1986

889523

AYLWIN CREEK (WILLA) PROJECT

Slocan District, B. C.

Northair - BP Minerals - Rio Algom Joint Venture

FINAL REPORT - GEOLOGY, DRILLING AND DRIFTING

MAY 1985 - FEBRUARY 1986

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1.0 SUMMARY

This report covers underground drifting and diamond drilling conducted on the Willa property near Silverton, B. C. during 1985 and January-February 1986. During this period 883 meters (2897 feet) of drifting and 6058.8 meters (19,878 feet) of BQ drilling from underground stations were completed. Slashing for drill stations resulted in a drifting equivalent of 924.5 meters (3033 feet). This program increases the total drilling on the property to 20,358.8 meters (66,794 feet) completed since 1979.

The West Zone mineralized ring fracture structure was intersected by the 1025 meter (3363 feet) elevation adit and was intersected by 18 drillholes on 6 sections. Within the heterolithic breccia both drifting and drilling conditions were excellent, although large quantities of water up to 300 PSI were encountered in drillholes. Mineralized intervals from underground and surface holes were used to calculate drill-indicated reserves resulting in an orebody of 2,030,204 tons grading 0.11 oz/ton gold and 0.68% copper (1,845,639 tonnes - 3.64 gm/tonne gold, 0.68% copper), including a higher grade core of 936,514 tons grading 0.16 oz/ton gold and 0.82% copper (851,376 tonnes - 5.43 gm/tonne gold, 0.82% copper). Although silver averages were not calculated for this report, silver is present at 0.3-0.4 oz/ton. Mineralization is open above and below all sections and further drilling is proposed to expand the present reserve.

The ring fracture mineralized structure was found to not be continuous in a full circle as had been proposed. The presence of an offsetting vertical fault is indicated by mineralized intersections in drillholes; the term "East zone" is now being used to indicate mineralization east of this fault.

The East Zone mineralization was encountered in 10 drillholes on 5 sections. All but two of these intersections were low grade and the zone is considered to be still undefined. The intersection of good grades in two drillholes retains the East Zone as a favorable target and further drilling is proposed.

2.0 INTRODUCTION

The Willa property (Figure 1) in its present form was explored yearly between 1979 and 1984 by Rio Algom Ltd. and B P Minerals Ltd. under a joint venture agreement. History of the area prior to these programs is outlined by Durgin (1980) and subsequent programs are described in reports by various authors from Rio Algom and B P Minerals; none of the prior history will be described here.

Northair Mines Ltd. became involved in the property by joint venture agreement between Northair and B P/Rio Algom in early 1985 in which Northair agreed to spend $2.5 million to earn a 50% interest in the property. Following the recommendations of a proposal by B P (Wong 1985) a program was designed to drive an adit to the center of the intrusion breccia body hosting the mineralized ring fracture structure and to obtain sufficient diamond drill intersections of the mineralized structure from underground drill stations to allow ore reserve calculations to be completed. The adit was collared in May 1985 at the 1025 meter level and completed to 883 meters on 6 January 1986.

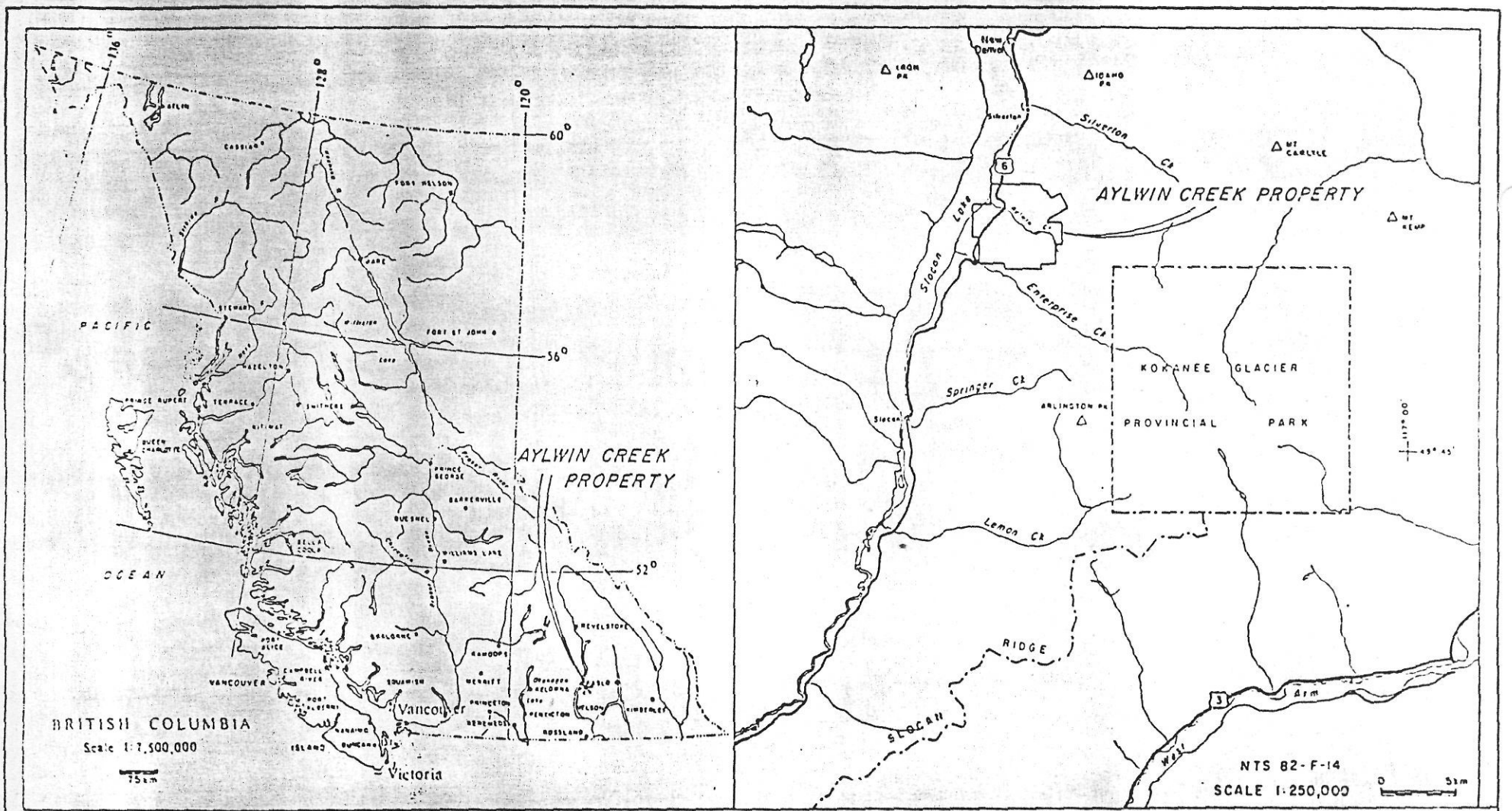

Figure 1: Aylwin Creek (Willa) Property Location Map

Progress was continuous except for a shut-down from August 31 to October 17 to allow for the drilling of 2 holes ahead of the adit for rock quality information and to reassess mining methods through very poor rock conditions.

