

Geological and Diamond Drilling

Assessment Report

on the

Hope Group Property
(Emancipation Mine)

Situated

24 km northeast of Hope, B. C.

New Westminster Mining Division

N.T.S. 92H/6W and 11W

Latitude 49°30' Longitude 121°15'

Field work carried out from June 10, 1980 to October 15, 1980

Report by:

D. G. Cardinal, P. Geol.,
March 4, 1981,
Vancouver, B. C.

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT

9035

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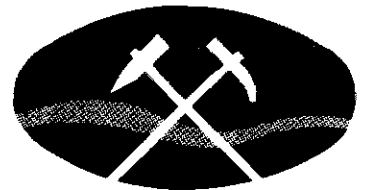


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PREAMBLE

The Hope Group property is part of an historical lode-gold mining camp, and is located in the same structural and geological belt as the Carolin Mine gold deposit (scheduled for production by mid 1981).

The Hope Group Project is part of a series of on-going exploration projects, this assessment report outlines the programs carried out during the 1980 field season.

Respectfully submitted

A handwritten signature in cursive script, appearing to read "D. G. Cardinal".

D. G. Cardinal, P. Geol.,

March 4, 1981,

Vancouver, B. C.



INTRODUCTION

This report filed for assessment purposes discusses the work done on the property including a brief report on diamond drilling, and the geology carried out during the 1980 field season.

The work includes detailed and reconnaissance mapping, sampling and prospecting, and the underground mapping of the old Emancipation Mine. Most of the geological mapping is a follow-up to previous soil geochemical programs that have outlined important gold geochemical anomalies.

Mapping generally covers important geological features and areas of geochemical targets. These targets generally evolved from soil and rock sampling on a 50 ft. (15 m) spacing. Geological mapping was done using the existing geochemical grid lines, at a scale of 1":100', and detailed mapping of any major road sections was carried out at a scale of 1":20'.

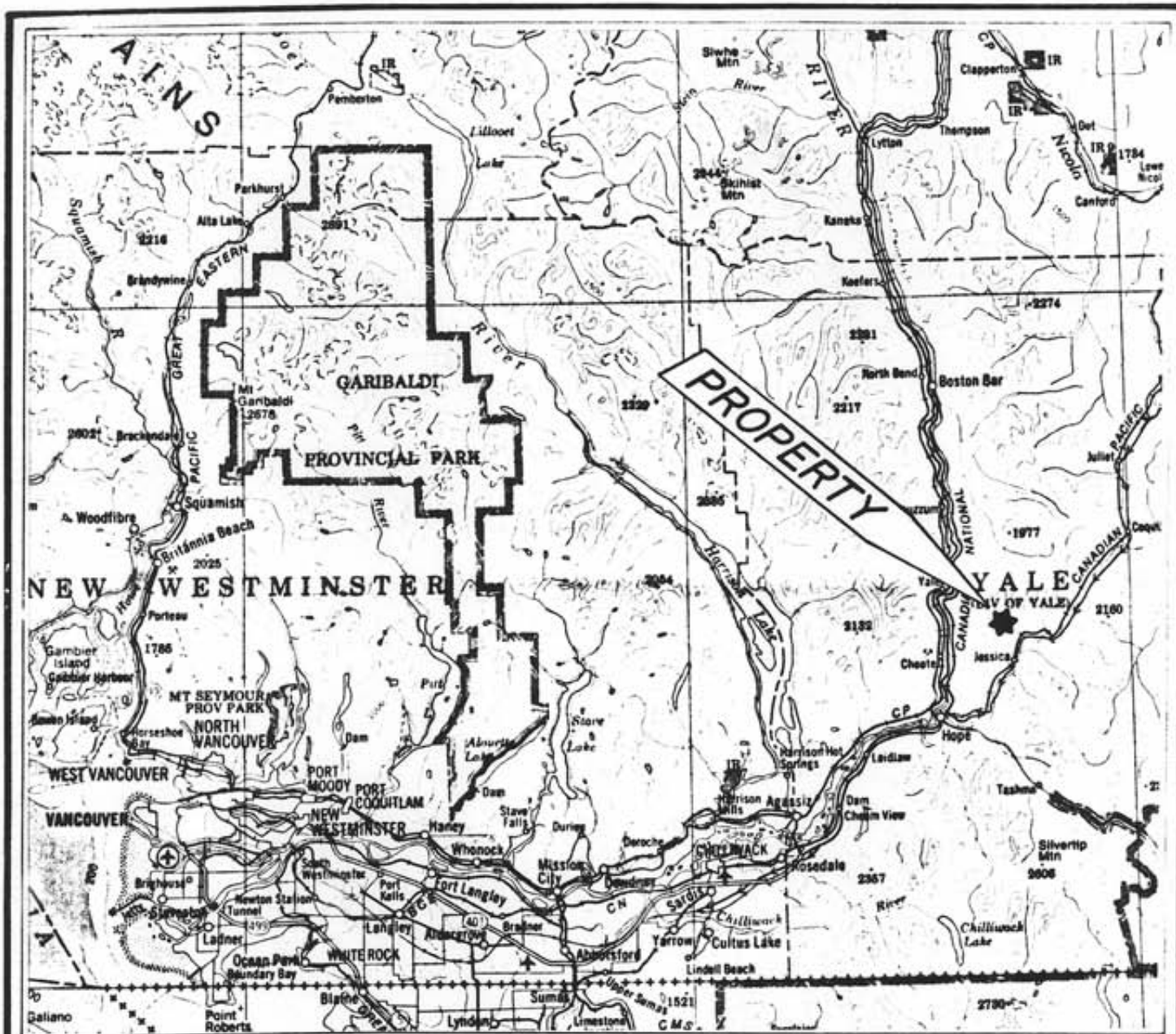


LOCATION AND ACCESS

The Hope Group Property and the old Emancipation Mine are located in the New Westminster Mining Division, British Columbia. The National Topographic System code for the area is 92H/6W and 11W. The centre of the property lies at latitude 49°30' N. and longitude 121°15'W.

Access to the property and the old Emancipation Mine is from the town of Hope via an all weather road travelling northeasterly along the Coquihalla River. Turn north at the Carolin Mine road turn-off (24 km) and travel for approximately 2 km and turn left off the mine road and drive westerly for an additional 1 km .





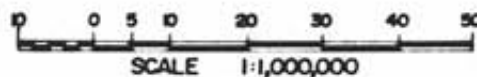
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Hope Group Project

Emancipation Mine

Hope, B.C.

New Westminister Mining N.T.S. 92H/11W.



LOCATION MAP

Figure 1

PROPERTY INFORMATION

The 1980 field work was carried out on the Hope Group of mineral claims situated in the New Westminster Mining Division. The claims are held by Aquarius Resources Ltd., 920-475 Howe St., Vancouver, B. C. Details are set out in the following table.

CLAIM NAME	UNITS*	RECORD NO.	ANNIVERSARY DATE	YEAR**
Hope 1	O.C.	25391	April 20	1986
Hope 2	O.C.	25392	April 20	1985
Hope 3	O.C.	25393	April 20	1985
Hope 4	O.C.	25394	April 20	1985
Hope 5	O.C.	25395	April 20	1985
Hope 6	O.C.	25396	April 20	1982
Hope 7	O.C.	25397	April 20	1982
Hope 8	O.C.	25398	April 20	1982
Hope 9	O.C.	25399	April 20	1982
Hope 10	O.C.	27779	May 18	1982
Hope 11	O.C.	28472	May 17	1982
Hope 12	O.C.	28473	May 17	1982
Hope 13	O.C.	28474	May 17	1982
Hope 14	O.C.	28475	May 17	1982
Hope 15	O.C.	28476	May 17	1982
Hope 16	O.C.	28477	May 17	1982
Hope 17	O.C.	28478	May 17	1982

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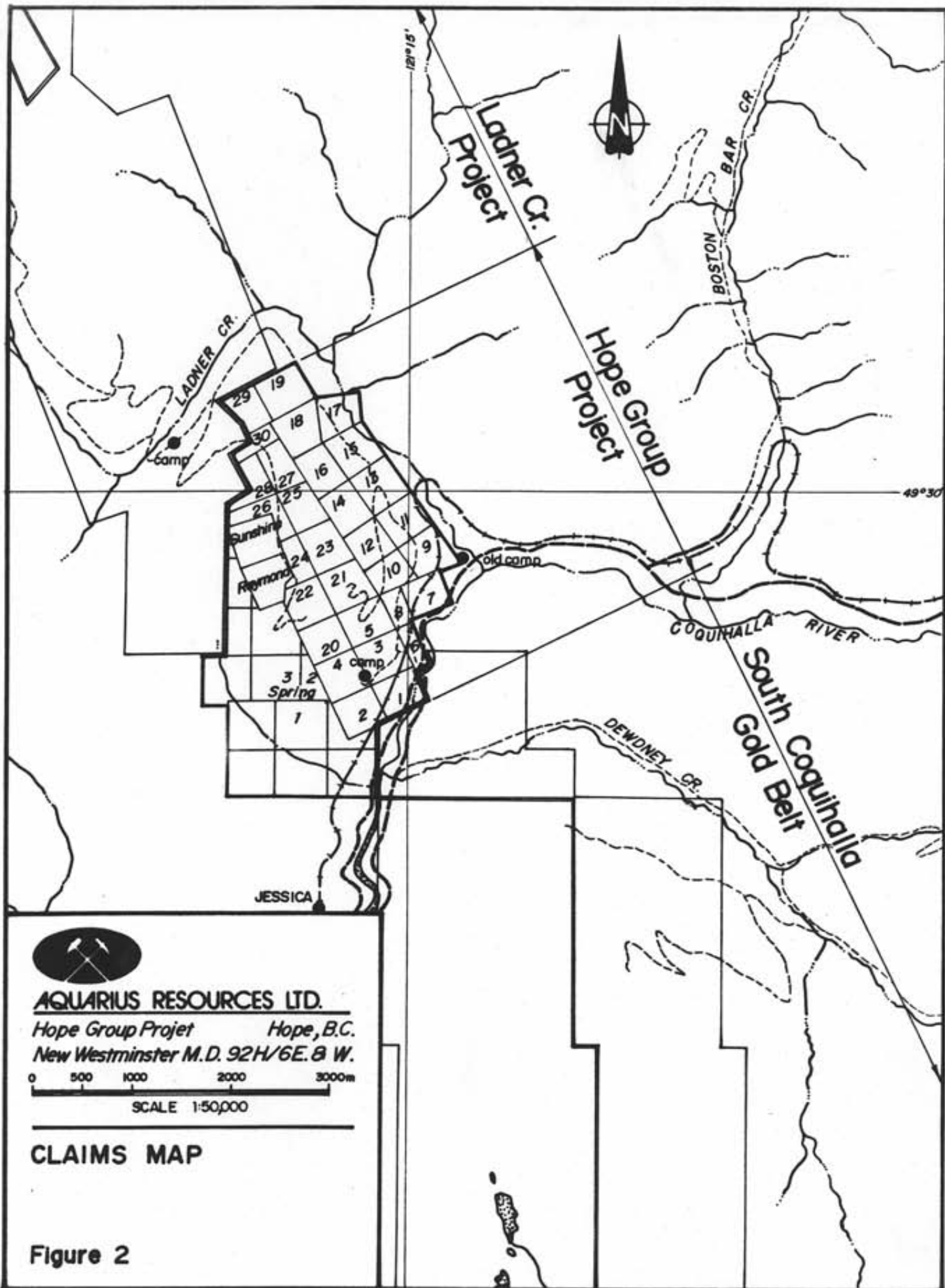


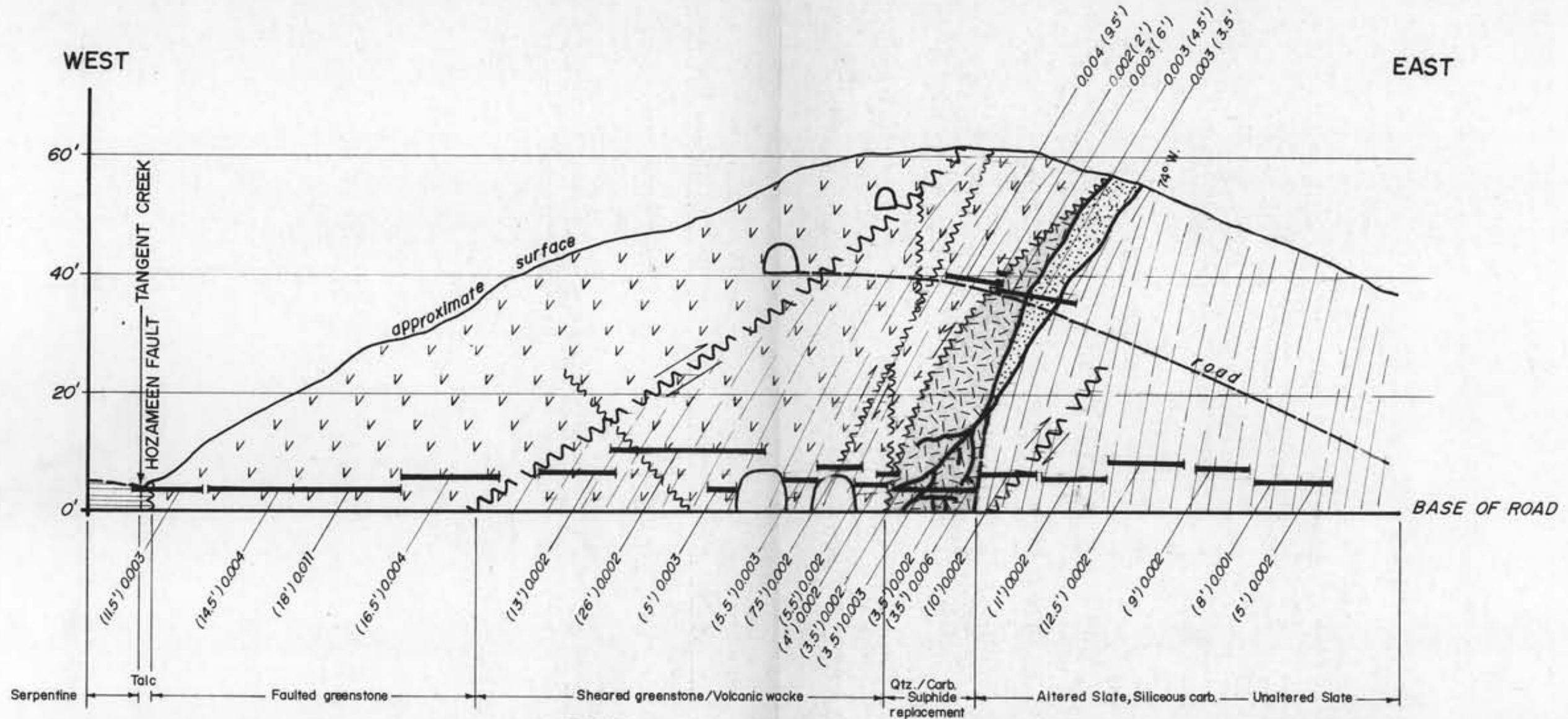
CLAIM NAME	UNITS*	RECORD NO.	ANNIVERSARY DATE	YEAR**
Hope 18	O.C.	28479	May 17	1982
Hope 19	O.C.	28529	June 19	1982
Hope 20	O.C.	26578	June 22	1985
Hope 21	O.C.	26579	June 22	1985
Hope 22	O.C.	26580	June 22	1985
Hope 23	O.C.	26581	June 22	1985
Hope 24	O.C.	26582	June 22	1985
Hope 25	O.C.	26583	June 22	1985
Hope 26	O.C.	26584	June 22	1985
Hope 27	O.C.	26585	June 22	1985
Hope 28	O.C.	26586	June 22	1985
Hope 29	O.C.	28530	June 19	1982
Hope 30	O.C.	28531	June 19	1982
Hope 31	O.C.	28532	June 19	1982
Hope 32	O.C.	28533	June 19	1985
Spring 1	6	177	Feb. 22	1981
Spring 2	1	178	Feb. 22	1981
Spring 3	8	179	Feb. 22	1981

