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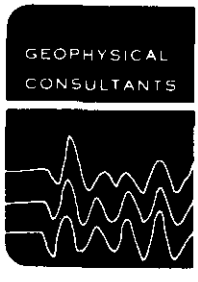
CHANNEL BAR MINING Co. LTD.

SEISMIC REFRACTION INVESTIGATION

PLACER GOLD EXPLORATION

NEW WESTMINSTER MINING DIVISION



R.A. HILLMAN
& ASSOCIATES

MARCH, 1984

GEOPHYSICAL CONSULTANTS

R.A. HILLMAN & ASSOCIATES

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CHANNEL BAR MINING CO. LTD.

REPORT ON
SEISMIC REFRACTION INVESTIGATION
FOR
PLACER GOLD EXPLORATION
PLACER LEASES 719, 720, 8599
NEW WESTMINSTER MINING DIVISION
LATITUDE 49° 28'N, LONGITUDE 121° 26'W
CHOATE, B.C.

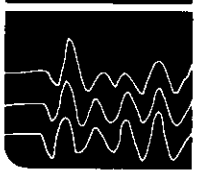
by

RUSSELL A. HILLMAN, P.ENG.

PROJECT 84-02

MARCH, 1984

GEOPHYSICAL CONSULTANTS



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LIST OF FIGURES

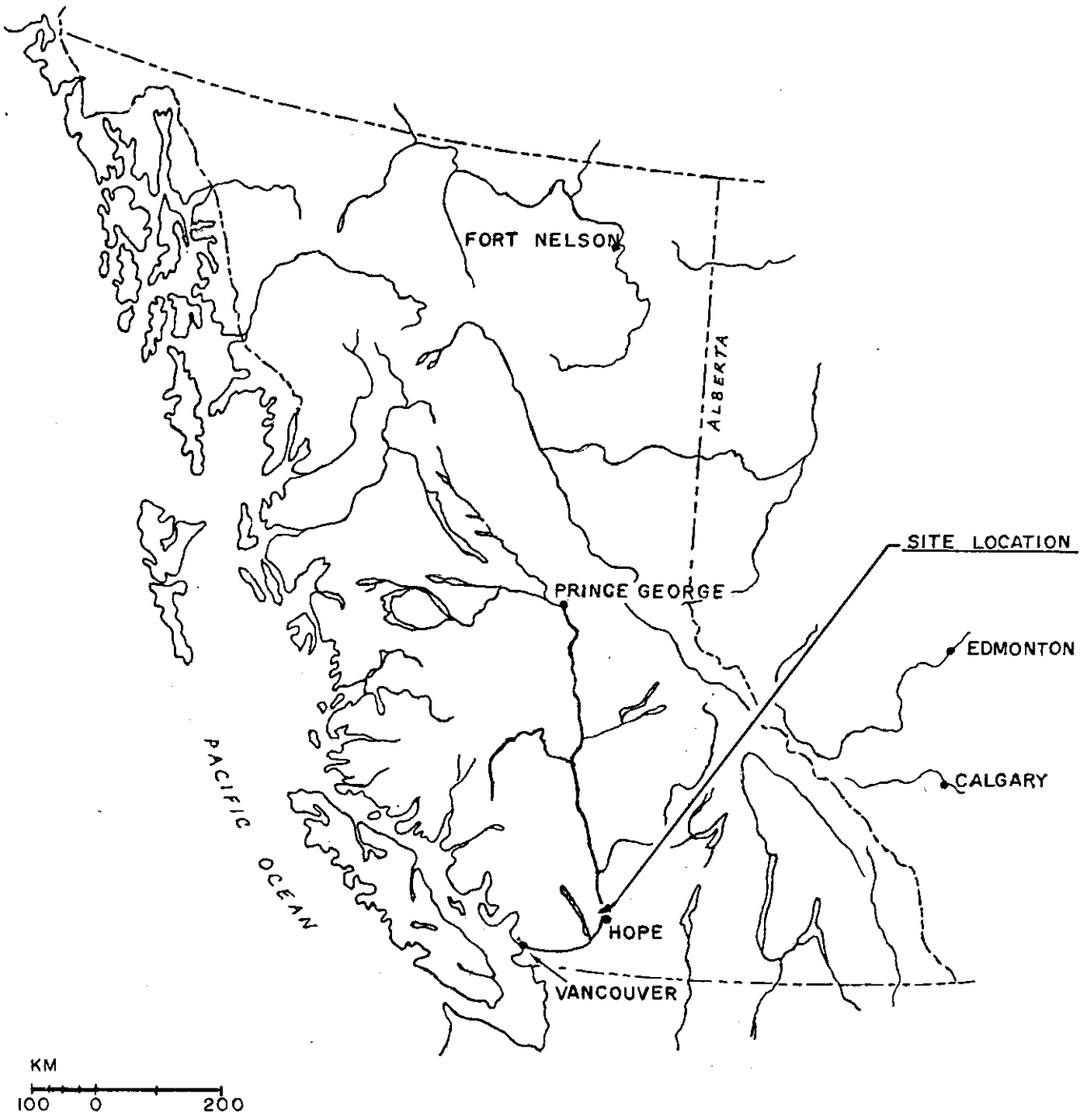
