

826013

SUMMARY REPORT
RED DOG PROPERTY
NUTTLUDE LAKE AREA
LIARD MINING DIVISION, B.C.
(NTS 104G/9W)

for

NORTHCAL RESOURCES INC.
1450 - 625 Howe Street
Vancouver, B.C.
V6C 2T6

by

G.A. NOEL & B. TAYLOR

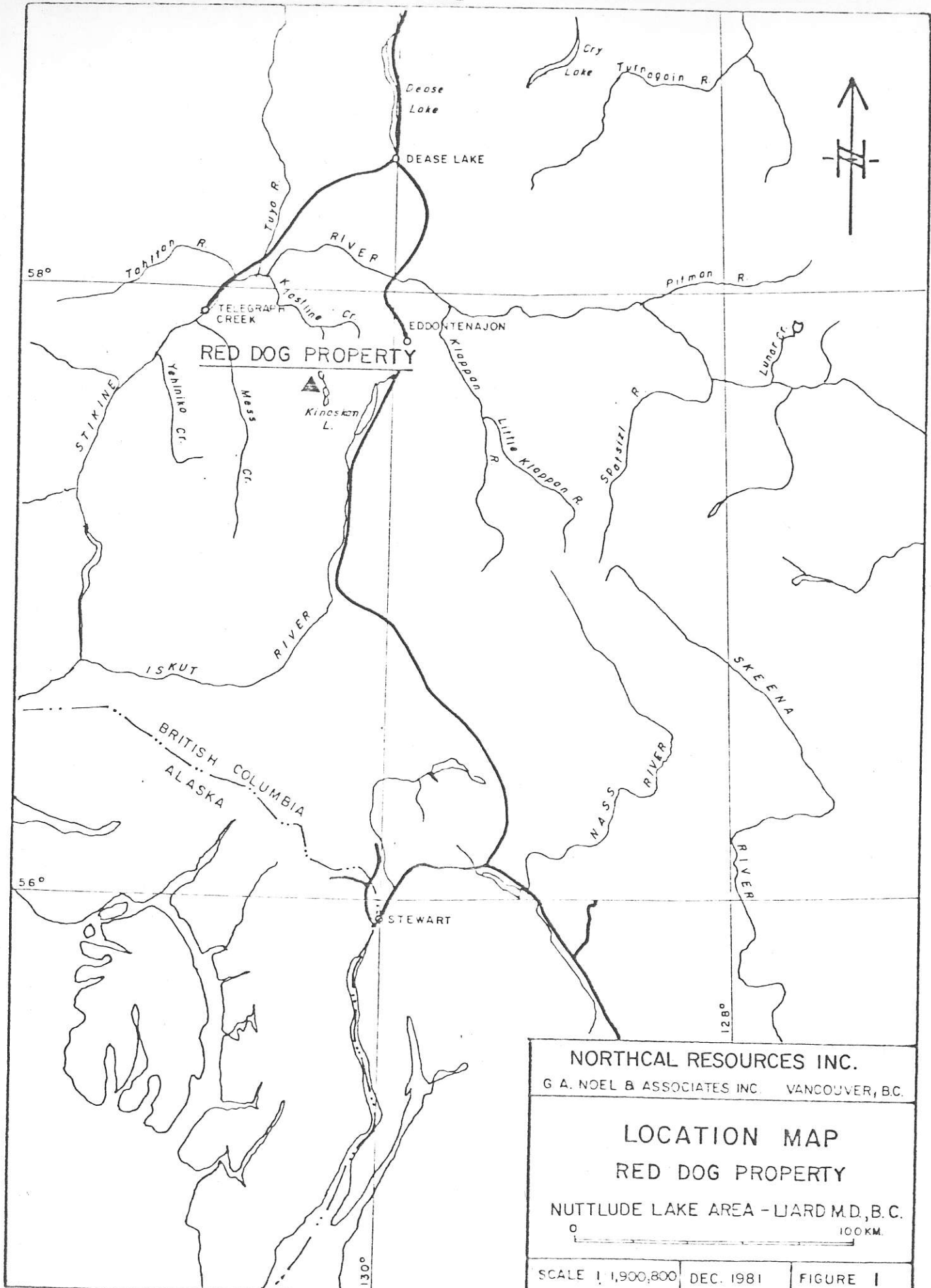
December 20, 1981

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NORTHCAL RESOURCES INC.		
G. A. NOEL & ASSOCIATES INC VANCOUVER, B.C.		
LOCATION MAP RED DOG PROPERTY		
NUTTLUDE LAKE AREA - LARD M.D., B.C.		
SCALE 1:1,900,800	DEC. 1981	FIGURE 1

INTRODUCTION

This report has been prepared at the request of Northcal Resources Inc. to consolidate all prior work on the Red Dog property with the regional mapping conducted in 1981, which covered the Hawk 1 and 2, Camp, Pink, Red Dog and Red claims. This report will be confined to the property held by Northcal Resources Inc. (formerly Consolidated Silver Ridge Mines Ltd.); that is, Camp, Pink, Red Dog and Red claims. In the report, these holdings are collectively termed the Red Dog property.

PROPERTY AND TITLE

The property consists of the following claims which are located in the Liard Mining Division of B.C. and shown on claim maps 104G/9W (see Figure 2). This data has been drawn from current records at the Mining Recording office in Vancouver.

<u>Claim Name</u>	<u>Units</u>	<u>Record No.</u>	<u>Expiry Date</u>	<u>Ownership</u>
Red Dog	2	53	Sept.30, 1990)	90% Consol.
Red Dog	15	116	April 9, 1992)	Sil.Ridge Mines
)	10% Placer
)	Development
Camp	12	784	April 9, 1984	Consol.
				Silver Ridge
Pink	20	724	Oct. 31, 1983	" "
Red	20	725	Oct. 31, 1989	" "
Red Dog 3	10	2040	Aug. 31, 1982	" "
Red Dog 4	8	2041	July 16, 1982	" "

130°30'

NUTTLUDE

LAKE

CAMP
784 (4)

HAWK 1
532 (2)

RED DOG
53 (9)

RED DOG
4
2041 (7)

RED
725 (10)

RED DOG
116 (4)

HAWK 2
533 (2)

RED DOG 3
2040 (8)

PINK
724 (10)

WHITE
723 (10)

57°40'

☐ LEGAL CLAIM POST



NORTHCAL RESOURCES INC.

G A NOEL & ASSOCIATES INC. VANCOUVER, B.C.

RED DOG PROPERTY

CLAIM MAP

NUTTLUDE LAKE AREA
LIARD M.D., B.C.

0 5 0 2 KM

SCALE 1:50,000

DEC. 1981

FIG. 2

G A N

HISTORY

The property was originally staked in 1969 as the Spectrum claims to cover a porphyry copper discovery. Spartan Explorations Ltd. optioned the property in 1970 to Mitsui Mining and Smelting Company Ltd., who did some geological mapping as well as geophysical and geochemical surveys. The property was optioned to Imperial Oil Limited from 1971-3 and further geological, geochemical and geophysical surveys were done as well as 450 metres of diamond drilling in four holes. The Red Dog claim was staked for the Racicot Syndicate in 1975 and was optioned to Consolidated Silver Ridge Mines Ltd. in 1977. Silver Ridge completed geological mapping and a geochemical soil survey on the Red Dog property in 1978. In 1979, this company undertook extensive road building, bulldozer trenching and diamond drilling on the property. A total of 432 metres of BQ and 400 metres of NQ drilling was completed in 10 holes from July 8 to October 14, 1979. In 1980, Silver Ridge completed 18 NQ drill holes totalling 2462.2 metres between June 29 and October 12.

