

GEOLOGY AND GEOCHEMISTRY
OF THE
LUPUS 1, LUPUS 2, LUPUS 3, LUPUS 4, LUPUS 5, & LUPUS 6
CLAIMS

Nanaimo Mining Division

British Columbia

NTS 92F/14E

FILMED

Latitude $49^{\circ} 47'$ Longitude $125^{\circ} 12'$

Owner/Operator: HOMESTAKE MINERAL DEVELOPMENT COMPANY

VANCOUVER, B.C.

**GEOLOGICAL BRANCH
ASSESSMENT REPORT**

January 1986

14,442
Karen L. Harrap

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1.0 INTRODUCTION

1.1 Location

The Lupus property is located 15.7 kilometres northwest of Courtenay, British Columbia, in the Nanaimo Mining Division. The claims cover the north end of Wolf Lake and are centered at latitude $49^{\circ} 46'N$, and longitude $125^{\circ} 10'W$.

1.2 Access

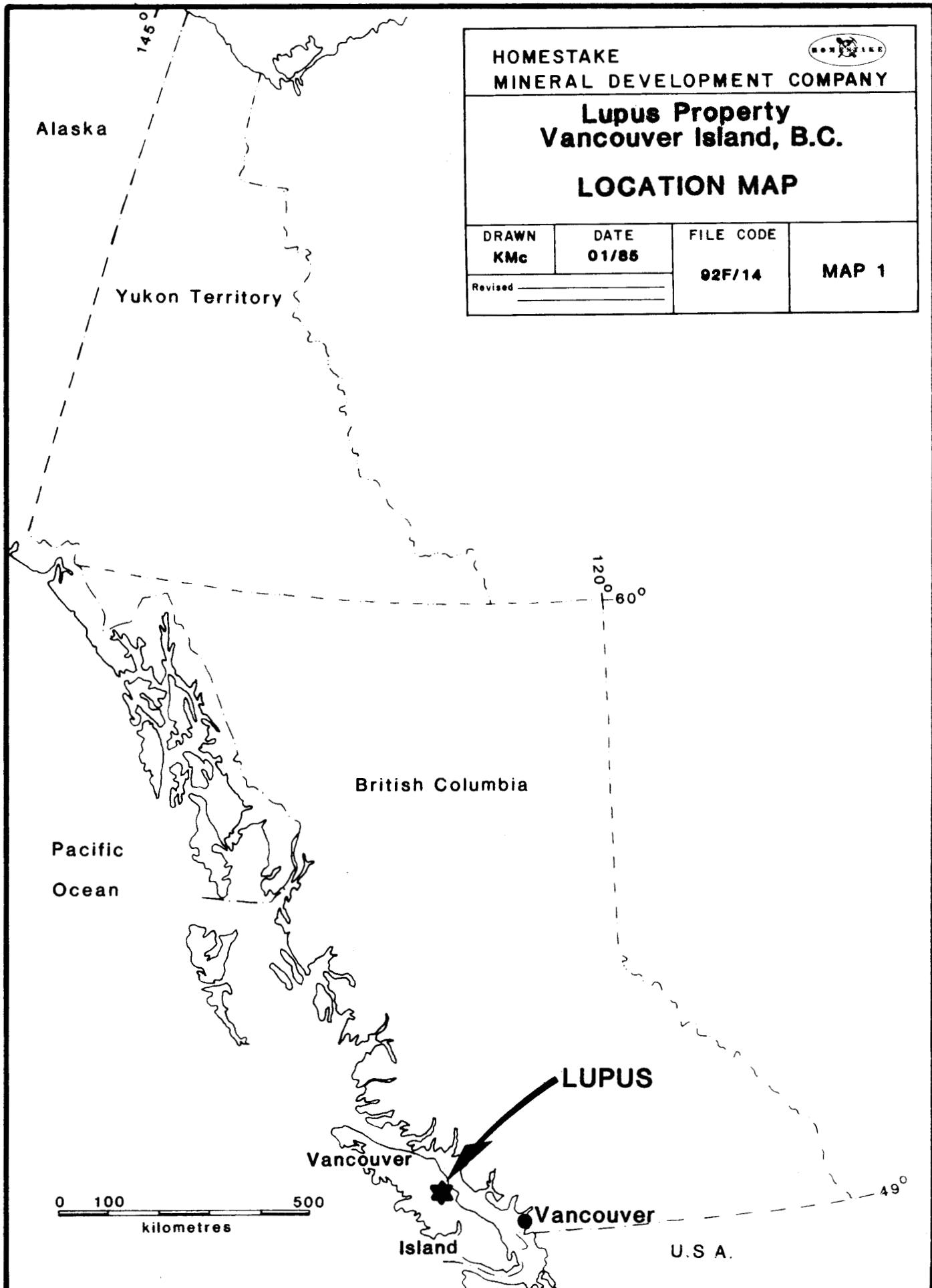
Access to the Lupus property is primarily by good logging roads which cross the property as well as pass within a few feet of each showing. The property lies within an area of active logging by Crown Forest Industries Ltd.