** in map case

1. INTRODUCTION

In the period, March 6 to March 8, 1984, R. A. Hillman & Associates carried out a seismic refraction survey in the New Westminster Mining Division for Channel Bar Mining Co. Ltd. The site, located at N 49° 28' latitude and W 121° 26' longitude and within NTS map sheet 92H/6 Hope, is approximately 13 km. north of Hope B.C. along Trans Canada Highway No. 1. Figure 1 shows the general location of the area. Greater detail is provided in Figure 2 which is a segment of NTS map sheet 92H/6.

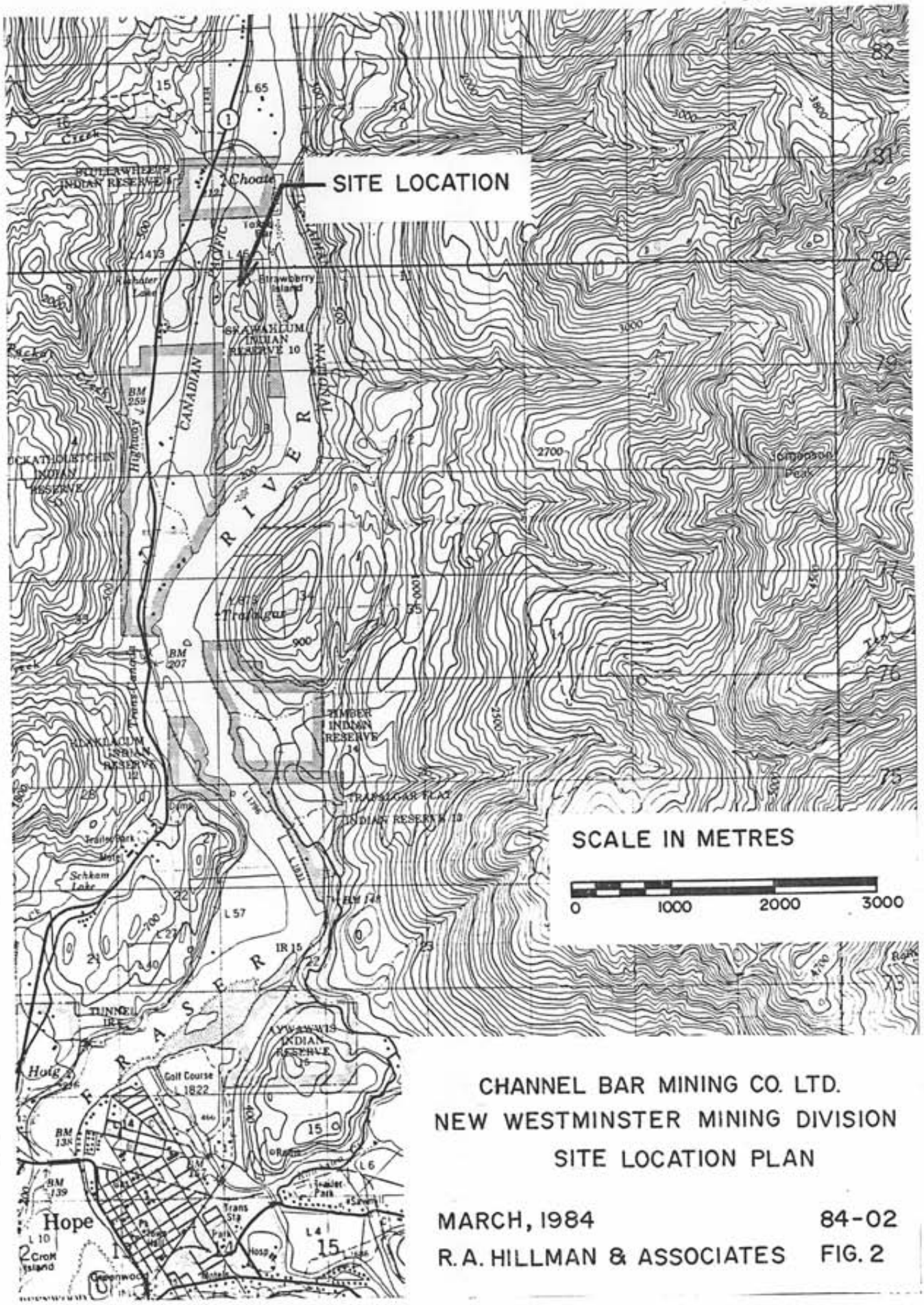
A total of 875 meters of seismic refraction survey work was carried out at the site along three cut lines and an existing power line. The location of the seismic lines together with the extent of placer leases 719, 720 and 8599 is shown in Figure 3, Survey Location Map.