RECENT FIELDWORK

The 1981 fieldwork consisted of geological reconnaissance and prospecting followed by original geological mapping and geochemical rock sampling. The geological reconnaissance resulted in the discovery of vein mineralization in volcanic flows and breccias about 3400 metres west-southwest of the main showings on the Red Dog claim and just outside the southwest corner of the Red claims. This discovery

necessitated the staking of Red Dog 3 and 4 claims in June 1981. The geological mapping was done from a number of traverses run with helicopter support between August 9 and 18. The final base map at a scale of 1:10,000 was compiled from a number of topographical and geological maps with scales ranging from 1:2000 to 1:10,000 as well as aerial photographs. Detailed geological mapping had previously covered about one-half of the Red Dog and Hawk 1 claims. Rock chip samples for geochemical analysis were taken over selected areas on the Red Dog claim in an attempt to correlate gold assays at the surface with the results from drilling. It was felt that areas of higher gold content might be outlined by the rock chip samples.

GEOLOGY

General

The Nuttlude Lake area is largely underlain by late Tertiary and Pleistocene flows which are part of the thick Edziza and Spectrum volcanic piles and range from basalt to rhyolite in composition. These flows overlie a gently rolling Tertiary erosion surface over an area of 600 square miles.

A thick section of Upper Triassic sedimentary and volcanic rocks directly underlies the Edziza volcanics. The sedimentary section is at least 900 metres thick in places and consists of volcanic agglomerate, greywacke, grit and chert breccia interbedded with tuffaceous siltstone. The volcanics overlie the sediments and consist of at least 1200 metres of green, purple and grey andesite and derived

volcaniclastics including greywacke, siltstone and minor conglomerate. The volcanics are cut by andesite dikes and sills and by irregular sub-volcanic intrusive bodies. All of the Triassic rocks are cut by a number of small diorite and granodiorite intrusive bodies of Jurassic and/or Cretaceous age.

The Upper Triassic rocks are warped into open folds with east-west axes and these rocks are cut into blocks by north-south, east-west, northwest and northeast faults. The north-south faults show some post-Pleistocene movement.

Property

On the Red Dog 1 (Record No.53) and 2 (Record No.116) claims, the Upper Triassic rocks lie below the 1700-metre elevation. The sediments are exposed as a NNW-trending band 100-150 metres wide consisting of siltstone, chert and greywacke. The sediments are overlain by andesite, dacite and rhyolite tuffs, chert and tuffaceous siltstone as a parallel band 150-250 metres wide. The pyroclastics are overlain by a thick section of flows, dikes and sills of dacite, andesite and basalt. The volcanics and pyroclastics have a variable but pervasive disseminated pyrite and pyrrhotite content. As a result the weathered surfaces are marked by widespread iron oxide coatings. The Upper Triassic rocks are cut by a north-northeast trending granodiorite dike which has been mapped for 1200 metres along strike with a width between 50 and 100 metres. It dips 60° - 80° to the west and shows fairly sharp contacts. The dike walls in places are notably sheared and brecciated. The dike is a medium to coarse grained, in places porphyritic, grey to pink

hornblende-biotite granodiorite. It is markedly altered along its margins with potassic, biotite-hornfels and propylitic alterations most notable. The dike and its walls have been mineralized with pyrite and minor chalcopyrite as disseminations and fracture fillings. This porphyry-type mineralization is associated with sericite and secondary biotite alteration. Pyrite, arsenopyrite, sphalerite and chalcopyrite occur as disseminations and fracture fillings in the granodiorite and volcanic/pyroclastic wall-rocks, in places associated with quartz-carbonate veinlets. The veinlets range from less than 1cm to over 30cm in width and in places show appreciable gold and silver values.

About 50% of the Red Dog property is covered by late Tertiary and Quaternary volcanic rocks extruded from the Mount Edziza vents. One set of flows bottoms about the 1700-metre elevation. It consists of flat-lying flows and related pyroclastics which rest unconformably on the inclined Upper Triassic volcanics. A second set of Edziza volcanics flowed down the main east-west creek valley at the south end of the Pink claim extending northward along the west side of Nuttlude Lake. Most of the Edziza flows on the Red Dog property consist of columnar basalt interbedded with scoria and pumiceous ash.

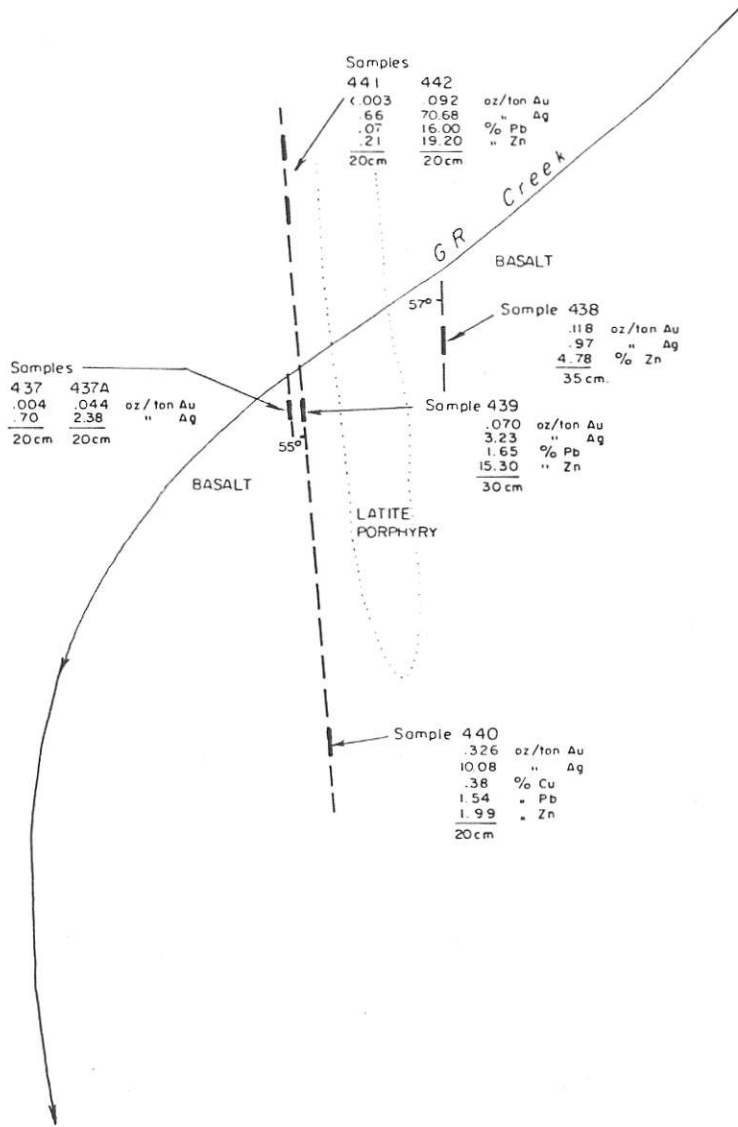
Mineralization

The most important mineralized zone on the Red Dog property occurs in the southeast quadrant of Red Dog 1 claim. As partially outlined by drilling, this zone is 250 metres long by 45 metres wide and contains at least 2,412,000 tons grading 0.037 oz. gold per ton, which could be mined

