

From: Huldra Silver Inc.
Prospectus Dated July 21/87

PROPERTY FILE 92H/6E

Tom Schrodt

888939
92HSW016

REPORT ON

TREASURE MOUNTAIN MINERAL CLAIMS

TULAMEEN RIVER AREA

SIMILKAMEEN MINING DIVISION, BRITISH COLUMBIA

NTS 92H / 6E, Lat. $49^{\circ}25'00''$ N, Long. $121^{\circ}03'20''$ W

For

HULDRA SILVER INC.
3475 West 34th Avenue
Vancouver, B.C.

[92HSW016]

By

J.J. MCDOUGALL & ASSOCIATES LTD.
7720 Sunnyside Road
Richmond, British Columbia
V6Y 1H1

January 10, 1987

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A.J. Beaton, P.Eng.

Report on the Feasibility of Open Pit Mining on the
Silver - Lead - Zinc Vein at Treasure Mountain, Jan. 18, 1987

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INTRODUCTION

This geological report summarizes numerous private and published descriptions of the Tulameen River silver - lead - zinc property now held by Huldra Silver Inc. It has generally been referred to during the past 88 years as the "Treasure Mountain", "Summit Camp", or "Silver Chief-Silver Hill" property and these names, plus others, are used interchangeably in various reports. The current report was prepared at the request of Magnus Bratlien, President of Huldra Silver Inc., 3475 West 34th Avenue, Vancouver, B.C.

Much of the contained geological data has been copied from updated reports prepared by on-site geologist Mohan R. Vulimiri (1986) while James Laird conducted sampling and exploratory programs.

The writer visited the property during work programs on July 8, 1983, October 20, 1985 and October 3, 1986, and visited the general area during various geological checks prior to this.

The historical Imperial system of measurements has been used in this report when quoting early work, with conversion to "metric" where later projects are involved. The terms 'vein' and 'zone' are used interchangeably in this report as they generally represent one of the same. Past work is summarized and a two stage program suggested.

SUMMARY

The Huldra Silver Inc. property, on which Huldra has expended in excess of \$200,000.00 since 1980, covers the more silver-rich eastern portion of a strong, east-west fault-controlled, near continuous vein system over 1.5 km in length. Mining in the past has produced 39,558 ounces of silver from approximately 4,000 tons of underground ore mined from one central location on the Huldra property. Recent activity by Huldra centers mostly around the eastern unmined extension of the zone where coincidental geological, geochemical and geophysical targets were test-drilled in 1983 and 1986, and the main "C" zone was exposed as the result of stripping programs in 1985 and 1986. 1983 drilling established that several veins

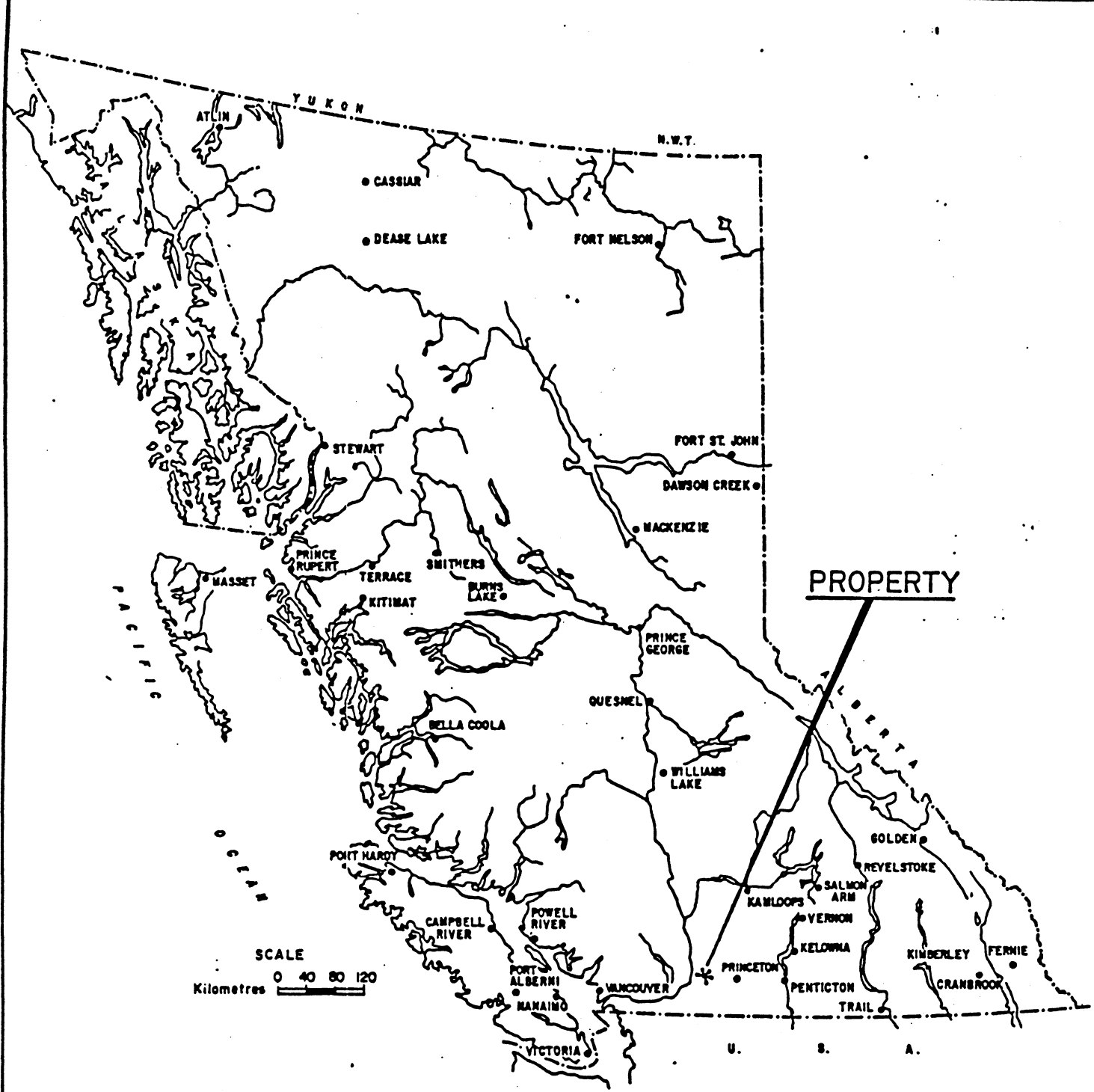


FIG. 1
HULdra SILVER INC.
TREASURE MOUNTAIN PROPERTY
LOCATION MAP

DECEMBER, 1986

existed in the eastern zone but correlation with known veins in the mine area to the immediate west remained uncertain. However, the recent stripping programs plus re-examination of the old workings have allowed a better appreciation of the vein configuration and in addition have outlined sufficient high grade ore to constitute a shipping reserve.

The best silver grades intersected during the 1983 drilling to depths of 45 m \pm (150 ft) were 126.6 oz. across .18 m (7") and 107.9 oz. across 0.30 m (12"). Intersections of 42.0 oz., 18.0 oz. and 13.8 oz. silver/ton were obtained over widths of 0.45 m (1.5'), 0.90 m (2.3') and 0.67 m (2.2') respectively. Limited 1986 drilling in the same general area intersected 0.6 m (2 ft) of 40.8 oz., 0.3 m (1 ft) of 35 oz., .2 m (.65 ft) of 40.8 oz., and .6 m (2 ft) of 18.1 oz. silver per tonne.

Ore widths involved (vein plus mineralized wall rock) during mining operations had reported average dimensions of about 4 feet assaying about 12.5 oz. silver, most values of which were contained within one or more of several inches wide massive galena or sphalerite veins. Reopening and sampling of the uppermost #1 adit in 1986 confirmed the earlier range of values reported.

The 1985 and 1986 trenching programs were designed to test coincidental geochemical and geophysical anomalies in an overburdened area where the drill-intersected main mineralized vein or zone should be present if projected to surface. As some of the early drill holes had intersected several veins, correlation was difficult. However, a 250 metre (820 ft.) length of impressive vein, now termed the "C" vein, carrying a considerable proportion of coarse grained galena with unusually high (up to 473 oz.) silver values, was uncovered. The vein, which does not straddle a dyke as its counterpart(?) did in the earlier mined or "Dyke" area, branches or splits along its strike and coalesces with other veins forming exploitable shoots with widths presumably sufficient to support mining. The "C" vein has been carefully sampled along its exposed length resulting in a 220 sample average of 64 oz. silver across an average true width of 0.68 m (2.2 ft).

Continuity of the zone easterly beyond the 250 metre length is suggested by limited trenching in swampy terrain, although some of the controlling and dyke-occupied structure crossing and cutting off the vein in this vicinity swings sharply to the south, and the main vein may reoccur along it.

Untested geochemical and geophysical anomalies also exist to the east and northeast of the "C" vein and may represent undetected paralleling veins within the composite system. Unmined shoots are reported to be present in the three existing mine levels, one of which (#1) was extensively sampled in 1986 where a vein averaged 21 oz Ag/ton for a length of 43 m across an average width of 0.48 m. Paralleling veins of interest are probably present in the essentially undrilled old mine area as suggested by multiple intersections evidenced in the 1983 drilling further east in the "C" vein extension and in limited 1986 drilling in the eastern portion of the #1 adit area.

Gold values (0.14 oz. Au, 9 oz. Ag in a grab sample) are present in a shear zone 800 m southeast of, and along (?), the "C" zone, and further exploration is required in this overburdened area which coincides with the deflection southerly of some controlling "C" vein structure.

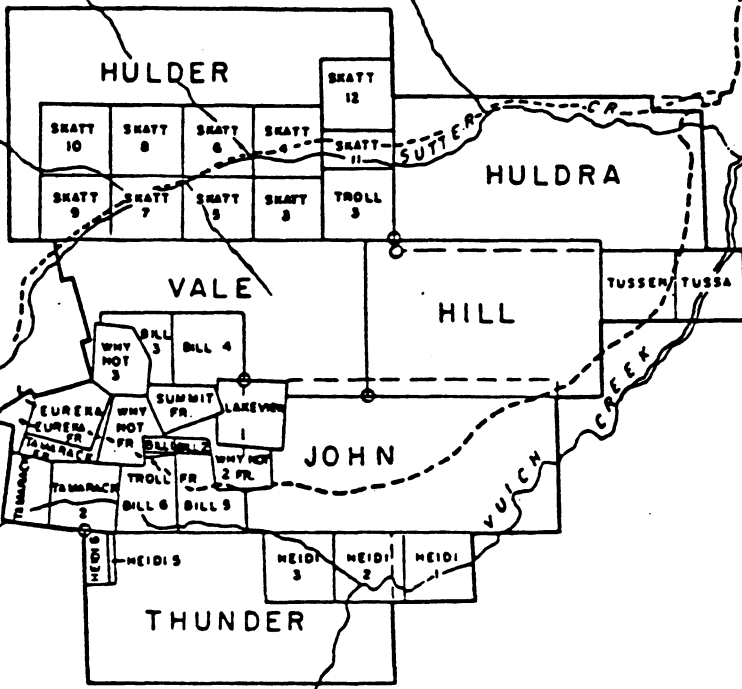
Stage 1 of the proposed program will involve additional fill-in geochemical and geophysical surveys, plus trenching in an attempt to follow the "C" vein further easterly and/or southeasterly, and to find paralleling zones. In addition, a moderately large smelter test shipment will be made to establish ore suitability as well as to recover some of the project costs. Stage 2 will involve test (and definitive) drilling of important Stage 1 discoveries, possibly underground in the "C" vein area if the large scale Stage 1 sampling and shipments show that returns will allow it. A second test shipment is allowed for in Stage 2. A pre-feasibility study relative to an underground mining approach will constitute a further stage.

