

104M/8E  
104M/016

019988

"Engineer"

A Geological Report  
on the  
Reverted Crown Grants & Located Mineral Claims  
of  
WINDARRA MINERALS LTD  
Surrounding the  
"Engineer" Gold Mine  
situated  
30 km west & 5 km south of Atlin, B.C.  
in the  
Atlin Mining Division  
N.T.S. 104-M/8(E)  
Lat: 59°29' N Long: 134°14' W  
By  
D.R. Morgan, P. Eng.  
Date of Report: 8 January 1982

D.R. Morgan, P. Eng.  
3424 West 6th Avenue,  
Vancouver, B.C. V6R 1T3

8 January 1982

Subject: A Geological Report on the Reverted Crown Grants & Located Mineral Claims of Windarra Minerals Ltd situated 30 km west & 5 km south of Atlin, B.C. by D.R. Morgan, P. Eng., dated: 8 January 1982.

Dear Sirs:

I hereby authorize the use of the above described report in a Statement of Material Facts or in a Prospectus.

Signed,



David R. Morgan, Geologist, P. Eng.



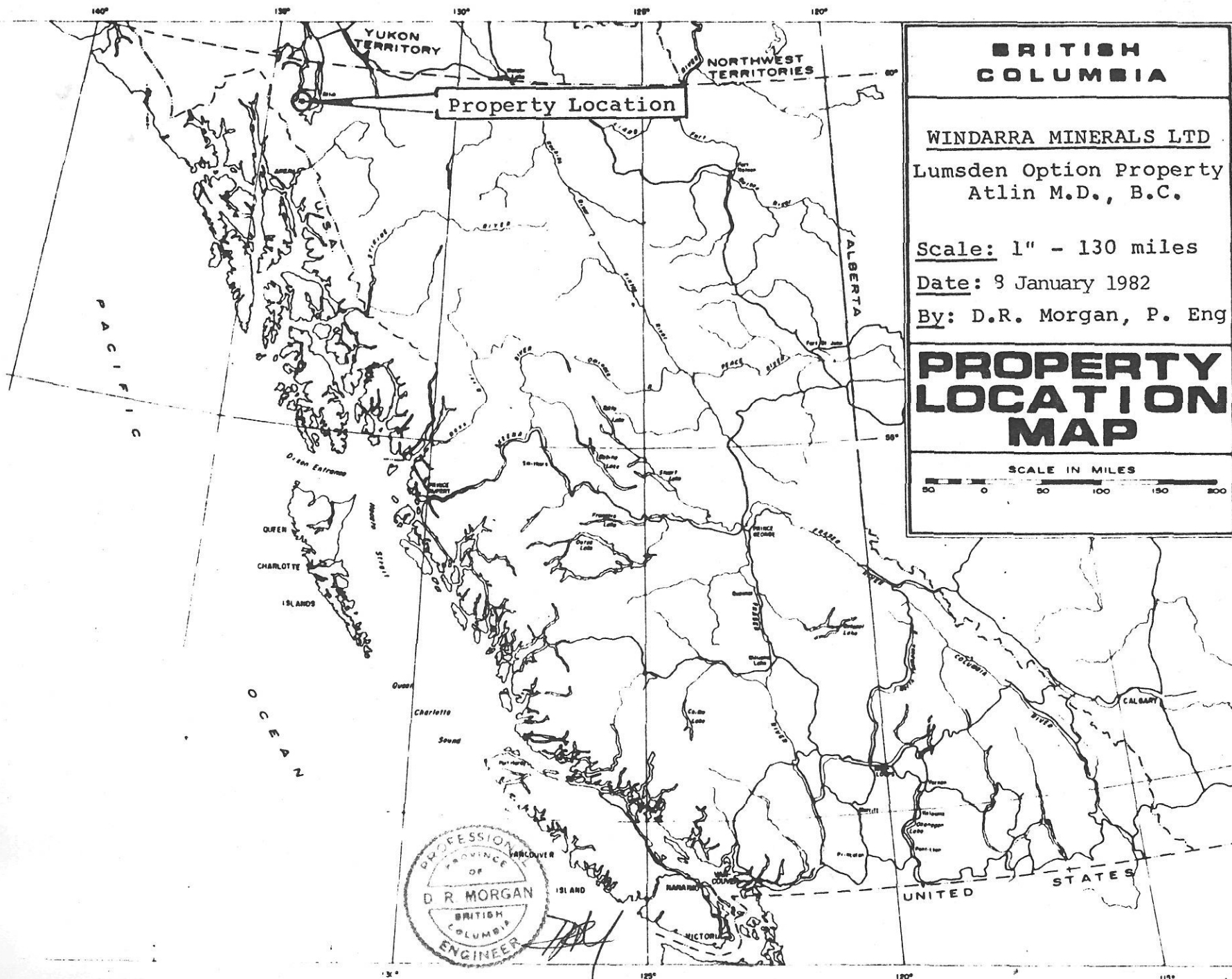
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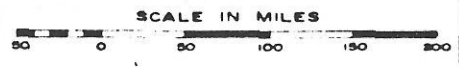


**BRITISH  
COLUMBIA**

**WINDARRA MINERALS LTD**  
Lumsden Option Property  
Atlin M.D., B.C.

Scale: 1" - 130 miles  
Date: 9 January 1982  
By: D.R. Morgan, P. Eng

**PROPERTY  
LOCATION  
MAP**



PROFESSIONAL  
ENGINEER  
OF  
BRITISH  
COLUMBIA  
D. R. MORGAN  
VANCOUVER

1 - 0

SUMMARY: (Fact)

1. Windarra Minerals has completed 2 field seasons exploration on the 40 claim Lumsden option property surrounding the 5 central claims of the old "Engineer" Gold Mine 30 km west of Atlin, B.C.
2. In 1981, work was concentrated in the Mickey vein area which emerged as a target in the 1980 program.
3. Bulldozer trenching exposed the Mickey vein along a strike length of 88 m. The quartz and quartz-argillite breccia of this exposure has a true width of 9.6 m.
4. Nine channels were moiled across full vein width at 10 m intervals. A total of 92 m of sampling was cut for 49 samples.
5. Assays showed that for 70 m a 3.14 m (10.3 ft) wide zone in the vein average 0.057 ozs/ton gold.
6. The channel across the south end of the exposed vein averaged 0.376 ozs/ton gold across 8 m (26 ft). This included a sample across 2 m that ran 1.350 ozs/ton gold.
7. Geochemical surveys indicated anomalous gold values on strike with the vein to the N.E.
8. Shear Zone A was mapped and sampled underground in the old Engineer mine. The average width of this strongly silicified and pyritic shear was 10 m and the average grade in the 3 locations sampled was. 008 ozs/ton gold. This shear has been mapped for 3 km to the S.E. of these workings and it enters the Company's Northern Partnership No. 5 claim approximately 150 m S.E. of the workings.

2 - 0

CONCLUSIONS: (Opinion)

1. Work to date has shown that the Mickey Vein is a long (900 m ) and in places broad (9 m) structure with encouraging gold mineralization.
2. The southern end of the trenched area offers immediate drill targets.
3. The anomalous gold and silver values detected at 600 N - 250 E, 280 m N.E. of the trenched area and coincident with the projected vein also make a worthwhile drill target.
4. Shear Zone A's great length and width and the fact that its underground exposures are gold bearing make this an important structure for exploration.
5. Admittedly the gold values in the 3 locations sampled are very low grade, however this long structure is virtually unexplored. The 1000 m section on the Windarra claim is totally unexplored.
6. Detailed surface and underground mapping and soil sampling (possibly for Ag, As, Hg and Sb) should be undertaken to locate drill targets on this important structure.
7. An exploration program costing \$300,000 is considered justified, as detailed in the next section.

3 - 0      RECOMMENDATIONS:3 - 1      Program:

1. Geological Mapping: The Gleaner x-cut and the area between it and the Mickey vein should be mapped at a scale of 1:500.

The S.E. end of the 501 x-cut on the Engineer Mine should be examined to see whether it reached Shear Zone A or was used for drill stations. The surface geology in the vicinity of Shear Zone A should be mapped in detail at a scale of 1:500.

2. Geochemical Survey: A base line should be cut along the centre of Shear Zone A as indicated by the mapping. Cross lines should be turned off at 25 m and soil sampled at 25 m intervals for 50 m from the base line. The samples should be taken with a soil sampling auger from a depth of 50 - 75 cm and analyzed for gold, silver, arsenic, antimony and mercury.

