

B.C. YUKON EXPLORATION CO. LTD. (N.P.L.),
303 - 1035 West Pender Street,
Vancouver 1, B.C.

GEOLOGICAL AND GEOCHEMICAL

ASSESSMENT REPORT

LIME LAKE PROPERTY
WHITEHORSE MINING DISTRICT, Y.T.

Latitude 134°27'

Longitude 60°04'

Mineral Claims B1-4, BOB 1-8, G 1-8,
J 1-8, JOHN 1-8, JUNE 1-4, ROGER 1-8,
STRIK 1-4, T 1-8.

by

JOHN S. VINCENT LTD.
1035 W. Pender St.,
Vancouver 1, B.C.

February, 1972.

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INTRODUCTION

The body of this report discusses the assesment work performed on the Lime Lake property of B.C. Yukon Exploration Company Ltd. between July 19 and September 6, 1971. The summer program included detailed mapping of the granitic intrusion and the adjacent area, a geochemical soil survey of the western part of the property, and a detailed investigation of the exposed mineralized zones and related alteration.

Particular attention was directed to genetic and structural features, and the relationship between molybdenite mineralization and fracturing. The resulting map and interpreted geologic setting is similar to that outlined previously, but considerably more detailed and informative. Mineralized float was examined and located. Previous soil sampling has outlined anomalous areas of interest, and a concentrated effort was directed towards a geological explanation of the results.

The field work was carried out by Mr. V. Ahlborn under the supervision of K.A. MacLean and J.S. Vincent, P. Eng.

PROPERTY, LOCATION AND ACCESS

The B.C. Yukon Exploration Co. Ltd. claim group is located in the southern Yukon Territory, approximately $4\frac{1}{2}$ miles north of the Yukon-British Columbia border at longitude $134^{\circ} 27'$ and latitude $60^{\circ} 04'$, Figure 1. The property is 11 miles southeast of Carcross and 49 miles southeast of Whitehorse, Y.T. The claims are located in the Whitehorse Mining District, and their particulars are listed as follows. The configuration of the block is shown in Figure 2:

<u>Claim</u>	<u>Record Number</u>	<u>Expiry Date</u>
B1-4 incl.	Y10376-Y10379	July 15, 1974
BOB 1-8 incl.	Y30329-Y30336	" " "
G 1-8 incl.	Y 9943-Y 9950	" " "
J 1-8 incl.	Y10131-Y10134	" " "
JOHN 1-8 incl.	Y25630-Y25637	" " "
JUNE 1-4 incl.	Y25644-Y25647	" " "
ROGER 1-8 incl.	Y25805-Y25812	" " "
STRIK 1-4 incl.	Y 9638-Y 9641	" " "
T 1-8 incl.	Y10368-Y10375	" " "

The property is accessible by float plane to Striker Lake (also known as Lime Lake), adjacent to the southeast boundary of the claim group. Three helicopter landing pads are located on the property adjacent to the early drill sites. An old cat road leads to Windy Arm from the lake. The nearest road, an allweather gravel road, connects Venus mine west of Windy Arm with Carcross and comes within 12 miles of the Property. Carcross itself is linked with Skagway by railroad (54 miles) and with Whitehorse by railroad and highway.

PREVIOUS WORK

August 1966: Initial property examination by A.C. Skerl; Recommendation of a limited diamond drill program.

September 1966: Six holes drilled using XRT equipment, average depth 80 feet. Holes spotted near surface of mineralization.

December 1, 1966: Report on X-ray drilling program.

February 8, 1967: Report submitted by Dr. A.C. Skerl, who recommended a geologic and geochemical survey program, and a short diamond drill program.

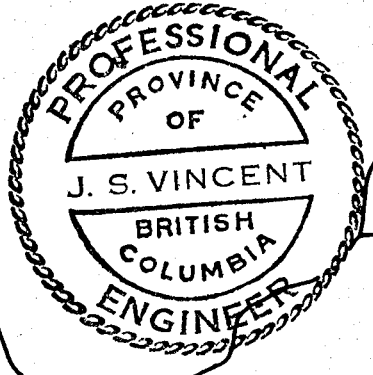
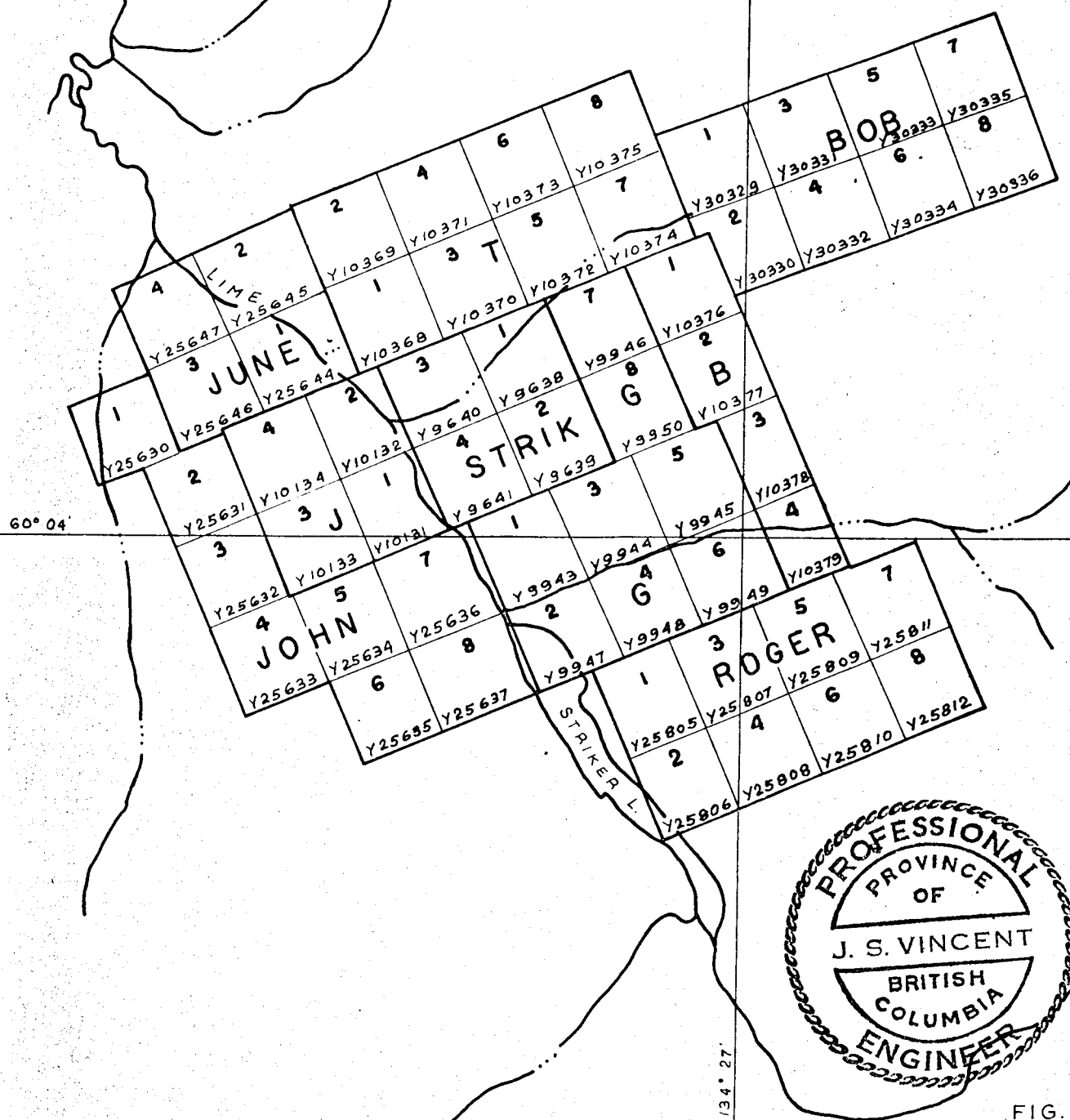


