

A Report on the Geology of the  
Darkwater Claims (No. 1, 2, 3 and 4)  
Nanaimo Mining Division, B.C.

Longitude 125 18'W  
Latitude 50 13'N  
NTS Reference 92K/3

Owner: Hillside Energy Corporation  
Operator: Hillside Energy Corporation  
Consultant: Beaty Geological Ltd.  
Author: R.J. Beaty  
Date Submitted: March 21, 1983

**GEOLOGICAL BRANCH  
ASSESSMENT REPORT**

**11,014**

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## SUMMARY AND CONCLUSIONS

1. The Darkwater property consists of 40 units in 4 mineral claims and is located on Quadra Island across from Campbell River, Vancouver Island, B.C. A group of Crown Grants in good standing termed the Lucky Jim Group extends into portions of the property.
2. At the turn of the century, gold and copper mineralization were discovered on and adjacent to the property. The Lucky Jim Mine contiguous to the property produced 352 oz Au, 873 oz Ag and 54,295 lbs. Cu from 711 tons of ore during 1908-1910.
3. The property occurs at the boundary between the Coast Plutonic Complex to the west and the Insular Belt to the east. The boundary area on Quadra Island is termed the "Lime Belt". On the property this belt is made up of crystalline limestone and intercalated greenstone, cut by prominent northwest trending faults.
4. Zones of calc-silicate development and iron-copper mineralization are widespread over the property in areas of similar geology to that at the Lucky Jim Mine. Further exploration is recommended to test these areas for skarn gold-copper mineralization. A secondary target is disseminated epithermal gold mineralization in carbonate rocks.
5. A two phase program of surface geological, geochemical and geophysical surveys followed by trenching and 500m of diamond drilling is recommended at an estimated total cost of \$123,000.

LOCATION, ACCESS AND PHYSICAL FEATURES

The Darkwater Claims are located immediately south of Granite Bay on the mid-western side of Quadra Island, Nanaimo Mining Division, B.C. at longitude 125 18'W and latitude 50 13'N.

Vehicle access is by car-ferry from Campbell River on Vancouver Island, to Quathiaski Cove, Quadra Island, thence by paved and gravel road 23km north towards Granite Bay. This road passes through the core of the Darkwater Claims; further access within the claims is provided by several tributary logging roads and trails. The property is also readily accessible from tidewater at Granite Bay, reached by private boat or float plane from Campbell River or Vancouver. Relief is moderate, with elevations ranging from 100' to 1500' ASL. The temperate climate and plentiful annual rainfall have produced thick second growth forest, the virgin forest having been logged off at the turn of the century.

CLAIM INFORMATION

The property consists of the following claims, all located in the Nanaimo Mining Division and registered in the name of Hillside Energy Corporation.

<u>Name</u>	<u>Units</u>	<u>Record No.</u>	<u>Date Recorded</u>
Darkwater 1	18	942(6)	June 5, 1981
Darkwater 2	8	943(6)	June 5, 1981
Darkwater 3	6	1135(4)	April 8, 1982
Darkwater 4	8	1134(4)	April 8, 1982

As shown in Figure 2, a group of currently valid Crown Granted mineral claims known as the Lucky Jim Group extends into portions of Darkwater 2, 3 and 4 claims; the area of overlap does not form part of the property.

PREVIOUS WORK

Mineral development has occurred on Quadra Island since the 1880's. Three mines have produced auriferous copper ore: Copper Road, Copper Bell and Lucky Jim. The Lucky Jim Mine,

the most auriferous, is located on Crown Grant Lot 723 immediately off the southwest corner of the Darkwater Claims. From 1908-1910 it produced 352 oz gold, 873 oz silver and 54,295 lbs. copper from 711 tons of ore. Other Crown Grants in the vicinity of the Lucky Jim claim were apparently located over similar zones of mineralization as at Lucky Jim though no production is recorded. Development work at Lucky Jim by 1911 consisted of a 46m shaft, a 46m tunnel and numerous pits and trenches. A forest fire is reported to have destroyed the mine in 1925 and it was never rebuilt.

