemical sampling program was to evaluate the gold potential of the property by testing the overburden for dispersed mineralization indicative of subcropping shear-hosted deposits and by testing the bedrock, especially along VLF conductor axes, for zones of intense bedrock deformation and/or alteration that could host deposits at depth or along strike from the drill holes.

The drilling has shown that the property is underlain not by volcanic and sedimentary rocks of the Abitibi Greenstone Belt, as was assumed when the property was staked, but by Pontiac-type turbidites. Since these formations have no history of gold production, the property appears to have little or no gold potential. This is confirmed by the lack of shearing in the bedrock samples and by the absence of dispersal train type gold anomalies in the overburden samples. The lack of shearing further indicates that the VLF data are unreliable.

8.0 RECOMMENDATIONS

In view of the uniformly negative results obtained from the reverse circulation drilling program, further exploration of the Bragg-Newman property by Cordiale is not warranted.

* * * * * * * * * * *

9.0 CERTIFICATE - STUART A. AVERILL

I, Stuart A. Averill, residing at 192 Powell Avenue, Ottawa, Ontario hereby certify as follows:

That I attended the University of Manitoba at Winnipeg, Manitoba and graduated with a B.Sc. (Hons.) in Geology in 1969.

That I have worked continuously in the field of mining exploration geology since 1971.

That I am President and a principal owner of Overburden Drilling Management Limited, 107-15 Capella Court, Nepean, Ontario, an independent geological consulting company that I founded in 1974.

That I qualify for and have recently applied for fellowship in the Geological Association of Canada.

That this technical report is based on data gathered on the subject property by employees of Overburden Drilling Management Limited and interpreted by me.

That I have no direct or indirect interest in Cordiale Resources Inc.

Stuart A. Averill, B.Sc. (Hons.)

Dated at Ottawa, Ontario this 24th day of June 1988.

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APPENDIX B

SAMPLE WEIGHTS - HEAVY MINERAL CIRCUIT

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OVERBURDEN DRILLING MANAGEMENT LIMITED

OTAL # OF SAMPLES IN THIS REPORT = 40

LABORATORY SAMPLE LOG

AMPLE NO.	WEIGHT (KG.WET) TABLE SPLIT	+10 CHIPS	TABLE FEED	WEIGHT (GRAMS DRY) TABLE CONC	M.I. LIGHTS	M. I. CONC CONC. TOTAL	NON MAG	MAG	AU NO. V.G.	CALC PPB	DESCRIPTION CLAST SIZE	% V/S	GR	LS	OT	MATRIX S/U	SD	ST	CY	COLOR SD	CY	CLASS
CBN-88																						
01-01	7.7	0.1	7.6	85.1	75.1	10.0	7.0	3.0	0	NA	P	30	40	30	NA	U	Y	Y	Y	B	B	TILL
01-02	3.3	0.2	3.1	132.7	118.4	14.3	9.7	4.6	0	NA	P	70	30	NA	NA	U	Y	Y	Y	B	B	TILL
01-03	3.7	0.4	3.3	162.3	149.8	12.5	8.2	4.3	0	NA	P	60	40	NA	NA	U	Y	Y	Y	B	B	TILL
01-04	4.3	0.4	3.9	177.8	161.2	16.6	10.9	5.7	1	59	P	60	40	NA	NA	U	Y	Y	Y	B	B	TILL
01-05	8.8	0.9	7.9	169.7	141.8	27.9	17.1	10.8	0	NA	P	60	40	NA	NA	U	Y	Y	Y	B	B	TILL
01-06	8.9	0.6	8.3	214.4	189.2	25.2	14.5	10.7	1	70	P	60	40	NA	NA	U	Y	Y	Y	B	B	TILL
01-07	8.9	1.2	7.7	224.6	189.7	34.9	21.9	13.0	5	296	P	70	30	NA	NA	U	Y	Y	Y	B	B	TILL
01-08	9.2	1.3	7.9	215.4	183.9	31.5	18.4	13.1	0	NA	P	60	40	NA	NA	U	Y	Y	Y	B	B	TILL
01-09	8.7	1.7	7.0	169.5	123.6	45.9	23.7	22.2	1	8	P	70	30	NA	NA	U	Y	Y	Y	GB	GB	TILL
01-10	9.1	1.2	7.9	160.6	127.7	32.9	19.6	13.3	2	167	P	60	40	NA	NA	U	Y	Y	Y	B	B	TILL
01-11	9.2	1.2	8.0	138.9	106.3	32.6	19.0	13.6	0	NA	P	60	40	NA	NA	U	Y	Y	Y	B	B	TILL
01-12	9.0	0.5	8.5	112.9	78.4	34.5	17.4	17.1	0	NA	P	60	40	NA	NA	U	Y	Y	Y	B	B	TILL
01-13	8.8	0.8	8.0	117.5	81.4	36.1	22.7	13.4	1	66	P	60	40	NA	NA	U	Y	Y	Y	B	B	TILL
01-14	6.5	0.8	5.7	104.1	80.2	23.9	15.5	8.4	5	763	P	60	40	NA	NA	U	Y	Y	Y	B	B	TILL
01-15	9.1	1.0	8.1	131.4	102.4	29.0	18.2	10.8	0	NA	P	65	35	NA	NA	U	Y	Y	Y	B	B	TILL
01-16	9.2	1.0	8.2	161.0	124.7	36.3	24.4	11.9	2	102	P	70	30	NA	NA	U	Y	Y	Y	GB	GB	TILL
02-01	4.7	0.0	4.7	84.4	80.8	3.6	2.9	0.7	0	NA	TR	NA	NA	NA	C	U	Y	Y	Y	B	B	TILL
02-02	7.9	0.5	7.4	108.2	86.0	22.2	15.3	6.9	0	NA	P	40	60	NA	NA	U	Y	Y	Y	GB	GB	TILL
02-03	8.3	0.0	8.3	97.1	74.4	22.7	15.4	7.3	0	NA	TR	NA	NA	NA	NA	S	F	Y	Y	B	B	SAND
02-04	7.6	0.2	7.4	135.6	114.6	21.0	14.5	6.5	1	103	P	40	60	NA	NA	U	Y	Y	Y	B	B	TILL
02-05	8.3	0.0	8.3	93.1	77.8	15.3	10.4	4.9	0	NA	TR	NA	NA	NA	NA	S	F	Y	Y	B	B	SAND
02-06	8.0	0.0	8.0	112.4	94.5	17.9	12.6	5.3	1	80	TR	NA	NA	NA	NA	S	F	Y	Y	B	B	SAND
02-07	8.3	0.0	8.3	109.6	83.7	25.9	17.1	8.8	1	59	TR	NA	NA	NA	NA	S	M	Y	Y	B	B	SAND
02-08	9.0	1.4	7.6	128.8	107.5	21.3	13.9	7.4	0	NA	P	40	60	NA	NA	U	Y	Y	Y	B	B	TILL
02-09	8.7	0.2	8.5	159.4	139.6	19.8	13.7	6.1	0	NA	P	40	60	NA	NA	U	Y	Y	Y	B	B	TILL
02-10	8.5	0.5	8.0	152.7	100.8	51.9	34.0	17.9	5	29	P	40	60	NA	NA	U	Y	Y	Y	B	B	TILL
02-11	8.6	1.0	7.6	164.3	119.6	44.7	29.7	15.0	1	34	P	60	40	NA	NA	U	Y	Y	Y	B	B	TILL
02-12	8.8	0.6	8.2	178.1	144.6	33.5	22.3	11.2	4	173	P	50	50	NA	NA	U	Y	Y	Y	B	B	TILL
02-13	8.7	0.6	8.1	160.9	119.8	41.1	26.2	14.9	1	14	P	60	40	NA	NA	U	Y	Y	Y	B	B	TILL
02-14	8.9	0.6	8.3	172.9	138.8	34.1	21.8	12.3	0	NA	P	80	20	NA	NA	U	Y	Y	Y	GB	GB	TILL
02-15	9.2	0.5	8.7	108.2	76.0	32.2	21.3	10.9	0	NA	P	80	20	NA	NA	U	Y	Y	Y	GB	GB	TILL
02-16	9.3	0.8	8.5	144.6	115.0	29.6	19.1	10.5	2	145	P	80	20	NA	NA	U	Y	Y	Y	GB	GB	TILL
02-17	9.4	1.2	8.2	171.4	136.0	35.4	24.4	11.0	1	119	P	85	15	NA	NA	U	Y	Y	Y	GB	GB	TILL
03-01	6.7	0.3	6.4	137.8	129.0	8.8	7.1	1.7	0	NA	P	20	20	60	NA	S	M	Y	Y	B	B	SAND
03-02	5.3	0.2	5.1	100.4	95.4	5.0	4.0	1.0	0	NA	P	30	30	40	NA	S	F	Y	Y	B	B	SAND
03-03	8.9	0.8	8.1	153.4	116.7	36.7	24.8	11.9	4	762	P	60	40	NA	NA	U	Y	Y	Y	B	B	TILL
03-04	8.4	0.6	7.8	133.2	101.6	31.6	21.2	10.4	1	71	P	60	40	NA	NA	U	Y	Y	Y	GB	GB	TILL
03-05	9.2	1.4	7.8	120.2	86.1	34.1	22.8	11.3	2	97	P	60	40	NA	NA	U	Y	Y	Y	GB	GB	TILL
03-06	8.3	1.2	7.1	131.1	90.4	40.7	26.2	14.5	1	39	P	60	40	NA	NA	U	Y	Y	Y	GB	GB	TILL
03-07	8.1	0.3	7.8	122.6	87.3	35.3	25.6	9.7	1	113	P	70	30	NA	NA	S	M	Y	Y	B	B	SAND