FIG. 2

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LIME LAKE PROPERTY MAP	
1 Inch = 1/2 Mile	November 1971

- Summer 1968: A grid system of lines spaced at 400 feet was cut. Geological mapping at a scale of 1'=200' was carried out over the eastern part of the grid. A magnetometer survey was performed on the whole grid, and soil samples were collected over the eastern part of the grid. Some trenching was done on the surface exposures. The soil samples were analysed and the results plotted and contoured. Three significant anomalies were delineated.
- Summer 1969: The grid was expanded to include the area west of the creek. Geologic mapping at a scale of 1'=200' was completed, and detailed mapping of the area adjacent to line 40+00 N at a scale of 1"=50' was done. Trenching and sampling in 25 locations was completed and the samples were analysed.
- December 1970: R.G. Hilker submitted a report detailing the results of knowledge gained to that time, including descriptions of samples and assay results. He concluded that the granite stock contained a zone of mineralization and three geochemical anomalies. He recommended an induced polarization survey in the trenched area and over some of the geochemical anomalies.

GEOLOGY

Regional Setting

The rocks of the Windy Arm area consist of a sequence of Upper Paleozoic limestones, limestone breccias, volcanic flows and pyroclastics. The property under study is underlain by granitic plug intrusive into this sequence, and shown as Cretaceous in age on Map 1093A, (105D).

The configuration and distribution of major creeks and lakes suggests underlying structural control of the topography, and a well developed system of faults and fractures is evident. Bennet Lake, Windy Arm and the southern part of Taku Arm represents one system, and the northern portion of Taku Arm and the Striker Lake valley accentuate another. The igneous body occurs in the acute intersection of the two valleys one of which continues southeasterly onto B.C., and becomes obscure in a north-westerly direction in the area of the junction of Windy Arm and Tagish Lake. Along the northwest shore of Windy Arm a strongly developed set of fractures trends 110° and generally lies along strike to the fracture system analysed at Striker Lake.

Local Geologic Setting

A. Introduction

The property is immediately underlain by limestone beds containing a slate seam. A sill of andesitic material approximately 500 feet thick has intruded this sequence and has in turn been intruded by a granitic stock. The volcanic material to the east, south and west of the igneous body extends over a wide area while in the north only a thin belt separates the igneous intrusive from the limestone. Because of glacial overburden, the contact relationships between the granite and limestone is uncertain. Numerous

basaltic and lamprophyre dikes traverse the various rock units. Another 500 foot wide volcanic sill occurs in the limestone.

B. Rock Types and Alteration

Limestone

The oldest rock in the area is a thick horizon of coarse, crystalline limestone which occurs in beds striking northwesterly and dipping moderately to the northeast. Adjacent to the contact with the volcanic rocks the limestone is metamorphosed and has in places a marmoritic appearance, or grades into a cherty phase. Flow structures, evidenced by vortices and banding, as well as brecciation of the limestone, can be observed in an andesitic or basaltic volcanic matrix.

Black Slates

A strongly folded slate unit is interbedded with the limestone to the east of the property, and a random orientation of cleavages was observed.

Volcanic Intrusives in the Limestone

Within the limestone is a two foot wide dike consisting of a lamprophyre in which oxyhornblende, pyroxene and altered plagioclase phenocrysts are included in an aphanitic basaltic matrix. The other dikes and the sill consist of basaltic material which in the latter case contains calcite phenocrysts often totally or marginally replaced by sulfides, mainly pyrite.