Elsewhere on the Darkwater property, old pits and trenches occur at the northwest area of the Darkwater 1 claim indicating former prospecting activities, perhaps relating to an old claim group known as the Nickle plate Group. Scanty reports from 1908-1914 also exist of other claim groups located in the area of the Darkwater claims having mineralization reportedly similar to that at Lucky Jim (eg. Great Granite Group; White Swan Group). A reconnaissance geochemical survey over a small part of the Darkwater 1 and 2 claims in February 1982 by Hillside Energy Corporation indicated localized soil anomalies in gold, copper and arsenic.

#### SCOPE OF WORK DONE

The purposes of the geological work described in this report are as follows; 1) evaluation of the geological setting of known mineral occurrences; 2) determination of distribution of local rock types; 3) preparation of a set of recommendations for physical exploration work. During the course of the field work a significant number of outcrops were examined and a geological map at a scale of 1:10 000 was prepared for the entire property, an area of 40 metric grid units.

#### REGIONAL GEOLOGY

The Darkwater property straddles a major northwest trending lineament which separates two major tectonic belts of British Columbia; the Insular Belt to the west and the Coast Plutonic Complex to the east (Figure 3). Rocks of the Coast Plutonic Complex consist dominantly of coarse grained granitic lithologies; rocks of the Insular Belt are made up mostly of sedimentary and volcanic rocks of Mesozoic age. On

Quadra Island, the contact region between these major belts is a zone termed the "Lime Belt", comprised mainly of limestone of the Upper Triassic Quatsino Formation underlain by and intercalated with mafic volcanic lavas of the Karmutsen Formation. Numerous northwest trending faults cut the belt. Mineral deposits in a similar regional setting include a number of skarn gold-copper deposits on Texada Island. (Cornell, Copper Queen, Little Billie, Marble Bay).

#### PROPERTY GEOLOGY, MINERALIZATION AND EXPLORATION TARGETS

Rocks underlying the property consist mainly of quartz diorite in the northeast, Karmutsen Formation, basaltic lava flows in the southwest and mixed sedimentary, volcanic and plutonic rocks in a northwest trending central zone. Within the central zone, Quatsino Formation limestone and intercalated volcanic rocks occur in two distinct areas separated by a large body of quartz diorite. Glacial drift masks bedrock in low lying areas of the property. Major and minor faults are common, dominantly along northwest trends. Diabase dykes occur sporadically.

Located within limestone and volcanic areas in the central zone of the property are numerous patches of mineralization associated with irregular skarn zones. At the Lucky Jim Mine, gold was reportedly recovered from pyrrhotite-chalcopyrite lodes occurring along a limestone-andesite contact in association with a narrow diabase dyke, with free gold and tellurides also occurring in small quartz stringers and "considerable gold values in apparently barren rock" (BCMM, 1908). Discontinuous zones of silicification and calc-silicate alteration in mineralized areas suggest a contact metasomatic origin for mineralization. The northwest area of the Darkwater 1 claim also exposes a wedge of limestone and mafic-volcanic rocks in which skarn zones have developed. Pyrite and pyrrhotite are common in fractures and disseminations and chalcopyrite has been reported from skarn material (GSC, 1913).

The primary exploration target on the property is skarn gold-copper mineralization in areas of Quatsino limestone or mixed limestone and andesite. These areas are well mineralized and evidence of contact metasomatic activity is widespread. A secondary target is disseminated epithermal gold mineralization in silicified limestone. Accordingly, further exploration should focus on the areas of limestone in



the vicinity of the Lucky Jim Group on Darkwater 3 and 4 and in the northwest portion of Darkwater 1.

#### RECOMMENDATIONS AND COSTED PROGRAM

In order to test the two zones on the property with potential for low tonnage high grade gold-copper skarn deposits similar to those mined at the adjacent Lucky Jim Mine and the possibilities of larger tonnage lower grade disseminated epithermal gold mineralization, further exploration is warranted. Due to easy access conditions, local supply sources and readily identified targets, exploration can be done in a cost-effective manner.