PROPERTY AND OWNERSHIP

The mineral property owned by Huldra Silver Inc. consists of a total of 41 contiguous mineral claims (Figure 2) which cover an area of approximately 3,000 acres (1214 hectares). Included are 7 reverted Crown Grants, 27 located two-post claims and fractions, 6 modified grid claims and 1 Crown grant. These are listed as follows:

121°00'

RAILROAD CREEK
ROAD



49°25'

AMBERTY CR.

SUTTER CR.
VUICH CREEK



HULDRA SILVER INC.		
TREASURE MOUNTAIN PROJECT		
NTS 92H-6E	SIMILKAMEEN MD, BC	
CLAIM MAP		
SCALE 1 50,000	NOV 1986	FIGURE 2

TABLE 1
Claim List

<u>Name</u>	<u>Claims or Units</u>	<u>Record No(s)</u>	<u>Expiry Date</u>
Two Post Claims:			
Bill No 1 - 6	6	404 - 409	August 16, 1994
Summit Fr	1	553	April 12, 1994
Heidi No 1 - 3	3	1289-91	November 19, 1987
Heidi No 5 - 6	2	1484-85	July 24, 1987
Skatt 3 - 12	10	2502-11	December, 1987
Troll 3	1	2123	February, 1989
Tussen	1	2232	August, 1989
Tussa	1	2233	August, 1989
Troll Fr.	1	2640	July, 1990
Tamarack Fr.	1	2529	February, 1990
MGS Claims:			
Hill	(6 units)	569	May 7, 1994
Vale	(8 units)	570	May 7, 1994
John	(8 units)	712	August 31, 1994
Hulder	15	2633	July, 1990
Huldra	8	2122	February, 1991
Thunder	8	2632	July, 1990
Reverted Crown-Grants:			
Why Not Fr.		377	July 12, 1994
Why Not No 3		378	"
Eureka Fr.		379	"
Tamarack		380	"
Tamarack No. 2		381	"
Lakeview		382	"
Why Not No. 2 Fr		383	July 12, 1994
Crown Grants:			
Eureka		Lot 1210	

Except for one building suitable as living quarters for a small crew, no usable buildings or equipment are present on the property.

LOCATION, ACCESS & PHYSIOGRAPHY

The mineral claims are located in the Amberty Creek drainage of Vuich Creek at the head of the Tulameen River, about 32 air, 34 road kilometres southwest of the village of Tulameen in the Similkameen Mining Division (Figure 1/86). The mineral claims are centred immediately southeast of a prominent local feature known as Treasure Mountain, Latitude $49^{\circ} 25'00''$ N, Longitude $121^{\circ} 03'20''$ W, N.T.S. 92H/6E. The main property under discussion occupies a south-facing hillside sloping about 30° . The lowest mine workings, #3 level cross-cut, occurs at elevation 1,383 m (4,534 feet) and the uppermost level, #1, at 1,630 m (5,336 ft.) Discrepancies of about 200 ft. exist between pre and post 1952 elevations quoted. The latter (higher) figures are now used.

Access is by a well-maintained logging road from the newly constructed Coquihalla Highway, a distance of 38 kilometres. The turn-off from the highway is at a distance of 52 kilometres north of Hope (1.5 kilometres north of the toll booth). During summer and fall the property is also accessible by a seasonal gravel road from Tulameen Village, a distance of 34 km. A short 4x4 road connects the lower camp area with the upper work area.

Timber is plentiful in the lower Tulameen Valley, but spotty in the claim area which has experienced forest fires and is near timber line. Rock outcrop is limited to less than 10% but overburden is light. The climate is moderate with the property being in the transition zone between 'wet coastal' and 'dry interior'. Winter snowfall is moderate to heavy and the local access roads are usually not kept open during winter months - i.e. December - April, although such is feasible, at least for hauling purposes, given better timber or mining economics. At the time of writing, however, (January) such hauling is in progress.

Water supply is adequate to meet exploration and mining requirements. Limited hydro power is a possibility as is thermal generated power using local low grade coal deposits formerly mined and still present in the Tulameen area.

HISTORY AND DEVELOPMENT

As summarized by Cairnes (G.S.C. Summary Report, 1922), Summit Camp, which includes the Treasure Mountain prospects as well as those in adjacent Sutter Basin, was discovered in 1895 although the Eureka claim was staked "on gossan" in 1894. Numerous small but persistent silver-bearing galena veins were discovered, staked and prospected but no development work was done until 1910 when a number of short adits were commenced on several of the better defined veins. Properties most directly involved and now part of the Huldra Silver property include those on Treasure Mountain known as the Silver Chief, (also referred to later as the "Mary E"), Whynot #3 Fraction, and the Eureka Fraction. By 1922, approximately 152 ft. of vein length had been tested on the Silver Chief Claim (the #1 or upper tunnel). 930 ft. of tunnelling on the Mary E, (the #2) driven from a portal on the southeasterly adjoining and lower Whynot #3 Fraction, tested the same vein system at a lower elevation. This involved two drifts totalling 300 feet which followed two paralleling veins, one of which (the "footwall") was also tested by a 50 foot raise. Road access from Tulameen was established in 1925.

By 1929, the property, (then controlled by a company known as 'Tulameen Silver King') had advanced to the stage, as reported by J.M. Turnbull (1929) that the main footwall vein had been drifted on (in the #2 level) for about 800 feet, of which "ore is practically continuous", though pinching or swelling, for 300 and possibly 370 feet. At this time, the raise on the footwall vein was reported as having reached 150 feet, showing "ore to continue upwards" towards that exposed in the upper drift 400 feet vertically above. At the same time, the #3 level workings, about 400 feet below the #2 level, had, after crosscutting for 900 - 1,000 feet, "drifted on about 150 feet of ('zincy') vein". Some 'much used' milling machinery, mostly jigs and tables, was, according to Turnbull, set up on the property by Tulameen Silver King. Between 1930 and 1932 recorded production from the mill of approximately 4,000 tons rendered 39,558 oz. of silver, 379,532 lb. of lead, and 88,455 lb. of zinc, the latter containing a small cadmium content. The locations of the workings are shown in plan on Fig. 4 and in longitudinal section on Fig. 6.

In 1950 the property was optioned to "Silver Hill Mines Ltd.", which company constructed a 50 ton flotation mill. This mill was closed in 1956, reportedly for

financial reasons, after making an unrecorded shipment of zinc concentrate. No records exist of important pre-1979 activity beyond 1956, but the property was examined by several groups during this period.

The surface geology of the property was first mapped on adequate 1"=200' scale by the B.C. Department of Mines (J.M. Black) in 1952. (Fig. 4).

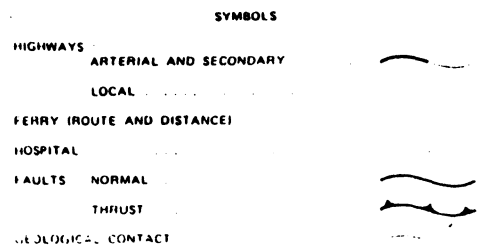
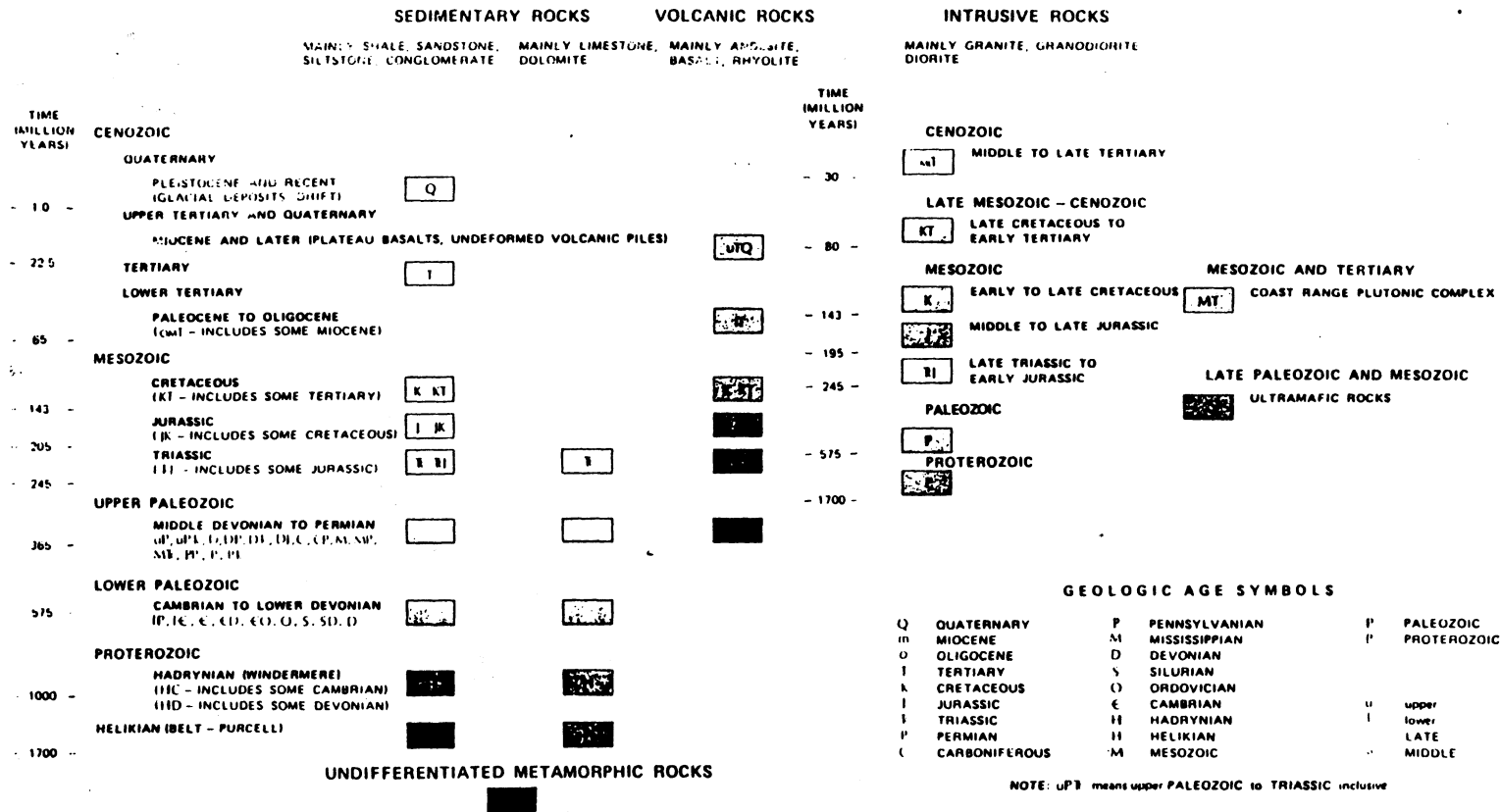
The main Treasure Mountain property is now owned by Huldra Silver Inc. whose 41 mineral claims appear to adequately cover known mineral occurrences.

In 1979, Magnus Bratlien optioned the main property from one of the former Silver Hill owners, Mr. E.L. Borup, and carried out an investigation of the mine area including a soil survey along the projected eastern extension of the main vein system. In 1980 Bratlien founded Huldra Silver Inc. into which the property was vended. Subsequently Huldra Silver contracted an EM16-VLF electromagnetic survey (Presunka, 1980) near the southeast end of the property (the "Heidi and John" mineral claims), results of which, along with some geochemical response, precipitated 1,700 feet of diamond drilling in 1981. Sub-economic mineralization was encountered in the first of 4 holes drilled (Livgard, 1982).

During 1981, VLF and magnetic surveys were conducted by Presunka (1981) on the eastern (uphill) extension of the vein system, resulting in several separate conductors or anomalies on the Bill #4 located claim which was east, and apparently not part of, the original Crown granted claims.

In 1983, the electromagnetic anomalies on the Bill #4 claim, supported in part by soil geochemical highs, were investigated by 2,612 feet of drilling in 8 holes (some off section) through a strike length of about 135 m (Fig. 7). Several narrow hangingwall veins similar to those described in the old "Dyke" workings were intersected although geological control parameters differed somewhat, particularly with respect to a dyke which historically had occupied a structure adjacent to the paralleling veins (Livgard, McDougall, 1983).

