R E P O R T

ON THE

RECONNAISSANCE EXPLORATION PROGRAM

OF

GIANT EXPLORATIONS LTD. (N.P.L.)

IN THE

NAHWITTI LAKE AREA, VANCOUVER ISLAND

MAY - AUGUST, 1964

By: R. Sutherland
Geologist
Giant Explorations Ltd.

870

October 12, 1966

Vancouver, B.C.

Giant Explorations Ltd. (N.P.L.)
1825 - 355 Burrard Street
Vancouver 1, B.C.

Gentlemen:

Following is a report on the exploration program conducted at Nahwitti Lake, Vancouver Island, during the summer of 1966. The report is based on work done by the company from May to August inclusive.

Respectfully submitted,

Ron Sutherland

Ron Sutherland,
Geologist.

Endorsed by E. R. Gayfer, P. Eng.,
Chief Engineer,
Giant Mascot Mines Limited (N.P.L).

870

ILLUSTRATIONS

		Follows Page
FIGURE 1:	Index Map #1	v
FIGURE 2:	Mahvitti Lake Area #2	1
FIGURE 3:	Zinc Creek Grid	15
FIGURE 4:	HPH 3 Grid	24
FIGURE 5:	Claim Map #3	29
FIGURE 6:	South Shore Area #4	In Pocket
FIGURE 7:	HPH Area #5	In Pocket
FIGURE 8:	Dorlon Area #6	In Pocket

TABLES

TABLE 1:	Lithology of Formations, Mahvitti Lake Area	5
TABLE 2:	Assays of Chip Samples, Contact Creek Prospect	18
TABLE 3:	Assays, HPH 3 Showings	25

ABSTRACT iii

RECOMMENDATIONS v

A. INTRODUCTION 1

1. Location and Access 1
2. History 2
3. Mineral Claims 3

B. SURVEY PROGRAM 3

C. GEOLOGY 4

1. General 4
2. Sedimentary and Volcanic Rocks 6
   a) Karmutsen Group 7
   b) Quatsino Formation 7
   c) Bonanza Group 8
   d) Tertiary Volcanics 8
3. Intrusive Rocks 9
   a) Older Intrusives 9
   b) Coast Intrusives 10
4. Alteration 10
5. Structure 11

D. ECONOMIC MINERALIZATION 14

1. General 14
2. Outside Prospects 15
3. South Shore Prospects 16
   a) Monzonite Creek 17
   b) Contact Creek 19
   c) Zinc Creek 19
4. HPH - Meade Creek Prospects 21
   a) Magnetite Contact Zones 21
   b) Lead-Zinc-Silver Zones 22
5. Norlon Showings 26
6. Guides to Exploration 27

APPENDICES

Appendix 1 : Mineral Claims 30

Appendix 2 : Survey Program 33

HALVITTI LAKE AREA, VANCOUVER ISLAND

ABSTRACT

Halvitti Lake, in north-central Vancouver Island, is the center of numerous base metal prospects which have been intermittently explored since 1930. Giant Explorations Ltd. (N.P.L.) undertook a comprehensive exploration program in the area during the 1966 field season.

The company holds 110 mineral claims south and southeast of the lake. Access is by good gravel logging road from Port Hardy, where services and supplies are available.

All but 18 of the claims were surveyed by tape and compass, and were covered by reconnaissance geological and geochemical surveys. Interesting areas were covered in greater detail. In all, some 42 miles of reconnaissance soil sample lines were run, and about 1200 soil samples were analyzed using the total heavy metals test. Previously known mineralised areas were outlined in greater detail, but no significant new areas of mineralisation were discovered.

The claims are underlain by rocks of the Vancouver Group, which is subdivided into the Karmutsen Group (andesites and basalts), the Quatsino Formation (limestone) and the Bonanza Group (mainly andesites). These are intruded by Coast Intrusives (monzonite) and Older Intrusives (diorite, felsite). Faulting is strongly developed in places. Folding is on a regional scale. In the area mapped the rocks strike west northwest and dip 25° to 55° south.

The mineralization is probably derived from the Coast Intrusives; it is usually contained in limestone and less than one mile distant from the nearest body of Coast Intrusive rock. It is controlled by interformational contacts, by older intrusive contacts, by fracturing and faulting, and probably by other less obvious features.

Three primary areas of mineralization are present. The South Shore prospects outcrop in the western part of the map area. They consist of skarn containing values in zinc, copper and silver. The HPH prospects are of two kinds: 1) magnetite contact zones carrying minor copper values, and 2) siliceous replacement zones containing silver, lead and zinc. They occur from HPH 2 claim westerly to Meade Creek. The Dorlon showings are narrow massive sulphide veins which contain zinc and gold, with minor silver and copper. They are exposed near the eastern end of the claim group.

RECOMMENDATIONS

Recommendations contained in this report are based on observations made during the survey program. They are as follows:

1. Diamond drill the EPH 3 main showing to test for depth, width, dip and grade.
2. If the diamond drilling proves a body of mineralisation of encouraging size and grade, cover the Quatsino limestone in the EPH-Meade Creek area with detailed geological and geochemical surveys. Particular attention should be placed on the Vananda-Quatsino contact, and on areas of regional shearing.
3. Map and soil sample the Rain claim area in greater detail, with the object of discovering promising targets for trenching or diamond drilling.
4. Re-test each of the reconnaissance soil samples for copper, using the rubeanic test.
5. Add the One Fraction and Two Fraction mineral claims to the EPH Group.

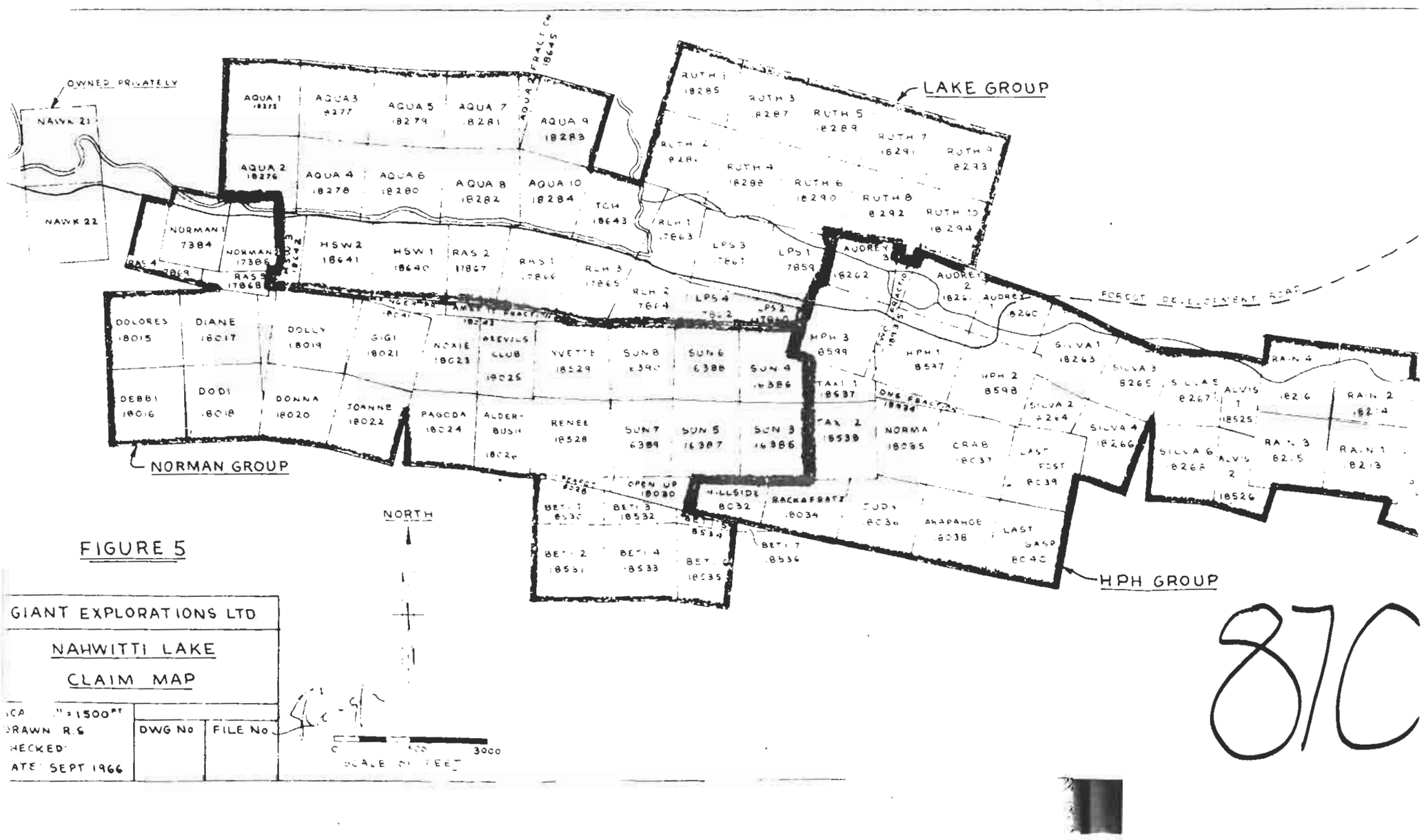


FIGURE 5

GIANT EXPLORATIONS LTD

NAHWITTI LAKE

CLAIM MAP

SCALE 1" = 1500FT
DRAWN R.G
CHECKED
DATE SEPT 1966

DWG No	FILE No

87C

FROM: G S C MAP 1-1966

FIGURE 1

GIANT EXPLORATIONS LTD.

NAHWITTI LAKE

INDEX MAP

SCALE: AS SHOWN
DRAWN: R.S.
CHECKED:
DATE: SEPT 1966

DWG No.	FILE No.

MAHWITTI LAKE AREA, VANCOUVER ISLAND

A. INTRODUCTION

1. Location and Access

Mahwitti Lake is in the north-central part of Vancouver Island, about 18 miles west of Port Hardy. Its coordinates are 50°42' north latitude and 127°50' west longitude. Giant Explorations Ltd. holds 110 claims south and east of the lake.

A good gravel road, officially known as the Port Hardy Forest Development Road, leads from Port Hardy to Mahwitti Lake, and provides very convenient access to the property. It is unlawful to use this road between 7 a.m. and 6 p.m. Monday through Friday, except under permit. The B.C. Forest Service issues permits for road-use free of charge.

Rayonier of Canada Ltd., has constructed a 12 mile logging road connection from Mahwitti Lake to Holberg, a small community at the head of Holberg Inlet on the western side of the island.

Port Hardy is the nearest center for shipment of freight and purchase of supplies. It is serviced by: 1) Island Tug & Barge: barge, once weekly. 2) Northland Navigation: coastal steamer, twice weekly. 3) North Island Coach Lines: bus, three times weekly. 4) Kelsey Bay Freight Lines (via the Kelsey Bay-Beaver Cove ferry). 5) Pacific Western Airlines: 3 trips daily. Groceries and drygoods can be purchased in Port Hardy, and both Imperial Oil and Standard Oil have dealerships in the town.

Costs of road construction in the area average $10,000 to $25,000 per mile. Short-term logging roads are constructed with less care than

permanent roads. Much of the overburden in the area is glacial in origin and contains a large proportion of clay. This creates an impervious soil which tends to soak up and retain water, forming an unstable solid that often becomes "soupy" on agitation. For this reason power shovels rather than bulldozers are normally used in road construction. It is often difficult or impossible to employ bulldozers in stripping mineral prospects, because the machines tend to bog down.

2. History

Prospectors have been active in the area since the late 1920's. Many of the local creeks and rivers are named after old timers. Meade Hepler and his partners found most of the deposits on Giant Explorations' holdings about 1930. The Dorlon (Ucam) prospect, presently covered by the Rain claims, was discovered about this time. Other small prospects in the area were probably found during this period.

Exploration and development, beginning with an initial spurt of enthusiasm, have been sporadically pursued over the years. American Smelting and Refining drove a 110 foot adit and two 30 foot inclined shafts on the HPH #1 main showing in 1930, with disappointing results. Sheep Creek Mines Ltd., in 1945, put down a dozen short x-ray diamond drill holes, again with poor results, on the HPH #1 prospects. In 1952, American Smelting and Refining returned and, from June to December, mapped the HPH and South Shore areas and drilled 13 core holes on the Zinc Creek and Monzonite Creek shows. Benny Erickson, a Seattle promoter, had some diamond drilling and reportedly some aeromagnetic surveying done about that time. The results of this work are not available. Asbestos Corp. did some geochemical and magnetometer work on the Meade Creek prospects in 1962, without finding ore.