Most of the diamond drilling was done between completion of drifting and February 10 1986. A total of 5,229.3 meters (17,164 feet) was drilled in 42 holes in addition to 829.5 meters (2721 feet) drilled in 1985.

3.0 CLAIM STATUS

The property is held under a joint venture agreement by B P Minerals Ltd. and Rio Algom Ltd. Two claims were staked for the joint venture in 1985 by P. Leontowicz which cover ground that came open with the expiry of the "Mr. O" claim below the portal area. All claims are in good standing until 1994 or 1995; details are included in Appendix 1.

Modifications to the joint venture agreement to include Northair Mines Ltd. as part property owner were not complete at time of writing.

4.0 DRIFTING

Drifting was started on 1 June 1985 following surface preparations in May and continued until 31 August 1985 when the adit was stopped for drilling. Drifting resumed on October 17 1985 and continued until January 5 except for a Christmas shut-down December 24-25 and December 31-January 2. The adit was completed to 883 meters; average advance was approximately 6.5 meters (21.3 feet) per mining day. Drifting conditions were variable with considerable problems of ground support required in faulted zones. Total cost was $2,167,448 or $2,344/meter including mining of drill slashes.

5.0 DIAMOND DRILLING

Diamond drilling was conducted in three stages, with the last stage contributing nearly all of the information used in ore reserve calculations. A list of all drill holes is included in Table 1.

The three periods of drilling are as follows: drilling of two holes for a total of 174.8 meters ahead of the adit face at 444.6 meters between 4 September and 11 September 1985; drilling of four holes for a total of 654.7 meters from a drill slash at 657 meters in the adit between November 30 and December 19 1985; drilling of 42 holes for a total of 5229.3 meters from three drill slashes near the end of the adit between January 8 and February 10 1986. All core was logged and is stored in racks in Silverton. Mineralized sections were split and half the core assayed in two meter intervals. Geochemical analysis was done on unmineralized sections of (split) core in two meter intervals up to and including drillhole U-86-64, after which it was stopped to reduce assaying costs.

The first two holes (U-85-48 and U-85-49) were drilled to obtain rock quality information ahead of the adit face at 444.6 meters. Drifting had encountered a 1-2 meter wide talc-bearing shear zone sub-parallel to the drift that caused severe mining problems due to caving. The drilling indicated improving rock quality 30 meters ahead of the face and the drift was not

diverted.

The second group of 4 holes (U-85-50 - U-85-53) were drilled from a drill slash driven to the left of the adit at 650 meters. Three holes (U-85-50 - U-85-52) were drilled to the east to investigate possible downward and northward extensions of the Main Zone mineralization. No signifigant mineralization was encountered. A fourth hole (U-85-53) was drilled southeast to search for breccia underneath metavolcanic rock west of the West Zone mineralization. Although highly silicified quartz latite porphyry was encountered near the end of the hole no breccia was found.

The remaining holes (U-86-54 - U-86-95) were drilled from three drill stations between 829 meters and 883 meters in the adit to intersect and define West Zone mineralization on both sides of the adit. These holes were drilled in fans on east-west sections and from fans on radial sections from the end of the adit, and three off-section holes to intersect the north edge of the mineralized structure. Early in this program it was found that mineralization west of the adit did not continue in the same form east of the adit; the term "East Zone" is now used to refer to mineralization found to the east. Of the 42 holes drilled in this program, 26 were drilled into the West Zone with 18 encountering mineralization; 15 were drilled into the East Zone with 10 encountering mineralization; 1 was aborted when it was found collared at the wrong angle. A list of all intersections is included in Appendix II.

All drilling recovered BQ core and was drilled with a J. K. Smith JKS 300-U electric-hydraulic drill and a Boyles BBU-2 air drill. Most drilling was contracted to F. Boisvenu Drilling Ltd. Drilling conditions and crews were excellent and up to 244 meters (800 feet) per day were drilled. A 4160 volt power cable was installed underground to a transformer station at 790 meters. This electrical installation is sufficient to operate two 50 HP drills, one of which was used during this project. The JKS 300-U was stored underground in the 650 meter drill station in anticipation of further drilling in 1986.

6.0 DRIFT GEOLOGY

Drifting has progressed through alternating bands of metavolcanic rock of Unit 1 (Rossland?) and quartz latite porphyry of unit 4 (with minor lamporophyre dikes) up to the contact with heterolithic breccia of unit 6 at approximately 725 meters. The distribution of these bands is mainly due to a complex configuration of quartz latite intruding a pendant of metavolcanic rock complicated by three directions of faulting, two of which are related to the diatreme and one to the Slocan Lake Fault zone.

6.1 Unit 1 Metavolcanic

The metavolcanic rock of unit 1 varies from a dark green to black chloritized undeformed augite porphyry basalt and basalt breccia near the portal to a highly biotized sheared greenstone near the contact with unit 6. Occasional minor zones of altered tuffaceous banded sediment were encountered (eg. 467.6 m.) but these are very minor. Most augite phenocrysts are probably altered to hornblende prior to chloritization. Brown to black secondary biotite is common, particularly near quartz latite intrusive contacts where alteration is related to hornfelsing of the volcanic.

Calcite and tremolite are common either filling fractures or coating fracture surfaces. Many occurrances of white fibrous minerals resemble natrolite but it is believed the metamorphic grade is too high for the preservation of zeolites. Calcite is replaced by gypsum as the dominant mineral in fractures as the heterolithic breccia is approached.

Pyrite and pyrrhotite are common in all metavolcanic rock as disseminations and veins. Sulfide content is generally at or below 1% and increases locally near intrusive contacts accompanied by increases in sulfide veins and by bands of epidote and calc-silicate alteration products sub-parallel to the trend of the contact.