LEGEND FIG 3



BRITISH COLUMBIA GEOLOGICAL HIGHWAY MAPS

Production Staff Legend and Geological Compilation, E. V. Jackson
 Coordination and text, W. J. McMillan
 Cartography, J. Armitage
 Text production, R. Morr

Acknowledgments and financial support of the following two organizations is gratefully acknowledged:

Cordilleran Section,
 Geological Association of Canada,
 Vancouver, B.C.

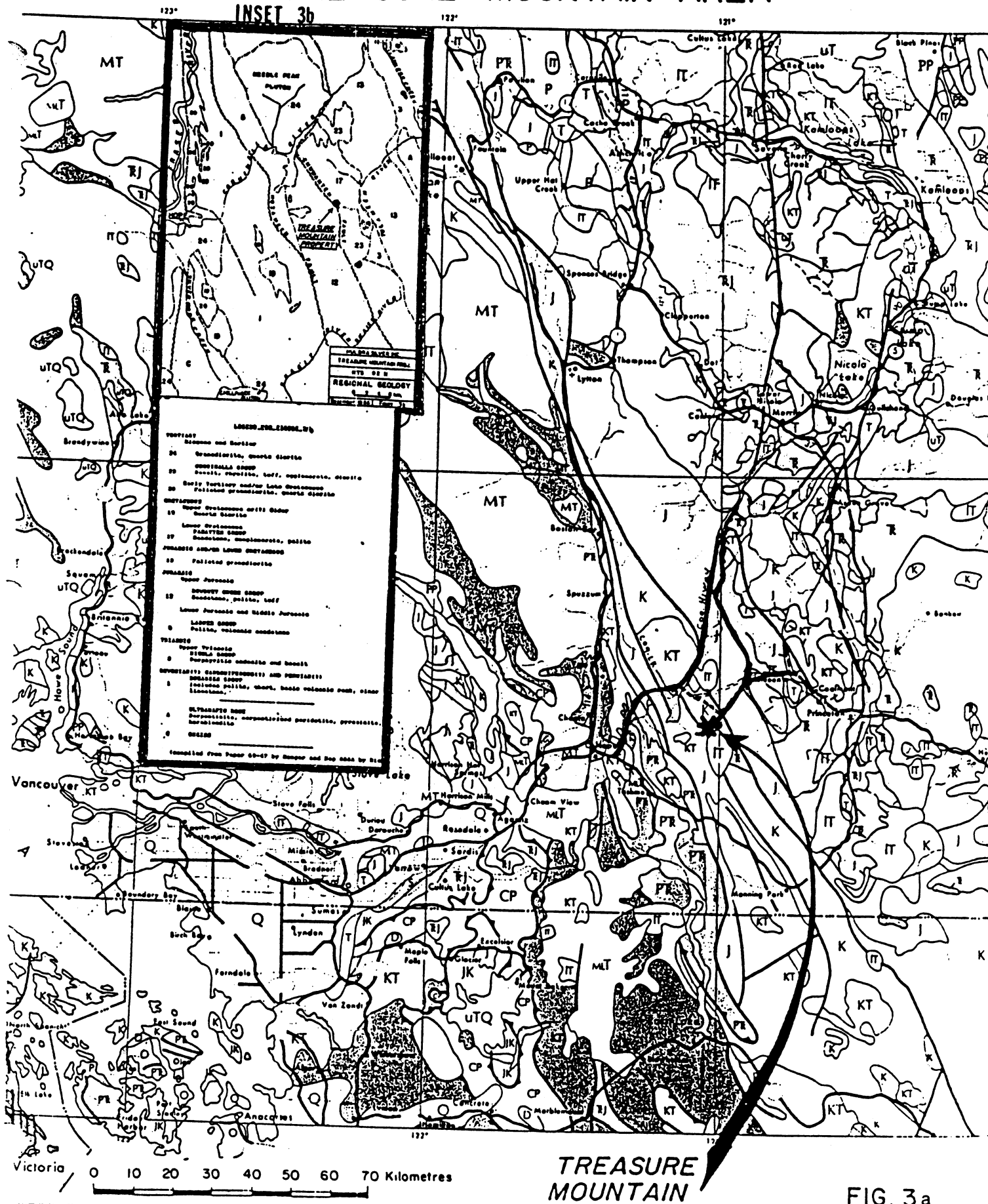
Canadian Society of Petroleum Geologists,
 Calgary, Alberta

Geology derived mainly from the following geological maps compiled by officers of the Geological Survey of Canada, 100 West Pender Street, Vancouver:

MAP NAME	COMPILED BY	OPEN FILE NO.	SCALE
Fraser River	A. V. Okulitch	165	1:1 million
Skeena River	A. V. Okulitch	166	1:1 million
Parsnip River	R. B. Campbell, et al.	261	1:1 million
Kootenay River	A. V. Okulitch and G. J. Woodsworth	481	1:1 million
Vancouver Island	J. E. Muller	463	1:250 000
Tectonic Assemblage Map of the Canadian Cordillera	H. W. Trupper, et al.	572	1:2 million
Geological Map of Part of the Southwestern Coast of British Columbia	R. B. Campbell		1:1 million

GENERAL GEOLOGY MAP TREASURE MOUNTAIN AREA

INSET 3b



123° 122° 121°

Cohen Lake Star Lake Black Pine

Kamloops Kamloops Kamloops

Cherry Creek Nicola Lake Douglas Lake

Thompson Lyndon Spuzzon

Bozeman Spuzzon Clifton

Columbia River Columbia River Columbia River

Vancouver Stave Falls MT Harrison Mills Chasm View MT

Durand Rosedale Sardinia Assisi KT

Midway Bradnor Alton Colby Lake CP KT

Blaine Lyndon Maple Falls Escalier KT

Fernside Van Zandt UTQ JIK KT

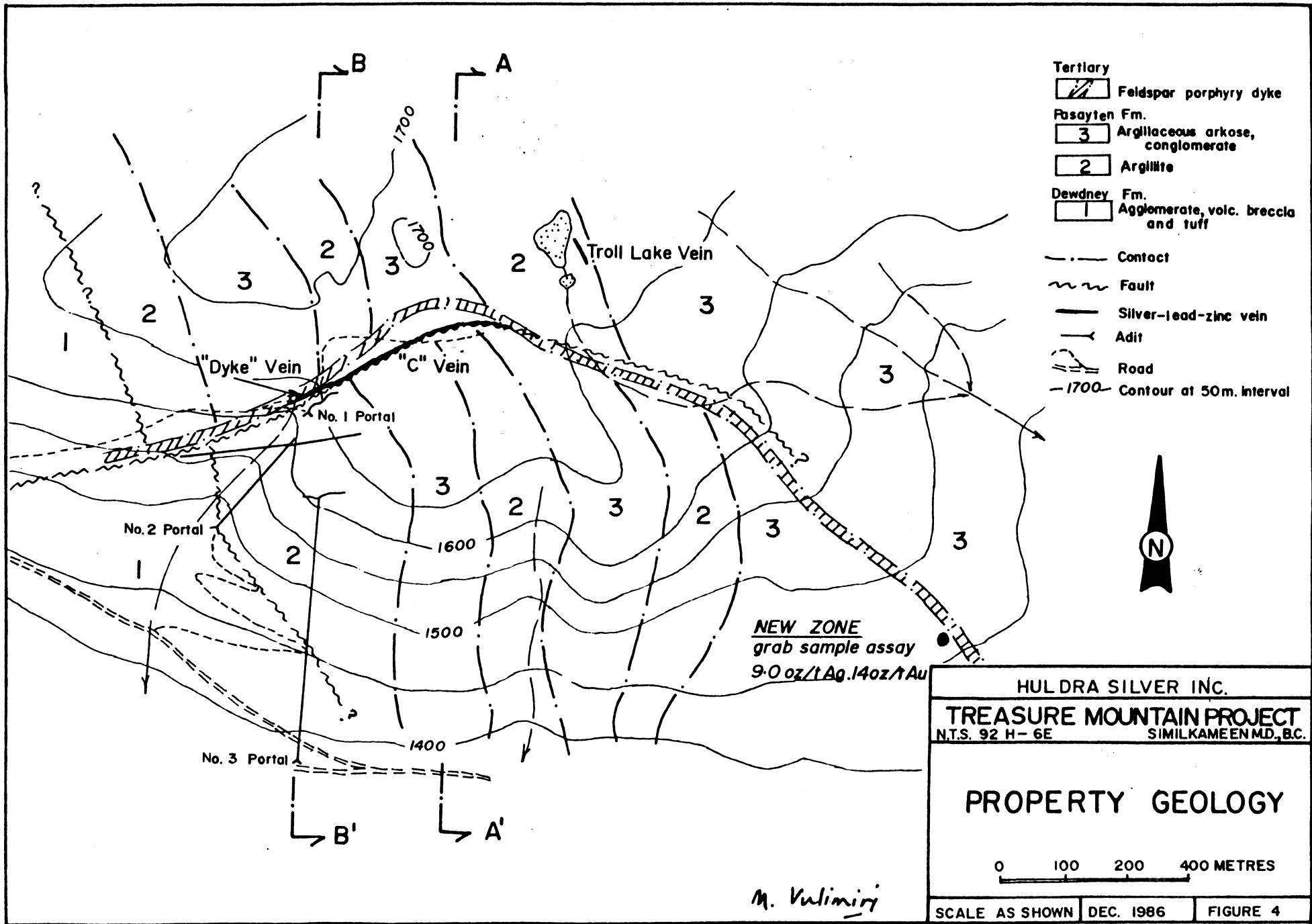
East Seabed Centrate Marble Mountain KT

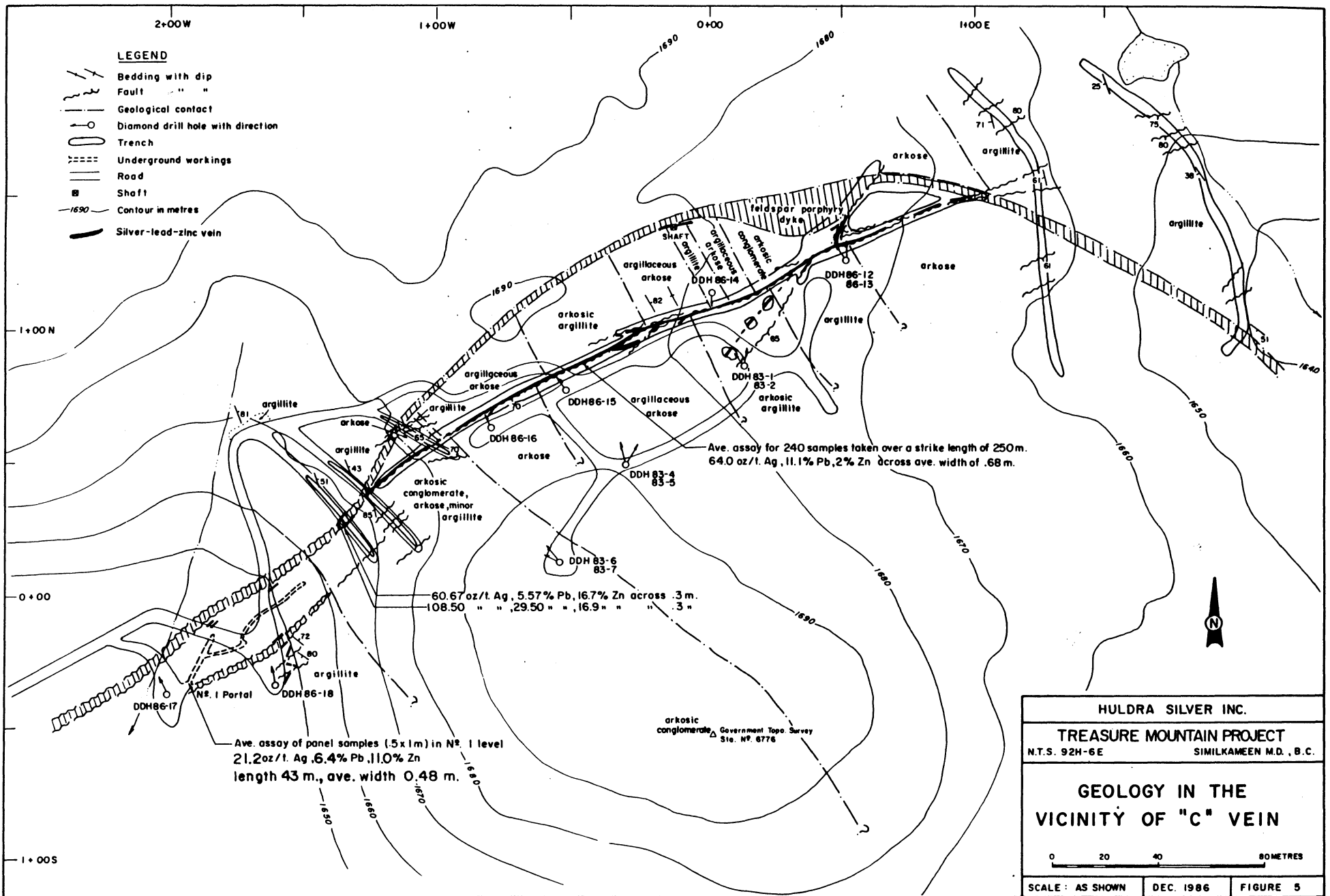
Victoria 0 10 20 30 40 50 60 70 Kilometres