The prospects of the area were brought to the attention of Giant Mascot Mines in early 1965. In view of the vastly improved access, the piecemeal nature of previous exploration, and buoyant metal prices, it was felt that the area deserved a comprehensive exploration program, and, with the formation of Giant Explorations Ltd. in late 1965, it was determined to undertake such a program during the 1966 field season. This report embodies results of the work done from May to August, 1966.

3. Mineral Claims

One hundred and ten (110) mineral claims are held under option or by location, eight of which are staked in contravention. The claims are divided for assessment purposes into three groups. (See figure 5, page 30) Details of the claims are given in Appendix 1.

8. SURVEY PROGRAM

An integrated reconnaissance survey program, including claim, geological and geochemical surveys, was conducted from May through August 1966. The resulting maps are included at the back of this report. Eighteen claims lying outside the areas of prime geological interest were not covered.

The tape and compass claim survey took the form of a large loop south of the lake and the MPH area, with an easterly offshoot along the Silva-Main claim lines. Final closure on the loop was 385 ft. over 38,022 ft., a precision of about 1:99. The adjusted claim map is as shown in Figure 5.

Thick overburden covers much of the property. To search for possible buried deposits, soil samples were taken on a nominal 300 by 500

ft. grid, and sold tested for heavy metal content. During the program about 42 miles (220,000 ft.) of line was run. About 750 samples were taken. In addition to the reconnaissance survey, detail grids were run on the South Shore and MPH 3 prospects. About 400 additional samples were taken. These prospects are described in greater detail in a later section of this report.

The geochemical survey, in a general way, outlined the three previously known mineralized areas: The Denlon showings, the MPH showings and the South Shore showings. The survey indicated that no other important mineralized areas exist.

Geological features were plotted using the geochemical grid as a base. Photogeology and topography were utilized where possible in interpreting structural features, because of a general paucity of outcrop.

Details of the surveys are given in Appendix 2.

C. GEOLOGY

1. General

Low, rolling mountains with broad river valleys are characteristic of the region. Creeks are usually deeply incised. They commonly follow zones of weakness such as major shear zones or intrusive contacts. Elevations vary from 680 ft. at Nahwitti Lake to 2400 ft. The highest point of land in the area is at 2413 ft., south of the mouth of Falls Creek. A government survey monument, #10J36, is placed on this peak. A plateau north of Nahwitti Lake is at about 1400 ft. It is believed to be underlain mainly by intrusive rocks, which characteristically erode to smooth, uniform, outcrop-poor surfaces.

TABLE I

LITHOLOGY OF FORMATIONS IN THE NAHWITTI LAKE AREA

Age		Name	Lithology
Recent			stream deposits, talus, soil
Pleistocene			till, gravel, clay
Tertiary			basalt
Lower Cretaceous		Coast Intrusives	Monzonite, diorite, quartz diorite, minor granodiorite, syenite
? Jurassic		Older Intrusives	Gabbrodiorite, diabase, trachyte, Felsite
U. Triassic & ? Jurassic	Vancouver Group	Bonanza Group	Andesite, minor rhyolite and trachyte
			Thin banded argillite, rhyolite and limestone
U. Triassic		Quatsino Formation	Crystalline limestone, impure limestone
U. Triassic & ? earlier?		Karmutsen Group	Andesite, basalt, minor discontinuous limestone beds

South of Mahwitti River and Mahwitti Lake a fairly uniform slope, interrupted significantly only by the largest creeks, rises to an average elevation of 2000 ft. Giant Explorations' claims lie along this slope, which trends easterly and faces north. Most of the known prospects occur in limestone near the base of the slope.

The photogeology of the area is instructive in interpreting faulting and intrusive areas. Faults are indicated on the aerial photographs by scarps and by prominent lineations, which occur as sharp vegetation patterns or as long narrow erosion features (gulleys, depressions, etc.) or both. Known intrusives often underlie areas of peculiar sloping swampy ground, which frequently has a characteristic texture on the aerial photographs. This feature was utilized in sketching the boundaries of the intrusives on the maps.

Mahwitti Lake is northwest of the Zeballos-Nimpkish Lake area. A very readable report by J.W. Hoadley, entitled "Geology and Mineral Deposits of the Zeballos-Nimpkish Area, Vancouver Island, British Columbia" has been published by the G.S.C. (Memoir 272). The rocks and in particular some of the mineral deposits found at Mahwitti Lake are strikingly similar to those described by Hoadley. For this reason, the formations and ages of the rocks are felt to be the same in both areas. Table I, adapted from Hoadley, summarizes the lithology.

2. Sedimentary and Volcanic Rocks

Sedimentary and volcanic rocks exposed on the claims belong exclusively to the Vancouver Group, which is subdivided into the Karmutsen Group, the Quatsino Formation and the Bonanza Group. Only the presence of the Quatsino limestone as a marker horizon makes this subdivision possible,

since the Karmutsen and Bonanza Groups are formed mostly of identical andesites. The Quatsino evidently marks a short cessation of volcanic activity, with the limestone accumulating in a fairly shallow marine environment.

a) Karmutsen Group

The Karmutsen Group borders the northern part of the map area. In the area covered by the survey all outcrops are of a hard, brittle, dark greenish-grey, very fine-grained rock. It is normally strongly fractured and sheared, with the fractures being coated and partly healed by calcite and minor chlorite. Pyrite is very commonly disseminated along the fractures and often throughout the rock. Indistinct glassy plagioclase phenocrysts are common. For mapping the rock was classified as andesite.

Farther north, the Karmutsen contains a few flows of dark purplish-green amygdaloidal basalt. A few thin discontinuous beds of dark grey crystalline limestone, very similar to the Quatsino limestone, are also present. The island in Nahwitti Lake is perhaps an exposure of Karmutsen limestone. No mineral deposits are known in the Karmutsen limestone except for a copper-molybdenum showing north of the west end of Nahwitti Lake. The base of the Karmutsen is not exposed.

b) Quatsino Formation

The Quatsino limestone is typically a light to dark grey, fine to medium grained, soft crystalline rock. The dark color is probably derived from very fine grained argillaceous and carbonaceous impurities. The limestone is usually massive, but indistinct color banding is visible in many places. In a few areas, small volcanic bombs and limey fragments contained in the massive limestone provide evidence of occasional explosive volcanic

activity during the relatively quiet Quatsino depositional period. No distinct fossils were seen.

The true thickness of the limestone was not measured because of structural complications, primarily faulting. The outcrop pattern indicates that it is not less than 200 ft. or more than 700 ft. thick.

All known mineral deposits in the map area are contained in or along the contacts of the Quatsino limestone.

c) Bonanza Group

The Bonanza Group is made up of two units; a relatively thin (50-100 ft.) lower member, and a very thick, massive upper member. The top of the group is not exposed.

The lower member is composed of thin bedded argillites and limestones with intercalated thin rhyolite and trachyte flows. The contact of the Bonanza Group and the Quatsino limestone is often rather arbitrarily placed, since the massive limestone of the Quatsino Formation grades over thirty or forty feet to the thin bedded limestone of the Bonanza Group.

The upper member is composed dominantly of andesites very similar to those of the Karmutsen Group. In places the Bonanza extrusives seem to be slightly less basic, as evidenced by a very slight color change, but as a whole the two groups are indistinguishable.

d) Tertiary Volcanics

Volcanics of Tertiary age are known to occur to the south, but were not observed within the area mapped. They consist mainly of reasonably fresh amygdaloidal maroon to green basalts.

3. Intrusive Rocks

Major and minor intrusions of many types interrupt the Vancouver Group. These are classed for purposes of this report as "Older Intrusives" and "Coast Intrusives".

a) Older Intrusives

Dikes, sills and erratically shaped plugs of intermediate to acid composition are exposed in many places. Most are fine to medium grained, dark green-grey and of andesitic composition. Others, of more acidic composition, are microcrystalline to fine grained, and usually mottled pale green to maroon but often grading to white. These were classified initially as trachyte and rhyolite (depending on color) and later as felsite when their intrusives nature was recognized. In future mapping, if any, care should be taken to distinguish them from the lithologically identical bedded rhyolites and trachytes of the Bonanza Group.

In addition to the fine grained rocks, several exposures of medium grained diabase and diorite were encountered. These were generally classed as 'gabbrodiorite' or diabase, to distinguish them from rocks of the Coast intrusives. In one area, just west of Contact Creek, the gabbrodiorite was observed to be closely associated with a greenish fine grained rock classed as trachyte (more correctly, felsite). This relationship indicates that the gabbrodiorites and felsites are genetically related, and that the difference in grain size is a reflection of local conditions at the time of intrusion. Possibly the felsites and trachytes are dike and sills, while the gabbrodiorite forms the more massive plugs that acted as feeders for major volcanic vents.

Lithologic similarities indicate that the 'older' intrusives are related to volcanics of the Bonanza Group. They are, therefore, probably

of Upper Triassic to Jurassic age.

b) Coast Intrusives

Several large bodies of granitic rocks intrude the Vancouver Group in the vicinity of Malwitti Lake. They are medium grained, with granitic texture, and vary in composition from monzonite to diorite. Minor differentiates, chiefly granodiorite and micropegmatite, occur in places. The intrusives are generally poorly exposed, since they tend to decompose with weathering, forming smoothly rolling swampy sidehills.

A monzonite-andesite contact is exposed along the road between Contact Creek and Monzonite Creek. Tongues of monzonite, several feet in thickness, intrude one to two hundred feet into the andesite from the main monzonite mass. No significant contact metamorphism is present.

These granitic rocks are undoubtedly part of the Coast intrusives, which were emplaced during Lower Cretaceous time.

4. Alteration

Effects of metamorphism are few. The Quatsino limestone is, in places, recrystallised from a fine to a medium-coarse texture, but other evidences of regional alteration are lacking.

Alteration is confined mainly to shear zones and to areas where skarn has formed. Broad zones of mylonite (intensely fractured rock) have been formed in places by strong shearing. Examples are well exposed in Contact Creek and Meade Creek. The mylonite is typically a 'grainy' rock containing lenticoid blocks of relatively unsheared rock in a finely fragmented matrix which has often been subjected to hydrothermal alteration. Uneven patches of apple green epidote alteration are common, but the rock is mostly altered to nondescript pale argillaceous material. A soft, deep

pink mineral (rhodo-chrosite?) is common in the Contact Creek shear zones.

Mylonite sometimes occurs along the contacts of diorites and felsites of the 'older intrusives'. This is probably a result of shearing along the contacts of these rocks during post-intrusive deformation, rather than a direct result of intrusive activity, since other evidence of contact effects is lacking.

No noticeable alteration of the limestone accompanies the mineralized zones of the MPH and Dorlon (Rain claim) areas. In the South Shore showings (Norman claims) the mineralization is contained in skarn zones.

Skarn tends to form by the action of very hot fluids on limey rocks like limestone or basic volcanics. Intrusive bodies are the source for the hot fluids and, classically, the alteration forms adjacent to the intrusive contact, giving rise to the term 'contact metamorphism'. However, exactly identical mineralization sometimes occurs at large distances from the known contacts, for example at Greenwood, B.C., and in these instances the term 'pyrometasomatic alteration' is technically more correct. In my usage, 'skarn' refers to a collection of lime silicate minerals and does not carry the genetic implications of the above terms.

The mineralized showings of the Mennonite Creek-Contact Creek-Zinc Creek area are all of the skarn type. They are described further in a later section of this report.

5. Structure

Regional structure, as in the Nimpkish Lake area, trends west-northwest. Near Mahwitti Lake the bedded rocks generally dip 20° to 50° south, and individual strikes vary from west to N 40° W. The Bonanza Group conformably overlies the Quatsino limestone, which in turn overlies conform-

ably the volcanics of the Karmutsen Group. Except where disrupted by shearing and intrusion, the Quatsino limestone can be traced from the north fork of the Goodspeed River, 1½ miles west of the west end of Nahwitti Lake, to beyond the junction of Kains Creek and Nahwitti River, 3½ miles east of the east end of the lake, or for a distance of at least 7½ miles. Over this distance the limestone dips fairly constantly at 35° to 40° south. It is exposed over a width of several miles to the south of Kains Lake, east of Nahwitti Lake. In the map area the limestone is interrupted by Coast Intrusives in two places: between the HPH and Dorlon areas, and to the west of Monzonite Creek. A gabbrodiorite plug intrudes the limestone immediately east of Contact Creek, and apparently extends east nearly to Zinc Creek.