The purpose of the seismic refraction survey was to locate depressions in the bedrock surface which may be indicative of an abandoned erosion channel. It is considered by Channel Bar Mining Co. Ltd. that these depressions may be infilled with gravels containing concentrations of alluvial gold.



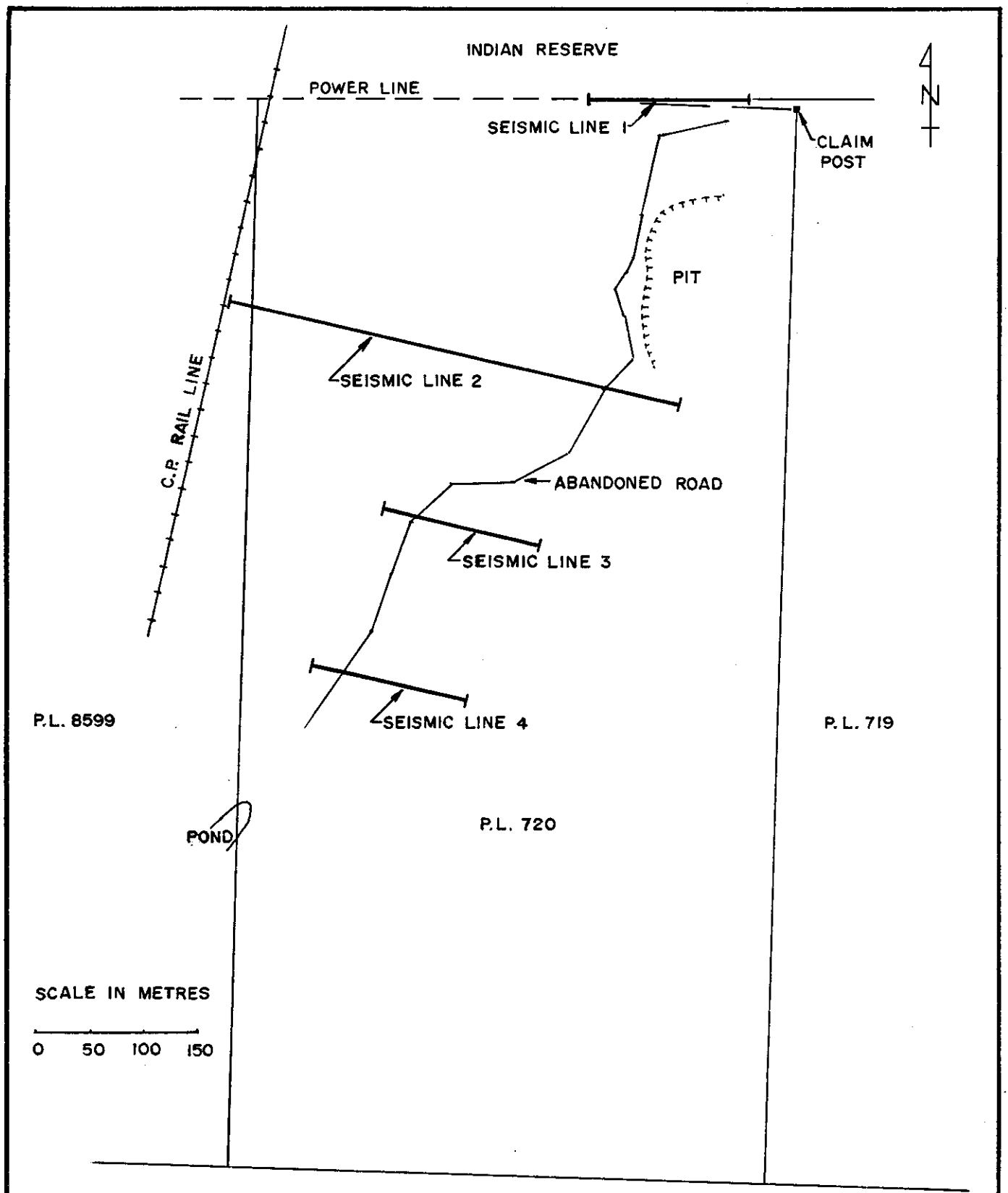
CHANNEL BAR MINING CO. LTD.
NEW WESTMINSTER MINING DIVISION
LOCATION PLAN

MARCH, 1984 84-02
R A HILLMAN & ASSOCIATES FIG. 1



CHANNEL BAR MINING CO. LTD.
NEW WESTMINSTER MINING DIVISION
SITE LOCATION PLAN

MARCH, 1984 84-02
R.A. HILLMAN & ASSOCIATES FIG. 2



CHANNEL BAR MINING CO. LTD
NEW WESTMINSTER MINING DIVISION
SEISMIC REFRACTION SURVEY
SURVEY LOCATION MAP
MARCH, 1984 84-02
R.A. HILLMAN & ASSOCIATES FIG. 3

2. THE SEISMIC REFRACTION SURVEY

2.1 EQUIPMENT

The seismic refraction investigation was carried out utilizing a Nimbus Instruments Model ES-1200, 12 channel, Signal Enhancement Seismograph. Receiver cables used were generally 152 meters in length. Geophone spacings were either 7.6 meters or more generally 15.2 meters. Explosive charges were detonated electrically using a Nimbus Instruments HVB-1 high voltage, capacitor type blaster.