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OTAL # O[illegible]AMPLES IN THIS REPORT = 40

OVERBURDEN DRILLING MANAGEMENT LIMITED

LABORATORY SAMPLE LOG

AMPLE NO.	WEIGHT (KG.WET) TABLE SPLIT	+10 CHIPS	TABLE FEED	WEIGHT (GRAMS DRY) TABLE CONC	M.I. LIGHTS	M. I. CONC CONC. TOTAL	NON MAG	MAG	AU NO. V.G.	CALC PPB	DESCRIPTION CLAST SIZE	% V/S	GR	LS	OT	MATRIX S/U	SD	ST	CY	COLOR SD	CY	CLASS
CBN-88																						
03-08	7.7	0.7	7.0	171.2	121.7	49.5	32.7	16.8	4	65	P	70	30	NA	NA	S	F	Y	Y	B	B	SAND
03-09	8.6	0.9	7.7	153.3	99.2	54.1	30.8	23.3	4	614	P	70	30	NA	NA	U	Y	Y	Y	B	B	TILL
03-10	8.2	0.8	7.4	167.5	133.5	34.0	21.8	12.2	5	160	P	60	40	NA	NA	U	Y	Y	Y	B	B	TILL
03-11	8.7	0.2	8.5	148.5	114.9	33.6	20.7	12.9	1	31	P	70	30	NA	NA	U	Y	Y	Y	B	B	TILL
03-12	8.7	1.1	7.6	138.8	109.3	29.5	18.0	11.5	4	205	P	70	30	NA	NA	U	Y	Y	Y	B	B	TILL
03-13	8.7	1.8	6.9	100.9	73.7	27.2	17.4	9.8	3	63	P	70	30	NA	NA	U	Y	Y	Y	GB	GB	TILL
03-14	8.6	1.2	7.4	115.2	90.6	24.6	15.8	8.8	0	NA	P	60	40	NA	NA	U	Y	Y	Y	GB	GB	TILL
03-15	4.9	0.2	4.7	100.5	82.3	18.2	13.2	5.0	0	NA	P	50	50	NA	NA	S	F	Y	Y	GB	GB	SAND
03-16	8.0	0.3	7.7	125.0	102.8	22.2	13.9	8.3	1	14	P	60	40	NA	NA	S	F	Y	Y	GB	GB	SAND
04-01	4.3	0.1	4.2	71.7	64.3	7.4	4.4	3.0	0	NA	P	10	5	85	NA	U	Y	Y	Y	B	B	TILL
04-02	8.9	1.7	7.2	183.8	151.3	32.5	19.6	12.9	3	186	P	60	35	5	NA	U	Y	Y	Y	B	B	TILL
05-01	2.7	0.1	2.6	69.4	67.1	2.3	1.7	0.6	0	NA	P	10	20	70	NA	U	Y	Y	Y	B	B	TILL
05-02	8.1	0.9	7.2	188.9	158.9	30.0	19.8	10.2	0	NA	C	90	10	NA	NA	U	Y	Y	Y	B	B	TILL
05-03	8.2	1.7	6.5	172.1	144.7	27.4	18.3	9.1	0	NA	P	70	30	NA	NA	U	Y	Y	Y	B	B	TILL
05-04	8.5	1.5	7.0	134.0	101.0	33.0	19.8	13.2	3	454	P	70	30	NA	NA	U	Y	Y	Y	B	B	TILL
05-05	8.7	1.6	7.1	157.8	124.0	33.8	21.6	12.2	0	NA	P	60	40	NA	NA	U	Y	Y	Y	B	B	TILL
05-06	8.2	1.1	7.1	156.7	128.2	28.5	18.7	9.8	3	149	P	60	40	NA	NA	U	Y	Y	Y	B	B	TILL
05-07	8.2	2.5	5.7	114.3	93.3	21.0	14.1	6.9	0	NA	P	70	30	NA	NA	U	Y	Y	Y	B	B	TILL
05-08	8.7	2.0	6.7	121.8	89.2	32.6	20.7	11.9	1	31	P	70	30	NA	NA	U	Y	Y	Y	B	B	TILL
05-09	8.8	0.8	8.0	142.8	111.4	31.4	21.3	10.1	0	NA	P	70	30	NA	NA	U	Y	Y	Y	B	B	TILL
05-10	8.5	0.4	8.1	102.5	77.5	25.0	16.3	8.7	1	39	PC	85	15	NA	NA	U	Y	Y	Y	B	B	TILL
06-01	4.8	0.3	4.5	123.3	111.3	12.0	9.5	2.5	0	NA	P	10	10	80	NA	U	Y	Y	Y	B	B	TILL
06-02	8.9	0.9	8.0	151.9	120.3	31.6	20.0	11.6	0	NA	P	60	40	NA	NA	U	Y	Y	Y	B	B	TILL
06-03	8.2	0.4	7.8	178.5	142.9	35.6	24.0	11.6	0	NA	P	60	40	NA	NA	U	Y	Y	Y	B	B	TILL
06-04	7.8	1.0	6.8	152.7	117.5	35.2	24.3	10.9	1	157	P	60	40	NA	NA	U	Y	Y	Y	B	B	TILL
06-05	7.9	1.0	6.9	211.1	163.6	47.5	32.1	15.4	5	190	P	70	30	NA	NA	U	Y	Y	Y	B	B	TILL
06-06	8.4	0.6	7.8	171.4	130.9	40.5	28.4	12.1	1	1002	P	70	30	NA	NA	U	Y	Y	Y	B	B	TILL
06-07	7.7	0.4	7.3	200.1	162.6	37.5	27.0	10.5	1	79	P	70	30	NA	NA	U	Y	Y	Y	B	B	TILL
06-08	8.7	0.4	8.3	158.4	119.5	38.9	26.5	12.4	4	54	P	70	30	NA	NA	U	Y	Y	Y	B	B	TILL
06-09	8.3	0.5	7.8	163.3	132.3	31.0	21.1	9.9	0	NA	P	60	40	NA	NA	U	Y	Y	Y	B	B	TILL
06-10	6.8	0.4	6.4	117.9	95.4	22.5	15.2	7.3	3	85	P	60	40	NA	NA	U	Y	Y	Y	B	B	TILL
06-11	7.8	0.3	7.5	119.5	94.3	25.2	18.0	7.2	1	21	P	60	40	NA	NA	U	Y	Y	Y	B	B	TILL
06-12	8.3	0.2	8.1	156.9	129.8	27.1	18.4	8.7	5	143	P	60	40	NA	NA	U	Y	Y	Y	B	B	TILL
07-01	5.7	0.2	5.5	99.5	91.7	7.8	6.3	1.5	0	NA	F	70	30	NA	NA	U	Y	Y	Y	B	B	TILL
07-02	8.5	1.0	7.5	160.1	126.4	33.7	18.4	15.3	10	157	P	70	30	NA	NA	U	Y	Y	Y	GB	GB	TILL
08-01	5.8	0.2	5.6	97.0	84.2	12.8	10.6	2.2	1	35	P	60	40	NA	NA	U	Y	Y	Y	B	B	TILL
08-02	1.1	0.6	0.5	52.8	49.3	3.5	2.4	1.1	1	884	C	80	20	NA	NA	U	Y	Y	Y	GNB	GNB	TILL
09-01	7.0	0.2	6.8	108.0	89.1	18.9	11.8	7.1	0	NA	P	60	40	NA	NA	U	Y	Y	Y	B	B	TILL
09-02	8.8	1.2	7.6	149.7	119.3	30.4	19.5	10.9	1	397	P	60	40	NA	NA	U	Y	Y	Y	B	B	TILL
09-03	6.1	0.8	5.3	127.1	101.5	25.6	16.8	8.8	0	NA	P	70	30	NA	NA	U	Y	Y	Y	B	B	TILL