6.2 Unit 4 Quartz latite porphyry

Through most of the adit quartz latite is relatively unaltered, homogeneous and constant in appearance. It is competent, rarely needs ground support and except for one zone at 320 m. has been dry. It is characterized by white feldspar phenocrysts 0.5 to 2 mm. across, occasional white translucent to clear quartz eyes up to 1 cm. in diameter and 5-10% mafics which are mostly chloritized and dominantly altered hornblende.

Fractures are commonly coated with calcite, and one fracture set was found to have variably developed scheelite. Tungsten assays have so far failed to confirm this. Disseminated pyrite is common near intrusive contacts with metavolcanic rock.

6.3 Unit 1 "Crackle breccia"

At approximately 705 m in the adit a contact between quartz latite and metavolcanic was crossed beyond which metavolcanic rock was similar in appearance to that in the rest of the adit. By 720 m. this metavolcanic becomes injected by numerous 2-6 cm. veins of quartz latite, followed by a mild brecciation disrupting quartz latite veins into angular clasts; this rock is termed crackle breccia. The transition from metavolcanic to crackle breccia is gradual over 3 m., and is marked by a considerable increase in sulfide content from 1-2% to 5% and the appearance of 3-5 cm. aggregates of pyrite/pyrrhotite between breccia clasts. Except for a zone of heterolithic breccia from 725 to 740 m. this crackle breccia becomes highly deformed by shearing parallel to a plane dipping steeply toward the diatreme center. Clasts are deformed to streaks and bands; in one area metavolcanic clasts have been deformed to boudins.

6.4 Unit 6 Heterolithic breccia

Heterolithic breccia is typified by clasts of both metavolcanic and quartz latite porphyry floating in a fine-grained pale green matrix. Crackle breccia blends into heterolithic breccia by the appearance of this matrix and the floating nature of the clasts, most of which are oval to round. It is likely that the matrix consists largely of dust-sized fragments derived from milling of the now-rounded clasts. Clasts vary from less than 2 mm. to over 1.5 m. in length, with a modal size of 15 cm.

Mineralization is similar to that in crackle breccia with both pyrite and pyrrhotite present as disseminations in clasts and as aggregates in the matrix;

quantities of each occurrance are roughly equal. Gypsum is present as fracture coatings and calcite is present only in minor amounts. Clasts of both quartz latite and metavolcanic contain veinlets of pre-breccia sulfide mineralization.

6.4.1 Unit 6 Heterolithic breccia--West Zone mineralization.

West zone mineralization was encountered in the adit from 792 to 803 m. The zone is distinguished from normal heterolithic breccia by several features: 1. A doubling of the sulfide content from roughly 5% to 10% of the total rock. Most of the increase is in the matrix where in places all interclast volume is sulfides; 2. Large (4 cm.) aggregates of monocrystalline pyrite, rough surfaced but with all cleavage surfaces aligned; 3. Large (10 cm.) aggregates of purple to lavender crystalline anhydrite in the matrix; 4. Appearance of considerable (15% of total sulfide) chalcopyrite mostly intimately intergrown with pyrite and pyrrhotite; 5. Magnetite disseminated along boundaries of sulfide aggregates. There may be enough magnetite to give the mineralized zone a magnetic signature but it is doubtful that this could be detected at surface because of the extreme topography and the overall pyrrhotite content of the overlying and surrounding rock.

The north boundary of the mineralized zone is diffuse with the transition from "normal" heterolithic breccia to mineralized breccia occurring over 1.5 m. The south boundary is sharp, being controlled by a body of either quartz latite or feldspar porphyry (Unit 4) or a mixture of both.

6.5 Faults

Three main directions of faulting have been encountered in the drift, two of which are related to the diatreme.

6.5.1 Major faulting at 160-165/90

This fault direction was encountered from 400 to 500 m. in the adit and caused the most severe problems to drifting. The fault varied from 1-2 m. in width within which all rock competency was destroyed by shearing and generation of gouge and talc. Extensive support of both back and walls was required. Water production from this zone was as high as 1500 liters per minute and diminished 4-6 weeks after exposure. As this time period coincided with the onset of surface freezing conditions renewed flow during the spring of 1986 is possible.

This feature is interpreted as a radial fracture related to the diatreme. Age of faulting is post-quartz latite as shearing adjacent to the fault crosses the metavolcanic-quartz latite contact at 500 m. Sulfides have been scavenged from within the fault and from wall rocks several meters either side of the fault.

6.5.2 Minor faulting and shearing at 045/25-45 SE

This deformation is predominantly within the metavolcanic and heterolithic breccia units beyond 705 m. It varies from thin (5 mm.) gouge zones within metavolcanic to severe flattening of breccia clasts to give a gneissic fabric to the rocks between 735 m. and near the mineralized zone at 792 m. Offsets of quartz stringers of unknown age or source show a movement consistent with normal faulting.

The progressive flattening of clasts toward the zone of most severe deformation suggests that this deformation occurred in ductile rocks, most likely soon following brecciation when temperatures were still high. The normal offset suggests this may represent a zone of slumping that accompanied subsidence of the breccia pipe following an eruptive phase.

6.5.3 Minor to moderate faulting at 00-030/75E-90

This faulting is widespread but does not cause serious ground support problems except for one 1.5 m. fault producing 50-100 liters/minute of water at approximately 750 m. The trend of these features suggests a relationship to the Slocan Lake Fault zone which surfaces 1.5 km. west of the property at approximately 750 m. elevation. A bend in the Slocan Lake fault zone from NNE to NNW occurs in this vicinity and the fault set encountered in the adit is probably related to stresses associated with this bend.

Near all moderate to major fault structures mineralization was found to diminish markedly. This effect is consistent enough that faults can be predicted several meters ahead of the drift face. It is not known whether this effect will remain noticeable within heterolithic breccia as the sulfide content may be too high.

6.6 Mineralization

Disseminated pyrite and lesser pyrrhotite are disseminated throughout all rocks encountered in the adit except within lamprophyre dikes and near faults as described above. Generally sulfide content is higher in metavolcanics than in quartz latite. Sulfide content increases within 3-5 meters of intrusive contacts, both as increases in disseminated sulfide and by the appearance of sulfide stringers and veins. Sulfide content of most rocks north of the breccia intersection is 1%. This rises to 5% in crackle breccia and to 10% and locally higher in heterolithic breccia.