2.2 SURVEY PROCEDURE

For each spread, the seismic cable was stretched out in a straight line and the geophones implanted. Usually five different shot holes were then excavated: one at either end of the line, one at the centre of the line, and one off each end of the line to ensure adequate coverage of the basal layer. Seventy-five percent Forcite was utilized as an energy source in the survey. Shots were detonated individually and arrival times for each geophone were automatically recorded in the seismograph. Hard copy records were made on light sensitive recording film. Data recorded during field surveying operations was generally good to excellent.

Throughout the survey, notes were recorded regarding surface topography and slope changes as they might affect the interpretation of seismic refraction data. Hand-held levelling was carried out along the steeper slope segments of Seismic Line 2. All elevations are based on a 0 elevation level established as the low, low water level on the Fraser River.

3. ANALYSIS

3.1 INTERPRETATION

Interpretation of the data generally indicates a three layer case. In some instances, such as Seismic Line 1 and on a segment of Seismic Line 2, a four layer case was interpreted.

In this investigation, our field procedure enabled a detailed interpretation of the depth to each refractor horizon below individual geophone detectors. The presence of continuous dashed lines on the profiles is our interpretation of the configuration of the refracting layers.

3.2 INTERPRETIVE METHODS

The final interpretation of the seismic data was arrived at through a combination of manual and micro-computer operations. The delay time or time-depth technique was employed in arriving at the final sections. In particular, the ability of the program to determine time-depths and corrected velocity computations greatly facilitated the interpretation of the data.

3.3 LIMITATIONS

The depths to subsurface boundaries derived from seismic refraction surveys are generally accurate to within ten percent of the true depths to the boundaries. In some cases, unusual geological conditions may give rise to false seismic arrivals with the result that computed depths to subsurface refractors may be less accurate.

Just to the east of Texas Creek on Seismic Line 2, some difficulty was encountered in interpreting the distribution and composition of materials overlying the interpreted bedrock surface. The interpreted gravel layer appears to diminish in thickness at this location, however, the configuration of the layers as presented may be erroneous due to the interpretation difficulties encountered.

The geophysical information provided in this report is based upon seismic measurements and field procedures and our interpretation of the data. Geological information is based upon our estimate of subsurface conditions considering the seismic data and all other information available to us. The results are interpretive and are considered to be a reasonably accurate presentation of existing subsurface conditions within the limitations of the seismic refraction method.

4. GEOPHYSICAL RESULTS

4.1 GENERAL

The results of the seismic refraction work are shown at a natural scale of 1:500 in Figures 4, 5, 6 and 7, Seismic Velocity Profiles SL-1, 2, 3 and 4 respectively. The profiles are shown with the observer facing north. The configuration of the basal surface was arrived at by taking the depth computation at each geophone location and scribing an arc with the point of the compass at the ground surface. The final configuration of the basal layer is the envelope of these arcs. The depths to the shallow boundaries were simply plotted below each geophone location.

Seismic Line 1

Seismic Line 1 is characterized by the largest interpreted thicknesses of overburden on the property. The thin surficial zone of 400 m.p.s. is interpreted as loose, dry silt and sand similar to materials encountered in shallow, hand-dug shotholes. The 1070 m.p.s. zone is very uniform averaging approximately 22 m. in thickness and is interpreted as unsaturated, coarse sand, gravels, cobbles and boulders similar to materials excavated in a nearby pit. The base of this layer slopes gently to the east toward the Fraser River and is interpreted as the water table. The 1830 m.p.s. velocity zone is believed to be saturated and similar in composition to the overlying 1070 m.p.s. zone. This layer ranges in thickness from a minimum of approximately 10 m. to a maximum of 38 meters. The underlying 2775 m.p.s. velocity zone is interpreted as

relatively competent bedrock. The ascending bedrock surface on either side of the apparent bedrock channel together with bedrock exposures to the south and east, suggests that Seismic Line 1 may have been positioned over an abandoned Fraser River channel.