Exploration should be carried out in two phases. The initial phase should consist of a surface geological, geochemical and geophysical program. Geological mapping should aim at identifying exposed calc-silicate and mineralized zones; rock and soil geochemical sampling should aim at identifying buried mineralized zones anomalous in gold, copper and silver; a magnetometer survey should aim at delineating magnetic highs associated with pyrrhotite and magnetite-rich areas. Contingent on successful results from this program, a second phase of work should be carried out consisting of bulldozer trenching of anomalous areas and a modest diamond drilling program of 500m which will allow the drilling of five 100m holes.

The following costed program is recommended:

#### PHASE I

- |   |        |
|---|--------|
| 1. Preparation of base map at 1:5 000 and air photo mapping of structures<br>2 days @ \$380/day           | \$ 760 |
| 2. Mobilization, demobilization, camp costs, field supplies, vehicle rental                               | 5,000  |
| 3. Control grid preparation (100m x 50m)<br>32 line km @ \$80/km  | 2,560  |
| 4. Geological mapping, prospecting, rock sampling; (Geologist and assistant):<br>14 crew days @ \$480/day | 6,720  |

5. Soil sampling (100m x 50m) 32 line km @ \$100/km		3,200
6. Analytical charges Geochem - 672 soil samples, 50 rock samples @ \$12/sample (Au,Ag,Cu,As)	\$ 8,664	
Assay - 50 rock samples @ \$11/sample (Au, Ag)	<u>550</u>	9,214
7. Magnetometer survey 32 line km @ \$70/km Instrument rental	2,240 <u>800</u>	3,040
8. Supervision and report preparation 10 days @ \$400/day Drafting,typing,office expenses	4,000 <u>1,000</u>	5,000
9. Contingency allowance (10%)		<u>3,506</u>
	TOTAL PHASE I	<u>\$39,000</u>

PHASE II

1. Camp costs, field supplies, vehicle rental		\$ 5,000
2. Trenching, blasting: 60 hrs @ \$80/hr		4,800
3. Diamond drilling (incl. mob/demob): 500m @ \$110/m		55,000
4. Geological supervision, logging, mapping (geologist, assistant): 15 crew days @ \$480/day		7,200
5. Assay charges 100 samples @ \$11/sample (Au, Ag)		1,100
6. Report preparation 5 days @ \$400/day Drafting,typing,office expenses	\$ 2,000 <u>1,000</u>	3,000
7. Contingency allowance (10%)		<u>7,900</u>
	TOTAL PHASE II	<u>\$ 84,000</u>
	TOTAL PHASES I AND II	<u>\$123,000</u>



BIBLIOGRAPHY

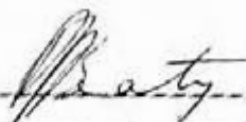
- Bancroft, J.A., 1913: Geology of the coast and islands between the Strait of Georgia and Queen Charlotte Islands, B.C., GSC Memoir 23, pp 134-135.
- B.C. Minister of Mines, 1908: - Annual Report, p 143
- B.C. Minister of Mines, 1911: - Annual Report, p K158-159
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- B.C. Minister of Mines, 1926: - Annual Report, p A313
- B.C. Minister of Mines, 1927: - Annual Report, p C353
- Cairnes, D.D., 1913: Summary Report, GSC Professional Paper 26, pp 69-71 and accompanying Map 120A.
- Roddick, J.A., 1975: Bute Inlet 1:250,000, GSC Open File 480.

CERTIFICATE

I, ROSS J. BEATY, hereby certify:

1. That I am a Consulting Geologist employed by Beaty Geological Ltd. with offices at 2831 West 22nd Avenue, Vancouver, British Columbia, V6L 1M7.
2. That I am a graduate in geology of the University of British Columbia (B.Sc. with First Class Honours, 1974) and the Royal School of Mines, Imperial College of Science and Technology, University of London (M.Sc. with Distinction, and Diploma of Imperial College, 1975), and in law of the University of British Columbia (LL.B., 1979).
3. That I have practiced within the geological profession in Canada, the United States, South Africa and New Zealand since 1970 while employed by Kennco Explorations (Western) Ltd., Duval Corporation, Cominco Ltd., Placer Development Ltd., Texasgulf Inc., Golder Associates, D.G. Leighton & Associates Ltd. and P.M. Hancock & Associates.
4. That I am a Fellow of the Geological Association of Canada and am a Member of the Canadian Institute of Mining and Metallurgy.
5. That the observations and opinions expressed herein are based on my personal examinations of the property on August 14 and 15, 1982 and on a review of available data and reports.
6. That I have no interest directly or indirectly, past or present, in the property, in any other property within 10km of the property, or in the securities of Hillside Energy Corporation or any affiliate or subsidiary thereof.