3. Diamond Drilling: The Mickey Vein should be drilled as follows:

<u>Hole #</u>	<u>Location (033<sup>o</sup> Baseline)</u>	<u>Bearing</u>	<u>Dip</u>	<u>Length</u>
82-1	228 NE - 20 NW	123 <sup>o</sup>	60 <sup>o</sup>	70 m
82-2	253 NE - 20 NW	123 <sup>o</sup>	60 <sup>o</sup>	70 m
82-3	278 NE - 20 NW	123 <sup>o</sup>	60 <sup>o</sup>	70 m
82-4	328 NE - 20 NW	123 <sup>o</sup>	60 <sup>o</sup>	70 m
82-5	253 NE - 20 NW	123 <sup>o</sup>	60 <sup>o</sup>	70 m
82-6	600 N - 250 E	123 <sup>o</sup>	60 <sup>o</sup>	100 m

Further drilling can be based on the results of these initial holes.

Drilling on Shear Zone A will be based on mapping and targets revealed by the geochemical survey.


3 - 2 Cost Estimates:

(For program on the Windarra Minerals Ltd property surrounding the former Engineer Gold Mine, 30 km west and 5 km south of Atin, B.C.)

<u>Phase 1</u>		
1.	Geology	12,000
2.	Geochemical Survey	6,000
3.	Assays	6,000
4.	Mobilization and demobilization	12,000
5.	Bulldozer work (road building etc)	9,000
6.	Diamond drilling (2000' @ \$40/ft)	<u>80,000</u>
	Subtotal	125,000
7.	Contingency, 20%	<u>25,000</u>
8.	Total for Phase 1	150,000

<u>Phase 2</u>		
(Subject to consultant's recommendation)		
1.	Engineering supervision	10,000
2.	Assays	5,000
3.	Bulldozer work	5,000
4.	Extra freight	5,000
5.	Diamond drilling (2500' @ \$40/ft)	<u>100,000</u>
	Subtotal	125,000
6.	Contingency 20%	<u>25,000</u>
	Total for Phase 2	<u>150,000</u>
	Total for Phases 1 and 2	<u>300,000</u>

Signed



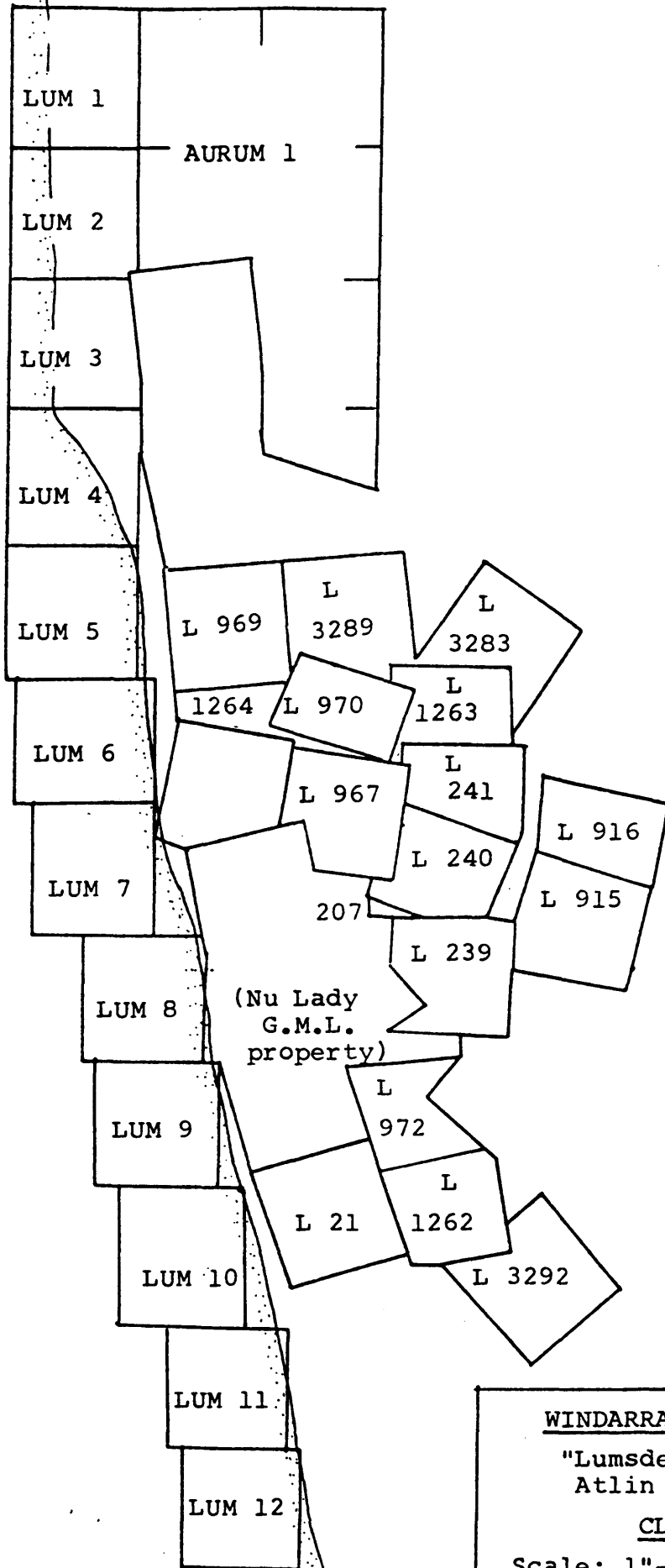
David R. Morgan, Geologist P. Eng.

8 January 1982 Vancouver, B.C.





TAGISH  
LAKE  
(Taku Arm)



**WINDARRA MINERALS LTD**  
 "Lumsden" Property  
 Atlin M.D., B.C.  
CLAIM MAP  
 Scale: 1"-2000'  
 Date: 8 January 1982  
 By: D.R. Morgan, P. Eng

4 - 0 INTRODUCTION:

4 - 1 Scope and Dates of Report: On Tuesday 8 December 1981 the writer was asked by Mr. Ron Philp, President of Windarra Minerals Ltd, 1458 - 409 Granville Street, Vancouver, B.C. V6C 1T2, to write a report on the Company's property surrounding the old "Engineer" Mine near Atlin, B.C.

The purposes of this report were:

1. To review all of the available data on the area in which the property lies.
2. To describe and discuss the results of the 1981 season's exploration program.
3. To use the foregoing as a basis for making recommendations for the further exploration of the property.

The writer was on the property for a total of 37 days in July, August and September.

4 - 2 Title: The property consists of 18 reverted Crown Granted Mineral Claims and 22 located mineral claims as follows:

<u>Reverted Crown Grant</u>	<u>Record #</u>	<u>Expiry Date</u>	<u>Lot #</u>
Philadelphia Fr.	19381	14 January 1986	207
Jersey Lily	19383	14 Februray 1986	21
Nest Egg	19386	14 February 1986	3292
Betsay	19387	14 February 1986	1262
Bonanza	19388	14 February 1986	915
Rubberneck	19389	14 February 1986	916
Mickey	19397	14 February 1986	967
Lakeview	19398	14 February 1986	241
Taku Chief	19399	14 February 1986	240
Myosotis	19400	14 February 1986	239
Northern Partnership #5	19401	14 February 1986	972
Hill Fraction	298	29 March 1987	1264
Smith Fraction	298	29 March 1987	4658
Golden Hope	299	29 March 1987	1263
Daisy	300	29 March 1987	970
Speculation	301	29 March 1987	969
Sweepstake #1	302	4 April 1987	3283
Chackawana	704	21 June 1986	3284

<u>Claim</u>	<u>Units</u>	<u>Record #</u>	<u>Expiry Date</u>
"LUM" 1-12	12	618-629	19 April 1986
"AURUM" 1	8	630	19 April 1982
WIN 1-2	2	1076-7	11 June 1986

5 - 0      HISTORY OF THE PROPERTY:

Gold mineralization was first found on what later became the Engineer Gold Mine in 1899 by a party of engineers working for the White Pass and Yukon Railroad. A company was formed a shaft sunk 70 feet and a cross cut driven 300 feet near the shore. Construction of a 2 stamp mill was incomplete in 1906 when operations were suspended and the claims allowed to lapse.

In 1907 the Northern Partnership Syndicate acquired the property staked additional claims and completed construction of the mill.

In 1913 Captain Alexander acquired the interests of the other partners in the Syndicate and began active and systematic prospecting. By 1915 19 veins had been found including "E" (Engineer or No. 8 vein) - the most productive vein to date.