1.3 Previous Work/HISTORY

In the 1950's, a considerable amount of exploration work was completed in the vicinity of the Lupus claims at Mount Washington. This led to production of copper, silver, and gold from high grade lodes associated with Tertiary Intrusives. A total of 377,639 tons of ore were mined between 1965 and 1967.

Imperial Oil Limited, as well as several other companies explored the old workings in the Mount Washington area. Imperial Oil outlined a 610,000 ton deposit with 1.4% Cu, 0.015 oz/ton Au, and 1.20 oz/ton Ag.

Currently, the Mount Washington copper properties and some of the surrounding area have been optioned by Better Resources Ltd. for "epithermal gold deposits" associated with the Tertiary intrusive complexes of the area.



The Luples 1, 3, 5 and 6 claims were staked in early 1984 to cover newly-discovered mineral occurrences in the Lake and Creek zones (see discussions in this report). The Luples 4 was staked for Homestake Mineral Development Company in 1985.

1.4 Physiography and Vegetation

The terrain within the Luples property is subdued, with elevations generally ranging from 100 to 500 metres above sea level. The claims are forested with second growth of good commercial stands of spruce, fir, and cedar with moderate underbrush cover.

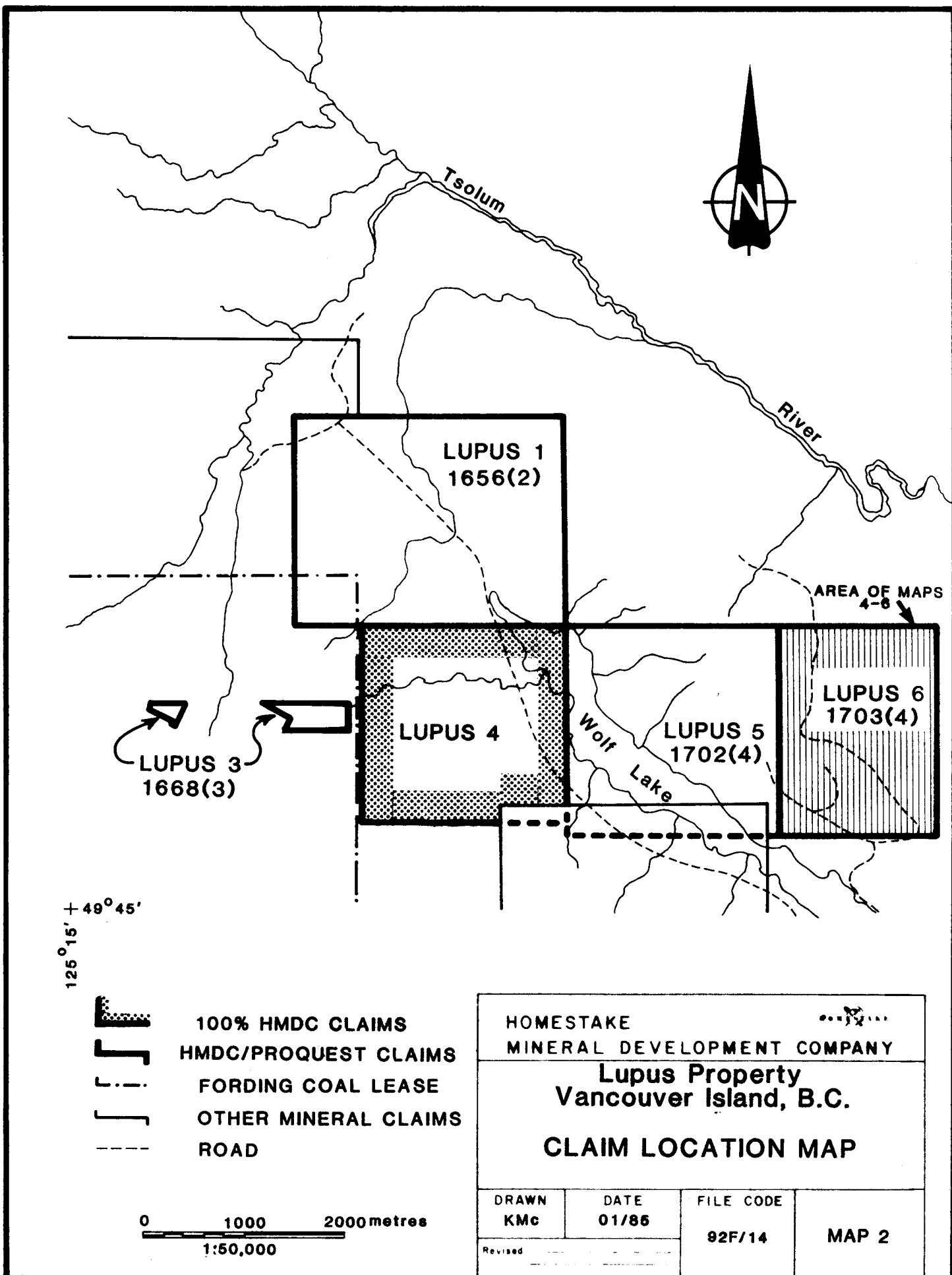
1.5 Claims Schedule

This report deals with those claims listed below and as outlined on the attached claims sketch:

