

120  
8-

Report on

GEOLOGICAL & PROSPECTING WORK

92I/6E

on the Property of

LACO MINES LIMITED

CALLING LAKE AREA, HIGHLAND VALLEY

BRITISH COLUMBIA 92I/6E

By: C. F. Wegener, B.Sc.,  
Cremac Surveys Limited,  
24 King Street West,  
Toronto, Ontario.

Supervised by: Fred J. Garbutt, P.Eng.,  
(Registered Professional  
Engineer, Province of  
British Columbia.)

---

Exact Location: Mining Division of Kamloops  
20 miles south-south-east of  
Ashcroft.

Centred on Latitude  $50^{\circ} 27'$   
Longitude  $121^{\circ} 6'$

Claims: Nancy 1 - 14  
Terry 1 - 9  
Dominion 1 - 2  
Starnes 1 - 4  
Stewart 1 - 3 Fractionals  
Stewart 5 - 9 Fractionals

Dates of Work: From May to December, 1956.

0170

170

Certificate re Assessment Work  
on the Property of Laco Mines Limited,  
Calling Lake, Highland Valley area, British Columbia

The Mines Act of British Columbia states that the qualifications of the geologist or engineer doing a geological survey should be filed with the application to record work. The data below is given re these requirements.

C. F. Wegener - Resident Geologist in charge of all work at the property.

- (1) Graduated in Geology with B. Sc. (Honours) at the University of Adelaide, Australia.
- (2) 3½ years as geologist with the South Australian Geological Survey.
- (3) 2½ years in South Africa on exploration and mining geology with Anglo-American Corporation of South Africa Limited.
- (4) 2 years in Canada on exploration and mining geology.

F. J. Garbutt - Supervised the job from Toronto and visited the property on two separate occasions in the spring and summer of 1956.

A Professional Engineer registered with the Association of Professional Engineers of British Columbia.

Certified that the above statements are correct and true.

*Clem. F. Wegener*  
Clem. F. Wegener

*F. J. Garbutt*  
Fred. J. Garbutt

December 15, 1956.

Report on  
GEOLOGICAL & PROSPECTING WORK  
on the Property of  
LACO MINES LIMITED  
CALLING LAKE AREA, HIGHLAND VALLEY,  
BRITISH COLUMBIA

---

Prepared for:

The President & Directors,  
Laco Mines Limited,  
Room 309, 200 Bay Street,  
Toronto, Ontario.

Prepared by:

Clem. F. Wegener, B. Sc.,  
Cremac Surveys Limited,  
24, King Street West,  
Toronto, Ontario.

## CONTENTS

	Page
INTRODUCTION	1
LOCATION	1
MAPS	1
MINERAL CLAIMS	1
TOPOGRAPHY & DRAINAGE	3
PREVIOUS WORK	3
GEOLOGICAL MAPPING & PROSPECTING	4
Methods Employed	4
GENERAL GEOLOGY	4
Abundance of Outcrop	4
Lithology	5
Structure	5
1. General	5
2. Jointing	6
3. Faulting	6
TRENCHING	10
Trench #1	10
Trench #2	11
Trench #4	13
Trench #3	14
Trench #5	16
SUMMARY & CONCLUSIONS	17
RECOMMENDATIONS	18
APPENDIX	20
Record of Expenses	

*Map #1 Section and copper mineralization  
1" = 300'*

• DEC • 56



Plate 1

View looking South onto Property

X marks position of Trench #1

## INTRODUCTION

The discovery in 1955 of possible large low grade copper ore-bodies on the Highland Valley property of Bethlehem Copper Corporation, revived interest in the whole Highland Valley region which had been prospected for copper more than 40 years ago.

The Laco property surrounds two of the better known old copper claims on which some work had been done, namely, the Empire and the Kathleen. Many other old diggings were also found on Laco ground.

In the period from the middle of June to the end of October, 1956, Cremac Surveys Limited of Toronto, undertook a geological mapping and prospecting programme on behalf of Laco Mines Limited. This report outlines the work done and findings made.

## LOCATION

The property is located in the Mining Division of Kamloops immediately south of Calling Lake in the Highland Valley, 20 miles in a direct line southsoutheast of Ashcroft, and centred on latitude  $50^{\circ} 27'$ , longitude  $121^{\circ} 6'$ ,

Ashcroft is 223 miles northeast of Vancouver on the Trans Canada Highway and from Ashcroft a 32 mile long winding second class road leads to the property.

## MAPS

A geological map on a scale of 300 feet = 1 inch accompanies this report. The map is based on a survey of claims by tape and compass and is accurate only to the limits of such a survey.