* Old Claims (staked under the old english system)

** Before assessment work applied for in this report




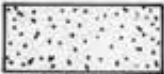

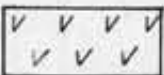
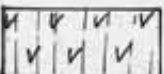







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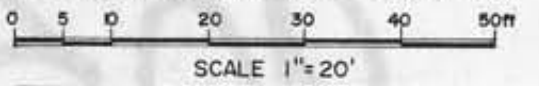
LEGEND

-  Slate & Argillite.
-  Milky Quartz (Boulder) Vein.
-  Sulphide, Siliceous/carbonate Replacement.
-  Greenstone
-  Sheared greenstone or Volcanic wacke.
-  Partial / adit.
-  Chip sample — Au, oz/ton (width)
-  Thurst Fault



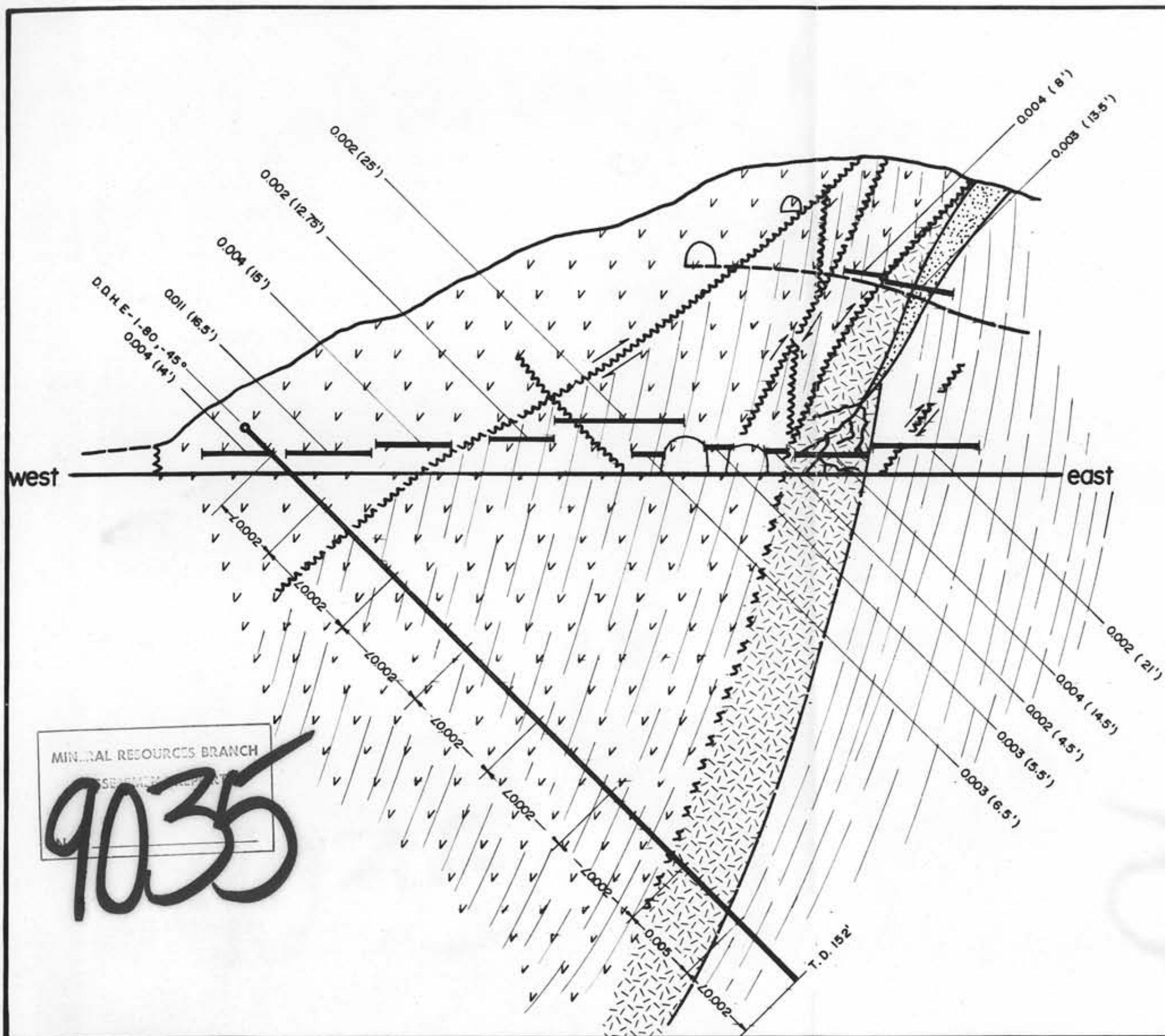
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Emancipation Mine Hope Group
New Westminster M.D. Hope, B.C.



**GEOLOGICAL
CROSS-SECTION EM-69S.**
— Emancipation Zone

Figure 3



LEGEND

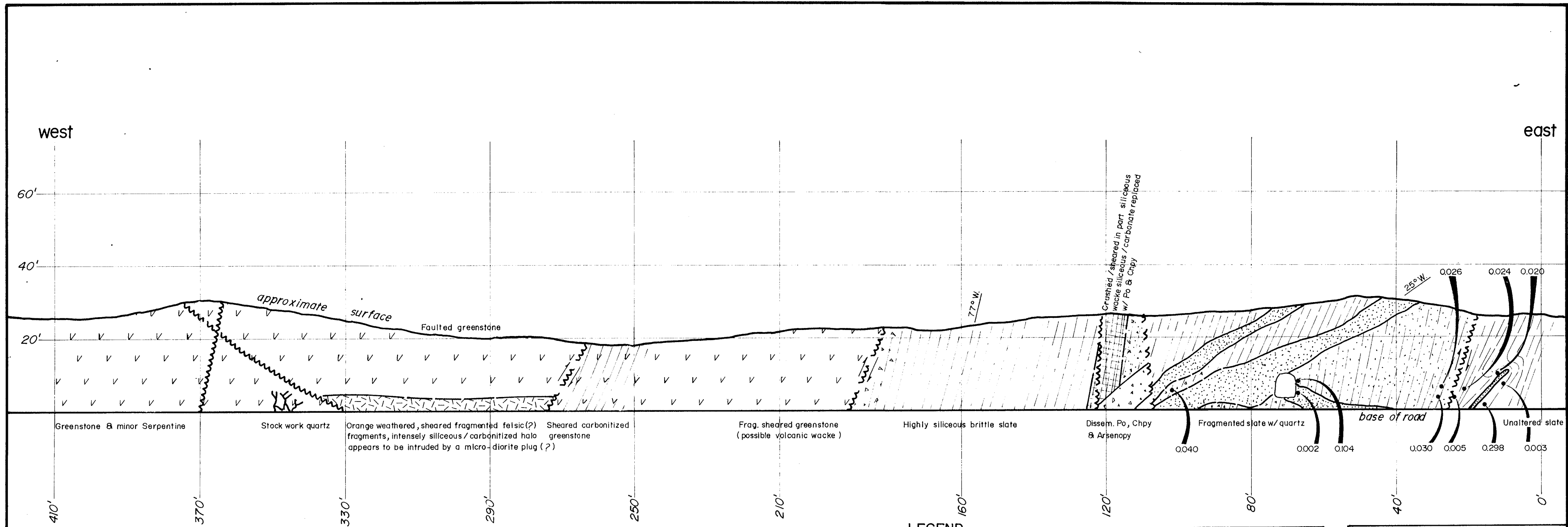
- Slate & Argillite
- Sheared greenstone and / or Volcanic wacke
- Greenstone, faulted greenstone
- Milky quartz (Boulder) vein
- Sulphide, siliceous / carbonate replacement.
- Diamond drill hole
- Portal / Adit
- Chip & core results(oz/ton)
- Thrust fault.

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 New Westminster M.D. Hope, B.C.

0 5 10 20 30 40 50ft
 SCALE 1" = 20'

D.D.H. E-1-80
CROSS-SECTION
Assay Result (oz/ton)
Figure 4



Greenstone & minor Serpentine Stock work quartz Orange weathered, sheared fragmented felsic(?) Sheared carbonitized greenstone Frag. sheared greenstone (possible volcanic wacke) Highly siliceous brittle slate Dissem. Po, Chpy & Arsenopy Fragmented slate w/ quartz base of road Unaltered slate

LEGEND

	Greenstone
	Sheared greenstone.
	Slate
	Slate & Wacke
	Highly siliceous / carbonitized, sheared replacement.
	Sheared / fragmented quartz, slate & wacke
	Sheared replacement Po & Chpy.
	Milky quartz
	Bulk grab sample (oz/ton)
	Thrust fault
	Portal / adit

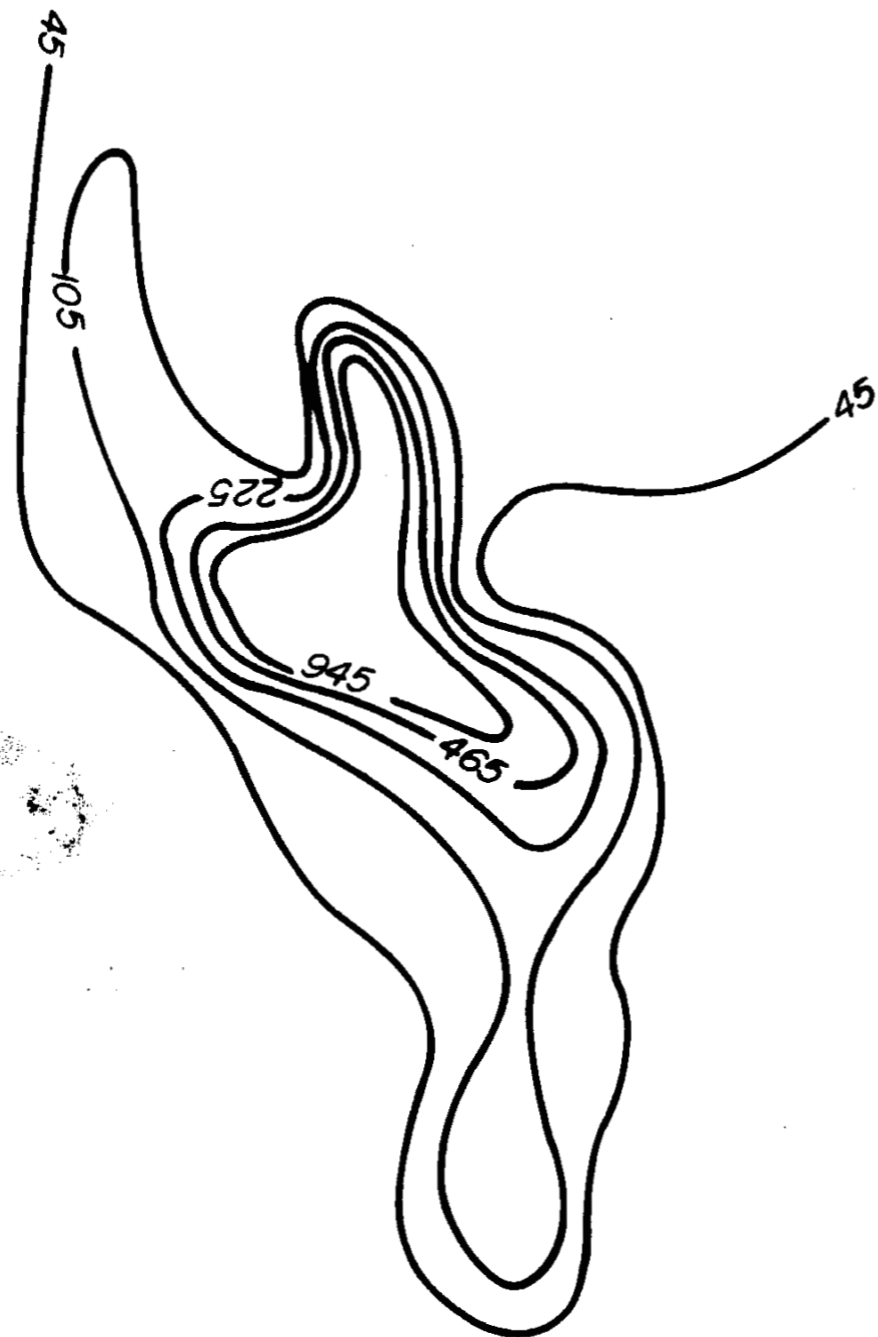
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0 5 10 20 30 40 50ft
 SCALE 1" = 20'