<u>Claim Name</u>	<u>Units</u>	<u>Record Number</u>	<u>Recording Date</u>
Luples 1	20	1656	February 28, 1984
Luples 3	08	1668	March 13, 1984
Luples 4	16	2046	February 21, 1985
Luples 5	16	1702	April 6, 1984
Luples 6	12	1703	April 6, 1984
Total	72 Units		

The Luples 1, 2, 3, 5, and 6 claims (see map 2) were staked by H.J. Keyser and C.G. Verley. These claims had been transferred to Proquest Resource Corporation before Homestake Mineral Development Company optioned them. Homestake is currently the owner and operator of these claims.

In late January, 1985, Homestake staked the Luples 4 claim, which adjoins the Luples 1 and Luples 5 (see map 2). This claim is owned entirely by Homestake.



2.0 GEOLOGY

2.1 General

The Luples property is situated in the Vancouver Island Ranges, within the southern part of the Insular Tectonic Belt. The area is underlain by a succession of gently northeasterly dipping Upper Triassic Karmutsen basic volcanics which are conformably overlain by Upper Cretaceous Nanaimo Group sandstone and siltstone. This sequence is intruded by Tertiary quartz diorite and related dacite porphyries. Some of the intrusive rocks seen on the property have a medium grained texture and composition approaches that of a monzo-granite.

Evidence indicates that an unroofed pluton may be buried beneath an area about 3.5 kilometres east of Mount Washington. Here, air photos indicate a pronounced set of radial and concentric lineaments. As well, aero-magnetic data indicates a magnetic high almost coincident with the center of the fracture pattern.

2.2 Lithologies

Upper Triassic-Karmutsen Group

A sequence of brownish weathering, massive, basic to intermediate volcanic flows underlies the Luples 1 claim. Massive flows are dark green coloured, amygdaloid basalts and andesites. Amygdules are filled with chlorite, quartz, calcite and epidote. Primary layering between flows is difficult to discern. The Karmutsen hosts gold-silver-zinc-arsenic-copper mineralization on Luples 1, exposed in rubble in a quarry at the north end of Wolf Lake.

Upper Cretaceous - Nanaimo Group

Nanaimo group sediments unconformably overlie the Karmutsen. On the property, exposures of the Nanaimo consist of sequences of thin-bedded, fine to medium grained brown weathering, brown to grey coloured greywacke and interbedded siltstone. Locally, near contacts with Tertiary intrusives, the sediments are pyritic, hematitic and altered to clays. Gold mineralization at the Creek Showing is situated in this sequence. The thickness of the Nanaimo group sediments on the property is unknown.

Tertiary - Mount Washington Intrusives

Grey weathering dacite porphyry is the predominant Tertiary lithology underlying the claims. Dacite consists of acicular hornblende phenocrysts which exhibit a vague alignment, white subhedral feldspar phenocrysts and rare quartz eyes in a pale grey medium-grained ground mass of feldspar and quartz.

Dacite has presumably intruded Nanaimo group sediments on the Luples claims as a large laccolith. In general the dacite is a resistant cliff forming unit: exposures commonly show well developed vertical joint sets, possibly cooling-contracting joints. An unusual recessive exposure of dacite forms a distinct orange gossan on the east side of Wolf Lake and lies on strike with gold-bearing veins of the Creek Showing. At the gossan dacite is shattered and contains disseminated pyrrhotite. Mafics are chloritized and in some cases completely gone. Feldspars are clouded and locally altered to clays.

Two principal mineralized localities have been located on the Luples property to date. They are: the Lake Showing and the Creek Showing. These two showings are on opposite sides of the Constitution Hill Intrusion, which is one of the Oligocene Mount Washington Intrusions.

2.3 Mineralization

The Lake Showing

The Lake Showing consists of mineralized rubble exposed by loggers who were quarrying for road fill, and is located on Lopus 6 at the south end of Constitution Hill. The showing is made up of one or more veins up to 5 cm wide which contain massive sulfides which are lined with quartz and may have quartz-carbonate cores. Sulfides most often present include coarse pyrite, fine grained arsenopyrite, black to dark blue sphalerite, minor chalcopyrite and galena.