By 1918 the Engineer vein had been opened up on four levels by a 275 foot shaft and the main cross cut (5 level) had been advanced 300 feet to connect with it and provide a main haulageway to the mill. The death of Captain Alexander in October 1918 plunged the property into litigation for 4 years.

In 1923 work was resumed on the long cross cut and in 1924 a major program of construction began with the building of houses, bunkhouses, a hospital, an additional ball mill and a 200 km hydro electric generating plant on the Wann River about 5 miles to the south.

In 1926 the shaft on the Engineer Vein was sunk 300 feet below 5 level and 6,7, and 8 levels were opened up in 1928 "good ore" was claimed to exist on the 800 level (lowest) and in the following year a crew of 25 men were at work exploring these lower levels, however work was suspended.

In 1930 development was concentrated on the extension of the long (5 level) cross cut to explore the "replacement Shear" (Shear Zone "A"), however the C.V. Bob interests of New York backing this work had financial problems and work was suspended.

In 1934 the assets of Engineer Gold Mines were acquired by Mining Corporation of Canada.

Apart from small scale leasing the property was dormant until recently. In 1975 Nu-Energy Development Corporation acquired the property and began to rehabilitate the underground workings.

In 1979, control of the five contiguous crown granted claims covering the old Engineer Mine workings passed to Nu Lady Gold Mines Ltd.

In 1980 Windarra Minerals Ltd obtained an option on the claims surrounding the Nu Lady property from Mr. Keith Lumsden of Carcross.

6 - 0      GEOGRAPHY:

6 - 1      Location:      The property lies 30 km west and 5 km south of Atlin, B.C. on the eastern side of Taku Arm of Tagish Lake. It has a latitude of 59°20' north, a longitude of 134°14' west, straddles National Topographic System areas 104-M/8(E) and 104-M/9(E) and is in the Atlin Mining Division.

LEGEND

10

7
6
5
4a
1a

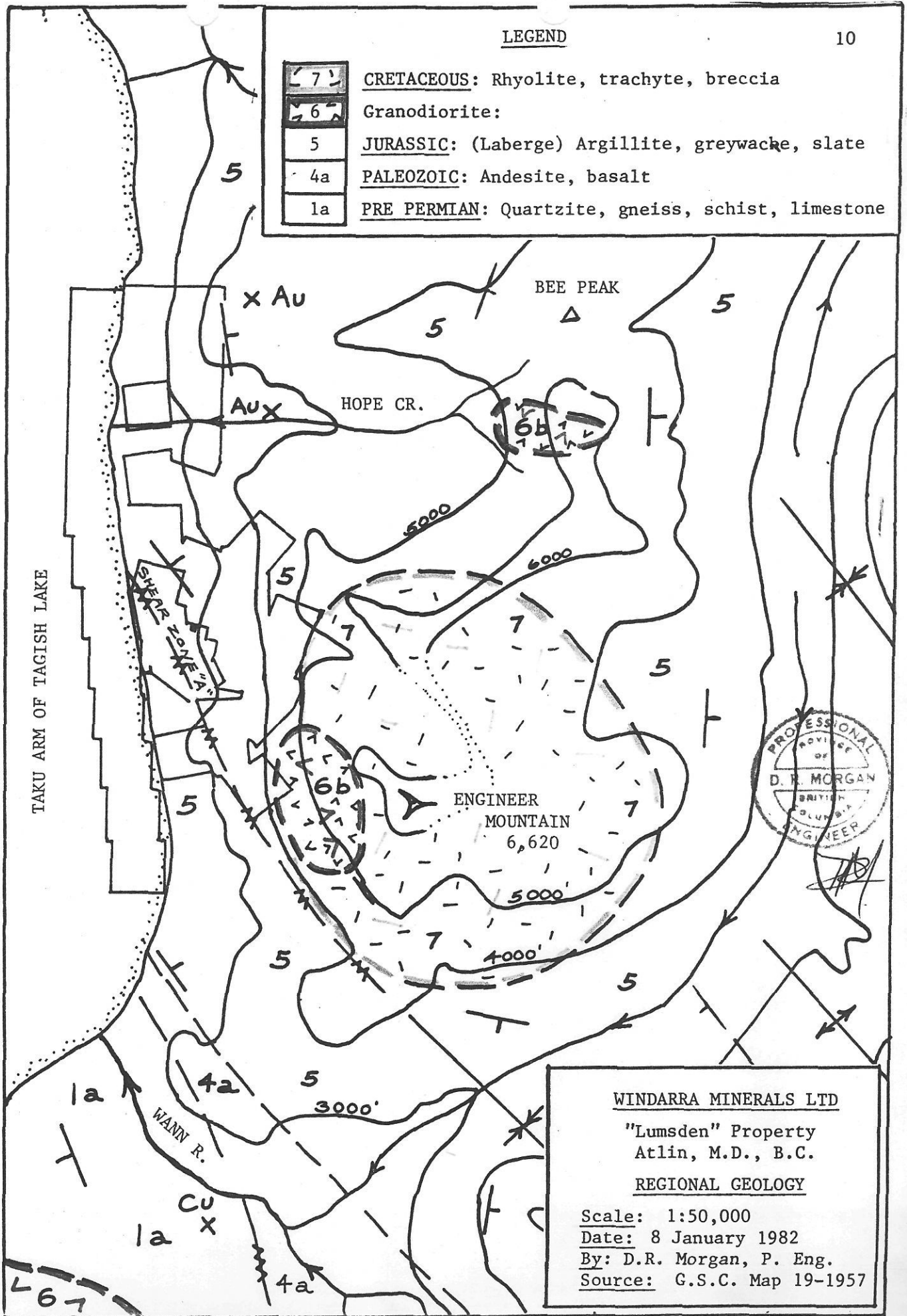
CRETACEOUS: Rhyolite, trachyte, breccia

Granodiorite:

JURASSIC: (Laberge) Argillite, greywacke, slate

PALEOZOIC: Andesite, basalt

PRE PERMIAN: Quartzite, gneiss, schist, limestone



WINDARRA MINERALS LTD

"Lumsden" Property  
Atlin, M.D., B.C.

REGIONAL GEOLOGY

Scale: 1:50,000

Date: 8 January 1982

By: D.R. Morgan, P. Eng.

Source: G.S.C. Map 19-1957

6 - 2 Access: The property is accessible by boat or barge from Carcross (66 miles/106 km). In calm weather this trip takes about 6 hours on Mr. Lumsden's barge which has a payload of about ten tons.

Air access is available by float plane from Whitehorse (85 miles/137 km) or by float plane or helicopter from Atlin (21 miles /33 km).

In winter the property is accessible by skidoo or truck depending on ice and snow conditions.

6 - 3 Topography: The property lies on the western slopes of the northerly trending mountain range that borders the southern tip of Taku Arm of Tagish Lake. Elevation range from 2152 ft (656 m) at lake level to 5500 feet (1675 m) in the eastern part of the property.

#### 7 - 0 REGIONAL GEOLOGY:

7 - 1 Rock Types and Structures: The Engineer gold camp lies 10 km E. of the Coast Range intrusions' eastern contact. Argillites and greywackes of the Jurassic Laberge Group surround the camp and host all of its ore bearing structures. These sediments have been compressed into closed folds with N.W. axes. The argillites in the vicinity of the Engineer Mine and the surrounding Lumsden property are generally easterly dipping ( $300^{\circ}/30-40^{\circ}$  NE). The accompanying Regional Geology map indicates that these rocks form the westerly limb of a N.W. trending syncline.

The argillites have been intruded by small granodiorite plugs to the west of Engineer Mountain and to the south of Bee Peak. Adjacent to the plug on Engineer Mountain and lying to the east of it is an assembly of rhyolite trachyte and volcanic breccia. Notes accompanying G.S.C. map 19-1957 state that these volcanics unconformably overlie the folded Laberge Group. The roughly circular plan outline of these volcanics together with their explosion type breccia containing shards of vitrified tuff suggest to the writer that this structure may be a volcanic neck rather than a capping.

Dykes of feldspar porphyry, trachyte and andesite, presumably satellitic to these igneous sources cut the argillites and appear widely underground. These

dykes are reportedly offset by veins and are considered pre-ore (ref: 3 p. 13a).

A major N.W. trending shear zone (Shear Zone "A") cuts these rocks for 4500 m. Veins branching from this shear zone at various angles to the west have accounted to date for nearly all of the gold produced from the Engineer Mine.

To the east of Shear Zone A and apparently unrelated to it is another set of generally northerly trending veins, some of which converge on "Hub B." One of these, the Mickey Vein extending northeasterly from Hub B has been intensively trenched and sampled by Windarra during 1981.