by a surface mining method. The zone is in, and along, the east side of the dike with about 50% of the mineralization in the dike and 50% in siliceous volcanics and pyroclastics along the east wall of the dike. The zone is shown on the drill sections (Figures 6 to 13) to a depth of 60-100 metres. It is open to the north and south, and at depth. The 1981 geological reconnaissance indicates that the dike extends at least 600 metres to the north of the northern-most drilled section (Section 9735N), and that it probably extends at least 450 metres to the southwest of the southern-most drilled section. To the north, geochemical rock sampling showed low gold values (10-80 ppb) in the dike but low to high gold values (120-2500 ppb) in the pyroclastics on the east side of the dike. These values compare quite well with geochemical analyses from surface samples from the drill-indicated mineralized zone which showed 400 ppb gold in the dike and 170-900 ppb gold in the cherty tuffs along the east wall of the dike. To the south, the intrusive rock showed 600 ppb gold and the volcanic wall-rock, 40-160 ppb gold. Intrusive rock is exposed on the south side of the large east-flowing creek some 500 metres south-southwest of the drilled area on the Red Dog claim. This rock is a monzonite with some skarny inclusions. It shows variable disseminated chalcopyrite and pyrite with some copper oxide on the surface. Two chip samples in the monzonite gave the following analyses:

<u>Length (m)</u>	<u>Au oz/ton</u>	<u>% Cu</u>
20	.032	0.40
8	.104	0.50

A new showing (GR) was discovered in June 1981 about 3400 metres S70°W of the main mineralized area. This showing in the



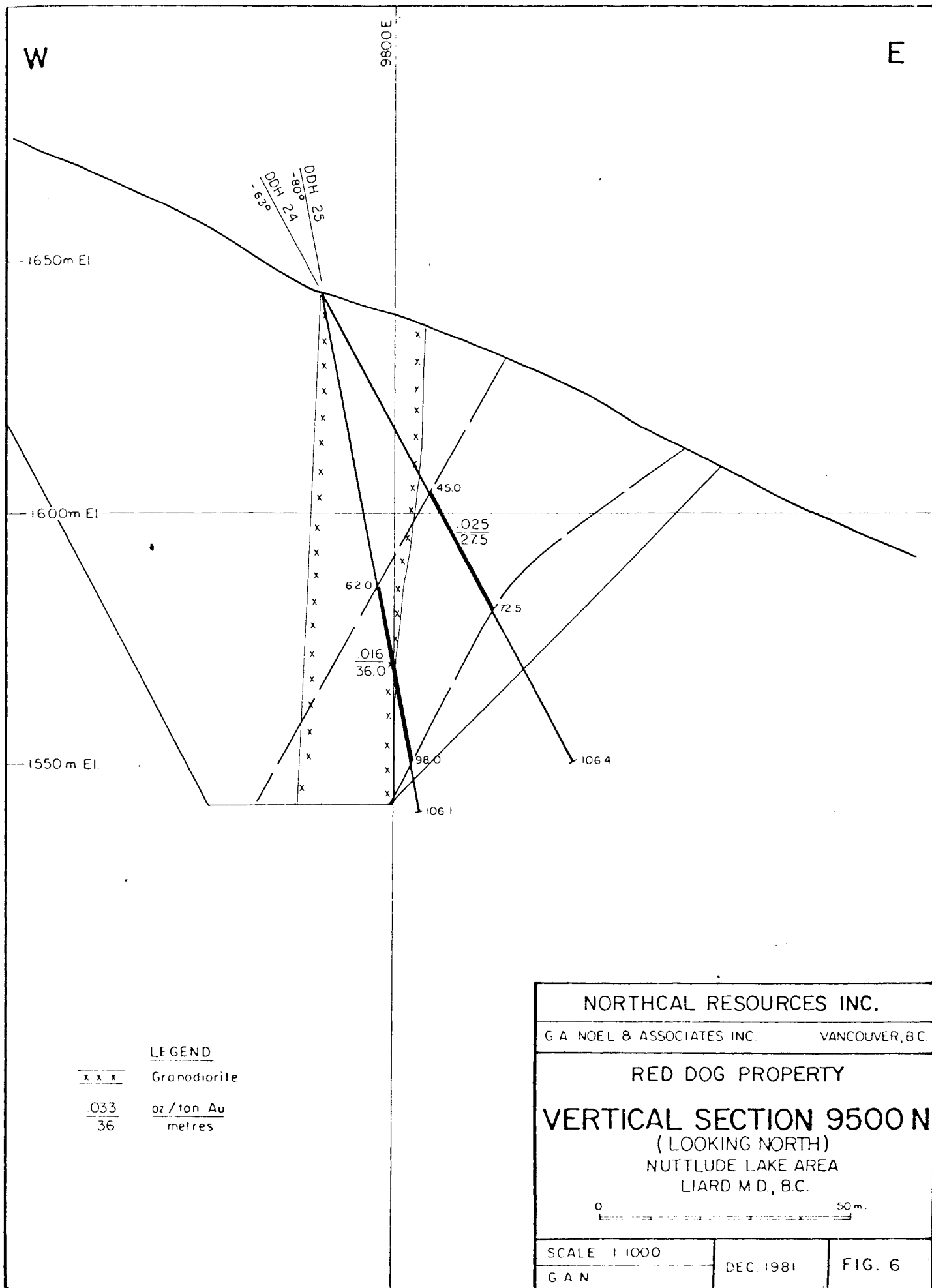
NORTHCAL RESOURCES INC.		
G.A. NOEL & ASSOCIATES INC.		VANCOUVER, B.C.
RED DOG PROPERTY		
SAMPLE MAP- GR SHOWING		
NUTTLUDE LAKE AREA		
LIARD M.D., B.C.		
0 10 20 metres		
SCALE 1:500	DEC. 1981	FIG. 4
B.T.		

southeast corner of the Red Dog 4 claim consists of two narrow veins 10 metres apart which are exposed by hand trenching for short intervals in the steep walls of a narrow north east-trending creek gulley. The veins strike N10^o-20^oW and dip 50^o-80^o west in basaltic volcanoclastics. The east vein is up to 35cm wide and is exposed along the south wall of the creek for about three metres. The west vein is 20-30cm wide and is exposed on both sides of the creek for a length of 40 metres. Both veins consist of quartz with pyrite, sphalerite, galena, arsenopyrite and a little chalcopyrite. The east vein assayed 0.118 oz/ton gold, 0.97 oz/ton silver and 4.78% zinc over 35cm. The east vein was sampled in three small trenches and gave an average assay of 0.149 oz/ton gold, 24.46 oz/ton silver, 5.72% lead and 12.61% zinc over an average width of 23.3cm.

About 500 metres west-northwest of the G.R. showings, pyrite and minor chalcopyrite occur in veinlets in a bleached zone in andesitic volcanoclastics. Two exposures 25 metres apart along a northerly trend gave an average assay of 0.181 oz/ton gold, 1.58 oz/ton silver, 2.12% copper, 0.09% lead and 0.17% zinc across two metres.

