

SUMMARY REPORT

on

DUNCAN LAKE MINERALS PROPERTY

Duncan Lake Area

Slocan Mining Division

Latitude: 50°25' Longitude: 117°57'

82K/07W

by

E.A. Lawrence, P.Eng.

GEOLOGICAL SURVEY BRANCH
ASSESSMENT REPORT

WESTBANK, B.C.

9 December 1998

25,865

TABLE OF CONTENTS

INTRODUCTION	1
SUMMARY	3
PROPERTY OWNERSHIP	4
PHYSIOGRAPHY	4
REGIONAL GEOLOGY	6
GEOLOGY OF THE PROPERTY	6
LOCATION AND ACCESS	10
PREVIOUS WORK	10
CURRENT WORK	13
PROCEDURES	13
RESULTS	13
CONCLUSIONS	15
STATEMENT OF COSTS	16
STATEMENT OF QUALIFICATIONS	17
REFERENCES	18

LIST OF FIGURES

<u>FIGURE</u>		<u>PAGE</u>
1.	B.C. Location Map 8.5x11 1"=140 miles	2
2.	Property Location Map 8.5x11 1: 50000	5
3.	Regional Geology 11 x 17 1"= 1 mile	8
4.	Property Geology 11 x 17 1: 10000	9
5.	East Band 11 x 17 1: 2500	14