7 - 2        Mineralization: Mineralization in the Engineer camp occurs in three principal ways:

1.    Quartz Fissure Veins: Generally narrow and carrying erratic though in some places very high grade gold values.

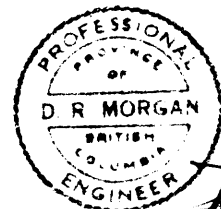
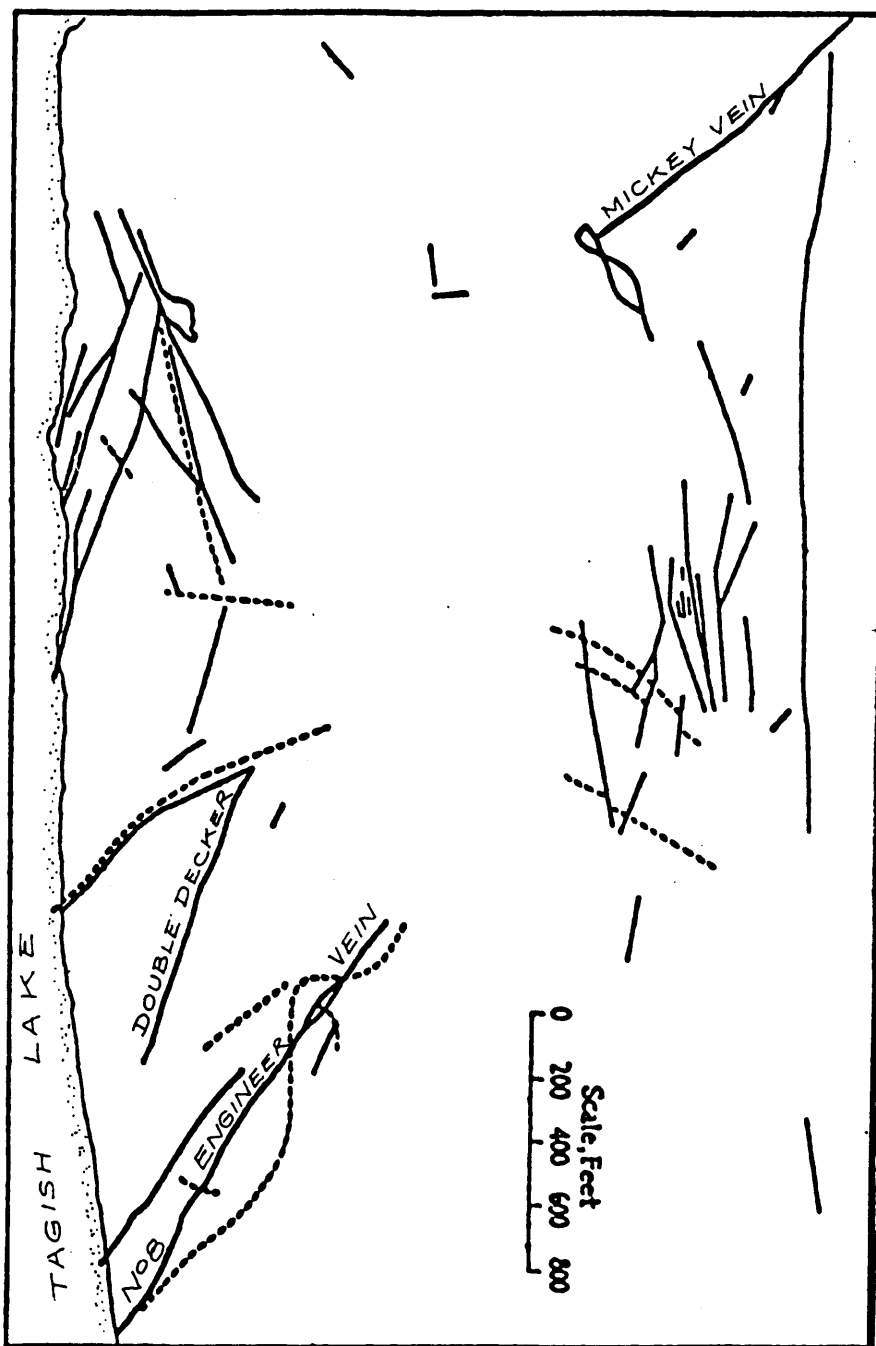
2.    Shear Zone: A broad silicified shear zone carrying very low grade values where tested.

3.    Hubs: Quartz flooded zones at vein intersections reputed to be very low grade or barren.

Most of the underground work has been concentrated on the quartz fissure veins. These have produced all of the gold recovered to date from the Engineer. The hubs have been intensively tested. The shear zone has been explored by cross cuts and drifting but it is a very large structure. Most of it is unexplored.

These three categories of mineralization will be considered below in more detail.

1.    Quartz Fissure Veins: Approximately forty of these veins have been found. They are mostly narrow and vary in width from stringers to 4 feet wide. The argillite wall rocks are often brecciated in the bigger veins, the breccia fragments being



Veins 
     
 Dykes 

**WINDARRA MINERALS LTD**  
 "Lumsden" Property  
 Atlin M.D., B.C.  
**VEIN & DYKE SYSTEMS**  
 Scale: 1"-600 ft  
 Date: 8 January 1982  
 By: D.R. Morgan, P. Eng.  
 Source: Ref. 2 Weed, 1925



7 - 2 continued

embedded in places in milky vein quartz, while in other places the fragments are surrounded by drusy crusts of quartz crystals which have not completely filled the cavities. Comb structures and drusy vugs are quite common.

The "Engineer" or No.8 vein has been the most productive to date. It varies in width from a stringer to nearly 2 feet and has been drifted on (5 level) for 1320 feet. Unlike the other veins in the mine which have simple quartz fillings, the Engineer is mineralized with quartz, calcite, mariposite (chrome-bearing mica) and allemonite (a compound of native arsenic and antimony) and roscoelite.

"The gold is almost invariably associated with a very dark green chloritic material which is said to have been indentified as maraposite (sic) chrome mica (but) seems much too dark coloured.... this dark material, spotted with gold, occurs in the vein as fragments surrounded by the quartz and calcite. The fragments (range) from the size of a pin head to a sheet a few inches thick by several feet in diameter... some gold free from the dark green mineral has been found near the surface, but the gold is confined to a sharply defined area resembling a fragment and ghosts of the green mineral can usually be seen... replaced by the quartz in the upper levels of the mine.

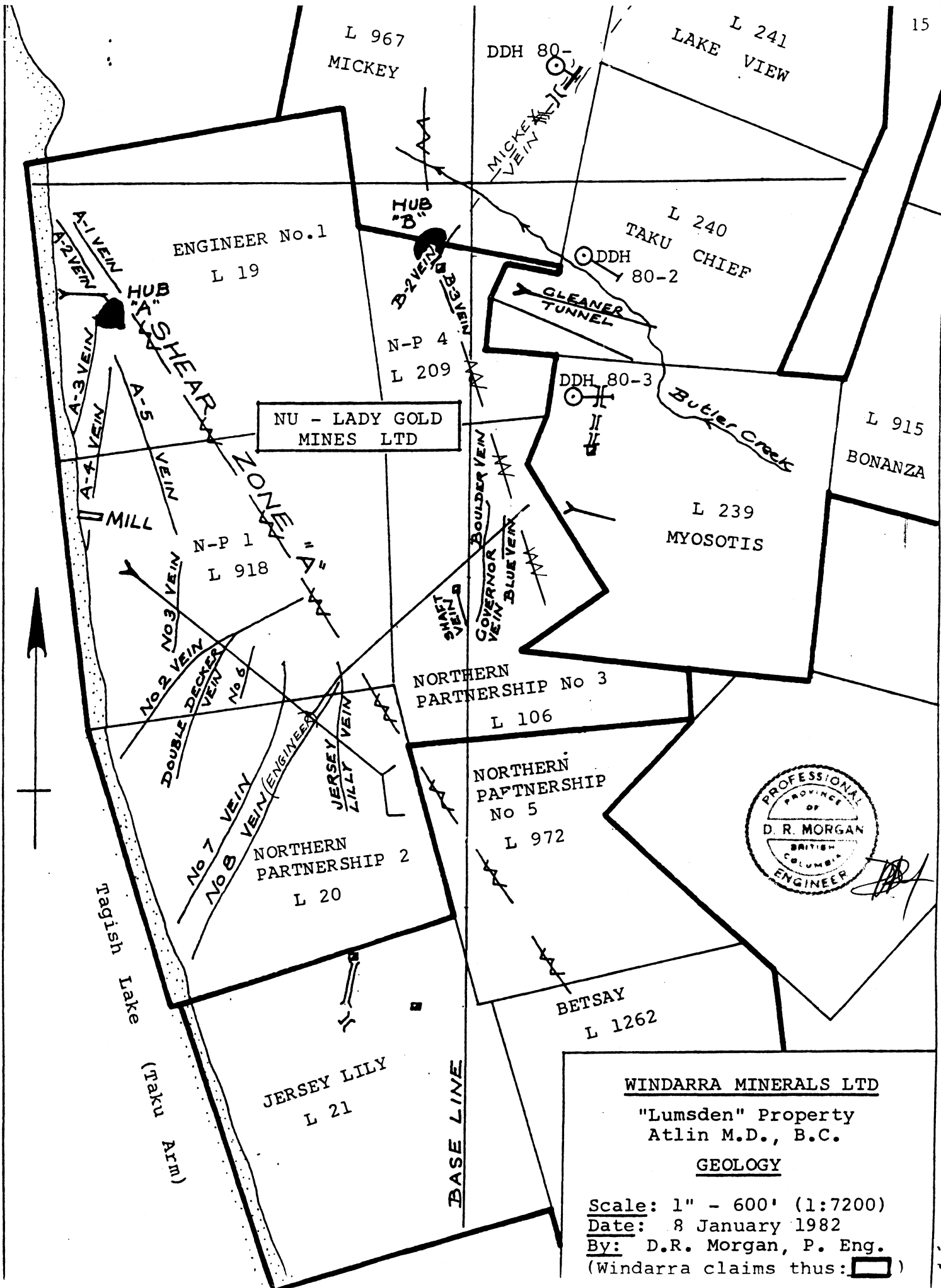
It would seem that there has been two distinct periods of mineralization. The first period produced a narrow but very high grade vein of gold associated with the dark green mineral. Movement then re-opened the vein, fractured the vein matter and wall rock and these fragments were then cemented in with the (second period) mineralization of quartz and calcite...

