REPORT ON GEOLOGICAL EVALUATION
OF
MINERAL PROPERTY AT UMITI CREEK

6

Claims: NOHILL 1 (#4871), 2 (#4873),
3 (#4872), 4 (#4874), 5 and 6

LOCATED IN: CARIBOO MINING DIVISION
93 G/1E
Latitude 53°9', Longitude 122°7'

OWNER: E. Bakker

OPERATOR: Reimchen Urlich Geological Engineering

AUTHOR: E. Bakker

SUBMISSION DATE: June 5, 1984

GEOLOGICAL BRANCH
ASSESSMENT REPORT

12,267

Vancouver, B.C.
Canada

June 1984
Project 32-05

REIMCHEN URLICH GEOLOGICAL ENGINEERING

4381 GALLANT AVENUE, NORTH VANCOUVER, B.C. V7G 1L1 CANADA
PHONE: (604) 929-2377 TELEX: 04 - 352858

June 5, 1984
File 35-05

Ministry of Energy, Mines and
Petroleum Resources
Mining Recorder
Province of British Columbia
Victoria, B.C.

Attention: Mr. Talis Kalnins

Dear Sir:

Please find enclosed two copies of the assessment report on the NOHILL Claims in the Cariboo Mining Division. Also find enclosed a cheque for $185.

If there are any questions concerning this report, or if additional information is required, please contact us.

Respectfully submitted,

E. Bakker, M.Sc.

/dg
Encl.

TABLE OF CONTENTS

LIST OF FIGURES

1.0 INTRODUCTION

1.1 Property Location

The NOHILL claims are located 35 km northeast of Quesnel, British Columbia (Figure 1). They are accessible by a gravel road which, at Cottonwood House, 26 km east of Quesnel, turns north off the paved provincial Highway #26. The southern boundary of the property is located 12 km down the gravel road. Logging roads crisscross the property.

The claims are situated near the boundary between the Fraser Basin and Fraser Plateau, just west of the Quesnel Highland. The property is drained by Umiti Creek (Figure 2).

1.2 Property Definition

1.2.1 History

Areas presently covered by the NOHILL claims were originally staked as "BL 3, 4, 5, 6 and 8 Umiti" by Mr. B. Grauman (General Manager of Two-Way Resources Ltd. of Vancouver). Mr. T. Reimchen, P.Eng., (President of Reimchen Surficial Geology Ltd. and partner of CGEI, Geological Engineers Incorporated, the predecessor of Reimchen Urlich Geological Engineering, of Vancouver) was subsequently approached by Mr. Grauman to do exploratory work on the Umiti claims. In 1981, a study of the surficial geology and a soil sampling program was carried out by Mr. T. Reimchen, followed by a study of the bedrock geology and possible mineralization by Mr. E. Bakker. The work was summarized in a report by CGEI to Two-Way Resources.

Because of financial problems by Two-Way Resources, Reimchen Surficial Geology and CGEI did not get paid for the work done, and no assessment report was written by them. The claims were forfeited in January 1983.

In April 1983, a small area of the original Grauman claims was staked by a Mr. D. Coffey of Quesnel. His claims "Umiti 2, 3 and 4" covered exactly the area in the CGEI report mentioned as the most interesting part of the Grauman claims. A larger area surrounding Coffey's claims was then staked in May 1983 as NOHILL 1, 2, 3 and 4 by Mr. E. Bakker of Vancouver.

During the recent study, it appeared that limited trenching was done on Mr. Coffey's claims on exposures mentioned in the CGEI report. However, as far is known, the claims were allowed to lapse. Subsequently a part of Coffey's claims was staked by Mr. E. Bakker as NOHILL 5 and 6.

The NOHILL claims are presently owned by Mr. E. Bakker and operated by Reimchen Urlich Geological Engineering.

1.2.2 Economic Assessment

The NOHILL claims are situated in an area famous for its placer gold deposits. Placer mining has been carried out in creeks draining this area. Some rocks exposed in the NOHILL claims are favourable as source for placer gold; similar rocks, belonging to the same geologic formation, have been mined for gold near Wells. Anomalous gold, copper, lead and zinc concentrations in quartz veins have been found. Rocks associated with ultrabasic intrusions show malachite encrustations and contain sulfide minerals. The claims straddle a fault. A magnetic anomaly, ultrabasic bodies and a granitic body are present along this fault.

1.3 Summary of Work

A detailed survey was carried out in areas which, during the 1981 fieldwork, were deemed favourable for further investigation. These areas are the quartzite and schists with abundant quartz veins in NOHILL 1 and exposures along the fault in NOHILL 2, 3 and 4 (and in NOHILL 5 and 6).

Between May 17 and 30, 1984, an area of 1 km^2 was investigated in detail, and exposures were marked on aerial photographs in scale 1:20,740. The information from the aerial photographs has been transferred to a map in the same scale (Figure 3). This map has been supplemented with updated information from the 1981 fieldwork.

Several samples were collected during the survey, of which six have been submitted for assay.

All the information collected during the recent fieldwork has been integrated with the relevant part of the 1981 fieldwork and is presented in this report.

1.4 List of Claims

In May 1984, work was performed on the following claims.

Name	Units	Record No.	Mapping and Sampling	
NOHILL 1	1	4871	May 28	
NOHILL 2	3	4873		
NOHILL 3	6	4872	May 17, 26, 28, 29	
NOHILL 4	6	4874		HILLTOP
NOHILL 5	1	-	May 29	
NOHILL 6	1	-		

2.0 DETAILED TECHNICAL DATA AND INTERPRETATION

2.1 Introduction

An extensive area near Umiti Creek was reconnaissance mapped in 1981. During the 1984 fieldwork, many outcrops in the NOHILL claims were re-visited and sometimes re-interpreted. Some new outcrops were found; malachite was found to be present at a few places.

A bedrock study in the NOHILL property is hampered by the lack of good outcrop. Bedrock exposures are generally small and weathered. Most outcrops occur in road surfaces and roadsides in the logged areas. There are surprisingly few outcrops in steep valley slopes and in creeks.