Scheelite was detected sporadically within quartz latite between 200 and 400 m. with an ultraviolet lamp but so far assays have failed to detect tungsten.

Quartz-molybdenite veins are locally present within quartz latite of the same interval. A greenish tinge to the fluorescent emission of scheelite near these veins suggest powellite, supporting the presence of molybdenum and tungsten minerals.

West zone mineralization was easily recognised when encountered in the adit. Overall sulfide content doubled from 5% in adjacent breccia to 10% total sulfide content. Chalcopyrite increased so as to be readily visible mainly as intimate intergrowths with pyrite and pyrrhotite and as aggregates up to 2 cm. across. This contrasts with no visible chalcopyrite in sulfides outside of the west zone, although copper is present in sulfides with no copper minerals apparent (85-Wa-48, 488 m., 0.33% Cu.). Massive pyrite/pyrrhotite as matrix filling is dominant within the west zone and all fragments contain disseminated pyrite. Magnetite accompanies pyrrhotite in the matrix.

No gold, silver or silver minerals were seen.

7.0 DRILLING GEOLOGY

7.1 Main Zone

needs figure numbers

The three holes drilled from the adit at 657 meters to test for extensions of the main zone did not encounter economic mineralization and no concentrations of sulfide mineralization were seen. This cuts off potential extensions of the Main Zone below the zone as outlined by surface drilling. Heterolithic breccia intersections were narrower than expected, indicating the drilling was done near the northern extremity of the breccia body.

7.2 West Zone

Most of the drilling within the West Zone confirmed the position and extent of the mineralization and disposition of rock types that had been inferred from surface drilling. There are some important changes, however, and therefore each section drilled will be discussed separately.

7.2.1 Radial Section 184 degrees from end of adit (9975N, 10039E):

figure No.

Includes drillholes U-86-54
U-86-55
U-86-76
U-86-77
U-86-79
U-86-81

A total of 6 holes were drilled in a fan between +30 degrees and -50 degrees. The mineralized zone was encountered in all holes with an average true thickness of 34 meters (112 feet). Mineralization is still open both above and below the zone drilled and is widening in both directions.

Grades from all holes on this section were surprisingly low when compared to the quantity of visible sulfides (commonly over 10%) and the grades encountered in drillholes 84-36 and 84-37. Both gold and copper grades are distinctively lower than those encountered in the surface holes. It was thought after assays were received from hole U-86-54 that the low assays resulted from the smaller core size; therefore a second hole (U-86-76) was drilled as close as possible to U-86-54 and the entire rather than split core assayed, but no difference was obtained in the assays from the second hole. Both of these holes were drilled through the highest grade sections of holes 84-36 and 84-37. No firm explanation has been found for this discrepancy.

The mineralization in all holes occurred adjacent to the contact between heterolithic breccia and metavolcanic rock. In two of the holes (U-86-54 and U-86-55) sulfides extended into crackled metavolcanic adjacent to the contact, and in U-86-55 the highest grades straddle this contact.

The zone dips northward at 70 degrees and is consistent with the interpretation as a mineralized ring fracture system.

7.2.2 Radial Section 245 degrees from 9975N, 10039E

Includes drillholes U-86-69
U-86-71
U-86-73
U-86-75

Four holes were drilled on this section in a fan between +20 degrees and -50 degrees. The mineralized zone was encountered in all holes with an average true thickness of 13.8 meters (45 feet). Mineralization is open both above and below the zone drilled but grades are low and the zone is thinning in both directions.

The zone on this section is considerably narrower than on section 184 but higher grade intersections were encountered. In addition, the zone has been offset by at least one (normal) northeast-dipping fault causing vertical shortening of the zone. This may account for the zone appearing to diminish in thickness more rapidly than on section 184.. Grades are generally similar to those resulting from surface drilling.

The mineralization in all holes occurred adjacent to the contact between heterolithic breccia and metavolcanic rock in similar fashion to that in section 184. Sulfides extend into crackled metavolcanic rock on three of the four holes, but as on section 184 most of the mineralization is within heterolithic breccia.

The zone dips northeastward ("inward") at 70 degrees and is consistent with the interpretation as a mineralized ring fracture system.

7.2.3 Radial Section 215 from 9975N, 10039E

Includes drillholes U-86-57
U-86-59
U-86-61
U-86-63

A total of four holes were drilled on a fan between +15 degrees and -50 degrees. The mineralized zone was encountered in all holes with an average true thickness of 21 meters (68 feet). Mineralization is open above and below the zone drilled but thickness is diminishing in both directions.

Grades encountered on this section are slightly higher than on section 245 but highest grades were lower; grades tended more towards the mean. As on section 245 highest grades were encountered in the center two holes of the fan. Mineralization occurs within heterolithic breccia adjacent to the metavolcanic contact.

The zone dips inward at 68 degrees and is consistent with the interpretation as a mineralized ring fracture system.

7.2.4 Section 9975N (west of adit)

Includes drillholes U-86-92
U-86-94
U-86-95

Three holes were drilled on a fan between 0 degrees and -30 degrees. The

mineralized zone was encountered in all holes with an average true thickness of 21 meters (69 feet). The zone on this section has a large bulge along the -15 degree hole (U-86-92) where the true thickness is 40 meters (131 feet). No faults have been found that allow an interpretation of structural thickening. The zone is open both above and below the zone drilled, although from underground drilling the zone appears to thin rapidly upward. Addition of surface drilling indicates this thinning does not occur.

Grades from this section were the highest of all sections drilled. Both copper and gold grades on holes U-86-92 and U-86-95 are high across the entire mineralized zone.

The configuration of the zone on this section varies from that found on previously described sections. Mineralization does not occur along the metavolcanic contact, and in hole U-86-94 occurs entirely within metavolcanic rock. In general this is attributable to the differing distribution of rock types in that the metavolcanic has almost disappeared, and this appears to have altered the pattern of flow of mineralizing solutions and the pattern of precipitation.

The zone dips inward at 65 degrees and is consistent with the interpretation as a mineralized ring fracture system.

7.2.5 Section 10,000N (West of Adit)

Includes drillholes U-86-68
U-86-70
U-86-72
U-86-93

A total of four holes were drilled in a fan between +20 degrees and -50 degrees. The mineralized zone was encountered in all holes with an average true thickness of 10 meters (34 feet). Mineralization is open both above and below the zone drilled but both grades and thickness decrease markedly away from the center two holes.