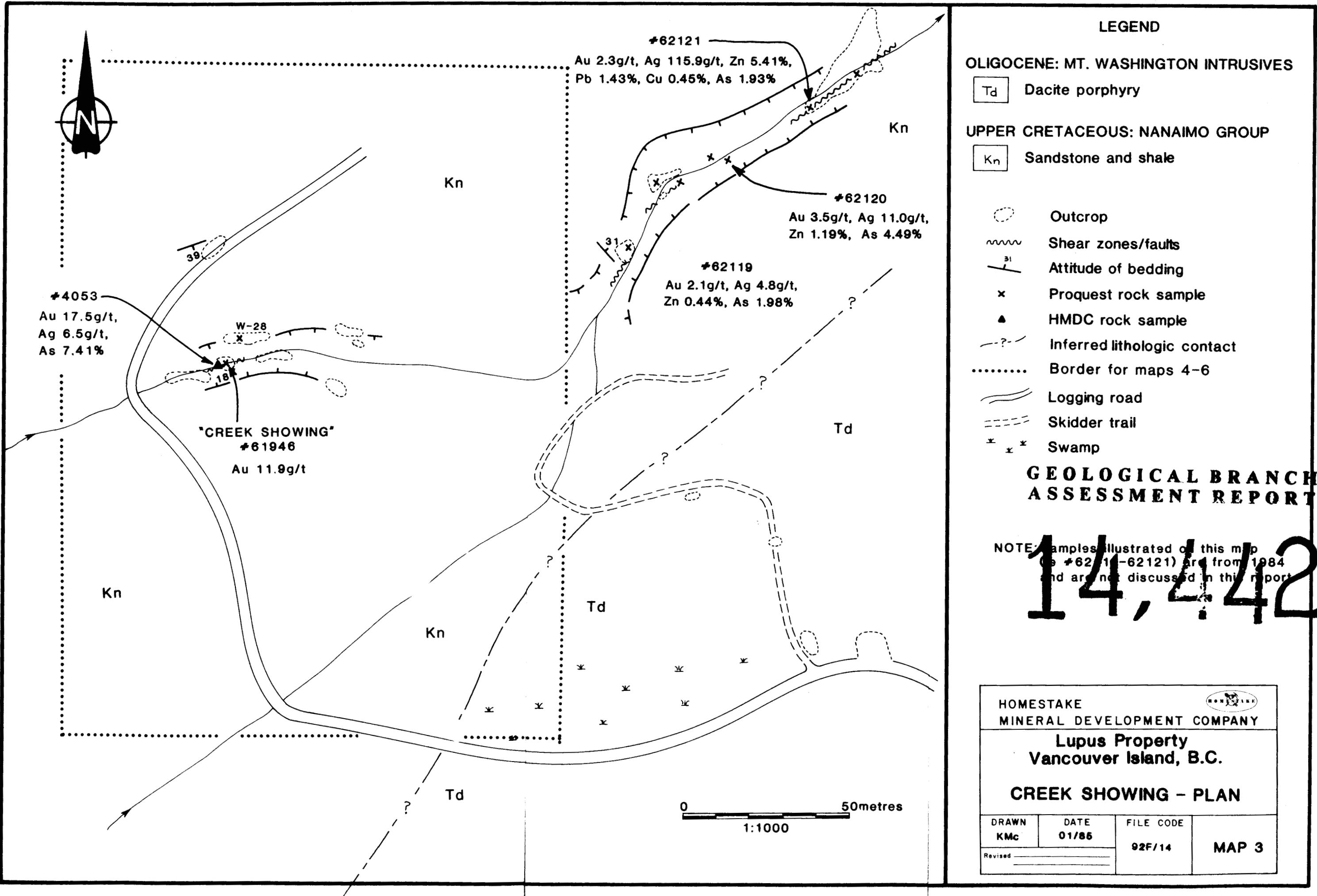
The vein, made up of a narrow sulphide-rich core, is overlain by a narrow clayey zone typically with broken sulphide-quartz material. These zones are enveloped in a dark grey alteration zone which grades out into a bleached pale grey to creamy coloured envelope which in turn grades into unaltered dark green Karmutsen volcanics. The dark alteration envelope may contain chlorite or secondary biotite.

Within the quarry area large boulders up to one ton are found in the vicinity of the mineralized fragments and are altered to a light grey carbonate-rich rock with relict pyroxene phenocrysts which weather orange.

The Creek Showing

The Creek Showing is found within Nanaimo Group sediments about 3 km southwest of the Lake Showing. It consists of small carbonate veins which are exposed in a creek bed, partially underwater during spring runoff.

Mineralization occurs in narrow breccia veins up to 10 cm wide on fracture and shear surfaces. Breccia vein material consists of siltstone and sandstone fragments in a matrix of fine to medium-grained semi-massive



pyrite and arsenopyrite, clay, realgar, and coarse white calcite. The veins trend E-NE, and have steep northerly dips. For as much as 7 m to the north of the veins, the mudstone wallrock in the creek gulley is bleached to a light grey rock that is probably a mixture of clays with some carbonate. Alteration of wallrock is variable and locally intense producing a bleached, fractured rock that is anomalous in gold and silver. Following the vein trend to the west there is very little exposure until a distinct orange soil gossan is reached on the edge of Wolf Lake. Exposures of altered and shattered dacite containing disseminated pyrrhotite occur adjacent to the gossan.

3.0 GEOCHEMISTRY

3.1 Sampling Procedures

Silt and limited soil samples were initially collected on reconnaissance traverses by Proquest Resources Corporation in 1984. Results of this work indicated that the known mineralization in the Creek Showing had a distinct geochemical signature with high values in Au, As, Ag, Zn, and Cu. As well, three other drainages were anomalous in arsenic.