## MINERAL CLAIMS

Laco Mines Limited holds 37 mineral claims tabulated as follows:

<u>Claim</u>	<u>Record No.</u>	<u>Tag No.</u>	<u>Recording Date</u>
Nancy 1-8	15384-91	B74481-88	Aug. 4, 1955
Nancy 9-14	16920-25	B67587-92	July 13, 1955
Terry 1-5	14873-77	B33496-500	June 14, 1955
Terry 6	14878	B67145	June 14, 1955
Terry 7	14879	B67153	June 14, 1955
Terry 8	14880	B67152	June 14, 1955
Terry 9	24379	233428	Aug. 7, 1956
Dominion 1-2	16970-71	B67585-86	July 13, 1955
Starnes 1-4	14927-30	B67147-50	June 14, 1955
Stewart 1 Fract.	24211	233424	July 6, 1956
Stewart 2-3 Fract.	24212-13	233430-31	July 6, 1956
Stewart 5 Fract.	24381	233427	August 7, 1956
Stewart 6 Fract.	24382	233429	August 7, 1956
Stewart 7 Fract.	24383	233426	August 7, 1956
Stewart 8-9 Fract.	24592-93	244130-31	Sept. 14, 1956

Stewart #4 Fractional, staked to cover the fraction between Nancys 4 and 6 was later found to have been covered in prior over-staking by outside interests.

The claims form an irregular block two and one half miles long in an east-west direction and one and one half miles wide in a north-south direction.

In the centre of this block and situated close to one another, are two claims, the Kathleen and the Empire, owned by H.H. Huestis of Vancouver. The exact location and size of neither claim is known as no claim posts definitely recognizable as belonging to these claims, are in existence. They were staked in 1912 and 1923

respectively and have been held in good standing since then.

#### TOPOGRAPHY AND DRAINAGE

The property covers a low range of hills whose summit extends the length of the property from east to west (see Plate 1). Elevation at Calling Lake is 4,920 feet above sea level and the summit of the range is approximately 500 feet above lake level.

As a whole, drainage is westwards to the Thompson River, but locally the north side of the property drains to Calling Lake and Inkikuh Creek and the south side drains to Pimainus Creek.

The area is generally heavily wooded with young lodge pole pine.

#### PREVIOUS WORK

Most of the previous prospecting was done probably around the turn of the century and up to about 1925. Numerous small diggings a few feet deep were found on the property and there is an old shaft, now collapsed, but probably originally 30 feet deep on Terry #6 claim.

Old workings on the Kathleen comprise a shaft perhaps 20 feet deep and a short adit 30 feet long leading into the shaft. These followed a shear a foot wide carrying a small amount of quartz containing bornite and chalcopyrite.

On the Empire claim there are two shafts 150 feet apart but both now filled with water. The more northerly one is an incline shaft with a reported depth of 35 feet, the other a vertical shaft with a reported depth of 52 feet. A little crosscutting was apparently done off each. The picture gathered from the few surface showings and the material on the dump is that these workings

are in a sheared zone of sericitic porphyry approximately 150 feet wide. Bornite is disseminated fairly constantly through the porphyry. Representative samples taken by former interests assayed from 1 - 1½% Cu. Conclusions as to future prospects on this showing are that there is probably an extension of the body to depth along the shear and possibly an extension southwesterly beneath the area covered by overburden.

#### GEOLOGICAL MAPPING AND PROSPECTING

##### Methods Employed

All bearings referred to in the report are magnetic bearings.

Grid lines A-E were cut in a north-south direction, across the property at intervals of 2000 feet. In a few instances, notably along the northeast and eastern sides of the property, the outside boundary of the property was cut and used as a base line.

In mapping geology, traverses were run between the cut lines in an east-west direction with the aid of a compass and by pacing distances. Intervals between traverses were 200 feet and in a few known vital areas 100 feet. In this way all outcrops were examined, their positions roughly sketched and notes made on any features of geological interest, of mineralization or of old diggings found.

At a later stage a D8 bulldozer stripped and trenched areas where copper mineralization of economic proportions was most likely to be found.

#### GENERAL GEOLOGY

##### Abundance of Outcrop

The high ground has relatively abundant rock outcrop but the lower slopes of the property near Calling Lake and towards

Inkikuh Creek on the northern side are largely covered with overburden.

In most places overburden is not particularly heavy and even where it is deepest, probably little more than 30 feet deep. Boulders in the overburden are commonly glacial erratics and probably most of the overburden is of glacial origin.

### Lithology

The area lies within the Gulchon Creek batholith. Broadly the two main rock types represented on the Laco property are diorite and granodiorite, usually both medium to coarse grained types. The diorite body occupies the western quarter of the property and the granodiorite the remainder. The gradational contact between the two lies in the vicinity of the west side of Nancy 9 and 10 and the northward extension is marked approximately, no doubt, by the small tributary stream flowing northerly into Inkikuh Creek.

The other rock type of significance is a sericitic porphyry. It is a secondary rock found only in the granodiorite. Its origin is attributed to the effects of stress and hydrothermal action on the granodiorite and invariably occurs in the vicinity of faults and shears. The first stage in its formation is the development of rounded quartz porphyroblasts followed later by conversion of some of the feldspar to sericite. An even later development may be a network of quartz veinlets through the rock resulting from re-distribution and introduction of silica.

