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**MOSQUITO CONSOLIDATED GOLDMINES LTD.**

**REPORT ON  
SEISMIC REFRACTION INVESTIGATION  
PLACER GOLD EXPLORATION  
WILLOW PROPERTY  
WILLOW RIVER, WELLS, B.C.**

MINING WELLS BRANCH  
Re: \_\_\_\_\_  
**APR 08 1999**  
L.I.# \_\_\_\_\_  
File \_\_\_\_\_  
VANCOUVER, B.C.

**Willow 1-6 Claim Block  
Latitude: 53° 08' N  
Longitude: 121° 36' W  
NTS 93 H/4 "Wells"**

by

**Russell A. Hillman P. Eng.**  
**GEOLOGICAL SURVEY BRANCH  
ASSESSMENT REPORT**

**25,883**

**PROJECT FGI-444**

**November, 1998**

(i)

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**1. INTRODUCTION**

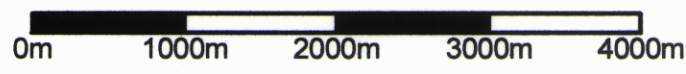
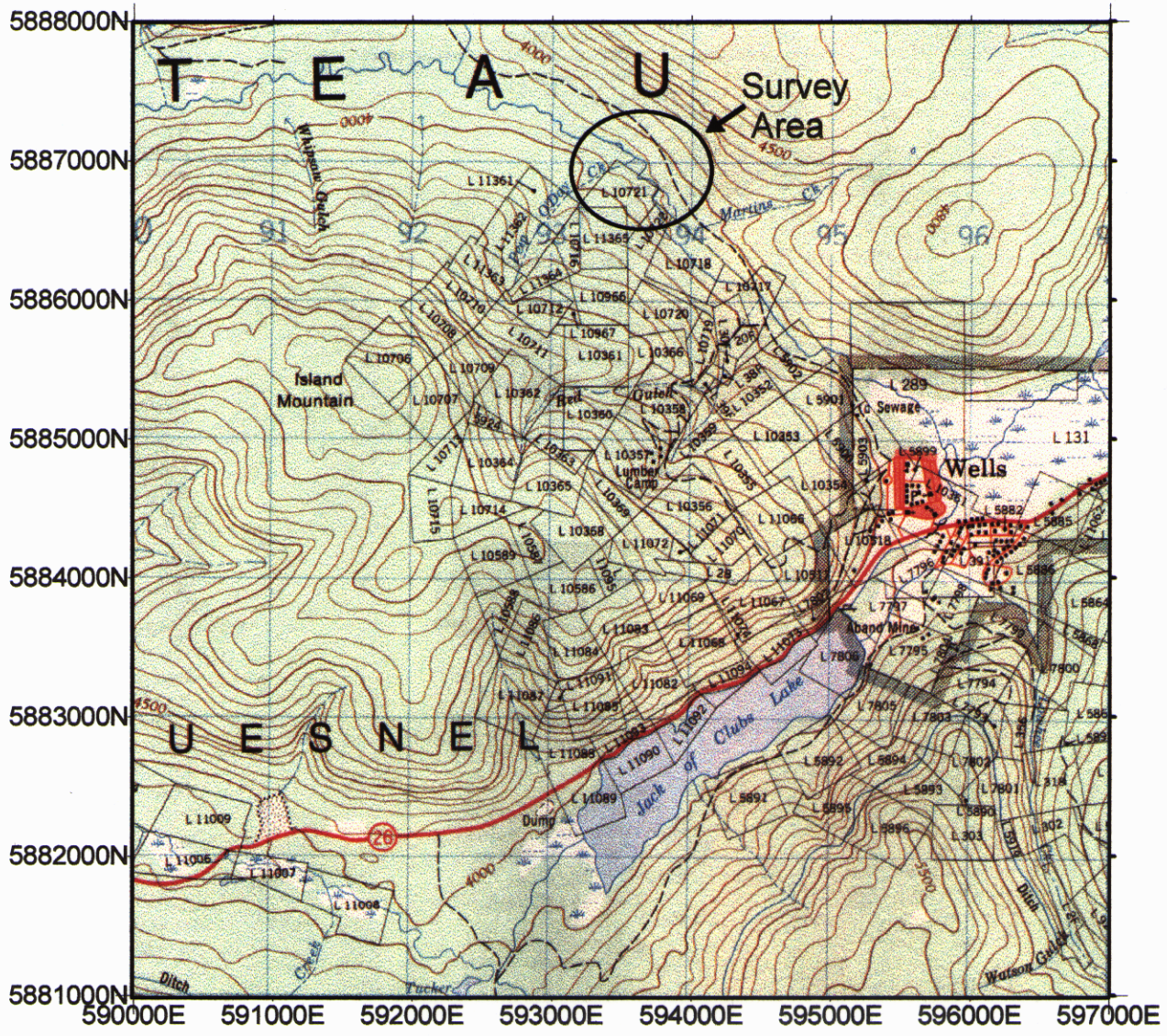
In the period November 23 to November 24, 1998, Frontier Geosciences Inc. carried out a seismic refraction investigation for Mosquito Consolidated GoldMines Ltd. at a prospective placer gold prospect, located approximately 3 kilometres northwest of the town of Wells, in west central, British Columbia. A Survey Location Plan of the area at 1:50,000 scale is shown in Figure 1.