In May of 1985, Homestake completed follow up work. A small soil grid was completed to delineate the Creek Showing, and several road and fill-in reconnaissance traverses were completed principally for mapping and prospecting.

All soil grids and reconnaissance traverses were established with flagging, compass and hip chains. Each sample site was identified with orange or blue flagging and the appropriate sample number.

GEOLOGICAL LEGEND

OLIGOCENE: MT. WASHINGTON
INTRUSIVES

- 1 DACEITE PORPHYRY
 - 2 UPPER CRETACEOUS : NANAIMO GROUP
 - 2 SANDSTONE , SILTSTONE AND SHALE
 - 2 UPPER TRIASSIC: KARMUTSEN GROUP
 - 3 BASIC VOLCANICS
- GEOLOGICAL BRANCH ASSESSMENT REPORT**
LITHOLOGIC CONCACT
- FAULT
 - OUTCROP
 - X ROCK SAMPLES
 - CLAIM BOUNDARY
 - - HMDC PLOTTED ROAD
 - PREVIOUSLY PLOTTED ROAD
- 14,442**

NOTE: VALUES FOLLOWED BY AN ASTERISK * ARE
ASSAY RESULTS AND ARE EXPRESSED AS
 $\text{Au}(\text{gm/t})$

HOMESTAKE
MINERAL DEVELOPMENT COMPANY

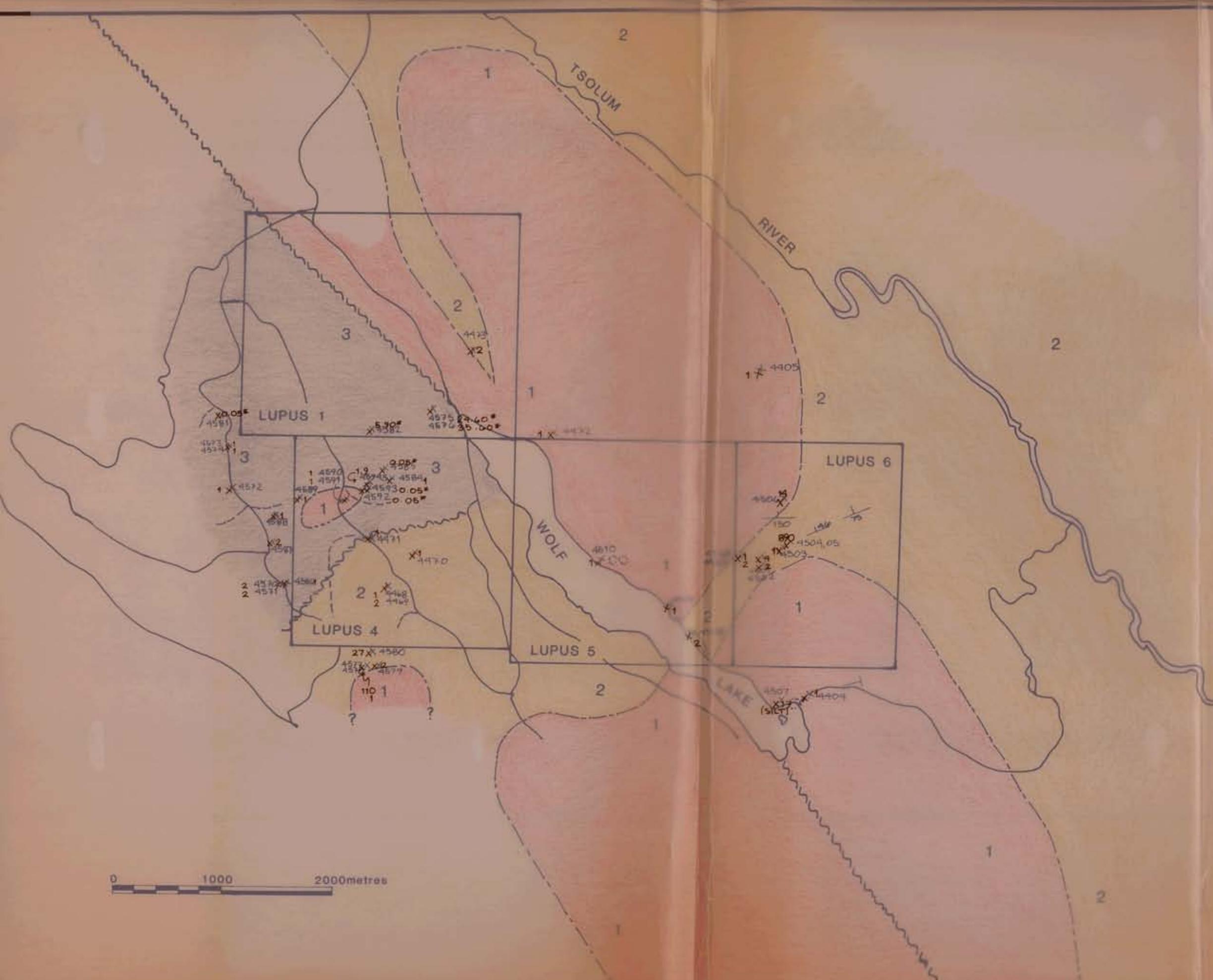
LUPUS PROPERTY
VANCOUVER AND