2.2 Landscape and Geologic Setting

The NOHILL property occupies 4 km^2 of a gently sloping hill with elevations ranging from 925 m to 1200 m. About 90 percent of the claims has been logged in recent years. The remaining humid forest, with dense under-brush, contrasts with the dry logged areas.

Parts of the property are cut by narrow, winding and intersecting valleys, up to several metres in depth. In NOHILL 1, a creek and a small lake are present in such a valley; all others are dry or swampy. There is no obvious relation between the orientation of these valleys and bedrock structures. The valleys are late glacial meltwater channels.

Bedrock is generally obscured by an overburden of variable thickness of silt and sand, with larger rocks to cobble size. Boulders are rare. The oberburden comprises glacial till with locally reworked stream gravels and occasionally broken bedrock. Erosion of this material is fast, as is indicated by the presence of up to 2 m deep gullies in skid roads.

From the setting of outcrops in logged valleys, it seems that the bedrock surface is more irregular than the present ground surface. This indicates the possible presence of hidden old stream valleys.

The NOHILL property straddles a major fault which separates the Omineca Crystalline Belt in the northeast (Northern and Central Units with Pre-cambrian strongly deformed and metamorphosed sediments) from the Inter-montane Belt in the southwest (Southern Unit with less deformed and non-metamorphic Triassic sediments and volcanics). Along the fault, Triassic or Cretaceous ultrabasics and a Tertiary acid intrusive occur.

2.3 Geology

2.3.1 Lithologic Units

General. According to composition, deformation and metamorphism, the rocks can be grouped into three units. Within each unit, rocks of different types appear. Due to lack of good outcrop, strong folding and gradations between rock types, it is impossible to extend a particular rock type over large distances. The main rock types within each unit are:

Northern Unit: quartzites and schists
Central Unit: sericite schists
Southern Unit: slates

Along the boundary between the Central and Southern Units, intrusive rocks occur. Quartz veins and lenses occur in all units.

Northern Unit: Quartzites. Light coloured massive quartzitic rocks are common. They are fine to medium-grained and contain always some feldspar and mica (biotite and muscovite). Occasional medium to coarse quartz and feldspar grains are set in a finer matrix (grit). A foliation is defined by lenticular quartz grains with mica oriented parallel to it. The amount of mica is variable, due to which the rock can become gneissic and locally schistose. Garnet can occur as medium to coarse grains, ranging in colour from a fresh pink to completely altered. Chlorite rims are common. An occasional weak layering in the quartzite suggests cross bedding.

Northern Unit: Schists. The schists consist of light to dark grey mica schists and phyllonitic schists; locally they grade into quartzitic schists. In the mica schists, muscovite (rather fine) is the most common mica. The amount of biotite (somewhat coarser) is variable and is often not or hardly present. Both are normally parallel to the foliation, but biotite has incidentally been observed as growing across the schistosity. Phyllonitic schists occur locally as small horizons or patches within and gradational with the mica schists. Garnet is common in all schists. The colour is darker and the alteration stronger than the garnet in the quartzite. Commonly, garnet is only present as completely altered knots. Weathered out rectangular holes in the schists indicate the original presence of pyrite. The schists commonly show rusty colours along joints and often along cleavage planes.

Thin mica schist layers often occur within the thicker quartzite layers. Locally they are tightly folded with the schistosity as axial plane foliation. Thin quartzite layers are nearly always present in the schists. Schists predominate in the Northern Unit.

Central Unit: Sericite Schists. Light colored, greenish schists are the most common rock type in this unit. Mica is commonly present as sericite, rarely as muscovite. Biotite has not clearly been observed, but could be present in darker rocks. Grey phyllonitic schists are locally present as thin layers. In Lars Creek, near the Umiti Creek junction, light grey sericite schists are underlain by a thick layer of dark grey phyllitic rock which contains sericite and folded quartz bands. Occasionally the rock grades into a quartzitic gneiss, but quartzite is not present. The schists locally contain bands with angular fragments, suggesting a partly volcanic origin (tuff). Small, partly weathered, pyrite crystals occur locally.

Intrusive Rocks between Central and Southern Units

Granitic Rock: A very light coloured and fine-grained quartz-feldspar rock is exposed as a large body in NOHILL 3 (Figure 3). Chlorite occurs as scattered fine grains. The homogeneity and structureless character of the body indicates a late intrusive origin. Within the body, a one-metre band of very fine-grained chlorite-rich rock is present.

Ultrabasic Rock: Complete retrograde ultrabasic serpentinite bodies are present at several localities (Figure 3). All or part of them might belong to a larger elongated NW-SE body. The southeasterly exposure is mostly light coloured, with some dark green "soapy" rock. The Body consists of serpentinite and chlorite with talc in more weathered parts. A carbonate (magnesite) is present in the lighter rock as thin veins and in the darker one as coarse grains. Coarse and weathered brownish crystals in the lighter rock are probably altered bronzite. A schistosity is well developed with a secondary cleavage present in the darker rock. The northwesterly body consists mainly of serpentinite and talc, with altered pyroxene relics.

Just west of the southeasterly ultrabasic body and southeast of the north-westerly body, ultrabasic or ultrabasic-related rocks (anorthosite?) are exposed containing malachite.

Southern Unit: Slates. The most common rock is a dark grey, very fine-grained rock with in general a good planar cleavage. It is sometimes fissile and locally rather massive. In the northern part, the rock often has other cleavage directions as well (axial plane cleavage and joints). A linear texture is locally prominent. A thin layering of lighter and slightly coarser materials is sometimes present. This layering (bedding) is mainly parallel, but in fold hinges discordant to the slaty cleavage. Argillite is present as layers in slate. Some rocks contain coarse angular grains of different rock types and medium grains of quartz (volcanic breccia and greywacke). The slate occasionally shows rusty colours along joints.