TREASURE MOUNTAIN

- LEGEND FOR SYMBOLS
- TREASURE MOUNTAIN AREA
UTQ 92 II
REGIONAL GEOLOGY
Scale: 1:50,000
- SYMBOLS FOR SYMBOLS
- 24 Granodiorite, quartz diorite
 - 25 GRANODIORITE GROUP
Quartz, diorite, loof, quartzite, diorite
 - 26 Gneiss, quartzite and/or Ligne Gneiss
Polished granodiorite, quartz diorite
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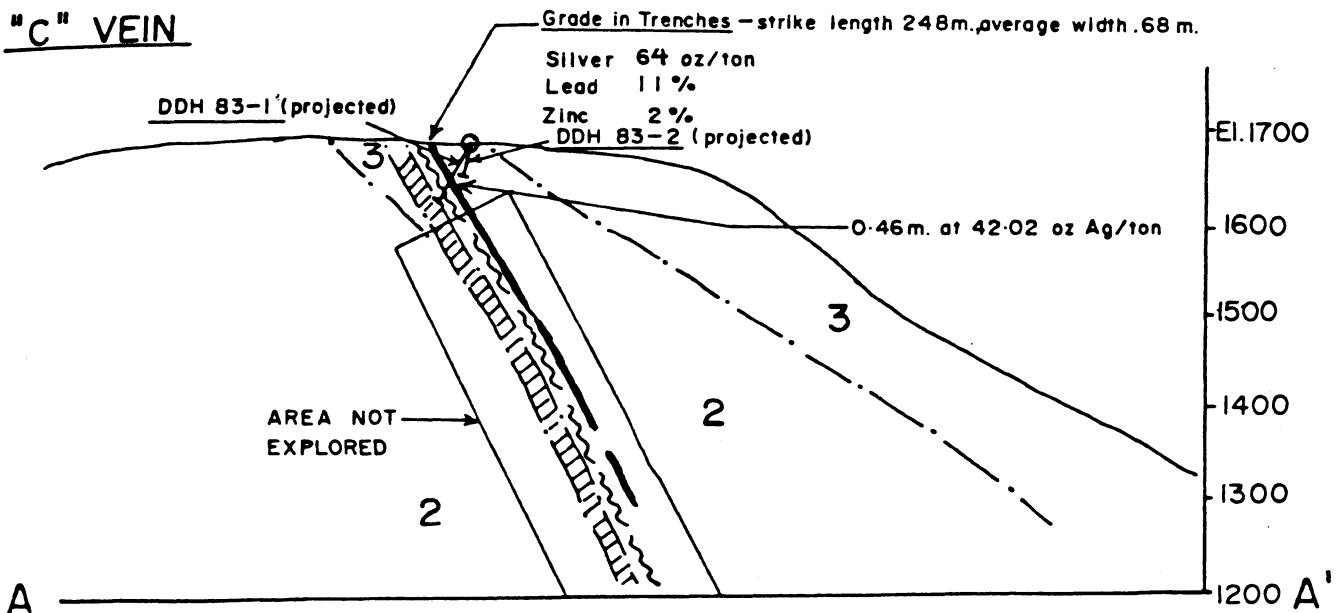
FIG. 3a



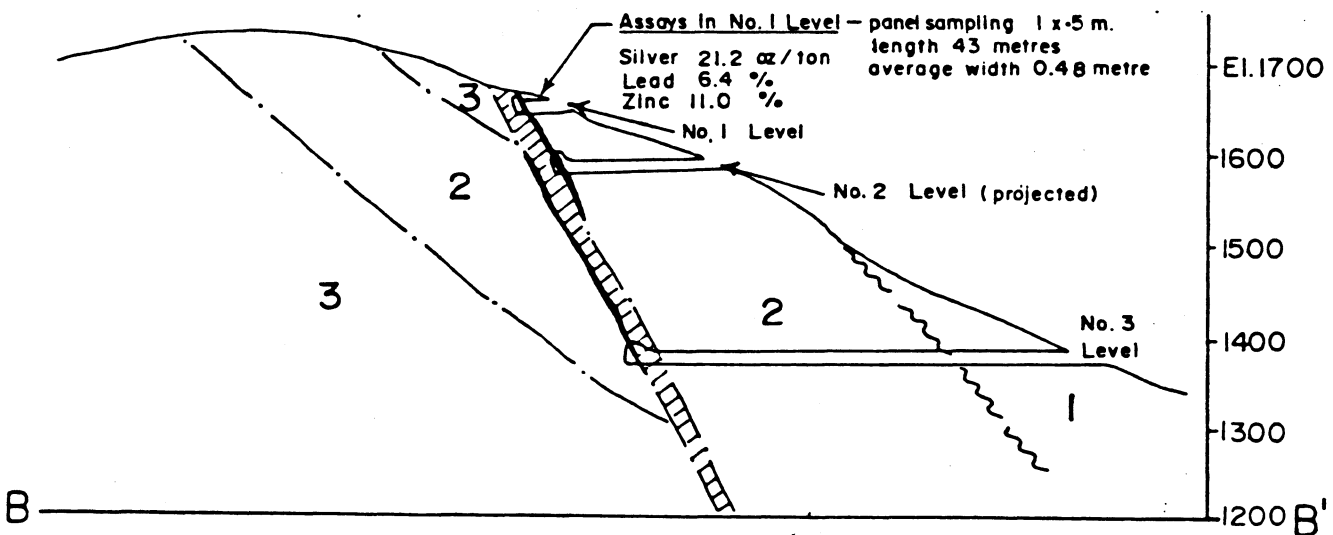


HULDRA SILVER INC.	
TREASURE MOUNTAIN PROJECT	
N.T.S. 92H-6E	SIMILKAMEEN M.D., B.C.
GEOLOGY IN THE VICINITY OF "C" VEIN	
0 20 40 80 METRES	
SCALE: AS SHOWN	DEC. 1986
FIGURE 5	

"C" VEIN



"DYKE" VEIN



Tertiary

 Feldspar Porphyry Dyke


Pasayten Fm.

 3 Argillaceous arkose, conglomerate

 2 Argillite

Dewdney Fm.

 1 Agglomerate, volc. breccia & tuff

 Contact

 Fault

 Silver-lead-zinc vein

HULDRA SILVER INC.

TREASURE MOUNTAIN PROJECT
N.T.S. 92 H- 6E SIMILKAMEEN M.D.B.C.

SECTIONS ACROSS
"C" AND "DYKE" VEINS.
LOOKING EAST

0 100 200 400 METRES

SCALE AS SHOWN DEC. 1986 FIGURE 6

M. Vulimiri

- S.L. 00

103

100

103

A SAMPLE TAKEN FROM A FORMER WORKING FACE IN THIS AREA BY J.D. GALLOWAY IN 1914 (ASSAYED 0.40 GR Au/TON ACROSS 3 FEET (0.91 METRE) (MINISTER OF MINES ANNUAL REPORT 1914)

A NARROW (1.0 m) CONTACT METAMORPHIC ZONE IS FOUND BETWEEN THE DIKE AND THE MAIN SULPHIDE VEIN. THIS ZONE CONTAINS MAGNETITE, JASPER, HEMATITE, PYRITE, AND MINOR GALENA AND SPHALERITE IN A MATRIX OF SILICIFIED, SPALCATED GYPSUM ROCK AND QUARTZ.

THIS STOPE IS REPORTED TO HAVE PRODUCED AN ESTIMATED 30 TONS OF ORE IN 1938 FROM A 1 FOOT (0.3 m) VEIN GRABBER. Ag 38oz/ton Au 0.02oz/ton Pb 30.6% Zn 18.0% (MINISTER OF MINES ANNUAL REPORT 1938)

ANDESITE FELDSPAR PORPHYRY DIKE (est. 4 m wide)

ALTERED ARGILLITE, SILTSTONE AND MINOR ARKOSE (Turbidite Sequence)

SPHALERITE CHARACTER SAMPLE (1937)
Ag, oz/ton Pb % Zn % Cu % Cr % Ni ppm Sn ppm W ppm
20.13 1.24 30.20 0.204 0.741 2 3 14

THE MAIN SULPHIDE VEINS CONTAIN: GALENA, SPHALERITE, CHALCOPYRITE, TETRAEDRITE, AND MINOR QUERCITE, MAGNETITE, PYRITE, HEMATITE

PORTAL ADIT NO. 1
E1 1025 m

Sample No.	Point Area m	Ag oz/ton	Pb %	Zn %
4677	03x10	22.75	2.00	12.00
4678	03x10	0.46	1.00	0.30
4679	03x10	5.19	1.44	13.90
4680	03x10	9.33	2.83	9.00
4681	03x10	16.40	4.33	11.00
4682	03x10	37.23	3.04	11.00
4683	03x10	2.30	0.50	3.00
4684	10x10	2.10	0.00	4.00
4685	10x10	0.30	1.23	0.30
4686	10x10	16.31	4.04	0.30
4687	10x10	15.50	0.70	0.00
4688	03x10	37.00	0.00	3.00
4689	03x10	30.00	0.20	0.00
4690	03x10	15.30	4.70	3.00
4691	03x10	20.12	3.30	0.00
4692	03x10	07.75	0.30	0.00
4693	03x10	00.12	0.00	0.00
4694	03x10	17.00	7.00	0.00
4695	03x10	20.00	0.20	0.00
4696	03x10	01.12	0.00	0.30
4697	03x10	06.73	0.70	0.00
4698	03x10	34.71	0.00	13.00
4699	03x10	00.13	0.00	0.00
4700	03x10	42.29	0.00	0.00
4701	03x10	03.00	0.10	0.00
4702	03x10	00.00	0.00	0.10
4703	03x10	4.70	1.00	0.00

Sample No.	Point Area m	Ag oz/ton	Pb %	Zn %
4700	075x03	34.34	3.60	27.50
4699	03x10	22.02	6.42	16.00
4698	03x10	13.05	4.43	17.10
4697	03x10	10.03	5.00	13.20
4705	018x10	37.63	16.00	3.64
4696	03x10	12.63	2.00	11.50
4695	03x10	4.10	0.00	0.00
4694	03x10	0.50	0.10	3.02
4693	03x10	1.70	0.40	4.47
4692	03x10	1.11	0.31	1.22
4691	03x10	0.93	0.18	3.00
4702	015x10	100.04	47.00	4.30
4690	03x10	5.19	2.44	12.00
4701	015x10	33.50	6.30	5.63
4689	023x10	10.03	1.10	32.56
4688	03x10	23.00	6.24	27.00
		22.27	2.57	5.47

J.J. 7.2 7.2 N. 20



LEGEND

- VEIN DIP: inclined, vertical
- STRUCTURAL DIP
- FAULT - movement unknown
- known
- STREAM
- ANDESITE FELSPAR PORPHYRY DIKE
- VEIN

HULTRA SILVER INC.
TREASURE MOUNTAIN PROJECT
 N.T.S. 92H-0E
 SIMILKAMEEN M.D., B.C.