The limestone is interrupted to the west of Meade Creek by strong shearing and intrusion. Faults are indicated by zones of mylonite that are evident in some of the creeks, by obvious disruption of the Quatsino limestone, and by strong lineaments on aerial photographs. The strongest known shear zone in the area trends S 25° E from a point 4000 ft. west of the east end of Nahwitti Lake. The Quatsino limestone is displaced at least 3500 ft. south on the east side of the zone. Cross-faulting and intrusions further complicate the structure. The net result is that the Quatsino limestone is cut off 1200 ft. east of Falls Creek, and that its outcrop pattern swings southerly as it approaches Meade Creek from the east. Considering its southerly dip, the limestone on the east side of Meade Creek appears to have been uplifted relative to the HPH area. This could be a result either of actual uplight on the west because of intrusive forces, or of downward movement to the east. A large, north-striking fault appears to cut the Quatsino limestone in the neighbourhood of the HPH 3 showing. This is indicated by a sudden widening of the limestone outcrop area to the west, and

by a prominent lineation visible on aerial photographs. Strong faulting is indicated in the area of the Contact Creek showing by large areas of mylonite. Shearing in the area has been interpreted as shown on the maps, but it should be realized that other faults may be, and in fact probably are, present but unexposed.

Faulting, especially south of the west end of Nahwitti Lake, is further indicated on the aerial photos by the presence of strong, sharp scarps. This topographic expression indicates a possible recent age for some of the movement. At least some of the faults are probably pre-Coast Intrusive in age, as evidenced by the presence of irregular masses of magnetite-pyrite-chalcopyrite mineralization which have been developed in the shear zones in Meade Creek.

Faults, known and postulated, are shown on the maps, but some strong shear zones undoubtedly were not detected, particularly in the Meade Creek area.

Folding on a broad regional scale, much larger than the map area, has probably occurred, in accord with similar folding in the Nimpkish Lake area. Limestone reportedly occurs in Pugh Creek (source: "Little Joe" Manson), some thousands of feet north of the lake. If so, the rocks south of Nahwitti Lake may represent the south limb of a broad westerly trending anticlinal fold, with the Karmutsen volcanics exposed in the center, and the Quatsino limestone exposed north and south of the Karmutsen.

Local folding, on a much smaller scale, occurs adjacent to faults, and in fault blocks of limestone contained in major shear zones. The shearing itself no doubt caused the folding in these cases.

The regional folding indicates that the main stress pattern in the area was oriented with the major axis of compression about N 20° E. It

is interesting to note that many of the known shear zones are oriented at an acute angle of about 20 to 40 degrees with respect to this direction, as would be expected from the theory of elasticity.

D. ECONOMIC MINERALIZATION

1. General

Different types of mineralization exposed are: 1) skarn (calcium-magnesium silicates) with zinc and minor copper and silver; 2) siliceous "cherty" replacements in limestone, with lead, zinc, silver and minor copper; 3) veinlets and disseminations of zinc sulphide directly in limestone with lead, silver and gold; and 4) magnetite-pyrite contact reaction zones with minor copper and zinc.

As with other mineral deposits on Vancouver Island, the Nahwitti Lake prospects are probably associated with Coast Intrusive rocks. Different types of mineralization tend to be concentrated in different areas, and are probably derived from different intrusives. All the showings in the area mapped are less than a mile distant from the nearest known body of Coast Intrusives. Skarn type deposits occur in the Monzonite Creek-Contact Creek-Zinc Creek area, and in the geologically similar Abem prospect west of the lake. These are probably derived from the monzonite intrusive exposed south and west of Monzonite Creek. Siliceous lead-zinc zones are common on the NPE claims, are probably scattered westward to Meade Creek, and one siliceous zone was noted on the Rain No. 3 claim near the Dorlon showing. The NPE and Dorlon prospects are probably associated with the Monzonite-granodiorite stock intruded in the area of the Silva 2-6 claims. Lensy, probably continuous, contact magnetite-pyrite bodies are evident on

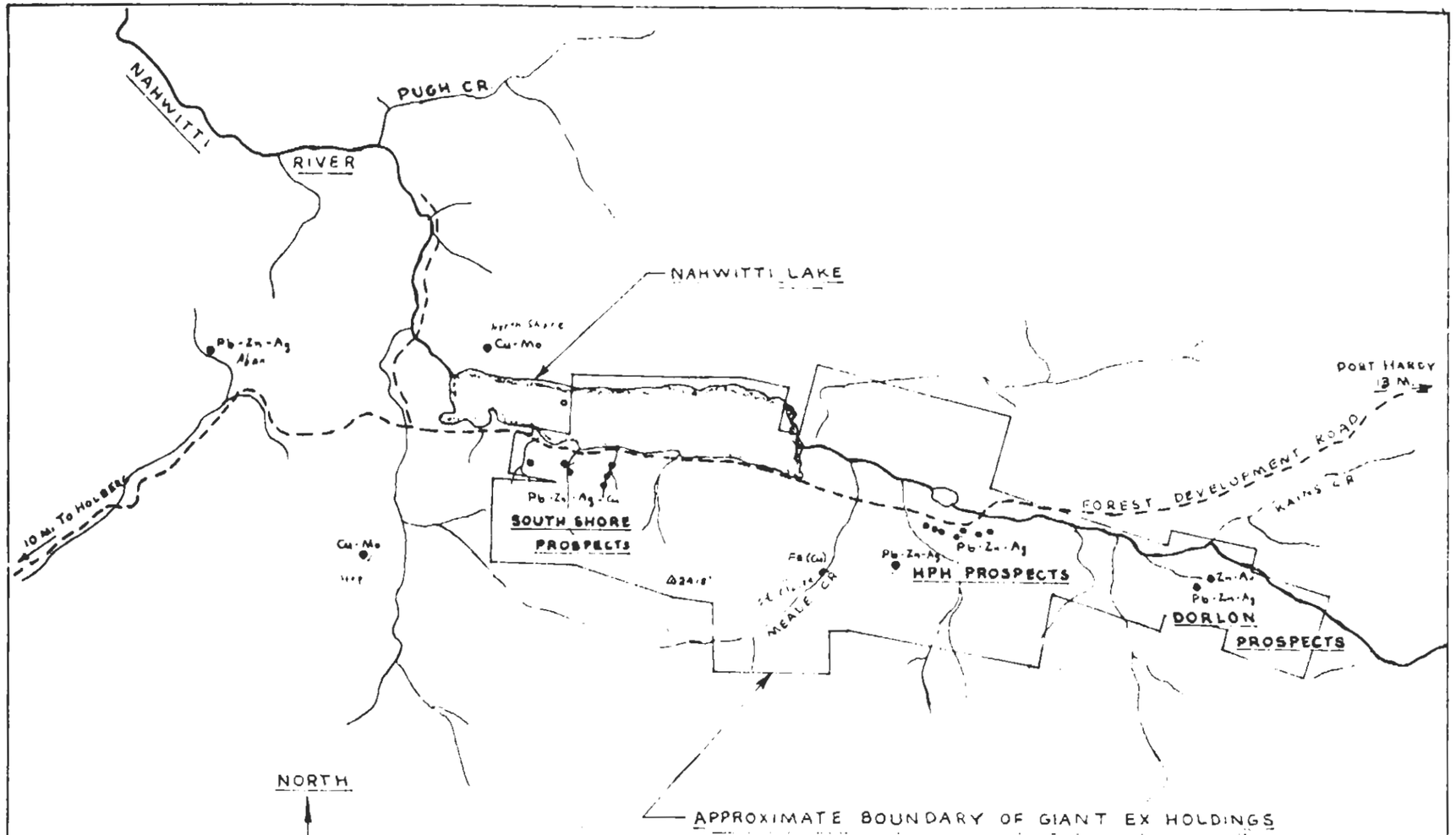


FIGURE 2

GIANT EXPLORATIONS LTD.

NAHWITTI LAKE AREA

SCALE: 1:50000
DRAWN: R.S.
CHECKED:
DATE: SEPT 1966

DWG No.

FILE No.

FROM: NAT TOPOG SYSTEM SHEET 92 L/12 WEST.

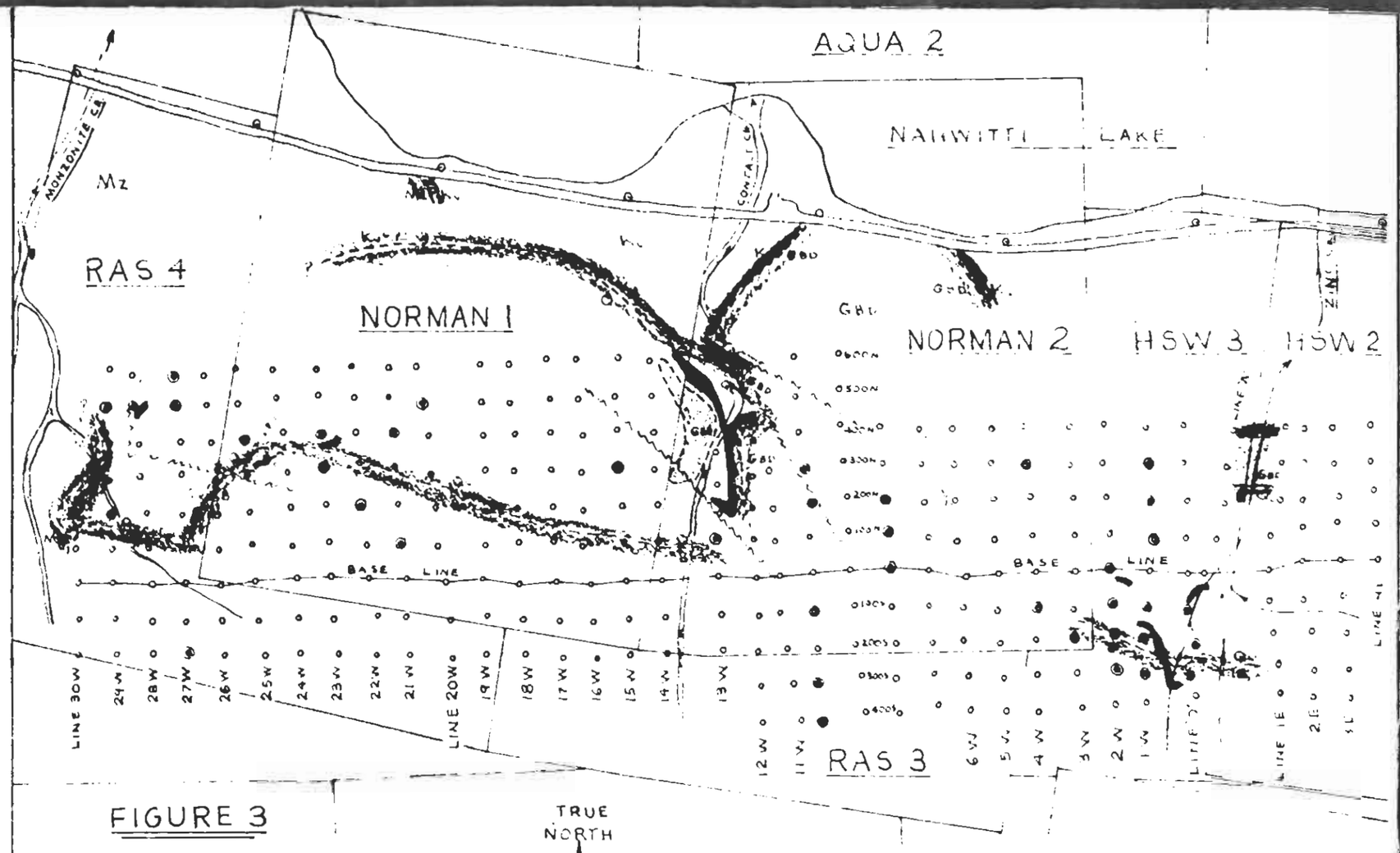


FIGURE 3

GIANT EXPLORATIONS LTD.