GEOLOGICAL CROSS-SECTION 67S.
 — Emancipation Zone A

Figure 5

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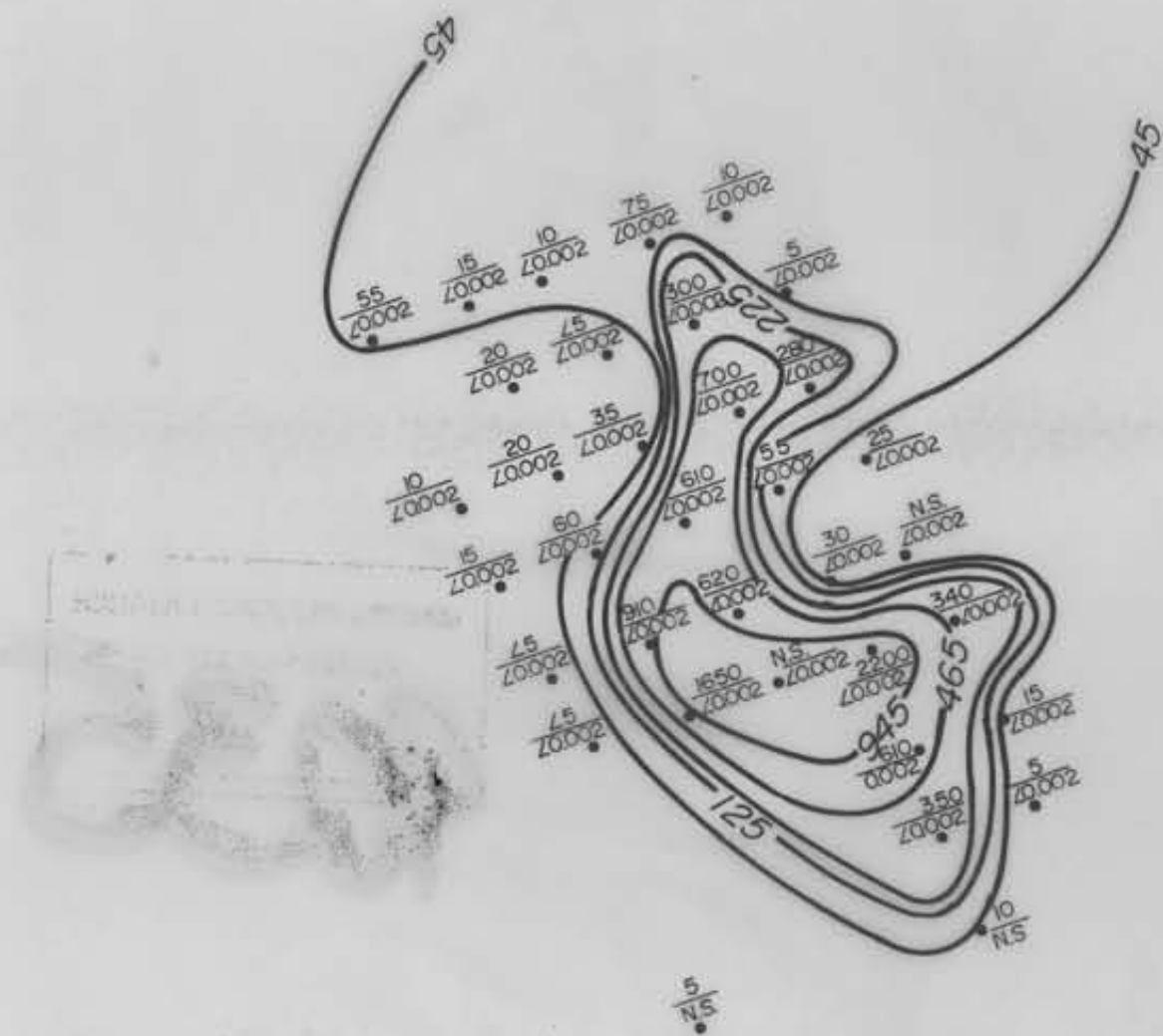
GEOCHEM GOLD
ANOMALY (1977)

Overlay A

NOTE

Soil & rock samples were obtained
(where possible) every 50 feet

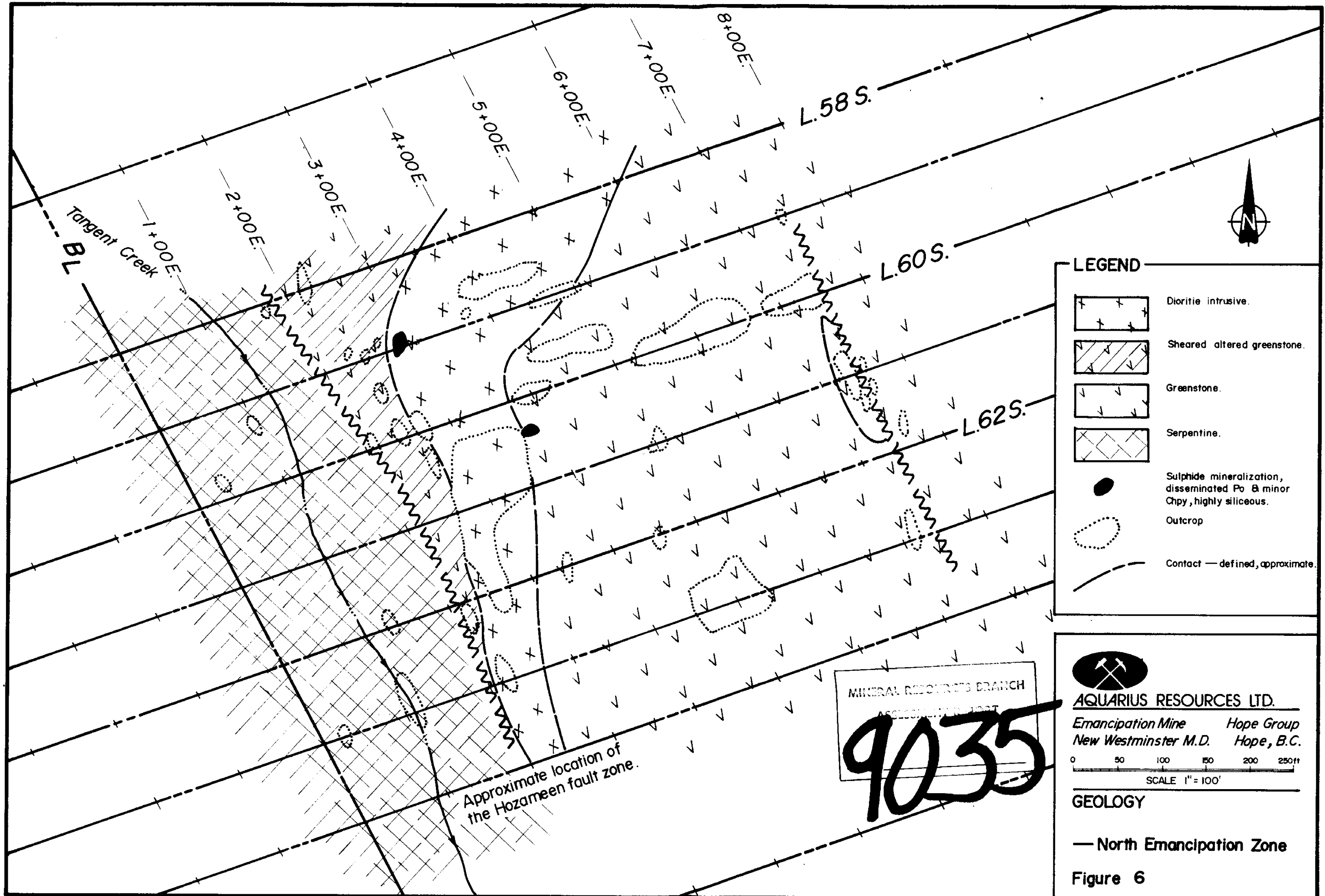
- Soil & rock sample location.
 $\frac{\text{Geochem (ppb)}}{\text{assay (oz/ton)}}$



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NORTH GEOCHEM
ANOMALY (1980)

Overlay B



Tangent Creek
B



- LEGEND**
- Dioritic intrusive.
 - Sheared altered greenstone.
 - Greenstone.
 - Serpentine.
 - Sulphide mineralization, disseminated Po & minor Chpy, highly siliceous.
 - Outcrop
 - Contact — defined, approximate.

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Approximate location of
the Hozameen fault zone.



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GEOLOGY
— North Emancipation Zone

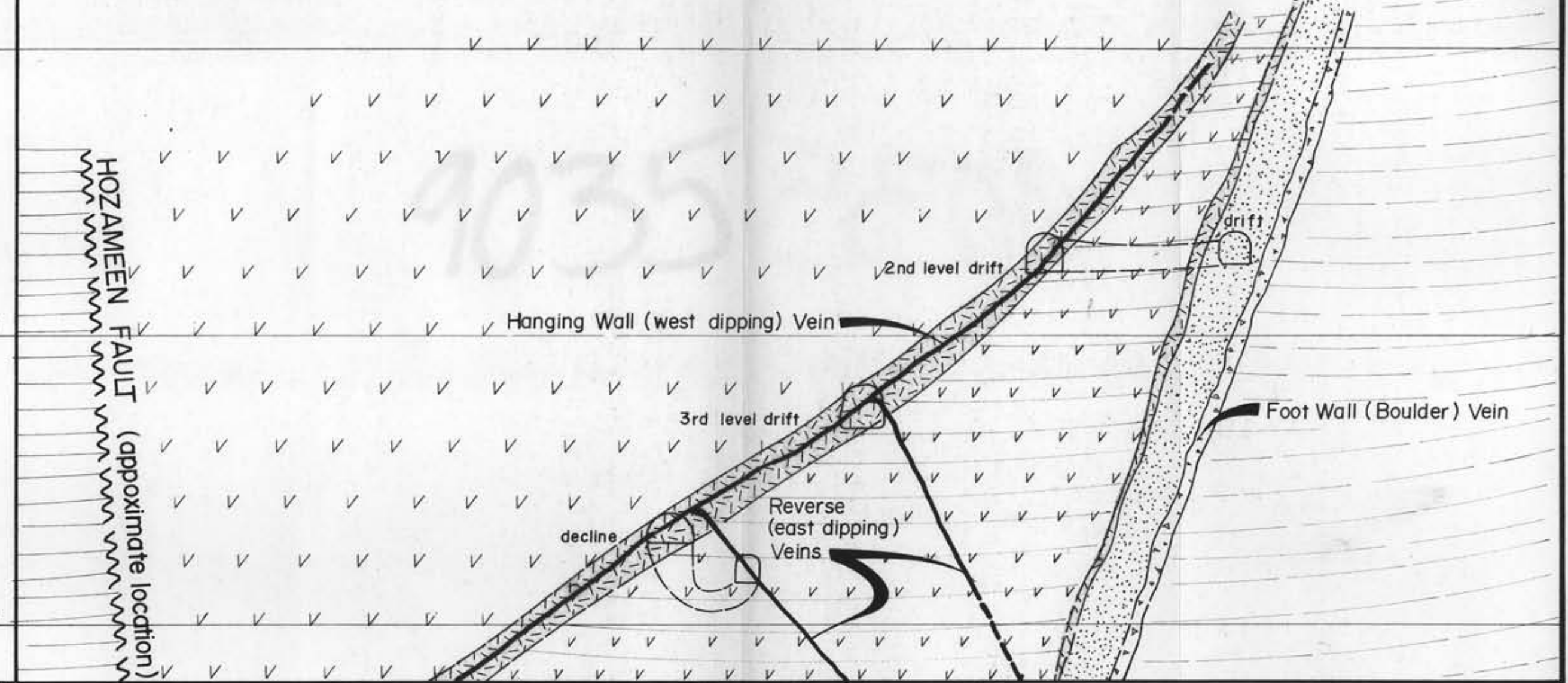
Figure 6

El. 2,700'

El. 2,650'

El. 2,600'

HOZAMEEN FAULT (approximate location)



B

B'

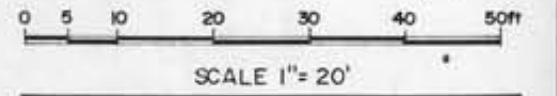
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LEGEND

- Slate & argillite
- Massive, Volcanic greenstone.
- Shear Zone, Schistose greenstone, minor quartz, disseminated sulphides.
- Breccia Zone, quartz & slate fragments.
- Massive, sheared, milky quartz (Boulder) Vein.
- Greenstone, wedge-sheared quartz veins & sulphides (possible zone of replacement.)
- Serpentine