The Volcanic Rock

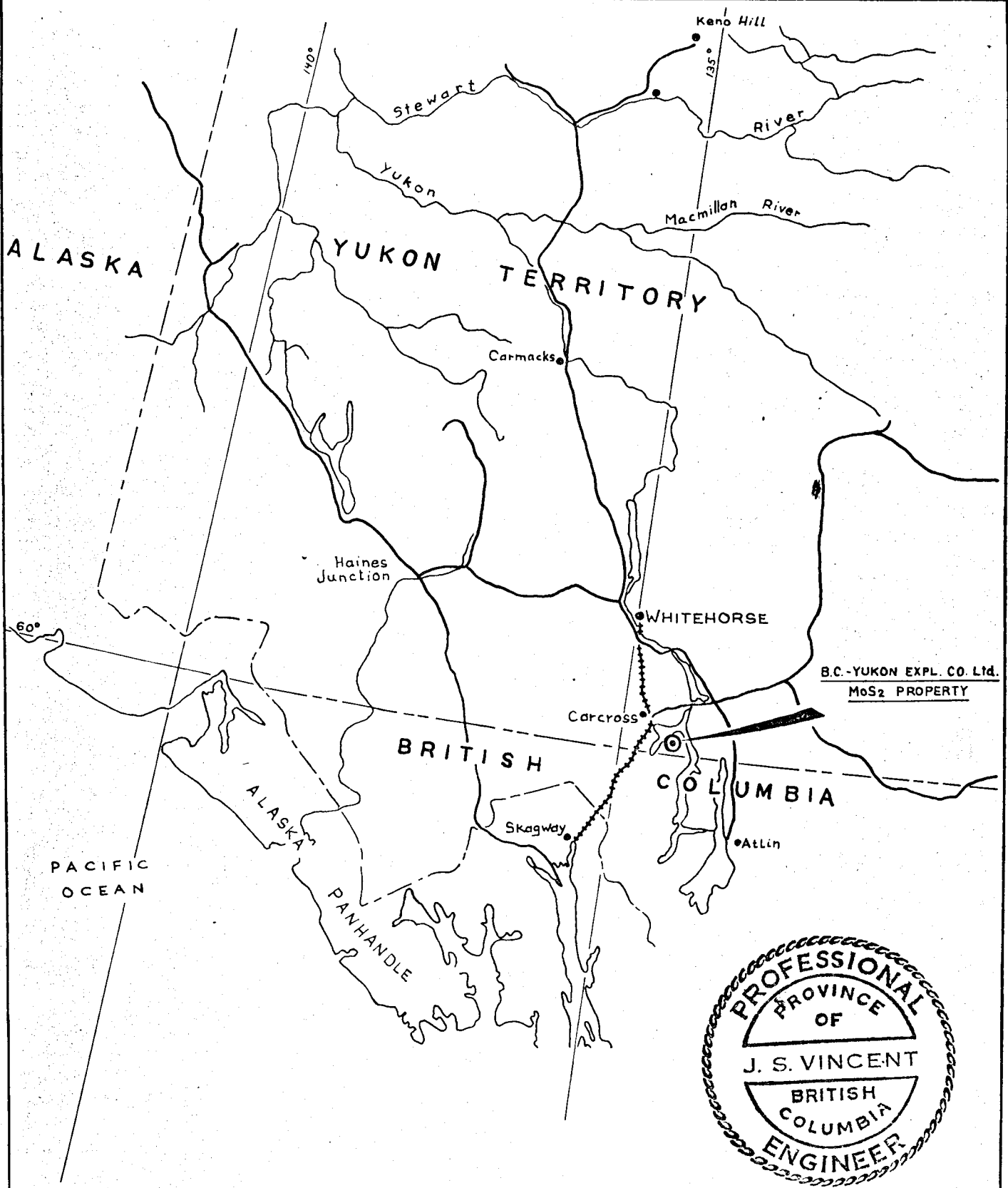
The volcanic material around the stock includes basaltic rock, greenstone, pyroclastics and strongly siliceous cherty varieties containing finely disseminated pyrite and chalcopyrite or thin sulfide veinlets.

The Granitic Body

The granitic rock assemblage is comprised of medium to coarse grained granodiorite and fine to medium grained quartz diorite. Apparently most of the granitic rock varieties are porphyritic, featuring coarse plagioclase, microcline, and quartz phenocrysts. In several places there are mafic-rich xenoliths up to two feet long, and these can make up as much as 40% of the rock. In the east-central part of the granitic body there are irregularly shaped dike-like bodies consisting of a biotite dacite with a sugary texture. The biotite crystals are crushed, compressed and strongly flow oriented. Quartz phenocrysts on the other hand are smoothly rounded indicating crystal movement by flowage during a semiplastic stage of the rock. A texturally interesting granitic rock occasionally occurs either sheared into or existing as flows within the intrusive rock. Large but very thin biotite flakes seem to have developed in a system of microfractures orienting them so that they appear either as fine needles (cross section) or as hexagons. In the eastern part of the map area an easterly trending zone of the quartz diorite contains very fine red garnets. Pegmatite lenses occur locally throughout the granite body.

The flow controlled igneous rock described above is cut by the flowing dikes and veins (listed in historical sequence beginning with the oldest event):

- (a) A set of aplite dikes up to 2½ feet wide with an average width of less than one inch.
- (b) Quartz veins generally a fraction of an inch wide.