2.3.2 Boundaries between Units

Northern-Central Unit. Although similar schists occur in both units, a discontinuity between these two units is assumed. The presence of garnet and biotite in the rocks of the Northern Unit and absence of these minerals in the Central Unit, indicate an original higher grade of metamorphism in the Northern Unit. Due to retrograde effects, the rocks locally become similar. Furthermore, quartzites are common in the Northern Unit but are absent in the Central Unit. The deformation history seems to be equal in both units, as is the presence of small boudinaged and folded quartz bands. The contact itself is not exposed. It probably runs through the valley of Lars Creek. The contact is not necessarily a fault or unconformity. The difference between the two units might reflect an original sedimentary one, together with a later higher grade metamorphism deeper in the sequence.

Central-Southern Unit. Higher grade metamorphism and a more complex deformation history in the Central Unit than in the Southern Unit indicate the presence of a major fault between the units. Intrusive rocks occur along this fault. The aeromagnetic map (1963, Sheet 93 G/1) shows a relative high in the area where the fault intersects the main road. Honeycomb quartz veins are concentrated in rocks along the fault.

2.3.3 Deformation

Folding. In the Northern and Central Units, a tight to isoclinal folding is present (D1), which is best seen in folded quartz bands. Schist bands in quartzite are locally isoclinal folded, but the schistosity in these folds is an axial plane foliation (S1). Because of the tightness of the folds, the main foliation in these units is Ss (bedding) + S1. The large scale influence of this folding is hard to estimate because individual layers cannot be followed over larger distances. In the Southern Unit, this deformation phase is absent.

In most of the rocks, small crenulations are common. Locally, close to open folds of the foliation can be observed with a fold axis gently plunging to the northwest and parallel to the crenulation lineation (D2). Axial planes dip moderately to steep to the southwest and locally to the northeast. An axial plane foliation is rarely developed in the schists, but is more common in the slates. This deformation had much influence on the distribution of rock types in the Northern Unit. In addition to the large structures shown on the map (Figure 3), smaller anti- and syn forms are present, the whole resulting in an anticlinorium.

Although it is not so evident from the map, an analysis of measurements made, shows that there is a persistent folding of the lineation. When comparing measurements in narrow zones parallel to the trend of D2 structures, a folding phase (D3) emerges with axes gently plunging to the north-northeast. A weak crenulation lineation with this same direction has been observed in a few places.

Jointing. In the Northern and Central Units, joints are fairly common, and spacings of several tens of centimetres are normal. The best defined joints are mainly moderate to steep dipping to the southeast and locally dipping to the southwest. Less well-defined joint directions do occur. In the Southern Unit, the joints are hard to separate from the slaty and axial plane cleavage. Analysis of a few conjugate sets show that the best defined joints can be tied to a folding with a northwest to southeast axis (i.e., the D2 folding). The variation in orientation of these joints in small areas indicates a folding with northeast and southwest plunging axes, which implies that these conjugate sets developed during D2 deformation.

Boudinage. Thin quartz bands are commonly boudinaged. Quartz in thicker bodies generally have lensoid shapes, and locally they can be seen as part of a boudinaged layer. Quartz veins locally show a boudinaged character. Because some quartz veins occupy D2 joints, and D2 was the last major deformation event, at least some of the boudinage must be attributed to the D2 event. This is also shown by the boudinage of veins and the more competent bands in the slates, where D1 is absent.

Faulting. In the Central and in the Southern Unit, the foliation changes to a nearly vertical orientation close to the fault which separates these Units. Because D2 folding is responsible for this change in orientation, it is evident that the faulting is synchronous with D2 deformation. Because the orientation of the fault is parallel to the trend of D2 structures and not to one of the joint systems, the fault might have originated by shearing the limb of a major fold (Figure 4). Asymmetry of parasitic folds only partly agrees with such a structure. The stratigraphy being upside down in the Southern Unit (Douglas, 1979) complicates the structure more.

The intrusion of acid and ultrabasic rocks occured typically along a zone of weakness, as do occur the most interesting quartz veins. Between the intrusive bodies, however, is a difference. The presence of a schistocity in the ultrabasic rocks indicates that they are probably contemporaneous with the faulting. The lack of any foliation in the aplite indicates that this body has intruded after the D2 deformation.

2.3.4 Quartz Veins and Lenses

Northern Unit. At least two generations of quartz veins and lenses (boudinaged veins) can be identified. Small D1 folded intrafolial lenses belong to an older generation. Veins occupying joints developed during D2 deformation belong to a younger generation. Veins and lenses which do not exhibit these criteria are difficult to date. Quartz veins with different orientations belonging to a D2 conjugate set have been observed.

In the thin lenses and veins (mainly the older generation), the quartz is generally clear and consists of recrystallized subgrains. In the thicker zones (mainly the younger generation), the quartz is mostly white and contains many irregular and closely spaced cracks. Around some of the cracks in the thicker veins and lenses, the quartz is stained yellow and brown. This colouring probably represents a very thin coating of iron hydroxide. Red colours occur and appear to be restricted to cracks and weathering surfaces. This colouring probably results from a later oxidation. Rarely small cavities are filled with iron hydroxides, consisting of yellow to brown soft material with a rim of dark grey to black hard material.

The most important quartz vein in the Northern Unit occurs in NOHILL 1. This area is drained by a creek, where some placer mining has been done. An area of 100 m^2 above a cliff, with some outcrops of phyllonitic schists overlying and interlayered with gneissose schist, has scattered much quartz, probably mainly belonging to an east-west subvertical 1 m wide vein. The white quartz is extensively yellow-brown and partly red (sample NH84-1) coloured. Another ½ m wide east-west subvertical quartz vein cuts a feldspathic, garnet- and biotite-bearing, quartzite layer. The quartz is only locally slightly coloured. A few cavities are partly filled with chlorite or with iron hydroxides. A regular subvertical north-east-southwest joint system and an irregular one parallel to the vein is present in the country rock.