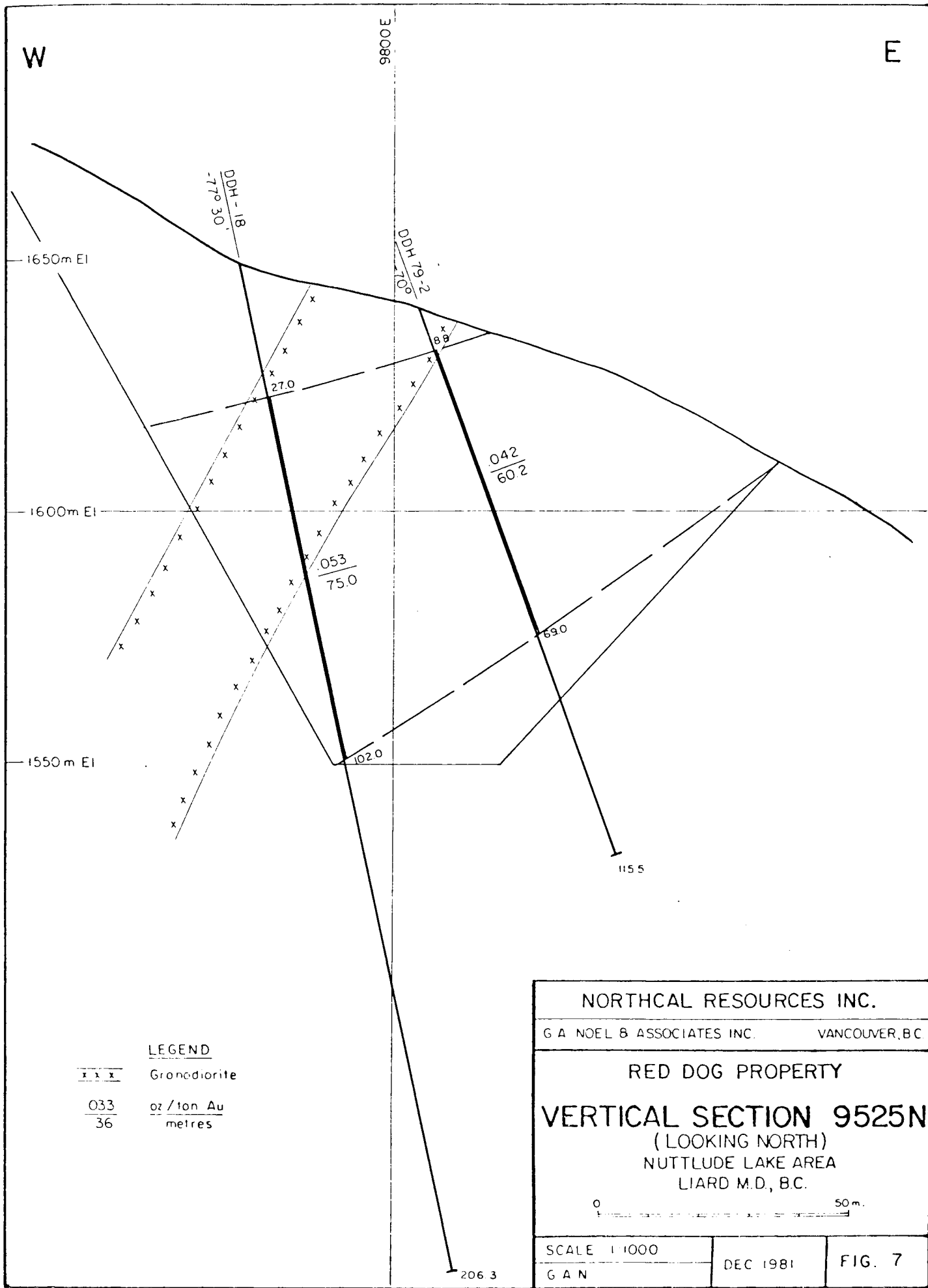
RESERVES

The potential reserves of the main zone in the Red Dog property as partially defined by drilling are shown on Figures 6 to 13. The results are summarized by sections in the following table:



x x x Granodiorite
 $\frac{.033}{36}$ oz/ton Au metres

NORTHCAL RESOURCES INC.		
G A NOEL & ASSOCIATES INC.		VANCOUVER, B.C.
RED DOG PROPERTY VERTICAL SECTION 9500 N (LOOKING NORTH) NUTTLUDE LAKE AREA LIARD M.D., B.C.		
0 50 m.		
SCALE 1:1000	DEC 1981	FIG. 6
G A N		