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MoS₂ PROPERTY

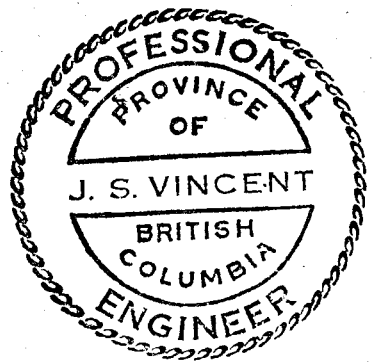


FIG. 1

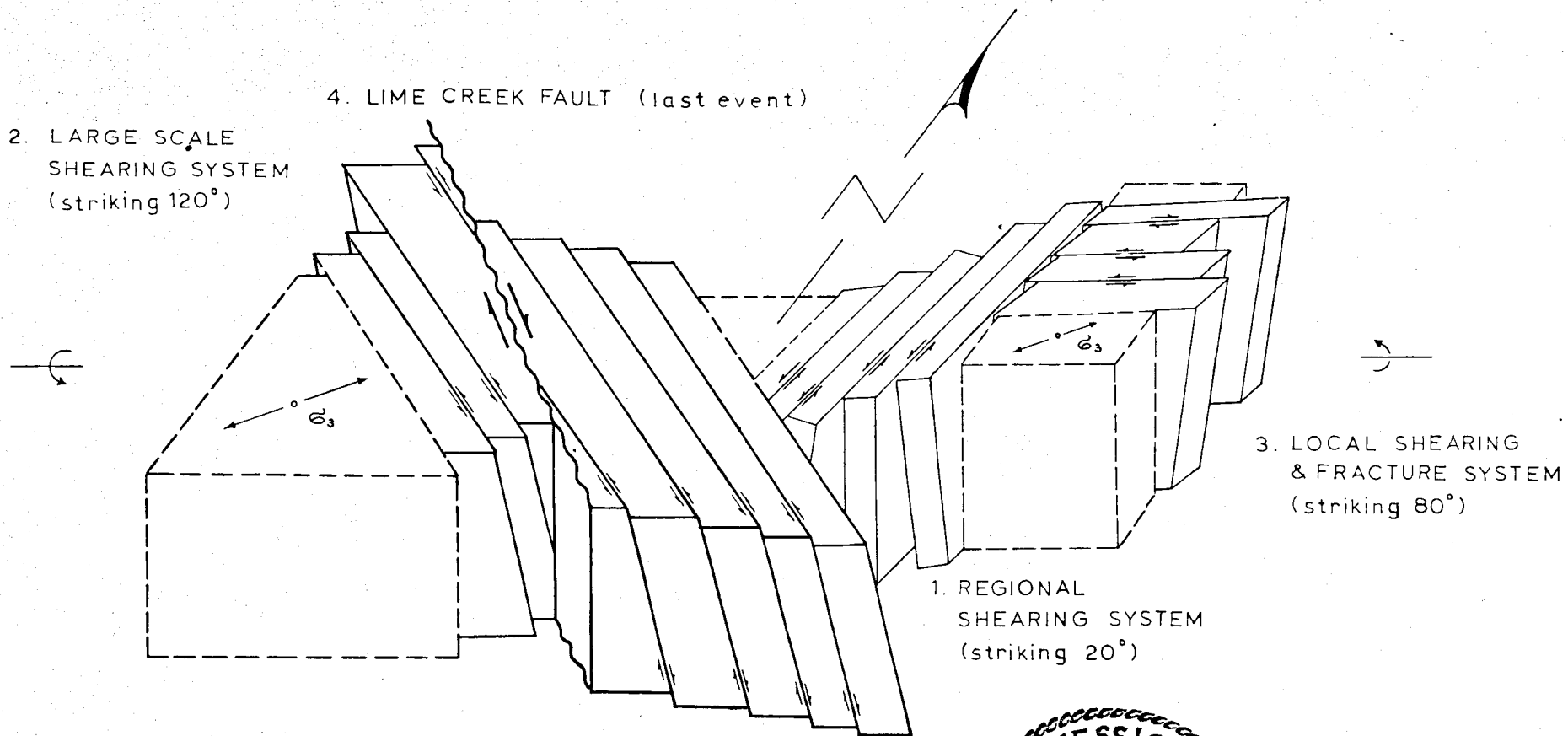
JOHN S. VINCENT LTD.	
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LIME LAKE PROPERTY LOCATION MAP	
1 Inch = 50 Miles	November 1971

- (c) Thin quartz veins containing muscovite flakes and molybdenite rosettes.
- (d) A 12 foot wide lamprophyre dike compositionally similar to that cutting the limestone.

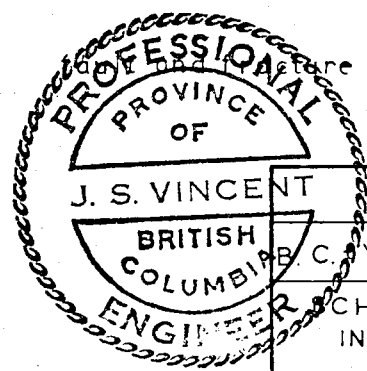
The rocks in contact with the granitic body require special attention. At the western contact stringers of fine grained granitic material have intruded volcanic breccia, while at the eastern contact a conflicting situation exists. There, the volcanic rock close to the contact is enriched with quartz and feldspar phenocrysts, has a partly acidic groundmass and contains clots of granitic material. The volcanic and granitic rock, where in contact, have irregular interlocking boundaries. Aplite, pegmatite and quartz pockets close to the contact are also abundant in the granitic rock.

Alteration

Alteration within the granite mass is irregularly distributed, but the most important is that associated with the system of quartz veins and stringers, and molybdenite mineralization. The altered zones range from a few inches in width to several feet where swarms of veinlets occur. Sericitization and saussurization are the most common types observed, while chloritization and epidotization are relatively rare; in hand specimen at least. Adjacent to the quartz stringers the rock is generally brittle, vuggy, and quite limonitic. Limonite augen which may be derived from small pyrite aggregates occur frequently along fracture planes which parallel the younger quartz veins.



2. LARGE SCALE SHEARING SYSTEM (striking 120°)



fault systems interpenetrating

FIG. 3

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SCHEMATIC BLOCK DIAGRAM INTERFERING FAULT SYSTEMS AT LIME LAKE

Saussuritization of the feldspars is not uncommon, but on the whole, the granite is relatively fresh looking.

In the volcanic rock adjacent to the northern edge of the granite, a 2 foot wide gossan zone was observed in a creek incision. Glacial cover and time did not allow an extensive investigation.

C. Structure

The structure of the area has an exciting complexity, and the numerous dike and veins serve as good structural markers.

Four different postcrystalline shear systems are evident:

- (1) Boulder traces, ridges, and edges marking drastic slope changes throughout the property commonly strike at 120° and seems to be closely related to the observed and previously described fracture system across Windy Arm. These large scale slices may reach thicknesses of 800 feet and appear to have controlled the post intrusive shape of the granitic stock. The rock debris at the contact indicates that extensive shearing occurred after the igneous material was intruded. Extensive measurements of the fracture sets within the pluton reveal that the major force responsible for the development of these joints was more or less normal to the strike of the shear planes. This implies that the maximum component of force produced a dip slip movement of the large scale rock slices, rather than a strike slip movement. It is surprising that the large angular granitic boulders are rather fresh and that their positions are so consistently oriented.