The seismic survey consisted of 450 m of coverage along two separate lines, perpendicular to the present day position of the Willow River. A Site Plan of the line locations at 1:20,000 scale is shown in Figure 2 in the Appendix. The purpose of the seismic survey was to determine the depths to bedrock and the nature and thicknesses of the overburden materials. The specific objective was to profile the bedrock to locate any potential, infilled, placer channels in the bedrock surface.

**2. CLAIMS INFORMATION, LOCATION AND ACCESS**

The Willow Property consists of 6 placer claims and covers about 260 hectares of surface area along the Willow River Valley. The property is located 3 km northwest of Wells and can be accessed along the Hardscrabble Road:

<u>Claim Name</u>	<u>Tenure Number</u>	<u>Anniversary Date</u>
Willow 1	361235	January 21, 2001
Willow 2	361236	January 21, 2001
Willow 3	361237	January 21, 2001
Willow 4	361238	January 21, 2001
Willow 5	361239	January 21, 2001
Willow 6	361240	January 21, 2001



**NOTE:**  
 -This figure is a segment of the NTS map sheet 93 H/4, "Wells".

MOSQUITO CONSOLIDATED GOLDMINES LIMITED WILLOW RIVER ASSESMENT PROJECT		
SEISMIC REFRACTION SURVEY		
SURVEY LOCATION PLAN		
FRONTIER GEOSCIENCES INC.		
DATE: NOVEMBER, 1998	SCALE: 1:50,000	FIG.1

### 3. REGIONAL GEOLOGY

In the Barkerville area, lode gold is hosted by the carbonate and metabasalt bearing sequence of the middle Paleozoic Downey Succession. The Downey is one of the carbonate-rich successions in the Barkerville Terrane. The terrane is dominated by continental shelf and slope clastics, carbonates and volcanoclastic rocks.

Lode gold was mined from the Downey Succession 2 km east of the Willow Property; at Cow Mountain and Island Mountain. About 1.2 million ounces was produced from this mining camp located around Wells. The gold was hosted in 'replacement' pyritic carbonates, and in quartz veins.

Gold mineralization at the Wells camp are controlled by three parameters; 1) Stratigraphic controls - lode gold and related placer deposits are primarily associated with the carbonated and metabasalt sequence of the Downey Succession; 2) Structural controls - auriferous replacement pyrite in carbonate layers are located where thickened along hinge zones, and less frequently along the limbs, of regional and minor folds. The most productive gold-bearing quartz veins are associated with diagonal stress fracture fields that accompany major northerly striking faults; 3) Metamorphic controls - lode gold concentrations are mainly confined to 'cold regime' rocks that exhibit a chlorite grade of metamorphism. Zoning has been recognized in some mineralized areas in the Wells/Barkerville area. The zones are characterized by carbon-depleted rocks that also exhibit bleaching and silicification, and commonly contain up to 2% disseminated medium to coarse-grained pyrite.