INTRODUCTION

Summary Report

DUNCAN LAKE MINERALS PROPERTY

Slocan Mining Division

82K/07W

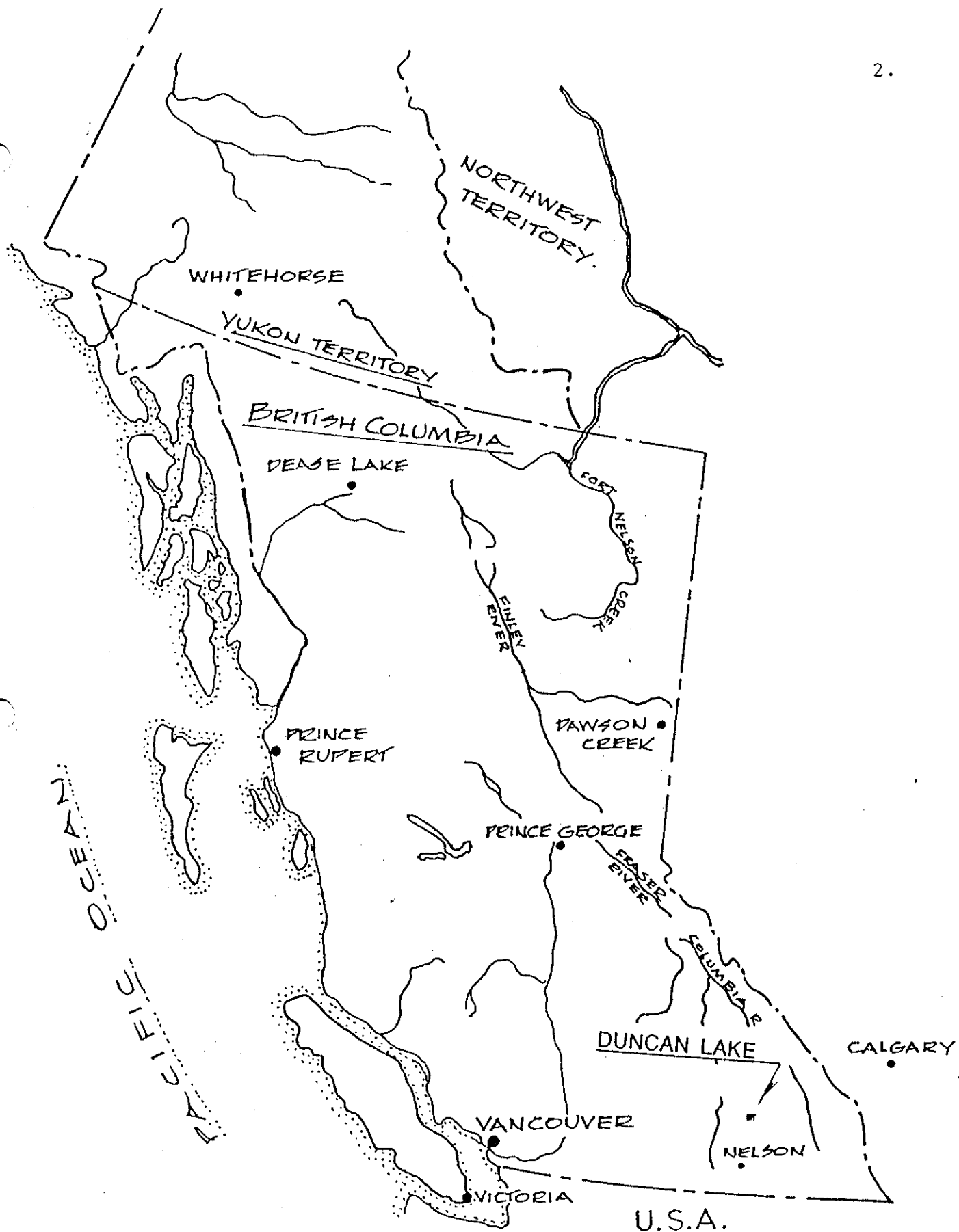
INTRODUCTION

The Duncan Lake Minerals Property consists of a series of nine two-post minerals claims, following a north-westerly trending zone of 'talcose' rocks within schists of the Lower Index Formation of the Hamill group. This talcose zone is composed mainly of a mixture of talc and magnesite, with occasional pods of nearly pure chlorite, and rare pods of pure talc. Petrographic studies indicate that the talc-magnesite component is an altered dunite. (Payne, 1990). This talcose zone averages about 35 meters in width, and has been traced for over 3000 meters.

The industrial mineral potential is the focus of economic interest on this property. Talc and magnesite are possible products. Preliminary metallurgical work on samples running about 63% talc and 34% magnesite, indicated that a talc concentrate and a magnesite concentrate could be produced with basic milling methods. This work also indicated that a by-product consisting of a mixture of talc and magnesite would be produced that might be marketable.

The pods of chlorite noted above have been shown to be suitable for 'soapstone' carving. However, markets are limited for this product.

This report covers the work carried out in 1998. In recent years work has been limited to geological mapping and prospecting of areas of specific interest, with the goal of filling in some of the areas where little information is available. The 1998 work continued with that objective.



LOCATION MAP

SCALE: 1" = 140 MILES APPROX.

100 0 100 200 300 MILES.

figure 1.

SUMMARY REPORT

DUNCAN LAKE MINERALS PROPERTY

Duncan Lake Area

Slocan Mining Division B.C.

SUMMARY

This property consists of nine two-post claims covering near vertical talcose bands trending north-westerly in the Duncan Lake area 120 km north of Nelson B.C. These talcose bands contain mainly talc and magnesite, with occasional pods of pure chlorite. The talc-magnesite component has potential in the industrial mineral market, the chlorite has limited potential in the carving stone market. This talcose zone has been identified in outcrops on the shore of Duncan Lake, in a road cut in a 70m high vertical bluff above the shore, and continuing south-easterly for 3050 m to an outcrop near North Creek. It consists of one main band with a width of 6 to 45 meters, and several narrower, less continuous bands paralleling the main band. In 1994 one of these bands was discovered on the east side of the claims about 1100 meters north of North Creek. This band - the East band - is up to 15 meters wide, and at that time had been traced for 400 meters. Work in 1998 located two sub-parallel bands which appear to be the northern continuation of the above band. These bands are each about five meters wide, and were traced for about 500 meters. Further work is needed to establish the northern extent of this significant discovery.