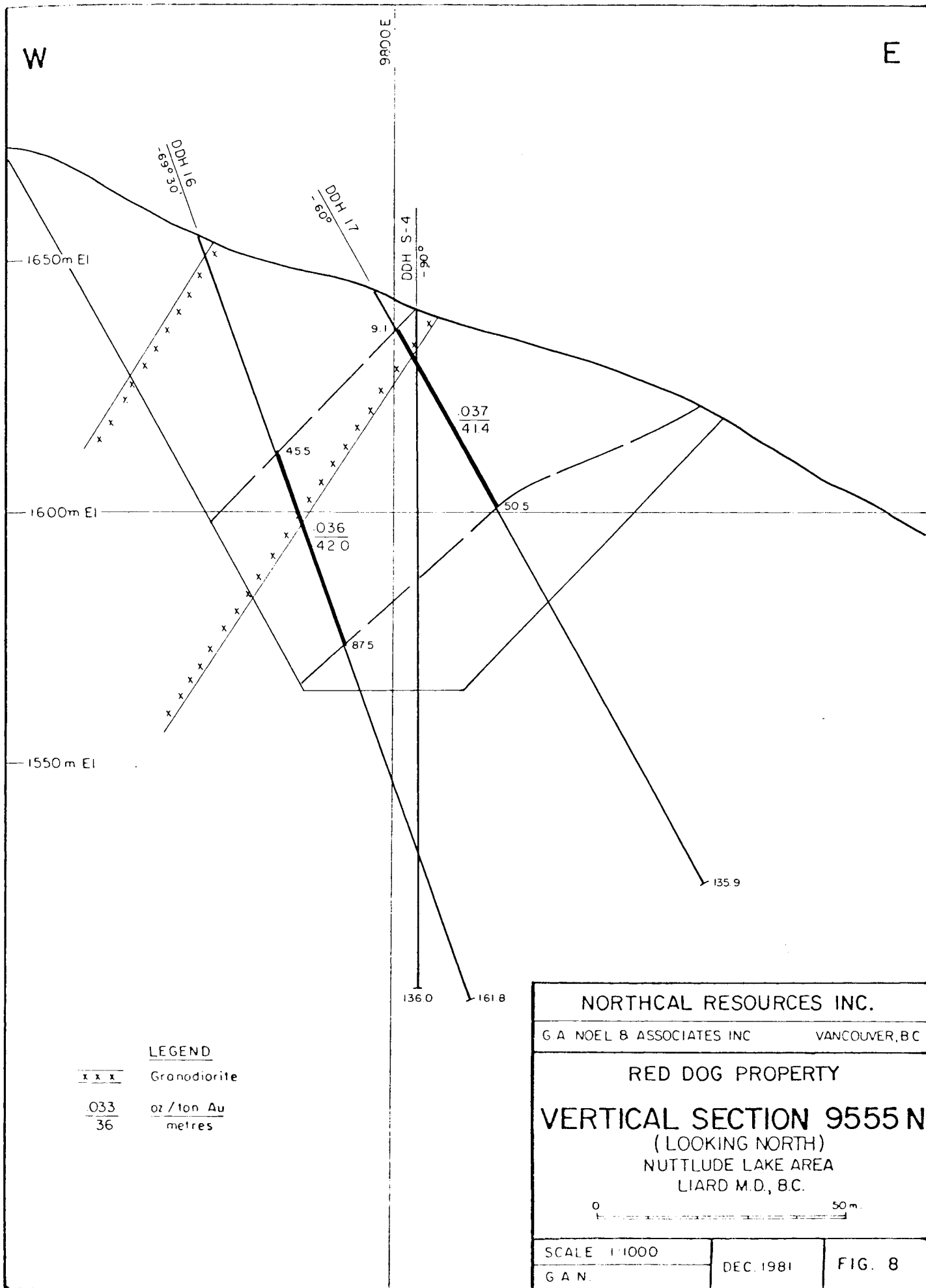


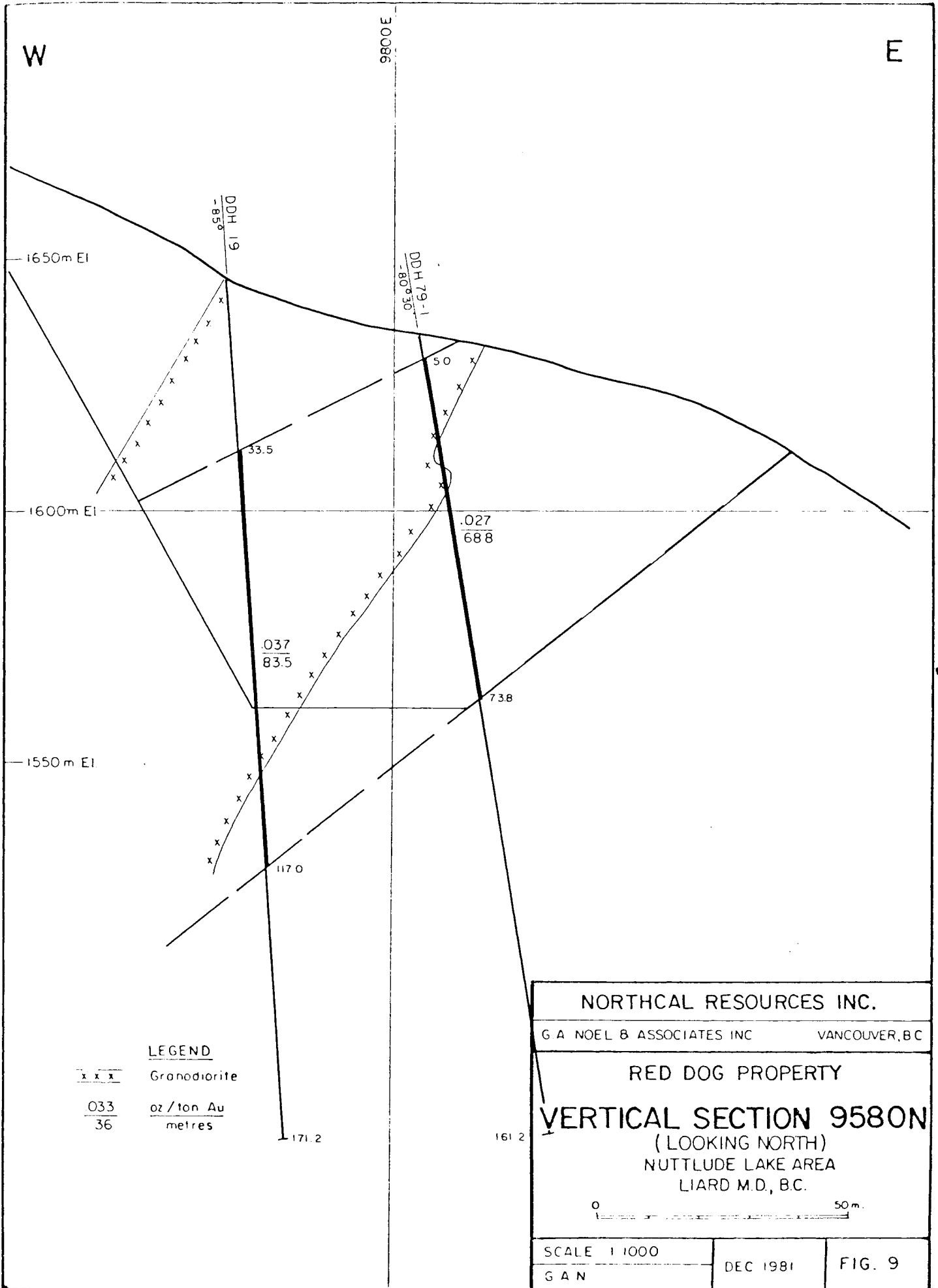
LEGEND

x x x Granodiorite

$\frac{0.33}{36}$ oz / ton Au
metres

NORTHCAL RESOURCES INC.		
G A NOEL & ASSOCIATES INC.		VANCOUVER, B.C.
RED DOG PROPERTY		
VERTICAL SECTION 9525N		
(LOOKING NORTH)		
NUTTLUDE LAKE AREA		
LIARD M.D., B.C.		
0 50 m.		
SCALE 1:1000	DEC 1981	FIG. 7
G A N		





LEGEND

x x x Granodiorite

$\frac{0.033}{36}$ oz/ton Au metres

NORTHCAL RESOURCES INC.

G A NOEL & ASSOCIATES INC

VANCOUVER, B.C.

RED DOG PROPERTY

VERTICAL SECTION 9580N

(LOOKING NORTH)
NUTTLUDE LAKE AREA
LIARD M.D., B.C.

