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Lewes River Mines Ltd. (N.P.L.)

Summary Report

WHITEHORSE PROPERTIES

Whitehorse, Y.T.

Aug. 1, 1968

Robert S. Adamson, P.Eng. Vancouver, Canada

Dolmage-Campbell & Assoc. Ltd.

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DOLMAGE, CAMPBELL & ASSOCIATES
CONSULTING GEOLOGICAL & MINING ENGINEERS
808 BANK OF CANADA BUILDING
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INTRODUCTION

During 1967 and early 1968 Lewes River Mines Ltd. acquired by location two separate blocks of mineral claims on the east side of the Yukon River valley at Whitehorse in the Yukon Territory.

The larger main block was staked to cover the east flank of the Whitehorse stock while the smaller Gronk Group lying further east covers the western flank of the Cantlie Lake granitic stock. Both blocks of claims were staked on the basis of the similarity of the regional geology to that of the New Imperial Mines Ltd. who own a large northwesterly trending block of claims on the western side of the Yukon River valley. New Imperial operates a 2500 ton per day mill located adjacent to their Little Chief open pit copper deposit in the centre of their claim block.

The writer has visited the New Imperial open pit on two separate occasions and has viewed geological maps and sections pertaining to the open pit geology as well as their deep orebody beneath the pit deposit.

Lewes River Mines Ltd. carried out a helicopter-borne low level magnetic survey over both their claim blocks in May of this year with a view to firmly defining the contact of the Whitehorse and Cantlie Lake stocks and also to isolate magnetic anomalies at or near the contacts.

During June and July 1968, the company undertook ground geophysical and geochemical surveys over two areas selected on the basis of the airborne work; Areas A and B (See Figure 2.)

The writer has examined the area encompassed by the main claim block of Lewes River Mines Ltd. on a number of occasions. The writer has not been on the eastern Gronk Group because it is not as readily accessible as the main block.

Geological maps and aeromagnetic maps of the area covering the Whitehorse Copper belt and the adjoining claims of Lewes River Mines Ltd. have been thoroughly examined.

All results of the recent airborne magnetometer program and the results of the ground geophysical and geochemical surveys have been made available to the writer.

DESCRIPTION OF PROPERTIES:

Lewes River Mines Ltd. (N.P.L.) owns by location two separate irregular claim blocks on the eastern side of the Yukon River at Whitehorse, Y.T. The main block of 378 contiguous mineral claims extends three miles north of Whitehorse and nine miles south of the city where it crosses the river to extend for another three and a half miles south. The separate Gronk Group consisting of 47 mineral claims lies two and a half miles further east.

The claim blocks include the following recorded mineral claims and tag numbers; all claims are in good standing.

Yukon River Claim Groups:

New Staking, Lewes River

	Grant No.
Red Deer 1-8	Y25610-Y25617
Toadstool 1-8 Fr.	Y25660-Y25667
Near Porter Creek EZ Fr. 1-8	Y25490-Y25497
Hilk 3, 4, 5, 6	Y24918-Y24921
Hilk 13, 14	Y24876-Y24877
Hulk 1, 2, Fr.	Y25011-12
Hulk 3, 4	Y24865-66
Hulk 5, 6, 7, 8 Fr.	Y25013-16
Puta 1, 2 Fr.	Y25017-18

Claim No.	Record No.
AC 1-10	Y21921-Y21930
AC 11-18	Y21936-Y21943
AC 19	Y21931
AC 21-30	Y21944-21953
AC 31 Fr.	Y23386
AC 32	Y21955
AC 33 Fr.	Y23387
AC 34-52	Y21957-Y21975
AC 53-54	Y21992-Y21993
AC 55-70	Y21976-21991
AC 71-75	Y21994-Y21998
AC 76	Y23367
AC 77-84	Y23001-Y23008