- (2) Three pieces of evidence strongly suggest a fault running down Lime Creek: The offsetting of contacts along Lime Creek, the continuous topographic trench extending far beyond Lime Creek and the broken up granitic rock with dispersed rock fragments at the west contact by the Creek. This fault has offset the eastern part of the igneous plug to the south relative to the western portion.
- (3) Four canyons, up to 1,000 feet long, numerous grabens which show in places slickensides, the dislocation of the lamprophyre dike segments (see map), and the strong orientation of the majority of the outcrops and steep rock faces define a system of shears which strike about 80° .
- (4) The fourth shearing system is defined by countless slabs, a fraction of an inch to several feet thick, which strike at 20° and dip steeply both east and west. These slabs protrude into the canyons or from cliff faces. They also tend to offset the irregular mafic dike-like bodies and aplite dikes, but were never found to dislocate any of the later quartz veins. The relatively late lamprophyre dike (chilled margins) as well as the numerous dikes in the uphill limestone environment were intruded along the same planes of weakness.

The interference of all these fault systems (Figure 3) has lead to strong displacement of the various related rock types within the intrusive, complicating the delineation of their individual extent. The shearing of rock masses in a semiplastic stage may have caused the development of the small garnets by dynamic metamorphism.

The historical sequence of the faulting is difficult to establish since it appears as if the movements in one

shearing event were rejuvenated after dislocation along another plane, and this was repeated several times.

An interesting relation can be found by comparing zones of weaknesses which developed before and after consolidation of the slowly solidifying intrusion. Many aplite dikes and the earlier quartz veins, for example, developed in tension gashes which strike at 120° ; the same direction along which the later large-scale rock slices were dislocated. A similar situation where early structural features are copied by later ones can be observed in the case of the 80° striking fault system. The more recent mineralized quartz veins grew in tension gashes which strike at 80° and have moderate southerly dips. In this case, the relative movement can even be defined with respect to direction and duration in time. Many of the quartz veins occur on rock faces. The shear movement started before or at the formation of the veins orienting the euhedral quartz crystals in an uniformly oblique direction with respect to the vein boundaries. Shearing in this direction continued after the lamprophyre dike intruded.

D. Mineralization

(1) Molybdenite

Molybdenite mineralization with associated quartz veins is concentrated in an area approximately 500 feet wide and 2,000 feet long east of Lime Creek, between lines 40 and 48 N. Within this area there is also a significant amount of mineralized float. Fifteen hundred feet along strike in a westerly direction, and west of Lime Creek, mineralized float and quartz veins carrying molybdenite were located. Uphill to the east, approximately 1,000 feet beyond the main trenches, several mineralized boulders were located, as shown on the geological map.

The molybdenite mineralization is related to the younger quartz vein system and does not appear to be associated with a particular granitic rock variety. The relatively high density of moly occurrences between lines 40N. and 48N. may be accentuated by the prominent 80° fault and fracture system which has completely exposed the vein surfaces, and opened up by blasting. It is possible that some of the extensive outcrops of the southeast part of the intrusive, which are covered with lichen, also contain mineralized veins under the cover.

The molybdenite is present in the form of various-sized rosettes (up to 0.4 inches in diameter), which commonly developed as linings on thin (up to 1 inch wide) quartz veins. These linings may lie only on one side or symmetrically on both sides of the vein. In some instances an odd number of molybdenite linings exist, where layers of rosettes alternate symmetrically with quartz-rich layers and the centre of the vein is marked by the remaining odd moly layer.

In addition, molybdenite occurs in massive fine grained stringers or ribbons in the quartz veins, and fine disseminations in the granite adjacent to the quartz veins. It appears that the crystallization of molybdenite occurred in cyclic intervals, and some of the quartz veins contain molybdenite only locally. In places, there are very thin quartz veins arranged in subparallel swarms up to 2 feet wide, and the associated wallrock is strongly kaolinitized, sericitized and mineralized with fine disseminated molybdenite. Although moly in granitic float often appears to be disseminated and unrelated to quartz veining, it is likely that it had been associated with quartz veins. The quartz may be inconspicuous, thinned out, or broken off.

The rosettes in the vein are in some cases parallel, in other cases more perpendicular to the vein outlines, whereas the raisin-sized clots disseminated in the wall rock have a random orientation. The crystal growth indicates that the rosettes developed locally under variable stress systems. Where the rosettes grew parallel to the vein sides the initial tension gashes seem to have been constant in width. In the case of perpendicular orientation, however a re-opening of the gash most likely occurred. As evident by the existence of vein swarms, the disseminated variety appears to have derived from molybdenum bearing solutions which were localized by tension or shear zones present in the crystal mush. Movements along these zones while the material was in a semi-plastic state, led to the random distribution of the molybdenite rosettes.

The "ribbon molybdenite" is fairly common in many quartz veins and forms spectacular "showings" in many of the trenches.

Previous work carried out by Hilker (1969, 1970) involved considerable sampling, and values were reported ranging from 0.01 to 2.08% MoS_2 . Visible moly correlates with these results, but careful composite sampling by diamond drilling will be required to effectively evaluate the mineralized zone and provide a meaningful grade estimation.

Often associated with the moly-rich quartz veins is muscovite. Textural examinations revealed that the muscovite crystallized from the molybdenum-carrying solutions first, followed by molybdenite and lastly quartz.

(2) Sulfides in the Igneous Rock

Rare, small pyrite aggregates are disseminated throughout the eastern part of the granite intrusion, their previous existence often documented by limonite spots or iron oxide stain. Chalcopyrite was only rarely observed.

(3) Sulfides in the Volcanic Rock

The volcanic rocks which enclose the igneous body contain minor amounts of sulfides in the form of pyrite and occasional chalcopyrite in fine disseminations and stringers.