ZINC CREEK GRID

SOIL SAMPLES AND GEOLOGY

SCALE: 1" = 300'
DRAWN: R.S.
CHECKED:
DATE: SEPT 1966

ELEV:

DWG No.	FILE No.

TRUE NORTH

VERTICAL EXAGGERATION 2:1

0 300 600'

LEGEND

- ANOMALOUS } SOIL SAMPLES
- BACKGROUND }
- FAULT
- CONTACT
- SKARN
- COAST INTRUSIVES, MONZONITE
- OLDER INTRUSIVES, GABBRO, DIORITE
- BONANZA GROUP, LOWER SEDIMENTS, RHYOLITE
- GOATS NOSE FORMATION, LIMESTONE
- KARMUTSEN GROUP, ANDESITE

the HPM 1 and 3 claims, and in Meade Creek. The source of this mineralisation is not clear, although it is probably associated with local intrusions.

In general, zinc (sphalerite, ZnS) and silver are present to some degree in all showings. Gold values are negligible except on the Dorlon prospect. Copper (chalcopyrite, $CuFeS_2$) is a common accessory metal.

A large number of individual prospects are known in the vicinity of Nahwitti Lake. For purposes of description these are grouped as: 1) prospects not belonging to Giant Explorations; 2) the South Shore showings, southeast of the west end of Nahwitti Lake; 3) the HPM showings, which also include prospects on the Taxi and Sun claims,; and 4) the Dorlon or Rain claim showings. The showings are grouped according to proximity and similarity of mineralogy.

2. Outside Prospects

Three prospects are known, all of which are west of the Giant Exploration claim holdings. See figure 2, page 2.

Copper-molybdenum mineralization in skarn, associated with a limestone-volcanic contact, is exposed a short distance north of the west end of Nahwitti Lake. Previously known as the North Shore showings, they are presently held by location by a Mr. Perry of North Vancouver. Falconbridge has done some self-potential work on the property, but, aside from trenching and test pitting, no other work is known. Mr Perry's report does not give the impression that the mineralization is continuous enough to warrant further investigation.

Copper-molybdenum mineralization occurs west of Meade Creek, about 2 miles south west from the west end of the lake. Wendy Fuller reports that the mineralization occurs as cuttings on [illegible] lines in

volcanic rock. The prospect is presently held under option by Utah Construction and Mining Co. Ltd.

G. Milbourne, a full-time prospector, holds 6 claims on the northernmost fork of the Goodspeed River, about 1½ miles west of the west end of Nahwitti Lake. These are known as the Aben 1-6 claims. The prospect was examined in June, 1966. ANAN 1-4

Chip sampling gave the following results:

No.	Length	Oz/ton Ag	% Pb	% Zn
3011	8 ft.	.06	0.97	1.81
3012	10 ft.	.06	0.36	2.78
3013	6 ft.	.06	0.25	1.71

The mineralization is very similar to the South Shore prospects. The prospect is not worthy of further investigation because of the indicated low grade and probable small tonnage.

3. South Shore Prospects

Zinc mineralization in skarn is exposed at several places in the Monzonite Creek-Contact Creek-Zinc Creek area. Silvery grey metallic sphalerite is usually disseminated through fine grained drab grey-green skarn. Silver and cadmium universally accompany the sphalerite. The cadmium often forms a distinctive yellow oxidation product (Greenockite, CdS) when the sphalerite is weathered.

The area was covered with the Zinc Creek geochemical grid. (Figure 3). Soil samples were taken on nominal 100 ft. centers, and all outcrop was mapped, in the expectation of finding further mineralized zones beneath the wide drift covered areas between the creeks. However, no new showings were discovered. Erratic anomalous values are probably caused by mineralized float or by small localized areas of zinc mineralization.

a) Monzonite Creek Area

The main Monzonite Creek showing is 800 ft. south of the Forest Development Road, 200 feet east of Monzonite Creek. Magnetite and sphalerite, with lesser amounts of pyrite and chalcopyrite, are the metallic minerals. Shiny black ilvaite (a silicate) is common, and can be distinguished from magnetite by its radiating texture. Other skarn type minerals, especially garnet and actinolite, can be detected.

Chip samples gave the following results:

Length	Oz/ton Ag	% Cu	% Pb	% Zn	% Cd
20 ft.	.2	.26	tr	7.17	.04
20 ft.	tr	.15	tr	11.21	.05

The mineralization apparently occurs as an irregular mass - its detailed limits are not known, although the tonnage appears to be small. A steeply dipping contact with limestone is exposed at the northeastern corner of the outcrop. A S & R drilled 3 core holes (numbered 11, 12 & 13) in the vicinity of this prospect. Weak concentrations of mineralization giving low assays were encountered at intrusive-limestone contacts. The showing does not offer much encouragement for further exploration.

A small outcrop of mineralized skarn is exposed in the east bank of Monzonite Creek 450 feet south of the road. The skarn lies under, and may be controlled by, a felsite dike which strikes southeasterly and dips 40°S. This showing was not covered by the detail grid. However, in view of the average low grade of the skarn deposits, it does not seem profitable to pursue exploration of this showing any further.

Skarn mineralization is exposed 300 feet southeast of the main Monzonite Creek outcrop by minor surface stripping. The geochemical results indicate that the zone is not very extensive. A sample by A S & R in 1951 assayed 0.30 oz/ton Ag, 0.22% Pb and 3.7% Zn.

TABLE II

CHIP SAMPLES - CONTACT CREEK PROSPECT

No.	Length	Oz/ton Ag	% Pb	% Zn	% Cu
3026		.14	.05	1.87	.12
3027		.20	.05	.40	.70
3028		.44	.05	.05	.88
3029		.76	tr	.45	2.14
3030		.36	.39	1.08	.05
3031		.46	.52	5.14	03
3032		2.2	.10	9.56	3.45
3033		.32	.05	2.39	.58
3034		.44	.10	8.83	.36
3035		.04	.05	1.05	.04
3036		.10	tr	8.64	.12
3037		.08	tr	1.22	.03
3038		tr	.05	1.22	.03

b) Contact Creek Area

Strong shearing complicates structural relations in the vicinity of the Contact Creek showing. However, mapping on a scale of 1" = 100 ft. indicates that skarn was formed in limestone underneath an irregular, curling sill-like body of older intrusive rock. The skarn is presently exposed over much of its area because the present erosion surface partially parallels the structure. Thickness varies but is generally about 4 to 10 feet. The skarn is exposed intermittently over a length of 400 feet and a width of 100 feet, but full lateral extent is unknown. The small scale nature of the controlling older intrusive does not offer much hope that a large tonnage is present. Sphalerite is disseminated reasonably uniformly throughout. The area of initial interest contains two stringers, about 15 feet in length and 2 to 5 feet wide, of good chalcopyrite mineralization. Diamond drilling (holes ML 1 to ML 5) failed to indicate much continuity of these stringers.

In this prospect the metallic minerals tend to be segregated into irregular patchy stringers in a relatively barren host. The best material exposed assayed 9.56% Zn, 3.45% Cu, and 2.2 oz/ton Ag, over 8 feet. Other assays are given in Table 2.

The Contact Creek showing does not warrant further exploration because of its irregular, small scale structure and patchy mineralization.

c) Zinc Creek

Zinc Creek exposes three showings of skarn containing zinc-silver mineralization. The lowest showing, near the base of the Quatsino limestone, is associated with a westerly striking fault zone that cuts it off to the north and a northerly striking, east dipping trachyte dike which appears to have provided some control to the mineralization. Contrary to relations

observed in other spots, the dike underlies the mineralisation. My reaction to the mineralisation as exposed was that it was concentrated at the intersection of the fault and the dike, and that a few well placed shots would put it out of existence. A chip sample of the material assayed 7.12% Zn, 5.17% Pb, and 0.4 oz/ton Ag over 10 feet. The prospect is not worthy of further exploration, because of its limited size.

The second Zinc Creek showing is 500 feet south westerly of the lowest showing. It consists of two skarn outcrops; no structural relations or controls are exposed. Geochemical results indicate that this showing is probably continuous with the upper showing.

The upper Zinc Creek showing is in the top of the Quatsino limestone and the lower limey beds of the Bonanza Group. Skarn is exposed in the bottom and along the west bank of the creek for a distance of 80 feet, and has been traced by stripping for a further distance of 100 feet to the north west. The detailed geochemical survey indicated mineralisation over an area 200 feet by 250 feet. A S & R drilled 9 core holes in and adjacent to the area. Logs of the holes are not available, but apparently four of the holes to the west of the showing were in intrusives, and the rest intersected intrusives at a shallow depth. The following intersections were obtained.

Hole No.	Ft. of Intersection	% Pb	% Zn
2	40.5	.15	3.0
5	30.5	.07	1.2
7	8.0	0.1	3.0
8	10.0	-	0.5
9	11.0	-	3.0

The showing was not sampled in detail. The following assays are available.

No.	Type	Oz/ton Au	Oz/ton Ag	% Cu	% Pb	% Zn
--	8'Chip	-	.1	.01	.4	2.49
7811	Grab	tr	.05	.47	.15	.12
7812	Grab	.005	.90	.30	9.25	13.03

No structural control is visible in the field, but the skarn is evidently concentrated at the Quatsino-Bonanza contact adjacent to an intrusive body. It may therefore extend down dip in a southerly direction. Geochemical sampling indicates that no skarn occurs at the surface for 400 feet east of Zinc Creek.

The indicated grade of the prospect is too low to offer much encouragement, and considering A S & R's unsuccessful diamond drilling, further exploration is not warranted.

3. HPH - Meade Creek Prospects

Two types of mineralisation are associated with the limestone in the HPH-Meade Creek area: magnetite contact reaction zones, and Pb-Zn-Ag replacement zones.

a) Magnetite Contact Zones

Magnetite-pyrite-pyrrhotite bodies with minor chalcopyrite and sphalerite are exposed in the collar of the Lee adit on the HPH #1 claim, in the road quarry immediately west of the adit, near the final post of the HPH 1 claim, and at various places (associated with both limestone contacts and shearing) in Meade Creek. The bodies are lenses varying from nil to 10 feet in thickness. They generally dip steeply along limestone-intrusive contacts, or follow mylonite zones as exposed in Meade Creek. They are far too small and too low grade to be considered for iron ore, and the chalcopyrite content is usually insignificant. Further exploration is not warranted.

The mineralisation is probably hydrothermal in origin. A narrow band of limestone (about 20 feet thick) exposed in Meade Creek has magnetite developed along both contacts. Since the limestone is contained in andesite

which probably belongs to the Kamutsen Group, the magnetite probably formed from fluids percolating along the contacts, rather than by direct intrusive contact reaction.

b) Lead-Zinc-Silver Zones

Siliceous lead-zinc-silver mineralisation is exposed at numerous places on the MPH 1, 2 and 3 claims and on the Taxi #1 claim. It is indicated further by widespread anomalous geochemical results. The showings have been tested to varying degrees, some by stripping and trenching and others by diamond drilling. The MPH #1 main showing has been explored with two short prospect shafts and one 110 foot adit (the Lee adit, named after the foreman).

Sphalerite and galena, with scattered grains of chalcopyrite, are concentrated in stringers and patches in a fragmented cherty matrix. The cherty material is dark grey to black, microcrystalline and fragmented. Delicate sharp limestone fragments occur in places with soft white calcareous material enclosing them in places. The mineralisation is often strongly leached.

No structure or continuity can be detected for most of the showings. Contacts with limestone, where exposed, are smooth and dip steeply. In the MPH #3 showings the exposed contacts often strike across the main direction of the mineralised zones. Small, pinching veins sometimes extend outwards from the mineralised areas. Dikes overlie the mineralization in places, but do not appear to have exerted much control on the over-all pattern of mineralization. The dominant controls have not been deduced. However, it seems likely that pre-mineralization jointing and fracturing was important in localising the mineralization. The presence of breccia fragments indicates that some open space filling occurred. A combination of

replacement and open space filling seems the most reasonable as a mode of emplacement.

In general, the surface exposures, while roughly aligned in a westerly-trending zone, do not look continuous. The appearance is of a number of isolated pods or lenses of mineralization rather than more or less continuous zones. There is no reason that the pods should have greater vertical than horizontal extent. The diamond drilling and development done to date does not so indicate.