### Structure

#### 1. General

In the Highland Valley it seems possible that Witches Brook, Inkikuh Creek and Pinainus Creek (see locality map) could mark

approximately the positions of regional faults in the batholith. These streams all strike in a general west-north-west direction. A second and apparently more minor direction of faulting is approximately north-south.

On the Laco property the broad structural picture is one of a faulted and sheared zone extending in a roughly north-south direction through the centre of the property, flanked on either side by a relatively undisturbed area. The possible Inkikuh Creek fault which would pass through Calling Lake, probably lies adjacent to the northern boundary of the property.

Aerial photographs show numerous lineations in a northwest-southeast direction. These are small gullies resulting from the gouging action of glaciers and generally have no bearing on the structure. Much less pronounced are scattered lineations in an approximately north-south direction. These are small gullies which mark the position of the north-south faults or shears.

## 2. Jointing

The degree of jointing is variable. The diorite is relatively undisturbed but generally displays a prominent direction of jointing on a strike of approximately  $80^{\circ}$  and a dip of  $75^{\circ}$  northerly.

Jointing in the granodiorite is marked in the region of faults but elsewhere is of no special significance.

## 3. Faulting

Faulting of any significance is confined to a triangular area within the granodiorite from Calling Lake as the base of the triangle to Nancy 13 in the south central part of the property as the apex.

The faults on this property do not appear to be of a type stemming from any great movement of blocks with the resultant possibility of wide breccia zones. Rather they are shears along which movement has not been great. In the main area of stress these shears are numerous but except for three they are mostly minor and short-lived.

Almost without exception shearing, probably accompanied by hydrothermal action, has had the effect of converting the granodiorite to a sericitic porphyry usually to the accompaniment of some quartz veining.

The biggest and most persistent shears are located in long narrow gullies and have an approximate north-south strike. Of the three main shears, one is located near the common corner of Nancy 3, 4, 5 and 6 claims, and extends generally southwards from there into Nancy 11. The second one appears to begin near the old Empire workings and extends southwards into Nancy 14. The third one named the "Kathleen Fault" passes close to the old Kathleen workings and then southwards through Stewart Fractional 2. It may re-enter the property in the southeastern part of Nancy 13. Its northward extension from the Kathleen workings is indefinite but a study of the photographs suggests that it is positioned approximately as shown on the plan.

Exposures in trenches show these shears usually comprise one main shear from a few feet up to 40 feet wide often with smaller shears or highly jointed bands nearby. The Kathleen fault exposed in the bulldozed trench was only three feet wide but a few hundred feet further north other diggings exposed widths in excess

of 12 feet. The main shears are normally near vertical but the minor ones can dip as low as 50° and usually easterly. Slickensides suggest that movement is generally nearly horizontal.

## ECONOMIC GEOLOGY

### Mineralization and its Relationship to Structure

#### 1. General

Copper mineralization is widely distributed over the property. Mineralization comprises copper in the form of bornite, chalcopyrite and some malachite. A little molybdenite is sometimes associated with the copper minerals.

Although many copper showings occur in veinlets along jointing, mapping and prospecting have shown that on this property, only in the vicinity of strong shearing or faulting could there be any hope for possible economic proportions of copper mineralization.

#### 2. Mineralization in the Diorite

The diorite in the western part of the property, except for some jointing, is relatively undisturbed. There was thus little opportunity for invasion by mineralizers. The few copper showings that there are, comprise quartz or epidote veins from a fraction of an inch up to three inches wide containing bornite or chalcopyrite.

#### 3. Mineralization in the Granodiorite

Much of the granodiorite, similar to the diorite, is massive and blocky and hence a poor host rock for mineralization. Within the granodiorite body, however, is the triangular region of faulting mentioned earlier in the report. The sericitic porphyry resulting from alteration of the granodiorite through shearing stress and hydrothermal action is invariably the host rock for copper mineralization. These mineralized shears that were seen exposed

varied from an inch up to forty feet in width.

Some of the old diggings along the shear zones first drew attention to their often mineralized character. The old Kathleen workings strictly are only on a minor offshoot of the main Kathleen fault but several hundred feet further south of those are two trenches 200 feet apart located directly in the fault zone. They expose a sheared, silicified, sericitic porphyry more than 12 feet wide on the eastern edge of the fault. Chalcopyrite and bornite are distributed sparsely throughout the rock.

The three main shears referred to earlier in the report were trenched with a bulldozer at several points. They are covered with overburden one or two feet deep in the shallowest places on the higher ground, to probably thirty feet in the deepest nearer the valleys such as near Calling Lake. The shears comprise sericitic porphyry containing a certain amount of quartz as irregular concentrations or small veins. Bornite is usually the main copper mineral, occasionally accompanied by minor amounts of molybdenite. It is largely associated with the quartz with lesser amounts disseminated throughout the porphyry.