Claim No.	Record No.
AC 85	Y21932
AC 86 Fr. - 87 Fr.	Y23388-Y23389
AC 88	Y21935
AC 89-96	Y23009-23016
AC 117-121	Y23017-Y23021
BC 1-4	Y23022-Y23025
BC 5-12	Y23030-&23037
13 Fr. - 14 Fr.	Y23468-Y23469
15 - 36	Y23040-&23061
BC 38	Y23062
BC 39-42	Y23026-Y23029
BC 43-74	Y23064-Y23095
BC 75	Y23063
BC 76	Y23096
BC 77-98	Y23098-Y23119
BC 100	Y23120
BC 101	Y23097
BC 102-112	Y23122-Y23132
BC 113	Y23121
AD 1 - 20	Y23133-Y23152
CC 1	Y23153
CC2	Y23161
CC 3	Y23154
CC 4	Y23162
CC 5	Y23155
CC 6	Y23163
CC 7	Y23156
CC 8	Y23164
CC 9	Y23169
CC 10	Y23177
CC 11	Y23170
CC 12	Y23178
CC 13	Y23171
CC 14	Y23179
CC 15	Y23172
CC 16	Y23180
CC 17	Y23185
CC 19-30	Y23187-Y23198
CC 31	Y23165
CC 32	Y23199
CC 33	Y23166
CC 34	Y23200
CC 35	Y23167
CC 36	Y23201

Claim No.	Record No.
CC 37	Y23168
CC 38	Y23202
CC 39	Y23181
CC 40	Y23207
CC 41	Y23182
CC 42	Y23208
CC 43	Y23183
CC 44	Y23209
CC 45	Y23184
CC 46	Y23210
CC 47-60	Y23215-Y23228
CC 61	Y23203
CC 62	Y23229
CC 63	Y23204
CC 64	Y23230
CC 65	Y23205
CC 66	Y23231
CC 67	Y23206
CC 68	Y23232
CC 69	Y23211
CC 70	Y23233
CC 71	Y23212
CC 72	Y23234
CC 73	Y23213
CC 74	Y23235
CC 75	Y23214
CC 76-90	Y23236-Y23250
CC 91-94	Y23157-Y23160
CC 95 - 98	Y23173-Y23176
CC 99-106	Y23251-Y23258
Gronk Group:	
9	Y18782
11 - 12	Y18783-Y18784
13 - 28	Y18789-Y18804
33	Y18805
35	Y18806
37-40	Y18785-Y18788
41-48	Y18807-Y18813
50	Y18814
52	Y18815
54	Y18816
56	Y18817
58	Y18818

Gronk Group: (Cont'd)

60	Y18819
62	Y18820
64-70	Y18821-Y18827
72	Y18828

HISTORY:

At the turn of the century numerous copper showings were discovered within an area two miles wide and extending for 17 miles along the west flank of the Yukon River valley. Small tonnage production from several properties within the belt, which has since been designated the Whitehorse Copper Belt, continued at intervals until 1920. Noranda Mines carried out some diamond drilling on a few of the zones in the area in the late 1940's.

From 1956 to 1963 most of these old zones were acquired by New Imperial Mines Ltd. Diamond drilling of the Little Chief deposit as well as other zones responded favourably, sufficient to justify construction of a mill near the centre of their extensive claim block and adjacent to the Little Chief deposit. Production from this plant was formally initiated in March of 1967.

The area acquired by Lewes River Mines Ltd. on the east side of the Yukon River valley has no history of mineral development or production. The east side of the river does not lend itself to direct discovery of mineral zones in view of the extensive, but not necessarily thick, overburden cover. Outcrops are much more plentiful on the west side of the river and underlying the Whitehorse Copper belt.