Individual exposures are: 1) The HPH main showing, near the HPH #1 initial post; diamond drilled by Sheep Creek and partly developed by [illegible] 2) The HPH #2 showings: a) 900 ft. east of the adit, a northeasterly-trending outcrop 20 ft. by 5 ft.; unexplored, and b) 600 ft. east of the adit; diamond drilled by Sheep Creek and by Giant Explorations. Sheep Creek hole number 2, drilled from the center of the outcrop, intersected mineralization from 5 to 8 ft. and from 13 to 18 ft., (no assays are available). The Giant Exploration drilling did not intersect mineralization. 3) About 200 ft. south west of the adit, from 2 to 5 ft. wide. Smaller exposures are 70 ft. south and 120 feet southwest of this. 4) Just below the crest of the steep north facing slope and south of the HPH #1 final post. (Previously called the HPH Hilltop showing). A chip sample across a true width of five feet assayed 7.6 oz/ton ag, 0.20% Pb and 14.45% Zn. This mineralization appears to dip about 40° west, and may be associated with the HPH #3 showings. 5) The Bluff showing, 20 ft. northeast of the Taxi #1 initial post. The mineralization lies just under the Quatsino-Bonanza contact. Stripping and trenching has exposed two small, probably lenticular areas of mineralization in length of about 50 ft.

The HPH #1 main showing contains the best looking mineralization

in the area, with massive galena exposed in the east shaft over a width of 4 feet. Lead-zinc mineralisation is exposed for 40 ft. west of the east shaft along a steep north facing slope. On closer inspection the western limit of the zone appears to be a felsite dike, 4 ft. wide, which dips about 65°E and strikes northerly, and the eastern limit a siliceous zone 6 ft. wide which dips about 70°W and strikes north-northwesterly. Mr. Neil McKechnie, of the B.C. Department of Mines, has proposed that a pipe may occur at the intersection of these structures. Such a pipe would be much more significant in terms of tonnage than either of the exposed features. The intersection should plunge steeply to the south underneath the present exposure.

The HPM #3 showings are exposed in outcrop and trenches over a length of 450 ft. A detailed geochemical grid, on a nominal 50 by 100 ft. pattern, (see figure 4) indicates that similar mineralisation extends at least 650 feet eastward. Trenching and geochemical sampling indicate that the main HPM 3 zone is about 250 ft. in length and of uncertain width, possibly from 5 to 15 ft. Assays are listed in Table III. The best mineralisation exposed assayed 19.4 oz/ton Ag, 9.95% Pb, and 3.68% Zn, while the average appears to be about 8 oz/ton Ag, 3% Pb, and 3% Zn.

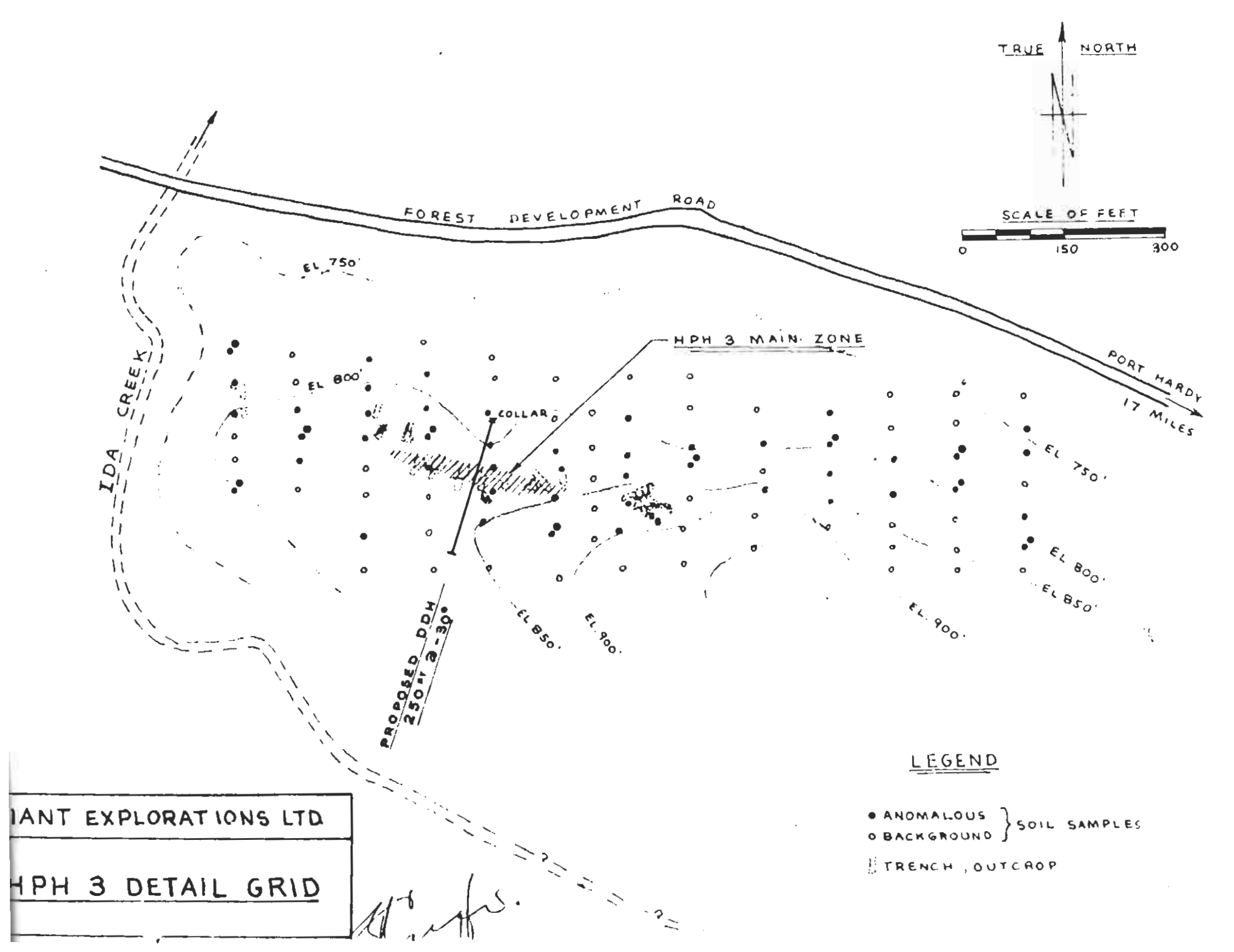
Assuming a length of 250 ft. and for convenience an average width of 8 ft., then the zone should contain about 200 tons per foot of depth, or 20,000 tons per 100 ft. depth. If the zone can be shown to be as deep as it is long, then it is reasonable to expect 50,000 tons. The zone should be tested further with diamond drilling in order to establish, in order of importance:

1) Continuity
2) Depth: minimum 200 ft. (40,000 tons) for 8 ft. width
3) Dip, width and grade.

TABLE III

ASSAYS OF HPH 3 SHOWING

No.	Length	Oz/ton Au	Oz/ton Ag	% Pb	% Zn	% Cu
3014	Grab	-	82.3	8.73	16.45	-
Main zone, west to east						
3040	Grab chip	-	4.1	.80	3.94	-
3039	Grab chip	-	2.1	.51	1.85	-
3041	7 ft.	-	10.9	3.18	5.56	-
3042	Grab chip	.01	10.4	3.18	4.97	.17
3047	5 ft.	-	8.2	2.95	3.34	.03
3048	5 ft.	-	5.0	1.46	2.00	-
3049	5 ft.	-	15.3	9.60	3.14	-
3016	2 ft.	-	19.4	9.95	3.68	-
3017	4 ft.	-	8.1	3.43	3.17	-
3050	12 ft.	-	4.2	3.28	3.94	-
East outcrop						
3054	10 ft.	-	1.6	1.11	4.24	-
3053	12 ft.	-	.70	.61	2.00	-
3055	8 ft.	-	1.7	1.01	5.14	-
3052	12 ft.	-	.80	.76	3.82	-
3051	7 ft.	-	2.1	.91	4.74	-


TRUE NORTH
SCALE OF FEET
0
150
300
FOREST DEVELOPMENT ROAD
PORT HARDY
17 MILES
IDA CREEK
EL 750'
EL 800'
HPH 3 MAIN ZONE
COLLAR
EL 750'
EL 800'
EL 850'
EL 900'
EL 850'
EL 900'
PROPOSED DDH
250'± @ -30°
LEGEND
ANOMALOUS
BACKGROUND
SOIL SAMPLES
TRENCH, OUTCROP
IANT EXPLORATIONS LTD
HPH 3 DETAIL GRID

If the Rain #3 main showing can be developed to a reasonable tonnage with sufficient grade, then further exploration is warranted in the HPH-Meade Creek area. This should take the form of detailed mapping and soil sampling over the Quatsino limestone, paying particular attention to the Quatsino-Bonanza contact, and to areas of strong shearing.

5. Dorlon Showings

Massive sphalerite stringers and siliceous lead-zinc mineralization of the HPH type are exposed on the Rain (formerly Dorlon) claims.

On the Rain #2 claim line 650 ft. west of the initial post, several narrow massive sphalerite stringers are exposed by stripping. The veins are about 18 inches wide, strike northerly, dip steeply and appear to pinch out laterally in distances of 20 ft. or so. The only significant gold values found in the Nahwitti Lake area have come from these stringers. The showings were not exposed sufficiently to determine any structural controls. A felsite dike about 5 ft. wide, which strikes northwesterly and dips vertically, is exposed adjacent to but not in contact with the veins. Available assays are as follows:

No.	Length	Oz/ton Au	Oz/ton Ag	% Pb	% Zn	% Cu
-	Grab	.94	2.0	-	35.6	-
-	28 in.	.54	.8	-	33.6	-
3018	2 ft.	.26	.9	.05	34.17	-
3019	2 ft.	.56	.7	tr	28.35	-
3020	2 ft.	.24	.4	tr	14.79	.58

Siliceous silver-lead-zinc mineralization of the HPH type is exposed by stripping 500 ft. southwesterly from the zinc-gold prospect. Similar mineralization occurs about 130 ft. east-northeast of the stripped area. The two exposures are separated by banded volcanics of the lower Bonanza group, which strike northwesterly and dip south. The trend of the

mineralization therefore cuts across the strike of the beds.

Isolated anomalous geochemical samples were obtained, especially to the northwest of the zinc-gold prospect.

Compared to the NW and south shore showings, little work has been expended in the area.

None of the exposed mineralization offers much cause for excitement, but in view of the good gold values in the Dorlon veins, more intensive prospecting is certainly justified. Detailed geochemical mapping and geochemical sampling should be undertaken with the object of obtaining structural information on the mineralization. Unless a zone of greater extent than the ones presently exposed can be found, there is no justification for diamond drilling or other development work.

6. Guides to Exploration

The prospects exposed in the Nahwitti Lake area have in common:

1) they are contained in or on the contacts of limestone;
2) they are within 1 mile of the nearest body of Coast Intrusive rock;
3) they all contain sphalerite (zinc) to some degree.

In addition, some of the showings are under, or beside, bodies of older intrusive, and prospects seem to be more numerous in areas of intense shearing.

Therefore, in northern Vancouver Island, the best place to look for mineral deposits appears to be in limestone, within one mile of Coast Intrusive bodies. Particular attention should be paid to contacts and especially to the intersection of contacts and shear zones.

The best method of looking for mineral deposits would take advan-

tage of a rapid field test for zinc. The THM or total heavy metals test is good for testing soil samples.