On Terry #6 claim copper mineralization in one of the minor faults interested prospectors many years ago. An old collapsed shaft now 12 feet deep but probably originally 30 feet deep, is situated on a band of sericitic porphyry 15 feet wide. The porphyry contains several vuggy quartz veins, the largest of which is two feet wide. Copper mineralization as chalcopyrite, bornite, and malachite is present in the quartz with also a little

disseminated through the porphyry. Surface indications suggested that the shaft had been sunk on the widest section of the shear and that it soon lensed out either way. This was later borne out by hand trenching.

The small shears are usually characterized by quartz veins a fraction of an inch up to two or three inches wide flanked by similar widths of sericitic porphyry. Some bornite and chalcocopyrite usually occur in the quartz with perhaps minor disseminations in the porphyry as well. These showings are too minor for individual comment but their positions with some notes are given on the geological map.

#### TRENCHING

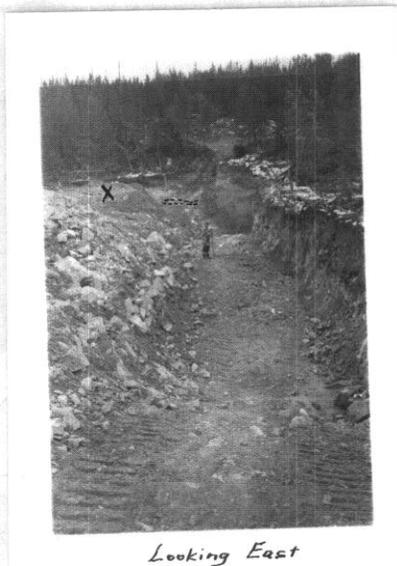
A D8 Caterpillar equipped with pusher blade and an auxiliary "rooter tooth" stripped and trenched five sections at various points along the main shear zones. Locations of the trenches are shown on the accompanying map. Altogether some 7000 cubic yards of overburden and rock were moved. On completion of bulldozing, sections of the trenches were cleaned sufficiently well by hand to allow for proper inspection and sampling of mineralized sections.

#### Trench #1 (Plate 2, page 11)

This trench, located near the common corner of Nancy 3, 4, 5 and 6, is 210 feet long with a cross trench 100 feet long at the east end. Bedrock is exposed for the full length and comprises highly jointed granodiorite containing occasional bands of sericitic porphyry and several small shears.

The only copper mineralization of note occurs in a 50 foot wide zone at the south east end of the trench (Plate 3). Even here the

granodiorite is not sufficiently shattered and copper mineralization, as chalcopyrite and malachite, is essentially confined to narrow quartz veins and stringers along a network of joint planes. Best mineralization is in a fault 15 inches wide. The fault contains several quartz veins up to two inches wide and these are well mineralized with chalcopyrite.



*Looking East*

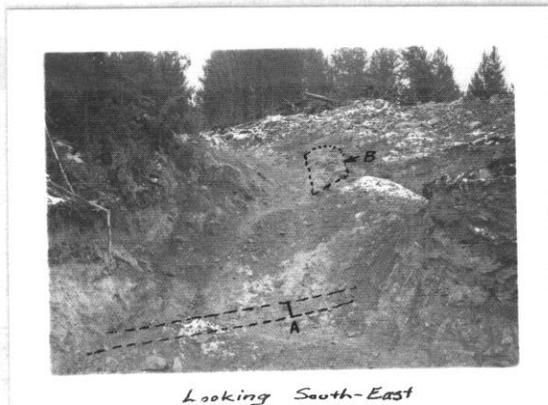
Plate 2

Two samples were taken from points A and B respectively.

- A. Channel sample across the mineralized fault assayed 2.6% Cu. over 16".
- B. Chip sample from a 15' x 5½' area of the mineralized network of joint planes. This assayed 0.35% Cu.

Trench #2 (Plate 4, page 13)

Trench #2 in Nancy 14 is located some 400 feet southeast of the northwest corner of Nancy 14 and is approximately 300 feet long. Maximum depth of overburden is three feet. The trench cuts across the shear extending southwards from the old Empire workings and at a point where minor shears converge on it from the northeast.



*Looking South-East*

Plate 3

Plate 3 is taken looking south-east from X on plate 2.

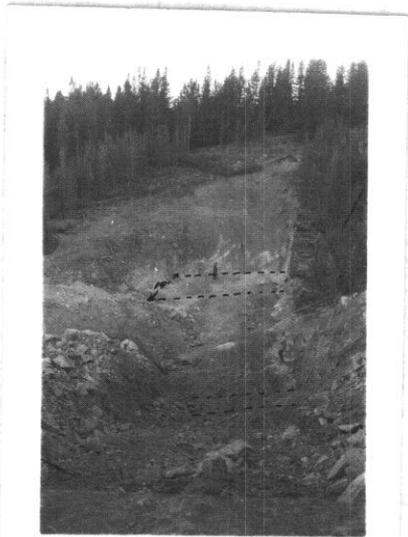
It was hoped that this might have produced a broad brecciated area but trenching shows that the shearing is confined to narrow widths with the intervening rock usually only well jointed.