The industrial mineral potential of the talcose zone is found in the medium-grained mottled grey mixture of talc and magnesite (with minor chromite, magnetite, and pyrite). Talc content varies from 52 to 75%, and magnesite ranges from 21 to 47% in the samples tested. Minor minerals accounted for up to 2% of the total.

Preliminary metallurgical work carried out in 1990 indicated that talc and magnesite concentrates could be produced with elementary milling methods.

PROPERTY OWNERSHIP

The property consists of nine two-post mineral claims known as the 'DLM' group as shown in Figure 2. Current status after 1998 assessment work is as follows:

CLAIM	OWNER	TENURE #	EXPIRY DATE
TED #1	Ed Lawrence	256476	19 May 2002
DLM #1	Ed Lawrence	257064	10 July 2002
DLM #2	Ed Lawrence	257137	25 Oct 2002
DLM #5	Ed Lawrence	306918	08 Dec 2002
DLM #6	Mary Savage	306919	08 Dec 2002
DLM #7A	Mary Savage	364465	16 Jul 2002
DLM #8A	Mary Savage	364466	16 Jul 2002
DLM #9	Mary Savage	306921	08 Dec 2002
DLM #10	Mary Savage	306922	08 Dec 2002

PHYSIOGRAPHY

Duncan Lake is located in the north-south trending Purcell trench. The Purcell Mountains rise steeply to the east, some peaks reach elevations of over 3000 meters. The north end of the DLM claim group terminates at the east shore of Duncan Lake. Following the claims to the south, the physiography is as described: very steep from the shore of Duncan Lake for about 250 meters, then a gently climbing bench for an additional 550 meters. From this point the slope steepens slightly until an elevation of about 1040 meters is reached, at about 2000 meters from the lake. From here the slope reverses, dropping to about 820 meters elevation at the end of the group at North Creek. North Creek is the only stream on the property. Water rights have been secured on this creek.

Vegetation consists mainly of young evergreens. Logging has removed most of the mature timber in the central area of the property.

REGIONAL GEOLOGY

The Duncan Lake area is underlain by complexly folded sedimentary and volcanic rocks of the Hamill group that have undergone a low to medium grade of metamorphism. Rare mafic dykes and amphibolite sills occur in the area. It is believed that the talcose zones on the property are an altered form of one of these dykes. No intrusives have been found in the area near the property. (See Figure 3)

GEOLOGY OF THE PROPERTY

The property is underlain by grey-black mica schists of the Lower Index formation. The central area of these rocks are cut by a north-westerly trending series of near vertical dyke-like structures, parallel to sub-parallel to the formation. These structures are composed of 'talcose' material, a mixture of 52 to 75 % talc and 21 to 47 % magnesite with minor constituents chromite, magnetite and pyrite. Widths vary from five to forty five meters, with the Main band averaging about thirty five meters. The subsidiary parallel bands tend to be narrower, in the range of five to fifteen meters. The Main band appears to be continuous from the shore of Duncan Lake to at least the vicinity of North Creek, a distance of 3050 meters. The parallel bands do not appear to be as continuous, but more detailed geology is needed to confirm this.

A petrographic report prepared by Vancouver Petrographics Ltd. (John G. Payne), in 1990 says that the "Samples are of talc-magnesite schists formed by alteration of dunite. They contain relic chromite grains altered slightly to completely to magnetite, and secondary patches of pyrite." These dunite(peridotite) dykes appear to be located along the eastern limb of the Hauser syncline.

The presently known rock assemblage within the talcose is distributed approximately as follows, in descending order as based on outcrop observation:

- | | | |
|----|-------------------|-----------------|
| 1. | talc-magnesite | over 90 % |
| 2. | serpentine masses | less than 10 % |
| 3. | chlorite pods | less than 1 % |
| 4. | pure talc pods | less than 0.1 % |

As shown by the above table, the talc-magnesite mixture is by far the most prevalent assemblage within the talcose zone. It is this material on which the economic potential of the property depends. Of the two minerals, talc is probably the most important.