Central Unit. Thin quartz lenses are common in the schists in the same way as in the Northern Unit. Larger ones are rare.

The most important veins occur along a small road north of the granitic body in a 3 m wide zone with phyllonitic bands in sericite schist. Thin quartz lenses are isoclinal folded. A 10 cm wide westnorthwest to eastsoutheast striking quartz vein is mainly parallel to the nearly vertical foliates. The vein is locally discordant and faulted. The white quartz is clean but rich in irregularly shaped and partly tubular cavities (honeycombed), partly filled with iron hydroxides. Another irregular, up to ½ m wide, vein is more massive and consists of quartz with pale yellow altered feldspar. Extensive colouring and coatings and thin veinlets occur along cracks. The weathering is strong along both veins, the soil and weathered rock is partly intensely coloured (NH 84-7 from the first vein).

Southern Unit. Locally thin and often rusty veins occur, such as one east-to-west striking subvertical. In one area, however, considerable amounts of quartz exist in the slates discontinuous exposed over 500 m along the upper contact of the unit. In the southeastern part (south of sample NH 84-8 location), the honeycombed quartz contains calcite. In the northwestern part (sample NH 84-9), the honeycombed quartz (up to 30% cavities) contains much iron hydroxides. Here a zone of 5 m consists of up to ½ m thick boudinaged vertical eastsoutheast-westnorthwest quartz veins parallel to the foliation of the dark grey slates.

2.3.5 Mineralization

The honeycombed quartz veins encountered at several locations (NH 84-1, 7 and 9) with anomalous values for gold, lead and zinc (as partly shown in previous assays), might be indicative of major sulphide mineralizations in rocks with are less weathered than those encountered in outcrops. Similar veins are proven to be the source of placer gold in other areas.

The malachite occurrences associated with the ultrabasic bodies (NH 84-2 and 8) are indicative of the presence of copper. Some grains of an unindentified sulphide ore have been observed in these rocks. Cobalt, nickel and chromium occur in small, but anomalous amounts.

Because of poor outcrop, honeycombed quartz veins and copper-bearing rocks are probably more widespread than observed in outcrops.

2.4 Correlations

The Parsnip River Map (Douglas, 1979) shows for this area three units, from northeast to southwest:

- Proterozoic Kaza Group: sandstone, conglomerate, grit, phyllite, schist, amphibolite, marble and gneiss in the Omineca Crystalline Belt;
- Upper Triassic: black phyllite, siltstone, limestone and quartzite in the Intermontane Belt;
- Upper Trassic to Lower Jurassic Takla Group: andesite, basalt, tuff, breccia, conglomerate greywacke, shale and limestone in the Intermontane Belt.

The contacts between these units are drawn as faults. Along the fault between the Kaza Group rocks and the Traissic rocks, Permian to Middle Triassic ultrabasic bodies are shown southeast of the Umiti area.

Tipper (1960) and Campbell et al. (1973) do not separate the rocks in the Intermontane Belt. Of the Proterozoic rocks, they discuss metamorphosed feldspathic sandstone and granule conglomerate, locally micageous and schistose; argillite, phyllite and schist, minor conglomerate, limestone and marble, separated by an unconformity from the locally fossiliferous Upper Triassic rocks (dark phyllite, shale, argillite, siltstone and, rarely, dark limestone). The rocks are folded in the northwest plunging Lightning Creek Anticline, of which the centre runs northeast of the study area. The Umiti area then is situated in the southwest limb. The Barkerville-Wells area is also near the upper contact of the Kaza Group but in the northeastern limb of the anticline.

Campbell et al. (1973) discuss the Proterozoic Isaac Formation which overlies the Kaza Group in the northeast limb (phyllite, argillite, schist and shale, minor siltstone, feldspathic sandstone and conglomerate, limestone).

Douglas (1976) discusses the early Tertiary volcanism, coeval with emplacement of small, high-level, granitic plutons in the Intermontane Belt, and gives a general deformation history of the area.

Comparing our observations with these references, it is evident that the Northern Unit correlates with the Proterozoic Kaza Group. The Central Unit may correlate with the Isaac Formation, or perhaps also with the Kaza Group. These rocks have been affected by the Devonian-Mississippian Caribooan and perhaps by the older East Kootenay orogeny (D1 structures and metamorphism). The Southern Unit correlates with the Upper Triassic black phyllites. It is not clear if the Triassic Tahltanian Orogency is responsible for the D2 deformation or if the Cretaceous Columbian orogeny is responsible for D2 and D3 deformation. For the ultrabasic intrusions, an event contemporaneous with D2 is favoured, which is later than Douglas' Permian-Middle Triassic age. The granitic intrusion likely correlates with Tertiary volcanism.

Johnston and Uglow (1926) describe the origin of placer gold in the Barkerville area. They conclude that the placer gold is derived from a belt of auriferous quartz veins. The auriferous constituents of unoxidized parts of the vein are arsenopyrite and pyrite. The gold was liberated from these sulfides during deep decomposition in late Cretacous-early Tertiary time and concentrated in valleys during uplift in late Tertiary time. Many of these Tertiary deposits were destroyed by glaciers during Pleistocene time.

Similar effects have likely also occurred in the Umiti area. Quartz veins with cavities (representing leached sulphides) appear to be the most interesting. Such veins are exposed in several parts of the property.

In the Cariboo Gold Quartz mine (Douglas, 1976), four types of veins are recognized. They occupy conjugate sets of diagonal and (mainly) northerly joints and some transverse joints. These three types are related to folding. The fourth type, a strike vein, is unrelated to the structural pattern. The transverse veins produced most of the ore. The strike veins were normally barren, but one did contain mineable ore. An attempt to correlate these veins with those in the Umiti area had no success because of all the folding and an apparent rotation of orientations.

From the aeromagnetic map (1963, Sheet 93 G/1), a relatively high reading of about 4300 gamma was measured in an area near the main road (Figure 3). A weak tail emanated from this point and extended to the southeast along a line parallel to the contact between the Southern and Central Units. Readings of less than 4000 gamma were recorded over the remainder of the area.