Bedrock on the Willow Property is dominated by grey to black phyllite and siltstone of the Hardscrabble Mountain Succession, and less grey and olive coloured sericitic phyllite, and green chloritic phyllite of the Downey Succession. Both successions are major components of the Barkerville Terrain.

#### **4. PROPERTY HISTORY**

There are no records of placer gold production on the Willow Property. About 1.5 km south-east (upstream) from the property, the Willow River Mining Company (1898-1903) identified gold grades exceeding 1 oz per cubic metre in gravels at 30 m depths in the Willow River valley bottom.

Significant placer gold production has been recorded from two local Willow River tributaries. A north flowing tributary located 2 km south-east of the Property, called Mosquito Creek, produced an estimated 200,000 oz of placer gold. Hardscrabble Creek, located immediately west of the Property, produced about 2,000 oz of placer gold. This tributary flows southerly into the Willow River.

## **5. THE SEISMIC REFRACTION SURVEY METHOD**

### **5.1 Equipment**

The seismic refraction investigation was carried out using a Geometrics, Smartseis, S12, 24 channel, signal enhancement seismograph and Mark Products Ltd. 14 Hz geophones. Geophone intervals along the multicored cables were maintained at 5 metres throughout the survey. Energy was provided by small explosive charges buried in hand-excavated shotholes along the seismic lines. The small explosive charges were detonated electrically with a Geometrics, HVB-1, high voltage, capacitor-type blaster.

### **5.2 Survey Procedure**

For each spread, the seismic cables were stretched out in a straight line and the geophones implanted. Seven separate shotholes were then excavated: one at either end of the 24 geophone array, three at intermediate locations along the cables and one off each end of the line to ensure adequate coverage of the basal layer. Eighty percent Extra-gel was utilized as the energy source in the survey. Shots generally consisting of one to four, 1" by 8" sticks of Extra-gel were detonated individually and arrival times for each geophone were automatically recorded in the seismograph (for off end shots, between three and six sticks were used to improve signal). Digital records of the seismic data were recorded on 3.5 inch double density discs. Data recorded during field surveying operations was generally of good to excellent quality.

Throughout the survey, notes were recorded regarding seismic line positions in relation to roads and the river, as well as topographic and geological features of the area. Elevations along the seismic lines were established by chain and inclinometer with absolute contour information provided by the 1:50,000 scale mapsheet NTS 93 H/4 "Wells" topographic map.

## **6. SEISMIC REFRACTION ANALYSIS**

### **6.1 Interpretation**

Interpreted geological conditions of the site indicate generally thick overburden of dense coarse materials or glacial till overlying the interpreted competent bedrock surface. In general, the velocity contrast between refractive layers was more than adequate for interpretation. Interpreted boundaries with distinct velocities are indicated by continuous lines in the sections. The basal line in all cases represents the interpreted competent bedrock surface.

### **6.2 Interpretive Method**

The final interpretation of the seismic data was arrived at using the method of differences technique. This method utilizes the time taken to travel to a geophone from shotpoints located to either side of the geophone. Using the total time, a small vertical time is computed which represents the time taken to travel from the refractor up to the ground surface. This time is then multiplied by the velocity of each overburden layer to obtain the thickness of each layer at that point.

### **6.3 Limitations**

The depths to subsurface boundaries derived from seismic refraction surveys are generally accepted as accurate to within fifteen percent of the true depths to the boundaries. In some cases, unusual geological conditions may produce false or misleading seismic arrivals with the result that computed depths to subsurface refractors may be less accurate. These conditions may be caused by a "hidden layer" situation or by a velocity inversion. The first condition is caused by the inability to detect the existence of layers because of insufficient velocity contrasts or layer thicknesses. A velocity inversion exists when an underlying layer has a lower velocity than the layer directly above it.

The results are interpretive in nature and are considered to be a reasonably accurate presentation of existing subsurface conditions within the limitations of the seismic refraction method.



## 7. GEOPHYSICAL RESULTS

### 7.1 General

The results of the interpretations for seismic lines SL-17 and SL-19 are shown at 1:500 scale in Figures 3 and 4 in the Appendix. Ground surface profiles are approximate and were determined by chain and inclinometer measurements along the seismic lines.