Higher grades were encountered in only the flat hole. All other holes encountered low grades, and the outer two holes encountered only very minor mineralization. The geological position of the zone is similar to the previously discussed sections in that mineralization occurs at the outer edge of heterolithic breccia adjacent to the contact with metavolcanic, but in one hole (U-86-70) the mineralization occurs west of a thin band of metavolcanic.

The zone dips inward at 85 degrees; this is distinctly steeper than the other holes but the position and orientation of the zone is still consistent with the interpretation as a mineralized ring fracture system.

7.2.6 Section 10,025 N (West of adit)

Includes drillholes U-86-62
U-86-64
U-86-66

Three holes were drilled on a fan between 0 degrees and -50 degrees. The mineralized zone was encountered in all holes with an average true thickness of

11 meters (37 feet). The zone is open both above and below the zone drilled, with the zone thinning upward but of consistent thickness downward.

Only low grades were encountered in all holes and the potential for mineable ore on this section appears low unless the grades increase with depth. Although orientation of the zone is consistent with the ring fracture structure interpretation the mineralization all occurs within heterolithic breccia and no contact with metavolcanic rock is present. The zone dips inward at 75 degrees.

7.2.7 Radial Section at 300 degrees from 10,025 N, 10,021 E

Includes drillholes U-86-58
U-86-60

Two holes were drilled on this section, one flat and one at -60 degrees. The flat hole encountered massive QLP at the projected position of west zone mineralization and is interpreted as a large block that remained intact during brecciation and fracturing. The downhole encountered only a narrow mineralized zone and a narrow zone of massive QLP indicating that the hole passed near the bottom extremity of this plug. The possibility of mineralization being found at a greater depth exists but the presence of the heterolithic breccia-metavolcanic contact being coincident with the ring fracture system is not likely.

7.3 East Zone

Mineralization encountered in drillholes east of the adit did not define a simple continuation of the ring fracture structure as outlined in the West Zone. The drilling has indicated the presence of a north-south fault between radial sections 184 degrees and 162 degrees that offsets the East Zone from the West Zone. The trace of this fault is expected to lie just east of the adit and to be close to vertical. The direction and amount of offset is not clear; alteration minerals and patterns strongly suggest that the East Zone is downdropped with respect to the West Zone and that the mineralization detected is marginal to and above the sought structure. Simple geometric offset of the mineralized structure suggests upward movement of the east side with respect to the west; this is supported by weak mineralization detected in surface drillholes 80-7 and 81-9 50 to 100 meters above adit elevation.

7.3.1 Radial Section 162 degrees from end of adit (9975 N 10039 E

Includes drillholes U-86-65
U-86-67
U-86-83
U-86-85
U-86-87

A total of five holes were drilled on a fan from 0 degrees to -55 degrees. One hole (U-86-85 was collared at too shallow an angle and was aborted at 40.8 meters. Weak mineralization was detected in all holes. Grades increase downward and the zone is interpreted as having a greater possibility of improving downward than upward. The zone has a fairly consistent true thickness averaging 12 meters (38 feet).

Grades increase from 0.7 gm/tonne Au in the flat hole to 1.4 gm/tonne Au in the bottom two holes. Mineralization occurs within heterolithic breccia

adjacent to metavolcanic in two of the holes and entirely within crackled metavolcanic rock in the other two. In U-86-83 visible sulfide mineralization suggests a much higher grade than was determined by assay. This mineralization is also offset by 15 meters from its projected position from the other holes on the section. It may be possible that gold mineralization in U-86-83 does not lie within the zone of high sulfide content and adjacent core to the zone sampled should be split and assayed.

The zone dips inward at 70 degrees and is consistent with the interpretation as a ring fracture system.

7.3.2 Radial Section 135 degrees from end of adit (9975 N 10039 E)

Includes drillholes U-86-89
U-86-90

Two holes were drilled at - 40 degrees and -55 degrees. Mineralization was detected in both holes but not in a simple pattern as on other sections. Although a zone is not well defined mineralization is open above and below the holes drilled. As two interpretations are possible a zone thickness is not applicable but mineralized intervals vary from 1.3 to 5.5 meters true thickness.

The upper hole has two mineralized intervals, both of which are higher grade than the one interval in the lower hole, but the total thickness is less than the thickness of the zone in the lower hole. As the distribution of rock types and mineralization encountered in both holes is more complex than in many holes an interpretation of a dip or a ring fracture system cannot be made.

7.3.3 Radial Section 110 degrees from end of adit (9975 N 10036 E)

Includes drillholes U-86-91

Only one hole was drilled on this section at -40 degrees. Two weak mineralized intervals were encountered at a similar position as the two mineralized intervals in the -40 degree hole on Section 135 degrees. For the same reasons as for the previous section no simple interpretation is possible without further drilling.

7.3.4 Section 10,000 N (east of adit)

Includes drillholes U-86-74
U-86-78
U-86-80
U-86-82
U-86-88

A total of five holes were drilled on a fan between +15 degrees and -49 degrees. An unexpected mineralized zone that is not similar to the mineralization of the ring fracture structure of the West Zone was encountered in four of the holes. This mineralization is open above the zone drilled but is likely terminated by a fault below the -30 degree hole.

This mineralization occurs within metavolcanic rock considerable distance from the heterolithic breccia-metavolcanic contact in a fractured zone that is

vuggy and contains zeolite minerals. This suggests near-surface alteration that is consistent with the interpretation of the East Zone being the down-dropped equivalent of the West Zone. The nature of the fracturing hosting the mineralization is distinctly different that the West Zone and this may be a separate fracture system previously undetected. The high grades of up to 26 gm/tonne (.76 oz/ton) make this zone an interesting target that must be investigated further.

The -49 degree hole encountered minor mineralization at the projected position of the East Zone, but the grade is too low and the interval too small to consider the zone defined. Further drilling below this hole is required to define the presence of the East Zone on this section.

7.3.5 Remaining Drillholes

Includes drillholes U-86-56
U-86-84
U-86-86

These three holes were drilled horizontally into the northeast quadrant of the interpreted ring fracture structure. These holes defined the breccia body as being circular in form but no well defined mineralized structure is apparent through this quadrant; this may be due to a greater degree of movement along the north-south fault in the north part of the ring fracture (i.e., rotation as well as translation) resulting in a greater distance between the adit elevation and the present position of the mineralization. A less optimistic interpretation is that the northern half of the ring fracture is not mineralized on either side of the north-south fault.

