



July 26, 1991

C O N F I D E N T I A L

B.A. Hawrys, R.P.F.
Resource Officer Timber
Sunshine Coast Forest District
7077 Duncan Street
Powell River, British Columbia
V8A 1W1

RE: SOIL AND ROCK ANALYSES, NELSON ISLAND

Dear Mr. Hawrys:

Tom Schroeter, P.Eng, our Vancouver-based Senior Regional Geologist, visited the controversial site on Nelson Island on June 19, 1991, accompanied by his Research Assistant, Bob Lane, and Jim Ettinger of the BC Forest Service.

Bedrock geology at the site consists of a N-S trending body of limestone (probably Quatsino Formation) bounded by and extensively intruded by younger diorite and granodiorite. The limestone is largely altered to marble and abundant skarn (an assemblage of secondary garnet, diopside and epidote produced by thermal metamorphism of the limestone). The skarn zones locally contain massive magnetite and disseminated or fracture-controlled pyrite and chalcopyrite. A copy of Tom's geological sketch of the site is attached and shows the locations where 11 rock samples and 3 soil samples were collected.

All 14 samples were analyzed for selenium and arsenic by our Geological Survey Branch laboratory. A print-out of the resulting data is attached. In the case of selenium, all three soils contain less than 1 ppm, well within the normal range for soils. Five of the rock samples also contain very low values at less than or equal to 0.15 ppm. The six rock samples which contain anomalous selenium (2.5 to 5.94 ppm) are all samples of skarn containing visible sulphide minerals. Selenium is chalcophile and commonly occurs at elevated levels in sulphide-bearing rocks of thermal metamorphic or hydrothermal origin.

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In the case of arsenic, two of the soils (5A and 6A) are very anomalous and two of the rocks (15 and 15A) are also quite high. Again, locally anomalous arsenic commonly is associated with skarn alteration, particularly where sulphides are present. It is important to note that the arsenic analyses reported here are total metal extraction analyses and will naturally produce higher numbers than the more common partial extraction analyses which, I understand, come closer to representing the "bio-availability" of the metal.

Barium was not determined in the samples because the analysis is difficult and expensive and not likely to produce significant results in this case. Barium occurs in amounts of several hundred ppm in most common rocks and soils and is very unlikely to be anomalous in geological settings such as this.

I hope that these observations and data will be of some help in clarifying the true situation at the Nelson Island site and that they will contribute to resolution of the issue. I'll leave it to our colleagues in your Ministry and Ministry of Environment to judge the biological and environmental implications of this geological information.

Sincerely,



H. Paul Wilton, P. Eng.
District Geologist
Victoria

HPW/pl

cc: ~~LT~~ Schroeter, Vancouver
Eric Beresford, Vancouver

Elements	:	Se	As
Units	:	PPM	ppm
Detection Limits	:	0.100	1.000
42466 NI91-5A		0.830	70.000
42467 NI91-6A		0.530	84.000
42468 NI91-12		0.220	10.000
42469 NI91-5B		4.950	33.000
42470 NI91-6B		-0.100	4.000
42471 NI91-5B (DUP)		4.950	33.000
42472 NI91-7		-0.100	1.000
42473 NI91-9		0.150	11.000
42474 NI91-12A		-0.100	6.000
42475 NI91-15		2.500	59.000
42476 NI91-8C		5.300	18.000
42477 NI91-12B		-0.100	6.000
42478 NI91-13		-0.100	8.000
42479 STANDARD B		0.150	5.000
42480 NI91-5		5.400	19.000
42481 NI91-15A		5.940	94.000

STANDARDS	:	GXR5	NBSS1633a	GSS-1	GSS-4
UNITS	:	ppm	ppm	ppm	ppm
Se		0.91	11.0	0.09	0.49
		0.99	10.9	0.10	
Certified Value		1.12	10.3	0.14	0.64
x from last runs		0.90	9.4	0.11	0.59