About 700 feet northeast of 61 N., in the creek incision, the volcanics show a higher concentration of sulfides (about 0.2% Cu) than the remaining volcanic rock. The leached alteration zone, mentioned under the earlier discussion of rock alterations, lies at the north boundary of the mineralized zone adjacent to the limestone contact, and a specimen returned values of 0.4% copper with traces of moly and zinc. Sulfides in float is spread along the creek for several feet below the showing. There is another 500-foot wide sill topographically higher up in the limestone between 26E. and 31E. on line 64N. The contact of this zone strikes 120° with a steep easterly dip and extends from the creek incision eastward, probably being fault bounded on the west side. The andesitic rock contains numerous amygdules filled with calcite. These secondary calcite aggregates are often marginally or in places completely replaced by pyrrhotite, pyrite and minor chalcopyrite (overall sulfide content is less than 1%). The weathered surfaces appears vuggy and coarse where the calcite was dissolved out of the matrix. The sulfides are much more apparent on a fresh surface than on the weathered surface. Some of the volcanic dikes within the limestone also contain small amounts of disseminated sulfides.

(4) Sulfides in the Black Slates

The microfractured slate beds southeast of the property in the creek incision, are thinly coated with pyrite.

E. Geologic History and Interpretation

Although the igneous body has a stock-like outline it appears to have suffered considerable readjustment by post-intrusive shearing. A concentric distribution of rock types or alteration around the igneous plug seems to be absent. There is, however, some vague indication of discontinuous zoning of rock types traversing the granitic body with easterly trends (similar to one of the four shearing systems striking at 80°) and laid out in a north-south oriented sequence.

The southernmost zone contains very small garnets, while adjacent to the north is a zone which has mafic dike-like bodies and steeply dipped quartz veins. The next zone to the north consists of very brittle rock which suffered extreme weathering (discussed under the topic of rock alteration) and is followed by another zone, characterized by increased amounts of mafic-rich xenoliths and apparently the highest number of quartz-molybdenite veins which dip to the south. The fact that the quartz veins west of Lime Creek dip steeply to the north and south may be due to a rotation of the walls about the fault plane defined by the Lime Creek Fault.

The following sequence of events is suggested based on the observed relationships of the various rock types. Present structural attitudes have only a relative meaning since tilting of the area may have disguised the original attitudes..

Geological History

1. Deposition of limestone.
2. Deposition of black shales, followed by more limestone.

3. Extrusion of volcanic rock:

- (a) The extrusion was accompanied by the intrusion of the sills or dikes into the cool sediments.
- (b) The mobilization of immediately adjacent limestone resulted in the formation of vortices and intermixed flows.
- (c) The lime silicates may locally have changed the character of the invading material considerably as indicated by the cherty appearance of some of the volcanic rock.
- (d) The intrusion must have been violent in places, causing brecciation and xenolithic incorporation of the limestone.
- (e) Contact metamorphism and recrystallization of the lime silicates occurred at the fringe of the volcanic flows producing marble and banded cert.

4. Intrusion of granitic rock material:

The intrusion took place into an initially cool environment over a relatively long period of time; probably as multiple events:

- (a) The volcanic rock brecciated before or at the moment the magma intruded it.
- (b) The magma penetrated the fractured volcanics in the form of small scale sills and stringers at the margins along the northwest contact.
- (c) The initial flows of the intrusive were chilled, as documented by the fine grain rock types.
- (d) Later intruding granitic material broke up and redigested the earlier granites, incorporating xenoliths and leaving behind flow-controlled granitic rock varieties.

- (e) The repetition of new magmatic advances heated up the environment and seems to have remobilized some of the volcanic material which then incorporated granitic clots as found at the southeast contact. This mechanism of remelting, however, requires some 900° C., a large heat influx which is difficult to visualize. It may also be that the volcanic rock on this side of the intrusive had not consolidated when the granitic material came in.
 - (f) The cooling of the final granitic crystal mush occurred, in general, very slowly.
 - (g) The formation of irregularly-shaped mafic bodies took place in a plastic medium which could barely sustain fractures.
5. Injection of aplite in one or more events:
- (a) The aplitic material was probably generated in areas of high physical pressure, as in shear zones during a semiplastic stage of the granitic mush.
6. Development of a large scale shearing system striking at 20°, (discussed under the topic "Structure", point 4);
- (a) Aplite and the irregular mafic dikes are offset by 20°-striking fault planes.
 - (b) Similar shearing planes also exist in the adjacent volcanics and may have originated from regional pressures superimposed onto the granitic crystal mush.
7. The invasion of siliceous material along tension gashes striking 120° (see "Structure", point (1)), initiated the growth of the older set of quartz veins:

- (a) It is possible that these zones of weakness existed in consolidated volcanic environment and were superimposed onto the crystallizing granitic rocks while they were in the plastic state. Quartz veins run into the immediately adjacent volcanic rock.
8. Rotation of the major stress field, possibly due to relaxation stresses with development of tension gashes trending at 80° (see "Structure", point (3)).
9. The supply of relatively hot siliceous solutions and the alteration of wall rock; ie. epidotization and sericitization of plagioclase crystals.
10. The beginning of shearing subparallel to the tension gashes.
11. Molybdenite emplacement:
 - (a) The growth of the quartz vein during continuous shearing with the following sequence of crystallization:
 - i. muscovite
 - ii. molybdenite
 - iii. quartz
 - (b) The absorption of molybdenite-rich solutions by the sheared wall rock adjacent to the veins.
12. Consolidation of the igneous body.
13. Injection of lamprophyre dike(s) along what are probably reactivated shearing planes of the 20° -trending system (point 6 of this summary):
 - (a) Chilled dike walls indicate that the dike material came into a relatively cold environment.

14. Rejuvenation of the 80°-trending shearing systems:

- (a) Offsetting of lamprophyre dike segment.
- (b) Offshearing of many 80°-striking quartz veins in the central part of the igneous body.
- (c) Further opening of graben, with the development of slickensides.

15. Rotation of the stress system.

16. Shearing along the 120° system.

17. Development of the Lime Creek Fault:

- (a) A dominantly strike-slip movement, offsetting the west side to the northwest relative to the east.
- (b) Rotation of the walls about an imaginary east/west oriented axis, such that the south part of the west wall dropped, while the north part rose. This rotation may also have been caused by isostatic rebound, following a glacial retreat (point 19 of this summary).

Note: All these alternating shearing activities led to faulting along the contact between the granitic body and the adjacent volcanic rock.