Seismic Line 2

Seismic Line 2 is essentially composed of two parts. The largest segment is the western part of the line consisting of three distinct velocity zones. The thin surficial 335 m.p.s. to 460 m.p.s. zone is likely composed of silt and fine sand which was encountered in shallow hand-dug shotholes. The underlying 945 m.p.s. to 1000 m.p.s. velocity zone is fairly uniform in thickness ranging from a minimum of 13 m. to a maximum of 22 m. Based on the similarity in velocities with the 1070 m.p.s. zone on Seismic Line 1, this zone is interpreted as unsaturated, coarse sand, gravel, cobbles and boulders. The basal zone having velocities of 2200 m.p.s. to 2745 m.p.s. is interpreted as bedrock although a velocity of 2200 m.p.s. is low for competent bedrock.

The eastern segment of the line straddles the Texas Creek channel which was dry at the time of our investigation. The velocity distribution is difficult to interpret in the zones overlying the interpreted bedrock surface. The 460 m.p.s. velocity zone is probably composed of silt, sand and gravel which was observed in shallow shotholes. The underlying 1590 m.p.s. to 2225 m.p.s. velocity zone is interpreted as bedrock due to the similarity in velocities encountered on the eastern segment of the line. It was possible to delineate a basal refractor within the

interpreted bedrock which is indicated by the 3995 m.p.s. velocity zone. This velocity zone may indicate the presence of more competent rock at depth or the presence of a different rock type at depth. The 700 m.p.s. surficial velocity layer is believed to be composed in part of either highly weathered rock or colluvium. This layer apparently grades into the interpreted gravel layer to the east. Underlying this layer to the east is an 1160 m.p.s. zone which, based on velocity, is interpreted as unsaturated coarse sand, gravel, cobbles and boulders.

Seismic Line 3

Seismic Line 3 was stretched out between bedrock exposures at either end of the line and is composed of three distinct velocity zones. The thin surficial 380 m.p.s. velocity zone averages approximately 3 m. in thickness and is likely composed of loose, dry silt and sand encountered in shallow shotholes. The surface depression at the eastern end of the line is an existing channel and is underlain by coarse sand and rounded gravels. The underlying 980 m.p.s. velocity zone is interpreted as unsaturated coarse sand, gravel, cobbles and boulders. This zone ranges in thickness from a minimum of 5 m. to a maximum of approximately 27 m. where it apparently occupies a deep depression in the bedrock surface. This depression is centred over a basal velocity zone of 1830 m.p.s. which is low in comparison to the adjacent interpreted bedrock velocity zones, and may be indicative of a shear zone in the rock. Alternatively, this velocity zone may be a steep walled feature in the bedrock surface infilled with saturated sediments.

Seismic Line 4

Seismic Line 4 was located between two bedrock-controlled hills and is characterized by shallow, computed depths to bedrock. The thin surficial 305 m.p.s. velocity layer is likely composed of colluvium or loose talus observed in shallow shotholes. The underlying 915 m.p.s. to 1525 m.p.s. velocity zone ranges in thickness from 2 m. to 8.5 m. and is interpreted as colluvium or highly weathered bedrock. The increase in velocity in this zone toward the west may be due to the presence of water which was observed in shotholes. The 3110 m.p.s. to 3660 m.p.s. basal velocity zone is interpreted as competent bedrock.

5. CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the seismic refraction investigation, the north half of placer lease 720 appears to be underlain by relatively thick accumulations of unsaturated coarse sands, gravels and cobbles averaging approximately 18 m. in thickness. Additional similar materials appear to be present below the water table. Seismic Lines 1 and 3 both appear to be centred on depressions in the bedrock surface. No connection appears to be possible between these features, however, as no similar feature was encountered on Seismic Line 2.

It is recommended that drilling, supervised by a competent geologist, be carried out to confirm the presence of the features interpreted from the seismic refraction survey. The drilling should be conducted in the vicinity of the interpreted depression on Seismic Line 1. Additional seismic work should then be carried out by extending Seismic Line 1 in both directions and placing additional seismic lines in the region between Seismic Lines 1 and 2.

for R. A. HILLMAN & ASSOCIATES

Russell A. Hillman

Russell A. Hillman, P.Eng.
Principal Geophysicist

C E R T I F I C A T I O N

I, Russell A. Hillman, of the Municipality of Garibaldi Highlands in the Province of British Columbia, do hereby certify as follows:

(a) I am a Consulting Geophysicist

(b) I am a Registered Professional Engineer in the Province of British Columbia, Registration No. 13042

(c) I graduated from the University of British Columbia in 1969 with the degree of Bachelor of Science in Geophysics

(d) I have practised my profession for more than 15 years

(e) I have no interest, direct or indirect, in the property discussed in this report, nor within 10 kilometers of the property, nor in the securities of Channel Bar Mining Co. Ltd. or associated companies, nor do I expect to receive any.

Dated at Garibaldi Highlands, B.C. this 29th day of March, 1984

Russell A. Hillman

Russell A. Hillman, P.Eng.