### 7.2 Discussion

The results of the interpretations for seismic lines SL-17 and SL-19 indicate that three distinct velocity layers underlie the site area. The thin surficial layer with a velocity range of 330 m/s to 940 m/s is consistent with surface exposures and shallow shothole intersections of organics and loose, dry sands, gravels and cobbles or weathered glacial till. The average interpreted thickness for this layer is of the order of 2 metres.

Underlying this surficial layer is a thick intermediate layer with a velocity range of 2130 m/s to 2150 m/s. The thickness of this layer varies from 16 metres to 37 metres. These velocities are consistent with dense saturated sands, gravels, cobbles and boulders or dense glacial till. This velocity layer may be composed of dense saturated coarse materials and dense glacial till. If a coarse saturated sand, gravel, cobbles and boulder layer were extant at the base of this layer, it would go undetected as a "hidden" layer.

The basal layer on seismic lines SL-17 and SL-19 with a velocity range of 3182 m/s to 4510 m/s is the interpreted competent bedrock surface. These velocities are representative of competent rock such as the metamorphic phyllite and siltstone evident in outcrops in the area. The interpreted bedrock surface on seismic line SL-19 dips steeply to the north toward the Willow River. The interpreted bedrock surface below seismic line 17 is generally flat lying from 0 N to 200 N, suggesting the ancient Willow River occupied a broad channel in this area.

For: Frontier Geosciences Inc.

*Russell A. Hillman*  
 Russell A. Hillman, P. Eng.  


## 8. STATEMENT OF QUALIFICATIONS

I, Russell A. Hillman, resident of North Vancouver, Province of British Columbia, hereby certify as follows:

- 1) I am a consulting geophysicist with business offices at 237 St. Georges Ave., North Vancouver, B.C., V7L 4T4.
- 2) I graduated with a Bachelor of Science degree in Geophysics, from the University of British Columbia in 1969.
- 3) I have practised my profession as a geophysicist for over 25 years.
- 4) I am a member of the Association of Professional Engineers of British Columbia (P.Eng.)
- 5) I have no direct, indirect, or contingent interest in the shares or business in the property of Mosquito Consolidated GoldMines Ltd. nor do I intend to have any interest.
- 6) I supervised and interpreted the results of a seismic refraction survey carried out on the property of Mosquito Consolidated GoldMines Ltd. near Wells, B.C. in the period of November 23 to November 24, 1998.

Signed *Russell A. Hillman*

Russell A. Hillman, P.Eng.

North Vancouver, B.C., March 22, 1999

## 9. COST BREAKDOWN

Seismic Refraction Survey (November 23 to November 24, 1998):

Geophysicist - 2.5 days @ \$368.00 per day	\$920.00
Technician - 2.5 days @ \$280.00 per day	\$700.00
Senior Geophysicist - 10 hours @ \$70.00 per hour	\$700.00
Secretarial - 2.5 hours @ \$18.00 per hour	\$45.00
Seismic System Rental - 2 days @ \$200.00 per day	\$400.00
Vehicle Expenses	\$360.00
Meals and Accomodation - 3 days @ \$140.00 per day	\$420.00
Explosives - Consummables	\$240.00
Miscellaneous - drawing reproduction, photocopying, etc.	<u>\$15.00</u>
Total	<u>\$3,800.00</u>

Invoice # 1998-006

STATEMENT OF WORK

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Stephen Kocsis, P.Geo.  
Cariboo Mining Services  
301-776 Vaughan Street, Quesnel, B.C., V2J 2T5  
Phone/Fax 1-604-992-9570 GST Acc. No. 129953964

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Work completed for:

Brian McClay, President  
Mosquito Consolidated Gold Mines Ltd.  
301-455 Granville Street, Vancouver, B.C., V6C 1T1  
Tel:604-689-7902, Fax: 604-689-7816

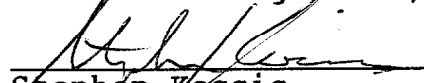
Work Period: November 15 to 25, 1998.