The main shear (Plate 5) located near the western end of the trench is 19 feet wide. It dips almost vertically and comprises a grey sericitic porphyry slightly veined with quartz. The quartz veining, as irregular concentrations and small stringers, is largely concentrated in the westernmost four feet of the shear and decreases notably towards the eastern edges. Mineralization comprises bornite, malachite and a little molybdenite. Malachite occurs as a heavy green staining in the upper three feet of the zone, immediately below the overburden. Below this depth bornite is the only copper mineral. Bornite is mainly associated with the quartz with lesser amounts disseminated through the porphyry. Best values were therefore to be expected in the westernmost four feet of the zone. Assays from channel samples taken across the full width of the shear as exposed on the northern wall of the trench are given below. An additional 200 pound bulk sample was taken across the full width from the south wall.

The smaller shear 100 feet to the east of the main one is eight feet wide with a dip of  $60^{\circ}$  to the east. It comprises four bands of silicified sericitic porphyry varying in width from 3" to 18" separated by porphyritic granodiorite. These bands contain a little bornite and some malachite staining. A chip sample was taken across the full eight feet.

The intervening 100 feet of rock is mostly porphyritic slightly sericitic granodiorite containing sparsely disseminated bornite. Three chip samples taken at points across the 100 foot width

assayed 0.20%, 0.15% and 0.15% Cu respectively.



Looking West



Plate 5

Plate 4

Sampling results:

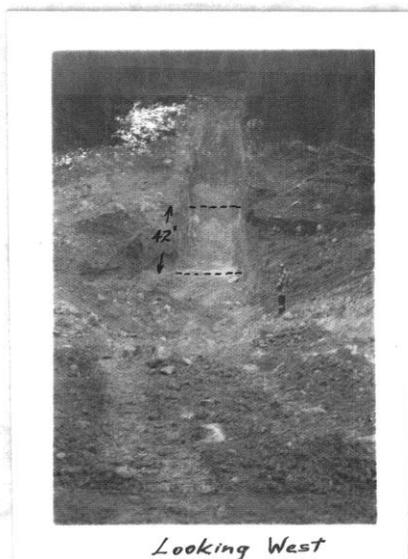
Place	Sam- ple No.	Type of Sample	Width	Copper %	Assays		
					Molybd- enum %	Gold oz/ ton	
North wall of main 19' wide shear 4 samples taken from west to east	1	Channel	4.1	2.60	) Av. 0.98	0.05	0.01
	2	Channel	5'	0.52		Tr.	0.01
	3	Channel	5'	0.65		Tr.	0.005
	4	Chip	5'	0.17		) not assayed	
South wall of main 19' shear	5	Bulk (200 lb)	19'	1.05	"	"	
North wall of 8' shear 100' east of main shear	6	Chip	8'	0.22	"	"	

Trench #4 (Plate 6)

In view of the encouraging signs in Trench #2, Trench #4 was located 700 feet south of #2. It is in a wider part of the gully where it was hoped that this fact, together with the lack of out-

crops, perhaps meant more intense shearing.

This trench is 220 feet long. Maximum depth of overburden is ten feet in the centre of the gully. The assumed continuation of the main shear from #2 was intersected in the western half of the trench. The shear at this point is 42 feet wide and has a vertical dip. Unfortunately mineralization is negligible. The only copper mineralization in this trench is a minor amount of malachite staining in a small shear and along jointing east of the main shear.



*Looking West*

Plate 6

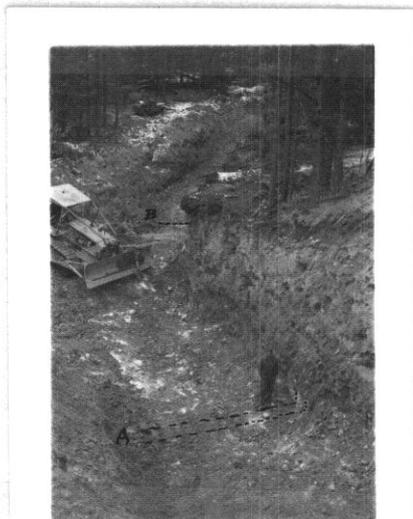
### Trench #3 (Plate 7)

This trench is 1000 feet south of the old Kathleen workings. It was positioned to intersect an expected wide shear zone suggested by exposures in diggings several hundred feet to the north. Unfortunately results were discouraging.