APPENDICES

		Page
Appendix 1:	Mineral Claims	30
	a) MPH Group	30
	b) Norman Group	31
	c) Lake Group	32
Appendix 2:	Survey Program	33
	a) General	33
	b) Claim Survey	33
	c) Geochemical Survey	34
	d) Geological Survey	37
	e) Topography	37

APPENDIX 1

MINERAL CLAIMS

A total of 110 mineral claims are held under option or by location. The claims are divided for assessment purposes into three groups, called the HPH Group, the Mormem Group and the Lake Group. Those claims marked with an asterisk (*) in the following list are staked in contravention, and should be allowed to lapse.

a) HPH Group - 35 claims

Name	Record No.	Date of Record
HPH 1	8597	4 July 1930
HPH 2	8598	4 July 1940
HPH 3	8599	4 July 1930
Seaside *	18031	18 June 1965
Hillside	18032	18 June 1965
Doinapiece *	18033	18 June 1965
Rackafrats	18034	18 June 1965
Norma	18035	18 June 1965
Judy	18036	18 June 1965
Crab	18037	18 June 1965
Arapahoe	18038	18 June 1965
Last Post	18039	18 June 1965
Last Gasp	18040	18 June 1965
Rain 1	18213	25 October 1965
Rain 2	18214	25 October 1965
Rain 3	18215	25 October 1965
Rain 4	18216	25 October 1965
Audrey 1	18260	3 December 1965
Audrey 2	18261	3 December 1965
Audrey 3	18262	3 December 1965
Silva 1	18263	3 December 1965
Silva 2	18264	3 December 1965
Silva 3	18265	3 December 1965
Silva 4	18266	3 December 1965
Silva 5	18267	3 December 1965
Silva 6	18268	3 December 1965
Silva 7	18269	3 December 1965

Name	Record No.	Date of Record
Silva 8	18270	3 December 1965
Silva 9	18271	3 December 1965
Silva 10	18272	3 December 1965
Alvis 1	18525	20 April 1966
Alvis 2	18526	20 April 1966
Owl Fraction *	18527	20 April 1966
Taxi 1	18537	20 April 1966
Taxi 2	18538	20 April 1966

To be added to EPH Group (staked after grouping was recorded):

One Fraction	18934	1 August 1966
Two Fraction	18935	1 August 1966

b) Norman Group - 38 claims

Sun 3	16385	3 May 1963
Sun 4	16386	3 May 1963
Sun 5	16387	3 May 1963
Sun 6	16388	3 May 1963
Sun 7	16389	3 May 1963
Sun 8	16390	3 May 1963
Norman 1	17384	19 June 1964
Norman 2	17385	19 June 1964
RAS 3	17868	23 April 1965
RAS 4	17869	23 April 1965
Dolores	18015	18 June 1965
Debbi	18016	18 June 1965
Diane	18017	18 June 1965
Dodi	18018	18 June 1965
Dolly	18019	18 June 1965
Donna	18020	18 June 1965
Gigi	18021	18 June 1965
Joanne	18022	18 June 1965
Moxie	18023	18 June 1965
Pagoda	18024	18 June 1965
Weevils Club	18025	18 June 1965
Alderbush	18026	18 June 1965
Teapot *	18027	18 June 1965
Peapot	18028	18 June 1965
Bubble U *	18029	18 June 1965
Open Up	18030	18 June 1965
Finger Fraction	18041	18 June 1965
Annex It Fraction	18042	18 June 1965
Fracture Fraction *	18043	18 June 1965
Renee	18528	20 April 1966
Yvette	18529	20 April 1966
Beti 1	18530	20 April 1966
Beti 2	18531	20 April 1966
Beti 3	18532	20 April 1966

Name	Record No.	Date of Record
Beti 4	18533	20 April 1966
Beti 5	18534	20 April 1966
Beti 6	18535	20 April 1966
Beti 7	18536	20 April 1966

e) Lake Brown - 35 claims

LPS 1	17859	23 April 1965
LPS 2	17860	23 April 1965
LPS 3	17861	23 April 1965
LPS 4	17862	23 April 1965
ELM 1	17863	23 April 1965
ELM 2	17864	23 April 1965
ELM 3	17865	23 April 1965
EAS 1	17866	23 April 1965
EAS 2	17867	23 April 1965
Aqua 1	18275	14 December 1965
Aqua 2	18276	14 December 1965
Aqua 3	18277	14 December 1965
Aqua 4	18278	14 December 1965
Aqua 5	18279	14 December 1965
Aqua 6	18280	14 December 1965
Aqua 7	18281	14 December 1965
Aqua 8	18282	14 December 1965
Aqua 9	18283	14 December 1965
Aqua 10	18284	14 December 1965
Bath 1	18285	14 December 1965
Bath 2	18286	14 December 1965
Bath 3	18287	14 December 1965
Bath 4	18288	14 December 1965
Bath 5	18289	14 December 1965
Bath 6	18290	14 December 1965
Bath 7	18291	14 December 1965
Bath 8	18292	14 December 1965
Bath 9	18293	14 December 1965
Bath 10	18294	14 December 1965
BSW 1	18640	30 May 1966
BSW 2	18641	30 May 1966
BSW 3	18642	30 May 1966
TCH	18643	30 May 1966
Aqua 1 Fraction *	18644	30 May 1966
Aqua 2 Fraction	18645	30 May 1966

[redacted]

APPENDIX 2

SURVEY PROGRAM

a) General

Of the 110 claims held, the Ruth 1-10, Beti 1-6 and Silva 9 and 10 claims were not surveyed. The other claims were picked up by tape and compass, and, except for the Aqua 1-10, Aqua 2 Fraction and TCH claims, which are under the lake, were covered by reconnaissance geochemical and geological surveys. The following personnel were directly employed in this work:

Name	Dates of Employment	Rate
R. Sutherland	1 May - 15 September 1966	$700/month
H. Thomas	29 July - 26 August 1966	$500/month
H.S. Wagmita	1 May - 17 June 1966	$450/month
G.H. Ellis	6 May - 5 September 1966	$325/month
B. Fraser	5 May - 27 August 1966	$325/month
F. Edwards	20 June - 30 August 1966	$325/month
D. House	11 July - 27 August 1966	$325/month
M Golub	1 May - 12 May 1966	$350/month
F. Kinnaird	8 June - 29 August 1966	$400/month

b) Claim Survey

A tape and compass survey was conducted. The objects of the survey were: 1) to relate the claims to each other and to the topography, and 2) to lay out accurate base lines for geochemical and geological work. Two and often three men were continuously employed on this work from 7 May to 18 June, 1966.

A K & E Brunton compass with triped and a 150 ft. tape were employed in the survey. Azimuths were taken at each station, with both the backsight and foresight being read, and vertical angles were read on each

chainage distance. No significant local attraction was encountered, the average being taken when the foresight and backsight differed for any leg of the survey.

The final shape of the survey was in the form of a large loop south of the lake and the MPH area, with an offshoot proceeding easterly along the Silva-Rain claim lines. Closure in the loop was 385 feet over a distance of 38,022 ft., with a precision of about 1 in 100. Claim post positions are shown on the maps.

c) Geochemical Survey

Thick overburden covers much of the property. To look for possible buried deposits a geochemical survey was run over most of the claims.

Base stations, designated by consecutive even numbers, were laid out at 500 ft. intervals beginning at the western end of the property and proceeding eastward. Station G 4 is at Monzonite Creek, G 46 is at the east end of the lake, and G 70 is just north of the MPH main showing. The road swings north out of the claim area near G 72, and Stations G 74 to G 100 were continued down the Silva claim line and beyond. Reconnaissance sample lines were run north and south from the base stations. The lines were marked out with 'orange glo' flagging, and each sample station was marked. The stations are designated by line number and distance from the base (e.g. G10 + 900 S, G92 + 600 N etc.).

Soil samples were taken at 300 ft. intervals along the lines, theoretically on a 300 ft. by 500 ft. grid. As a result of the nature of the work (thick bush, hand held compasses, etc.) the lines tended to wander somewhat, and many of the sample stations are several hundred feet removed from their planned positions. All wander has been corrected for as much as

possible, using the claim line survey as a check, but sample locations as shown on the maps, especially near the ends of the lines, may be in error by a hundred feet or more.

Each sampling party consisted of two men. The lead chainman followed a straight compass line and marked out the sample stations, and the tail chainman flagged the lines and took the samples using a 4 ft. auger. Each soil sample was taken at a depth of 4 ft., or on bedrock, whichever came first, and the nature of the soil was recorded.

Soil sampling is probably ineffective in areas of very deep overburden, such as along the Nahwitti River, because of the greater diffusion possible for the metallic ions. The best way to overcome this difficulty would be by sampling such areas with long augers.

Samples were tested for total heavy metals content, using apparatus and chemicals as supplied by Tri-L Laboratories of Vancouver. The test employs dithizone and an organic solvent (xylene), and is sensitive to metal contents of about 50 ppm. A color change from green to pink indicates an anomalous value. One man can run about 100 tests per day, and the work proceeds more than twice as fast if two are employed.

The THM (Total Heavy Metals) test supposedly reacts with all base metals, especially copper, lead and zinc. [illegible] its high mobility, zinc provides [illegible] For this reason, the THM test is well suited to the Nahwitti [illegible], for zinc is dominant in all the known base metal deposits.

The geochemical survey, in a general way, outlines each of the previously known mineralized areas: the Bolton showings, the Main showings, and the South shore showings. The survey also indicated that two new important mineralized areas exist. However, the [illegible]

unless zinc is present in the deposit. For this reason it is conceivable that buried copper-magnetite bodies may have been overlooked. Therefore, the reconnaissance geochemical samples, especially those taken in the vicinity of Meade Creek (lines G 55-G 40) should be tested for copper. The cubeanic test is probably sufficiently sensitive for this purpose.

In addition to the reconnaissance survey, detailed sample grids were run on the main HPH 3 and South Shore prospects. On the HPH 3 claims a nominal 50 by 100 ft. grid, covering 300 by 1200 ft., was run east of Ida Creek and south of the road. The Zinc Creek-Contact Creek-Monzonite Creek region (the South Shore showings) was covered with a 100 by 100 ft. grid over a 900 by 3500 ft. area. The grid covers the upper limestone contact from Monzonite Creek to 400 ft. east of Zinc Creek.

A number of anomalous readings were found outside the detail grids. The HPH-Meade Creek area in general appears to be anomalous, and the Dorlon (main claim) area has widely scattered anomalous readings. These areas are discussed under the section on economic mineralization. Anomalous samples were obtained at G56 + 3600 S and at G52 + 3900 S. These were found to be in an area of volcanic rocks, mostly rhyolites, and check samples surrounding the originals at a distance of 100 ft. were negative. The values are probably spurious.

An anomalous value at G78 - 600 S is thought to be associated with the HPH mineralization. It was not checked out.

Anomalous samples at [illegible] 900 N (east of the Dorlon area) and at G42 - 00 (west of the Dorlon area) did not stand up under check sampling.

A sample at G43 - 2700 was taken near weak zinc-copper mineralization exposed in Meade Creek. The mineralization is not worthy of further investigation.

n anomalous sample at 3% + 1800 S was not checked out. It was taken in an area underlain by [illegible]. The positive reaction probably results from mineralization contained in an erratic boulder or from magnatite-chalcopyrite similar to that causing the reaction at G48 + 2700 S in Meade Creek.

No other anomalous samples were found outside the main mineralized areas.

3) Geological survey

[illegible] sampling crews took specimens of each outcrop encountered. These were then classified and plotted along with the geochemical results,, resulting in a generalized map of the areal geology. Geological work was then concentrated in the areas of greatest interest.

Outcrop is scarce over most of the area, in spite of the often steep gradients. In many pits the only exposures to be found are in the stream bottoms

Geology surveys procedures varied according to the thoroughness of mapping. Creeks were surveyed by pace-and-compass, as were some claim lines. Outcrops were tied in to the geochemical sample lines, usually by pace-and-compass but at times by chain and compass.

4) Topography

Elevations were taken to the nearest 25 ft. at each sample station by aneroid barometer. The readings were corrected against a base station which was read periodically. Topographic contours constructed from the readings are plotted on the map.

SUB - MINING RECORDER
RECEIVED
1966
M.R.
VANCOUVER, B.C.