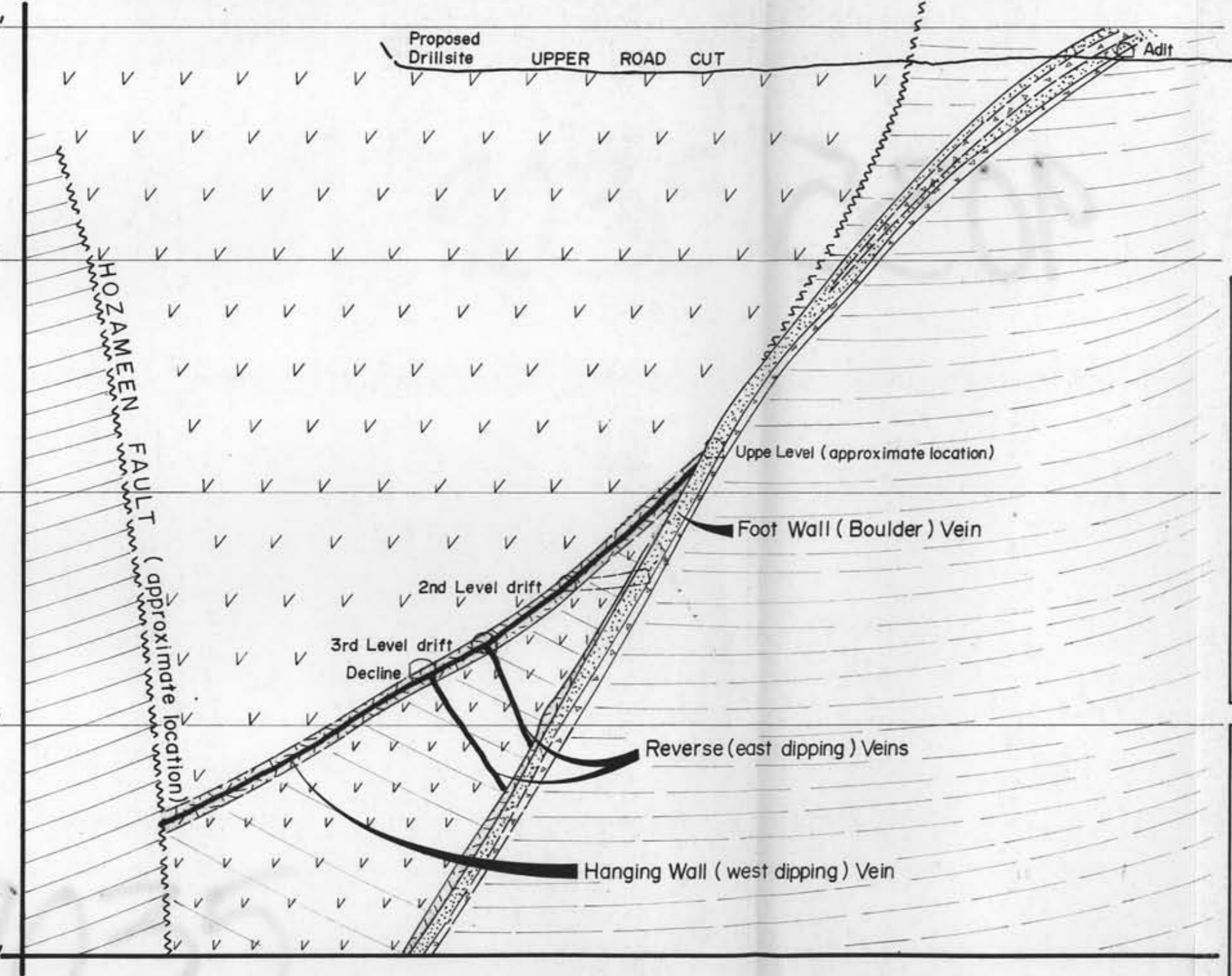
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**GEOLOGICAL
 CROSS-SECTION B-B'**
 Underground Emancipation Mine
 Figure 9

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EL. 2,900'
EL. 2,800'
EL. 2,700'
EL. 2,600'
EL. 2,500'



LEGEND

	Slate, argillite.
	Shear zone, Schistose greenstone, minor quartz, disseminated Sulphides.
	Breccia zone, quartz & slate fragments.
	Greenstone wedge, sheared, quartz veinlets, sulphides (possible zone of replacement).
	Massive, sheared, milky quartz (Boulder) vein.
	Massive, volcanic greenstone.
	Serpentinite

AQUARIUS RESOURCES LTD.
Emancipation Mine Hope Group
New Westminster M.D. Hope, B.C.

0 5 10 20 30 40 50 100feet
 SCALE 1" = 50'

GEOLOGICAL
CROSS - SECTION A - A' —
 Underground, Emancipation Mine
 Figure 10

A

A'

SECTION I: SURFACE GEOLOGY

GEOLOGY OF THE HOPE GROUP

Emancipation Zone

During construction of the road to the second and third level portals of the old Emancipation Mine a good section of rocks for detail mapping was exposed. A detailed geological section (EM-69S) was mapped at a 1" = 20' scale, (Fig. 3 & 4) the rocks encountered from east to west include, as follows:

- 1) Unaltered grey to black slate and slatey argillite of the Ladner Group (Ladner Slates), with beds dipping approximately 70-75° southwest and striking about N 25° W. Cleavage is parallel to bedding. Fine stringers of pyrite can be found along cleavage and bedding planes. Finely laminated, silicified slate and minor cherty quartz pebbles and green clast of possible volcanic origin occur near the greenstone contact.



- 2) A highly siliceous/sulphide and in part carbonate replacement makes up the greenstone/slate contact. The sulphides 3% to 5% by volume in decreasing abundance include, pyrite, pyrrhotite, arsenopyrite and chalcopyrite. An unmineralized milky quartz vein 4 to 6 ft. wide (Boulder Vein) occurs near the surface and pinches downward into a network of quartz veinlets which finger into the zone of replacement.
- 3) Fine grained sheared greenstone with elongated sheared clasts in part resembling detritals of volcanic origin occurs between the true greenstone and the quartz vein and/or replacement zone against the Ladner Slates. This is characteristic of the contact zone also found in other parts of the property.



- 4) Faulted, fine grained, massive volcanic greenstone which immediately to the west is bounded by the Hozameen Fault.

- 5) Dark green, brittle serpentinite and talc shear in fault contact with the greenstone.

This section of rocks exposed at the Emancipation Mine road cut can be encountered elsewhere on the property, except at the north end where the greenstone is lacking.

A drill hole, D.D.H. El-80 was collared just west of the third level portal primarily for geological control and drilled to a depth of 152 ft. (46.3 m). The rock types encountered are much the same as those found on surface with the mineralized replacement continuing at depth (Fig. 4).



The upper road cut on Section EM-67S (Fig. 5) located approximately 200 vertical feet (61m) above section EM-69S (3rd level portal) exposed similar geology. It is evident at this level that both the slate and greenstone have undergone increased silicification and carbonitization and shows the greenstone in places to be sheared, leached, and replaced by iron carbonates (FeCaCO_3) of siderite and/or ankerite. Abundant quartz veins and brecciation are associated with the slate, with slate fragments incorporated within the quartz. The section suggests an igneous or replacement body at shallow depth possibly causing a thermal contact halo that is reflected by the alteration.

Detail chip sampling and bulk sampling procedures were carried out along both exposed sections and the majority of the results were disappointing with assays less than 0.005 oz/ton gold. Two (2) bulk samples obtained from a brecciated slate/quartz zone on section EM-67S ran values of 0.298 oz/ton and 0.104 oz/ton gold. More encouraging results were obtained when weathered bedrock and



fault gouge were panned, most pans carried between 5 to 10 colours of fine gold. Approximately 600 ft. (183m) north of the old Emancipation Mine (EM Zone) a prominent geochemical Au anomaly, identified here as the North EM Anomaly (North EM Zone) was outlined during the 1977 field season. At the North EM Zone (Fig. 6 & overlays) soil samples collected from the "B" horizon at 50 ft. (15.2m) intervals outlined a geochemical anomaly (Fig. 8) with values up to 2,200 ppb gold which proved to be a good case history for previous (1977) geochemical work done at 100 ft. (30.5m) spacings (Fig. 6). The bulk rock samples collected at the same intervals as the soils returned disappointing assay values of less than 0.002 oz/ton gold. Such values may reflect leaching and weathering of the bedrock and probably will require trenching to obtain fresh unweathered rock.

Both the volcanic greenstone and diorite intrusive trend northwest and become masked by overburden and glacial till near the summit of the Hope Group property. This area lies near the boundary of the Hope claims and the



geology here consists of slate and interbedded fine grained wacke, turbidite and conglomeratic beds in fault contact with the serpentine. The greenstone does not occur at the contact in this area but is approximately 300 ft. (92 m) east of the Hozameen Fault well within the Ladner Slates. The greenstone then, may well form part of the Ladner Slates, possibly forming the lowest member of the series.



DISCUSSION

The Hope Group property straddles part of the northwest trending Hozameen Fault, a major structural break that separates the Ladner Slates and volcanic greenstone on the east from serpentine and altered pyroxenite on the west.

The Ladner Slates trend N. 25° W., dip 70-75° S. W. and consist of argillite, slate and limited greywacke. The slates appear to be overturned to the east as indicated by what are identified as "soft sediment structures" (i.e. scours, truncations, etc.). These structures occur in many places along the Emancipation Mine road section and consistently indicate tops of beds to be to the east. Near the greenstone-slate contact pebble conglomerates occur in a slate matrix, the cherty quartzite pebbles are similar to the rock types that make up the Hozameen Group. This conglomeratic unit is believed to be the basal unit of the Ladner Slates. This would further confirm the belief that the slates occurring on the Hope Group property form



part of an isoclinal fold overturned to the east.

The wacke in surface outcrop is limited, lacking in most places and only begins to occur near the northern boundary of the property as fine grained wacke interbedded with slate. A little further to the north the wacke is very coarse grained consisting of sub-rounded to sub-angular quartz and volcanic clasts with beds 5 to 8 m thick. The increase of wackes northwards suggest an influx of coarser sediments, a change from constant deposition of fine clastic sediments found to the south.

The greenstone/slate contact in most places is a conformable contact showing no evidence of faulting. Characteristically the greenstone near the contact is generally sheared with elongated fragments and in some cases resembles volcanic wacke. The volcanic greenstone appears to pinch out and may in part be intercalated with the sediments near the north end of the property. The greenstone at the Idaho Zone is suggested to be interfingering or intercalating with the slate



(per communication with Mr. W. Clarke). Such evidence would probably make the greenstone the lowest member of the Ladner Slate series. Pillow structures and agglomeratic flows found south of the property along the Coquihalla River indicate a marine environment for the origin of the volcanics.



MINERALIZATION AND POSSIBLE CONTROLS

Much of the mineralization found on the property to date is closely or directly related to the volcanic greenstone. Presently at least two (2) types of mineralization occur, vein type and replacement type. In the Emancipation Mine the volcanics host the quartz veins which are known to carry gold, although there are major quartz veins developed within the slate (eg. Boulder Vein). Such veins carry low gold values and are barren of sulphide mineralization. At the Emancipation Mine road cut (Fig. 3) approximately 5 - 7 m of mineralized replacement occurs between the greenstone and slate contact. The sulphide assemblage within the zone of replacement consists of, in decreasing abundance, pyrite, pyrrhotite, arsenopyrite, and chalcopyrite. In many cases the chalcopyrite partially replaces pyrrhotite. Silicification, and to a lesser extent, carbonitization and albitization are the major alteration products associated with the replacement.



The "North EM Zone" located north of the Emancipation Mine occurs entirely within a greenstone and intrusive complex. Mineralization on surface is limited, primarily consisting of pyrite, pyrrhotite and minor chalcopyrite. The geochemical gold values obtained in this area run as high as 2900 ppb and appears to reflect the greenstone intrusive contact zone.

It is evident that the mineralization within the Hope Group property is spatially related to the greenstone horizon and may in part be genetically related to it. It should also be noted that the Hozameen Fault is immediately adjacent to the volcanic greenstone and could also as well contribute to the mineralization, forming channelways for migrating mineralized solutions. The replacement zone at the Emancipation may be one such case, the mineralized zone appears to follow a zone of weakness between the greenstone/slate contact. This zone of weakness if projected downward (Fig. 4) may intersect the Hozameen Fault at depth which may have allowed carbonate, siliceous, and sulphide solutions to migrate upwards.



On the other hand the geochemical gold anomaly at the "North EM Zone" appears to reflect a thermal contact halo produced by the intrusive, remobilizing and concentrating solutions along the margins of the greenstone. Such possible gold bearing solutions may have originated from the intrusive and/or greenstone.



CONCLUSION

The Ladner Slate/greenstone series trends northwest and dips steeply to the southwest and is bounded to the west by the Hozameen Fault, and serpentine and altered pyroxenite. Slates and argillites predominate over the wackes with the latter becoming more evident near the northern boundary of the property.

Volcanic greenstone is in contact with slate and is fault bounded on the west by the Hozameen Fault, shearing and alteration normally occur at the contact. Pillow lavas and agglomeratic flows make up part of the greenstone suggesting marine environment for their origin, they are in fault contact with serpentized ultramafics. Diorite intrusives occur within the greenstone as elongate or dyke-like bodies and may in part be comagmatic with the greenstone.

Within the Hope Group two (2) possible modes for the occurrence and origin of mineralization have been tentatively identified: epigenetic and syngenetic/epigenetic, both



appear to be structurally controlled. The zone of sulphide-siliceous replacement (to a smaller extent carbonate) that occurs between the slate/greenstone contact appears to be of the epigenetic type with epithermal solutions following a faulted contact zone. The gold bearing quartz veins associated with the greenstone (Emancipation Zone) appear to be epigenetic in character but may also be syngenetic/epigenetic in origin. Enriched solutions remobilized from the host or country rock into faults or shear planes may have combined with hydrothermal solutions migrating from depth. It is more likely that the majority of the mineral occurrences on the property are of the epigenetic type and that epithermal solutions were controlled by the Hozameen Fault.



WRITER'S REMARKS

Some of the problems that are brought out from the above review includes:

- 1) The Volcanic greenstone and it's relationship to the Ladner Slates.
- 2) The structure i.e. amount of isoclinal folding and degree of plunge of the slate, greenstone and mineralization.
- 3) Possible change from fine to coarser clastic sediments northward.
- 4) Control and origin of mineralization related to depth, structure and wall rock composition.

Identifying the above problems will aid in developing a model for the belt, and greatly assist in establishing future exploration methods both within Aquarius ground and along the belt, and other similar belts.



SECTION II: UNDERGROUND MAPPING AND SAMPLING OF
THE OLD EMANCIPATION MINE

INTRODUCTION

A transit survey of the roads and underground workings at the old Emancipation Mine were completed in September, 1980, enabling the writer to carry out controlled mapping and sampling of the old underground workings. A combination of the underground and surface mapping has produced a better geological model and gives some insight to the structure and control of mineralization.