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OVERBURDEN DRILLING MANAGEMENT LIMITED

TOTAL # OF SAMPLES IN THIS REPORT = 40

LABORATORY SAMPLE LOG

AMPLE NO.	GHT (KG.WET)			WEIGHT (GRAMS DRY)					AU		DESCRIPTION											CLASS
						M. I. CONC					CLAST					MATRIX						
	TABLE SPLIT	+10 CHIPS	TABLE FEED	TABLE CONC	M.I. LIGHTS	CONC. TOTAL	NON MAG	MAG	NO. V.G.	CALC PPB	SIZE	% V/S	% GR	% LS	% OT	S/U	SD	ST	CY	COLOR SD	COLOR CY	
CBN-88																						
09-04	8.4	1.0	7.4	119.8	88.6	31.2	19.0	12.2	0	NA	P	40	60	NA	NA	U	Y	Y	Y	B	B	TILL
09-05	7.9	0.4	7.5	134.3	110.6	23.7	15.4	8.3	0	NA	P	40	60	NA	NA	U	Y	Y	Y	B	B	TILL
09-06	8.3	0.6	7.7	105.7	79.7	26.0	16.9	9.1	1	60	P	50	50	NA	NA	U	Y	Y	Y	B	B	TILL
09-07	9.0	0.6	8.4	133.2	107.3	25.9	17.6	8.3	0	NA	P	60	40	NA	NA	U	Y	Y	Y	GB	GB	TILL
10-01	2.7	0.0	2.7	57.0	53.2	3.8	2.7	1.1	0	NA	TR	NA	NA	NA	NA	U	Y	Y	Y	B	B	TILL
10-02	8.2	1.0	7.2	171.6	142.8	28.8	17.2	11.6	0	NA	P	40	60	NA	NA	U	Y	Y	Y	B	B	TILL
10-03	9.0	0.8	8.2	142.3	109.9	32.4	18.0	14.4	0	NA	P	40	60	NA	NA	U	Y	Y	Y	B	B	TILL
10-04	8.5	1.5	7.0	134.2	107.4	26.8	13.9	12.9	0	NA	P	50	50	NA	NA	U	Y	Y	Y	B	B	TILL
11-01	2.1	0.0	2.1	102.5	93.8	8.7	6.2	2.5	0	NA	TR	NA	NA	NA	NA	U	Y	Y	Y	B	B	TILL
11-02	9.0	1.0	8.0	152.3	119.4	32.9	20.3	12.6	1	188	P	70	30	NA	NA	U	Y	Y	Y	B	B	TILL
12-01	1.5	0.0	1.5	47.2	45.6	1.6	1.1	0.5	0	NA	TR	NA	NA	NA	NA	U	Y	Y	Y	B	B	TILL
12-02	7.0	0.8	6.2	104.2	82.5	21.7	15.9	5.8	0	NA	C	70	30	NA	NA	U	Y	Y	Y	GNB	GNB	TILL
13-01	9.0	0.2	8.8	193.7	158.3	35.4	22.4	13.0	2	265	P	60	40	NA	NA	U	Y	Y	Y	B	B	TILL
13-02	8.7	0.4	8.3	159.5	126.9	32.6	21.5	11.1	4	86	P	60	40	NA	NA	U	Y	Y	Y	B	B	TILL
13-03	8.9	0.4	8.5	166.6	137.6	29.0	18.0	11.0	1	11	P	60	40	NA	NA	U	Y	Y	Y	B	B	TILL
13-04	9.2	1.1	8.1	172.6	137.2	35.4	22.4	13.0	0	NA	P	70	30	NA	NA	U	Y	Y	Y	B	B	TILL
14-01	6.2	0.1	6.1	45.3	42.4	2.9	2.2	0.7	0	NA	P	20	20	60	NA	U	Y	Y	Y	B	B	TILL
14-02	5.6	0.4	5.2	95.7	74.3	21.4	13.8	7.6	0	NA	P	70	30	NA	NA	U	Y	Y	Y	B	B	TILL
14-03	8.0	1.1	6.9	172.5	146.9	25.6	15.9	9.7	1	40	P	60	40	NA	NA	U	Y	Y	Y	B	B	TILL
14-04	8.8	0.4	8.4	175.7	144.6	31.1	18.7	12.4	1	333	P	60	40	NA	NA	U	Y	Y	Y	B	B	TILL
14-05	7.2	0.6	6.6	110.4	82.4	28.0	18.5	9.5	1	81	P	70	30	NA	NA	U	Y	Y	Y	B	B	TILL
14-06	8.7	0.4	8.3	163.1	131.2	31.9	19.4	12.5	1	33	P	70	30	NA	NA	U	Y	Y	Y	B	B	TILL
14-07	8.8	1.6	7.2	104.8	76.6	28.2	17.9	10.3	0	NA	P	80	20	NA	NA	U	Y	Y	Y	B	B	TILL
14-08	8.6	1.4	7.2	126.7	101.4	25.3	16.8	8.5	0	NA	P	50	50	NA	NA	U	Y	Y	Y	B	B	TILL
14-09	8.4	0.5	7.9	103.6	79.9	23.7	15.5	8.2	1	65	P	55	45	NA	NA	U	Y	Y	Y	B	B	TILL
14-10	8.1	0.4	7.7	149.3	125.0	24.3	15.9	8.4	0	NA	F	60	40	NA	NA	U	Y	Y	Y	B	B	TILL
14-11	8.6	1.0	7.6	145.5	121.6	23.9	13.4	10.5	1	368	P	50	50	NA	NA	U	Y	Y	Y	B	B	TILL
14-12	8.9	1.0	7.9	127.4	98.9	28.5	15.1	13.4	2	216	P	55	45	NA	NA	U	Y	Y	Y	B	B	TILL
14-13	7.9	0.2	7.7	126.8	103.0	23.8	14.4	9.4	0	NA	P	40	60	NA	NA	U	Y	Y	Y	B	B	TILL
14-14	8.6	0.7	7.9	200.7	175.6	25.1	16.4	8.7	1	5	P	50	50	NA	NA	U	Y	Y	Y	B	B	TILL
14-15	8.6	0.3	8.3	124.6	104.3	20.3	12.1	8.2	2	90	P	50	50	NA	NA	U	Y	Y	Y	B	B	TILL
14-16	8.6	2.6	6.0	140.1	117.4	22.7	14.4	8.3	0	NA	P	70	30	NA	NA	U	Y	Y	Y	GB	GB	TILL
15-01	8.7	0.8	7.9	178.3	151.9	26.4	17.4	9.0	0	NA	P	70	30	NA	NA	U	Y	Y	Y	B	B	TILL
15-02	8.4	0.3	8.1	100.3	74.0	26.3	18.2	8.1	1	35	P	60	40	NA	NA	U	Y	Y	Y	B	B	TILL
15-03	8.0	0.3	7.7	154.4	127.1	27.3	18.0	9.3	0	NA	P	40	60	NA	NA	U	Y	Y	Y	B	B	TILL
15-04	8.7	0.4	8.3	160.5	129.2	31.3	20.3	11.0	0	NA	P	50	50	NA	NA	U	Y	Y	Y	B	B	TILL
15-05	7.9	0.4	7.5	188.9	166.7	22.2	15.5	6.7	1	247	P	45	55	NA	NA	U	Y	Y	Y	B	B	TILL
15-06	9.3	1.3	8.0	205.2	183.3	21.9	14.1	7.8	0	NA	P	60	40	NA	NA	U	Y	Y	Y	B	B	TILL
15-07	8.0	0.6	7.4	175.1	151.7	23.4	15.8	7.6	0	NA	P	70	30	NA	NA	U	Y	Y	Y	B	B	TILL
15-09	8.4	0.2	8.2	117.3	93.9	23.4	17.3	6.1	1	58	C	80	20	NA	NA	S	F	Y	Y	B	B	SAND