PROFILES

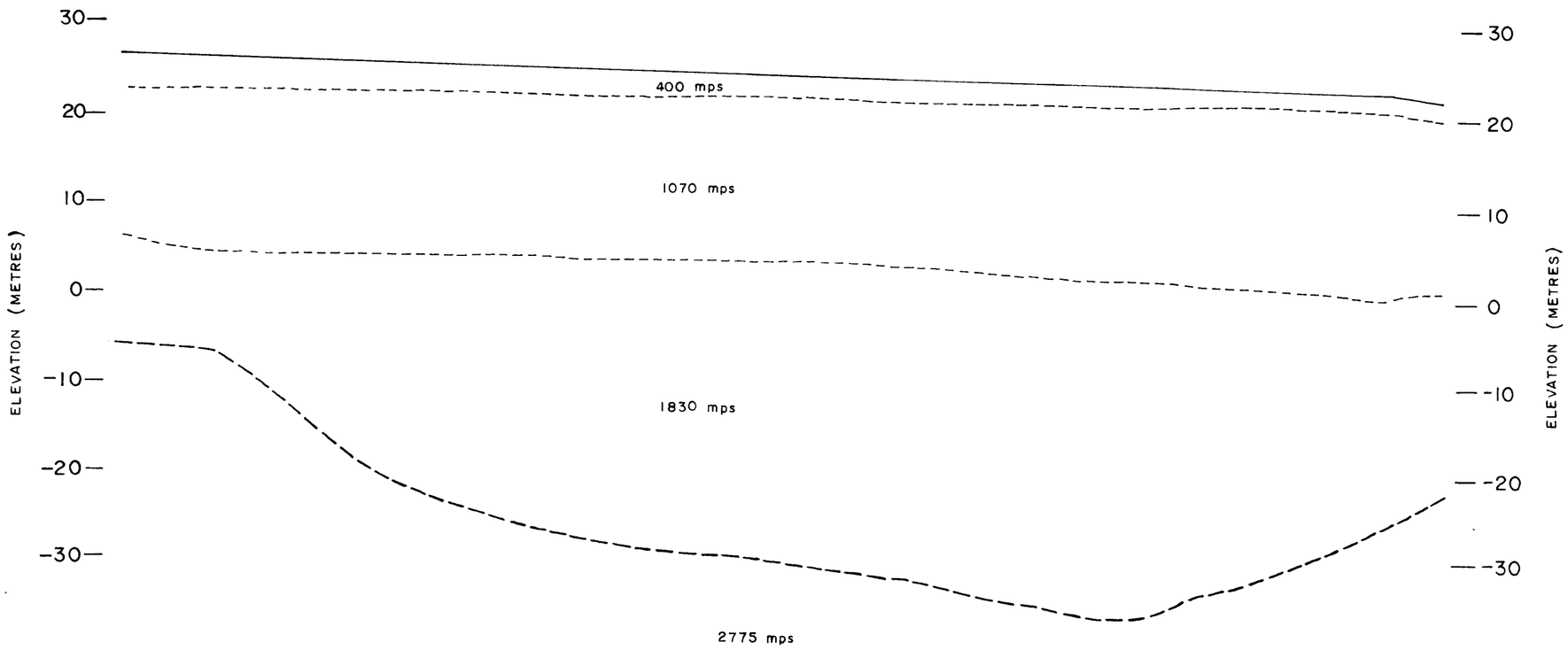
GEOLOGICAL BRANCH
ASSESSMENT REPORT

12,153

2. The following is a detailed statement of such work and of the value thereof:
[Set out full particulars of the work done in the 12 months in which such work is required to be done, include amount of material (gravel, etc.) moved, dimensions of test pits, trenches, or trails, etc.]

	Cost
Principal Geophysicist:	
8.0 days @ 400.00/day	3,200.00
Technician:	157.50
7.0 hours @ 22.50/hr	
Drafting Services	
18 hrs @ 15/hr	270.00
Secretarial Services	
2.0 hrs @ 22.50 hr (See report submitted)	45.00
TOTAL	3,672.50