Previous underground mapping and sampling was carried out by A. R. Bullis, (1972), who gave a qualified report on the property. D. R. Cochrane, of Cochrane Consultants Ltd., resampled the underground workings in 1977. More recently (November, 1980) work was carried out by the writer and is outlined and documented in this report.

History of the Emancipation Mine can be found in reports from the early 1900's, such as, B. C. Minister of Mines annual reports; C. E. Cairnes, 1924 and 1929 G.S.C. reports; and summary reports by Cochrane Consultants Ltd.



GEOLOGY

Surface

The surface geology of the old Emancipation Mine was exposed by a road cut when access to the third level portal was built. This exposed a good section of rocks (Fig. 3) composed of argillites and slates in fault contact with volcanic greenstone which in turn is in fault (Hozameen Fault) contact with the serpentine.

At the greenstone-slate contact a highly siliceous sulphide zone approximately fifteen feet (15 ft. or 4.6 m) wide was encountered and identified as a zone of replacement (Fig. 3) where it occurs as abundant quartz veinlets and stringers. Both the surface structures and geology throughout the Hope Group property is much the same as the section described above. Only near the north boundary is the greenstone not observed and may be masked by overburden. The trend of the rocks is about



north 25° west with slates steeply dipping to the southwest. A more detailed report of the surface geology can be found in Section I of this assessment report.



Underground

Both the third and second level drifts follow the trend of quartz veins within the volcanic greenstone which are bounded by greenstone or wall rock that is highly sheared, schistose and altered, carrying disseminated sulphides and quartz stringers. Outside this sheared zone the wall rock is generally more or less massive.

A milky quartz vein (Hanging Wall or West Dipping Vein) follows and partly replaces one such greenstone shear zone with occasional greenstone fragments incorporated in the vein. Its thickness varies from 0.5 ft. (0.15 m) to about 1.5 ft. (0.46 m) and it also occurs as lenses and as small feathered stringers, the dip is to the southwest between 35° to 40° . A second system of quartz veins (Reverse or East Dipping Veins) occur in an underlying, intersecting relationship to the Hanging Wall Vein. Their thickness varies between 0.5 ft. (0.15 m) to about 1.0 ft. (0.31 m) and dip approximately 60° east (Fig. 9 & 10). These



two (or more) reverse veins appear to be a secondary system of fractures or dilatent zones normal to the shear and west dipping vein.

Cross cuts on the second level encountered a massive, milky quartz vein (Boulder or Footwall Vein) which appears to have replaced a fault breccia contact zone between the greenstone and slate. The slate adjacent to the "Boulder Vein" is generally brecciated with fragments incorporated in it, the greenstone has undergone more of a schistose shear with little brecciation. The "Boulder Vein" dips to the southwest approximately 60° and varies in width from 3 ft. (0.92 m) to 15 ft. (4.6 m). In a down-dip position at the EM-69S (Emancipation) outcrop section (Fig 3). This same vein changes to a series of quartz veinlets and stringers enclosed in the highly siliceous sulphide replacement zone previously described.



STRUCTURE

At least two (2) major structures were mapped underground. A prominent shear zone within the greenstone dipping approximately 40° southwest which is partly replaced by the west dipping vein, the shear is believed to be in part a thrust fault partially overlapping the slate. The second prominent structure is a fault-breccia zone occurring between the greenstone-slate contact and may have developed from the thrust of the greenstone suggested above. These two (2) structural systems are separated by a "wedged" shaped greenstone (Figs. 9 and 10), which hosts a series of fractures or dilatent zones approximately normal to the shear zone dipping about 60° to the east. These appear to change to a near-vertical dip with depth. The fractures or dilatent zones are believed to be tension weaknesses developed during the thrust movement of the greenstone and subsequently replaced by quartz veins (reverse dipping veins). More similar structures might occur at depth and possibly along strike.



What plunges could be mapped (two localities) show the structurally controlled veins to be plunging about 20-30° to the north. This may also be the case for the partially sheared and mineralized wedged shaped greenstone. More recent minor faulting has off-set some of the quartz veins although the displacement is generally minimal, (between 2 ft. (0.61 m) to 6 ft. (1.8 m)). The majority of these minor faults strike approximately east-west and dip steeply to the north.



MINERALIZATION AND POSSIBLE CONTROLS

The majority of the mineralization observed occurs within the sheared greenstone and quartz veins. The mineral assemblage is composed predominantly of pyrrhotite, pyrite, arsenopyrite and minor chalcopyrite, with minor visible gold noted in the west dipping quartz vein. Abundant arsenopyrite is peppered throughout one of the east dipping quartz veins and carries gold with assays up to 4 oz/ton (A.R. Bullis, 1972). Samples obtained from this vein also carry visible gold. The sheared greenstone which makes up the host and wall rock appears to be associated with a highly silicified, disseminated sulphide zone consisting of quartz stringers and abundant disseminated pyrrhotite with lesser pyrite and arsenopyrite. The siliceous-sulphide zone appears to occur near the decline and third level drift area and was noted for a length of at least 100 ft. (31m) along the 3rd level drift.



Controls of mineralization are structural with the quartz replacing part of the greenstone shear (Hanging Wall Vein) and along the fractures or dilatent zones (reverse dipping veins) within the greenstone wedge. The wedge which occurs between the greenstone shear zone (hanging wall vein) and the greenstone-slate fault breccia zone (Boulder Vein) appears to be in part a complex shear system and could also have contributed to the control of mineralization and may itself carry disseminated sulphides and gold values at depth, similar to the mineralized zone noted in the third level drift.



SYNTHESIS AND CONCLUSION

The underground geology of the old Emancipation Mine is composed of two (2) major rock units, volcanic-greenstone, andesitic in composition and slaty argillites. Practically all the mineralization occurs within the greenstone and appears to be controlled by shearing and fracture zones.

The shear zone in the greenstone (west dipping vein) and the breccia zone (Boulder Vein) in the greenstone-slate contact are believed to result from thrusting, with part of the greenstone overlapping the slate. Between these two zones is a greenstone wedge that hosts a series of dilatant or fracture zones approximately normal to the greenstone shear zone, this wedge in part is also sheared. The reverse dipping veins and mineralized replacement zone lying immediately under the Hanging Wall Vein occur within this greenstone wedge. One continuous chip sample obtained from the wall rock associated with the replacement carried up to 0.189 oz/ton of gold over 7 ft. (2.1 m).



ASSAYS AND RESULTS

A total of at least fifty-four (54) rock samples both bulk and chips were collected from the old Emancipation underground workings (see accompanying compilation assay map) over the last several years. Samples were initially obtained by A.R. Bullis (1972), No. 401-423 inclusive; D. R. Cochrane (1977), E1-E9 inclusive; and subsequently by D.G. Cardinal (1980), EM1-EM23 inclusive. Assay results were tabulated and weighted averages calculated for all the samples.

Below is a brief summary of the weighted averages and includes:

1. West dipping vein - (18 rock samples)
Wt. avg. gr. = 0.233 oz/ton (7.9 gm/metric ton)
Avg. width = 1.19 ft. (0.36 m)

2. Reverse dipping veins = (6 rock samples)
Wt. avg. gr. = 1.52 oz/ton (51.7 gm/metric ton)
Avg. width = 0.90 ft. (0.27 m)

3. Boulder vein - (7 rock samples)
Wt. avg. gr. = 0.013 oz/ton (0.44 gm/metric ton)
Avg. width = 4.64 ft. (1.41 m)



4. Wall Rock - (23 rock samples)
Wt. avg. gr. = 0.043 oz/ton (1.5 gm/metric ton)
Avg. sample length = 5.17 ft. (1.6 m)

5. 3rd level Zone - 100 ft. portion of the 3rd level drift which covers part of the mineralized replacement zone mentioned above.

Samples include portion of the quartz veins (1 and 2) and wall rock samples.

Wt. avg. gr. = 0.22 oz/ton (6.82 gm/metric ton)
over a length of 100 ft. (30.5 m)
Sample width - 0.5 ft. to 7.0 ft. (0.15 to 2.1 m)

The third level zone includes part of the west dipping and reverse dipping veins and sheared wall rock which are mineralized and is recommended as a priority target for any future underground drilling.



SECTION III: DIAMOND DRILL WORK

PURPOSE OF D.D.H. E1-80

The main purpose of D.D.H. E1-80 was twofold, first, to try to define both structure and geology at depth and secondly to prognosticate, to some degree, the approach to follow for the proposed 1981 diamond drilling program.

The diamond drill hole E1-80 was collared approximately 100 ft. (30 m) west of the 3rd level portal (see geology map 1:100 and Fig. 4), with azimuth 57.5° and dipping -45° , for a total length of 152 ft. (46 m).



GEOLOGY AND SAMPLING

The geology encountered in the drilling was similar to the geology mapped along the road section (Fig. 4, Section 1). The volcanic greenstone, in the core from surface to 125 ft. (38 m) is essentially barren with only disseminated pyrrhotite and pyrite. A siliceous replacement zone from 125 ft. (38 m) to 133.5 ft. (41 m), at the greenstone-slate contact was logged and carried minor pyrite, pyrrhotite with subordinate chalcopyrite. Slate logged from 133.5 ft. (41 m) to 152 ft. (46 m) is barren of mineralization and steeply dips to the west.

The entire 152 ft. (46 m) of core was split in half and sampled. One-half was sampled at continuous 5 ft. (1.5 m) intervals, bagged and shipped to Bondar Clegg and Co. Ltd., in North Vancouver, B. C., for analysis. One-half (unsampled) was stored on the property, at the Hope field camp.



APPENDIX I
DIAMOND DRILL RECORD



EMANCIPATION PROJECT

DIP TEST		
Footage	Angle	
	Reading	Corrected

Diamond Drill Record



AQUARIUS RESOURCES LTD.

HOLE No. E1-80 Sheet No. 2 of 3 Lat. 3,194.13
 Section Dep. 10,476.32
 Date Begun August 2/80 Bearing N. 57°45' E.
 Date Finished August 6/80 Elev. Collar 2,640.81

Total Depth 152.0'
 Logged By D. G. C.
 Claim Hope Group
 Core Size BQ

DEPTH	DESCRIPTION	SAMPLE No.	FROM	TO	WIDTH of SAMPLE	1		2	
						Au. oz/ton	Ag. oz/ton	Au. oz/ton	Ag. oz/ton
84-102'	green granular/sheared greenstone, (possible volcanic wacke) dissem. pyrrhotite + minor chalcopyrite	E1-80	85.0'	90.0'	5'	/0.002			
			90.0'	95.0'	5'	/0.002			
			95.0'	100.0'	5'	/0.002			
101-110.5'	green to light (lime) green fine grained volcanic wacke with streaked angular fragments of slate (?) quartz stringers	E1-80	100.0'	105.0'	5'	/0.002			
			105.0'	110.0'	5'	/0.002			
110.5-118'	dark green fine grained green- stone/wacke	E1-80	110.0'	115.0'	5'	/0.002			
118-125'	grey/green siliceous wacke plus dissem. pyrrhotite	E1-80	110.0'	115.0'	5'	/0.002			
			115.0'	120.0'	5'	/0.002			
			120.0'	125.0'	5'	0.005			
125-133.5'	highly siliceous replacement with pyrrhotite and chalcopyrite 1-3% by volume stringers of qtz with minor calcite	E1-80	125.0'	130.0'	5'	0.004			
			130.0'	135.0'	5'	0.006			

APPENDIX II

CERTIFICATE OF ASSAY



BONDAR-CLEGG & COMPANY LTD.

1500 PEMBERTON AVENUE, NORTH VANCOUVER, B.C.
PHONE: 988-5315

TELEX: 04-54554

CERTIFICATE OF ASSAY

TO Aquarius Resources Ltd.
1802 - 475 Howe Street
Vancouver, B.C.

A20 - 1211

September 3, 1980

I hereby certify that the following are the results of assays made by us upon the herein described **core** samples.

MARKED		Au REPORT OR/TON	MARKED		Au REPORT OR/TON	MARKED	Percent
DNI-81-80	7- 10	<0.002	DNI-8180	120-125	0.005		
	10- 15	<0.002		125-130	0.004		
	15- 20	<0.002		130-135	0.006		
	20- 25	<0.002		135-140	<0.002		
	25- 30	<0.002		140-145	<0.002		
	30- 35	<0.002		145-150	<0.002		
	35- 40	<0.002		150-152	<0.002		
	40- 45	<0.002					
	45- 50	<0.002					
	50- 55	<0.002					
	55- 60	<0.002					
	60- 65	<0.002					
	65- 70	<0.002					
	70- 75	<0.002					
	75- 80	<0.002					
	80- 85	<0.002					
	85- 90	<0.002					
	90- 95	<0.002					
	95-100	<0.002					
	100-105	<0.002					
	105-110	<0.002					
	110-115	<0.002					
	115-120	<0.002					

cc Mr. Dan Cardinal

NOTE:

Rejects retained two weeks
Pulps retained three months
unless otherwise arranged.

Registered Assayer, Province of British Columbia

MIN-EN Laboratories Ltd.

705 WEST 15th STREET,
NORTH VANCOUVER, B.C., CANADA V7M 1T2
TELEPHONE (604) 980-5814

ANALYTICAL REPORT

Project Date of report **July 11/80.**
File No. **0-412** Date samples received **July 5/80.**
Samples submitted by: **D. Cardinal**
Company: **Aquarius Resources**
Report on: Geochem samples
.....
..... **7** Assay samples
.....

Copies sent to:

1. **Aquarius Resources, Vancouver, B.C.**
2. **Aquarius Resources, Hope, B.C.**
3.

Samples: Sieved to mesh Ground to mesh **-100**

Prepared samples stored discarded

rejects stored discarded

Methods of analysis: **Acid digestion-chemical analysis.**

Remarks:

MIN-EN LABORATORIES LTD.