Most of the fragments of country rock and gold ore occur a long the foot wall of the veins. "(B.C. Ministry of Mines Report 1927 p. 113-114).

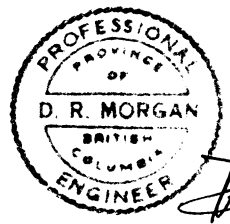
The 'dark green chloritic material' referred to is identified by Weed (ref: 2) as roscoelite, an alteration product of chlorite.

The 'Double Decker' vein has been the second most productive vein. It is a simple quartz filled fissure vein varying from a stringer to 2 feet wide. Free gold occurs in cracks and crevices in the quartz occasionally in spectacular pockets. On 8 level this vein "consists of rosettes of radiating quartz crystals projecting from about 4 inches from either wall towards the centre of the vein, leaving a long open space down the centre of the vein. "(B.C. Ministry of Mines Report 1927 p. 113).

The Engineer and Double Decker veins have accounted for almost all of the gold produced from the Engineer camp.



NU - LADY GOLD MINES LTD



**WINDARRA MINERALS LTD**  
 "Lumsden" Property  
 Atlin M.D., B.C.  
**GEOLOGY**  
 Scale: 1" - 600' (1:7200)  
 Date: 8 January 1982  
 By: D.R. Morgan, P. Eng.  
 (Windarra claims thus: )

7 - 2 continued

Total production has been as follows:

<u>Years</u>	<u>Tons</u>	<u>Gold</u>	<u>Silver</u>
1913 - 52	17,157	18,058 ozs (1.05 ozs/ton)	8,950 ozs (0.52 ozs/ton)

2. Shear Zone: The N.W. trending shear zone (Shear Zone "A") is one of the most important structures in the camp. It has a length of approximately 4500 m and a width that varies from 9 m to 12 m as exposed in x-cuts on No.5 level. On the surface it is expressed as a clearly defined narrow valley which extends S.E. into the Northern Partnership No.5 claim held by Windarra.

Underground the shear is accessible on 5 level from the Double Decker (502) drift and the Engineer (506) drift. At the 3 locations visited (see accompanying map: "Shear Zone \*A) the shear consisted of a highly silicified, pyritic zone. The silicified material is finely divided by the shearing into a rock with an almost schist like structure which is nevertheless hard, competent and not easily cut for sampling. The fact that this shear has weathered to form a valley on the surface is probably due to its pyritic content. The shear was chip sampled by the writer at the 3 locations indicated on the map.\* Gold values are low (.004 to .016) .

The shear has also been exposed on 8 level (300 feet below 5 level). The levels below 5 level are now flooded and inaccessible, but according to Hershman (ref. 3p. 14) the Double Decker vein drift on 8 level was extended N.E. to cut the Shear Zone. The zone was then drifted on for 330 feet to the N.W. and 500 feet to the S.E. This drifting was "only partly in the shear zone and largely in the dyke that accompanies it." Since this shear zone is generally about five times drift width and there is no mention of cross cutting, the 8 level exploration does not add much to knowledge of the shear.

The 1930 Summary Report (Ref. 3) mentions that the main adit (501) x-cut on 5 level was in 1450 feet and was being extended 'to intersect the Shear Zone.' Whether this intersection was made is not known to the writer. The adit is barricaded beyond the Engineer vein and since bad air was encountered examining the shear zone where it is cut by the Engineer vein, the adit was not examined beyond the Engineer vein.

Since Shear Zone "A" must extend into the Northern Partnership No.5 claim

PORTAL OF 5<sup>TH</sup> LEVEL

501 XC

504 ND

502D

504 SD

506D

DOUBLE DECKER VEINS

No. 8 (ENGINEER) VEIN

NU-LADY GOLD MINES LTD property

Width Au (ozs/ton)  
12m .004

9m .004

10m .016

SHEAR

ZONE "A"

17

WINDARRA MINERALS LTD

"Lumsden" Property

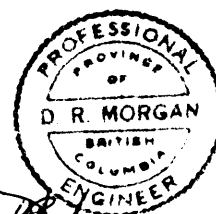
Atlin, M.D. B.C.

SHEAR ZONE "A"

Scale: 1"-200

Date: 8 January 1982

By: D.R. Morgan, P. Eng



NORTHERN PARTNER-SHIP

NO.5

L972

7 - 2 continued

(held by Windarra) an examination of the south end of the 5 level adit (501) x-cut should be made. An air testing device and a breathing apparatus should be used in making this examination.

3. Hubs: These are the local names for vein intersections which have been flooded with quartz to form stockworks of country rock and quartz. Hub "A" lies 200 feet E. of the lake shore at the north end of Shear Zone "A". It measures 240 ft by 160 ft. A 560 foot diamond drill hole to explore this Hub was drilled in 1924. No results were given (B.C. Ministry of Mines Report 1924 p.79).

Hub "B" lies approximately 500 m E. of Hub "A". It too consists of a quartz stockwork in argillite and measures 120 ft by 80 ft. This Hub has been trenched, diamond drilled to 360 feet in 1924 and explored by a shaft. This shaft is at least 58 m deep (hip chain) and old plans indicate a total of 332 m of drifting and cross cutting. About 68 m of these workings appear to drift and cross cut the southern end of the Mickey vein. This shaft was sunk in the mid 1920's.

It is possible that the hubs were formed by late stage barren quartz flooding which appears to have diluted the narrow, rich fissure veins of the Engineer. However, the writer has seen no assay plans or drill logs from work done on either of the hubs. They are obviously low grade where explored but nevertheless deserve further investigation.

## 8 - 0 GEOLOGY OF THE PROPERTY

8 - 1 General: The 40 claim Lumsden property optioned by Windarra surrounds 6 claims covering the main underground workings of the old Engineer Mine. Five of these central claims are held by Nu Lady. The N.E. dipping argillites and greywackes that underlie these central claims are also found in the surrounding Windarra property.

8 - 1 continued...

Mineralization on the Windarra property found to date occurs in quartz fissure veins, the most important of these being the Mickey Vein. Shear Zone "A" certainly extends through the Windarra property but its mineralization is so far unexplored. There are no known hubs on the Windarra property.

8 - 2 Rock Types and Structures: The commonest rock type on the property is a rusty weathering dark grey generally massive argillite. Fine light and dark banding is visible in places and sometimes this argillite grades into a fine grained banded greywacke.

Regionally these (Laberge) sediments dip steeply to the N.E., however locally there are sharp variations from this attitude. Pre-ore andesite and feldspar porphyry dykes accompany the veins and the Shear.