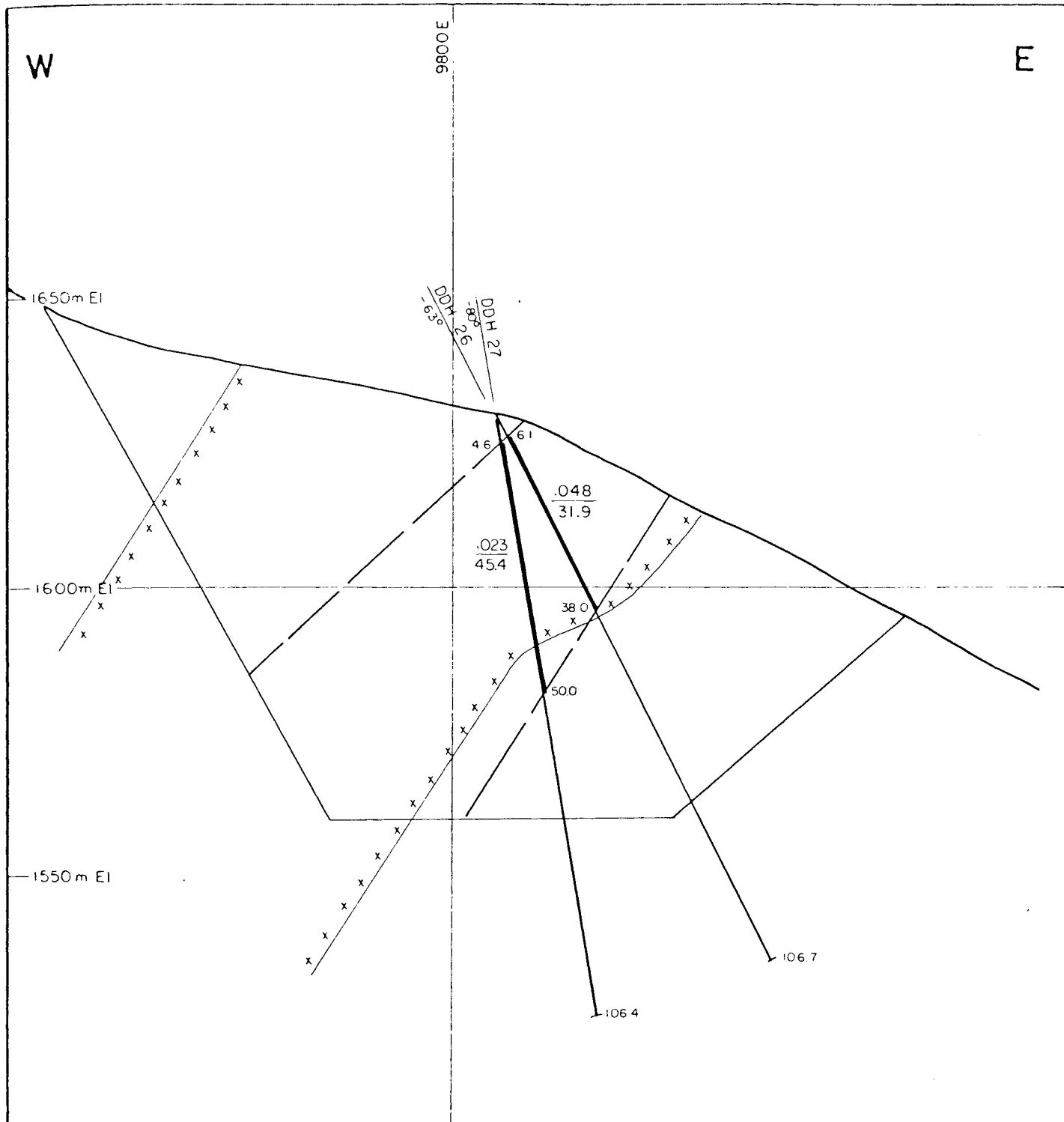
0 50m

SCALE 1:1000

G A N

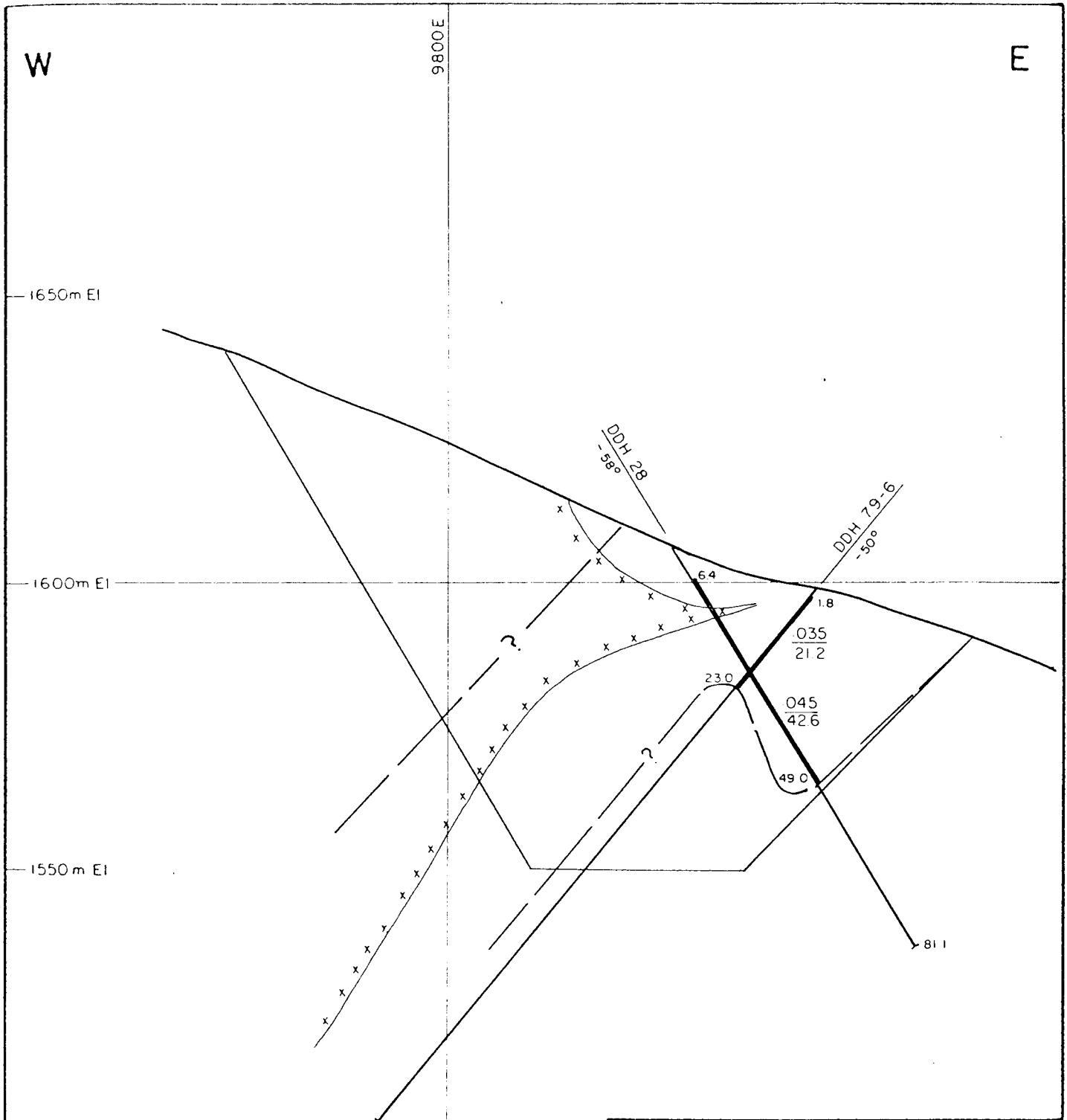
DEC 1981

FIG. 9



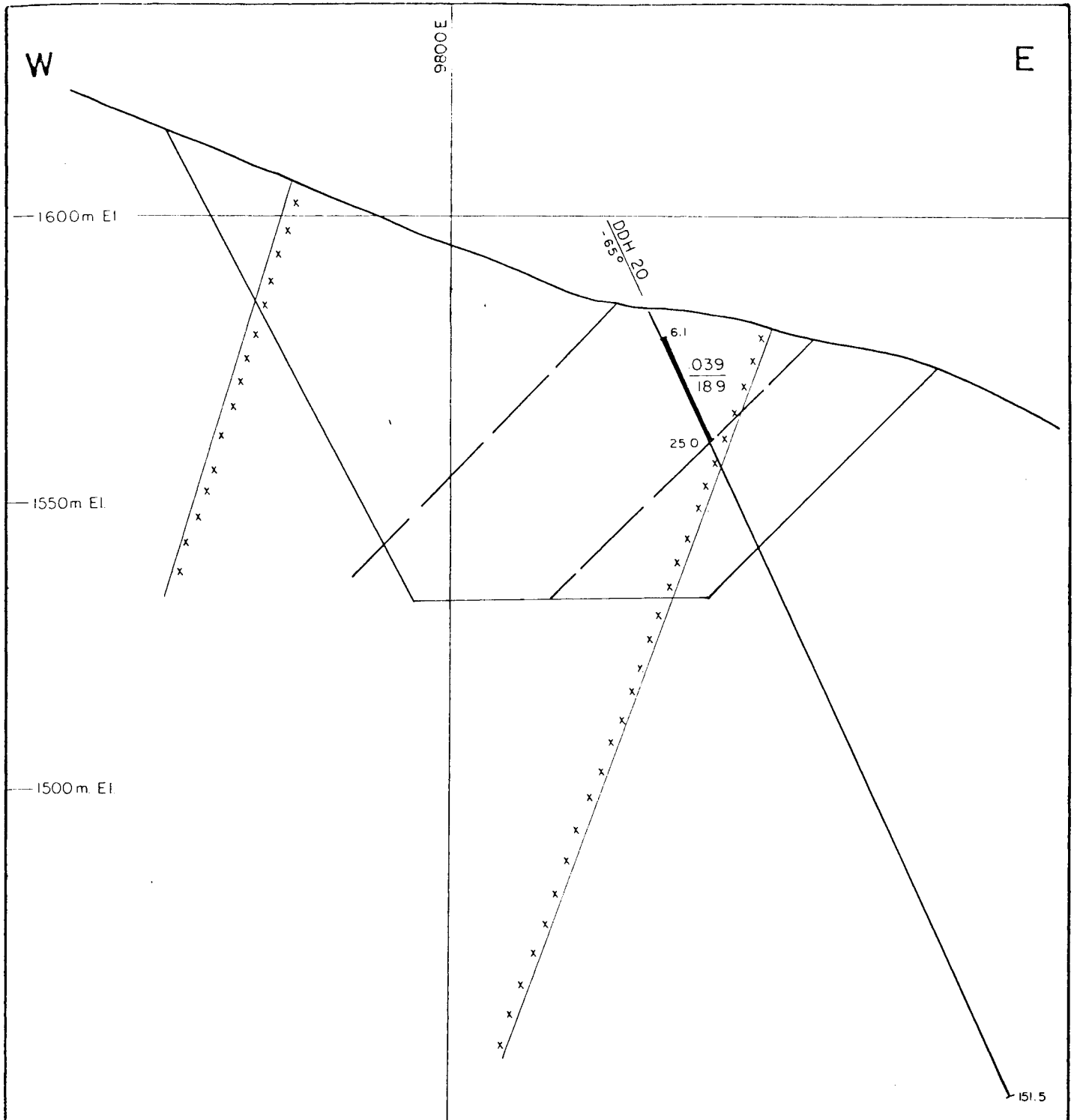
LEGEND
 x x x Granodiorite
 $\frac{.033}{36}$ oz/ton Au
 metres

NORTHCAL RESOURCES INC.		