BRITISH COLUMBIA

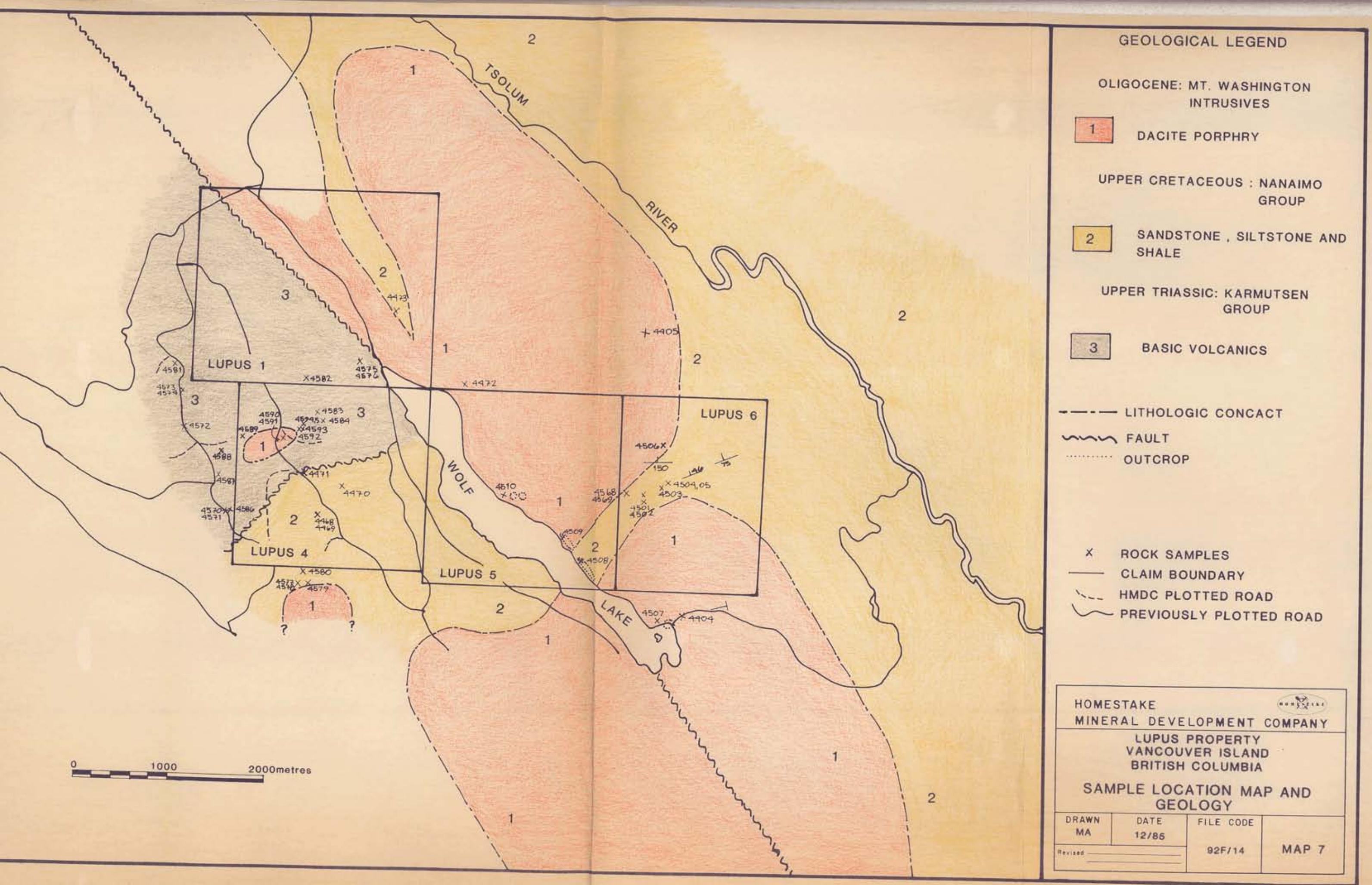
Au GEOCHEMISTRY (ppb)
GEOLOGY

DRAWN	DATE	FILE CODE
MA	12/88	92F/14

MAP 7

MAP 8





3.2 Geochemical Results

A total of 155 rock, soil, and silt samples were collected in May during the follow-up phase of exploration of the Luples claims. All of the analytical results for gold and arsenic have been plotted on Maps 5 and 6, respectively, at a scale of 1:2500.

Within these samples, values ranged up to a high of 890 ppb Au in a rock sample. As well, some samples from the soil grid were anomalous (greater than 20 ppb gold), but no trend or consistent auriferous anomaly was found to envelop the Creek Showing. Five rock samples of various lithologies were anomalous (ranging from 27-890 ppb Au).

There is a slight tendency for samples containing higher gold values to be accompanied with higher arsenic values. Only one small point silver anomaly (1.1 ppm Ag) occurred in a silt sample, which also contained the only anomalous copper value (2.85 ppm Cu).