OCB4MAR.WR1

OTAL # [illegible]AMPLES IN THIS REPORT = 56

OVERBURDEN DRILLING MANAGEMENT LIMITED

LABORATORY SAMPLE LOG

AMPLE NO.	WEIGHT (KG.WET) TABLE SPLIT	+10 CHIPS	TABLE FEED	WEIGHT (GRAMS DRY) TABLE CONC	M.I. LIGHTS	M. I. CONC CONC. TOTAL	NON MAG	MAG	AU NO. V.G.	CALC PPB	DESCRIPTION CLAST SIZE	% V/S	GR	LS	OT	MATRIX S/U	SD	ST	CY	COLOR SD	COLOR CY	CLASS
CBN-88																						
15-09	7.8	0.4	7.4	114.5	87.6	26.9	18.9	8.0	1	10	P	60	40	NA	NA	U	Y	Y	Y	GB	GB	TILL
15-10	8.3	0.6	7.7	131.5	104.5	27.0	19.5	7.5	0	NA	C	80	20	NA	NA	U	Y	Y	Y	B	B	TILL
15-11	8.9	0.7	8.2	109.9	84.7	25.2	16.4	8.8	1	39	C	80	20	NA	NA	U	Y	Y	Y	B	B	TILL
16-01	2.5	0.0	2.5	66.0	55.6	10.4	7.9	2.5	0	NA	TR	NA	NA	NA	NA	U	Y	Y	Y	B	B	TILL
16-02	8.3	0.4	7.9	131.4	100.5	30.9	20.9	10.0	0	NA	P	60	40	NA	NA	U	Y	Y	Y	B	GB	TILL
16-03	6.0	0.4	5.6	83.6	70.8	12.8	8.5	4.3	0	NA	C	60	40	NA	NA	U	Y	Y	Y	B	B	TILL
16-04	8.7	0.4	8.3	111.9	91.0	20.9	13.0	7.9	0	NA	P	70	30	NA	NA	U	Y	Y	Y	B	GB	TILL
16-05	8.1	0.5	7.6	100.5	68.4	32.1	19.3	12.8	1	10	C	70	30	NA	NA	U	Y	Y	Y	B	GY	TILL
16-06	8.6	0.2	8.4	180.1	142.4	37.7	22.1	15.6	3	122	P	75	25	NA	NA	U	Y	Y	Y	B	GY	TILL
16-07	9.0	0.6	8.4	105.7	83.1	22.6	14.4	8.2	0	NA	P	70	30	NA	NA	U	Y	Y	Y	B	GY	TILL
16-08	8.4	0.8	7.6	148.7	122.4	26.3	17.0	9.3	0	NA	P	70	30	NA	NA	U	Y	Y	Y	B	B	TILL
16-09	8.5	0.6	7.9	122.1	92.0	30.1	19.5	10.6	3	106	P	75	25	NA	NA	U	Y	Y	Y	B	B	TILL
16-10	8.1	0.1	8.0	164.1	134.4	29.7	19.5	10.2	5	137	P	60	40	NA	NA	U	Y	Y	Y	B	B	TILL
16-11	8.7	0.6	8.1	187.4	158.9	28.5	18.4	10.1	1	514	C	80	20	NA	NA	U	Y	Y	Y	B	B	TILL
17-01	3.1	0.2	2.9	106.0	96.9	9.1	7.0	2.1	0	NA	P	60	35	5	NA	U	Y	Y	Y	B	B	TILL
17-02	8.3	1.2	7.1	188.1	172.5	15.6	9.9	5.7	0	NA	P	60	30	10	NA	U	Y	Y	Y	B	B	TILL
17-03	5.5	0.8	4.7	68.7	54.8	13.9	9.6	4.3	0	NA	P	70	30	NA	NA	U	Y	Y	Y	B	B	TILL
17-04	6.3	0.9	5.4	90.0	76.0	14.0	9.9	4.1	0	NA	P	40	30	30	NA	U	Y	Y	Y	B	B	TILL
17-05	8.3	0.8	7.5	121.4	104.5	16.9	11.8	5.1	0	NA	P	50	30	20	NA	U	Y	Y	Y	B	B	TILL
17-06	9.0	1.1	7.9	88.5	61.6	26.9	16.6	10.3	1	61	P	60	30	10	NA	U	Y	Y	Y	B	B	TILL
17-07	8.8	1.2	7.6	146.9	113.7	33.2	20.0	13.2	4	270	P	70	30	NA	NA	U	Y	Y	Y	B	B	TILL
17-08	8.8	0.9	7.9	161.9	132.9	29.0	19.0	10.0	0	NA	P	70	30	NA	NA	U	Y	Y	Y	B	B	TILL
17-09	8.9	0.9	8.0	165.5	135.7	29.8	19.1	10.7	1	53	P	50	50	NA	NA	U	Y	Y	Y	B	B	TILL
17-10	8.3	0.7	7.6	266.8	236.4	30.4	20.9	9.5	1	31	P	60	40	NA	NA	U	Y	Y	Y	B	B	TILL
17-11	9.0	0.6	8.4	181.8	152.0	29.8	19.6	10.2	0	NA	P	60	40	NA	NA	U	Y	Y	Y	B	B	TILL
17-12	8.9	0.6	8.3	160.3	129.3	31.0	20.4	10.6	1	18	P	60	40	NA	NA	U	Y	Y	Y	B	B	TILL
17-13	9.0	0.5	8.5	175.3	144.3	31.0	19.7	11.3	0	NA	P	70	30	NA	NA	U	Y	Y	Y	B	B	TILL
17-14	8.5	0.6	7.9	168.2	137.3	30.9	20.1	10.8	1	75	P	60	40	NA	NA	U	Y	Y	Y	B	B	TILL
17-15	8.7	0.6	8.1	159.1	128.4	30.7	20.2	10.5	5	227	P	80	20	NA	NA	U	Y	Y	Y	GB	GB	TILL
18-01	3.4	0.1	3.3	171.6	166.0	5.6	4.3	1.3	0	NA	P	25	25	50	NA	U	Y	Y	Y	B	B	TILL
18-02	8.8	1.1	7.7	154.5	123.8	30.7	18.8	11.9	0	NA	P	70	30	NA	NA	U	Y	Y	Y	B	B	TILL
18-03	7.1	0.4	6.7	133.7	107.8	25.9	16.8	9.1	0	NA	P	70	30	NA	NA	U	Y	Y	Y	B	B	TILL
18-04	9.3	0.8	8.5	178.7	149.6	29.1	18.5	10.6	0	NA	P	70	30	NA	NA	U	Y	Y	Y	B	B	TILL
18-05	4.7	0.3	4.4	156.2	140.2	16.0	11.3	4.7	0	NA	P	70	30	NA	NA	U	Y	Y	Y	B	B	TILL
18-06	8.3	0.7	7.6	137.0	116.8	20.2	13.4	6.8	0	NA	P	70	30	NA	NA	U	Y	Y	Y	B	B	TILL
18-07	8.8	0.4	8.4	145.3	124.4	20.9	14.1	6.8	0	NA	P	70	30	NA	NA	U	Y	Y	Y	B	B	TILL
18-08	8.9	1.3	7.6	157.5	134.1	23.4	14.5	8.9	0	NA	P	70	30	NA	NA	U	Y	Y	Y	B	B	TILL
18-09	8.0	0.4	7.6	132.2	115.6	16.6	12.5	4.1	0	NA	P	50	50	NA	NA	U	Y	Y	Y	B	B	TILL
18-10	9.0	0.8	8.2	178.1	152.9	25.2	15.3	9.9	1	139	P	70	30	NA	NA	U	Y	Y	Y	B	B	TILL
18-11	8.2	0.4	7.8	131.7	108.2	23.5	14.8	8.7	0	NA	P	70	30	NA	NA	U	Y	Y	Y	B	B	TILL
18-12	8.5	1.5	7.0	128.9	98.5	30.4	16.5	13.9	0	NA	C	80	20	NA	NA	U	Y	Y	Y	B	B	TILL
18-13	7.4	0.2	7.2	101.9	74.6	27.3	17.4	9.9	0	NA	P	70	30	NA	NA	U	Y	Y	Y	B	B	TILL
18-14	8.5	0.9	7.6	131.8	103.9	27.9	18.1	9.8	5	148	C	75	25	NA	NA	U	Y	Y	Y	B	B	TILL
18-15	8.8	0.8	8.0	115.4	89.2	26.2	15.8	10.4	1	12	P	70	30	NA	NA	U	Y	Y	Y	B	B	TILL