REFERENCES:

The following publications and maps have been carefully reviewed prior to writing this report:

G.S.C. paper 63-41	Copper and Iron Resources of the Whitehorse Copper Belt by E.D. Kindle
G.S.C. memoir 312	Whitehorse Map Area by J.O. Wheeler
Geophysics paper 1341	Macrae aeromagnetic map 105D - 10
1412	Upper Laberge aeromagnetic map 105D - 14
1342	Cap Creek aeromagnetic map 105D - 15.
1413	Whitehorse aeromagnetic map 105D - 11.
3376	Whitehorse aeromagnetic map 105D - 11.
3378	Lake Laberge aeromagnetic map 105E - 3.
7003	Whitehorse aeromagnetic map 105D.

Report on Aeromagnetic survey, Whitehorse Area, Yukon Territory on behalf of Lewes River Mines Ltd. by R. O. Crosky, Seigel Associates Limited.

Report on Ground and Airborne Geophysical Surveys on behalf of Lewes River Mines Ltd. by Jon G. Baird, Seigel Associates Ltd.

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SUMMARY AND RECOMMENDATIONS

Lewes River Mines Ltd. completed a helicopter borne low level aeromagnetic survey over their claim groups near Whitehorse in the Yukon Territory during April and May, 1968. The object of the survey was to localize areas adjacent to the eastern contact of the Whitehorse granitic stock that could be underlain by copper deposits similar to those of New Imperial Mines Ltd. Lewes River Mines Ltd. mineral claims extend over the eastern contact of the stock while New Imperial Mines Ltd. claims cover the western contact.

As a result of the survey, thirteen target areas have been outlined. Four of the areas are well removed from the contact and therefore they do not warrant ground followup surveys at this time.

Induced polarization, ground magnetic and geochemical surveys have been carried out over two of the remaining nine target areas, resulting in the definition of one induced polarization anomaly of potentially economic significance.

RECOMMENDATIONS:

Induced polarization and ground magnetic surveys are recommended to be undertaken over the remaining seven target areas. These areas are Zones C, D, E, F, K., L and M. (Figure 2).

COSTS:

A)	Induced Polarization surveys (includes cost of ground control)	$55,000.
B)	Ground Magnetic Surveys	5,000.
C)	Administration, Engineering	10,000.
		$70,000.
D)	Contingencies	5,000.
		$75,000.

Respectfully submitted,

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
R. S. ADAMSON

R.S. Adamson, P.Eng. for
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GEOLOGICAL SETTING

GENERAL GEOLOGY:

The Whitehorse Trough, a belt of Mesozoic sedimentary and volcanic rocks approximately 50 miles wide, trends northwesterly across the south central Yukon Territory. The lowest formation within the trough, the Lewes River Group of Upper Triassic age, consists of limestone, quartzite, conglomerate, greywacke and argillite with minor volcanic rocks near its base. The Lower Jurassic Laberge Group containing limestone, tuff, volcanic greywacke, andesite, and conglomerate lies both disconformable and conformable upon Lewes River rocks. The Lewes River, Laberge, and overlying Tantalus and Hutshi Group rocks have been tightly folded along northwest-trending axes prior to intrusion essentially along the axes by several granitic stocks. The granitic stocks are variable in composition, exhibiting differentiation ranging from diorite to granodiorite, quartz monzonite and granite.

Two such stocks, the Whitehorse and Cantlie Lake bodies, crop out in the Whitehorse city area approximately seven and fifteen miles respectively east of the main mass of the Cretaceous Coast Range batholith. The Whitehorse stock is of paramount economic significance, because where it is in contact with the limy members of the Lewes River Group those members have been hydrothermally altered to skarn and mineralized by copper.

Tertiary basaltic lava flows crop out in Miles Canyon south of Whitehorse and farther south, west of Macrae on the Alaska Highway.

ORE OCCURRENCES:

At least 28 known copper occurrences crop out along the Whitehorse Copper Belt; most of these are owned by New Imperial Mines Ltd. Mineralization consists of bornite and chalcopyrite with or without magnetite, disseminated in limestone. Minor metallic minerals present are pyrite, pyrrhotite and molybdenite. The copper zones are usually enveloped in a skarn composed of garnet, actinolite, tremolite, diopside, wollastinite and epidote.