As noted earlier, it is believed that the talcose minerals are the result of alteration of peridotite dykes. This interpretation is also supported by the good continuity of the zone, the sharp contacts with the schists, and the occasional crosscutting features.

Recent prospecting and subsequent geologic mapping has confirmed a new talcose band - referred to as the 'East' band - parallel to the east side of the Main band, on the east side of DLM #6. The East band is also vertical, and varies in width from five to fifteen meters. 1998 work has confirmed its continuity for 900m, to the point where it appears to join the 'Main' band, near a previously mapped split in the Main band at 5710N 6340E. More work is needed to resolve the geology of this area. No microscopic work has been done yet on this new band, but it appears similar to the Main band. Black 'soapstone' (chlorite) was found at the south end of the new band, about twenty meters above the logging road. A series of four black 'soapstone' outcrops was also discovered about 125 meters west of the 'East' bands discussed above. See Figures 3 and 4.

Figure 3
GEOLOGICAL MAP
OF THE
DUNCAN LAKE AREA

Geology by James T. Fyles 1960-1963

LEGEND

- — — — — GEOLOGICAL CONTACT
defined, approximate, assumed
- ~~~~~ FAULT
defined, approximate, assumed
- — — — — ATTITUDE OF FOLIATION
prominent foliation planes undifferentiated
inclined, vertical
- — — — — ATTITUDE OF BEDDING
inclined, vertical
- — — — — ATTITUDE OF CLEAVAGE AND SCHISTOSITY
inclined, vertical
- — — — — Plunge of lineations and axes of minor folds
- Y Adit
- X Prospect
- XQ Marble quarry
- — — — — Main road
- — — — — Side road
- — — — — Trail
- — — — — Building

Scale 0 1 2 Miles
Contour interval 500 feet



LEGEND

- Areas of little or no outcrop.
- BROADVIEW FORMATION
6 Green and grey quartzite, greywacke, grit and fine grained mica schist.
- JOWETT FORMATION
5 Fine grained green chlorite schist.
- TRIUNE, AJAX, AND SHARON CREEK FORMATIONS
4 4c- dark grey to black argillite, 4b- massive grey quartzite, 4a- grey and black quartzite.
- INDEX FORMATION
3 Interlayered fine grained green and grey schist, minor limestone and quartzite.
UPPER INDEX: mainly fine grained green schist.
3d- chlorite schist.
3c- green mica schist and garnet mica schist.
LOWER INDEX: mainly fine grained grey schist.
grey and white limestone, brownish quartzite,
3b- minor green and grey schist.
- 3a Fine grained grey mica schist and garnet mica schist.
- BADSHOT AND MOHICAN FORMATIONS
2 2a Grey and white crystalline limestone and dolomite and interlayered limestone and mica schist.
- MARSH ADAMS FORMATION
1 Grey and brown micaceous quartzite, mica schist and white quartzite.
- Amphibolite

LOCATION AND ACCESS