The trench is 200 feet long in an east-west direction across the Kathleen fault. Overburden is up to 12 feet deep. Bedrock comprises granodiorite which is well jointed but otherwise little

disturbed except in the vicinity of the Kathleen fault. The Kathleen fault was intersected 60 feet from the east end of the trench. (Plate 7, A). The fault is marked by a five foot wide band of jointed, brecciated and silicified sericitic porphyry. (Plate 8). The only notable copper mineralization occurs within the silicified portion of the Kathleen fault. Maximum width of mineralization is two feet and the vein of high grade mineralization is no more than one foot wide. Mineralization comprises bornite and chalcopyrite together with a little molybdenite. Two channel samples were taken across this band.

Place	Sam- ple No.	Type of Sample	Width	Assays		
				Copper %	Molybd- enum %	Gold oz/ ton
North wall	1	Channel	2'	2.17	0.15	0.01
Floor, centre of trench	2	Channel	1'	2.35	0.08	0.015



Looking West

Plate 7

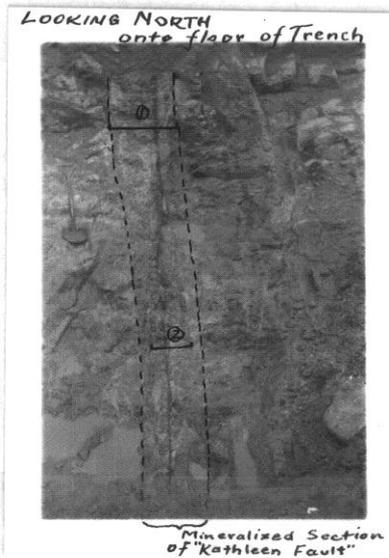


Plate 8

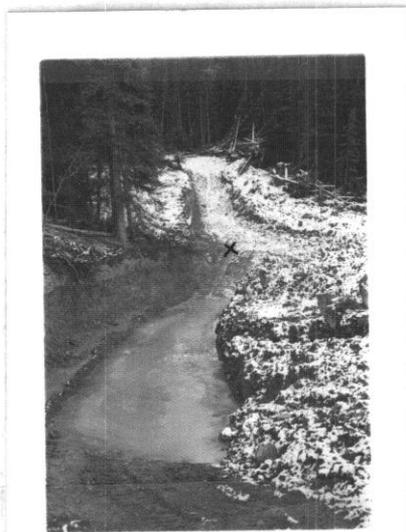
Seventy feet from the west end of the trench is a band of sericitic porphyry one foot wide containing a quartz vein one and a half inches wide (Plate 7,B). The quartz vein contains approximately 2% Cu as bornite and chalcopyrite.

Trench #5 (Plate 9)

Trench #5 is located in the south central part of the property near the eastern boundary in Nancy 13.

Consideration of the various aspects of mineralization in the area suggested that the eastern side of Nancy 13 would be favourable ground for possible copper mineralization. The reasons were that the main shears crossing the property appeared to be converging on this area and scarcity of outcrop and low ground suggested comparative ease in erosion perhaps as the result of much shearing and severe jointing of rocks.

Trench #5 is approximately 300 feet long. After four days of bulldozing, work was stopped here for the season. Bedrock had just been exposed at one point (X) on the eastern slope and from this it could be assumed that total depth of overburden in the centre of the trench would be approximately 20 feet.



*Looking East*

Bedrock exposed was a jointed granodiorite with a little malachite staining along jointing.

Plate 9

### SUMMARY AND CONCLUSIONS

Geologically, the Laco property is divided into the diorite area comprising the western quarter of the property and the granodiorite area which covers the remainder.

There are several small showings of copper in the diorite but generally on this property the diorite is too massive and undisturbed to have been a suitable host rock for any significant copper mineralization. Although the granodiorite is similar in character in many parts, it is traversed by a series of mainly north-south faults or shears in a triangular area from Calling Lake as the base of the triangle to Nancy #13 claim in the south central part of the property as the apex. These shearing forces, probably assisted by hydrothermal action, locally converted the granodiorite to a sericitic porphyry. Work has shown first that the sericitic porphyry is amenable to copper mineralization, secondly that only within the triangular area of shearing and mainly along the more persistent shears, is there liable to be a mineralized porphyry body sufficiently large to be of economical interest.

Five places along various shears were stripped and trenched with a D8 bulldozer. Best results were obtained from Trench #2 in which a shear zone, 19 feet wide, containing bornite largely associated with quartz, but also generally disseminated throughout the porphyry, assayed 1% Cu. The zone could conceivably extend from this point along the shear to the old Empire workings where a similar type of mineralization occurs. The Empire claim is not part of the Laco property. At the Empire, samples assayed between 1% and 1½% Cu over a possible maximum width of 150'. Unfortunately little

increase in width of the zone exposed in Trench #2 could be expected inside the Laco property as most is bounded by exposures of barren granodiorite.