2.5 Conclusions and Recommendations

The most promising area of mineral potential is a zone southeast of the main road at both sides of the fault between the Central and Southern Unit (Figure 3). Pegmatitic honeycomb quartz veins are fairly abundant and contain iron hydroxides a probable residue of leached sulfides. Granitic and ultrabasic intrusions occur. Malachite is present in ultrabasic-related rocks and these rocks are anomalous in cobalt, nickel and chromium. Gold, lead and zinc occur in small amounts in the honeycomb quartz veins but in significantly higher concentrations than elsewhere in the area (as indicated by previous assays). In view of the leaching of the sulfides and the presence of up to 30 percent of iron hydroxide, fresher rock may be encountered at deeper levels.

The extent of this zone is difficult to estimate because of lack of outcrop. A ground geophysical survey might define anomalies along this zone. Because of the relief of the area, the VLF and self-potential methods appear to be the most promising. These methods are fast and less expensive than other methods.

Because the major quartz veins are mainly exposed in steep slopes, and as weathering and leaching may be extensive, trenching in general would be difficult and is not recommended. Trenching in the area with malachite-bearing rocks (near the southeasterly ultrabasic exposure) is advisable.

Because of the steepness of the foliation and the essential parallel veins, angled diamond drilling from selected localities could be performed at a later stage of the exploration. The irregular and boudinaged character of the veins, and the rugged relief, may present some problems.

The only other area in which further exploration and investigation are recommended is in NOHILL 1 near NH 84-1. Although samples from this area did not show any significant mineralization, large amounts of coloured quartz were encountered. In addition, gold dredging was once carried out at the end of the creek which drains this area.

Yours very truly,
REIMCHEN URLICH GEOLOGICAL ENGINEERING

Ebo Bakker,
Senior Geologist

3.0 ITEMIZED COST STATEMENT

Geological Survey - May 17 - 30, 1984

Principal geologist, May 17; ½ day @ $600	$ 300.00	
Senior geologist, May 17, 26, 28, 29: 2½ days @ $500	1,250.00	
Technician, May 28, 29: 1½ days @ $175	262.50	
Accommodation and subsidence (split cost), May 17, 26, 28, 29: 4½ man days @ $60	270.00	
Transportation, May 17, 26, 28, 29 (split cost):		
Truck Rental, 1 day @ $40	180.00	
Mileage, 260 km @ $0.40	104.00	
Transportation, May 30 to Vancouver (split cost, one way):		
Truck Rental, 1 day @ $40	40.00	
Mileage, 650 km @ $0.40	260.00	
Materials	25.00	
Communications	13.25	
Rock samples, multi-element analyses, 6 @ $13	78.00	
Rock samples, gold assays, 3 @ $11.25	33.75	$2,813.00

Report and Map Compilation

Senior geologist, 24 hours @ $50	$1,200.00	
Geologist, 4 hours @ $35	140.00	
Drafting, 8 hours @ $25	200.00	
Typing, 8 hours @ $20	160.00	
Materials	50.00	
Administration, 1 hour @ $60	60.00	1,810.00
Total Cost		$4,626.00

From the 4½ man days mapping and sampling, half a day was spent on NOHILL 1, the rest on NOHILL 2 to 6. Subsequently, 1/9 of the total cost is applied to NOHILL 1 and the rest to NOHILL 2 to 6.

REFERENCES

Aeromagnetic map (1963) 1:63,630 Cottonwood (Map 1540 G; sheet 93G/1).

Campbell, R.B.; Mountjoy, E.W. and Young, F.G. (1973): Geology of the McBride map area, B.C. (G.S.C. Paper 72-35).

Douglas, R.J.W. (co-ordinator, 1979): Map 1424A, Parsnip River 1:1,000,000 (G.S.C. Sheet 93).

Douglas, R.J.W. (editor, 1976): Geology and economic minerals of Canada, (G.S.C. Economic Report No. 1).

Johnston, W.A. and Uglow, W.L. (1926): Placer and vein gold deposits of Barkerville, Cariboo District B.C. (G.S.C. Memoir 149)

Reimchen Surfical Geology Ltd. (1981): Preliminary report on some claims east of Quesnel.

Pettijohn, E.J. (1975): Sedimentary rocks (3rd ed.) (Harper International Edition).

Tipper, H.W. (1961): Geology Prince George, Cariboo District, British Columbia (G.S.C. Map 49-1960).

Topographic maps: Williams Lake-Prince George (1976) 1:500,000 N.T.S. No. 93 S.E.; Cottonwood, Cariboo District (1964) 1:50,000 93G/1E.

CHEMEX LABS LTD.

212 BROOKSBANK AVE.
NORTH VANCOUVER, B.C.
CANADA V7J 2C1
TELEPHONE: (604) 984-0221
TELEX: 043-52597

• ANALYTICAL CHEMISTS • GEOCHEMISTS • REGISTERED ASSAYERS

CERTIFICATE OF ASSAY

TO : REIMCHEN URLICH GEOLOGICAL ENGINEERING **

4381 GALLANT AVE.
NORTH VANCOUVER, B.C.
V7G 1L1

ATTN: EBO BAKKER

CERT. # : A8412138-001-A
INVOICE # : I8412138
DATE : 5-JUN-84
P.O. # : NONE
FILE 32-05

Sample description	Prep code	Au oz/T RUSH FA					
NH 84-1	236	0.003	--	--	--	--	--
NH 84-7	236	<0.003	--	--	--	--	--
NH 84-9	236	<0.003	--	--	--	--	--

Registered Assayer, Province of British Columbia

CHEMEX LABS LTD.