G A NOEL & ASSOCIATES INC		VANCOUVER, B.C.
RED DOG PROPERTY		
VERTICAL SECTION 9615 N (LOOKING NORTH) NUTTLUDE LAKE AREA LIARD M.D., B.C.		
0 50 m.		
SCALE 1:1000	DEC 1981	FIG. 10
G A N		



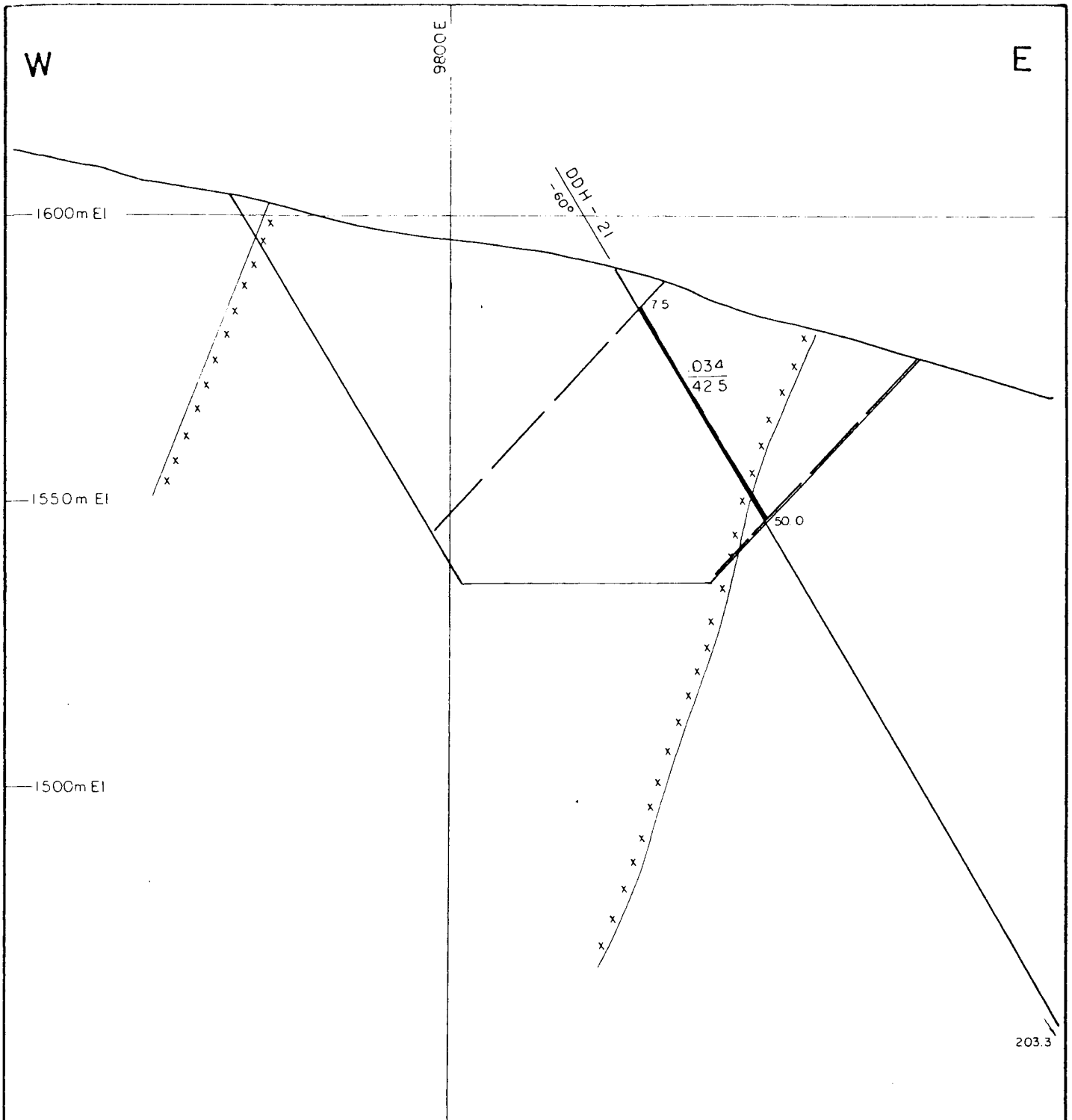
LEGEND
 xxx Granodiorite
 .033 oz / ton Au
 36 metres