The westernmost fault in the southern part of Nancy 5 which extends southwards into Nancy 11, could be the locus of other probably small bodies of copper ore. This sector was not tested with the bulldozer.

Numerous minor shears with slight copper mineralization, but with widths commonly only from a few inches up to a foot occur in this triangular zone. None of these are likely to be of interest economically.

#### RECOMMENDATIONS

1. No further work should be done on the property for the time being.
2. The central part of the property should be retained by the Company. Sufficient work has been done for assessment purposes to hold this portion in good standing for several years.
3. The present data should be reviewed from time to time in the light of any new developments or new techniques in Highland Valley exploration to determine if more work might be advisable in the more promising area and also in the overburdened areas within the favourable zone.
4. The mineralized shear inside Laco ground between Trench #2 and the Empire workings does not look sufficiently encouraging to warrant further work at this time. However, in any future programme more trenching should be done along both this shear and the one parallel to it 500 feet to the west.

5. It should be borne in mind that, apart from its own copper showings, the Laco property has value in that it surrounds the Empire claim which also has a promising copper showing.
6. It would seem good practice that both the Empire and the Kathleen claims should be incorporated with the Laco property before any further work is done by the owners of either claims.

Respectfully submitted,



Clem. F. Wegener, B. Sc.

December 15, 1956

APPENDIX

RECORD OF EXPENSES

For assessment purposes, an outline of costs incurred in exploration on the property of Laco Mines Limited, Highland Valley, B.C. during May to December 1956, is given below. These are taken from accounts submitted by Cremac Surveys Limited of Toronto and Clarallen Construction Limited of Ashcroft, B.C. to Laco Mines Limited.

1. From Accounts of Cremac Surveys Limited

Payroll

Name	Status	Period	Rate	Total
G.F.Wegener	Res. Geologist	May 21-Dec.15	\$600/m	\$3950
W.G.Stewart	Stud. "	June 11-Sep.26	\$350/m	1237
R.B.Wallace	" "	June 11-Sep.26	\$350/m	1237
G.E.Hawkes	Labourer	Sep. 29-Oct. 6	13/d	97
J.C.Barquest	"	Sep. 29-Oct. 6	13/d	97
L.G.Pusztai	"	Sep. 30-Oct.15	14/d	238
W.M.McCall	"	Sep. 30-Oct.15	14/d	238
L.E.Wegener	Cook	June 13-Oct.21	\$175/m	752
				\$7846
Cost of Camp, Groceries, General Expenses (Exclusive of travelling costs beginning and end of job.)				\$5519
Total				\$13365

The costs cover two categories of work,

- (1) Geological survey and prospecting,
- (2) Supervision of trenching, hand cleaning of trenches and sampling.

From the proportion of time spent on each of (1) and (2) the proportion of costs applying to each is,

- (1) 85% of \$13365 or \$11365
- (2) 15% of \$13365 or \$2000

2. From Accounts of Clarallen Construction Limited

Stripping and trenching was done by a D8 bulldozer under contract @ \$21/hour operating time.

Supervision etc. costs of \$2000 are divided between the claims in the proportion of hours of bulldozing spent on each claim to total hours.

(1) On Nancy #6 Claim

Trench #1 - 179 hours @ \$21/hour	\$3759	
Supervision etc. -- .36 of \$2000	720	
	<hr/>	\$4479

(2) On Nancy #14 Claim

Trench #2 and 4 - 173 hours @ \$21/hour	\$3633	
Supervision etc. -- .34 of \$2000	680	
	<hr/>	\$4313