DATED at Vancouver, British Columbia, this 21st day of March, 1983.

  
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Ross J. Beaty, M.Sc., D.I.C., LL.B.

## Darkwater Claims

### Itemized Cost Statement

#### Geological Mapping

##### Personnel

R.J. Beaty	4.5 days @ \$195/day (August 13-26, 1982)	\$ 877.50
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##### Meals and Accommodation

2.0 days @ \$33/day (August 13-15, 1982)	66.00
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##### Transportation

Vehicle 621km @ \$0.40/km	248.40
Ferry fares	35.60
Gas	88.90

Expendable Field Supplies, Maps, Air Photos	42.27
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Contract Expenses (UIC, CPP, W.C., etc.)	<u>263.25</u>
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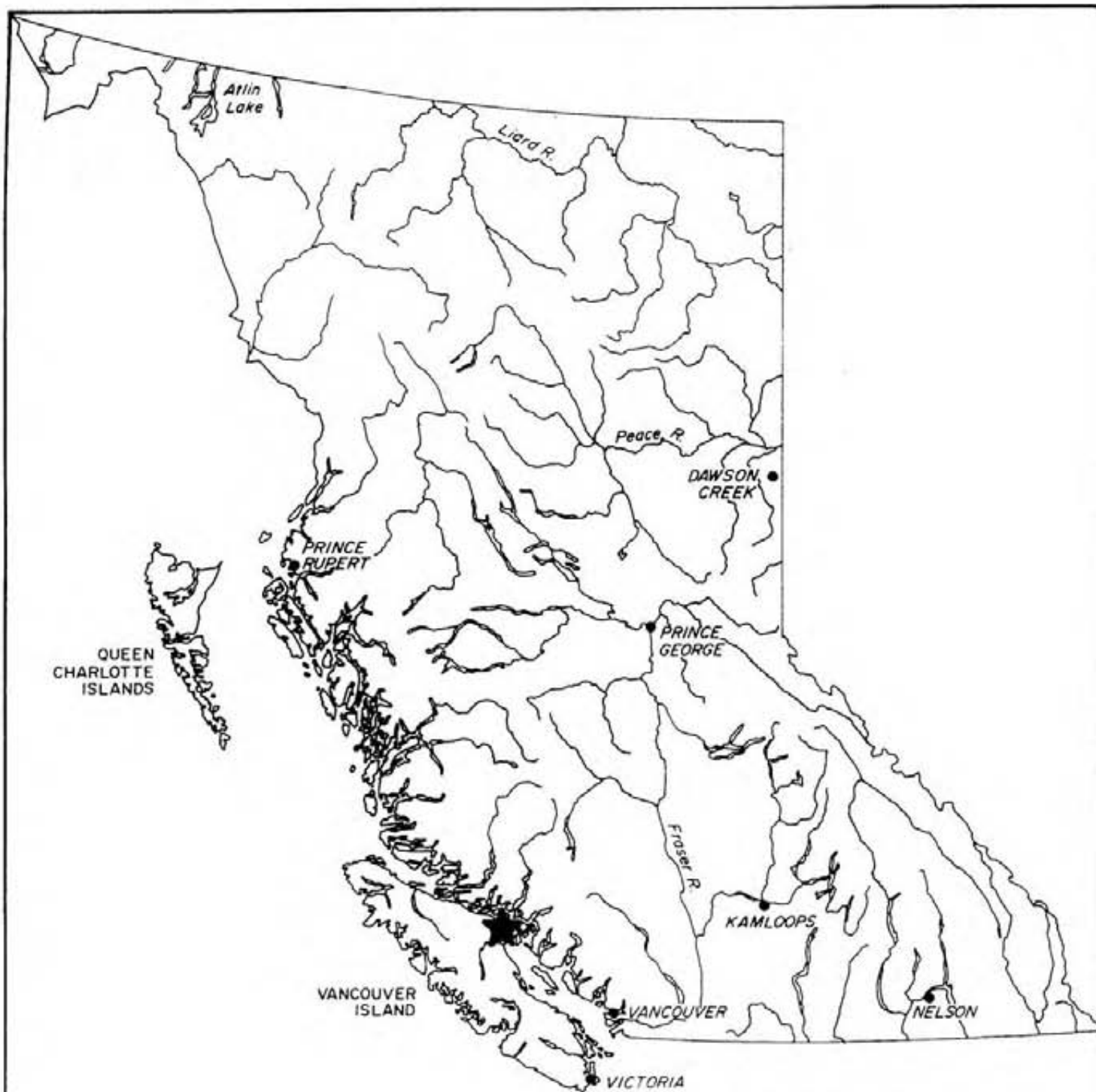
Sub Total (field)	<u>\$1,621.92</u>
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#### Report Preparation