The orebodies in the district are classified as contact metamorphic in origin in view of their metallic and skarn mineral association and their proximity to the contact of the granitic stock. However, the new deep orebody of New Imperial Mines Ltd. exhibits very definite replacement characteristics, which in turn implies a decidedly large tonnage potential for the district as a whole. The deep orebody lies more or less conformable with the attitude of the replaced limestone beds, striking northwest and dipping 57° northeast.

Most of the known copper occurrences are in limestone at the west contact of the Whitehorse stock or in limy pendants in the stock. In some instances copper occurs along sheared and faulted zones in limestone as much as 500 feet away from the contact. In other cases the stock itself is mineralized where it is faulted, sheared and fractured. Favoured localities for copper zones within the Whitehorse Copper Belt are at abrupt directional changes along the limestone-granite contacts, in particular within embayments in the stock.

PROPERTY GEOLOGY

Glacial alluvium mantles the area underlying the mineral claims of Lewes River Mines Ltd., so that the bedrock geology must be determined by extrapolating outcrop geology from outside the claims aided by the aeromagnetic results. On this basis it can be reasonably assumed that tightly folded favourable limy members of the Lewes River Group in contact with the Whitehorse granitic stock and the Cantlie Lake Stock underlie the company's claims.

The eastern contact of the Whitehorse Stock extends northwesterly across the main claim block from a "goosenock" bend in the Yukon River, through Chaburn Lake and the City of Whitehorse. The western contact of the Cantlie Lake Stock with Lewes River sedimentary rocks crosses the eastern part of the Gronk claim group.

AEROMAGNETIC RESULTS

Seigel Associates Ltd., geophysical contractors, carried out a helicopter borne aeromagnetic survey over Lewes River Mines Ltd. claims in April and May, 1968. Terrain clearance was maintained at 200 feet. The aeromagnetic survey was initiated both with a view to firmly defining the intrusive-sedimentary contact and to directly locating copper orebodies.

In the Whitehorse area, aeromagnetics can be applied in the search for copper orebodies both from an indirect and a direct standpoint; indirectly by clearly defining the contact along which orebodies in the district usually are located, and directly by taking advantage of the not uncommon association of copper mineralization with magnetite. In that the amount of magnetite in the various Copper Belt orebodies is extremely variable it should reasonably be expected that the caliber of magnetic anomalies which could be related to copper deposition would also be variable. Therefore, the absence of magnetic anomalies in the district need not imply absence of copper orebodies.

With reference to Figure 2, the favourable intrusive-sedimentary contact has been determined principally by the 1500 gamma contour; the igneous rocks on the southwest have a higher magnetic intensity than the invaded sedimentary rocks. Possible faults have been interpreted from magnetic lineaments; in some cases the lineaments have topographic support.

Following are listed thirteen target areas, based upon the results of the aeromagnetic survey (see figure 2). Two of the areas, A and B, were investigated in June and July, 1968 by ground geophysical and geochemical surveys.

Zone A:

This target has been delimited by the coincidence of an indicated embayment within the intrusive contact, the intersection of a possible northeast striking fault with the intrusive, and the presence of an isolated magnetic anomaly near the contact. Ground exploration over this combination of circumstances has proved fruitful; an induced polarization anomaly of potentially economic significance has been located at the intrusive contact.

Zone B:

A marked embayment within the intrusive contact that coincides with an apparent easterly striking fault has defined target area B. Ground followup surveys over this area failed to isolate an induced polarization anomaly of sufficient continuity to justify additional work.

Zone C:

The northeasterly striking magnetic trend may be considered from two approaches. The anomalies may represent copper orebodies associated with magnetite that are localized by a northeast striking fault. On the other hand, they can reflect intrusive plugs satellitic to the Whitehorse stock, which are intruded along a northeast structure. Should they be intrusive rocks they may contain orebodies of a "porphyry" type. In either case, Area C should be covered by followup ground geophysical surveys.