4.0 CONCLUSIONS AND RECOMMENDATIONS

A total of seven man-days were spent mapping and sampling the Luples claims, with four additional man-days spent compiling, interpreting and reporting on the results. Forty-two rock, one hundred and eleven soil, and two silt samples were analyzed for 30 element ICP. Atomic Absorption and Fire Assay methods were employed for gold and mercury analysis. Some rock samples were also sent out for assay.

The Luples claims, which consist of 72 claim units, are primarily underlain by a succession of gently northeasterly dipping Upper Triassic Karmutsen basic volcanics which are conformably overlain by Upper Cretaceous Nanaimo Group sandstone and siltstone. This sequence is

intruded by Tertiary quartz diorite and related dacite porphyries. Mineralization is seen in two principal localities: the Lake Showing and the Creek Showing. Mineralization here occurs mainly in veins (stockworks) containing sulphides with quartz and calcite, respectively. Sulphides consist of pyrite and arsenopyrite, with sphalerite and chalcopyrite in the Lake Showing and pyrrhotite in the Creek Showing.

From initial work completed and geochemical results, the Luples claims showed some potential for significant gold mineralization. After a more thorough investigation into the primary showings, it is felt that this prospect does not contain sufficient potential for large tonnages to warrant further investigation at this time.

5.0 REFERENCES

- Barr, D.A., 1980 Gold in the Canadian Cordillera, CIMM Bulletin, June, pp. 59-76.
- Carson, D.J.T., 1969 Tertiary Mineral Deposits of Vancouver Island, CIMM Transactions Vol. 62, pp. 116-125.
- Carson, D.J.T., 1973 The Plutonic Rocks of Vancouver Island, G.S.C. Paper 72-44.
- Verley, C.G., and
Keyser, H.J., 1984 Reconnaissance Report on the Lupus Claims, 20 pp.

APPENDIX A
STATEMENT OF EXPENDITURES

LABOUR (field, 14-20 May, 1985)

P. Ronning:	7 days at \$130/day	\$910.00
K. Harrap	7 days at \$94/day	\$658.00

LABOUR (office, 9-12 December, 1985)

K. Harrap	4 days at \$118/day	\$472.00
Drafting and typing		\$225.00

TRANSPORTATION

One truck	7 days at \$50/day	\$350.00
Fuel and Maintenance		\$40.00

TRAVEL

Travel Expenses, Groceries, Accommodation, Meals 7 man days at \$50/day	\$350.00
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MATERIALS AND SUPPLIES

Flagging, Topofil, Kraft Bags, etc.	\$200.00
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ANALYTICAL

42 Rock sample prep at	\$2.75	\$115.50
111 Soil sample prep at	\$0.60	\$66.60
2 Silt sample prep at	\$0.60	\$1.20
155 30 Element ICP at	\$6.00	\$930.00
155 Hg Geochem AA & FA at	\$5.50	\$825.00
155 Au by Fire Assay at	\$8.25	\$1278.75
8 Ag and Au by FA		\$90.00
6 Cu, Pb, and Zn assay		\$85.50
2 Cu assay		\$13.50
8 Rock samples		\$22.00

TOTAL GEOCHEMISTRY	\$3455.55
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GRAND TOTAL	\$6660.55
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APPENDIX B
ANALYTICAL PROCEDURES

ANALYTICAL PROCEDURES

All analyses were completed by Acme Analytical Laboratories in Vancouver, B.C.

All rock, soil and silt samples were analysed utilizing 30 element Inductively Coupled Argon Plasma (ICP) techniques and geochemical fire assay plus atomic absorption (FA+AA) analytical procedure for gold and mercury.

All samples were prepared to a 80 mesh size fraction. Half gram samples were digested with 3 ml of dilute regia at 95° for one hour, then diluted to 10 ml with water. Thirty elements were then analysed by ICP (Appendix E). This technique enables only a partial leach for 20 of the 30 elements analysed.

Gold analyses required 10 gram samples that were subjected to a fire assay preconcentration techniques to produce a lead button. The button was then digested with hot aqua regia. The quantity of gold was then determined from the solution by graphite furnace Atomic Absorption technique.

For mercury analysis, 0.5 grams of pulp sample was digested in aqua regia and diluted with 20% HCL. Mercury in the solution was determined by cold vapor Atomic Absorption. A small portion of the extract was added to a stannous chloride/hydrochloric acid solution. The reduced mercury was swept out of the solution and passed into a mercury cell where it was measured by Atomic Absorption.

Eight rock samples were analysed with assay techniques. All eight were analysed for copper, while only six were also analyzed for lead and zinc.