**GEOLOGY & SAMPLING OF
 TREASURE MOUNTAIN NO. 1
 ADIT, 1910**

MAPPED & SAMPLED BY JAMES LAIRD

SCALE 1:100 OCTO '06 MAP NO. 8

In 1985, approximately 150 m of relatively shallow (1-1.5 m) backhoe trenching was completed in six trenches along a saddle below which the 1983 drilling was done. Most of this was along the 'main zone' now designated the "C" vein. During 1986, a more thorough and deeper hoe trenching program was carried out, exposing the main vein almost continuously for 250 metres and discovering a second narrow, but silver-rich, vein paralleling the first to the immediate south. In excess of 220 channel samples were taken along the length of the "C" vein. In addition, some trenching was conducted along strike to the east despite swampy ground. One trench, designed to test a geophysical (VLF-EM) anomaly several hundred feet northeast of the most easterly exposure of the "C" vein, exposed a narrow, silver-rich but northeasterly trending occurrence (the Troll Lake Showing). Approximately 1000 feet (305 m) of fill-in diamond drilling was done to help delineate or correlate the "C" zone at shallower depths than previously, but poor recovery and a complicity of veins resulted in little additional data. A gold-bearing shear zone was exposed by trenching 800 m southeast of the "C" vein (Figure 4). Here mineralization apparently parallels the "re-introduced" arcuate dyke which occupied the controlling fault structure in the old workings. No. 1 adit was opened in 1986 and a 43 m length of vein(s) sampled (Figure 8).

Exploratory expenses incurred by Huldra since 1980 reportedly exceed \$200,000.00.

GEOLOGY

(a) General Regional

The Huldra property occurs within the Cascade Mountain System of the Intermontane Tectonic Belt, which is largely a geologically derived subdivision. The system is a continuation northward of the Cascade Mountains of northwest Washington State. The Fraser River acts as the western boundary in southernmost B.C., often characterized by serpentine belts, and the eastern limit approximates the Okanagan Valley in southcentral B.C. (Fig. 3b). Numerous mines and mineral deposits are located within it. The belt contains sedimentary and volcanic rocks of Late Paleozoic to Cretaceous age plus younger intrusives and sediments (Fig. 3a). In B.C. it is characterized by subdivisions including the following, listed in order of decreasing age: Hozameen Gp, Nicola Gp, Ladner Gp, Dewdney Creek Gp, Jackass

Mountain Gp, and Pasayten Gp. Of interest in the Tulameen area are the fault bounded, relatively unmetamorphosed Dewdney Creek and Pasayten Groups with a combined thickness approaching 30,000 feet, although proposed subdivision changes may reduce this somewhat (Cairnes, 1922 and Coates, 1970). Ages range from early Jurassic to late Cretaceous.

The Dewdney Creek stratigraphy consists largely of fragmented volcanic rocks, including tuff, breccia and agglomerate. Interbedded sediments, about 25% of the total, include argillite and conglomerate, the latter being prevalent near the base.

The younger Pasayten Group is separated from the Dewdney Creek Group by a "near conformity". The Pasayten consists of arkose, argillite, and conglomerate, in order of abundance.

Faults and minor intrusive bodies are common in the Dewdney and Pasayten Groups, as shown on Figures 3a, 3b.

(a) Local Geology

Black (1952) has mapped the overall Treasure Mountain area but local geological features have been mapped in more detail by others including Vulimiri (1986) whose maps (Figs. 4, 5, 7) are included in this report.

(1) Stratigraphy

In the Treasure Mountain area, the Dewdney Creek and Pasayten Groups are cut by Tertiary Intrusions, and fault-controlled mineralization cuts both within the property limits. As described in most detail by Black (1952) the Dewdney Creek Group is represented by green to grey pyroclastic rocks and interbedded conglomerate plus dark argillite, the later present in mappable amounts. Pyrite is common and the rocks weather rusty. The Pasayten Group consists of arkose and argillite plus minor conglomerate. The arkose is grey, relatively coarse grained and massive. The argillite is thin bedded and weathers rapidly, thus outcrops are rare. The conglomerates are occasionally interbedded with the argillite and arkose

and contain cobbles, generally granitic but often composed of volcanics and/or sediments, attaining sizes to 1 foot in diameter.

The two formations, which strike northwesterly and dip southwesterly, are intruded by numerous sills and lamprophyre dykes, and by stocks ranging from diorite to gabbro.

The intrusives, which are generally altered, appear similar in both formations they cut but sills appear non-existent in the Pasayten. The dykes in the Dewdney Creek formation strike east-west while those in the Pasayten strike more northwesterly. These range in size up to 21 m (70 feet) in width, and the largest sill is 210 m (700 feet) thick.

In the eastern property area a feldspar porphyry dyke crosses Treasure Mountain, striking east-westerly and dipping southerly. It occupies a major fault which cuts across both formations and at least one large sill. Thicknesses range from 21 m in the east to 1.5 m in the west. In the 1983 drill area the width of this dyke ranged from 2.4 to 3.6 m. Alteration, including carbonatization and chloritization, is common as the borders of this pre-mineral and highly sheared dyke appear to have been subjected to hydrothermal agencies accompanying mineralization. However, the dyke itself is apparently unmineralized.

(2) Structure

Structurally, Black (1952) considers the stratigraphic formations to be separated in the claim area by a 'near conformity' since there is little evidence of movement between the beds. The formations appear overturned locally as the younger Pasayten dips under the Dewdney Creek. Both are described as occupying the limb of a major anticline overturned to the northeast, evidenced more clearly elsewhere in the belt (Coates, 1970).

The important fault which crosses Treasure Mountain markedly offsets the formations with a possible displacement of 305 m (1,000 feet) or more. The more important mineralization occurs along this or closely related and paralleling faults, and along the included feldspar porphyry dyke which often bounds the

mineralization on either or both walls. On Treasure Mountain the fault is poorly exposed on surface but clearly depicted underground. In one exposure the fault zone is 9 m (30 feet) wide, strikes north 80° east and dips southward between 30 and 65°. The dyke generally occupies a central position within the Treasure Mountain fault zone but can wander, particularly into the hanging wall of the zone as appears to have occurred in the easterly "C" vein area. The fault and included dyke have a length exceeding 2,316 m (7,600 feet).

Black has mapped the "Treasure Mountain" fault as having an arcuate trend on the Huldra Silver property with a severe flexure southward occurring immediately east of the 1983 drill area (Figures 4, 5, 7). A narrow dyke intersected in D.D.H. #8, (1983), may confirm that the controlling fault zone suddenly changes strike in this area, but overburden masks other possibilities such as a shallower dip, etc. On Treasure Mountain, the horizontal component within faulted sediments, mostly arkose and argillite, is reportedly as much as several hundred feet (relatively) to the left (Black, 1952). Faulting with greater offsets, particularly vertical, is present to the north where the quantity of intrusives (dykes, etc.) is markedly greater, suggesting pre-fault proximity to the intrusive source.

(3) Alteration

Wallrock alteration, although present, is not a readily noticeable feature on Treasure Mountain in locales far removed from the dyke. Pyritization is common but generally best developed in the conglomerate member. Carbonatization and chloritization are evident near dyke contacts but less well developed near simple vein structures. Silicification appears unimportant. Surface oxidation is limited.

(4) Mineralogy

The ore minerals, historically, include sphalerite, galena, pyrite, arsenopyrite, tetrahedrite, stibnite, and pyrrhotite. Mineralogical examinations done in conjunction with an earlier report (McDougall, 1983) show that zinkenite - a lead-antimony sulphide not previously reported, is present in important amounts. Bournonite - a lead-copper-antimony sulphide, is also identified. Magnetite has been reported in drill logs and was observed by Vulimiri (1986) along with hematite near dyke contacts.

Earlier examinations suggested that most of the silver was present in the form of the silver sulphide 'argentite', largely disseminated (exsolved) in the galena. However, ratio discrepancies existed which suggested that galena was not the only important silver-bearing mineral. Work on the 1983 core showed that native silver, although rare, is present within galena. A considerable amount of the silver was confirmed as occurring in the zinkenite, which resembles galena and/or sphalerite when the two are well intermixed. Silver within tetrahedrite is also suspected as is minor argentite. It appears that the silver-bearing minerals were deposited late in the mineralizing sequence.

Cadmium is present roughly proportional to the zinc content but no specific cadmium mineral has been identified although greenockite is suspected. A minor barium content is present (Figure 9) as is a minute mercury content. Gold is detectable in small amounts, i.e. to 0.008 oz. in the "C" zone, but up to 0.14 oz. in the "C" zone (dyke) extension.

The gangue consists of quartz, the 'comb' variety on occasion, and carbonates, reportedly of two generations. Manganese is present in unusually large amounts ranging to 18.5% on weathered surfaces, and 0.2% to 6.4% in fresh material. As no primary manganese mineral has been recognized, it probably originates as manganeseiferous siderite, a common gangue often related to silver-rich deposits.

Metal zoning has not been well documented on the property, possibly since numerous discrepancies exist. However, the western (lower elevation) section has always been described as being "more zincy" than the remainder. Using production data plus limited ore sampling and drill core assays, particularly lacking toward the western extremity, the following trends are suggested:

- 1) Silver to lead (oz. to %) ratios, on average, appear to increase from west to east (also lower to higher elevations) ranging from 1.35:1 to 6:1.
- 2) The silver to zinc ratio varies widely from 1.28:1 to 15.5:1. Vulimiri (1986) suggests dyke proximity to be an important control with a higher silver ratio away from the dyke.

- 3) The zinc to lead ratio changes little at about 2.0:1.
- 4) The silver to antimony ratio is about 47.0:1, but the plot appears linear.

Vulimiri (pers. comm.) suggests, with recent additional sample data available from slightly lower elevations, that vertical zoning is not evident. It appears more sampling is required at lower levels to substantiate the presence or absence of vertical zoning as in the writer's opinion more than a small and relatively insignificant dyke is required to account for the increased silver content to the east.

PROPERTY DESCRIPTIONS

(a) General

The mineral occurrences on Treasure Mountain are classified as veins filling tension zone fractures or (collectively) as lodes controlled by the Treasure Mountain or subsidiary faults. The lodes consist of up to several sulphide-rich stringers or veins, together with vein material concentrated in pockets and disseminated in the walls. Very little gangue is present and the limits of mineralization are determined by assaying since the partially altered wallrock is mineralized to varying degrees. The veins branch, split or coalesce, and vary in width, although no distinctive plunge or rake is recognized as yet. Early workers felt that the more competent arkose allowed better vein formation when cut by the fault than did the argillite. Black felt there was little economic difference overall. Vulimiri uses the term "argillaceous arkose" more than he does either individually. 1983 drilling suggested that the veins, which occupied both sides of the dyke so consistently in the mine workings to the west, split away from the dyke forming two distinct hangingwall veins. As described by Black, the veins for the most part are less than 2 feet wide although some 10 foot (conjugate?) widths were mined. They consist generally of a central massive section with veinlets and disseminated mineralization distributed outwards. One vein within the lode in the old mine (dyke) area had been followed continuously for approximately 116 m horizontal along a total explored zone of about 350 m. Most veins had been followed shorter distances of 15 m or less. The most continuous lode noted prior to 1985 (in the

mine area) was about 244 m long. Trenching in 1985 and 1986 revealed that the "C" zone "extension" was essentially continuous for at least 300 m (980 feet) commencing from a point 30 m east of the face (projected to surface) of #1 adit (Figs. 4, 7). A 250 m length of continuous and substantial vein was sampled along this zone. Individual vein widths seldom exceed 0.6 m along this extension but conjugate systems sampled across widths of up to 1.3 m (4.2 feet) appear 'ore grade'. Drilling along this zone to date has produced insufficient data to allow absolute correlation with the exposed (Dyke zone) underground veins, however.