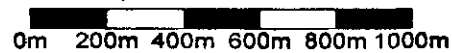
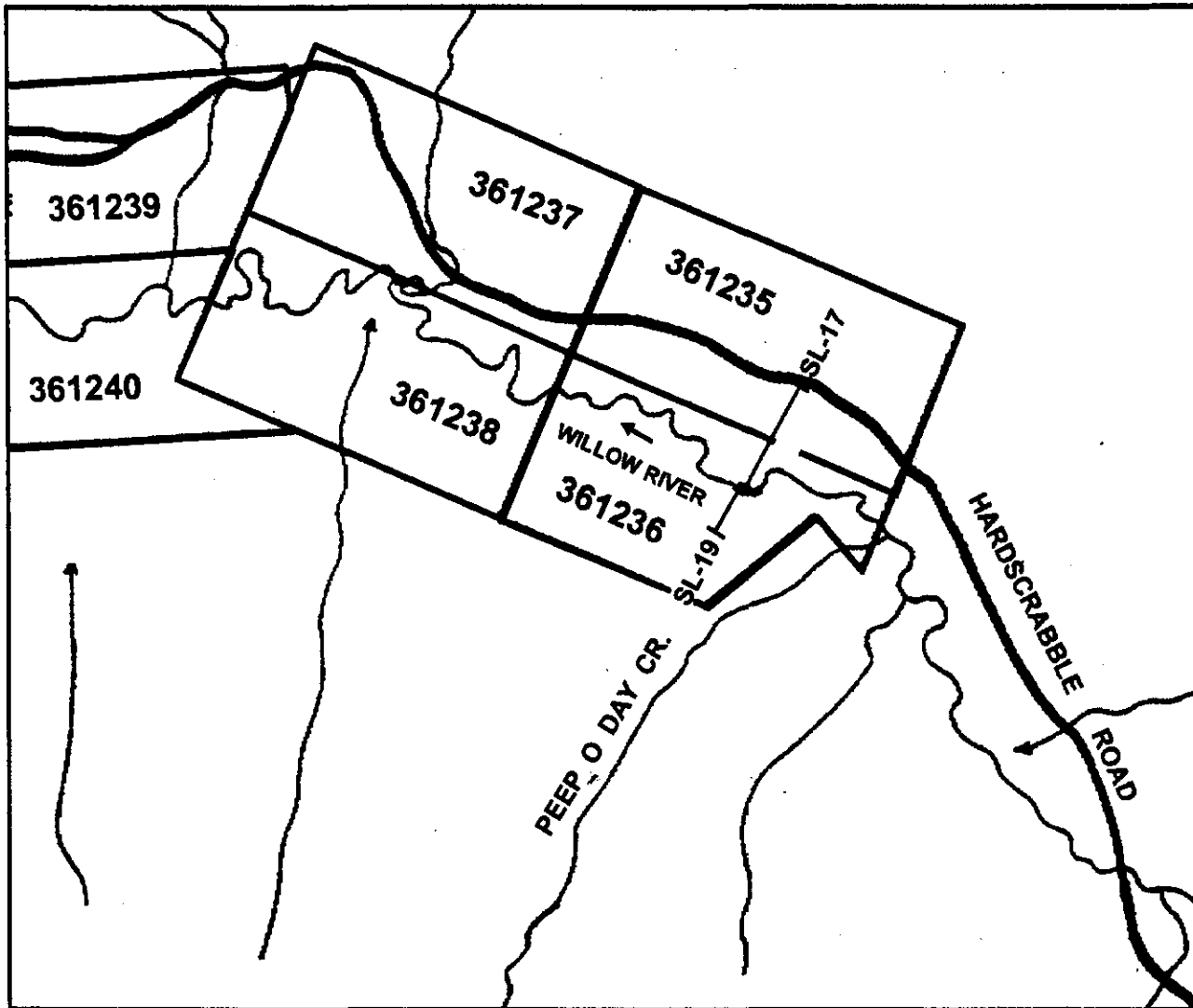
Work Description: Geophysical Consulting - Seismic Survey  
supervisor/assistant - Placer gold exploration in the Cariboo  
District of British Columbia at the Willow River, NTS map 93H4E,  
Placer Claims 361235 - 361240.