18. Uplift and erosion

19. Glaciation

- (a) Formation of eskers.
- (b) The last ice movement was along the valley in a northwest direction.

20. Blanketing of the whole area with siliceous volcanic ashes.
21. Local cirque carving by yearly ice activities.
22. Soil erosion.

GEOCHEMISTRY

The 1971 program carried out by the writers completed the soil sampling over the grid west of Lime Creek. Rather than sample the entire west grid on a 100x400 ft. spacing, initial coverage was on a 600 foot square grid. Where anomalous values were returned the area was followed up with a sample spacing of 200x400 feet. The results are shown on the accompanying map.

The work carried out by R.G. Hilker (1968-1970) included a detailed soil survey of the grid east of Lime Creek. Sampling on a 100x400 foot grid, and statistical interpretation by F.M. Smith, defined a large "ring-halo" type of anomaly which he regarded as "common to copper-moly porphyry granite stocks." The mineralization exposed to date is concentrated in a fracture zone striking across the northern limit of the soil anomaly. The details of this work have been described in Hilker's reports.

(a) Description of Survey

The samples were taken from below the humus and ash layers by means of an auger, and then analysed by Bondar-Clegg Laboratories for copper and molybdenum using the -80 mesh fraction, extracting with hot aqua regia, and making determinations by atomic absorption spectroscopy.

(b) Treatment of Results

The results of the geochemical analyses were treated statistically by obtaining the arithmetic mean and standard deviation of the sample population. Interest levels were established by adding various multiples of the standard deviation to the mean values for Cu and MoS₂. These threshold values were used in the map plot of sample values to indicate anomalous areas. Calculations were done on a Sharp Compet 36 3P programmable desk top calculator. The parameters were calculated as tabulated below:

<u>Element</u>	<u>Cu</u>	<u>MoS₂</u>
Arithmetic Mean (\bar{x})	50.8 ppm	2.2 ppm
Standard Deviation (s)	37.9	2.5
Threshold @ $\bar{x} + 1s$	88.7	4.7
Threshold @ $\bar{x} + 1.5s$	107.7	6.0
Threshold @ $\bar{x} + 2s$	126.6	7.2
Threshold @ $\bar{x} + 3s$	164.4	9.7

Representation of Results

The sample locations and results are shown on the Soil Geochemistry Map, and the statistical levels of significance are shown by appropriate symbol. The relative size of the symbol indicates directly the level of significance, and the eye is drawn to clusters of anomalous values and areas of interest. The bias and interpolation inherent in contouring is minimized, and the reader is provided with a subjective picture of the results.

Discussion of Results

The soil values in excess of the mean plus 2 standard deviations are regarded as definitely anomalous, and are clustered in the area of 20 to 28N. and 38 to 55W. As shown on the map, the western half of the anomalous area is underlain by volcanic rocks andesitic in composition, in which occasional stringers of pyrite and chalcopyrite have been observed. Although anomalous copper values predominate, there is a significant correlation with high moly values. No underlying molybdenite mineralization was located. The anomalous moly and copper values down the hill are underlain by the granite, and molybdenite mineralization was located in quartz veins and float. However, distribution over the grid is somewhat erratic, and a high priority area is not indicated.

Geological investigation east of Lime Creek did not locate any molybdenite mineralization in the immediate area of the soil anomaly outlined by Hilker's earlier survey. However, the mineralization is difficult to see on the smooth and lichen-covered outcrop surface, and blasting may be worthwhile to expose fracture and vein systems.

Although high moly values are present in the soil, the possibility cannot be overlooked that migration and glacial transport has expanded the size of the anomalous area. The large anomaly on the east grid is somewhat elongated to the south and trails off down slope.

With the spectacular mineralization exposed across the northern boundary, a glacial "smear" action cannot be disregarded.

CONCLUSIONS AND RECOMMENDATIONS

The 1971 work program completed the geochemical and initial geological evaluation of the claim group. The most significant zone of molybdenite mineralization was closely defined, and evidence of mineralization was located west of Lime Creek. Structural analysis of the various faults and fracture systems indicates a complex geological history, and the molybdenite mineralization is associated with quartz veins localized in a well developed system of fractures striking at 80° across the granite plug; a system which appears relatively late in the sequence of events.

Although alteration is visible in the immediate area of the mineralized quartz veins, the bulk of the granite is quite fresh.

Although the soil survey west of Lime Creek indicated an anomalous area, the values are confined to a relatively small area elongated down a $15-20^{\circ}$ slope. Values towards the bottom are distributed erratically, and the upper end is underlain by andesitic volcanics which contain minor visible pyrite and chalcopyrite. However, the correlating anomalous moly values are significant, and were not explained by the geological evaluation.

Copper mineralization in float and bedrock in the areas underlain by volcanic rocks peripheral to the granitic plug, is interesting, and further geological prospecting should be instigated.

The molybdenite mineralization exposed in the trenches along the main zone requires further evaluation, and a preliminary diamond drilling phase is warranted.

Four 500 foot holes are recommended to evaluate the continuity of the zone and obtain composite samples. An all-inclusive price of \$20.00 per foot should be allotted, for a total cost of \$40,000.00