APPENDIX C
GEOCHEMICAL RESULTS

ACME ANALYTICAL LABORATORIES LTD.
852 E. HASTINGS ST. VANCOUVER B.C. V6A 1R6
PHONE 253-3158 TELEX 04-53124

DATE RECEIVED: MAY 22 1985

DATE REPORT MAILED: May 22/85

ASSAY CERTIFICATE

SAMPLE TYPE: ROCK CHIPS

ASSAYER: *T. Saundry* DEAN TOYE OR TOM SAUNDRY. CERTIFIED B.C. ASSAYER

HOMESTAKE MINERALS PROJECT - 5710 FILE # 35-0665A PAGE 1

SAMPLE#	Cu %	Pb %	Zn %	Ag** gm/t	Au** gm/t
VL-06-4-4505	-	-	-	7.0	4.40
VL-01-4-4575	.44	.04	2.15	54.0	24.60
VL-01-4-4576	.30	.04	5.59	44.5	35.60
VL-01-4-4581	.07	.01	.05	1.5	.05
VL-01-4-4582	1.54	.01	.06	55.0	5.90
VL-04-4-4583	.73	.01	.04	17.5	.05
VL-04-4-4592	.10	-	-	1.5	.05
VL-04-4-4593	.15	-	-	1.5	.05
STD R-1	.89	1.32	2.38	-	-

HOMESTAKE MINERALS PROJECT - 5710 FILE # 85-0665 PAGE 4

SAMPLE#	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Au	Th	Sr	Cd	Sb	Bi	V	Ca	P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	N	Aust	Hg
	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppb	ppb							
VL-06-3-4563	2	17	10	123	.1	9	5	361	2.64	102	5	ND	1	9	1	2	4	.49	.18	.06	9	10	.11	83	.01	2	1.48	.01	.05	1	2	40
VL-06-3-4564	2	10	12	44	.1	6	4	275	2.19	46	5	ND	1	7	1	2	3	40	.13	.03	4	8	.07	56	.01	2	1.17	.01	.04	1	1	20
VL-06-3-4565	1	23	8	84	.2	19	8	540	3.07	140	5	ND	1	17	1	2	2	59	.44	.04	6	20	.25	84	.01	3	1.74	.02	.03	1	2	30
VL-06-3-4566	1	23	2	84	.2	24	13	1217	4.16	4	5	ND	1	17	1	2	3	108	.62	.08	5	35	.25	53	.25	14	2.07	.02	.03	1	1	50
VL-06-3-4567	1	42	4	76	.1	32	14	578	5.60	2	5	ND	1	15	1	2	2	151	.59	.07	3	50	.41	56	.33	13	3.02	.02	.03	1	18	70
VL-06-1-4507	1	53	3	65	.1	33	16	1127	4.94	8	5	ND	1	33	1	2	2	133	1.07	.06	9	58	.52	60	.31	14	2.97	.02	.03	1	17	60
VL-04-1-4585	5	285	8	60	1.1	40	34	1098	6.91	292	5	ND	2	15	1	216	2	108	.47	.07	3	54	.71	70	.19	18	2.84	.02	.08	1	32	20
STD C	21	61	40	133	7.4	71	27	1218	3.95	42	17	8	39	49	18	15	19	59	.48	.15	37	59	.89	179	.08	38	1.73	.07	.13	11	-	-

HOMESTAKE MINERALS PROJECT - 5710 FILE # 85-0665

PAGE 6

SAMPLE#	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Au	Th	Sr	Cd	Sb	Bi	V	Ca	P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	X	Asst	Hg
	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppb	ppb								
VL-04-4-4590	1	.59	2	28	.1	73	12	277	1.53	27	5	ND	1	.62	1	2	2	.47	.86	.01	5	33	.21	.88	.18	21	1.92	.26	.18	1	1	5
VL-04-4-4591	1	13	2	14	.1	34	5	115	.19	31	5	ND	1	.9	1	2	2	.24	.21	.02	6	9	.04	43	.01	4	.41	.05	.11	1	1	5
VL-04-4-4594	1	736	2	80	1.6	110	36	572	4.34	13	5	ND	2	.71	1	2	2	114	3.06	.17	6	101	1.19	26	.01	14	4.19	.44	.04	1	1	10
VL-04-4-4595	1	224	2	94	.1	26	22	967	10.77	2	5	ND	1	.16	1	2	2	209	.65	.08	2	104	1.45	14	.19	6	3.20	.13	.02	1	9	10
STD C	20	60	41	132	7.7	70	27	1195	3.92	40	16	7	36	49	18	16	18	58	.48	.15	41	58	.88	177	.08	42	1.72	.07	.12	11	-	1300

APPENDIX D
STATEMENT OF QUALIFICATIONS

STATEMENT OF QUALIFICATIONS

I, Karen Louise Harrap, of 11 - 130 East 17th Street, North Vancouver, B.C., hereby certify that:

1. I am a graduate of Queen's University at Kingston, with a B.Sc. Honours (Geological Sciences) (1983). I am also a graduate from B.C.I.T. (Mining Engineering, 1984).
2. I have worked in the field of mineral exploration since 1981.
3. I am a geologist employed by Homestake Mineral Development Company, 640 - 1380 Burrard Street, Vancouver, B.C., involved in property and reconnaissance examinations.
4. The work in this report was done by myself:

Karen L. Harrap

Karen L. Harrap