212 BROOKSBANK AVE.
NORTH VANCOUVER, B.C.
CANADA V7J 2C1

TELEPHONE: (604) 984-0221
TELEX: 043-52597

• ANALYTICAL CHEMISTS • GEOCHEMISTS • REGISTERED ASSAYERS

CERTIFICATE OF ANALYSIS

TO : REIMCHEN URLICH GEOLOGICAL ENGINEERING

4381 GALLANT AVE.
NORTH VANCOUVER, B.C.
V7G 1L1

** CERT. # : A8412139-001-A
INVOICE # : I8412139
DATE : 5-JUN-84
P.O. # : NONE
FILE 32-03

ATTN: EBO BAKKER

Sample description	Mo ppm (ICP)	W ppm (ICP)	Zn ppm (ICP)	P ppm (ICP)	Pb ppm (ICP)	Bi ppm (ICP)	Cd ppm (ICP)	Co ppm (ICP)	Ni ppm (ICP)	Ba ppm (ICP)	Fe % (ICP)	Mn ppm (ICP)
NH 84-1	2	<10	<1	55	65	<2	<0.5	<1	12	20	0.66	63
NH 84-2	<1	<10	14	125	20	7	<0.5	60	1120	140	3.80	715
NH 84-4	<1	<10	<1	90	70	7	<0.5	39	670	<10	3.00	1220
NH 84-7	<1	<10	168	1460	35	<2	<0.5	6	60	395	5.57	660
NH 84-8	<1	<10	33	250	10	<2	<0.5	54	990	350	4.70	1150
NH 84-9	4	<10	69	420	20	<2	<0.5	6	23	40	3.97	5490

Sample description	Cr ppm (ICP)	Mg % (ICP)	V ppm (ICP)	Al % (ICP)	Be ppm (ICP)	Ca % (ICP)	Cu ppm (ICP)	Ag ppm AAS	Ti % (ICP)	Sr ppm (ICP)	Na % (ICP)	K % (ICP)
NH 84-1	<10	0.03	<1	0.18	<0.5	<0.01	<1	<0.5	0.010	<1	0.01	0.21
NH 84-2	1980	17.70	9	0.79	<0.5	2.50	<1	5.0	0.012	210	0.01	0.50
NH 84-4	1060	17.40	<1	0.30	<0.5	8.88	<1	2.0	0.003	1210	0.01	0.29
NH 84-7	39	1.81	79	4.07	<0.5	0.28	30	<0.5	0.074	24	0.06	0.76
NH 84-8	1260	12.70	39	3.04	<0.5	1.03	270	1.0	0.074	67	0.12	1.04
NH 84-9	<10	0.65	<1	0.26	<0.5	10.70	2	1.5	0.006	198	0.02	0.34

Certified by ....

CERTIFICATE

I, Ebo Bakker, of 2904 Park Lane, West Vancouver, B.C., Canada, do hereby certify that:

I am a graduate of the Leiden University, Netherlands, graduated with a B.Sc. Honors Degree in Geology with Mathematics, Physics and Chemistry in 1973, and with a M.Sc. Degree in Geology in 1979.

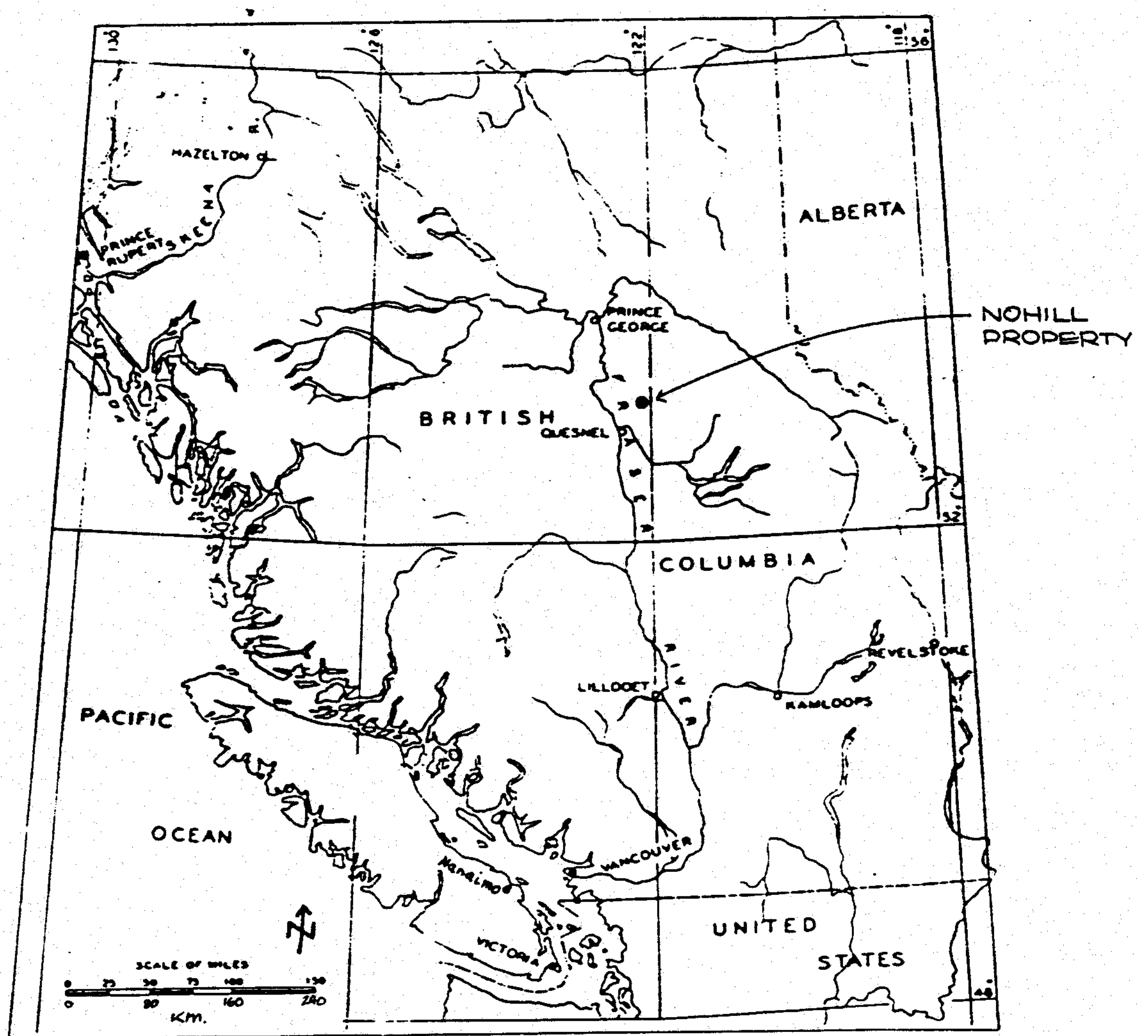
I am a member of the Royal Dutch Geology and Mining Society, the Geological Society of Sweden, a fellow of the Geological Association of Canada and a Member-in-Training of the Association of Professional Engineers, Geologists and Geophysicists of Alberta.