OCB4MAR.WR1
TOTAL # [illegible] SAMPLES IN THIS REPORT = 56

OVERBURDEN DRILLING MANAGEMENT LIMITED

LABORATORY SAMPLE LOG

SAMPLE NO.	WEIGHT (KG.WET) TABLE SPLIT	+10 CHIPS	TABLE FEED	WEIGHT (GRAMS DRY) TABLE CONC	M.I. LIGHTS	M. I. CONC CONC. TOTAL	NON MAG	MAG	AU NO. V.G.	CALC PPB	DESCRIPTION CLAST SIZE	% V/S	GR	LS	OT	MATRIX S/U	SD	ST	CY	COLOR SD	CY	CLASS
CBN-88																						
18-16	8.9	0.6	8.3	142.0	114.3	27.7	17.0	10.7	3	355	P	60	40	NA	NA	U	Y	Y	Y	B	B	TILL
18-17	8.6	0.6	8.0	152.8	124.9	27.9	17.6	10.3	1	57	P	60	40	NA	NA	U	Y	Y	Y	B	B	TILL
18-18	8.5	0.9	7.6	155.8	135.7	20.1	13.2	6.9	1	219	P	55	45	NA	NA	U	Y	Y	Y	B	B	TILL
18-19	8.8	0.2	8.6	147.6	112.6	35.0	23.6	11.4	1	27	P	50	50	NA	NA	U	Y	Y	Y	B	B	TILL
18-20	8.8	0.2	8.6	159.1	123.4	35.7	24.4	11.3	0	NA	C	90	10	NA	NA	U	Y	Y	Y	B	B	TILL
18-21	8.8	0.9	7.9	157.4	125.6	31.8	21.3	10.5	4	592	C	80	20	NA	NA	U	Y	Y	Y	B	B	TILL
18-22	8.8	0.8	8.0	189.1	160.0	29.1	18.4	10.7	0	NA	P	70	30	NA	NA	U	Y	Y	Y	B	B	TILL
18-23	9.1	1.4	7.7	227.6	198.8	28.8	18.4	10.4	0	NA	C	80	20	NA	NA	U	Y	Y	Y	B	B	TILL
18-24	8.8	0.8	8.0	185.7	155.1	30.6	18.8	11.8	0	NA	C	90	10	NA	NA	U	Y	Y	Y	B	B	TILL
19-01	3.5	0.0	3.5	143.5	137.2	6.3	4.6	1.7	0	NA	TR	NA	NA	NA	NA	U	Y	Y	Y	B	B	TILL
19-02	7.9	0.0	7.9	138.1	103.9	34.2	25.5	8.7	0	NA	TR	NA	NA	NA	NA	S	M	Y	Y	B	B	SAND
19-03	7.9	0.3	7.6	216.5	190.5	26.0	16.7	9.3	5	177	P	50	50	NA	NA	U	Y	Y	Y	B	B	TILL

APPENDIX D

BONDAR-CLEGG HEAVY MINERAL ANALYSES

Bondar-Clegg & Company Ltd.
5420 Canotek Road
Ottawa, Ontario
K1J 8X5
(613) [illegible]-2220 Telex 053-3233

BONDAR-CLEGG

Geochemical Lab Report

REPORT: 088-01378.0

PROJECT: BRAGG NEWMAN PAGE 1

SAMPLE NUMBER	ELEMENT UNITS	Cu PPM	Zn PPM	Ag PPM	As PPM	Au PPB	Testwt gms
CBN88-01-01-3/4		27	20	<0.1	52	<15	3.53
CBN88-01-02-3/4		159	46	0.1	8	<10	5.00
CBN88-01-03-3/4		68	32	<0.1	35	<10	
CBN88-01-04-3/4		91	37	0.1	2	<10	
CBN88-01-05-3/4		10	14	<0.1	2	65	
CBN88-01-06-3/4		26	21	<0.1	8	380	8.00
CBN88-01-07-3/4		103	60	0.3	7	370	13.00
CBN88-01-08-3/4		32	26	<0.1	4	<5	11.00
CBN88-01-09-3/4		68	32	<0.1	5	55	15.00
CBN88-01-10-3/4		65	39	<0.1	13	85	11.00
CBN88-01-11-3/4		72	33	0.1	11	<5	
CBN88-01-12-3/4		69	32	0.1	14	35	
CBN88-01-13-3/4		80	30	0.1	8	20	13.00
CBN88-01-14-3/4		69	24	<0.1	12	940	9.00
CBN88-01-15-3/4		85	35	<0.1	9	80	
CBN88-01-16-3/4		74	32	<0.1	13	145	15.00
CBN88-02-01-H		94	81	<0.1	32	<50	1.83
CBN88-02-02-3/4		46	29	0.2	13	65	8.00
CBN88-02-03-3/4		67	36	<0.1	14	<10	
CBN88-02-04-3/4		72	36	<0.1	12	<10	
CBN88-02-05-3/4		72	47	<0.1	13	<10	5.00
CBN88-02-06-3/4		74	44	0.3	13	<10	7.00
CBN88-02-07-3/4		76	46	0.1	23	35	
CBN88-02-08-3/4		68	38	<0.1	13	25	8.00
CBN88-02-09-3/4		80	43	<0.1	10	10	
CBN88-02-10-3/4		57	28	<0.1	10	80	24.00
CBN88-02-11-3/4		57	34	<0.1	12	15	20.00
CBN88-02-12-3/4		75	28	0.1	8	250	15.00
CBN88-02-13-3/4		81	35	0.2	21	100	17.00
CBN88-02-14-3/4		86	40	0.1	49	105	14.00
CBN88-02-15-3/4		86	35	0.2	33	10	
CBN88-02-16-3/4		105	42	0.3	47	10	12.00
CBN88-02-17-3/4		129	62	0.6	57	70	16.00
CBN88-03-01-3/4		43	69	0.1	5	<15	4.43
CBN88-03-02-H		98	174	0.1	23	<25	2.42
CBN88-03-03-3/4		49	27	<0.1	4	995	16.00
CBN88-03-04-3/4		59	31	0.1	20	280	14.00
CBN88-03-05-3/4		63	33	<0.1	8	14	15.00
CBN88-03-06-3/4		62	29	0.2	13	100	18.00
CBN88-03-07-3/4		55	34	<0.1	11	165	17.00

Bondar-Clegg & Company Ltd.
5420 Canotek Road
Ottawa, Ontario
K1J 8X5
(613[redacted]-2220 Telex 053-3233