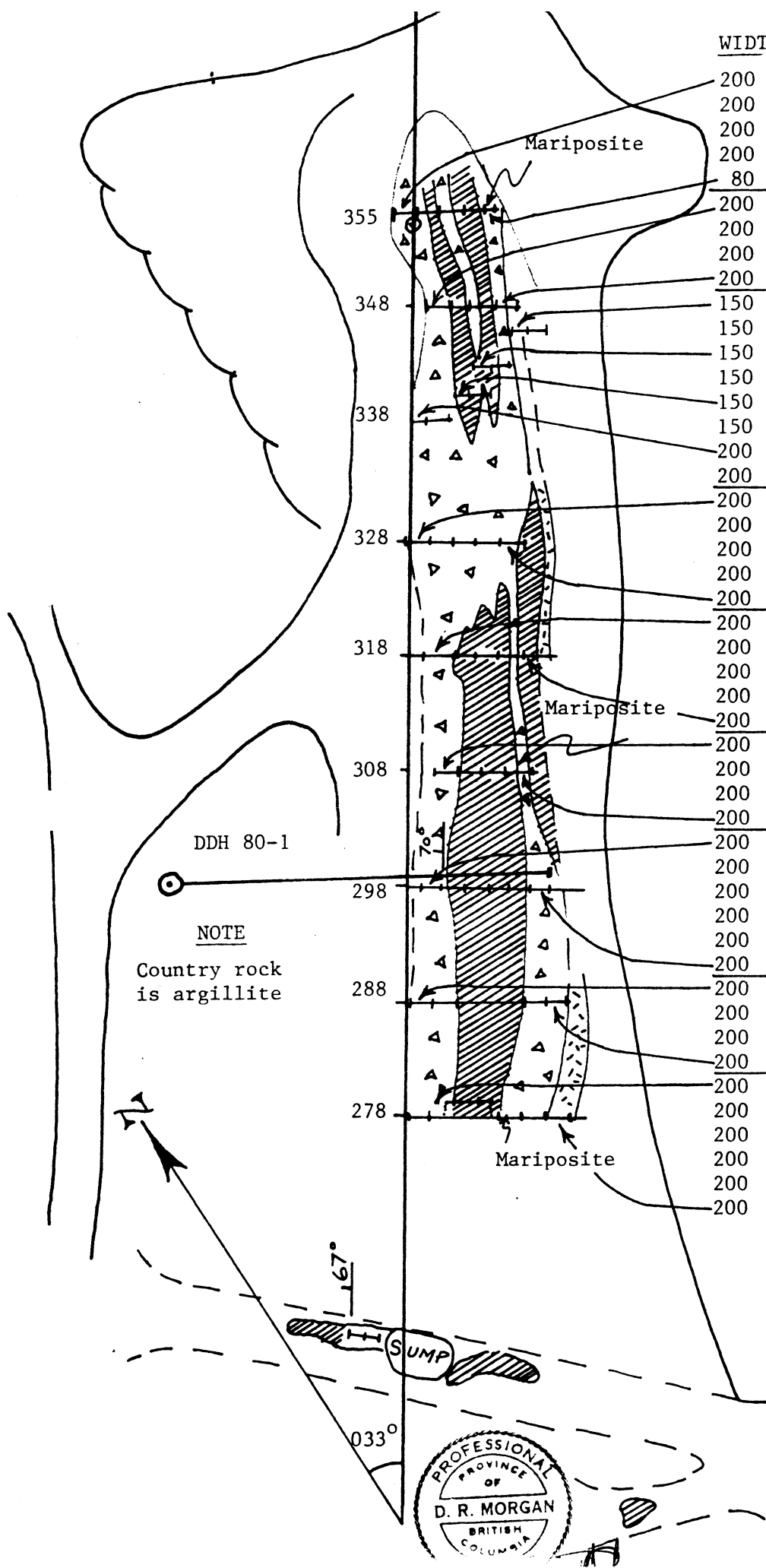
8 - 3 Mineralization:

1. Mickey Vein: This strong well defined vein has been well exposed for 400 m to the N.E. of Hub B. Beyond this point bedrock is deeply buried by a talus fan for approximately 300 m, however 950 m N.E. of Hub B trenching has exposed a vein on strike with and probably representing the extension of the Mickey Vein.

Early prospecting exposed this vein in 3 narrow rock trenches 220 m north-east of Hub B. Drifting from a shaft (now flooded) on Hub B also appears on old plans to follow the Mickey Vein for 70 m.

In 1980 the vein was probed with one short diamond drill hole (DDH 80-1). In 1981 the vein was bulldozer trenched and stripped for a strike length of 90 m. It was then mapped and channel sampled by the writer. The results of this work appear on a map accompanying this report. ("Mickey Vein Assay Plan").




In the area stripped this year the width of the vein varies from 7 to 14 m, in the old rock trenches to the south vein width is about 10 m, at the most north easterly trench the vein has a width of 2 m.



WIDTH (cm)	Au	Ag
200	.042	.31
200	.005	.07
200	.009	.20
200	.010	.12
80	.019	.16
200	.031	.19
200	.066	.31
200	.042	.29
200	.027	.14
150	.008	.10
150	.008	.16
150	.065	.15
150	.024	.17
150	.064	.23
150	.053	.12
200	.006	.09
200	.012	.35
200	.025	.13
200	.016	.04
200	.029	.07
200	.051	.21
200	.068	.34
200	.029	.05
200	.001	.01
200	.021	.01
200	.055	.12
200	.027	.09
200	.013	.17
200	.031	.22
200	.009	.02
200	.051	.06
200	.023	.05
200	.064	.19
200	.008	.03
200	.012	.19
200	.015	.01
200	.040	.05
200	.004	.01
200	.018	.03
200	.073	.12
200	.011	.01
200	.051	.04
200	.054	.03
200	.049	.05
200	1.350	1.60
200	.008	.02
200	.007	.01

DDH 80-1

NOTE  
Country rock  
is argillite

 Quartz argillite breccia  
 Argillite  
 Feldspar Porphyry dyke

WINDARRA MINERALS LTD  
Lumsden Property  
Engineer Mine Area Atlin, B.C.

MICKY VEIN ASSAY PLAN

Scale: 1:500 (1cm:5m)  
Date: 8 January 1982  
By: D.R. Morgan, P. Eng.



8 - 3 continued...

The vein strikes  $033^{\circ}$  and dips N.W. at  $75^{\circ}$ . Its walls are well defined with a buff weathering andesite dyke (1-2m wide) forming the footwall. Within the vein walls there is a range of mineralization from argillite veined with quartz, quartz cemented argillite breccia to pure vein quartz. Comb structure and drusy vugs are common. Malachite-green Mariposite was seen in 3 locations, the southern most being adjacent to high gold values.

Assay results from channel sampling across the vein in the trenched area generally show marginal values except for the values in the eastern part of sample line 278. Interestingly, the gold values in the whole sampled portion of the vein and also in D.D.H. 80-1 are highest close to the footwall in conformity with the generalization about Engineer Mine gold values published in the 1927 B.C. Minister of Mines Report.

It is also of interest that the "Dykes and veins of Engineer Mine" Map accompanying Weed's report (ref. 2) shows a 730 m (2400 ft) long vein with a N-S strike close to intersection with the Mickey Vein in the trenched area. (See map p. 13)

2. Shear Zone "A": All of the known exposures of Shear Zone "A" are in the old Engineer Mine workings and are currently included in the Nu Lady Mines Ltd property. A description of these exposures appears on page 16 of the report.

On the surface Shear Zone "A" is expressed as a steep sided little valley which continues southward into the Windarra property. This topographic evidence together with the width and regularity of this major structure underground leave little room for doubt that it traverses 2 and possible 3 claims in the S.E. corner of the Windarra property. (L972, 1262 and 3292).

The 'Regional Geology' map accompanying this report shows Shear Zone "A" passing close to the S.W. corner of a small intrusive plug on the West flank of Engineer Mountain, while another source (ref. 3, p12). states the Shear Zone "A" runs from the granodiorite outcrops near the south end of the property towards Hub A. Just what effect increasing proximity to this intrusive has on gold values in the shear is not known, but it deserves very thorough investigation.



3. Gleaner Group of Veins: In the eastern part of the property on the Myosotis, Taku Chief and Lakeview claims there is a system of 5 northerly striking veins. These were explored by a number of open cuts and by the 210 m (690 ft) 'Gleaner Tunnel' driven easterly to cross cut several veins exposed in trenches and in the canyon of Butler Creek above.