I have been a practicing geologist since 1976 and have been an employee of Reimchen Urlich Geological Engineering since 1981.

Dated at the District of North Vancouver in the Province of British Columbia this 5th day of June, 1984.

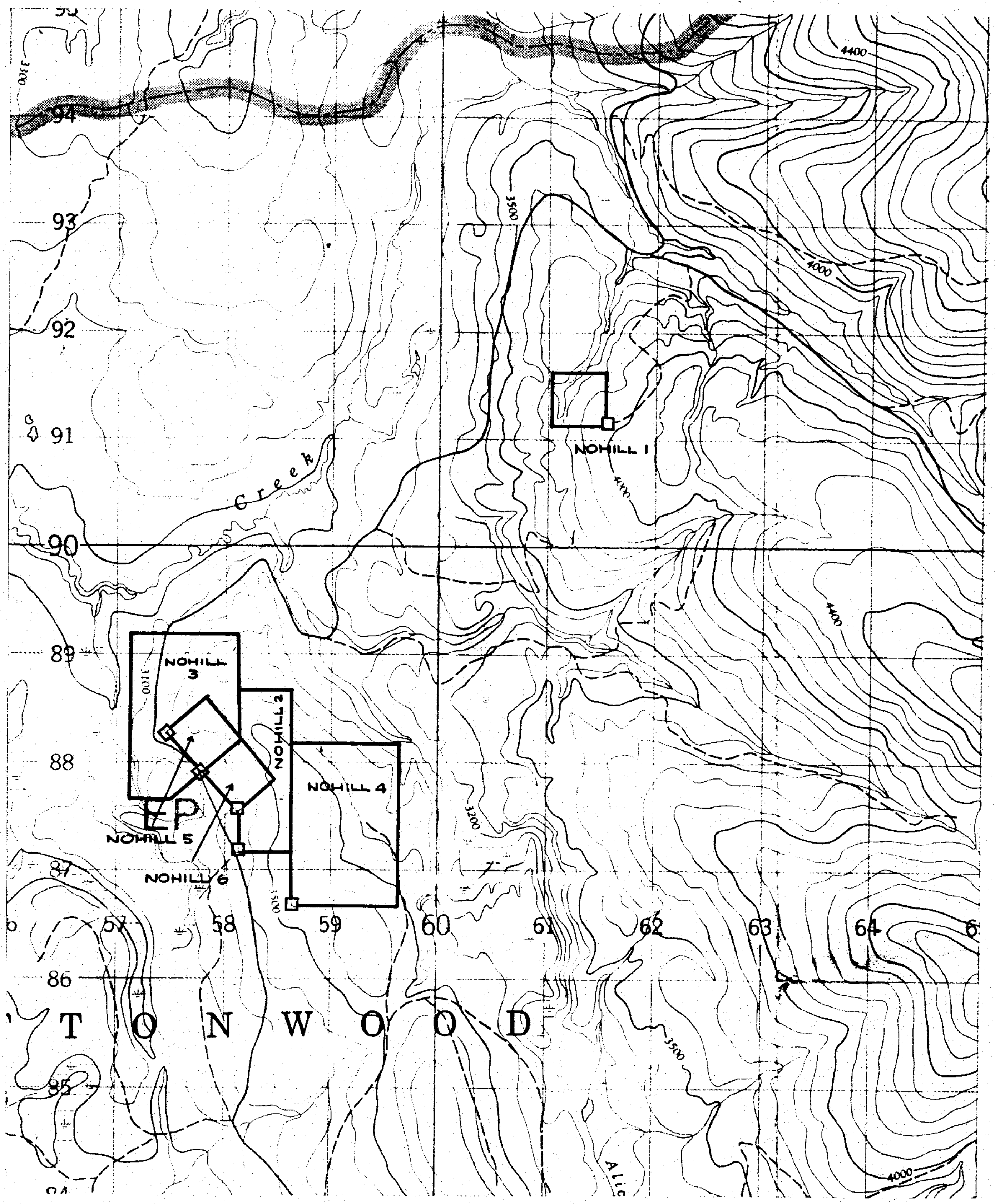
Respectfully submitted,

Ebo Bakker, M.Sc.