BONDAR-CLEGG

Geochemical Lab Report

REPORT: 088-01432.0

PROJECT: BRAGG NEWMAN PAGE 1

SAMPLE NUMBER	ELEMENT UNITS	Cu PPM	Zn PPM	Ag PPM	As PPM	Au PPB	Testwt gms
CBN-88-03-08-3/4		63	28	0.1	15	155	22.43
CBN-88-03-09-3/4		59	23	0.2	13	1185	21.91
CBN-88-03-10-3/4		65	34	0.1	8	185	15.47
CBN-88-03-11-3/4		62	28	0.1	17	75	14.52
CBN-88-03-12-3/4		76	28	0.1	28	345	12.51
CBN-88-03-13-3/4		66	28	<0.1	13	130	11.94
CBN-88-03-14-3/4		100	41	0.1	6	15	10.68
CBN-88-03-15-3/4		54	23	0.1	4	30	8.68
CBN-88-03-16-3/4		67	29	0.1	10	200	9.26
CBN-88-04-01-H		32	20	<0.1	7	175	2.83
CBN-88-04-02-3/4		31	17	0.2	4	655	13.56
CBN-88-05-01-H		37	42	<0.1	5	810	0.84
CBN-88-05-02-3/4		45	21	0.2	12	215	13.76
CBN-88-05-03-3/4		21	18	<0.1	3	20	12.64
CBN-88-05-04-3/4		14	16	<0.1	4	120	13.94
CBN-88-05-05-3/4		11	14	<0.1	<2	30	15.15
CBN-88-05-06-3/4		20	15	<0.1	<2	100	12.84
CBN-88-05-07-3/4		83	22	0.2	7	<10	8.91
CBN-88-05-08-3/4		43	15	<0.1	8	75	14.55
CBN-88-05-09-3/4		123	36	0.2	15	25	14.95
CBN-88-05-10-3/4		60	24	<0.1	34	<5	10.83
CBN-88-06-01-3/4		16	21	<0.1	4	<10	5.47
CBN-88-06-02-3/4		59	26	<0.1	10	<5	13.43
CBN-88-06-03-3/4		24	14	<0.1	5	10	16.14
CBN-88-06-04-3/4		14	13	0.1	8	5	16.43
CBN-88-06-05-3/4		14	14	<0.1	4	375	21.89
CBN-88-06-07-3/4		13	15	<0.1	<2	170	18.25
CBN-88-06-08-3/4		15	15	<0.1	35	80	17.53
CBN-88-06-09-3/4		18	15	<0.1	5	205	14.19
CBN-88-06-10-3/4		16	19	<0.1	5	200	9.81
CBN-88-06-11-3/4		16	14	<0.1	14	50	12.19
CBN-88-06-12-3/4		53	24	<0.1	10	160	12.15
CBN-88-07-01-3/4		82	220	<0.1	258	110	3.89
CBN-88-07-02-3/4		180	34	0.5	16	150	12.36
CBN-88-08-01-3/4		71	210	0.2	42	115	6.15
CBN-88-08-02-H		180	51	0.2	57	50	1.59
CBN-88-09-01-3/4		76	102	<0.1	8	<10	7.16
CBN-88-09-02-3/4		47	19	<0.1	10	25	12.81
CBN-88-09-03-3/4		61	30	0.2	23	10	11.11

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PROJECT: BRAGG NEWMAN PAGE 1

SAMPLE NUMBER	ELEMENT UNITS	Cu PPM	Zn PPM	Ag PPM	As PPM	Au-150 PPM	Au+150 PPM	Au Av PPM	TestWt gms	-150Wt gms	+150Wt gms
CBN-88-06-06-3/4		23	12	0.1	3	<0.01	10.66	3.23	11.00	13.64	5.92

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SAMPLE NUMBER	ELEMENT UNITS	Cu PPM	Zn PPM	Ag PPM	As PPM	Au PPB	Testwt gms
CBN88-09-04-3/4		42	22	0.1	9	10	11.28
CBN88-09-05-3/4		41	29	<0.1	12	20	9.50
CBN88-09-06-3/4		69	25	<0.1	9	15	10.00
CBN88-09-07-3/4		103	27	0.2	20	10	11.00
CBN88-10-01-H		25	29	0.1	3	<50	1.75
CBN88-10-02-3/4		13	14	<0.1	2	50	10.00
CBN88-10-03-3/4		11	13	<0.1	<2	10	11.00
CBN88-10-04-3/4		31	27	0.3	2	870	8.00
CBN88-11-01-3/4		49	27	0.1	13	<330	0.45
CBN88-11-02-3/4		69	24	0.2	30	<170	0.85
CBN88-12-01-H		97	7470	0.2	21	<935	0.16
CBN88-12-02-3/4		114	224	0.1	17	25	4.75
CBN88-13-01-3/4		38	24	<0.1	9	240	14.00
CBN88-13-02-3/4		39	21	0.2	12	95	14.22
CBN88-13-03-3/4		101	35	0.1	22	140	11.00
CBN88-13-04-3/4		54	24	0.1	14	90	14.00
CBN88-14-01-H		83	138	<0.1	21	140	1.00
CBN88-14-02-3/4		91	80	0.2	9	75	7.50
CBN88-14-03-3/4		45	41	0.1	23	80	10.00
CBN88-14-04-3/4		40	38	0.1	17	50	12.00
CBN88-14-05-3/4		44	139	0.1	14	120	12.20
CBN88-14-06-3/4		55	27	0.1	12	20	10.00
CBN88-14-07-3/4		66	34	0.2	23	470	12.78
CBN88-14-08-3/4		10	21	<0.1	2	135	11.67
CBN88-14-09-3/4		9	14	<0.1	<2	160	11.03
CBN88-14-10-3/4		6	14	<0.1	3	55	11.21
CBN88-14-11-3/4		18	18	<0.1	<2	435	9.17
CBN88-14-12-3/4		16	14	<0.1	4	90	10.49
CBN88-14-13-3/4		13	15	0.1	<2	75	10.06
CBN88-14-14-3/4		18	21	<0.1	<2	75	11.40
CBN88-14-15-3/4		23	15	0.1	2	130	8.32
CBN88-14-16-3/4		112	19	<0.1	6	75	10.03
CBN88-15-01-3/4		43	30	0.2	8	325	12.40
CBN88-15-02-3/4		38	31	0.1	10	435	12.61
CBN88-15-03-3/4		37	27	0.1	15	25	12.35
CBN88-15-04-3/4		39	30	0.1	15	10	11.69
CBN88-15-05-3/4		36	30	0.2	16	330	11.04
CBN88-15-06-3/4		56	106	0.3	35	20	9.54
CBN88-15-07-3/4		88	47	0.1	16	570	11.05
CBN88-15-08-3/4		86	44	<0.1	21	55	12.19

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SAMPLE NUMBER	ELEMENT UNITS	Cu PPM	Zn PPM	Ag PPM	As PPM	Au PPB	Testwt gms
CBN88-15-09-3/4		80	43	<0.1	22	75	12.90
CBN88-15-10-3/4		94	70	<0.1	26	10	13.59
CBN88-15-11-3/4		109	54	<0.1	23	155	11.60
CBN88-16-01-3/4		27	43	0.1	17	100	5.03
CBN88-16-02-3/4		26	19	0.8	10	55	15.20
CBN88-16-03-3/4		37	25	<0.1	8	50	5.38
CBN88-16-04-3/4		35	18	<0.1	21	10	9.05
CBN88-16-05-3/4		28	17	<0.1	7	10	13.78
CBN88-16-06-3/4		32	19	<0.1	8	180	16.00
CBN88-16-07-3/4		27	85	<0.1	6	45	8.95
CBN88-16-08-3/4		28	18	<0.1	4	40	12.06
CBN88-16-09-3/4		30	18	<0.1	13	20	14.03
CBN88-16-10-3/4		27	20	0.2	6	100	13.82
CBN88-16-11-3/4		56	22	0.1	14	20	12.90
CBN88-17-01-3/4		36	62	0.1	7	<15	4.37
CBN88-17-02-3/4		111	207	0.4	62	2760	6.51
CBN88-17-03-3/4		180	148	<0.2	43	120	6.35
CBN88-17-04-3/4		96	218	0.2	49	120	5.93
CBN88-17-05-3/4		140	229	0.1	68	<10	7.98
CBN88-17-06-3/4		41	17	<0.2	8	135	11.60
CBN88-17-07-3/4		52	33	0.1	20	7675	13.80
CBN88-17-08-3/4		66	29	0.1	11	245	12.96
CBN88-17-09-3/4		20	28	<0.1	8	20	13.11
CBN88-17-10-3/4		21	16	<0.1	4	45	14.38
CBN88-17-11-3/4		30	18	<0.1	8	40	13.46
CBN88-17-12-3/4		81	43	<0.1	26	55	14.02
CBN88-17-13-3/4		91	36	0.2	28	75	13.31
CBN88-17-14-3/4		97	31	0.1	23	30	13.87
CBN88-17-15-3/4		114	46	0.3	60	205	13.56
CBN88-18-01-H		49	38	0.4	6	45	3.10
CBN88-18-02-3/4		25	22	0.3	10	170	12.93
CBN88-18-03-3/4		53	22	<0.1	6	190	11.37
CBN88-18-04-3/4		9	17	<0.1	5	160	12.72
CBN88-18-05-3/4		24	28	0.1	3	1105	7.22
CBN88-18-06-3/4		24	25	0.2	2	90	8.29
CBN88-18-07-3/4		20	21	0.1	4	<10	9.30
CBN88-18-08-3/4		23	22	<0.1	7	<10	9.75
CBN88-18-09-3/4		17	24	<0.1	<2	<10	8.15
CBN88-18-10-3/4		18	19	0.1	4	<5	10.29
CBN88-18-11-3/4		31	18	<0.1	4	90	10.07