Zone D:

The aeromagnetic survey has defined a possible roof pendant of sedimentary rock within the Whitehorse stock, extending from the southwest flank of Chadburn Lake southeasterly to and a little beyond the "gooseneck" bend in the Yukon River. This area, designated Target D, includes an area 2 1/2 miles by 3/4 miles. Roof pendants are very promising locales for copper deposits in the Whitehorse Copper Belt; therefore, ground followup surveys should be undertaken over the entire pendant.

Zone E:

Another roof pendant has been partially defined between the Alaska Highway and the "gooseneck" bend in the Yukon River. Northeasterly striking faults, indicated by magnetic lineaments, flank this target area. Ground followup geophysical surveys are recommended for that part of the pendant which lies within Lewes River Mines claims.

Zone F:

A broad magnetic high has been outlined about a mile and a half northeast of Zone A. This anomaly possibly represents a satellite intrusive body within which an orebody of the "porphyry" type may be found. A linecutting grid has already been cut over the anomaly. A ground followup geophysical survey should be carried out.

Zones G, H, I, J:

These target areas have been grouped because they are considerably removed from the Whitehorse stock. All four zones are magnetically high anomalies which are interpreted as intrusive bodies; two of which, Zones H and I, are probably dykes. Because of their distance from the contact they should be placed on a low priority basis from the standpoint of carrying out ground followup surveys. Only if the zones at or near the contact respond favourably from diamond drilling, should Zones G, H, I and J be investigated by ground followup surveys.

Zone K:

A very highly magnetic anomaly lies for the most part beneath the Yukon River adjacent to the pendant zone D. This anomaly could represent a copper orebody with associated magnetite that occurs within the pendant D but at the intrusive contact. Ground followup geophysical surveys over Zone D should extend to the river's edge. Further surveys can be carried out on the river ice during the winter.

Zone L:

Area L has been determined from an embayment within the intrusive contact, a possible northeast striking fault, and a magnetic high occuring between pendant D, pendant E and the indicated fault. Ground followup geophysical surveys are fully justified over this area.

Zone M:

The aeromagnetic survey did not extend over the Porter Creek area because of the extensive habitation there. However, because this part of the Lewes River Mines claim block adjoins the War Eagle copper deposit of New Imperial Mines and bounds the intrusive contact the area has been designated Zone M. In view of the proximity of the intrusive contact and known copper mineralization the area should be investigated by ground geophysical surveys.

GROUND GEOPHYSICS

The recommended procedure for ground followup surveys in the Whitehorse area should include ground magnetic, induced polarization and possibly geochemical surveys in those areas where the overburden is not too thick.

The magnetic surveys are recommended in order to firmly locate the aeromagnetic results upon which the ground followup surveys are predicated. A subtle ground magnetic anomaly may also provide support for induced polarization anomalies of marginal economic potential. The orebodies in the Whitehorse Copper Belt may or may not contain associated magnetite, therefore magnetic surveys need not necessarily directly provide diamond drill targets.

The nature of the orebodies in the Whitehorse Copper Belt lends itself to detection by induced polarization techniques. IP anomalies located at or near the contact of the Whitehorse granitic stock with the Lewes River Group sedimentary rocks could reflect copper bearing sulphide deposits.

Induced polarization and ground magnetic surveys were carried out over Zones A and B by Seigel Associates Ltd. (IP) and Eagle Geophysics (magnetics) on behalf of Lewes River Mines Ltd. in June and July, 1968.

Resistivity surveys undertaken in conjunction with the induced polarization surveys have proved very useful in assessing the depth of overburden beneath Lewes River Mines claims. Approximately 50 feet of overburden occurs over Zones A and B.