W E



NOTE: GROUND SURFACE TOPOGRAPHY APPROXIMATE

LEGEND

SEISMIC VELOCITY INTERFACE MOST LIKELY REPRESENTATIVE OF BEDROCK SURFACE

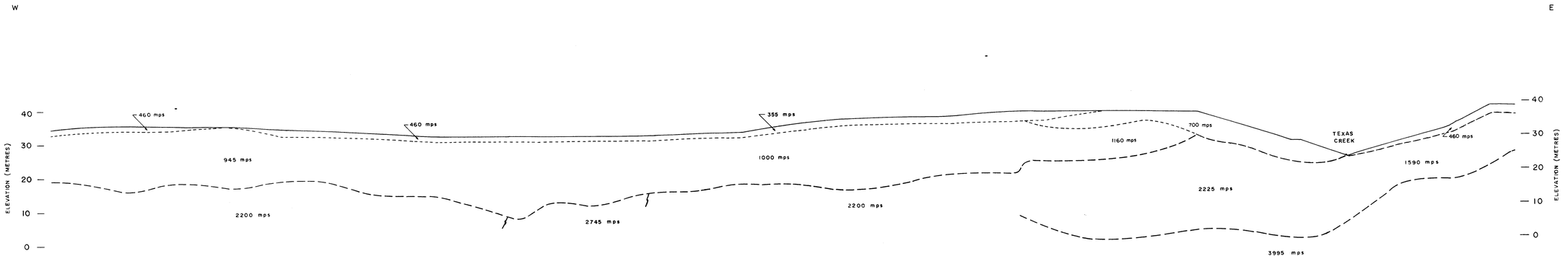
VELOCITY INTERFACE WITHIN OVERBURDEN

SCALE IN METRES

CHANNEL BAR MINING CO. LTD
NEW WESTMINSTER MINING DIVISION
SEISMIC REFRACTION SURVEY
SEISMIC VELOCITY PROFILE
SEISMIC LINE 1

MARCH, 1984
R.A. HILLMAN & ASSOCIATES

84-02
FIG. 4



NOTE: GROUND SURFACE TOPOGRAPHY APPROXIMATE

LEGEND

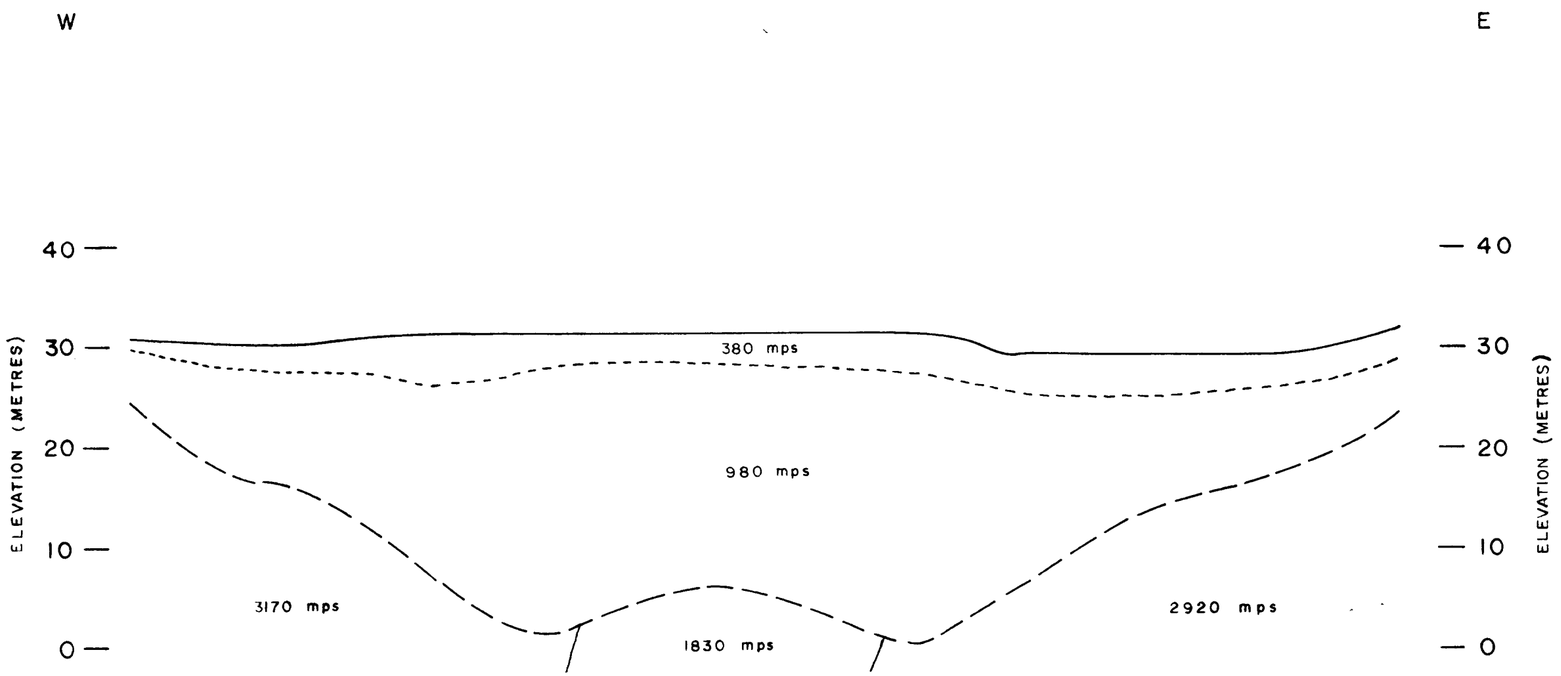
- – – – SEISMIC VELOCITY INTERFACE MOST LIKELY REPRESENTATIVE OF BEDROCK SURFACE
- ------ VELOCITY INTERFACE WITHIN OVERBURDEN