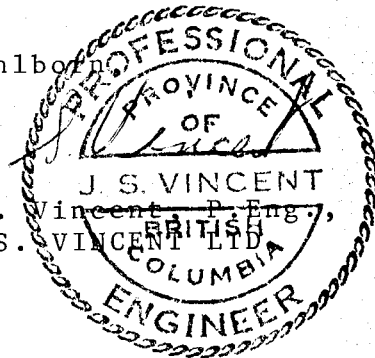
Respectfully submitted,

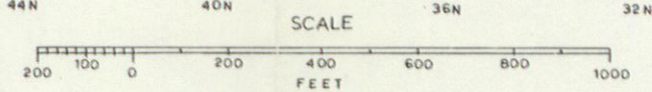
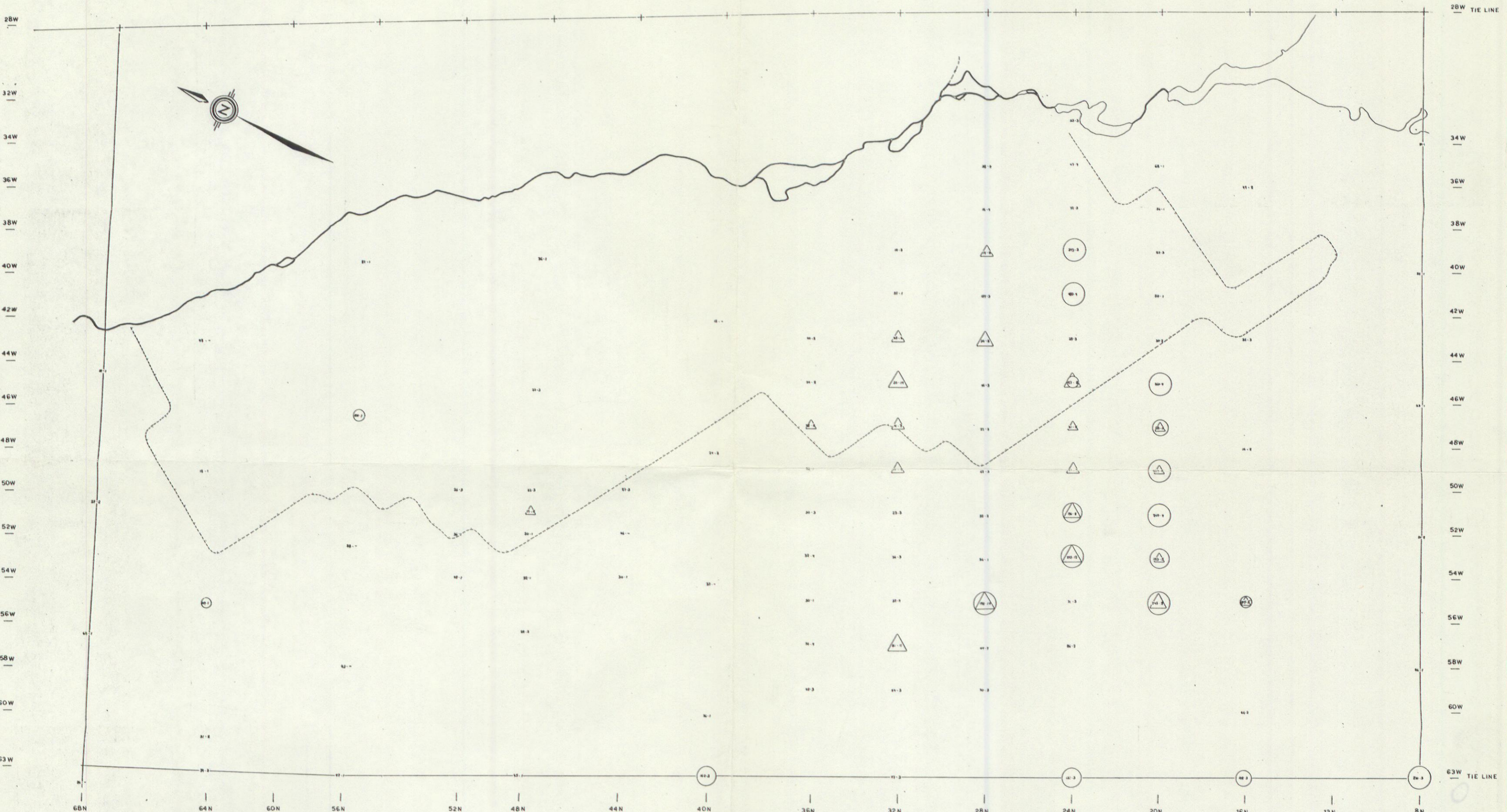
Valber Ahlborn

V.H. Ahlborn

John S. Vincent

John S. Vincent, P. Eng.,
for JOHN S. VINCENT LTD.





LEGEND

COPPER	MOLYBDENUM	CONTACT
● < 88.7 PPM	△ < 4.7 PPM	--- Molybdenum not detectable
○ > 88.7 PPM	△ > 6.0 PPM	- - - CONTACT Granite/Volcanics
○ > 107.7 PPM	△ > 7.2 PPM	○ LIME CREEK
○ > 126.6 PPM	△ > 9.7 PPM	
○ > 164.4 PPM		

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LIME CREEK PROPERTY / WEST OF LIME CREEK

SOIL GEOCHEMISTRY
COPPER & MOLYBDENUM

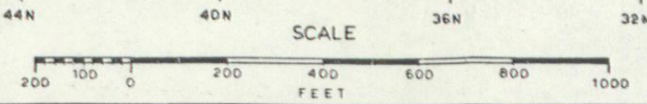
November 1971 V. A.



LEGEND

- GRANITE
- PEGMATITE
- LAMPROPHYRE DIKE
- VOLCANIC ROCK
- CHERT
- LIMESILICATES
- GLACIAL TILL
- CONTACT (SHEARING)
- FAULT (REL. MOVEMENT)
- INFERRED FAULT
- OUTCROP WITH TALUS OR BROKEN UP ROCK
- RIDGE
- LINE INDICATING PROMINENT CHANGES IN SLOPE
- CLIFF, STEEP ROCK FACE
- CANYON, GRABEN
- BOULDER RIDGES, BOULDER TRACES
- MIXED BOULDERS
- MOLYBDENITE IN FLOAT
- SULFIDES
- QUARTZ VEIN (STRIKE / DIP)
- QUARTZ VEIN WITH MOLYBDENITE
- APLITE DIKE
- MAFIC DIKE (STRIKE / DIP)
- JOINTS
- ROCK SLABS
- DIRECTION OF MAXIMUM STRESS
- TOPOGRAPHIC LOW, DRAINAGE
- TRIBUTARY
- MAIN CREEK
- POND
- SWAMP
- OLD SNOW SLIDE
- HELICOPTER LANDING PAD
- GAR.
- XEN.
- BEAVER DAM

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**GEOLOGY OF
 LIME CREEK PROPERTY**
 Scale: 1 inch = 200 Feet November 1971 V. A.



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