The property is accessible by a good all-weather logging road. This road branches east off Highway 31 immediately south of Cooper Creek bridge, then carries on along the east shore of Duncan Lake. The 'Bluff' area of the property is located at about the 28.5km point on the Duncan Lake main logging road. The 'Central' area and the 'Randy' area are accessed by the North Creek logging road which branches off the main road at about the 26.6km point. The Central area is reached by turning left off the North Creek road at the #3 switchback, and following the north trending road for about 800 meters. The Randy area is reached by following the North Creek road further up the hill and turning left about 200 meters past the #5 switchback. The new East band is found by following the North Creek road past the Randy area road junction, and then turning left at the next junction. Follow this road up the hill, bearing left again at the next junction also. Follow this road until reaching the next junction which consists of a short stub (20 meters) to the left. It is in this area that the East zone was first located.

PREVIOUS WORK

In the 1970's some work was done by Imasco, but unfortunately the data from this work could not be located. (Personal communication with Arnold Rennich, Manager Creston office Imasco).

It wasn't until 1987 that further work was initiated on the property, this being done by RPW Holdings, under the direction of the late Ted Savage of Taghum, B.C. A small tonnage of black soapstone was quarried from the Bluff area, with selected samples being sent to soapstone carvers in the NWT for their evaluation. In early 1988, the author was engaged by Mr. Savage to carry out preliminary geological work. A chain and compass survey was completed to roughly tie in the Bluff showings with those at the Central area. Vertical angles were carried to determine the

approximate elevation differences between these areas. Geologic mapping at a scale of 1:1200 was carried out along the reconnaissance survey line. Detailed mapping at a scale of 1:120 was done on the Bluff area road cuts. Two truck loads of talcose material were taken to Nelson for sorting, cleaning and sampling. Hand trenching on the main band at the Bluff area was also done to expose some pure talc pods.

In 1989 an associate of a consulting firm with experience in industrial minerals examined the property. He recommended that we determine if the deposit contained any serious contaminants that could cause marketing problems. Samples were collected from the Main zone and analyzed with whole rock ICP, 27-element ICP, and for asbestos. A sample of the serpentine pod at the Bluff was also taken. All results were favourable.

The drilling and blasting needed for the sampling provided an opportunity to evaluate the feasibility of using controlled blasting techniques to quarry the soapstone component of the deposit.

A very oxidized 15 inch band of pyrrhotite rich material on the road near survey station X-17 was checked for gold, returning a value of 5ppb.

Black soapstone was quarried at both the Bluff and Randy areas in 1990 and 1991. This activity resulted in a much improved understanding of the shape, continuity, internal variations, and size range possibilities for this product, which in turn was useful in planning future quarrying. In 1990 a transit-chain survey was carried out to tie together the extremities of the property. This was an unclosed survey.