SCALE IN METRES

0 25 50

CHANNEL BAR MINING CO LTD
NEW WESTMINSTER MINING DIVISION
SEISMIC REFRACTION SURVEY
SEISMIC VELOCITY PROFILE
SEISMIC LINE 2

MARCH, 1984 84-02
R.A. HILLMAN & ASSOCIATES FIG. 5



NOTE: GROUND SURFACE TOPOGRAPHY APPROXIMATE

LEGEND

——— SEISMIC VELOCITY INTERFACE MOST LIKELY REPRESENTATIVE OF BEDROCK SURFACE

- - - - VELOCITY INTERFACE WITHIN OVERBURDEN

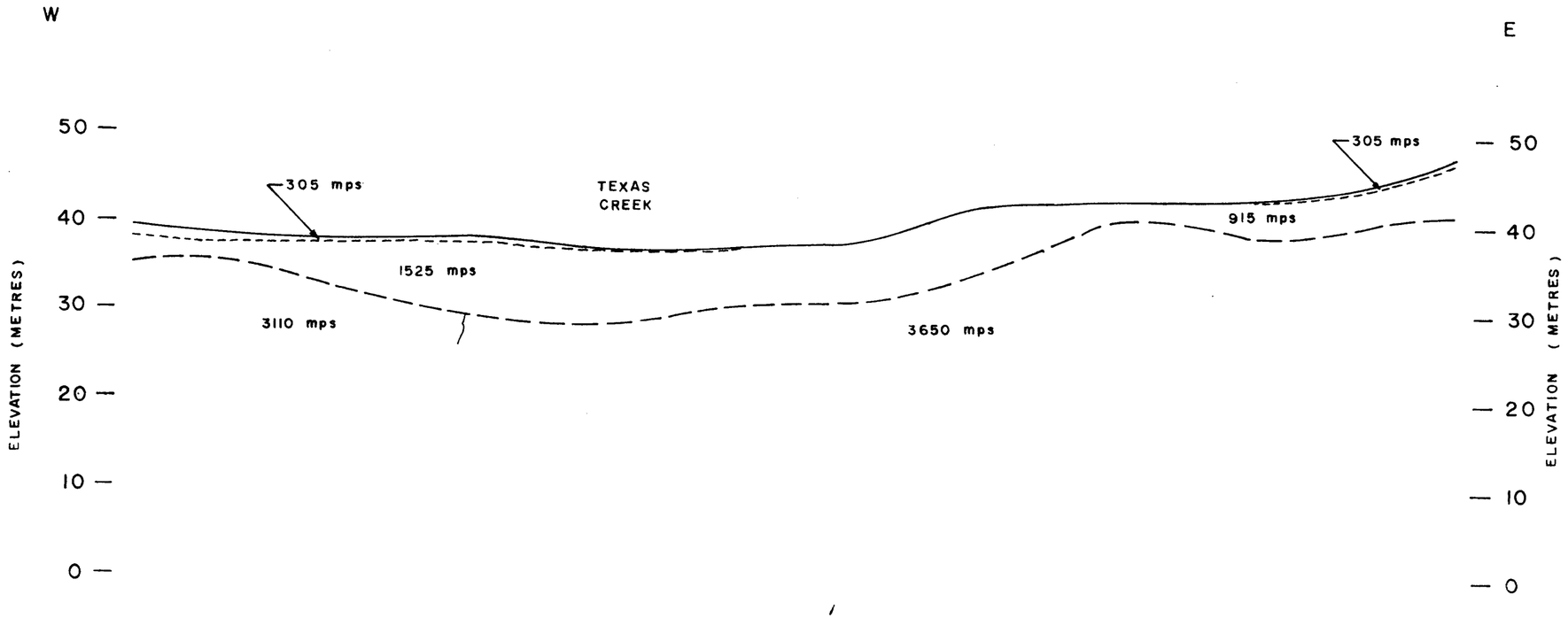
SCALE IN METRES

0 25 50

CHANNEL BAR MINING CO. LTD
NEW WESTMINSTER MINING DIVISION
SEISMIC REFRACTION SURVEY
SEISMIC VELOCITY PROFILE
SEISMIC LINE 3

MARCH, 1984
R. A. HILLMAN & ASSOCIATES

84-02
FIG. 6



NOTE: GROUND SURFACE TOPOGRAPHY APPROXIMATE

LEGEND

SEISMIC VELOCITY INTERFACE MOST LIKELY REPRESENTATIVE OF BEDROCK SURFACE

VELOCITY INTERFACE WITHIN OVERBURDEN

SCALE IN METRES

0 25 50

CHANNEL BAR MINING CO. LTD
NEW WESTMINSTER MINING DIVISION
SEISMIC REFRACTION SURVEY
SEISMIC VELOCITY PROFILE
SEISMIC LINE 4

MARCH, 1984
R.A. HILLMAN & ASSOCIATES

84-02
FIG. 7