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SAMPLE NUMBER	ELEMENT UNITS	Cu PPM	Zn PPM	Ag PPM	As PPM	Au PPB	Testwt gms
CBN88-18-12-3/4		39	34	<0.1	13	50	11.24
CBN88-18-13-3/4		51	23	0.3	10	75	12.05
CBN88-18-14-3/4		40	18	0.2	9	45	12.55
CBN88-18-15-3/4		39	15	<0.1	16	870	9.85
CBN88-18-16-3/4		40	21	0.3	7	75	11.50
CBN88-18-17-3/4		43	16	<0.1	6	185	11.91
CBN88-18-18-3/4		45	17	0.2	7	15	8.73
CBN88-18-19-3/4		10	12	<0.1	3	15	16.36
CBN88-18-20-3/4		37	15	<0.1	3	15	12.39
CBN88-18-21-3/4		89	41	0.3	29	175	17.14
CBN88-18-22-3/4		85	42	0.4	24	60	12.54
CBN88-18-23-3/4		121	43	0.5	31	100	11.88
CBN88-18-24-3/4		129	56	0.4	52	35	13.11
CBN88-19-01-H		71	71	<0.1	14	75	3.50
CBN88-19-02-3/4		84	157	0.3	21	<5	17.91
CBN88-19-03-3/4		33	32	0.2	8	165	11.39

APPENDIX E

1/4 CONCENTRATE PANNING AND INA RESULTS

GOLD CLASSIFICATION
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VISIBLE GOLD FROM SHAKING TABLE AND PANNING

CORD.WR1

TOTAL # OF PANNINGS

SAMPLE #	PANNED Y/N	DIAMETER	THICKNESS	ABRADED T	ABRADED P	IRREGULAR T	IRREGULAR P	DELICATE T	DELICATE P	TOTAL	NON MAG GMS	CALC V.G. ASSAY PPB	REMARKS
CBN-88													
06-06	Y	NO VISIBLE GOLD											NO SULPHIDES
17-02	Y	NO VISIBLE GOLD											EST. 10% PYRITE
17-07	Y	50 X 75	0 C				1			0			EST. 3% PYRITE
		50 X 100	0 C						1	0			
		75 X 175	0 C		1					0			
18-05	Y	NO VISIBLE GOLD											NO SULPHIDES

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SAMPLE NUMBER	ELEMENT UNITS	Au PPB	Wt g
CBN88-05-06-1/4		9	8.26
CBN88-17-02-1/4		15	2.37
CBN88-17-07-1/4		812	5.04
CBN88-18-05-1/4		400	2.78

APPENDIX F

BINOCULAR LOGS - BEDROCK CHIP SAMPLES

SAMPLE NUMBER	COLOUR	STRUCTURE	GRAIN SIZE (mm)	TEXTURE	MINERALOGY				NAME
					Silicates	Carbonates	Sulphides	Other	
CBN-88 01-17	dark gray	very well developed foliation, locally bedded due to variations in grain size	presently 0.2 → 0.6 mm blue qtz sand 0.3 → 0.6 mm	recrystallized sugary texture; clastic texture obscured by deformation	1% blue qtz sand 10% plag sand 25% biotite 60% quartzofeldspathic sugar	3% dissem calcite	2% dissem pyrite		Graywacke (Biotite schist)
02-18	gray to gray-brown, 40% of chips have limonitic stain	well developed foliation, locally fractured and veined	presently 0.15 → 0.25 colourless quartz grit 0.3 → 0.6 mm	recrystallized sugary texture, clastic texture obscured by deformation.	2% colourless quartz 25% biotite 70% quartzofeldspathic sugar	2% calcite veining	0.5% disseminate pyrite		Graywacke (Biotite schist)
03-17	mottled black-white	well developed foliation, locally bedded due to variations in grain size	presently 0.15 → 0.70 colourless qtz sand 0.25 → 0.70 mm	recrystallized sugary texture, clastic texture obscured by deformation	10% colourless quartz sand 20% biotite 70% quartzofeldspathic sugar	nil	0.5% finely dissem pyrite		Graywacke (Biotite schist)
04-03	mottled black-white	well developed foliation, locally bedded due to variations in grain size	presently 0.15 → 1.5 qtz and plag sand 0.3 → 1.5 mm	recrystallized sugary texture, clastic texture obscured by deformation.	15% white plag sand 10% colourless qtz " 15% biotite 55% quartzofeldspathic sugar	2% dissem calcite	2% dissem pyrite		Graywacke (Biotite schist)
05-11	mottled black-white	moderate to well developed foliation locally bedded due to variations in grain size	presently 0.15 → 1.0 mm qtz and plag sand 0.3 → 1.0 mm	recrystallized sugary texture, clastic texture obscured by deformation	25% white plag sand 3% blue qtz " 15% biotite 55% quartzofeldspathic sugar	2% dissem calcite	2% dissem pyrite	0.5% sphene	Graywacke (Biotite schist)

SAMPLE NUMBER	COLOUR	STRUCTURE	GRAIN SIZE (mm)	TEXTURE	MINERALOGY				NAME
					Silicates	Carbonates	Sulphides	Other	
CBN - 88 06-13	rusty-beige	highly sheared and fractured, well devel foliation locally preserved.	presently 0.05 to 0.5 relict qtz sand 0.3→0.5	recrystallized sugary texture locally preserved, obscured by deformation.	10% biotite 5% colourless quartz 2% sericite 80% quartzofeldspathic sugar	1% dissem calcite	nil		Graywacke (Biotite schist)
07-03	black	very well developed foliation, locally bedded due to variations in grain size.	presently 0.05→0.2 relict qtz sand 0.2 mm	recrystallized sugary texture, clastic texture obscured by deformation.	60% biotite 2% quartz sand. 40% quartzofeldspathic sugar.	nil	0.1% finely dissem pyrite.		Siltstone (Biotite schist)
08-03	dark gray to black	very well developed foliation, bedded, 5% siltstone beds.	presently 0.05→0.2 relict qtz sand 0.4 mm siltst < 0.05	recrystallized sugary texture, clastic texture obscured by deformation	10% dark green amph beds. 15% dissem biotite 1% blue qtz sand. 65% quartzofeldspathic sugar.	4% dissem calcite	5% finely dissem pyrrho.		Graywacke (Biotite schist)
09-08	dark gray to black	very well developed foliation, bedded.	presently 0.05 mm	recrystallized sugary texture, clastic texture obscured by deformation.	20% dissem biotite 80% quartzofeldspathic sugar	nil	0.1% finely dissem pyrrho		Siltstone (Biotite schist)
10-05	dark gray to gray-brown	very well developed foliation, locally bedded due to variations in grain size, locally veined	presently 0.05→0.2 relict qtz sand 0.3 →0.5 mm	recrystallized sugary texture, clastic texture obscured by deformation.	5% blue qtz sand 20% dissem biotite 2% black amph. (dissem) 70% quartzofeldspathic sugar.	1% dissem calcite 1% calcite veining	0.2% finely dissem pyrrho 0.5% dissem pyrite		Graywacke (Biotite schist)

SAMPLE NUMBER	COLOUR	STRUCTURE	GRAIN SIZE (mm)	TEXTURE	MINERALOGY				NAME
					Silicates	Carbonates	Sulphides	Other	
CBN-88 11-03	dark gray to gray-brown	very well developed foliation, locally bedded due to variations in grain size	presently 0.15→0.4 relict qtz sand 0.2→0.4 mm	recrystallized sugary texture, clastic texture obscured by deformation.	2% colourless qtz sand 20% biotite 80% quartzofeldspathic sugar.	nil	0.5% finely dissem pyrrho.		Graywacke (Biotite schist)
12-03	dark gray	very well developed foliation, locally bedded due to variations in grain size	presently 0.10→0.25 relict qtz sand 0.25 mm	recrystallized sugary texture, clastic texture obscured by deformation.	2% colourless qtz 15% biotite sand 80% quartzofeldspathic sugar 1% garnet	nil	0.5% finely dissem pyrrho.		Graywacke (Biotite schist)
13-05	dark gray	very well developed foliation, locally bedded due to variation in grain size, 5% siltst beds	presently 0.05→0.75 mm relict qtz sand 0.5→0.75 mm	recrystallized sugary texture, clastic texture obscured by deformation	5% blue quartz 15% biotite 10% plag sand. 70% quartzofeldspathic sugar	2% dissem calcite	0.1% finely dissem pyrrho.		Graywacke (Biotite schist)
14-17	dark gray to black	very well developed foliation, locally bedded due to variations in grain size	presently 0.05→0.75 mm relict qtz sand 0.5→0.75 mm	recrystallized sugary texture, clastic texture locally preserved.	10% plag sand 2% blue qtz sand. 25% biotite 65% quartzofeldspathic sugar.	1% dissem calcite assoc. with coarser sand sections	0.1% finely dissem pyrrho 1% pyrite in quartz vein		Graywacke (Biotite schist)
15-12	gray to gray-green	well developed foliation veined	presently 0.05→0.4 relict qtz sand 0.4 mm	recrystallized sugary texture.	10% white qtz veining 15% biotite 5% chlorite 70% quartzofeldspathic sugar.	nil	0.2% finely dissem pyrrho. 0.5% pyrite along some fracture surfs		Graywacke (Biotite schist)