In 1990 a preliminary metallurgical test was run on the talc-magnesite material, confirming that a 95% talc con can be produced with basic milling techniques. Recovery was 59.2%. A by-product grading 67% talc and 32% magnesite was also produced during this testing.

In 1991, testing of soapstone quarrying techniques was carried out with the aim of minimizing fracturing of the product. One method tested was the continuous cable cutting system where a thin cable with many tungsten carbide cutters is used to slot the stone. This method is more suitable for deposits with pods exceeding 3 meters, and was not suitable for this property. The other method tested was the tungsten carbide chain system. This method utilizes a regular chainsaw-type chain equipped with tungsten carbide teeth. The unit tested had a 36 inch bar, but bars up to 72 inches would be practical. The unit tested was a standard heavy duty gas-powered chain saw, but for production purposes a hydraulically powered and hydraulically manipulated unit would be the most efficient method. The chain-saw method was very quick to set up, adaptable to varying pod thicknesses, and had a good cutting speed. The product was virtually undamaged by this process. Also in 1991, a 3082 meter transit-chain survey commencing at the south end of the survey done in 1990, established a closed loop from the Randy area to the Central area. This substantiated earlier plotting of outcrops, physical work, road locations, and claim boundaries.

In 1993 a new 1:5000 base plan was obtained from the BC Forest Service which covered the Duncan Lake area. This plan has a 10m contour interval, and is more accurate and current than earlier plans. Current survey and geologic data was transferred to the new plan. Reconnaissance mapping on the DLM#3 to DLM#7 claims filled in some gaps in previous geological data, confirming the general interpretation for the deposit. Also in 1993, a new occurrence of chlorite was found on DLM#4.

No physical work was done in 1994. Chain and compass surveys were completed to tie in several features. Reconnaissance mapping along a new logging road commencing at 5170N, 6990E resulted in the discovery of the East talcose band. New occurrences of chloritic rock (black soapstone) were also found in this area. All data was plotted on the new base plan.

In 1997 the season's objective was to determine how far south the East band continued. Geologic mapping was carried out in this area for this purpose. The southern limit was extended to 5183N, 7115E. Overburden obscured the projected strike beyond this point.

CURRENT WORK

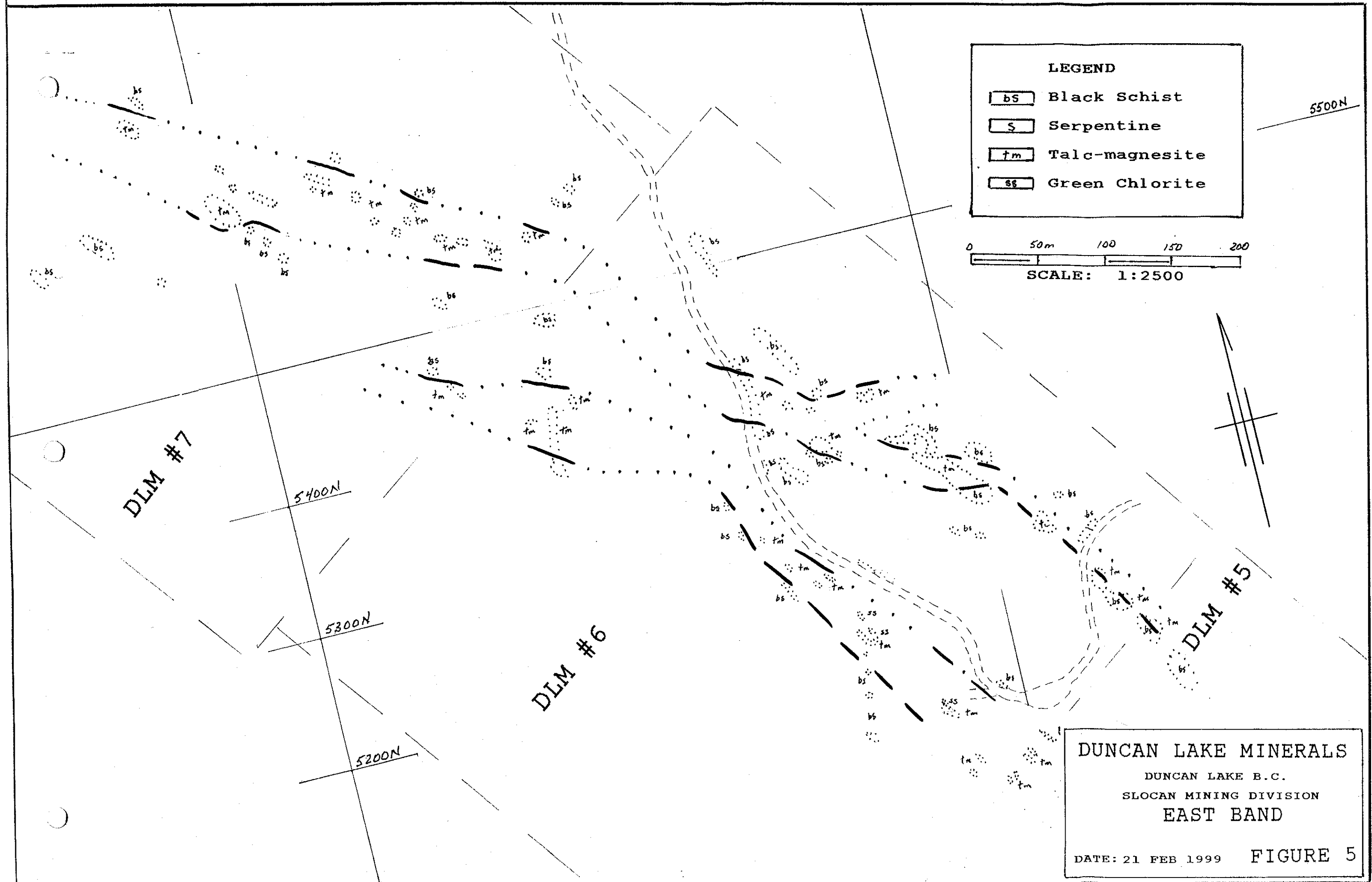
Work carried out in 1998 was a continuation of the geologic mapping program to fill in areas with limited data. The area chosen for this work was the northern continuation of the East band. The strike length covered was from 5250N, 7050E to 5700N, 6440E, as shown in Figure 5:

PROCEDURES

Mapping was done on 1:1000 sheets, then replotted on a 1:2500 plan. Chain and compass methods were used to tie in the mapping, with reference points established from the 1:5000 base plan.