8.0 SAMPLING

8.1 Drift face samples.

Chip samples were taken usually daily across the drift face as the adit progressed. Those samples with appreciable sulfides were assayed for Au, Ag, and Cu. Results are shown plotted on a drift assay plan in Figure 3. Except in heavily biased samples of massive sulfides from sulfide veins no appreciable values were found. The positive results from massive sulfides are considered only to indicate the regional presence of gold.

A complete list of samples is included in Appendix III.All samples not assayed are stored in Silverton.

8.2 Drift Wall Panel samples

As the mineralization was approached wall panel chip samples were taken along the right (west) wall instead of face chip samples. These are discontinuous due to the frequency of fault slip surfaces forming the drift wall resulting in a non-representative wall panel; in such cases no sample was taken

both walls in 1.5 m. intervals with the last sample interval shortened to coincide with the visual cut-off of mineralization. Fill-in samples were collected from the right (west) wall panel to provide continuous sampling throughout the heterolithic breccia.

8.3 Muck samples

Muck samples were collected from cars by the miners during mucking of rock blasted from the West Zone. Samples were collected from two rounds within the West Zone and from one round beyond the West Zone. In addition muck from the drill slash within the West Zone was sampled. These samples vary from 20 to 40 liters in size and were found to be extremely variable as to the size and representative nature of the material collected.

All muck samples were immediately dried in Silverton and repacked in plastic-lined pails. They were subsequently crushed in the laboratory at Dickenson Mines and a 4.5 kg./10 lb. sample split out for assay. The remainder is being stored in Silverton for eventual shipment to Lakefield Research for metallurgical studies.

8.4 Bulk samples

Muck removed during intersection of the west zone was stockpiled below the portal area near Red Mountain road. Approximately 135 kg./300 lbs. was collected, dried and stored in plastic lined pails for metallurgical studies.

8.5 Drill core samples

During the early stages of the project visibly unmineralized sections of core were sampled 2 meters of every 6 meters, split and analysed by multi-element ICP and geochemical gold determination. Visibly mineralized sections were sampled continuously in 2-meter intervals of split core and analysed by conventional fire assay for gold and silver, and chemically for copper. Starting with drillhole U-86-64 the ICP analyses were discontinued except for short intervals adjacent to some mineralized sections to lower assaying costs. All assay results from mineralized intervals have been entered on drill logs.

The results from the first drillhole in 1986 (U-86-54) indicated a potential problem with sampling and/or assaying procedure in that the expected values as indicated by drillholes 84-36 and 84-37 were not obtained and the gold/copper ratios changed markedly from previous drilling. Check assays of some samples upgraded gold values from .064 oz/ton to 0.34 oz/ton indicating severe non-homogeneity of samples as split for assay. The possibility of the split BQ core being too small was tested by "re-drilling" hole U-86-54 and assaying the entire core (U-86-76); no appreciable difference in values was obtained. Therefore the high variance of values obtained from the same sample is concluded to be a result of non-homogeneity of the sample with respect to gold content.

This problem was found to be not limited to drillcore. Two large (> 50 kg.) muck samples were crushed and two equal 5 kg. samples split out of each and submitted for assay. The results are as follows:

Muck sample A: #07973 Au 0.106 Cu 0.45 Ag 0.13

	#07974	Au 0.076	Cu 0.45	Ag 0.13
Muck sample B:	#07975	Au 0.038	Cu 0.11	Ag 0.08
	#07976	Au 0.062	Cu 0.12	Ag 0.07

These results show clearly that samples that are equivalent with respect to copper and silver differ by 100% in gold content. The splitting occurred at the same particle size (10 mesh) as is used in analysis of drill core at Vangeochem.

An analysis of Lakefield Research Lab. studies into recovery of gold indicated that approximately 30% of the gold was collectable by gravity methods at a particle size of 80 mesh, and the remainder of the gold was collected by standard flotation techniques. This can be assumed to indicate that 30% of the contained gold in the Willa orebody is coarse grained (80 mesh) and contributes to a severe non-homogeneity at the 10 mesh splitting size.

Relating particle size, gold content and sample size indicates that there will be 6.3 coarse gold particles per 2 meter section of split BQ core, and that 7% of the assays will show the non-homogeneity caused by the coarse gold. Check assays were performed on samples 07987 through 08122 (36 samples). Results are shown in Table 2. Variation between samples and average variation show that little pattern is obvious except that few samples are consistent when assayed by different laboratories. Those that are consistent are remarkably so (i. e. 07987, 07993, 08106, 08121). However some samples show no consistent assay (i. e. 08117, 08104). This is consistent with the presence of some fraction of the contained gold in some samples existing in large particles contributing to non-homogeneity of the sample.

Whether this non-homogeneity is a problem in the validity of the assay data has not been satisfactorily answered. The sums of assay results for the three sets of check samples (2.101 for Vangeochem, 2.105 for Chemex, 1.945 for CDN Resource Labs.) indicate that for a large number of samples all three splits will give the same value, or at the pulp particle size no problem exists if the number of samples is large. However the probability of a sample being non-homogeneous increases with sample particle size. A program to test for homogeneity using sample rejects was devised but was stopped when it was found that the assay laboratory had inadvertantly discarded half of each reject leaving too small a sample for the excercise to give valid results. This should still be performed at a later date on samples from which the entire rejected material is saved.

9.0 COSTS

Total cost for the Willa Project from May 1985 to February 1986 was $2,988,305. Drifting costs were $2,167,448 for a cost of $2,344 per meter or $715 per foot. Diamond drilling costs were $499,621.41 for a cost of $82.46 per meter or $25.13 per foot. Costs of the project other than direct drifting or drilling costs amounted to $321,235.59.

Costs are further detailed in Table 3. This list is preliminary and unaudited.

10.0 CONCLUSIONS AND RECOMMENDATIONS

The Willa Project between May 1985 and February 1986 has completed a program of drifting to the center of the mineralized ring fracture structure as outlined by previous programs by B P Minerals Ltd. and Rio Algom Ltd. and diamond drilling of this structure to obtain data suitable for calculation of ore reserves. This calculation has resulted in West Zone reserves of 2,030,204 tons grading 0.11 oz/ton gold and 0.68% copper, including a higher grade core of 936,514 tons grading 0.16 oz/ton gold and 0.82% copper. This ore occurs as a steeply-dipping arcuate-tabular body with an arc length of 200 meters, an average thickness of 20 meters and a vertical extent (presently drilled) of 150 meters. The body appears continuous and would be mineable by low-cost underground methods.