AREA LOCATION

FIG. 1



□ legalcorner post

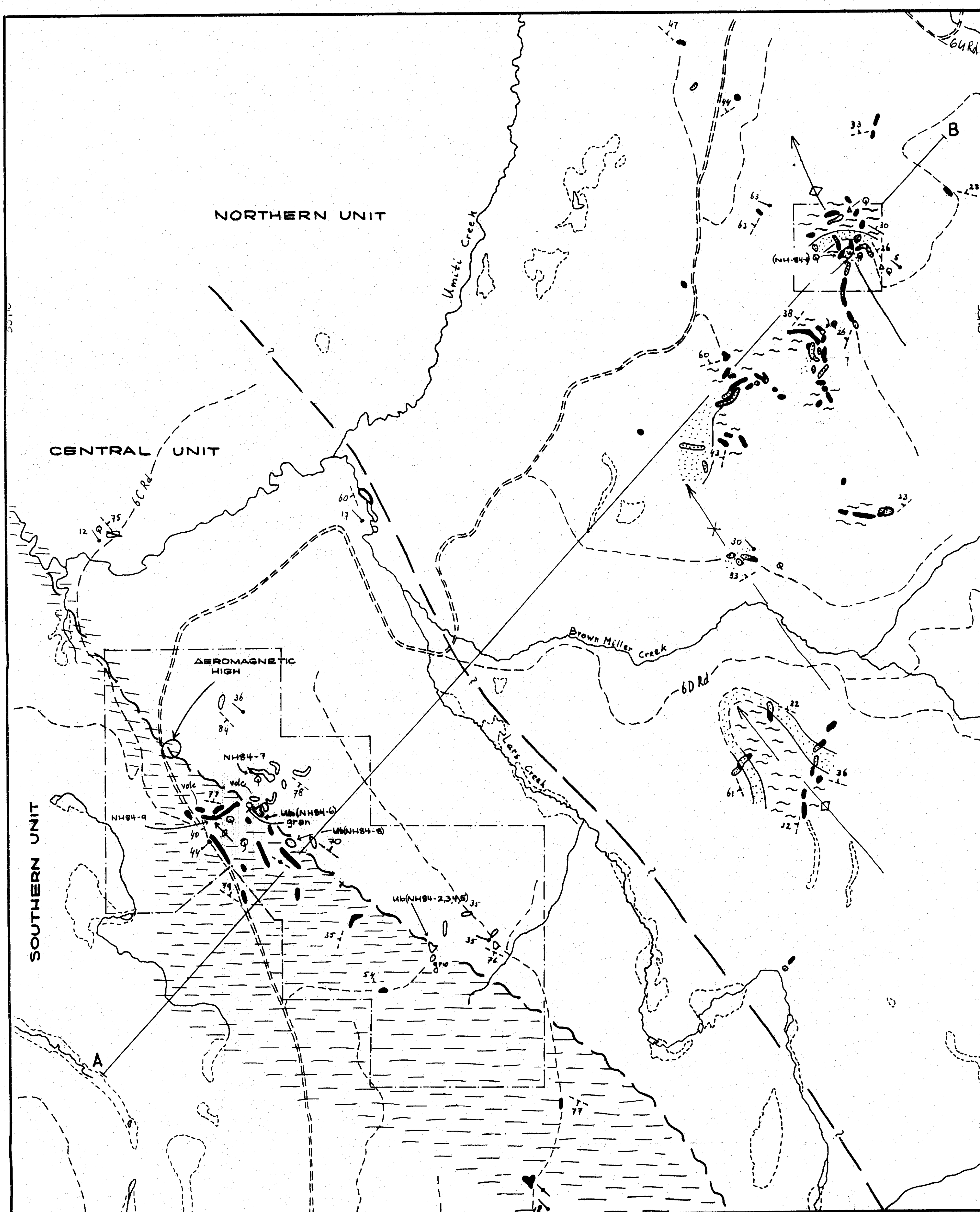
◇ no. 1 post

CLAIM LOCATION

FIG. 2

N

0 1 2 Km.



in non-exposed areas

Northern Unit
- quartzite (± feldspar, ± micaceous)
- schist (muscovite, ± biotite, ± garnet)

Central Unit
- sericite schist

Southern Unit
- slate, dark grey
- grw graywacke

- volc volcanic rock (tuff, breccia)
- Ub ultrabasic
- gran granitic rock
- intermediate rocks
- Q quartz in veins and lenses
- A—B cross section

- outcrop boundary
- location certain — boundaries
- location approximate — boundaries
- location uncertain — boundaries
- bedding (S_0)
- foliation ($S_1 \pm S_2$)
- lineation (crenulation)
- antiform
- synform
- roads
- creek
- lakes
- swamps
- claim block boundary (approx.)
- (NH84-) sample location
- fault

12267

GEOLOGIC MAP OF THE NOHILL PROPERTY

Fig. 3

Scale 1: 20,740 (approx.)
(3 inch to 1 mile)

metre: 0, 250, 500, 750, 1000
0, 1/4, 1/2 mile

Reimchen Urlich Geological Engineering, June 1984

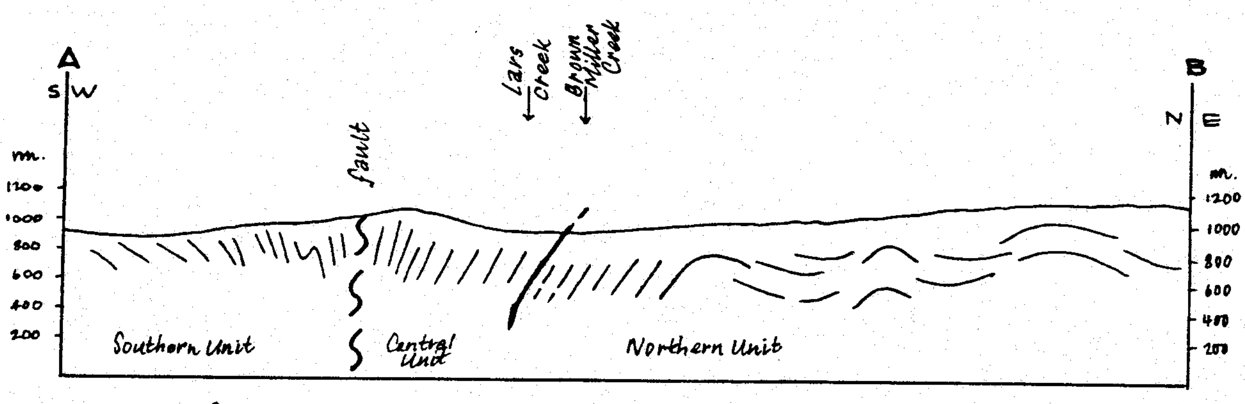


Fig. 4 SW.-NE. cross section through the Umiti area 1: 50,000