<u>Period</u>	<u>Description</u>	<u>Days</u>	<u>Cost</u>
Nov 15	constructing seismic survey lines	1	\$300.00
Nov 21-23	refraction seismic survey	3	\$900.00
Nov 25	elevation survey	1	\$300.00
GST			<u>\$105.00</u>
sub total			\$1,605.00
expenses			
5 days 4X4 pickup truck rental at \$60 per day			\$300.00
5 days snowmobile rental at \$75 per day			\$375.00
5 days accomodations at \$60 per day			<u>\$300.00</u>
sub total			\$975.00
total cost			\$2,580.50

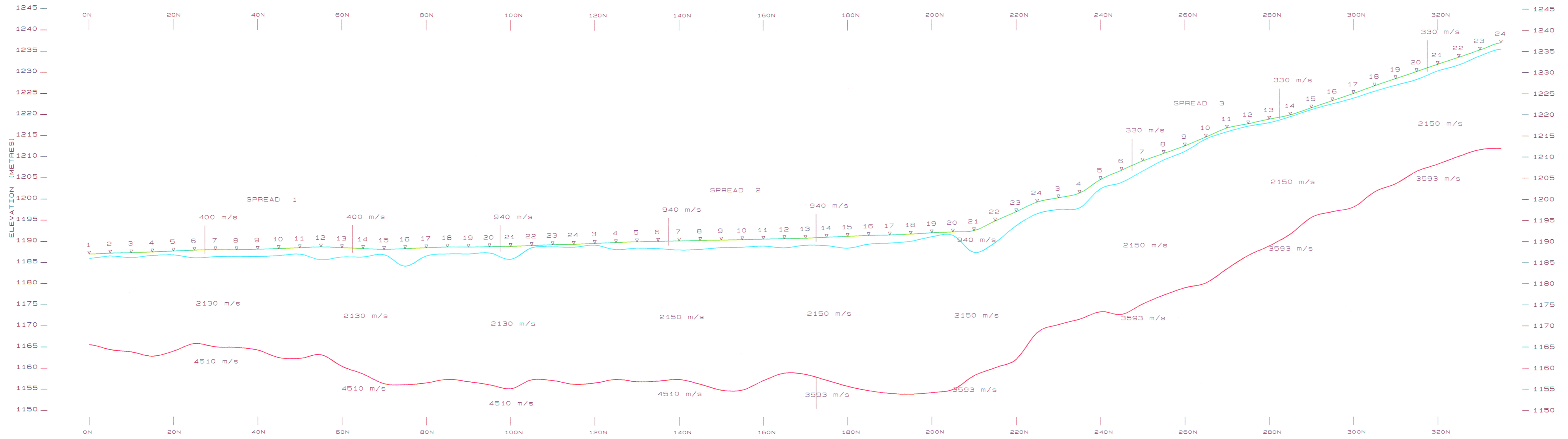
Thankyou for employing Cariboo Mining Services.

Authorized Signature,

  
Stephen Kocsis  
November 30, 1998



MOSQUITO CONSOLIDATED GOLDMINES LTD. WILLOW RIVER PROPERTY - WELLS B.C.		
SEISMIC REFRACTION SURVEY		
SITE PLAN		
FRONTIER GEOSCIENCES INC.		
DATE: NOVEMBER, 1998	SCALE: 1:20,000	FIG. 2