	GXR5	GXR4
	ppm	ppm
As	11	97
Certified Value	11	98

R. E. Lett

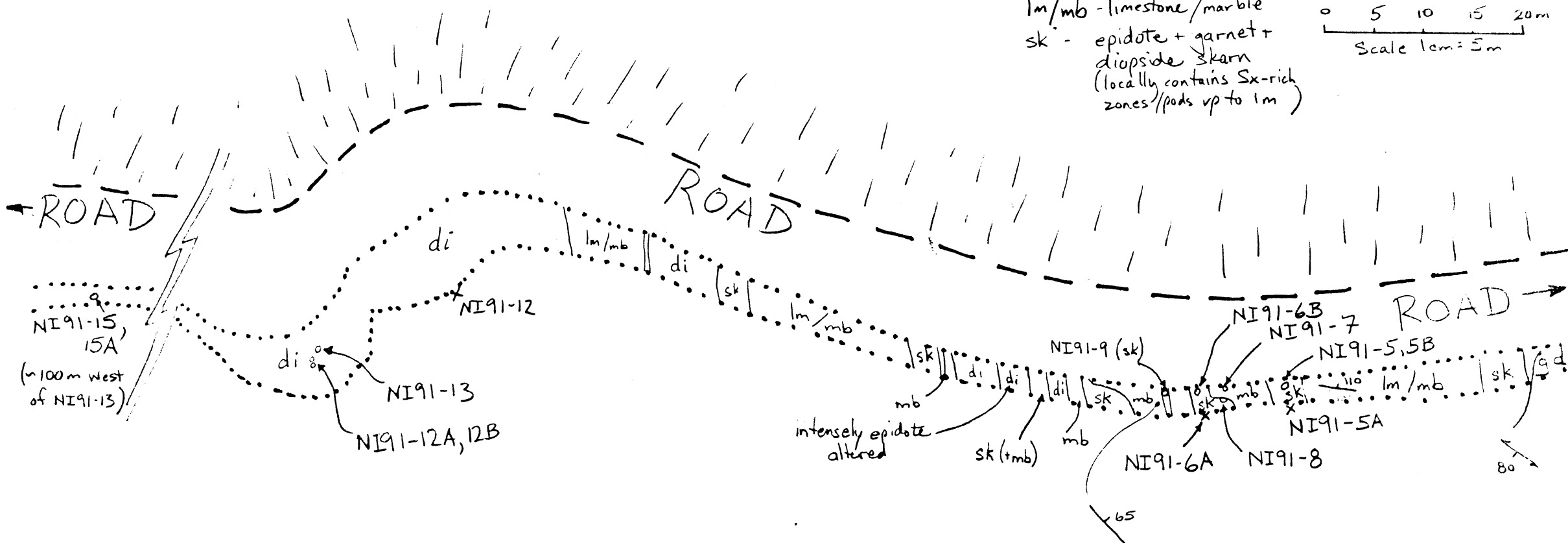
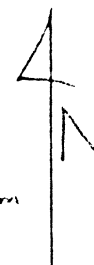
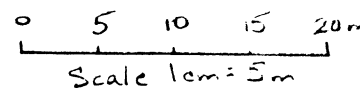
LABORATORY SUPERVISOR.

GEOLOGY AND SAMPLE LOCATION MAP NELSON ISLAND ROAD CUT

LEGEND

- gd - granodiorite
(med. to c.gr)
- di - diorite
(dk. grey; weakly to
intensely ep. altered)
- lm/mb - limestone/marble
- sk - epidote + garnet +
diopside skarn
(locally contains Sx-rich
zones/pods up to 1m)

- x - soil sample location
NI91-12
- o - rock sample location
NI91-7





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Telephone: (604) 660-2708 Fax: (604) 660-2653
June 25, 1991

To: Paul Wilton,
District Geologist
Geological Survey Branch
Victoria

CONFIDENTIAL

Subject B.C. FOREST SERVICE REQUEST - NELSON ISLAND

REQUEST: Examine proposed logging site to ascertain the potential for hazardous (possible contamination) elements (especially selenium, arsenic, and barium) in rocks/soils.

LOCATION: Nelson Island, NTS 92F/9E, Lat. $49^{\circ} 45'$ Long. $124^{\circ} 10'$ situated on north slope of second growth forested slope south of the west end of West Lake and Mackechnie Lake.

ACCESS: Site visit by helicopter from Sechelt, approx. 15 min. one way. Past and new logging roads would provide access.

DATE OF VISIT: June 19, 1991

SITE VISITORS: Jim Ettinger (BC Forest Service - Sechelt); Tom Schroeter and Bob Lane (BC Geological Survey Branch - Vancouver).

PHYSIOGRAPHY/GEOLOGIC SETTING: The area is situated due east of the historic (and present) operation-iron/gold/limestone skarns on Texada Island. Previous mapping by the Geological Survey of Canada (OF 611; 92G) indicates the area to be underlain by granodiorite of the Coast Plutonic Complex. The area is underlain by a heavily tree covered (second growth) prominent ridge. Newly constructed logging roads have created good rock exposures.

SITE GEOLOGY: The site is underlain by granodiorite, limestone (marble), and skarn (see Fig. 1). Skarn varieties include: garnet (andradite) \pm diopside \pm epidote. Locally massive magnetite, disseminated or fracture-controlled pyrite and/or chalcopyrite exist. Table 1 describes samples collected together with relevant assay values.

Although the numerous skarn 'bands' observed were relatively narrow in width (eg. 0.5 to 3 metres), the potential "zone of interest" striking N-S with steep dips may widen along strike or at depth. Locally karsting was observed in the limestone (i.e. caves).

CONCLUSION/RECOMMENDATION: Concerns expressed do not appear to be substantiated and it is recommended that BC Forest Service proceed with no concern from the Ministry of Energy, Mines & Petroleum Resources.

Tom Schroeter, P.Eng.
Sr. Regional Geologist

Attachments 1. Sketch Map - Fig. 1
2. Sample description/analyses - Table 1
3. Nine photographs
Reference: June Monthly Report

JUL 29 1991

Geological Survey Branch
MEMPR