These veins were reconnaissance mapped in 1980 and were described thus: (ref. 10) "One long N-S set of trenches expose a 61 cm wide vein of massive quartz, quartz stringers veinlets and breccia. Another 70 - 100 cm wide massive, brecciated quartz vein on the S. side of Butler Creek is in contact with andesitic rocks. On the N. side of Butler Creek a tunnel has been driven 18 m on a 15 cm wide zone of quartz stringers and veinlets."

The Gleaner Tunnel cuts 9 veinlets and veins ranging from 5 cm to 61 cm and also 2 narrow (25-150 cm) shears. All of these structures have northerly strikes (fig. 7, ref. 10).

Diamond drill holes 80-2 and 80-3 (86 m and 153 m) probed the longest of these Gleaner Group veins in 1980 with inconclusive results.

The immediate exploration of the Gleaner group of veins is seen to be in the area of their projected intersection with the Mickey Vein to the north. Detailed mapping of the area between the x-cut and the Mickey Vein should be the first step in this exploration.

4. Jersey Lily Vein Extension: Two trenches on the Jersey Lily Claim expose a 61 cm wide vein ( $012^{\circ}/67^{\circ}-86^{\circ}$  W) for 75 m. It consists of "vuggy comb quartz-argillite solution breccia with quartz stringers and veinlets" (ref. 10, p6)

No work was done on the Gleaner Group of Veins or the Jersey Lily Vein extension in 1981.

9 - 0 EXPLORATION OF THE PROPERTY:

9 - 1 Survey Control: The crown granted claims forming half of the

9 - 1 continued...

property were legally surveyed. Photostats of most of these surveyed claims show bearings and distances of claim boundaries. These were plotted at a scale of 1:2000. The post at the point where lots 19, 209 and 987 meet was tied in to the shaft on Hub B and to the geochemical survey grid by hip chain and Silva compass. The grid was run by D. Hammer and crew. The writer surveyed the road system with hip chain and silva.

9 - 2      Geological Mapping:      The property was reconnaissance geologically mapped in 1980 at a scale of 1:3600. More detailed mapping was carried out around showings as follows: Gleaner Group of Veins (1:1250), Gleaner Tunnel (1:1000), Vein on Jersey Lily Claim (1:250), Mickey Claim Trench III (1:250). These maps accompany ref. 10.

In 1981 the geology of the Mickey claim trenches were mapped at a scale of 1:500 by the writer using a hip chain and silva compass.

9 - 3      Geochemical Surveys:

1. 1980 Survey: A soil sampling survey covering most of the reverted crown grants which immediately surround the old Engineer Mine claims was carried out in 1980. A base line was run 1200 m N and 1500 m S of the shaft on Hub B. East-west lines were turned off at 100 m spacing and soil sampled at 30 m intervals. A total of 801 samples were collected along 25 km of line providing coverage of 240 hectares or about 10 claims. Samples were analyzed for silver, lead and zinc content and the results were plotted on a map grid. This survey indicated zinc anomalies covering or adjacent to all known mineralized areas, lead anomalies were restricted to scattered highs in the northern part of the survey area and one high in the S.E. Silver anomalies were indicated west of the base line at 400 N (adjacent) and 700 N (125 m W).

2. 1981 Survey: As a result of the 1980 surveys the 1981 survey was concentrated on a "Y" shaped area to the north of Hub B. A base line was run 900 m N of Hub B. E.W. Lines were turned off every 40 m and soil sampled at 20 m intervals. A total of 396 samples were taken along 8.4 km of line covering parts of the Mickey, Taku Chief, Lakeview, Daisy, Golden Hope, Chackawana, Sweepstake No's 1 & 5.

## 2. 1981 Survey continued..

A total area of 33.6 hectares was thus surveyed in detail.

Samples were analysed for silver and gold. The plotted results show that the most strongly anomalous silver values occur in an area centred 100 m W of the base line between 640 and 780 m N. A second anomalous area extends north westerly to the base line from the vicinity of the south end of the trenched area. Scattered smaller areas extend north easterly in the vicinity of the Mickey vein projected on strike.

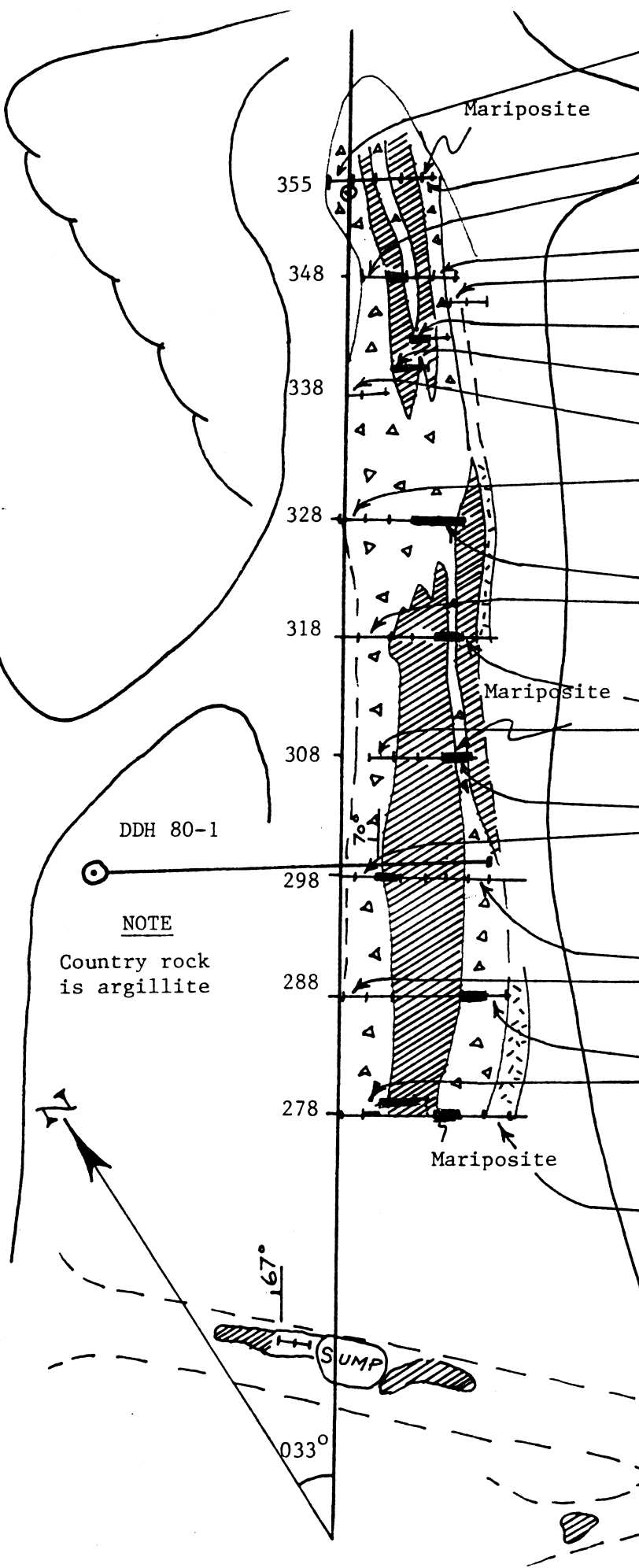
Background gold values are .005 ppm. Amomalous areas with values ranging from .02 to 1.180 ppm, (typically .03 ppm ) occur in an irregular elongate area extending north easterly from the main trenched area.

The 1981 survey results confirm the presence of anomalous silver values in an area centred 100 m W of the base line and 700 m N. Gold values appear to follow the Mickey vein projected. It is interesting to see that the strongest gold values lie to the N.E. of the trenched area.

9 - 4 Bulldozer Trenching: A program of bulldozer trenching was carried out in 1981 to explore the Mickey vein and the anomalous areas indicated by the geochemical survey. A base line was cut and chained at  $033^{\circ}$  (the strike of the Mickey vein) from the vicinity of Hub B. Initially, 50 m trenches were cut across the vein at 255 m and 335 m on the base line, the area between these trenches was then mostly stripped clear. This entailed the removal of approximately 3550 cubic metres of overburden. The 80 m of vein exposed was then channel sampled at 10 m intervals across full vein width.

Trenching was also carried out at 850 N - 400 E on the Mickey veins northern most exposure near an old cabin.