Vulimiri (1986) suggests some of the mineralization is stratabound within argillaceous arkoses but most is fracture or shear controlled with concentrations at the intersections of conjugate shears (N 20° E) and the dominant fault (N 60° E). Vulimiri also recognizes another type of mineralization as being due to contact metasomatism at the dyke contacts and suggests a post mineral dyke causing remobilization of minerals contained in the argillaceous arkose or impure argillite.

Only about 1/3 of the defined fault zone occurring on Huldra Silver property has been physically explored.

(b) Specific Occurrences

From west to east on or adjacent to the Huldra property the occurrences described below appear along the one Treasure Mountain lode as presently defined. All occur along the Treasure Mountain fault and are more fully described in the referenced literature. These include:

(1) Eureka Zone

Huldra owns the Eureka Fraction, Record #379 (Figure 2), the Eureka C.G. Lot 1210 and the Whynot Fraction, Record #377, which lie west and east respectively of the original Eureka property from which production has occurred. The Why Not Fraction to the east contains nearly 305 m (1,000 feet) of the important Treasure Mountain fault structure. The Eureka Fraction west of the Eureka lies north of the structure and appears to include unrelated prospects near Sutter Creek. The Eureka deposit, a lode composed of very small veins, produced 873 ounces of silver

from 43 tons shipped. It occurs along the fault where an unusually large dioritic sill is contained within Dewdney Creek rocks. The feldspar porphyry dyke, which adheres so closely to the fault elsewhere, is also present, and the small veins mined reportedly occurred in intrusive rock as well as in the more common argillites, volcanics and conglomerates. A paralleling fault zone in argillites 15 m (50 feet) to the south of the Eureka is also mineralized.

The importance of the Eureka deposit to the Huldra property is the evidence that silver mineralization can occur within granitic rocks, which are also present elsewhere on Treasure Mountain and possibly at depth below the mineralized zones. The fault zone on the Whynot Fraction, which contains part of the displaced diorite sill, appears not to have been seriously tested.

(2) #3 Level Deposits

The lode system in the #3 cross-cut and drift level consists of narrow, sphalerite-rich veins which parallel the porphyry dyke along or in the hangingwall side of the fault in a zone 6 m (20 feet) wide at this point. Arkose and argillite are the host rocks cut by the fault. The best mineralization occurs in the footwall (northern) zone where it has been followed for about 115 m (380) feet and raised on for 88 m (290 feet). Three samples taken by Black of this 1 foot vein plus 1 foot of mineralized wallrock traced by the raise assayed (arithmetic average) 3.2 oz. silver, 0.8% lead, and 22.4% zinc. The width of the lode approaches 5 feet on occasion, but pinches at the extremities of the drift and the raise. Black notes that higher grade mineralization occurs between argillite walls rather than argillite-arkose walls, although within arkose itself (believed to be more common in the mined but currently inaccessible #2 level) vein formation (volumetrically?) may be better developed.

(3) #2 Level Deposits

As documented by numerous workers, the #2 level, which produced practically all the millfeed, contained two lodes - the "hangingwall" which was followed for 30 m (100 feet) and the "footwall" which was followed for 244 m (800 feet). Raises reached vertical heights of about 53 m (175 feet). Production is recorded as "about 4,000" tons, returning 39,558 oz. of silver, 379,532 pounds of lead, and 102,079 pounds of zinc.

Vein widths ranged between 8 inches and 6 feet and mining widths averaged about 4 feet.

The drifts and stopes are only partially accessible and geological confirmation as to the most favorable host rock has not been attempted by recent workers.

(4) #1 Level Deposits

The pre-1986 exploratory work at this level consisted of drifting in the hangingwall lode (1 to 3 paralleling or branching veins) for a total distance of ± 53 m (174 feet) before being abandoned in favor of deeper development. Sampling across an average width of 2.13' had returned an assay average of 9.3 oz. silver, 4.0% lead, 8.2% zinc. The level, inaccessible due to caving at the portal, was re-opened in 1986. Through a zone length of about 50 m, sections of the more northerly veins, were panel sampled over a length of 43 m averaging 21.2 oz/ton Ag, 6.4% Pb and 11% Zn, across an average width of 0.48 m (Fig 8). The 7 m not sampled represent a centrally located but stoped area from which 30 tons averaging 96 oz/ton was reportedly extracted.

(5) Upper Shaft Level

A shallow -64° shaft was put in near the highest and most easterly elevation on the present "C" vein system, but records are skimpy. As plotted on Figure 7, the shaft, now water filled, is reported to be 40 feet deep and to have "followed a fissure" downward. Projection shows the reported vein to be 200 feet north of the main lode system and it thus appears to be a footwall vein unrelated to the "C" Zone, - partly suggested by 1983 drilling.

(6) "C" Vein Area (formerly Bill #4 Drill Area)

The area constitutes the extension eastward (and uphill) of the Treasure Mountain mineralized zone beyond the limits of the Why Not No. 3 Reverted Crown Grant (see Figure 2). The section of immediate interest occurs as a slight east-west hilltop depression just below and southeast of the summit of Treasure Mountain. The depression coincides in most part with the eastward continuation of the Treasure Mountain Fault. Outcrop prior to stripping was limited to a few exposures of a porphyry dyke, but shallow trenching in the past (now sloughed) had exposed minor mineralization toward the west end of the area. The upper shaft workings are included within it.

Based on geological and geophysical data, the area was test drilled in both 1983 and 1986 (Figure 7). Small but occasionally high grade veins were intersected further south than expected, suggesting deviation from the general mine trend in this area. Stripping in 1985 and 1986 led to the definition of the "C" vein, currently the prime deposit within the Huldra holdings.

"C" vein is defined as the current 250 m long vein, or composite vein, first evident on surface about 30 m east of the face of the #1 adit and terminating against the feldspar porphyry dyke near the east end of the 1986 trenching program (Figures 4, 5, 7). On surface, the vein which is on the hangingwall of the dyke structure, averages .68 m (2.2 ft) in width and assays (240 samples) 64.0 oz/ton silver, 11% lead and 2% zinc plus a low antimony content. The vein dips southerly at approximately 70°. Easterly continuity beyond the dyke has not been established although continuing composite shears show at least some structural continuity in

this direction. It is suggested that the main vein may deviate southerly paralleling the porphyry dyke. Although there is no evidence of this near the first 50 m of deflected dyke, a recent gold-bearing discovery in a much sheared area at lower elevation nearly 800 m to the southeast (Figure 4) suggests possible re-appearance along this unexplored trend. Relatively shallow drilling to depths of about 150 feet, at least half of which was 'off section', confirms the continuity of the "C" zone vertically but drilling density plus recovery in certain critical areas is insufficient to allow direct correlation with wider composite vein shoots(?) exposed on surface (McDougall, 1983). It is these wider shoots, developed by paralleling or conjugate veins or vein systems, which have justified underground mining in the past. The "C" vein has been well stripped on surface in an area of moderate topography and seems to have good potential for the development of several thousand tons of shipping ore recoverable from surface (Beaton, 1987).

(7) Lower Gold Prospect

A few but elevated spot geochemical soil samples suggested the desirability of some testing in an overburdened area 800 m downhill and southeast of the current easterly termination(?) of the "C" vein (Figure 4). During late 1986, a hoe walked the 800 m(+) distance northeasterly uphill from the local access road and uncovered a shear zone adjacent to the projection of the main Treasure Mountain dyke in this direction. A grab sample of an apparent shear zone assayed 0.14 oz. gold, 9 oz. silver. As strong shearing was exposed in the area, and the projected zone appears to occur along the nose of a small but apparent anticlinal structure, further trenching is required along strike uphill toward the probably-related "C" zone.

(8) Troll Lake Vein

A geophysical anomaly tested by trenching for a possibly eastern continuation of the "C" zone near Troll Lake, about 175 m northeast of the "C" vein termination against the porphyry dyke (Figure 4), resulted in the detection of a narrow silver shear zone returning 100 oz. silver assays across a few inches of width. The zone, under relatively heavy overburden, appears to trend northerly and may have some relation to an untested geophysical anomaly northeast of its present trend.

GEOPHYSICAL AND GEOCHEMICAL SURVEYS

There are no records of systematic geochemical or geophysical surveys having been performed on the Huldra Silver property prior to 1979, but some rock sampling was done by Black during his 1952 geological survey.

(a) Geophysical Surveys

In 1980, Presunka Geophysics (Presunka, 1980) performed an EM16 (electromagnetic) and magnetic survey of a grid approximately 800 metres square on the John and Heidi mineral claims located near the Tulameen road in the southeast portion of the claim group. Magnetics (relief of about 800 gammas) covered only part of the grid and was not correlated with the EM16 results. The EM16 electromagnetic survey - employing very low frequency (VLF) transmissions - outlined a well defined E-W conductive "crossover" zone through the center of the grid. The direction and magnitude corresponded with that of the paralleling Treasure Mountain fault, which, if continuous to the east, would be 1,000 metres to the north. In addition, several shorter north to northeast trending crossovers were obtained, one of which suggested a fold with a nose trending southeast. This was test drilled, revealing one small vein associated with graphitic gouge, a grab sample of which assayed 1.21 oz. silver, 2.86% lead, and 0.47% zinc. In addition, a quartz-graphite schist was encountered containing several percent zinc but only 0.3 oz. silver. A second drill hole about 150 m to the southwest intersected a slightly graphitic zone and was abandoned in a porphyrite dyke. Assuming that the east-west anomaly was a 'Treasure Mountain type' fault structure dipping to the south, it was concluded the drilling could not have intersected it.

In 1981, electromagnetic surveying was continued in the eastern projected area of the main vein system (Bill #4 MC) where a grid 800 metres long east-west and 400 - 500 metres long north-south had been established for soil sampling control in 1979. The EM survey indicated a weak (secondary) conductor commencing in the vicinity of the upper (#1) portal and trending east-northeasterly, increasing in strength between lines 1 + 50 metres west and 0 + 50 metres east where it corresponded with an east-west depression believed to be the surface trace of the Treasure Mountain fault. Two paralleling anomalies were also established, crossing

the grid approximately 175 and 210 metres to the northwest and north respectively of the depression. An arcuate crossover trend was also established between line 100 E and 400 E in the northeastern portion of the grid, and a weaker (secondary), southeasterly trending one was established to the southeast, also between lines 100 E and 500 E.

Diamond drilling tested the depression area anomalies in 1983 when 6 of 8 drill holes along an east-west extent of approximately 125 metres intersected southerly dipping veins similar in tenor to those described in the underground workings to the west. The highest grade intersection was 126.6 oz. silver over 0.18 m and the widest intersection 6.99 oz. over 1.5 m. The veins were closely associated with crushed and sheared argillite and arkose zones within the Treasure Mountain fault zone which the electromagnetic survey apparently reacted to. The crossover zone did not continue, at least on the same trend, beyond line 100 E, but the possibility remains that the northeast anomaly may be a faulted continuation, or that the weak southeasterly trending anomaly may indicate a less responsive continuation of the controlling Treasure Mountain fault structure which is mapped on minimal evidence as changing direction more sharply to the south in this area. Presunka (1983-86) carried out short but minimally recorded VLF surveys at intervals since the 1983 drilling, some of which were tested by trenching with occasional success.

(b) Geochemical Survey

A soil sample grid was established by Bratlien (1979) over the suspected eastern extension of the main mineral zone (i.e. the hilltop "depression" area referred to above under 'Geophysics'. The overall Huldra property is still contained within this chain and compass survey). 130 samples were collected from the B horizon through an irregular shaped area about 1,000 m long E-W and 600 m N-S, felt important because of the occasional outcrop of the "indicator" porphyry dyke associated with the mineral zone elsewhere. With values exceeding 2 ppm silver, 22 ppm lead, and 130 ppm zinc considered anomalous, three target areas were indicated, one of which paralleled the trend of the suspected dyke-fault zone. When correlated with later geophysical anomalies, target areas were presented for the 1983 drill program. Without more coverage and a resultant increase in data points, however, no obvious trend appeared present within other anomalies

recorded, including a few highs over what is now referred to as the "Lower Gold Prospect". "Spot highs" present may have been due to erratic manganese concentrations in the soil.