SAMPLE NUMBER	COLOUR	STRUCTURE	GRAIN SIZE (mm)	TEXTURE	MINERALOGY				NAME
					Silicates	Carbonates	Sulphides	Other	
CBN - 88 16 - 12	20% mottled black-white 80% limonite staining on chips	very well developed foliation, locally bedded due to variations in grain size.	presently 0.05 → 0.5 relict qtz sand 0.3 → 0.5 mm	recrystallized sugary texture, clastic texture obscured by deformation	20% biotite 5% colourless qtz 5% blue qtz sand. 65% quartzofeldspathic sugar	nil	5% finely dissem pyrrho.		Graywacke (Biotite Schist)
17 - 16	dark gray to gray - green	well developed foliation, locally bedded due to variations in grain size	presently 0.05 → 1.0 mm relict qtz sand 0.5 → 1.0 mm	recrystallized sugary texture, clastic texture obscured by deformation	20% plag sand. 5% colourless qtz 1% blue qtz sand. 20% biotite 5% chlorite 50% quartzofeldspathic sugar	nil	nil		Graywacke (Biotite Schist)
18 - 25	dark gray to green	very well developed foliation	presently 0.05 mm	recrystallized sugary texture	15% biotite 3% chlorite 80% quartzofeldspathic sugar 2% garnet	nil	0.1% finely dissem pyrrho.		Siltstone (Biotite Schist)
19 - 04	dark gray to black	very well developed foliation, locally bedded due to variations in grain size	presently 0.05 → 0.75 relict qtz sand 0.4 → 0.75 mm	recrystallized sugary texture, clastic texture obscured by deformation.	25% biotite 10% plag sand. 5% qtz sand (blue) 60% quartzofeldspathic sugar	nil	0.2% finely dissem pyrrho.		Graywacke (Biotite Schist)

APPENDIX G

BONDAR-CLEGG BEDROCK ANALYSES

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SAMPLE NUMBER	ELEMENT UNITS	SiO2 PCT	TiO2 PCT	Al2O3 PCT	Fe2O3* PCT	MnO PCT	MgO PCT	CaO PCT	Na2O PCT	K2O PCT	P2O5 PCT	LOI PCT
CBN-88-01-17-B		63.10	0.41	16.00	4.10	0.06	2.80	3.77	2.58	3.66	0.34	2.80
CBN-88-02-18-B		66.50	0.31	15.50	3.56	0.05	1.35	1.96	3.20	3.40	0.34	2.00
CBN-88-03-17-B		64.70	0.52	15.80	4.10	0.05	1.55	3.10	5.00	1.54	0.54	0.70
CBN-88-04-03-B		62.40	0.35	16.40	3.53	0.05	1.96	3.67	5.28	2.19	0.22	1.50
CBN-88-05-11-B		64.90	0.28	16.40	2.45	0.08	1.20	3.13	5.17	1.78	0.32	1.60
CBN-88-06-13-B		64.70	0.23	17.70	3.31	0.02	1.10	2.05	4.24	2.44	0.33	2.30
CBN-88-07-03-B		60.10	0.57	15.10	10.40	0.09	2.88	2.18	2.07	2.65	0.31	1.90
CBN-88-08-02-B		65.30	0.52	13.30	8.11	0.10	1.65	3.95	2.02	1.64	0.17	1.25
CBN-88-09-08-B		59.90	0.64	17.30	6.89	0.09	2.96	2.76	3.08	2.48	0.17	1.50
CBN-88-10-05-B		64.60	0.49	14.80	4.92	0.08	2.73	3.50	3.60	2.22	0.33	0.90
CBN-88-11-03-B		67.20	0.47	14.00	4.68	0.06	2.49	2.51	3.48	2.10	0.25	0.80
CBN-88-12-03-B		59.10	0.69	17.60	7.80	0.09	3.10	2.32	2.95	2.24	0.20	3.15
CBN-88-13-05-B		65.10	0.43	15.70	3.72	0.05	1.48	3.49	5.15	1.59	0.16	1.40

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Geochemical Lab Report

REPORT: 088-01200.0

PROJECT: BRAGG NEWMAN PAGE 1B

SAMPLE NUMBER	ELEMENT UNITS	Total PCT	Cu PPM	Zn PPM	Ag PPM	As PPM	Au PPB
CBN-88-01-17-B		99.62	57	58	0.2	2	<5
CBN-88-02-18-B		98.17	27	138	<0.1	2	<5
CBN-88-03-17-B		97.60	22	66	<0.1	<2	<5
CBN-88-04-03-B		97.56	25	54	<0.1	<2	<5
CBN-88-05-11-B		97.30	10	34	<0.1	2	<5
CBN-88-06-13-B		98.42	35	44	0.1	<2	<5
CBN-88-07-03-B		98.25	54	58	0.3	<2	5
CBN-88-08-02-B		98.01	32	62	0.2	10	<5
CBN-88-09-08-B		97.76	55	64	<0.1	9	<5
CBN-88-10-05-B		98.17	46	85	0.1	<2	<5
CBN-88-11-03-B		98.04	49	60	0.1	<2	<5
CBN-88-12-03-B		98.25	55	68	<0.1	<2	<5
CBN-88-13-05-B		98.27	13	51	<0.1	4	<5

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REPORT: 088-01572.0

PROJECT: BRAGG NEWMAN PAGE 1A

SAMPLE NUMBER	ELEMENT UNITS	SiO2 PCT	TiO2 PCT	Al2O3 PCT	Fe2O3* PCT	MnO PCT	MgO PCT	CaO PCT	Na2O PCT	K2O PCT	P2O5 PCT	LOI PCT
CBN88-14-17-B		61.70	0.49	17.70	4.90	0.09	2.31	4.10	4.08	2.43	0.30	0.55
CBN88-15-12-B		64.00	0.60	15.50	4.69	0.05	2.64	2.80	3.99	1.75	0.22	1.25
CBN88-16-12-B		61.00	0.48	16.90	5.24	0.06	2.38	3.88	2.81	2.49	0.13	1.00
CBN88-17-16-B		67.50	0.25	17.10	2.83	0.04	1.34	1.92	4.17	2.55	0.03	1.65
CBN88-18-25-B		58.80	0.58	17.60	7.19	0.08	2.87	2.79	2.57	2.43	0.12	2.70
CBN88-19-04-B		58.10	0.65	14.40	5.07	0.09	3.66	5.54	4.01	2.49	0.45	2.80

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PROJECT: BRAGG NEWMAN

SAMPLE NUMBER	ELEMENT UNITS	Total PCT	Cu PPM	Zn PPM	Ag PPM	As PPM	Au PPB
CBA88-14-17-B		98.65	30	63	0.4	4	<5
CBN88-15-12-B		97.49	29	56	<0.1	2	<5
CBN88-16-12-B		97.17	35	72	0.1	3	<5
CBN88-17-16-B		99.38	9	39	0.1	2	<5
CBN88-18-25-B		97.13	46	82	0.2	6	<5
CBN88-19-04-B		97.26	35	71	0.1	3	<5

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THIS SUBMITTAL CONSISTED OF VARIOUS REPORTS, SOME OF WHICH HAVE BEEN CULLED FROM THIS FILE. THE CULLED MATERIAL HAD BEEN PREVIOUSLY SUBMITTED UNDER THE FOLLOWING RECORD SERIES (THE DOCUMENTS CAN BE VIEWED IN THESE SERIES):

(1) Appendix A → see Toronto file
Reverse Circulation drill hole logs. # 2.11676
by: I. Poliquin Feb/88 R.O.W. # W8808-391

(2) Appendix C → " "
Gold grain counts and calculated visible gold assays.

(3) Geological Compilation → " "
Plan 1 June/88