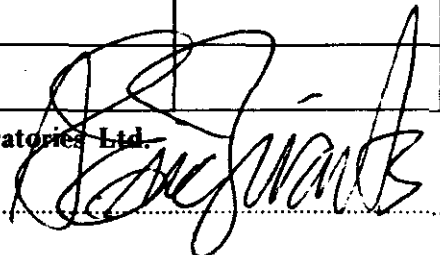
705 WEST 15TH STREET
 NORTH VANCOUVER, B.C.
 Phone: 980-5814

Certificate of Assay

TO: Aquarius Resources Ltd.,
1002-475 Howe St.,
Vancouver, B.C.

PROJECT No. Emancipation
 DATE July 11/80.
 File No. 0-412

SAMPLE No.	Cu %	Ag	Au
		oz/ton	oz/ton
201	.010	.18	.002
202	.008	.11	.002
203	.009	.03	.004
204	.012	.10	.011
205	.007	.09	.005
206	.011	.08	.004
207	.006	.05	.003

MIN-EN Laboratories Ltd.
 CERTIFIED BY 

MIN-EN Laboratories Ltd.

705 WEST 15th STREET,
NORTH VANCOUVER, B.C., CANADA V7M 1T2
TELEPHONE (604) 980-5814

ANALYTICAL REPORT

Project **Emanicipation** Date of report **Aug. 1/80.**
File No. **0-548** Date samples received **July 28/80.**
Samples submitted by: **D. Cardinal**
Company: **Aquarius Resources**
Report on: **Geochem samples**

42 ✓ Assay samples

Copies sent to:

- Aquarius Resources, Vancouver, B.C.**
- Aquarius Resources, Hope, B.C.**
-

Samples: Sieved to mesh _____ Ground to mesh **-100**

Prepared samples stored discarded

rejects stored discarded

Methods of analysis: **Cu, Ag-Acid digestion-chemical analysis.**

Au-Fire and A.A. Finish.

Remarks:

MIN-EN LABORATORIES LTD.

705 WEST 15TH STREET
 NORTH VANCOUVER, B.C.
 Phone: 980-5814

Certificate of Assay

TO: Aquarius Resources,

PROJECT No. Emancipation

1002-475 Howe St.,

DATE Aug. 1/80.

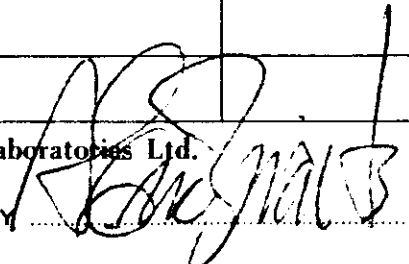
Vancouver, B.C.

File No. 0-548 ✓

SAMPLE No.	Cu %	Ag	Au
		oz/ton	oz/ton
DC35-780	.004	.06	.003
DC36-780	.006	.02	.003
208	.005	.01	.003
209	.007	.01	.002
210	.009	.01	.003
211	.005	.01	.003
212	.004	.03	.004
213	.006	.07	.298
214	.006	.03	.003
215	.010	.01	.020
216	.005	.02	.024
217	.007	.01	.005
218	.009	.01	.030
219	.014	.03	.026
220	.003	.01	.002
221	.008	.01	.104
222	.004	.01	.040
223	.005	.02	.004
224	.003	.02	.003
DC15-2-780	.010	.01	.003

MIN-EN Laboratories Ltd.

CERTIFIED BY



MIN-EN LABORATORIES LTD.

705 WEST 15TH STREET
 NORTH VANCOUVER, B.C.
 Phone: 980-5814

Certificate of Assay

TO: Aquarius Resources,
1002-475 Howe St.,
Vancouver, B.C.

PROJECT No. Emanicipation

DATE Aug. 1/80.

File No. 0-548

SAMPLE No.	Cu %	Ag oz/ton	Au oz/ton
DC13-780	.004	.04	.002
14-780	.010	.03	.001
15-780	.005	.06	.002
16-780	.039	.05	.002
17-780	.012	.08	.002
18-780	.006	.02	.001
19-780	.009	.02	.002
20-780	.008	.03	.002
21-780	.008	.06	.002
22-780	.007	.01	.002
23-780	.008	.02	.002
24-780	.004	.01	.002
25-780	.004	.02	.002
26-780	.007	.01	.002
27-780	.010	.06	.002
28-780	.004	.03	.006
29-780	.007	.03	.002
30-780	.010	.02	.003
31-780	.007	.02	.002
32-780	.008	.05	.002
33-780	.009	.03	.002
DC34-780	.004	.05	.002

MIN-EN Laboratories Ltd.

CERTIFIED BY

MIN-EN Laboratories Ltd.

705 WEST 15th STREET,
NORTH VANCOUVER, B.C., CANADA V7M 1T2
TELEPHONE (604) 980-5814

ANALYTICAL REPORT

Project **Emancipation** Date of report **Aug. 13/80.**
File No. **0-640** Date samples received **Aug. 11/80.**
Samples submitted by: **D. Cardinal**
Company: **Aquarius Resources**
Report on: **Geochem samples**
32 Assay samples

Copies sent to:

- Aquarius Resources, Vancouver, B.C.**
- Aquarius Resources, Hope, B.C.**
-

Samples: Sieved to mesh _____ Ground to mesh **-100**

Prepared samples stored discarded

rejects stored discarded

Methods of analysis: **Fire and A.A. Finish.**

Remarks:

MIN-EN LABORATORIES LTD.

705 WEST 15TH STREET
 NORTH VANCOUVER, B.C.
 Phone: 980-5814

Certificate of Assay

TO: Aquarius Resources Ltd.,
1002-475 Howe St.,
Vancouver, B.C.

PROJECT No. Emancipation

DATE Aug. 13/80.

File No. 0-640

SAMPLE No.	Au oz/ton
DC1-880	.119
2	.013
3	.002
4	.010
5	.007
6	.002
7	.002
8	.008
9	.036
10	.001
11	.001
12	.019
13	.002
14	.001
15	.002
16	.001
17	.001
18	.002
19	.002
20	.048
21	.008
DC22-880	.002

MIN-EN Laboratories Ltd.

CERTIFIED BY

✓

MIN-EN LABORATORIES LTD.

705 WEST 15TH STREET
 NORTH VANCOUVER, B.C.
 Phone: 980-5814

Certificate of Assay

TO: Aquarius Resources Ltd.,
1002-475 Howe St.,
Vancouver, B.C.

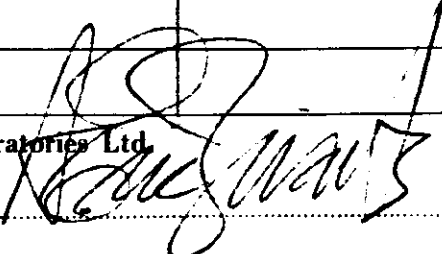
PROJECT No. Emancipation

DATE Aug. 13/80.

File No. 0-640

SAMPLE No.	Au		
	oz/ton		
DC23-880	.002		
24	.002		
25	.010		
26	.002		
27	.001		
28	.003		
29	.002		
30	.002		
31	.002		
DC32-880	.002		

MIN-EN Laboratories Ltd.

CERTIFIED BY 

MIN-EN Laboratories Ltd.

705 WEST 15th STREET,
NORTH VANCOUVER, B.C., CANADA V7M 1T2
TELEPHONE (604) 980-5814

ANALYTICAL REPORT

Project **Emancipation** Date of report **Sept. 3/80.**
File No. **0-720** Date samples received **Aug. 28/80.**
Samples submitted by: **D. Cardinal**
Company: **Aquarius Resources**
Report on: **Geochem samples**

5 ✓ **Assay samples**

Copies sent to:

1. **Aquarius Resources, Vancouver, B.C.**
2. **D. Cardinal, Hope, B.C.**
3. _____

Samples: Sieved to mesh _____ Ground to mesh **-100**

Prepared samples stored discarded

rejects stored discarded

Methods of analysis: **Fire and A.A. Finish.**

Remarks: **Geochem samples to follow.**



BONDAR-CLEGG & COMPANY LTD.

130 PEMBERTON AVE., NORTH VANCOUVER, B.C. V7P 2R5 • PHONE: 985-0681 • TELEX: 04-352667

Certificate of Analysis

TO Aquarius Resources Ltd.
1002 - 475 Howe Street
Vancouver, B.C. V6C 2B6

A20 - 1577

October 17, 1980

I hereby certify that the following are the results of assays made by us upon the herein described ore samples. ✓

MARKED	PERCENT	PERCENT	MARKED	PERCENT	PERCENT	MARKED	PERCENT	PERCENT
	Au	Ag		Au	Ag			
	oz/ton	oz/ton		oz/ton	oz/ton			
DC - 8 - 780	<0.002	<0.02	DC - 7 - 980	<0.002	<0.02			
9	<0.002	<0.02	8	<0.002	<0.02			
10	<0.002	<0.02	9	<0.002	<0.02			
11	<0.002	<0.02	10	<0.002	<0.02			
12	<0.002	<0.02	11	<0.002	<0.02			
37	<0.002	<0.02	12	<0.002	<0.02			
38	0.002	<0.02	13	<0.002	<0.02			
39	0.002	<0.02	14	<0.002	<0.02			
41	0.010	0.03	15	<0.002	<0.02			
43	<0.002	<0.02						
44	<0.002	<0.02						
45	<0.002	<0.02						
DC- 29 - 880	0.002	<0.02						
DC- 1 - 980	<0.002	<0.02						
2	<0.002	<0.02						
3	<0.002	<0.02						
4	<0.002	<0.02						
5	<0.002	<0.02						
6	<0.002	<0.02						

cc Mr. Dan Cardinal

BONDAR-CLEGG & COMPANY LTD.

REGISTERED ASSAYER, PROVINCE OF BRITISH COLUMBIA

NOTE:

Rejects retained two weeks
Pulps retained three months
unless otherwise arranged.

To: Aquarian Resources Ltd.

REPORT NO. A20 - 1605

PAGE No. 1

BONDAR-CLEGG & COMPANY LTD.

DATE: November 5, 1980

1002 - 475 Howe Street
Vancouver, B.C.

CERTIFICATE OF ASSAY

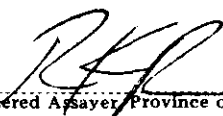
Samples submitted: October 16, 1980
Results completed: November 5, 1980

PROJECT: SAN CAROLINE

I hereby certify that the following are the results of assays made by us upon the herein described etc samples

MARKED	GOLD		SILVER		Percent	Percent	Percent	Percent	Percent	Percent
	Ounces per Ton	Grams per Metric Ton	Ounces per Ton	Grams per Metric Ton						
BC - 1 - 1000	<0.002		0.05							
2	<0.002		<0.02							
3	<0.002		<0.02							
4	<0.002		<0.02							
5	<0.002		<0.02							
6	<0.002		<0.02							
7	<0.002		<0.02							
8	<0.002		<0.02							
9	<0.002		<0.02							
10	<0.002		<0.02							
11	<0.002		<0.02							
12	<0.002		<0.02							
13	<0.002		<0.02							
14	<0.002		<0.02							
15	<0.002		<0.02							
16	<0.002		<0.02							
17	0.076		0.03							
18	0.003		0.02							
19	0.000		0.03							
20	0.011		0.02							
on Mr. San Caroline										

NOTE:
Rejects retained three weeks
Pulps retained three months
unless otherwise arranged.


Registered Assayer, Province of British Columbia

MIN-EN Laboratories Ltd.

705 WEST 15th STREET,
NORTH VANCOUVER, B.C., CANADA V7M 1T2
TELEPHONE (604) 980-5814

ANALYTICAL REPORT

Project Date of report **Nov. 27/80.**
File No. **0-1161** Date samples received **Nov. 25/80.**
Samples submitted by: **D. Cardinal**
Company: **Aquarius Resources**
Report on: Geochem samples

..... **25** Assay samples

Copies sent to:

1. **Aquarius Resources, Vancouver, B.C.**
2. **D. Cardinal, Hope, B.C.**
3.

Samples: Sieved to mesh Ground to mesh **-100**

Prepared samples stored discarded

rejects stored discarded

Methods of analysis: **Ag-Acid digestion-chemical analysis.**

Au-Fire and A.A. Finish. WO₃-Fusion-A.A. Analysis.

Remarks:

SPECIALISTS IN MINERAL ENVIRONMENTS

MIN-EN LABORATORIES LTD.

705 WEST 15TH STREET
 NORTH VANCOUVER, B.C.
 Phone: 980-5814

Certificate of Assay

TO: Aquarius Resources, PROJECT No. D. Cardinal
1002-475 Howe St., DATE Nov. 27/80.
Vancouver, B.C. File No. 0-1161

SAMPLE No.	Ag oz/ton	Au oz/ton	W ₃ %
Z21-1080	.04	.012	.001
Z22-1080	.01	.017	.001
EM 1	.05	.003	
2	.18	.359	
3	.04	.009	
4	.03	.060	
5	.04	.013	
6	.08	.189	
7	.02	.042	
8	.04	.102	
9	.03	.032	
10	.03	.010	
11	.02	.002	
12	.02	.019	
13	.56	1.985	
14	.02	.013	
15	.04	.041	
16	.02	.001	
17	.34	1.510	
18	.06	.048	
19	.08	.058	
EM 20	.04	.002	

MIN-EN Laboratories Ltd

CERTIFIED BY

MIN-EN LABORATORIES LTD.

705 WEST 15TH STREET
NORTH VANCOUVER, B.C.
Phone: 980-5814

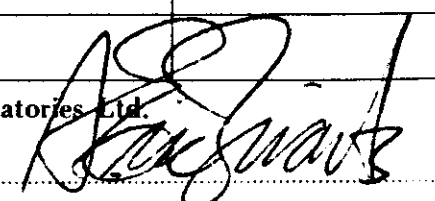
Certificate of Assay

TO: Aquarius Resources,
1002-475 Howe St.,
Vancouver, B.C.

Attn: D. Cardinal
PROJECT No. D. Cardinal
DATE Nov. 27/80.
File No. 0-1161

SAMPLE No.	Ag		Au	
		oz/ton		oz/ton
EM 21		.03		.019
22		.05		.029
EM 23		.03		.001

MIN-EN Laboratories Ltd.