GEOCHEMISTRY

In view of the overburden thicknesses indicated over the two zones investigated by ground followup surveys, soil sampling is not expected to be effective. However should the geophysical surveys indicate shallower overburden over some of the zones, then geochemistry should be done on a selective basis. Induced polarization surveys of marginal interest may be enhanced by geochemistry, thereby possibly justifying investigation by diamond drilling.

CONCLUSIONS

As a result of an aeromagnetic survey carried out the properties of Lewes River Mines in the Whitehorse area, thirteen zones have been designated on the basis of being favourable locales for copper deposits typical of those which occur within the adjoining Whitehorse Copper Belt.

Two of the designated zones have been investigated by follow-up ground geophysical and geochemical surveys; one of which, Zone A, resulted in the definition of an induced polarization anomaly which could be indicative of an underlying copper orebody.

Priority for ground follow-up surveys should be predicated on the proximity of the zones to the intrusive contact of the Whitehorse stock with Lewes River Group flmy sedimentary formations. Therefore the following three groups of zones are listed in order of priority:

1) Zones A, B, D, E, K, L - Zones A and B have already been assessed. The remaining zones should be subjected to induced polarization and ground magnetic surveys.

2) Zones C, F, M - These areas are removed from the contact but have almost equal merit for potential copper zones as the first group. Follow-up induced polarization and ground magnetic surveys are recommended.

3) Zones G, H, I, J - The aeromagnetic response over these areas indicates intrusive bodies considerably removed from the Whitehorse stock intrusive contact. Therefore ground follow-up surveys are not recommended at this time. Should some of the areas in the first two groups ultimately be diamond drilled and reveal copper mineralization then ground follow-up surveys would be in order over these zones.

Because of the nature of the known orebodies in the Whitehorse Copper Belt induced polarization and ground magnetic surveys are determined to be the best geophysical techniques to localize diamond drill targets in the area.

Respectfully submitted,

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA R. S. ADAMSON

R. S. Adamson, P.Eng., for

Dolmage-Campbell & Associates Ltd.

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CERTIFICATE

I, Robert S. Adamson, with business and residential addresses in Vancouver, British Columbia, do hereby certify that:

1. I am a consulting geological engineer.

2. I am a graduate of the University of British Columbia, (B.A.Sc. in Geological Engineering, 1957).

3. I am a registered Professional Engineer of the Province of British Columbia.

4. From 1957 to 1967 I was engaged in mineral exploration in Canada as a geologist for a number of companies; I was Chief of Exploration for Anvil Mining Corporation Ltd. when I retired in 1967 to join the firm of Dolmage-Campbell and Associates Ltd. as a consulting geologist.

5. I have not received, nor do I expect to receive, any interest, directly or indirectly, in the properties or securities of Lewes River Mines Ltd. (N.P.L.)