The West Zone is cut off by a postulated north-south fault near its southernmost extremity, or immediately east of the 184 degree radial section from the end of the adit. The zone is also terminated on the northwest by a large block of quartz latite porphyry that appears to have remained intact during brecciation and fracturing and blocked passage of mineralizing solutions. All sections drilled are still open both above and below the zone drilled, but on some sections the possibility of developing further reserves appears low because of a thinning of the zone and a decrease in grades.

East of the postulated fault what is believed to be the margins of a downdropped equivalent of the West Zone have been detected in the southeast quadrant of the heterolithic breccia body. An additional mineralized zone completely within metavolcanic rock was detected east of the adit. This zone contains high-grade mineralization and may occupy another ring fracture structure at a greater radius that that of the West or East Zones. Both of these structures east of the fault are not yet well defined and require further drilling to establish their potential.

The variability in assay values obtained from select samples has caused considerable discussion regarding the validity of assay values. Numerous calculations have been completed including log-transformation of all the data and recalculation of mean values, calculation of expected biasing from a "nugget effect", and calculation of variations in assay values of the same samples when analysed by three different laboratories. The results of all calculations indicate that the combination of all these factors may result in a cancellation of bias and that the arithmetic averages as used in reserve calculations will be correct. A distribution analysis of some of the drill core samples from U-86-76 was still in progress at time of writing and the data of this study was not available.

The reliance on present data must be considered to be dependent upon the distribution of gold particle sizes within the orebody. Insufficient information from the West Zone exists to allow a determination of gold particle sizes as most polished section descriptions are from samples collected from the Main Zone. Mineralization is known to be of a different nature in Main Zone as compared to the West Zone and the particle size data are not applicable. In general, it is presently accepted that particle sizes are such that samples when pulverized to pulp sizes (140 mesh) are homogeneous but it is not known whether they are sufficiently homogeneous to result in unbiased sample splits at 10 mesh sizes.

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Recommendations

At the completion of the 1985 (Feb 1986) program there are four areas to be investigated by the next phase of exploration of the Willa property. These are:

1. Establish the position of and reserves within the East Zone mineralized structure(s).

2. Expand West Zone intersections to the limits of economic mineralization.

3. Obtain one or two bulk samples for comparison with drilling results.

4. Obtain gold particle size and distribution information.

10.1 1. East Zone Drilling

A program of 9 drillholes for a total of 1780 meters is proposed to investigate further the East Zone mineralization detected by recently completed drilling. These holes are as follows:

From 10,000 N 9970 E (on bulk sample crosscut)

Azimuth	Dip	Length
110	-35°	180
110	-47	220
130	-35	180
130	-45	200
090	-40	210
090	-50	230
090	-60	300

From 9975 N 10,039 E

110	+40	120

From 10,000 N 10,029 E

060	+40	140
		1780 meters

This program will investigate the proposed position of the East Zone 150 - 200 meters below adit elevation. The last two holes are to be drilled as "last resort" holes if no zone is detected in the previous 7 holes, to investigate the possibility that the East Zone is offset upwards by the postulated fault.

10.2 2. West Zone drilling

On most of the sections drilled during the January-February 1986 program the limits of mineralization on each section were not established, i. e. mineralization was open both above and below section. A series of holes is

proposed to expand the occurrance on each section or to define limits of mineralization. The list of these holes is as follows:

From 9975 N 10,039 E (end of drift)

Azimuth	Dip	length
270	+13	140
270	+25	160
270	-45	115
215	+30	135
215	-62	135
245	-62	135

From 10,000 N 10,029 E

270	+35	110
270	-59	150
180	+35	210
180	-50	190

From 10,025 N 10,021 E

270	+23	100
270	-64	115
		1695 meters

This is a total of 1695 meters of drilling to expand reserve of all the West Zone sections with reasonable potential for more ore. The holes are designed to intercept the mineralized zone 25 meters above or below the last drill intersection.

10.3 3. Bulk Sampling

Two crosscuts are proposed to intercept the West Zone in two representative areas to obtain at least 200 to 300 tons per sample of ore to be available for milling. It is proposed to have these entire samples run through a concentrator with a gold recovery circuit to determine actual gold content.

The first crosscut should intercept the zone on section 10,000 N to coincide with drillhole U-86-68. This should result in the crosscut recovering 9 gm/tonne (.24 oz/ton) gold ore. This will require approximately 100 meters of drifting and provide 300 to 400 tons of sample depending on drift size.

The second crosscut is proposed to intercept the southern portion of the West Zone on section 184 (radial) coincident with drillhole U-86-55. This should result in the crosscut recovering 3.6 gm/ton (0.11 oz/ton) gold ore . Approximately 120 meters of drifting is required and 800 to 1150 tons of ore will be provided depending on size of drift.

Each of these two crosscuts will produce $30,000 in gold at 85% recovery, or $60,000 total for both bulk samples.

10.4 4. Determination of gold size distribution.

All polished section studies completed to date have been done on samples from the Main Zone. It has been established that there are signifigant differences between Main and West Zone mineralization and that the native gold particle size information obtained is likely not applicable to the West Zone. Therefore no information exists at this time to aid in a correct sample handling procedure and assay results interpretation for the mineralization being investigated. It is proposed that a program of polished section analysis be initiated on West Zone samples, possibly followed by microprobe analysis if required. Such a study may be suitable for a batchelor's level thesis but time may not allow this to be undertaken.