RESULTS

The geological data gathered revealed the existence of two 5 meter bands of talcose material on strike north of the previously mapped area of the East band. It appears that this is due to a split in the East band somewhere north of the logging road (approx. 5400N, 6800E).



CONCLUSIONS

The East talcose band is now confirmed from 5183N,7115E in the south, to 5770N, 6440E in the north, where it appears to join with the Main band. The structure and composition of this band is similar to the Main band based on visual examination. The East band also appears to have split into two bands, with a width of about five meters each in the northern area. The attitude of these bands seem to be similar to the Main band. Further work will be needed to clarify the structural relationships in the area where the Main and East bands join. It was previously thought that the westerly split of the Main band had terminated, but it may in fact be what is referred to as the 'Main' band in the Randy quarry area.

Trenching is planned in the future to open up the accessible showings so that they can be examined more closely and sampled. The chlorite showings found near the East band will be cleaned off so that they can be examined more carefully.

STATEMENT OF COSTS
DUNCAN LAKE MINERALS PROPERTY
1998 FIELD WORK

FIELD WORK (geologist)	5 days @ \$350/da	\$1750.00
(field assistant)	2 1/2 days @ \$100/da	250.00
OFFICE WORK (geologist)	3 days @ \$350/da	1050.00
VEHICLE	1382kmM @ 0.35/km	486.15
ACCOMODATION	4 days @ 25/da	100.00
MEALS	7 1/2 m-da @ 16/m-da	120.00
PHONE/FX		45.40
CHAIN SAW RENTAL		25.00
REPORT TYPING AND ASSEMBLING		70.00
DRAFTING		50.00
PRINTS/PCS		32.53
SUPPLIES		<u>53.20</u>
TOTAL COST.....		<u>\$4032.28</u>


E.A. Lawrence, B.A.Sc., P.Eng.

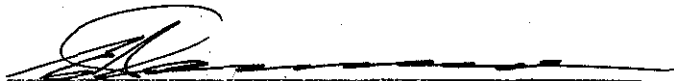
21 February 1999

STATEMENT OF QUALIFICATIONS

I, E.A. Lawrence, P.Eng., of 3590 Wiig Road, Westbank, B.C.

DO HEREBY CERTIFY:

- 1) That I am a graduate of the University of British Columbia with a B.A.Sc. in Geological Engineering (1959).
- 2) That all of the technical work carried out on the property in 1998 was done by me.
- 3) That I am a registered Professional Engineer in the Province of British Columbia.



E.A. Lawrence, B.A.Sc., P.Eng.

Dated: This 21st day of February 1999
at Westbank, B.C. in the Province
of British Columbia.

REFERENCES

- PYLES, J.T. (1964) Geology of the Duncan Lake Area, B.C.
Department of Mines, Bulletin # 49.
- MACLEAN, M. (1987) Taic and Pyrophyllite in B.C.
B.C. Mineral Resources Division, open 1988-19.
- LAWRENCE, E.A. (1989) Geological Summary Report.
Valentine Property, Duncan Lake, B.C.
- LAWRENCE, E.A. (1990) Geological Summary Report.
Valentine Property, Duncan Lake, B.C.
- LAWRENCE, E.A. (1991) Summary Report.
Duncan Lake Minerals Property
Duncan Lake, B.C.
- LAWRENCE, E.A. (1993) Summary Report.
Duncan Lake Minerals Property
Duncan Lake, B.C.
- LAWRENCE, E.A. (1994) Summary Report.
Duncan Lake Minerals Property
Duncan Lake, B.C.
- LAWRENCE, E.A. (1997) Summary Report.
Duncan Lake Property.
Duncan Lake, B.C.