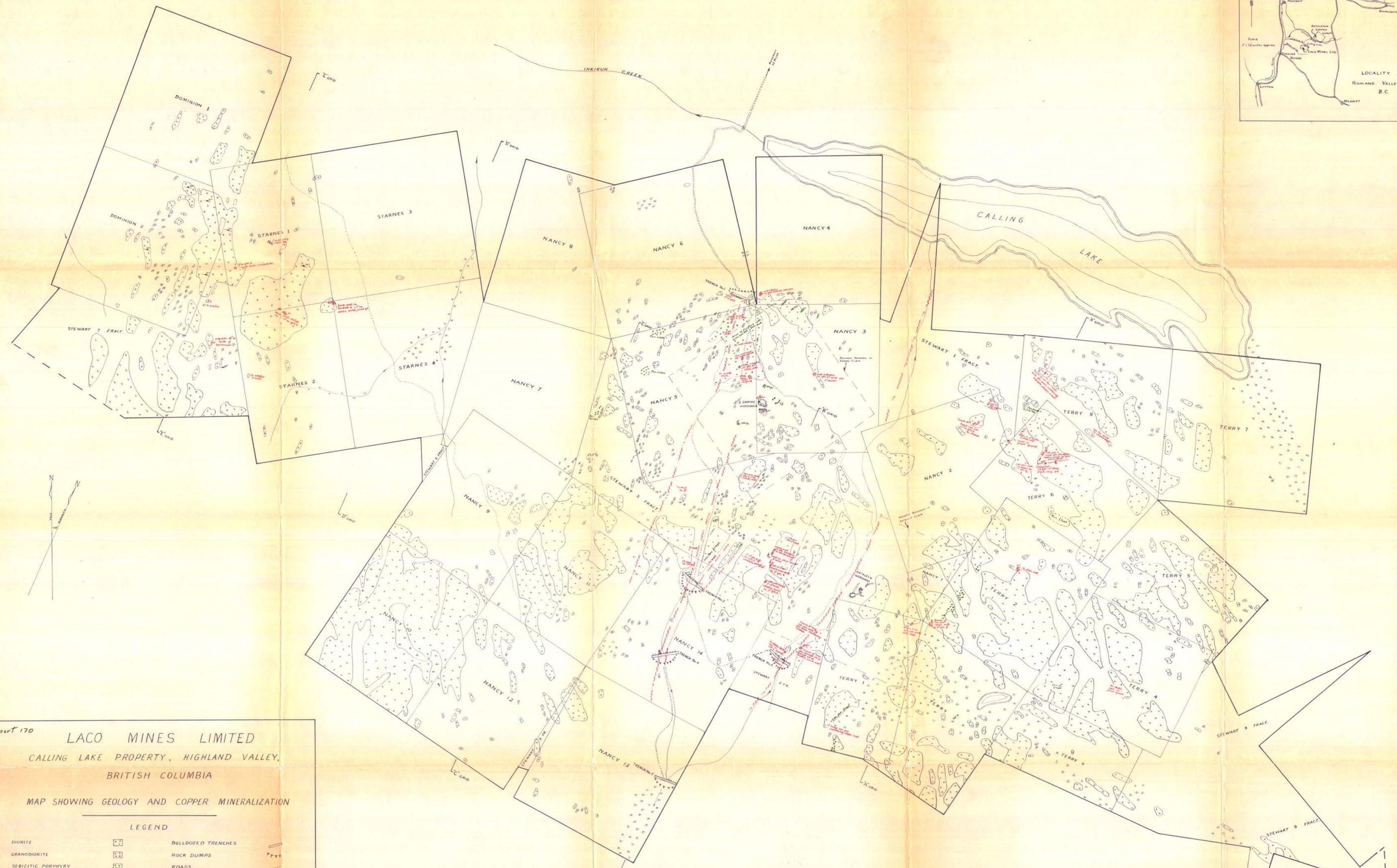
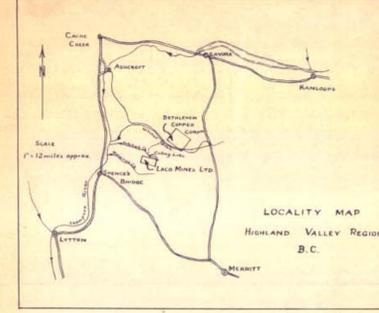
(3) On Stewart #2 Fractional

Trench #3 - 106 hours @ \$21/hour	\$2226	
Supervision etc. -- .22 of \$2000	440	
	<hr/>	\$2666

(4) On Nancy #13 Claim

Trench #5 - 41 hours @ \$21/hour	\$ 861	
Supervision etc. -- .08 of \$2000	160	
	<hr/>	\$1021

Total		<hr/> <hr/>
		\$12479



Report 170  
**LACO MINES LIMITED**  
 CALLING LAKE PROPERTY, HIGHLAND VALLEY,  
 BRITISH COLUMBIA  
 MAP SHOWING GEOLOGY AND COPPER MINERALIZATION

LEGEND

- |                            |  |                    |  |
|----------------------------|--|--------------------|--|
| DIORITE                    |  | BULLDOZED TRENCHES |  |
| GRANODIORITE               |  | ROCK DUMPS         |  |
| SERICITIC PORPHYRY         |  | ROADS              |  |
| FAULTS AND SHEARS          |  | TRAILS             |  |
| STRIKE AND DIP OF JOINTING |  | STREAMS            |  |
| OLD DIGGINGS               |  | SWAMPS             |  |

SCALE 1 inch = 300 feet

Department of  
 Mines and Petroleum Resources  
 ASSESSMENT REPORT  
 NO. 170 MAP #1

CREMAC SURVEYS LIMITED,  
 24, KING STREET WEST,  
 TORONTO, ONTARIO,  
 DECEMBER 1956

*Alfred S. Wegener*  
*J. J. Karbutt*  
 SURVEY BY C.F. WEGENER

Notes: 1. Claims not legally surveyed.  
 Boundaries shown enclosed only within the limits of a map and compass survey.  
 2. All claims owned by Laco Mines Ltd except Empire and Karbutt.  
 Boundaries of Empire and Karbutt assumed only.

#170  
 MAP 1