NORTHCAL RESOURCES INC.		
G A NOEL & ASSOCIATES INC		VANCOUVER, B.C.
RED DOG PROPERTY		
VERTICAL SECTION 9645N (LOOKING NORTH) NUTTLUDE LAKE AREA LIARD M.D., B.C.		
0 50m.		
SCALE 1:1000	DEC. 1981	FIG. 11
G A N		



LEGEND
 x x x Granodiorite
 $\frac{.033}{36}$ $\frac{\text{oz / ton Au}}{\text{metres}}$

NORTHCAL RESOURCES INC.		
G. A. NOEL & ASSOCIATES INC.		VANCOUVER, B.C.
RED DOG PROPERTY		
VERTICAL SECTION 9705N (LOOKING NORTH) NUTTLUDE LAKE AREA LIARD M.D., B.C.		
SCALE 1:1000	DEC. 1981	FIG. 12
G A N		



x x x Granodiorite

$\frac{033}{36}$ oz / ton Au
metres

NORTHCAL RESOURCES INC.		
G A NOEL & ASSOCIATES INC		VANCOUVER, B.C.
RED DOG PROPERTY VERTICAL SECTION 9735N (LOOKING NORTH) NUTTLUDE LAKE AREA LIARD M.D., B.C.		
SCALE 1:1000	DEC 1981	FIG. 13
G A N		

<u>Section</u>	<u>Mineralized Volume (m³)</u>	<u>Grade oz/ton Au</u>	<u>Vol. X Grade</u>	<u>Volume Waste (m³)</u>
9500N	61,750	0.020	1235.0	235,500
9525N	159,840	.048	7672.32	87,210
9555N	75,924	.037	2809.188	108,486
9580N	171,660	.033	5664.78	88,680
9615N	88,490	.033	2920.17	140,695
9645N	103,680	.042	4354.56	135,720
9705N	78,750	.039	3071.25	158,850
9735N	69,600	.034	2366.4	53,200
Totals	809,694		30,093.668	1,008,341

$$\text{Average grade} = \frac{30,093.668}{809,694} = .0372 \text{ oz. gold per ton}$$

$$\text{Tonnage factor} = \frac{2000}{62.5 \times 2.7} = 11.85 \text{ cu.ft./ton}$$

$$\text{Total tons} = \frac{809,694 \times 35.314}{11.85} = 2,412,956$$

$$\text{Stripping ratio (waste : ore)} = \frac{1,008,341}{809,694} = 1.25$$

CONCLUSIONS

A fairly substantial tonnage of low grade gold mineralization has been partially outlined in and along the east side of the main granodiorite dike on the Red Dog claim. As outlined by drilling to date, this north-trending zone contains over 2,400,000 tons grading 0.037 oz/ton gold. The zone is open to the north, south and at depth. The 1981 geological reconnaissance suggests that the zone can be traced for 500 metres to the north and south which should substantially increase the overall tonnage.

The average grade may improve with further drilling since there is considerable variance in assays of individual holes across the zone. The zone as delineated is amenable to open pit mining. It is quite possible that a second mineralized zone may be outlined along the hanging wall of the dike similar to that outlined along the dike's foot-wall. If so, this would substantially increase the potential reserves of the Red Dog property.

RECOMMENDATIONS

In order to determine the economics of this deposit, it is recommended that a bulk sample be taken for metallurgical testwork, such as leaching and recovery tests. This sample could be obtained very easily at the surface from such sections as 9530N and 9615N.

If the results of the leaching test are favorable, it is recommended that drilling be continued on the main zone. This drilling should be extended both north and south of the presently drilled area on sections spaced at 30-metre intervals.

The west side of the granodiorite dike should be drilled more definitively with holes collared about 50 metres west of the west margin (hanging wall) of the dike. These holes should be drilled on east-west sections at dips of 50° to 75° to the east.

Some attention should be given to the problem of assaying low grade gold occurrences. A procedure should be established with several good assaying firms and a routine system of check assays should also be initiated.

The G.R. showing should be investigated in more detail and a modest program of geological mapping and soil sampling is recommended for this area. At the same time, some geological and geochemical reconnaissance work could be done on the northern part of the Pink claim.

The estimated cost of these programs is given in the attached cost estimate.

B.T.

G.A. Noel, P.Eng. & B. Taylor, P.Eng.

Vancouver, B.C.
December 20, 1981

COST ESTIMATE

1. Bulk sample (1000 lb.)		
Sampling	\$ 10,000	
Test work	<u>10,000</u>	\$ 20,000
2. Drilling (Contingent)		
Main Zone - 2000 m @ \$150	\$300,000	
West Zone - 1000 m @ \$150	<u>150,000</u>	450,000
3. Geology & Soil Sampling (Red Dog 4 & Pink claims)		<u>10,000</u>
Total		\$ 480,000
Contingencies		<u>70,000</u>
TOTAL COST		\$ <u>550,000</u>

CERTIFICATE

I, Gerald A. Noel, do hereby certify that:

1. I am a practising geological engineer with G.A. Noel & Associates, Inc., 622 - 510 West Hastings Street, Vancouver, B.C.
2. I am a graduate of the University of B.C. and the University of Toronto and have been granted the degree of Master of Applied Science.
3. I have been practising my profession as a geological engineer for over 25 years.
4. I am a member of the Association of Professional Engineers of British Columbia, Registration No.4283.
5. I was directly involved in the 1981 fieldwork on the Red Dog property and this work served as the basis for this report.
6. Neither I nor any member of my firm has directly or indirectly received or expects to receive any interest direct or indirect in the property or securities of Northcal Resources Inc.
7. Northcal Resources Inc. is hereby given permission to reproduce this report, or any part of it, for the purpose of a financial prospectus; provided, however, that no portion may be used out of context in such a manner as to convey a meaning differing materially from that set out in the whole.

G.A. NOEL, P.Eng.

Vancouver, B.C.
December 20, 1981

CERTIFICATE

I, Bert Taylor, do hereby certify that:

1. I am a practising geological engineer with G.A. Noel & Associates, Inc., 622 - 510 West Hastings Street, Vancouver, B.C.
2. I am a graduate of the University of Saskatchewan and have been granted the degree of Bachelor of Science in Geological Engineering.
3. I have been practising my profession as a geological engineer for over 25 years.
4. I am a member of the Association of Professional Engineers of British Columbia, Registration No.7879.
5. I was directly involved in the 1981 fieldwork on the Red Dog property and this work served as the basis for a portion of this report.
6. Neither I nor any member of my firm has directly or indirectly received or expects to receive any interest direct or indirect in the property or securities of Northcal Resources Inc.
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B. Taylor

BERT TAYLOR, P.Eng.

Vancouver, B.C.
January 11, 1982