Trenching carried out at 520 N - 280 E failed to reach bedrock due to a talus fan which extends from 370 - 700 m on the  $033^{\circ}$  base line. Investigation of



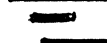
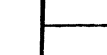


200		.042	.31		
200		.005	.07		
200		.009	.20		
200		.010	.12		
80		.019	.16		
200		.031	.19		
200	} 2m	.066	} 0.066	.31	
200		.042			.29
200		.027	.14		
348		.008	.10		
		.008	.16		
		.065	.15		
	} 6m	.024	} 0.051	.17	
338		.064			.23
		.053			.12
		.006	.09		
		.012	.35		
		.025	.13		
328		.016	.04		
		.029	.07		
	} 4m	.051	} 0.060	.27	
		.068			.34
		.029	.05		
318		.001	.01		
		.021	.01		
	} 2m	.055	} 0.055	.12	
		.027			.09
		.013	.17		
308		.031	.22		
		.009	.02		
	} 2m	.051	} 0.051	.06	
		.023			.05
	} 2m	.064	} 0.064	.19	
298		.008			.03
		.012	.19		
		.015	.01		
		.040	.05		
288		.004	.01		
		.018	.03		
	} 2m	.073	} 0.073	.12	
		.011			.01
	} 8m	.051	} 0.376	.04	
		.054			.03
278		.049			.05
		1.350	1.60		
		.008	.02		
		.007	.01		

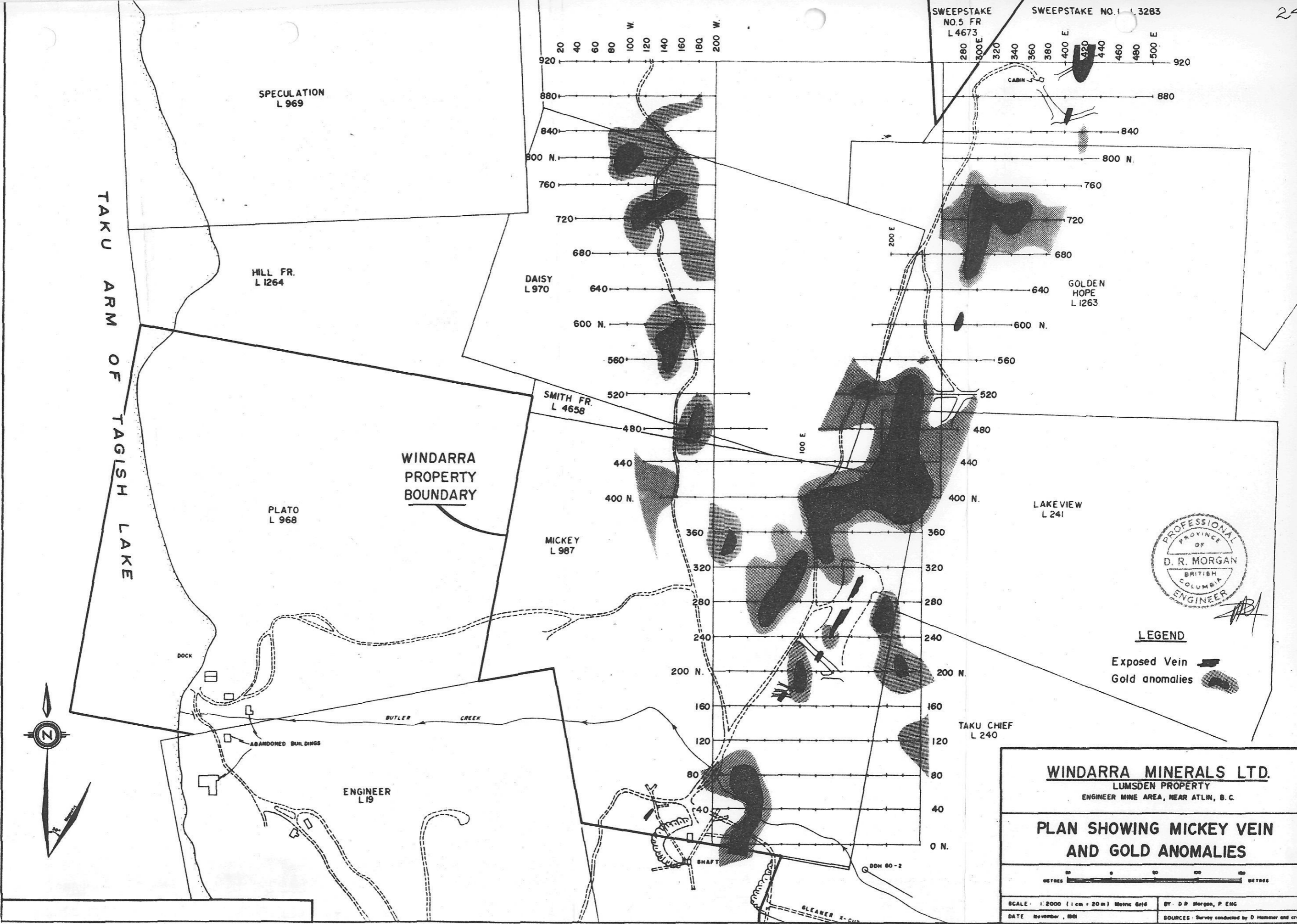
DDH 80-1

NOTE

Country rock is argillite

-  Quartz argillite breccia
-  Argillite
-  Feldspar Porphyry dyke
-  OVER .05 ozs/ton

WINDARRA MINERALS LTD	
Lumsden Property	
Engineer Mine Area Atlin, B.C	
N.E. VEIN ASSAY PLAN	
Scale: 1:500 (1cm:5m)	
Date:	
By: D.R. Morgan, P. Eng.	



**WINDARRA MINERALS LTD.**  
 LUMSDEN PROPERTY  
 ENGINEER MINE AREA, NEAR ATLIN, B. C.

**PLAN SHOWING MICKEY VEIN  
 AND GOLD ANOMALIES**

SCALE 1:2000 (1 cm = 20 m) Metric Grid  
 BY: D. R. Morgan, P. ENG.  
 DATE: November, 1981  
 SOURCES: Survey conducted by D. Hamner and crew



**LEGEND**  
 Exposed Vein [Symbol]  
 Gold anomalies [Symbol]

9 - 4 continued ...

2 geochemical anomalies west of the base line by bulldozer trenching was not attempted due to swampy ground.

A 35 m trench was dug at 250 N - 170 W to explore for the projected extension of the vein indicated by a 100 m drift from the shaft on Hub B. Bedrock was not reached in this trench.

9 - 5 Diamond Drilling: Three B.Q. diamond drill holes were drilled in 1980 as follows:

<u>Hole #</u>	<u>Length</u>	<u>Bearing Dip</u>	<u>Location</u>
80 - 1	66.4m	120° - 60°	275N - 120E
80 - 2	86.3m	120° - 50°	10S - 165E
80 - 3	153.3m	090° - 60°	195S - 135E

The core from these holes was logged by the writer. The vein intersection made in hole 80-1 ran as follows:

<u>From</u>	<u>To</u>	<u>Intersection</u>	<u>Au (035/ton)</u>	<u>Ag (038/ton)</u>
26.51 - 38.1		11.6m	.029	.253
-----		of which	-----	-----
33.38 - 38.25		4.87m	.042	.51

\*\*\*\*\*

10 - 0

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11. Morgan, D.R. "Geology of Claims surrounding the Engineer Gold Mine," for Windarra Minerals Ltd, 24 February 1981
12. B.C. Minister of Mines Annual Report 1900 - 1952.

11 - 0      CERTIFICATE:

I, David R. Morgan of 3424 West 6th Avenue, Vancouver, B.C., V6R 1T3, do hereby certify that:

1. I am a 1954 graduate of McGill University, Montreal, Quebec, with a Bachelor of Science Degree in Honours Geology.
2. Since graduating I have engaged in mining exploration in British Columbia, Ontario, Quebec, Ungava, Baffin Island, Northwest Territories, the Yukon, Alaska, Washington, Montana, Idaho, Nevada, Arizona, Mexico and Haiti.
3. I am a registered member, in good standing, of the Association of Professional Engineers of the Province of British Columbia.
4. I am a Consulting Geologist.
5. I have examined all of the available data on area covered by the reverted crown grants and located mineral claims of Windarra Minerals Ltd which surround the "Engineer" gold mine and adjacent areas.
6. I was on the property for a total of 37 days in July, August and September 1981.
7. I have not received, nor do I expect to receive, any interest directly or indirectly in the properties or securities of WINDARRA MINERALS LTD or in those of any associated companies.

Signed,



David R. Morgan, Geologist, P. Eng.

8 January 1982      Vancouver, B.C.