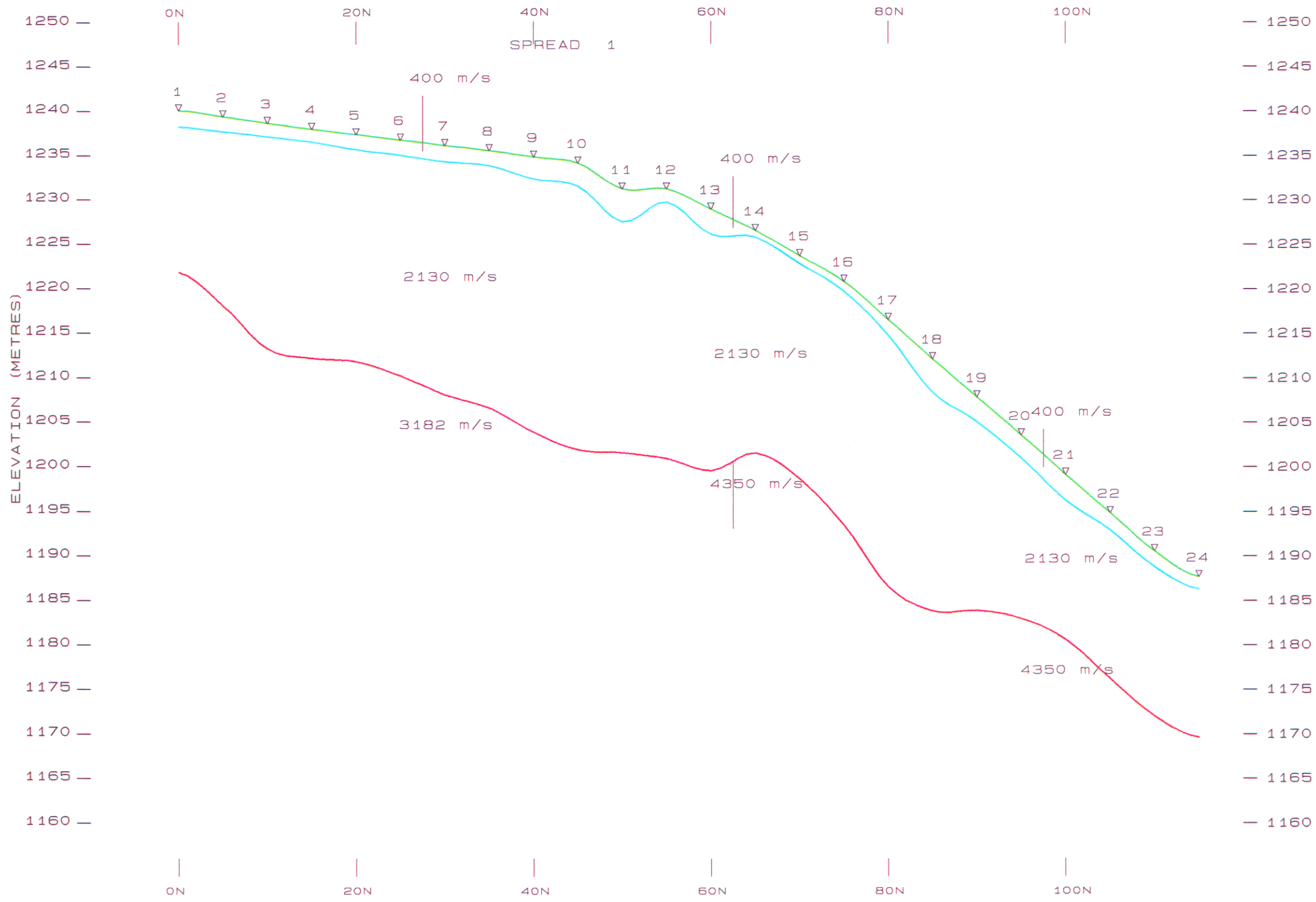
SEISMIC LINE SL-17

NOTES:  
 VERTICAL SCALE 1: 500  
 HORIZONTAL SCALE 1: 500  
 INSTRUMENT: GEOMETRICS S-12

**GEOLOGICAL SURVEY BRANCH**  
**ASSESSMENT REPORT**

**25,883**

MOSQUITO CONSOLIDATED GOLDMINES LIMITED WILLOW RIVER PROPERTY - WELLS B.C.	
SEISMIC REFRACTION SURVEY	
INTERPRETED DEPTH SECTION	
FRONTIER GEOSCIENCES INC.	
DATE: NOVEMBER 1998	Fig. 3



SEISMIC LINE SL-19

NOTES:  
 VERTICAL SCALE 1: 500  
 HORIZONTAL SCALE 1: 500  
 INSTRUMENT: GEOMETRICS S-12

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MOSQUITO CONSOLIDATED GOLDMINES LIMITED WILLOW RIVER PROPERTY - WELLS B.C.		
SEISMIC REFRACTION SURVEY		
INTERPRETED DEPTH SECTION		
FRONTIER GEOSCIENCES INC.		
DATE: NOVEMBER 1998		Fig. 4