CERTIFIED BY 

MIN-EN Laboratories Ltd.

705 WEST 15th STREET,
NORTH VANCOUVER, B.C., CANADA V7M 1T2
TELEPHONE (604) 980-5814

ANALYTICAL REPORT

Project **Emancipation** Date of report **Dec. 24/80**
File No. **0-1212** Date samples received **Dec. 23/80**
Samples submitted by: _____
Company: **Aquarius Resources Ltd.**
Report on: _____ Geochem samples
_____ Assay samples
3

Copies sent to:

- Aquarius Resources Ltd., Vancouver, B.C.**
- Dan Cardinal, Hope, B.C.**
- _____

Samples: Sieved to mesh _____ Ground to mesh **-100**

Prepared samples stored discarded

rejects stored discarded

Methods of analysis: **Cu, Ag-Acid digestion-chemical analysis. Au-Fire and A.A. Finish.**

Remarks: _____

MIN-EN LABORATORIES LTD.

705 WEST 15TH STREET
 NORTH VANCOUVER, B.C.
 Phone: 980-5814

Certificate of Assay

TO: Aquarius Resources Ltd.
1002 - 475 Howe St.,
Vancouver, B.C.

PROJECT No. **Emancipation**
 DATE **Dec. 24/80**
 File No. **0-1212**

SAMPLE No.	Cu %	Ag oz/ton	Au oz/ton
EM-24			.103
EM-25			.002
01-128	.003	.02	.001

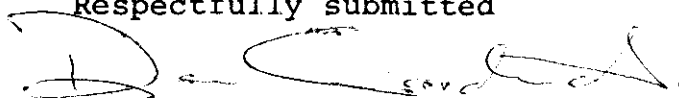
MIN-EN Laboratories Ltd.
 CERTIFIED BY *[Signature]*

APPENDIX III

ASSESSMENT WORK DETAILS - Drilling

J. Stewart, Supervisor, 2 days @ \$200/day	\$ 400.00
D. G. Cardinal, Geologist, 2 days @ \$250/day	500.00
Helper, August 1, 2, 1980 2 days @ \$90/day	180.00
D. R. Cochrane, P. Eng., 1 day @ \$300/day	300.00
Equipment rentals,	
D8 Cat, 5 hrs @ \$85/hr	425.00
4 x 4 truck, 4 days @ \$30/day	120.00
380 km @ 20¢/km	76.00
Drilling Cost, 152 ft. @ \$20/ft.	3,040.00
Driller, 2 days Helper, 2 days	
Bondar-Clegg & Co. Ltd., 30 rock samples @ \$19.50/sample	585.00
Food, accomodation, camp expenses 9 man days @ \$40.64/man day	365.75
Report preparation, drafting, typing, etc...	<u>210.00</u>
Total Drilling Assessment Costs	<u>\$6,501.75</u>

Respectfully submitted



Daniel Cardinal, P. Geol.
March 4, 1981,
Vancouver, B. C.



APPENDIX III (cont'd)

ASSESSMENT WORK DETAILS - Geology and Geochemical

D. G. Cardinal, P. Geol., June 10 to Oct. 15, 1980, 95 days @ \$150/day	14,250.00
Prospector, June 10 to Oct. 15, 1980 95 days at \$120/day	11,400.00
J. Stewart, Supervisor, July 2 to Sept. 30, 1980 75 days @ \$150/day	11,250.00
Fieldperson, June 10 to Oct. 15, 1980, 95 days @ \$100/day	9,500.00
Fieldperson, June 10 to Oct. 15, 1980 95 days @ \$100/day	9,500.00
Helper, July 2 to Sept. 30, 1980, 75 days @ \$100/day	7,500.00
Dr. K. W. Geiger, P. Eng., 10 days @ \$300/day	3,000.00
D. R. Cochrane, P. Eng., 15 days @ \$300/day	4,500.00
Camp cook, June 28 to Aug. 30, 1980, 62 days @ \$3000/month	6,000.00
Camp Expenses Fuel and propane, June 10 to Oct. 15, 1980 4 months @ \$980/month	3,920.00
Room and Board, 4 months @ \$3,508.25/month	14,033.00
Air photo Interpretation	2,680.00

Cont'd..



APPENDIX III (cont'd)

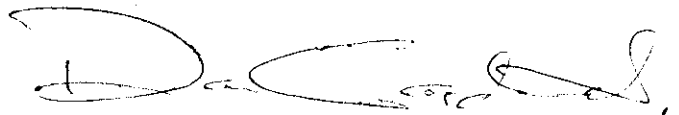
Min-En Labs, Au and Ag analysis	
70 soil samples (Au) @ \$4.85/sample	\$ 339.50
185 rock samples (Au) & (Ag)	
@ \$21/sample	3,885.00
Vehicle Expense, two (2) 4 x 4 trucks	
4 month lease @ \$485/month/truck	3,880.00
Service & repairs	1,675.53
Report preparation and writing,	
10 days @ \$150/day	1,500.00
Drafting,	
70 hours @ \$17.50/hr	1,225.00
Typing and Office,	
15 hours @ \$12/hour	180.00
General Administration	2,550.00
Reproduction, collating, binding	<u>255.00</u>
TOTAL	<u>\$ 113,023.03</u>
Total Drilling	\$ 6,501.75
Total Geology and Geochemical	<u>113,023.03</u>
Total Credits Applied For	<u>\$ 119,524.78</u>



CERTIFICATE

I, Daniel G. Cardinal of the Municipality of Hope, British Columbia, do hereby certify that:

1. I am a professional geologist, residing in Hope, British Columbia, mailing address, P. O. Box 594, Hope, British Columbia, V0X 1L0.
2. I am a graduate of the University of Alberta (1975) with a B.Sc. degree in Economic Geology and a graduate of the Northern Alberta Institute of Technology with a Geological Technologist diploma (1970)
3. I am a member in good standing of the Association of Professional Engineers, Geologists and Geophysicists of Alberta, and a member of the Canadian Institute of Mining and Metallurgy. Application is in progress for membership to the Association of Professional Engineers of British Columbia.
4. Since 1968, I have been actively involved in the Canadian mining industry both as a prospector and a professional geologist, and have assisted and instructed prospector's courses through the Department of Extension, University of Alberta.
5. I am presently employed by Aquarius Resources Ltd., as a permanent staff geologist, to systematically carry out geological mapping, prospecting and to setup and supervise geochemical, geophysical and drilling programs.



Daniel G. Cardinal, P. Geol.
March, 1981.

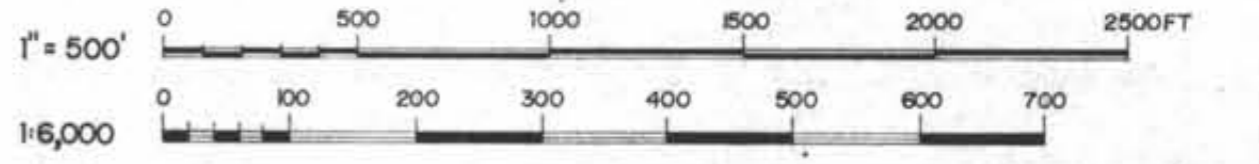




AQUARIUS RESOURCES LTD.

Hope Group Project

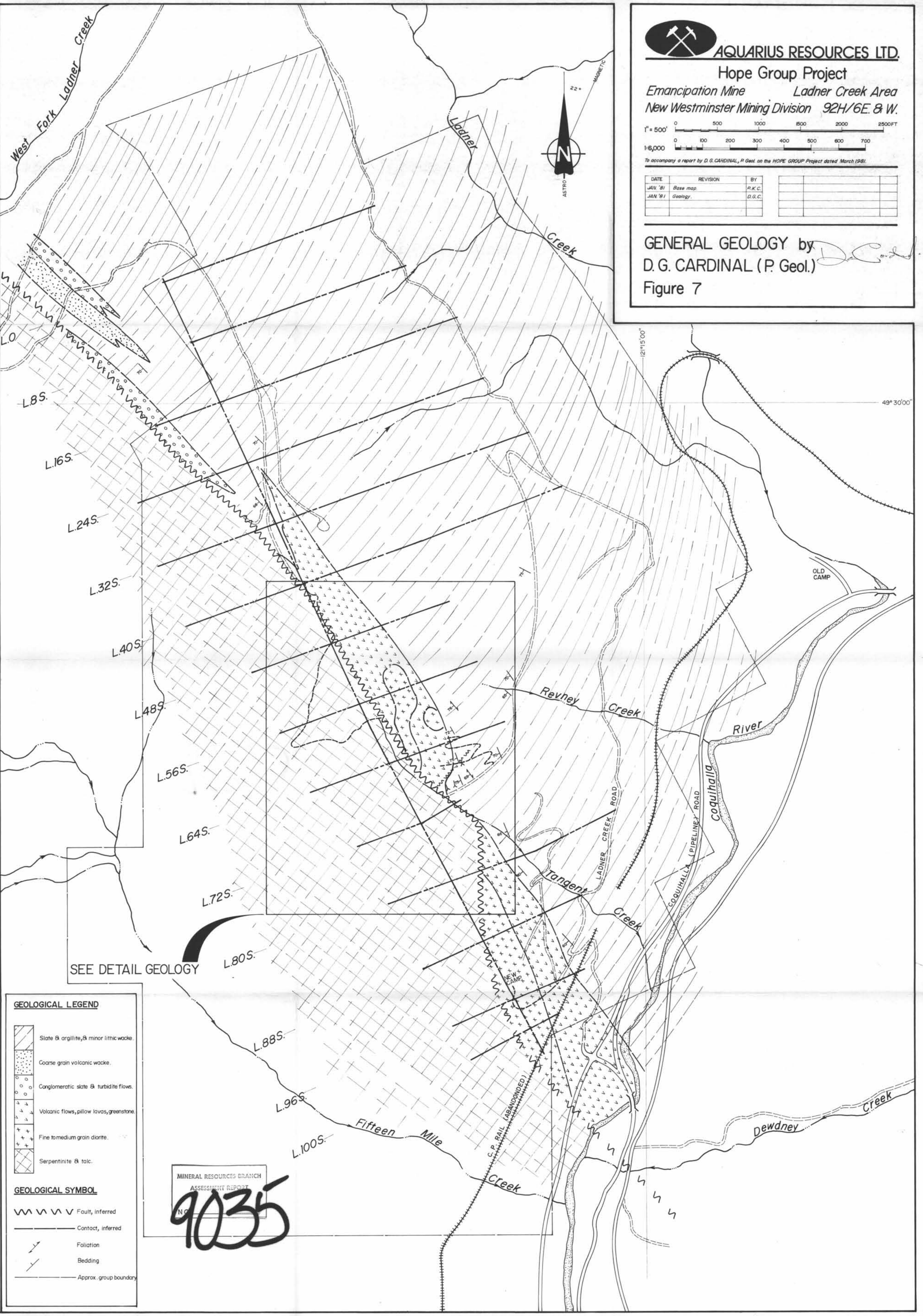
Emancipation Mine Ladner Creek Area
New Westminster Mining Division 92H/6E. & W.



To accompany a report by D. G. CARDINAL, P. Geol. on the HOPE GROUP Project dated March 1981.

DATE	REVISION	BY
JAN '81	Base map	R.K.C.
JAN '81	Geology	D.G.C.

GENERAL GEOLOGY by *D.G.C.*
D. G. CARDINAL (P. Geol.)
Figure 7



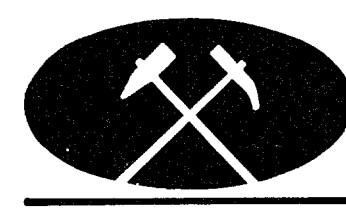
GEOLOGICAL LEGEND

- Slate & argillite, & minor lithic wackes.
- Coarse grain volcanic wackes.
- Conglomeratic slate & turbidite flows.
- Volcanic flows, pillow lavas, greenstones.
- Fine to medium grain diorite.
- Serpentinite & talc.

GEOLOGICAL SYMBOL

- Fault, inferred
- Contact, inferred
- Foliation
- Bedding
- Approx. group boundary

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
9035



AQUARIUS RESOURCES LTD.

Hope Group Project
Emancipation Mine Ladner Creek Area
New Westminster Mining Division 92H/6E.8 & W

1" = 100'
0 50 100 150 200 300 400 500 FEET
0 10 20 30 40 50 100 ISOMETRES

To accompany a report by D.G. CARDINAL, P. Geol. on the HOPE GROUP Project dated March 1981.

DATE	REVISION	BY
JAN 81	Base map	P.G.C.
JAN 81	Geology	D.G.C.