10.5 Cost Estimate for proposed program.

The following costs will be incurred in the program as outlined above (costs are based on preliminary estimates of costs incurred in the May 1985 - February 1986 program):

1. Diamond drilling:	East Zone-1780 meters at $84/meter	$149,520
	West Zone-1695 meters at $84/meter	142,380
	Total 3475 meters	$291,900
2. Bulk Sampling:	Drifting-On 10,000 N-100 meters ` $2344	$234,400
	on 184 -120 meters ` $2344	281,280
	Total	$515,680
	Treatment-milling-1000 tons ` $50/ton	50,000
	-trucking-360 hrs ` $55/hr	20,000
	-gold recovered-4000 gm. ` $15	(60,000)
	Total	$525,680
3. Petrographic Studies		$ 5,000
4. Contingencies (10% of above)		$ 82,258
Total for program		$904,838

L. J. Werner
April 1986

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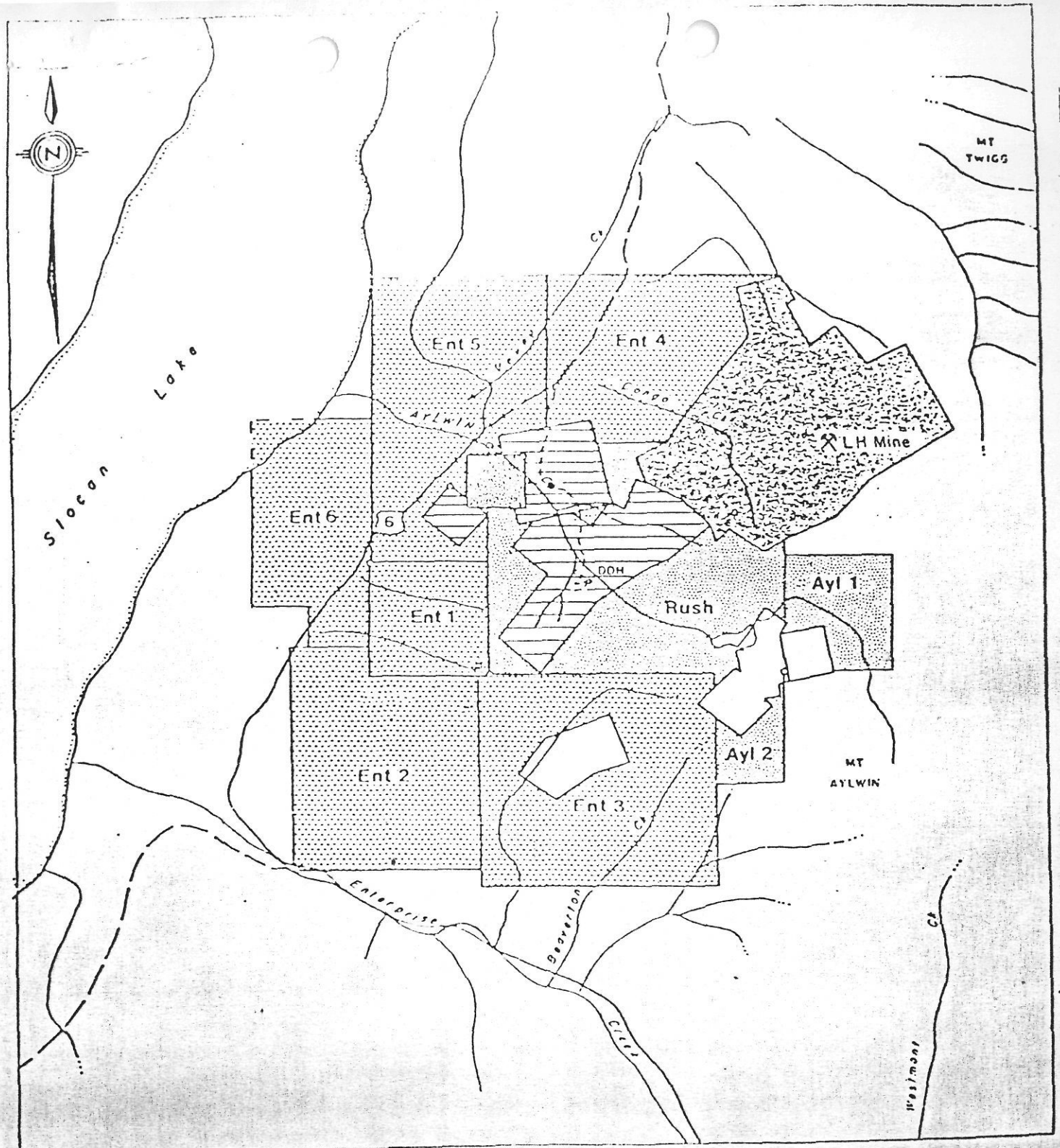

LEGEND

- Rio Algom Claims
- BP Claims
- Optioned Claims and Crown Grants
- Andaurex Claims

} Joint Venture

- Others

METRES
0 500 1000 1500 2000 2500

Figure 2: Claim Map of Aylwin Creek (Willa) Property

NORTHAIR WILLA PROJECT

SUMMARY OF RESERVE CALCULATIONS

25 MARCH 1986

1. Four reserve calculations by Northair:

A. Underground drilling only

(i) 1,488,455 tons 0.10 oz/ton Au; 0.59% Cu

including (ii) 761,939 tons 0.15 oz/ton Au; 0.79% Cu

B. Underground + surface drilling

(i) 2,030,203 tons 0.11 oz/ton Au; 0.68% Cu

including (ii) 936,514 tons 0.16 oz/ton Au; 0.82% Cu

2. Calculation Parameters

A. Underground Drilling only

(i)-all drilling intersections from 1986 drilling over 1 gm/tonne as interpreted by Werner and Wong.

-all drawing done on 1000 scale sections as provided by BP in progress report by Wong 21 Feb/1986.

-Polygon areas measured by Co-ordinate Area calculation by Sharp PC 1211 computer; compilation by Visicalc in Apple //+, files "Willa Reserve 1", "Willa Reserve 2".

-drillhole values interpreted to extend either side of drillhole halfway to next hole.

-section areas swept through arc lengths either side of section halfway to next section.

-east and north boundaries of mineralized zone picked at interpreted fault just east of 184 section and 12.5 m. north of section 10025 N.

-separate radii measured for each polygon.

(ii)-same as 2.A (i) except intersections over 3 gm/tonne used.

B. Underground + Surface drilling

(i)-drilling intersections as in 2.A (i) plus surface drillhole intersections as listed by Wong Dec. 1984 Table 1 (pg. 12), intersections over 1 gm/tonne.

-all drawing done on new Northair 500 scale sections after plotting of all assays for surface and underground drilling. Minor modifications to intersections made after analysis of assay intervals.

-polygon areas measured by Co-ordinate area calculation by Sharp PC 1211, compilation by Visicalc in Apple //+, files "Willa Reserve 3" and "Willa Reserve 4".

-where two or more drillholes affect grade of one polygon holes weighted subjectively by length included in polygon and hole position in polygon.

(ii)-same as 2.B (i) except intersections over 3 gm/tonne.