Geochemical investigation programs have been scarce since 1979, but will be accelerated as exploration continues.

ASSAYS AND RESERVES

Detailed "C" and "Dyke" zone sampling and resultant assays are plotted on Figures 5, 7 and 8 respectively. As reported by Vulimiri (1986), 220 channel samples taken in 1986 plus 20 taken in 1985 along 250 m of "C" vein averaged 64 oz/ton silver, 11.1% lead and 2.0% zinc across a true width of 0.68 m (2.2 ft). 'Cutting' was not advisable as a smooth value curve rather than disconnected spot highs were generally involved in the areas of most interest. Metallic minerals and oxide appear to have made up 30% of the sample, and wallrock or gangue the remainder.

The 1985 assaying was performed by Chemex Labs Ltd. of Vancouver and the 1986 assaying was performed by Min-Ex Laboratories Ltd., also of Vancouver. As sections of the same zone were assayed in both years and numerous additional samples have been assayed at various laboratories, a good sampling and assay check has been provided with no major discrepancies apparent.

Assays of a 21 sample "C" vein composite required for smelter assessment are shown in Figure 9. Of interest, besides the usual gold, silver, lead and zinc analysis, is that for mercury, arsenic, copper, cadmium, antimony, barium and manganese as well as that for the rock and gangue constituents.

Geological reserves estimated by Livgard (1979) as occurring between levels and adjacent to known unmined veins in the old mine ("Dyke") area totalled 100,000 tons grading 5 oz. silver, 4% lead and 5% zinc. No. 1 adit sampling carried out in 1986 of a 43 m length of vein system averaged 21.2 oz. silver across an average width of 0.48 m (Figure 8). This confirms in part the grade estimated by Livgard who allowed for 4 foot mining widths. With inclusion and projection of the "C" vein to depths of 305 m (1,000 ft), geological reserves approximating 200,000 tons are perceivable.

FIG 9
Assays - C Vein
MIN-EN LABORATORIES LTD.
Specialists in Mineral Environments
 705 West 15th Street North Vancouver, B.C. Canada V7M 1T2

PHONE: (604) 980-5814 OR (604) 988-4524

TELEX: VIA USA 7601067 UC

Certificate of ASSAY

Company: HULDRA SILVER INC.
 Project:
 Attention: M. BRATTIER

File: 6-746R
 Date: DEC 18/86
 Type: ROCK ASSAY

We hereby certify the following results for samples submitted.

Sample Number	AG G/TONNE	AG OZ/TON	AU G/TONNE	AU OZ/TON	HG PFB	AS %
COMPOSITE	6200.0	180.83	0.27	0.008	1030	0.24

Sample Number	CU %	PB %	ZN %	CD %	SB %
COMPOSITE	0.510	34.10	4.25	0.050	2.98

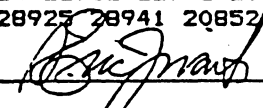
SAMPLE NUMBER COMPOSITE

AL2O3	%	3.64
BA	%	.018
CAD	%	.07
FE2O3	%	10.51
K2O	%	.86

MGO	%	.39
MNO2	%	9.05
NA2O	%	.06
P2O5	%	.10
SI02	%	23.28

SR	%	.01
S	%	5.90
LOI	%	.50

COMPOSITE BY VOLUME: 13352 13367 13380 22712 22724 22732 22742 20955 20973
 20983 20991 20999 28906 28911 28912 28916 28920 28925 28941 20852 20860

Certified by 

MIN-EN LABORATORIES LTD.

Drilling required to substantiate this reserve in the Dyke zone is non-existent and very limited in the "C" zone, however.

CONCLUSIONS

The Treasure Mountain silver property of Huldra Silver Inc. contains important silver-lead-zinc reserves. A portion of these can probably be mined from surface at a profit even at today's depressed silver prices and would constitute a profitable underground reserve given a moderate increase in silver prices or the discovery of moderately wider 'ore' shoots. Access has been improved considerably by recent nearby highway construction.

The controlling fault structure is unusually strong and persistent and the recent discovery of an increased silver content in the "C" zone extension area has increased the value of the property substantially. Several additional targets, including a gold prospect, remain to be tested, and certainly others may be found. However, the vein system is complex and detailed work will be required to advance geological reserves into the proven category.

RECOMMENDATIONS

It is recommended that surface targets still untested be investigated by geophysical and geochemical surveys followed by trenching and drilling. Exploratory drilling is also required to prove up mineable underground reserves in the Dyke and "C" vein areas. A test shipment (target 1000 tons) should be made of surface exposed, weakly oxidized ore in the "C" zone area which appears readily strippable to depths of 10-20 metres. As reported by mining consultant A. Beaton, P.Eng. (1987), initial mining of the higher grade section to a depth of about 5 metres should generate about \$550,000 profit. It is estimated that an additional 1,000 tons is similarly available to depths of ± 10 m, which could be considered for a second stage if Stage 1 estimates prove correct. Vertical persistence of the zone is predictable based on earlier wide spaced drilling, but the location of profitable ore shoots at depths it is not possible without some underground work and very detailed drill hole investigation. This may be accomplished most efficiently from underground as allowed for in Stage 2. A proper control survey should be

carried out before much more surface or underground investigation is done, including a perimeter claim survey by qualified personnel.

A two stage program is recommended, the first of which will be exploratory in nature, but will involve test shipments from the surface defined "C" zone. The second stage will involve more definitive testing of remaining reserves in the defined old mine (Dyke) area, deeper test drilling of the "C" zone, and exploratory drilling of new targets positively indicated in Stage 1. The most efficient approach may be from underground and such a program is recommended. If feasible, following Stage 1 shipments, additional shipments are allowed for in Stage 2. A prefeasibility study involved with possible underground mining would be in order at this stage also.

COST ESTIMATES

A two stage program is presented, the first of which will involve surface exploration and trenching of additional target areas described, and include up to a 1,000 ton test shipment of "C" Zone mineralization exposed on surface, as proposed by A. Beaton, P.Eng. (1987) and Vulimiri (1986). With cut off in the order of 40 oz. Ag/ton, selective mining of the deposit is calculated to generate in excess of \$500,000 profit. Legal and infill surveying will be conducted. Stage 2 will involve drill testing of any targets outlined by surface exploration in the first stage, including those adjacent to the Dyke (old mine) area. Underground access is allowed for in the cost recommendations. It will also allow for further shipments, possibly involving simple 'jig' type sorting equipment, of surface ore (1,000 tons+?) if desirable following Stage 1 shipments. Exploratory "(a)" and shipment "(b)" projects will be conducted simultaneously to reduce costs. Pre-feasibility and initial environmental studies relative to possible underground mining will be included and expanded on in a later stage when experience gained in earlier stages can be utilized.

STAGE 1

(a) Exploratory

Trenching (exploratory) 50 hours at \$70/hr (contract - all incl.)	\$ 3,500.00
Personnel (includes some geotechnical surveys) Geologist - 10 days at \$250/day	2,500.00
Assistant - 10 days at \$150/day	1,500.00
Assays 100 at \$10	1,000.00
Transportation Mobilization	500.00
Property (4x4) 10 x 70	700.00
Accommodation 20 man days at \$50/day	1,000.00
Field Expenses	500.00
Surveying (contract)	2,000.00
Office Overhead, Reports, Supervision	<u>2,000.00</u>
Sub-total	\$15,200.00
Contingency	<u>1,200.00</u>
Total "a"	<u>\$16,400.00</u>

(b) Test Shipment (after Beaton, 1987 in Appendix)

Capitalization		
Pre-mining administration		\$10,000.00
Mobilization of personnel and materials		3,000.00
Capital work on road		13,900.00
Camp set-up costs		<u>17,000.00</u>
Total Pre-Mining Cost		\$43,900.00
Actual Mining Costs (per day)		
Equipment costs over six weeks	per day	\$ 1,955.00
Labour costs	per day	888.00
Engineering - geology - assaying	per day	200.00
Cook - supplies	per day	340.00
Head office	per day	<u>300.00</u>
	per day	<u>\$ 3,683.00</u>

Estimated Daily Production	30 ton
Mining Cost Per Ton	<u>\$ 122.77</u>
Trucking costs to Trail	per ton \$ 67.00
Mining Cost	per ton \$ 122.77
Pre-Mining (\$43,900 per 1,000 tons)	<u>\$ 43.90</u>
Total Cost Per Ton	\$ 233.67
For 1,000 tons	\$233,670.00
Total Stage 1	\$250,000.00

STAGE 2

(Dependent on positive Stage 1 results)

(a) Exploratory

Mine rehabilitation	\$ 50,000.00
Underground drifting 150 m at \$1000/m	150,000.00
Drilling surface and/or underground contract (all incl.) 1500 m at \$100/m	150,000.00
Personnel Geologist - 80 days at \$250 Assistant - 80 days at \$150	20,000.00 12,000.00
Assays Camp and supplies, 3 months at \$5,000	15,000.00
Transportation Mobilization Vehicles (2), \$2,500/month x 3	1,500.00 <u>7,500.00</u>
Contingency	<u>408,500.00</u> <u>41,500.00</u>
	\$450,000.00

(b) Additional Shipment (after Beaton, 1987 in Appendix)

1,000 tons - \$233,600/ton (as "b", Stage 1)	<u>\$233,670.00</u>
Total Stage 2 "a" and "b"	\$683,670.00
or	<u>\$684,000.00</u>
TOTAL STAGES 1 AND 2	\$934,000.00

A third stage will be required to establish feasibility of underground mining if Stages 1 and 2 establish positive indications.

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A REVIEW REPORT
ON THE FEASIBILITY OF OPEN PIT MINING
ON THE SILVER-LEAD-ZINC "C" VEIN
AT
TREASURE MOUNTAIN
IN THE HOPE-PRINCETON AREA, BRITISH COLUMBIA
FOR
HULDRA SILVER INC.
BY
A.J. BEATON, B.Sc. MINING, P.ENG.

Vancouver, B.C.
January 29, 1987

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SUMMARY

A review of the open pit mining and custom shipping of silver-lead-zinc ore from the Treasure Mountain mineral claims located in the Hope-Princeton area of southwestern British Columbia has indicated that a small open pit program in the summer months over one or several seasons would be highly profitable.

- 1) Ore reserves immediately available and proved up for surface mining are 3000 tons.

- 2) The shipment grade would be
 - 128 ounces of Silver
 - 22 percent of Lead
 - 4 percent of Zinc

- 3) Initial capital cost \$43,000
 - Actual Mining Cost \$122.77/ton
 - Trucking cost from mine to Cominco Smelter in Trail \$ 67.00/ton
 - Smelter charges \$180.00/ton
 - Cost per ton based on mining 1000 tons only \$413.67/ton

- 4) Revenue based on a silver price of \$5.60 U.S. with an exchange rate of 1.35 would be \$7.56 Canadian.
 - 128 Ag x \$7.56 = \$967.68
 - (No revenue taken for lead and zinc)
 - Profit per ton would be \$554.01/ton
 - Profit on 1000 tons would be \$554,010
 - Profit on 3000 tons would be approximately \$1,500,000

INTRODUCTION

The Treasure Mountain property, consisting of 41 contiguous mineral claims presently held by Huldra Silver Inc., is located west of Princeton in the Similkameen Mining Division. Access to the property is by 40 kilometres of gravel road from the Coquihalla Highway. The property was first discovered in 1895 and was prospected and explored intermittently ever since. Three adits were driven on the east end of the property and there were milling operations from 1930 to 1932 and in 1950.