R.J. Beaty 3.8 days @ \$225/day	\$ 855.00
Contract Expenses (UIC, CPP, W.C., etc.)	256.50
B. MacDougall (drafting) 34 hrs @ \$9.50/hr	323.00
P. McCormick (typing, etc.) 20.90 hr @ \$3.75/hr	78.38
B. Fairbank (P.Eng.) 2.5 hrs @ \$59.60/hr	149.00
Word Processing	<u>38.00</u>

Sub Total	<u>\$1,699.88</u>
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TOTAL	<u>\$3,321.80</u>
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QUEEN CHARLOTTE ISLANDS

VANCOUVER ISLAND

HILLSIDE ENERGY CORPORATION

LOCATION MAP  
DARKWATER CLAIMS

NANAIMO M.D., B.C.

NTS MAP 92K/3

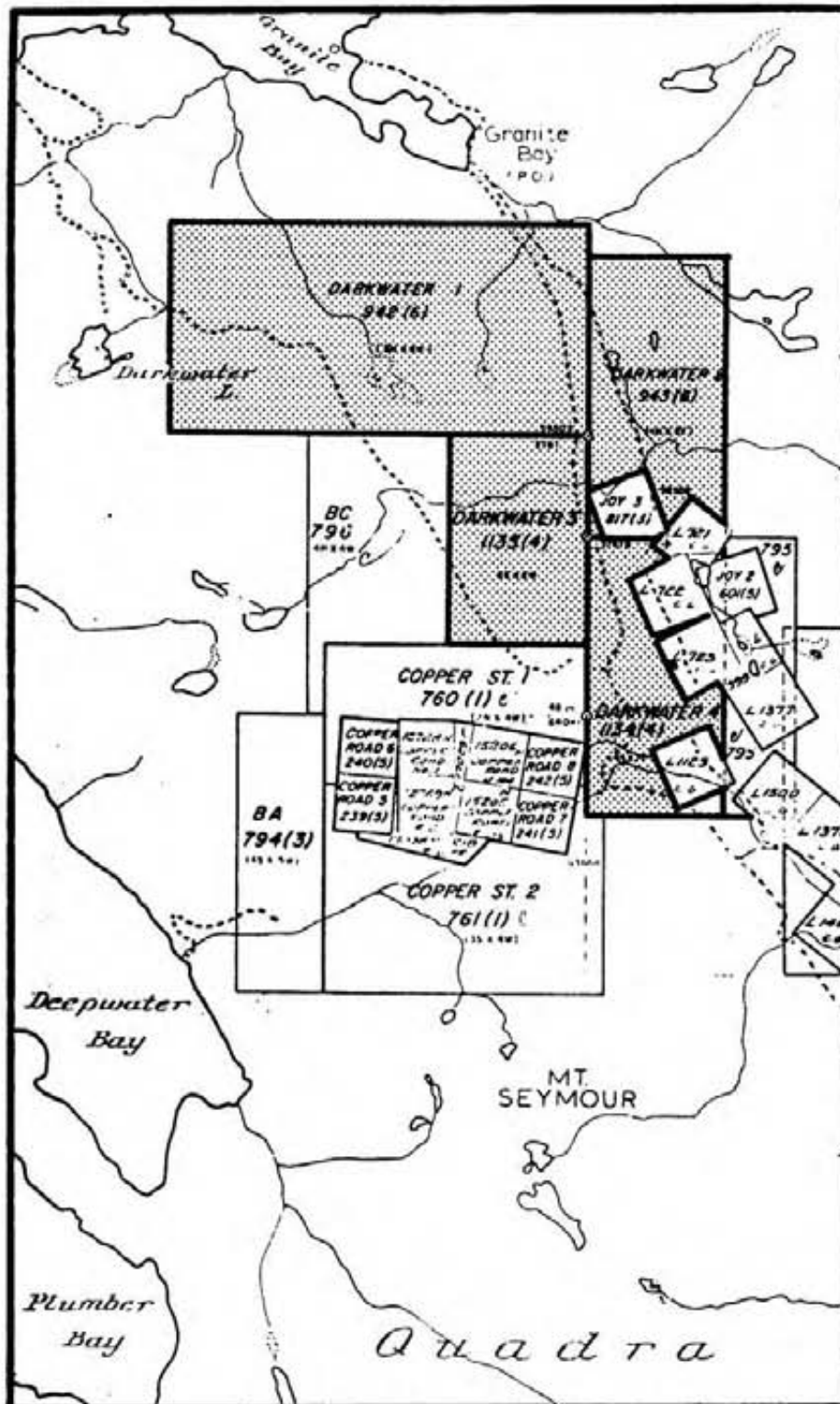
FIGURE 1

SCALE: AS SHOWN

DATE: NOVEMBER 1982

BEATY GEOLOGICAL LTD.





SCALE : KILOMETRES



HILLSIDE ENERGY CORPORATION

## CLAIM MAP DARKWATER CLAIMS

NANAIMO M.D., B.C.

MAP M92K/3W

FIGURE 2

SCALE 1:50 000

DATE : NOVEMBER 1982

BEATY GEOLOGICAL LTD.

# LEGEND

## STRATIFIED ROCKS

### QUATERNARY

**Q** Alluvial and glacial deposits

### TRIASSIC UPPER TRIASSIC

**Rq** QUATSINO LIMESTONE  
Mainly thick-bedded, light grey bioclastic limestone

**URKp** KARMUTSEN FORMATION  
Pillow lava within Quatsino Limestone

**URK** UPPER KARMUTSEN  
Basalt flows; minor limestone, shale, pillow lava, and pillow breccia

**URKm** MIDDLE KARMUTSEN  
Pillow breccia and aquagene tuff

## PLUTONIC ROCKS

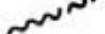
**qm** Quartz monzonite

**gd** Granodiorite

**qd** Quartz diorite

**di** Diorite

 Geologic Contact - defined, approximate

 Fault - defined, approximate

 Darkwater Claims



SCALE - KILOMETRES

5 0 5 10

HILLSIDE ENERGY CORPORATION

## REGIONAL GEOLOGY DARKWATER CLAIMS

NANAIMO M.D., B.C.