EXPENDITURE SUMMARY

NAHNITTI LAKE - MAY TO AUGUST inclusive

CATEGORY	DIRECT CHARGES - IN DOLLARS				
	MAY	JUNE	JULY	AUGUST	TOTAL
Supervision	500	500	250	125	1375
Engineering & Geology	3012	2584	2410	3194	11200
Camp Operation & Accomodation	3485	1464	1296	1069	7314
Assaying & sampling		24	417	147	588
Geophysical & Geochemical			133	67	200
Diamond Drilling	4242	2633	2	706	7583
Travel Expense	562	317	214	28	1121
Vehicle Operation	641	353	150	162	1306
TOTAL					30,687

Less diamond drilling - assessment filed in June 1966 + $708 D.D. in July & August			8808
Total this submission for geochemical & geological			21,799
No. of claims worked on	=		77
Average expenditure per claim		$	283
Claims worked on in Lake Group			12
Expenditure incurred on Lake Group = 283 x 12	=		$3400

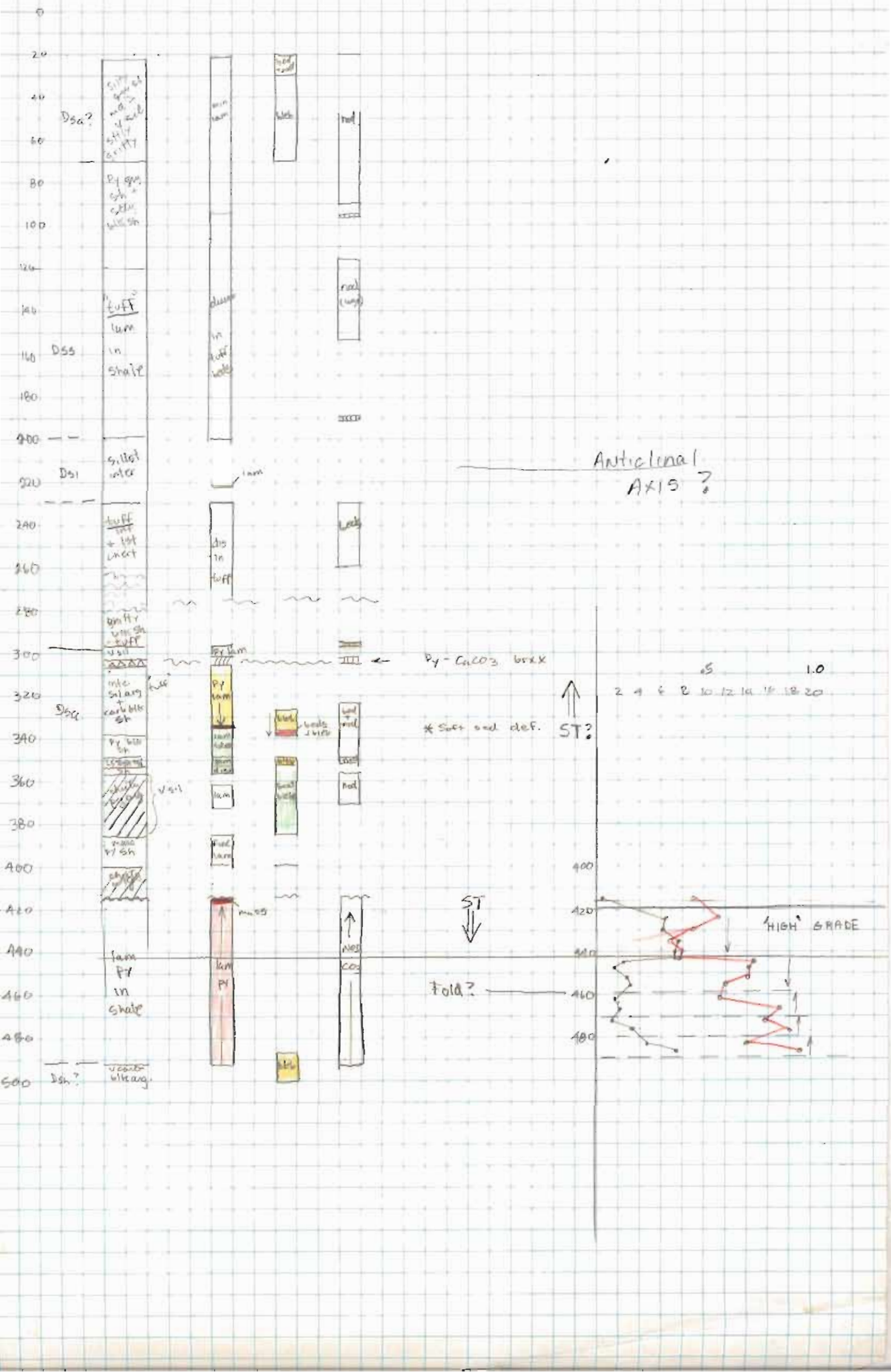
Declared before me at the City of Vancouver, in the Province of British Columbia, this 13th day of November, 1966, A.D.

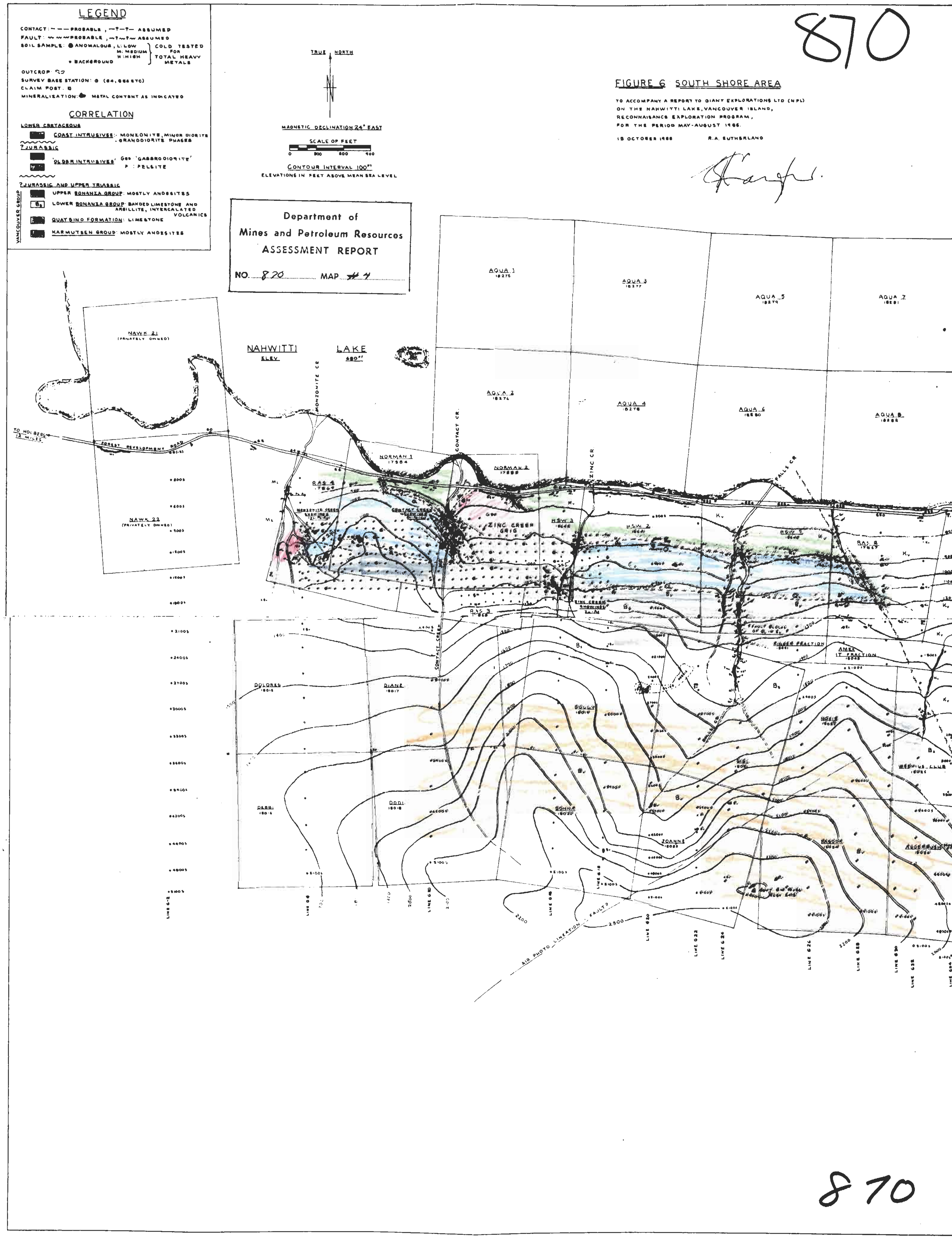
A Commissioner for taking Affidavits within British Columbia or a Notary Public and a Solicitor of British Columbia.

SUB - MINING RECORDER

Welland - retreat
June 6 Sat

78-8




870
LEGEND
CONTACT: — — — PROBABLE , —?—?— ASSUMED
FAULT: ~~~PROBABLE , ~?~?~ ASSUMED
SOIL SAMPLE: ● ANOMALOUS , L: LOW M: MEDIUM H: HIGH } COLD TESTED FOR TOTAL HEAVY METALS
• BACKGROUND
OUTCROP
SURVEY BASE STATION: (84, 666 ETC)
CLAIM POST
MINERALIZATION: METAL CONTENT AS INDICATED
CORRELATION
LOWER CRETACEOUS
COAST INTRUSIVES: MONZONITE, MINOR DIORITE - GRANODIORITE PHASES
?JURASSIC
'OLDER INTRUSIVES' Gd: 'GABBRODIORITE' P: FELSITE
?JURASSIC AND UPPER TRIASSIC
VANCOUVER GROUP
UPPER BONANZA GROUP: MOSTLY ANDESITES
LOWER BONANZA GROUP: BANDED LIMESTONE AND ARGILLITE, INTERCALATED VOLCANICS
QUATSINO FORMATION: LIMESTONE
KARMUTSEN GROUP: MOSTLY ANDESITES
TRUE NORTH
MAGNETIC DECLINATION 24° EAST
SCALE OF FEET
0 300 600 900
CONTOUR INTERVAL 100FT
ELEVATIONS IN FEET ABOVE MEAN SEA LEVEL
FIGURE 6 SOUTH SHORE AREA
TO ACCOMPANY A REPORT TO GIANT EXPLORATIONS LTD (NPL)
ON THE NAHWITTI LAKE, VANCOUVER ISLAND,
RECONNAISANCE EXPLORATION PROGRAM,
FOR THE PERIOD MAY-AUGUST 1966.
15 OCTOBER 1966
R.A. SUTHERLAND
Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 820 MAP #4
NAHWITTI LAKE
ELEV. 680FT
MONZONITE CR
CONTACT CR.
ZINC CR
FALLS CR
TO HOLBERG 12 MILES
FOREST DEVELOPMENT ROAD
NAWK 21 (PRIVATELY OWNED)
NAWK 22 (PRIVATELY OWNED)
AQUA 1 18275
AQUA 2 18276
AQUA 3 18277
AQUA 4 18278
AQUA 5 18279
AQUA 6 18280
AQUA 7 18281
AQUA 8 18282
NORMAN 1 17584
NORMAN 2 17585
RAS 4
RAS 3
RAS 2 17567
ZINC CREEK GRID
HSW 3 16642
HSW 2 16641
HSW 1 16640
MONZONITE CREEK SHOWINGS
CONTACT CREEK SHOWINGS
ZINC CREEK SHOWINGS Zn-Ag
FAULT BLOCKS
FINGER FRACTION
AMEX 17 FRACTION
DOLORES 18015
DIANE 18017
DEBBI 18016
DODI 18018
DOLLY 18019
DONNA 18020
JOANNE 18022
GIGI
NOSIE
PAGODA
VESUVIUS CLUB 18025
CONTACT CREEK
AIR PHOTO LINEATION - FAULT?
LINE 6-2
LINE 66
LINE 6B
LINE 618
LINE 620
LINE 622
LINE 624
LINE 626
LINE 628
LINE 630
LINE 632
LINE 634
ADJOINS SHEET 7A
SHEET 6A
ADJOINS SHEET 7B
SHEET 6B
1400
1500
1600
1700
1800
1900
2000
2100
2200
2300
870