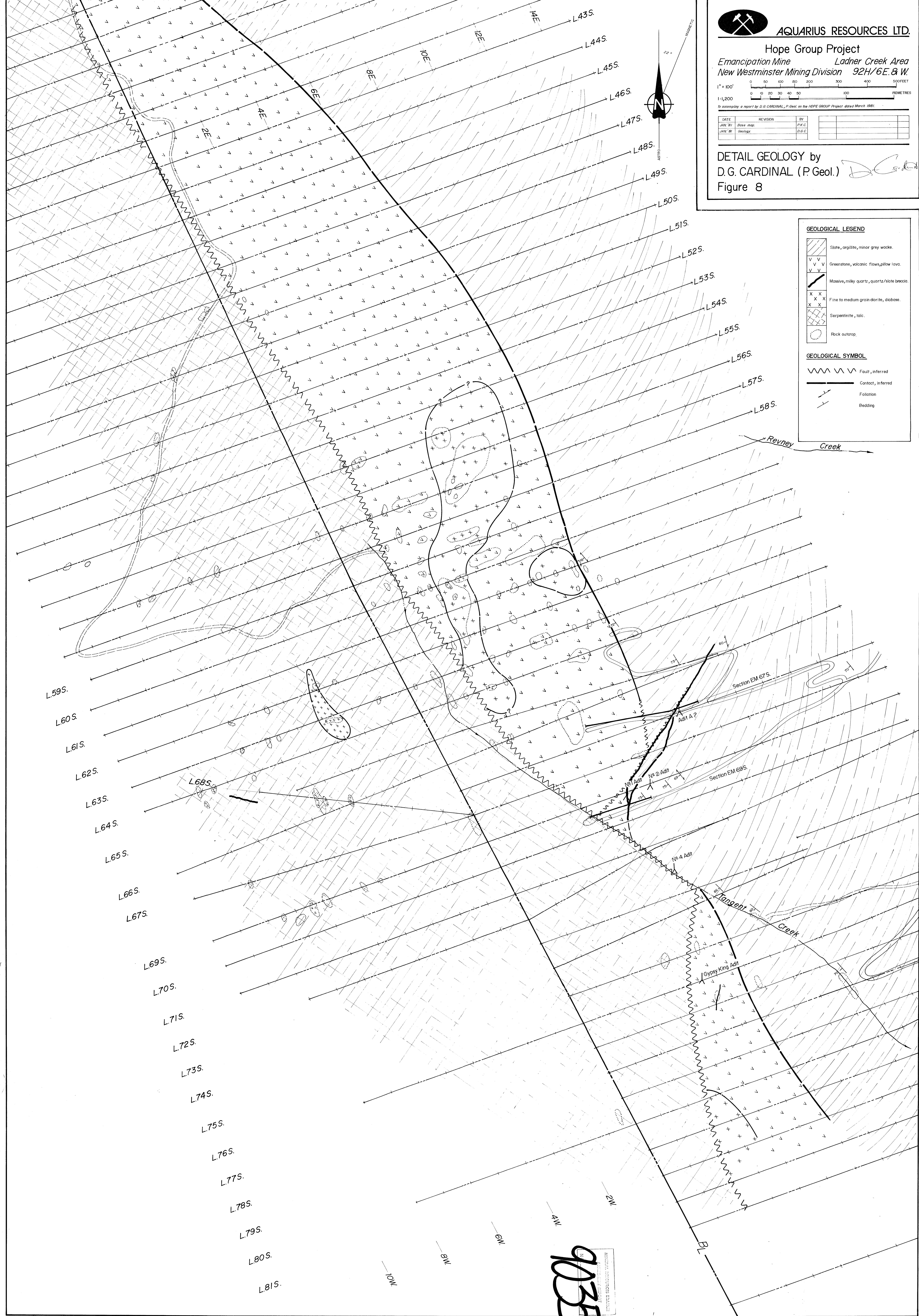
DETAIL GEOLOGY by
D.G. CARDINAL (P. Geol.) *DGC*
Figure 8

GEOLOGICAL LEGEND

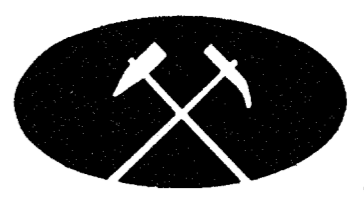
- Slate, argillite, minor grey wacke.
- Greenstone, volcanic flows, pillow lava.
- Massive, milky quartz, quartz/slate breccia.
- Fine to medium grain diorite, diabase.
- Serpentine, talc.
- Rock outcrop.

GEOLOGICAL SYMBOL

- Fault, inferred
- Contact, inferred
- Foliation
- Bedding



90355



AQUARIUS RESOURCES LTD.

Emancipation Property Hope, B.C.
New Westminster M.D. 92H/6 & 11W

SCALE 0 5 10 20 30 40 50 60 70 80 90 100 FEET
1" = 20'

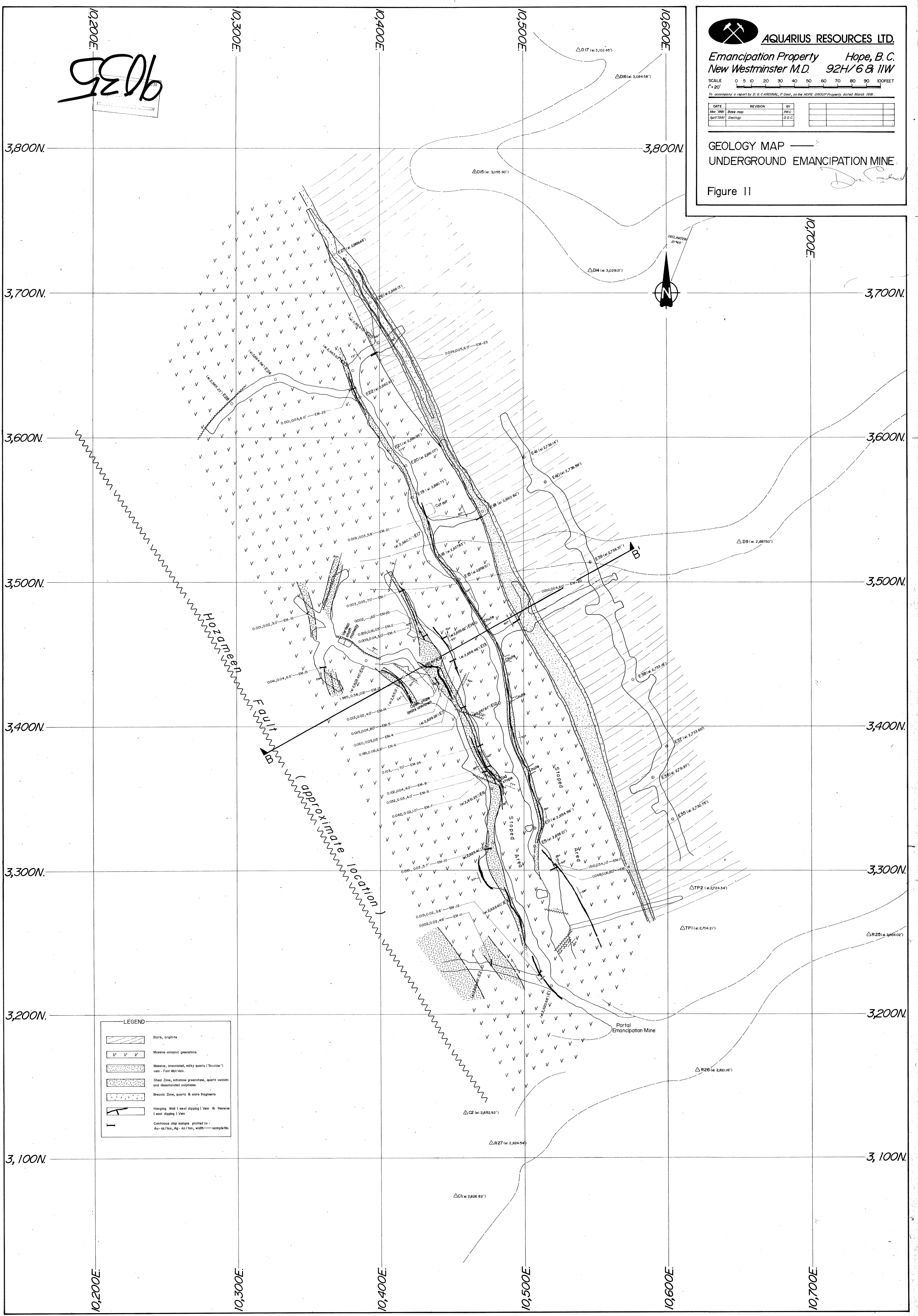
To accompany a report by D. G. CARDINAL, P. Geol., on the HOPE GROUP Property dated March 1988.

DATE	REVISION	BY
Mar 1988	Base map	PKC
April 1988	Geology	D.G.C.

GEOLOGY MAP —
UNDERGROUND EMANCIPATION MINE

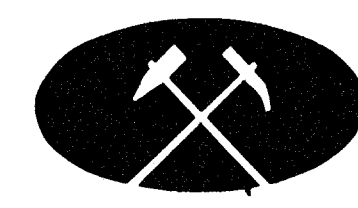
Figure 11

9035
10/35



LEGEND

- Slate, argillite
- Massive volcanic greenstone
- Massive, brecciated, milky quartz ('Boulder') vein - Foot Mt. vein
- Shear Zone, calcareous greenstone, quartz veins and disseminated sulphides
- Breccia Zone, quartz & slate fragments
- Hanging Wall (west dipping) Vein & Reverse (east dipping) Vein
- Continuous chip sample plotted in
Au - oz/ton, Ag - oz/ton, width - sample No.



AQUARIUS RESOURCES LTD.

Emancipation Property Hope, B. C.
New Westminster M.D. 92H/6 & 11W

SCALE 0 5 10 20 30 40 50 60 70 80 90 100 FEET
1" = 20'

To accompany a report by D.G. CARDINAL, P. Geol., on the HOPE GROUP Property dated March 1981.

DATE	REVISION	BY
Mar 1981	Base map	P.K.C.
April 1981	Assays	P.K.C.

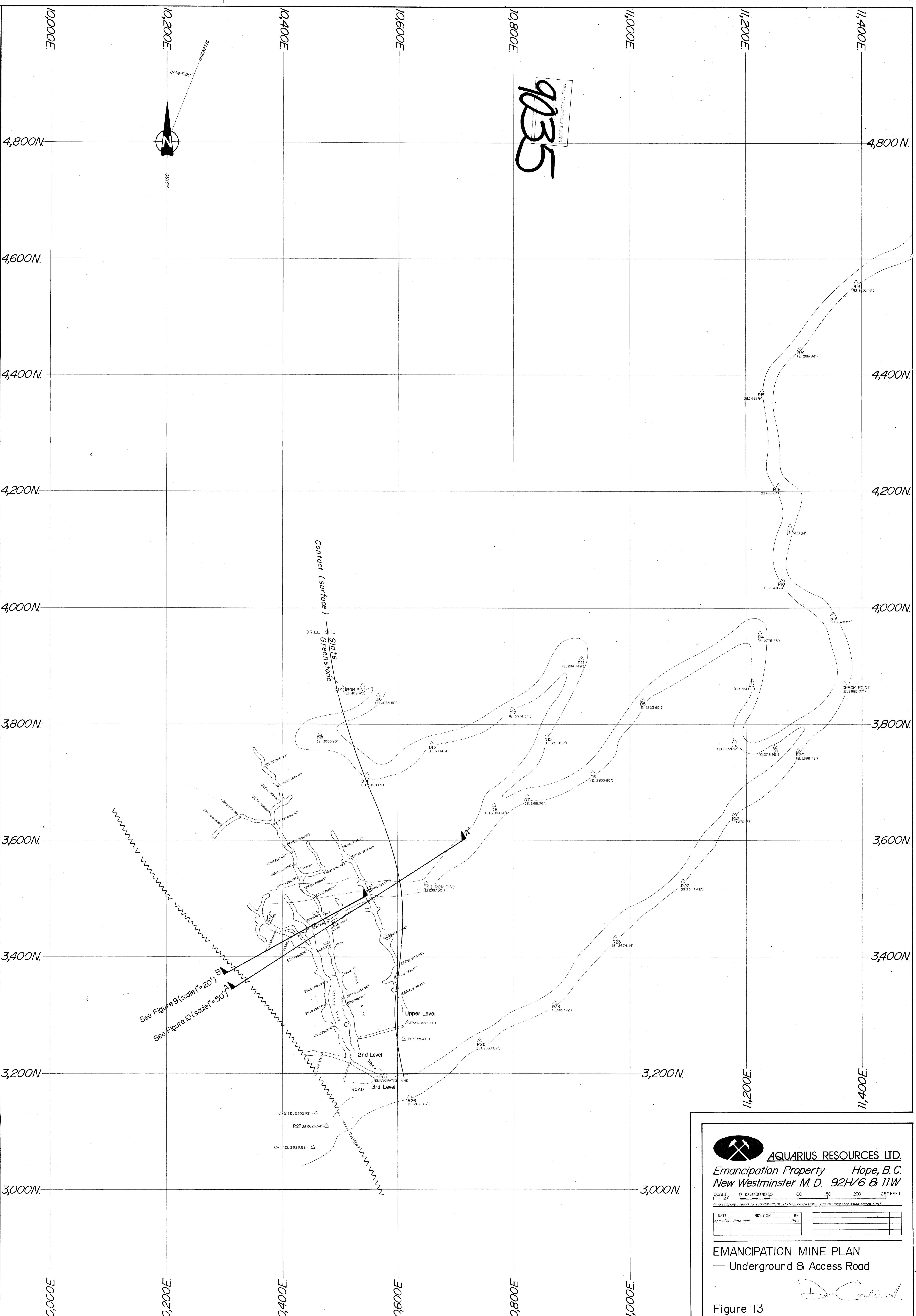
COMPILATION ASSAY MAP
(1972 to 1980)

Figure 12



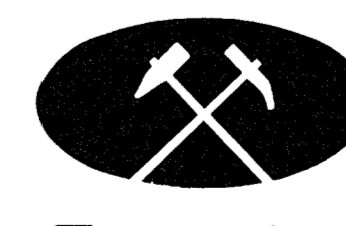
NOTE:

- ALL ASSAY RESULT ARE IN:
 - Au (oz/ton), Ag (oz/ton), sample width — sample N# for all Wall Rock (sheared greenstone) samples.
 - Au (oz/ton), Ag (oz/ton), sample width — sample N# for all Quartz Vein samples.
- SAMPLES OBTAINED BY: SAMPLING NUMBER
 - A. R. Bullis (1972) N#401 to N#423
 - D. R. Cochran (1977) E-1 to E-9
 - D. G. Cardinal (1980) EM-1 to EM-23
- Weight overlying 0.22 oz/ton (Quartz Vein & Wall Rock) over 100 feet along drift.



9035

See Figure 9 (scale 1"=20') B
See Figure 10 (scale 1"=50') A



AQUARIUS RESOURCES LTD.
 Emancipation Property Hope, B.C.
 New Westminster M.D. 92H/6 & 11W

SCALE: 0 10 20 30 40 50 100 150 200 250 FEET
 1" = 50'

By accompanying report by D.G. CARROLL, P. Geol., on the HOPE GROUP Property dated March 1981.

DATE	REVISION	BY
Apr 82	Base map	PKC

EMANCIPATION MINE PLAN
 — Underground & Access Road

D. Carroll

Figure 13