NTS MAP 92K

FIGURE 3

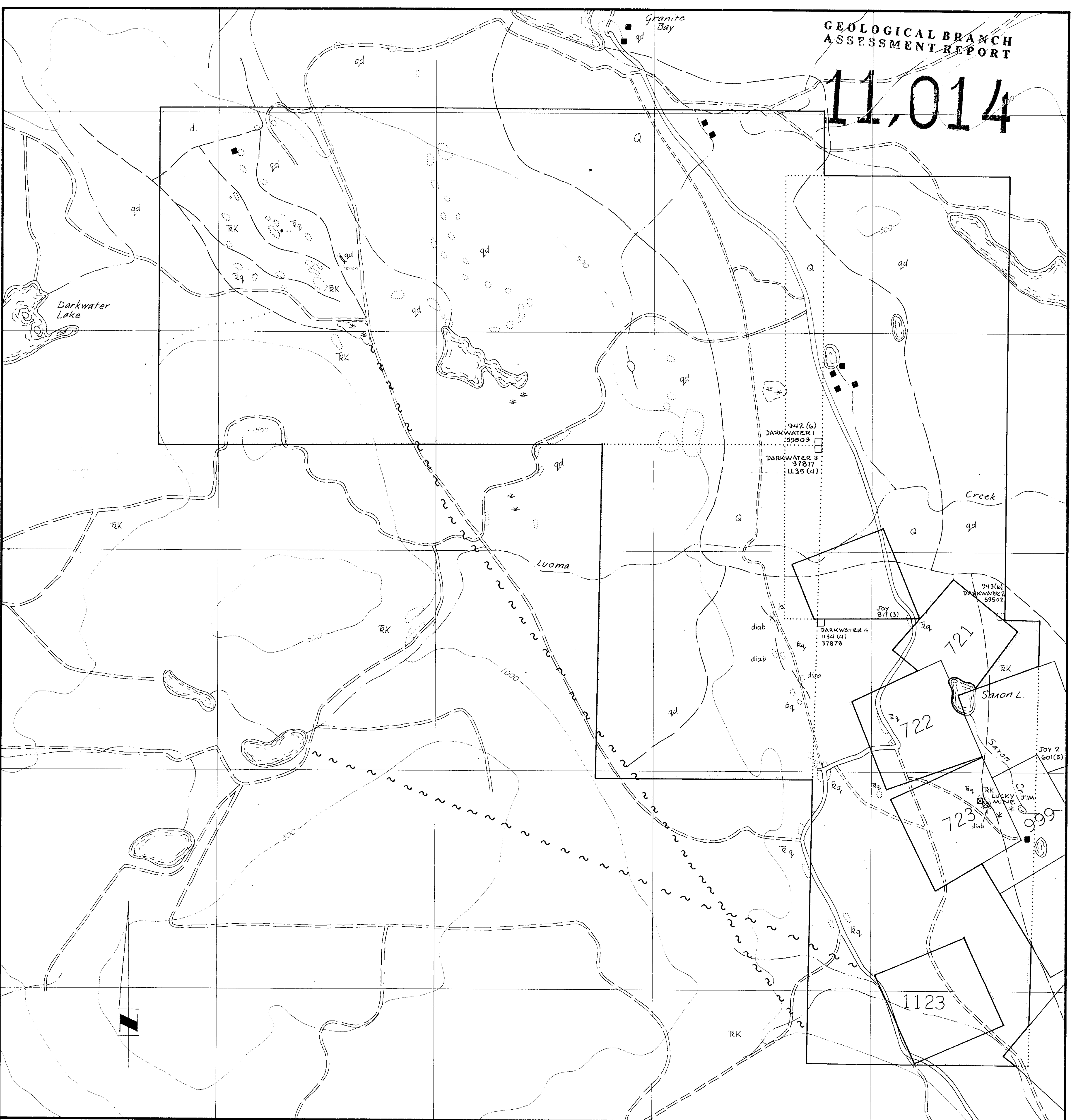
SCALE 1:250 000

DATE: NOVEMBER 1982

BEATY GEOLOGICAL LTD.

FROM: J.A. Roddick & G.J. Woodsworth, 1976





SCALE 1:10,000  
0 200 400 600 800 1000 METRES

**LEGEND**

- |   |  |
|---|--|
| <b>QUATERNARY</b>   | Geological boundary: Defined, Approximate, Assumed |
| Unconsolidated alluvial and glacial deposits                          | Fault Defined, Approximate                         |
| <b>TRIASSIC</b>   | Outcrop Area                                       |
| Diabase dyke  | Shaft  |
| Quatsino Formation; Limestone, massive, grey cryptocrystalline; skarn | Adit   |
| Karmutsen formation, greenstone, basalt                               | Stream   |
| <b>PLUTONIC ROCKS</b>   | Building   |
| quartz diorite  | Road Improved, Unimproved                          |
| diorite   | Contour line (500' interval)                       |
|   | Claim post   |
|   | Claim boundary                                     |

To accompany a report titled: "A REPORT ON THE GEOLOGY OF THE DARKWATER CLAIMS (No 1, 2, 3, and 4)", dated March 21, 1983, by R.J. Beaty.

*Beaty*

FIGURE 4

HILLSIDE ENERGY CORPORATION

**GEOLOGICAL MAP OF THE DARKWATER CLAIMS QUADRA IS., B.C.**

NANAIMO M.D., B.C. NTS MAP 92K/3

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MARCH 1983