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
R. S. ADAMSON

Respectfully submitted,

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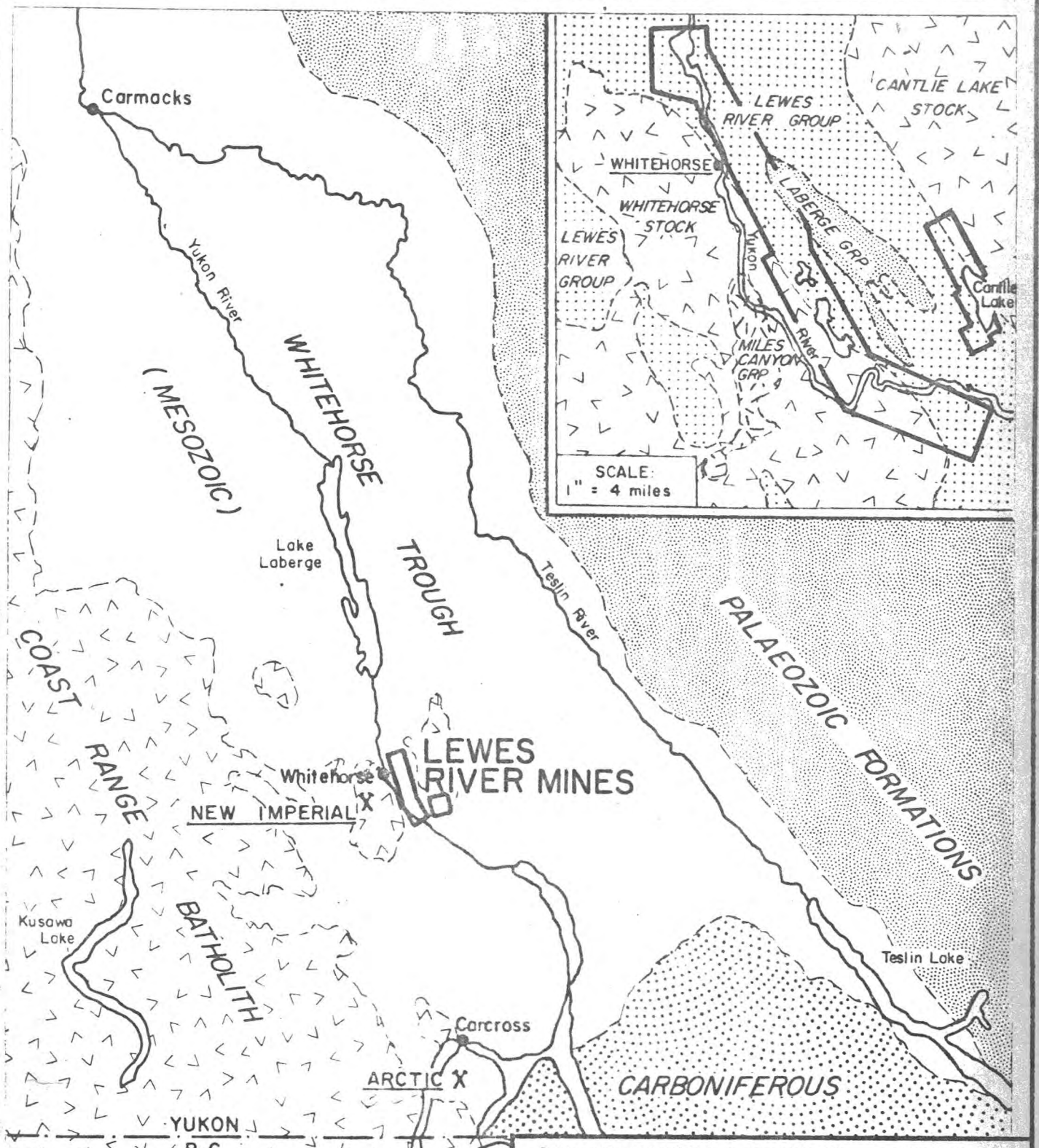

DOLMAGE - CAMPBELL & ASSOCIATES CONSULTANTS
VANCOUVER, CANADA

LEWES RIVER MINES LTD.
VANCOUVER, B.C.

LOCATION MAP

LEWES RIVER CLAIMS

REGIONAL GEOLOGY

SCALE: As shown | AUG. 1968 | FIG. 1

LEGEND

- MILES CANYON BASALT
- GRANITIC ROCKS
- LABERGE GROUP
- LEWES RIVER GROUP
- (A) TARGET AREAS
- MAGNETIC LINEARS, POSSIBLE FAULTS

CANTLIE LAKE

LEWES RIVER MINES (Gronk group)

MINES

CHADBURN LAKE

RIVER

LEWES

RIVER

YUKON

WHITE PASS & YUKON RAILWAY

Whitehorse

ALASKA HIGHWAY

H G F A L E K D C B J I M

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GENERAL GEOLOGY

LEWES RIVER CLAIMS

SCALE 1" = 1 mile	AUGUST, 1968	FIG. 2