In 1985 Huldra Silver Inc., which was founded in 1980, discovered a significant new zone east of the original workings which was called the "C" vein. This "C" vein contains high grade silver-lead-zinc values and varies in thickness from several inches to several feet.

The vein, although outcropping to surface, was blind due to a light covering of overburden. The vein is steeply dipping to the south-east and is amenable to underground mining. It is open to depth and to the west. The "C" vein can be explored and developed from underground by extending the existing three portals on the west side to the east.

In 1986 250 metres or 850 feet of the "C" vein was uncovered by extensive trenching and sampled at one metre intervals. The average grade of the vein over the full strike length was 64 oz./ton silver, 11.1% lead, and 2% zinc over .68 metres. By selectively mining only .23 metres or nine inches of the vein thickness which contains the massive sulfides, the grade would be 180 ozs. of silver per ton.

The present report, prepared at the request of Magnus Bratlien, President of Huldra Silver Inc., is for the purpose of evaluating and costing out the feasibility of surface mining the top portions of the "C" vein. Because of the low capital costs of this approach the scope of mining would be flexible, but this report is based on mining and shipping 1000 tons of ore in 1987. Because of the known ore reserves presently available and the factor of additional exploration planned for 1987 the tonnage available for surface mining would be several thousand tons.

The purpose of surface mining would be two fold:

- 1) Exploration
- 2) To generate funds for additional exploration in the form of diamond drilling and underground development.

ACKNOWLEDGEMENTS

The present report is based on the writer's personal review of the detailed geological and assay data, property maps and information provided by Huldra staff and consultants and from the author's own personal experience in carrying out this type of mining.

No field examinations were possible due to winter conditions, but the author is satisfied that the information supplied by Huldra Silver Inc., including detailed photos, is complete and competent.

The author is very familiar with this type of mining and has initiated and carried out similar operations as manager of Erickson Gold Mine from 1979 to 1986. At Erickson over 70,000 tons were mined by this approach.

The author has also reviewed on site successful surface operations in the Yukon, particularly the Keno Hill area where narrow, high grade silver veins have been economically surface mined and custom shipped to a smelter.

GENERAL

Huldra Silver Inc. owns 41 mineral claims on Treasure Mountain, located 90 kilometres by road north of Hope, B.C. These claims cover a significant silver-lead-zinc vein system. The vein system and indications of additional ore cover a wide area and are located at approximately 5000 feet above sea level.

The main vein on the property, called the "C" vein, appears to be an extension of silver veins explored and mined from the turn of the century. The "C" vein was discovered in 1985 and although outcropping to surface, was not discovered previously due to a light covering of overburden.

In 1986 this vein was extensively trenched and sampled and proved up over a strike length of 850 feet. Trenching carried out by a 225 Cat backhoe was relatively simple and straight forward due to the light overburden, approximately two to four feet, and good ground conditions and terrain. The "C" vein has been well mapped and sampled extensively at three foot intervals.

The vein is steeply dipping to the southeast and there are no indications of mud, clay or water which would cause dilution and mining problems for surface work. The vein pinches and swells from several inches to several feet with some cross veins and splits. A portion of the vein containing massive sulfides and the main silver values is readily identifiable and averages nine inches over the strike length. Composite assays of this high grade portion of the vein average 180 ozs. of silver to the ton. The average grade of the vein taken over a 2.2 foot thickness over the full strike length of 850 feet is 64 ozs. of silver per ton, 11.1% lead and 2% zinc.

Access is by a well-maintained 38 kilometre logging road from the Coquihalla Highway 52 kilometres north of Hope (1.5 kilometres past the toll booth). The upper portion of the road will require minor up-grading to allow full access to the mine site by ore trucks. The property is reasonably close to the smelter in Trail and open ore trucks could be utilized to haul directly to the smelter. The property could be mined year round from underground but surface mining would be limited to six months.

Huldra Silver Inc., as part of a long term plan to fully explore and develop the property, has asked for a cost feasibility on carrying out initial mining by surface means and custom shipping the selected ore. The Cominco Smelter will accept custom ore and has indicated there would be no problem handling Treasure Mountain ore by open truck.

Open pit mining would consist of stripping the "C" vein down dip utilizing a backhoe, Cat, airtrack and compressor. High grade ore would be broken and stockpiled on clean, prepared sites. The ore as mined and stockpiled would be extensively sampled prior to shipping by truck to the smelter. The scope of the program is

flexible but initially calls for mining and shipping 1000 tons of ore. The work would be carried out in the summer months probably starting out in late June and could be expanded into late fall.

ORE RESERVES

Due to high smelter fees and trucking costs involved with this type of mining only high grade ore can be mined and shipped. An analysis of the mapping and sampling carried out to date indicates that 75% or 638 feet of the "C" vein exposed could be open pit mined. Additional exploration prior to and while mining could expand this strike length.

The average width of vein material which would be stockpiled for trucking would be nine inches. The cubic factor is taken at five cubic feet per ton for material "in place". There would be a 40% swell factor for broken material.

Mining the vein one foot down dip would be as follows:

$$\text{Tonnage} = \frac{(\text{Strike Length})(\text{Dip Length})(\text{Thickness})}{\text{Cubic Factor}}$$

$$\begin{aligned} \text{Tonnage for one foot} &= \frac{(638 \text{ feet})(1 \text{ foot})(.75 \text{ feet})}{5 \text{ Cubic Feet/ton}} \\ &= 96 \text{ tons} \end{aligned}$$

A reasonable physical limit for surface mining would be 30 feet until ground conditions and the amount of drilling and blasting required are determined by the initial work. This would give an ore reserve available for mining of 2880 tons.

Due to some mining dilution and lower grade material the 180 oz. grade would be cut to 128 ozs. of silver. Lower grade material mined with the high grade would be stockpiled separately.

The initial mining plan would call for mining down to an average of 15 feet over 442 feet of the strike length which would give 1000 tons.

MINING OPERATIONS

Mining operations would call for a small, competent crew working 10 hour days on a six or seven day week. The equipment required would be a 225 backhoe or larger, one D6 Cat and airtrack compressor. The work force would consist of one supervisor, hoe man, Cat operator, one airtrack operator, two labourers and a camp cook.

Initial capital work would consist of upgrading the upper portion of the existing road to allow for haulage truck to drive to the mine site.

This would be limited to 70 hours of hoe time \$100/hour	\$ 7,000
70 hours of Cat time \$70/hour	4,900
Supervision and truck rental	<u>2,000</u>
	\$13,900

CAMP

The existing building on site would be upgraded for a kitchen, office and minor warehouse	\$ 3,500
4 tent frames would be rented or purchased for use as bunkhouses and dry	9,000
A small generator, water pump and water lines would be installed to the camp	3,000
Initial kitchen stock	<u>1,500</u>
	\$17,000

This capital work would be carried out over a two week period. It is estimated that pre-administration work required would be \$10,000

ACTUAL MINING OPERATIONS

The easiest and highest grade portion of the vein would be initially selected. Actual mining would consist of working back from the vein over a stretch of 100 feet. The hoe would be used predominately and drilling and blasting with the airtrack would be minimized. When a strip of vein down to six feet is exposed and cleaned off using compressed air the hoe would be used to peel the material carefully, probably with a bucket with the teeth removed. High grade material left by the hoe would have to be hand-loaded into the bucket or barrels that could be moved later by the hoe.

Several sites along the vein will have to be prepared for stockpiling. It is recommended that mining, stockpiling and sampling be ahead by 200 to 300 tons prior to any trucking. It is estimated that one truck could make 10 trips in a month transporting 180 tons and therefore seven or eight trucks would be required to transport 1000 tons in a three week period. The hoe would be utilized to load trucks to avoid the requirement of a loader.

The rate of mining will depend on ground conditions but a seven man crew should be able to average better than 30 tons per day of stockpiled and loaded material. This would require mining a strike length of 13 feet per day down to 15 feet.

COST OF MINING

EQUIPMENT

The backhoe would be utilized an average of 9 hours per day. Cost, including operator, fuel and travel \$100/hour	\$ 900/day
Cat utilized for 9 hours \$70/hour	630/day
Airtrack, compressor, partially on standby, and powder	300/day
Two pickups on site rentals and fuel	120/day
	<u>\$1,950/day</u>

LABOUR

Supervisor	\$ 200/day
Airtrack operator	200/day
Two labourers \$100/day	200/day
Cook	140/day
	<u>\$ 740/day</u>
Administration, compensation 20%	148/day
	<u>TOTAL \$ 888/day</u>

Cook house and camp supplies	\$ 140/day
Miscellaneous operating supplies	200/day
Engineering, geology & assaying (includes 15 samples to be assayed)	200/day
Overall administration costs would be \$10/ton	300/day

SUMMARY OF COSTS

PRE-MINING COSTS

Pre-administration	\$10,000
Mobilization of people and materials	3,000
Capital work on road	13,900
Capital on camp	17,000
	<u>TOTAL \$43,900</u>

ACTUAL MINING

Equipment cost	\$1,955/day
Labour cost	888/day
Engineering - geology	200/day
Cook house and operating supplies	340/day
Overall head office	300/day
	<u>TOTAL \$3,683/day</u>

TOTALS PER TON

Capitalization and mobilization	\$43,900
Cost per ton on 1000 tons	\$43.90
Operating cost per ton	
3683/day over 30 tons	\$122.77
Total per ton on 1000 tons	\$156.70

TRANSPORTATION

It is estimated that a truck hauling ore from the mine site, including 45 kilometres of gravel road, would require up to 24 hours of travel time to make a turn around from the Cominco Smelter in Trail. The ore haul would be contracted out but for this report an estimate of \$1200/trip is utilized or \$1200/18 tons hauled. The trucking cost would be \$67/ton. Two to four trucks would be loaded per day.

REVENUE

Average grade 128 ozs. of silver/ton.

No revenue has been taken for lead or zinc. The lead grade would be 22.2% and 4% zinc at the above silver grade.

A silver price of \$5.60 US has been used with a conversion factor of 1.35. The price in Canadian dollars per ounce would be \$7.56.

Revenue would be $\$7.56 \times 128 = \967.68

The smelter charges have not been worked out accurately but would be around \$180/ton.

Potential revenue \$967.68 - 180.00 would be \$787.68

Mine operating costs and trucking	233.70	
	Profit	\$553.98
		\$554/ton

No contingency has been utilized since the grade calculations and operating costs have been fairly conservative. The main variable factors will be grade and silver prices and to a lesser extent the smelter penalties and charges.

It would be feasible to expand the mining program from 1000 tons to several thousand tons. By writing the \$43,900 of capital cost off on the first 1000 tons as planned and with the increasing efficiency of the work crew mining depths greater than 30 vein feet could be considered and mining costs should not be significantly higher. There is also the factor of finding additional ore along the strike and elsewhere on the property that could be mined from surface. The Project would be naturally evaluated as it progressed and the company would be able to curtail or expand the program.

The use of bags or barrels has been discounted because the additional cost of the containers and handling would add approximately \$40 per ton to the cost. In fact, Cominco prefers to receive custom ore shipments by truck or rail car. The ore at the Smelter is dumped into a grizzly where oversize over six inches would have to be broken by hand. The grade of the material is determined by automatic sampling which also retains a sample for umpire results. Due to the weight of the ore handled, the truck loads would be quite compact and well below the box level. In any event the loads would be covered by a tarp to prevent dust, contamination and pilfering. The smelter will pay 75% of the contained value of the metal within four weeks, with the remainder to follow.

Material being mined and stockpiled would be sampled and each truck load would be well sampled. It is very important that the stockpiled material be well ahead of trucking to ensure that the actual grade being shipped is known.

The value of the open-pit program is more significant than the actual revenues generated. Open pit mining will help define the grades and conditions that could be anticipated underground. There always is a strong exploration aspect of surface mining on a vein and the ore reserve in the vein system should be actually expanded by this type of work.

CONCLUSION

The feasibility of surface mining and custom shipping is quite economic. Profits of approximately \$500,000 per 1000 tons mined are possible at relatively low capital and risk.

A. J. Beaton

A.J. Beaton, P.Eng.