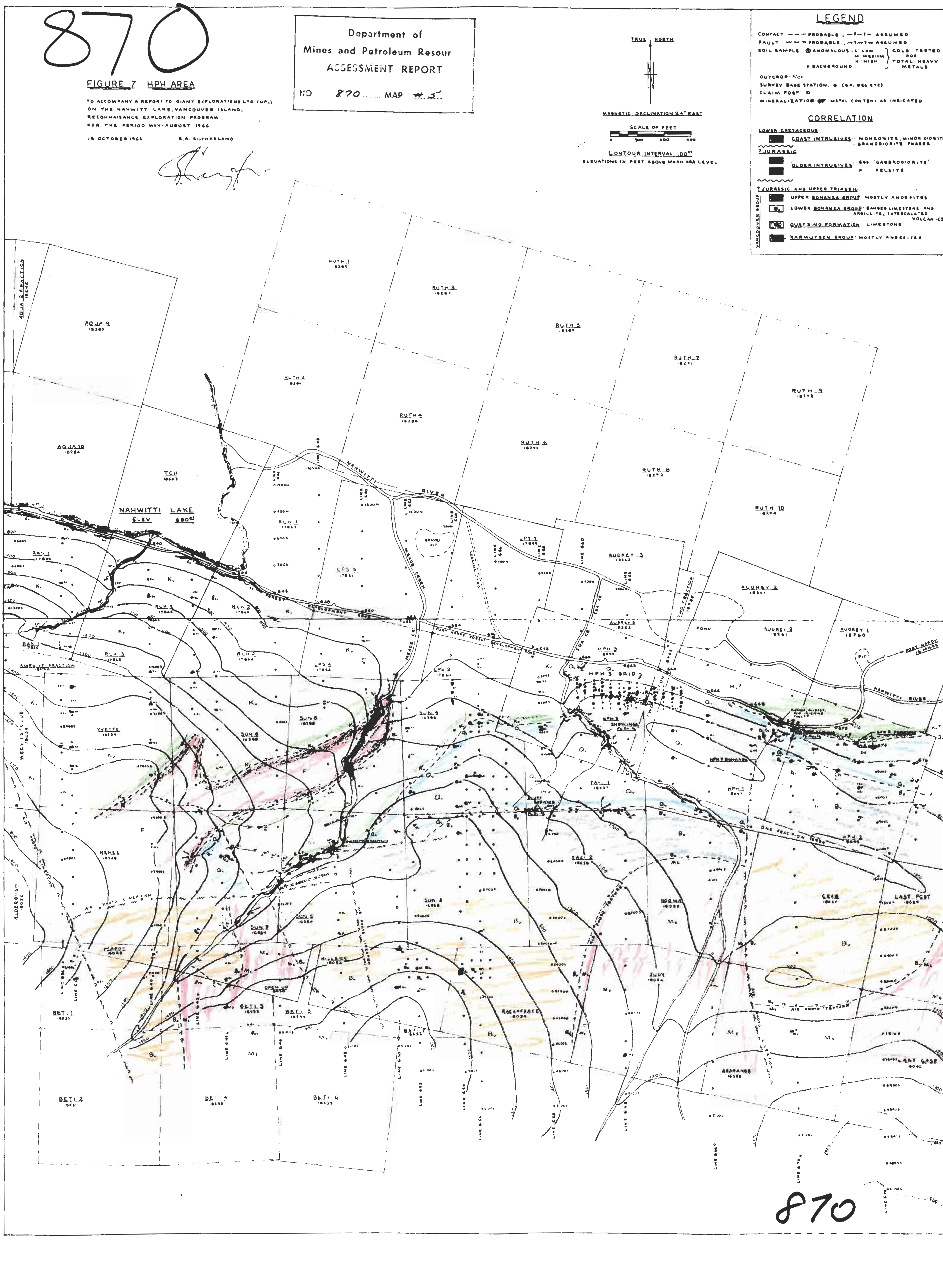
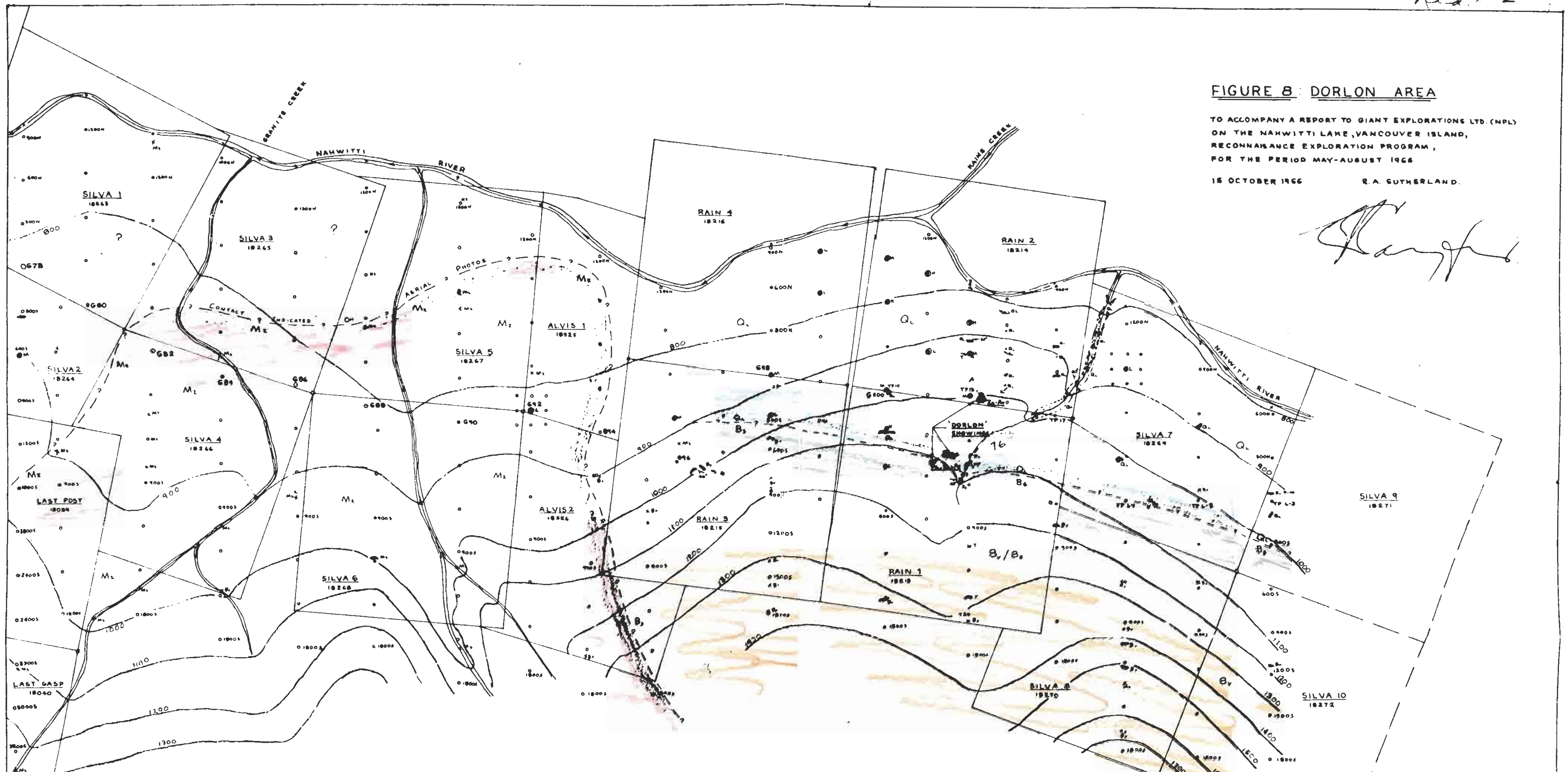

870
FIGURE 7 : HPH AREA
TO ACCOMPANY A REPORT TO GIANT EXPLORATIONS LTD. (NPL)
ON THE NAHWITTI LAKE, VANCOUVER ISLAND,
RECONNAISANCE EXPLORATION PROGRAM,
FOR THE PERIOD MAY-AUGUST 1966
15 OCTOBER 1966
R.A. SUTHERLAND
Department of
Mines and Petroleum Resour
ASSESSMENT REPORT
NO. 870 MAP #5
TRUE NORTH
MAGNETIC DECLINATION 24° EAST
SCALE OF FEET
CONTOUR INTERVAL 100 FT
ELEVATIONS IN FEET ABOVE MEAN SEA LEVEL
LEGEND
CONTACT ——— PROBABLE, —?—?— ASSUMED
FAULT ~~~ PROBABLE, ~?~?~ ASSUMED
SOIL SAMPLE ANOMALOUS, L: LOW M: MEDIUM H: HIGH · BACKGROUND
COLD TESTED FOR TOTAL HEAVY METALS
OUTCROP
SURVEY BASE STATION (64, 656 ETC)
CLAIM POST
MINERALIZATION METAL CONTENT AS INDICATED
CORRELATION
LOWER CRETACEOUS
COAST INTRUSIVES: MONZONITE, MINOR DIORITE, GRANODIORITE PHASES
? JURASSIC
'OLDER INTRUSIVES' 'GABBRODIORITE' F FELSITE
? JURASSIC AND UPPER TRIASSIC
VANCOUVER GROUP
UPPER BONANZA GROUP: MOSTLY ANDESITES
LOWER BONANZA GROUP: BANDED LIMESTONE AND ARGILLITE, INTERCALATED VOLCANICS
QUATSINO FORMATION: LIMESTONE
KARMUTSEN GROUP: MOSTLY ANDESITES
NAHWITTI LAKE
ELEV. 680 FT
NAHWITTI RIVER
MEADE CREEK
GRAVEL PIT
POND
PORT HARDY FOREST DEVELOPMENT ROAD
PORT HARDY 15 MILES
HPH 3 GRID
HPH 3 SHOWINGS
HPH 1 SHOWINGS
BLUFF SHOWING
AIR PHOTO LINEATION
AIR PHOTO TEXTURE
AQUA 2 FRACTION 18645
AQUA 9 18283
AQUA 10 18284
TCH 18643
RUTH 1 18285
RUTH 2 18286
RUTH 3 18287
RUTH 4 18288
RUTH 5 18289
RUTH 6 18290
RUTH 7 18291
RUTH 9 18293
RUTH 10 18294
RLH 1
RLH 2
RLH 3
RAS 1
LPS 1
LPS 2 17860
LPS 3 17861
LPS 4
AUDREY 1 18760
AUDREY 2
AUDREY 3
TWO FRACTION
HPH 3
HPH 1
HPH 2
TAXI 1
TAXI 2
ONE FRACTION
SUN 3
SUN 4
SUN 5
SUN 6
SUN 7
SUN 8
YVETTE
RENEE 18528
ALDERBUSH 18026
PEAPOT 18028
HILLSIDE 18052
OPEN UP 18050
BETL 1 18530
BETL 2
BETL 3 18532
BETL 4 18533
BETL 5 18534
BETL 6 18535
NORMA
JUDY
CRAG
LAST POST
LAST CASE 18040
SHEET 7B ADJOINS SHEET B
870

FIGURE 8: DORLON AREA

TO ACCOMPANY A REPORT TO GIANT EXPLORATIONS LTD. (NPL)
ON THE NAHWITTI LAKE, VANCOUVER ISLAND,
RECONNAISSANCE EXPLORATION PROGRAM,
FOR THE PERIOD MAY-AUGUST 1966

15 OCTOBER 1966 R. A. SUTHERLAND.



LEGEND

CONTACT: — — — PROBABLE, —?—?— ASSUMED
FAULT: ~~~ PROBABLE, ~?~?~ ASSUMED
SOIL SAMPLE: ⊕ ANOMALOUS, L: LOW, M: MEDIUM, H: HIGH; ∘ BACKGROUND } COLD TESTED FOR TOTAL HEAVY METALS
OUTCROP:
SURVEY BASE STATION: ⊙ (64, 666 ETC)
CLAIM POST: ■
MINERALIZATION: METAL CONTENT AS INDICATED

CORRELATION

LOWER CRETACEOUS

COAST INTRUSIVES: - MONZONITE, MINOR DIORITE - GRANODIORITE PHASES

?JURASSIC

'OLDER INTRUSIVES' Gbd: 'GABBRODIORITE'
F : FELSITE

?JURASSIC AND UPPER TRIASSIC

VANCOUVER GROUP

B_V UPPER BONANZA GROUP: MOSTLY ANDESITES

B_S LOWER BONANZA GROUP: BANDED LIMESTONE AND ARGILLITE, INTERCALATED VOLCANICS

Q_L QUATSINO FORMATION: LIMESTONE

K_V KARMUTSEN GROUP: MOSTLY ANDESITES

TRUE NORTH

MAGNETIC DECLINATION 24° EAST

SCALE OF FEET

0 300 600 900

CONTOUR INTERVAL 100FT

ELEVATIONS IN FEET ABOVE MEAN SEA LEVEL

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT

NO. 870 MAP # 6

870