

92I W.J. Claim Group

810722

February 29, 1972

Mr. K. W. Livingstone,
c/o J. R. Woodcock Consultants Ltd.,
1521 Pemberton Avenue,
NORTH VANCOUVER, B.C.

Dear Wayne:

I am returning herewith your maps and reports on the W J claim group in the Highland Valley. As I indicated to you on the phone last week, we have considered this property further, particularly in the light of Peter Walcott's review of the geophysical data, and have decided that we will be unable to carry out any further work. For your information I am attaching a copy of Peter's note to us which may be of interest.

We certainly thank you for the opportunity to review this data, and look forward to a continuing association with you on other projects.

Yours very truly,

CYPRUS EXPLORATION CORPORATION, LTD.

J. B. P. Sawyer
Manager - Canadian Exploration

JBPS/jel

Encl.

PETER E. WALCOTT & ASSOC. LTD.

605 RUTLAND COURT, COQUITLAM, B.C. • TEL. 939-0383

February 23rd, 1972

Cyprus Exploration Corporation Ltd.,
1101 - 510 W. Hastings St.,
Vancouver, B.C.

For the attention of Mr. J.B.P. Sawyer

Gentlemen,

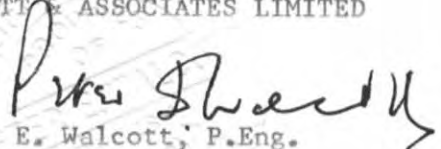
Re: I.P. Survey, WJ. Claim Group, Highland Valley, B.C.

At your request the writer has reviewed the result of the I.P. survey carried out by Geoscience Incorporated on the Laura Mines property in the Highland Valley area of British Columbia and has reached the following conclusions based on these results:

- (1) The percentage F.E. background varies between 0.5 and 0.9 with a mean of circa 0.7
- (2) Repeatability of readings appear to be within 0.3 to 0.4% F.E.
- (3) As a result F.E. values of greater than 1.5% would be considered anomalous.
- (4) No significant anomalies based on the above were obtained.
- (5) No significant resistivity contrast was evident.
- (6) Three zones where the % F.E. was greater than 1.0 were obtained on the property, the two stronger of which were drilled with negative results.
- (7) No significant mineralization exists on the property down to a depth of at least 600 feet.

Yours truly,

PETER E. WALCOTT & ASSOCIATES LIMITED


Peter E. Walcott, P.Eng.
Geophysicist



File

INTER OFFICE MEMO

CYPRUS EXPLORATION CORPORATION LTD.
VANCOUVER OFFICE

Date: December 10, 1968

To: Mr. D. W. Tully
From: Mr. J. B. P. Sawyer
Subject: W J CLAIMS - HIGHLAND VALLEY

Attached please find copies of the Noranda work in the area of the recently staked W J Claims, southeast of Bose Lake in the Highland Valley. The Noranda work consisted of geological mapping, J.E.M. survey, and tractor trenching. As previously reported, the intrusives in the area of the copper showings are fairly well altered. From inspection of Noranda's geological map, it is apparent that similar alteration occurs at several other points on the property. The Noranda mapping also indicates limonitic material at several locations on the property. The Noranda report mentions the fact that compass deflections were noted in this area. As can be seen, some interesting amounts of copper were obtained from some of the trenches. It is to be borne in mind that this work was carried out in 1958 before any of the porphyry deposits of the Highland Valley were known or probably even thought of. The work by Noranda was probably not adequate to test the potential of the property in full in light of our present knowledge of the area.

A considerable amount of work was done by Cominco in this immediate area, however, none of their many I.P. surveys covered the showing area on the W J Claims.

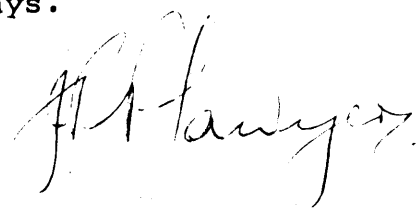
At a meeting on November 28th with K.W. Livingstone and J. Christie, owners of the W J Claims, some discussion was had concerning their proposal as outlined in their report of which you already have a copy. I pointed out to them that as a result of the Winter conditions now prevailing, it had not been possible to make a satisfactory examination of the prospect on the ground, and that such an examination would not now be possible until late May. They, of course, are aware of this and as a consequence have modified their deal considerably. In general, they are now considering an arrangement along the following lines:-

1. A payment in December to cover staking costs, etc to date, say \$2,000. In consideration of this, first refusal on the property after a field examination has been made in the Spring would be granted.

2. Initial payment if the option is exercised of \$10,000 from which the December payment would be deducted.
3. Second payment of \$10,000 after, say three months. The schedule of payments would then be as outlined in their original suggested Agreement.

If Cyprus is interested in this ground, this arrangement would give us six months to consider it more fully and to carry out further research for a nominal cost with an option to acquire it at a down payment which is not out of line with current prices in the Valley. Although it does not fit exactly into any of Ross Kidd's four target areas, it is not very far from his area "D", and lies between it and the Bethlehem orebody in an area which structurally could be favourable. It has the advantage of having copper mineralization, alteration, fracturing and brecciation established within the boundaries of the claim group. I would suggest that on this basis it warrants some serious consideration.

Livingstone and Christie are interested in summer employment. They are both experienced field geologists, Christie will complete his PhD at U.B.C. this Spring and Livingstone will complete his in 1970. If some arrangement for employment can be reached with them, I think a more favourable deal could be arranged on the W J Claims, should they merit acquisition after further consideration. I would like to repeat my earlier suggestion that we might use these men on the project such as prospecting on the Kicking Horse Timber Limits in the Kootenays.



JBPS/jel

Attachments

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Date May

..... 2 ...

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Geol. Geoph.

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JBPS/jel

Attachments

CONTROL:

A north-south, east-west grid of lines was cut and chained by transit crews. The two main parts of the Highland Valley property were connected by a common base line and a proper relationship established between them. In addition, picket lines were cut on the B.X. and Cow groups. Geological and geophysical surveys were carried out by pace and compass along east-west traverses tied into two known chainage points on the grid system. A chain and compass survey was made to establish the positions of all claim posts and the boundaries of the properties. Geological and geophysical work was plotted at a scale of 1 inch to 400 feet and a 1000 scale map was prepared showing claim locations, roads, and other physical features. B.X. trenches were mapped in detail at a scale of 1 inch to 50 feet.

GEOLOGY:Rock Types1. Guichon Creek Quartz Diorite and Associated Rocks:

These are generally massive, structureless rocks containing variable amounts of quartz and mafics, and in some areas grade into a quartz monzonite. The typical rock is light grey in colour and contains some slightly pink colouration from orthoclase. It is medium grained and unaltered. The plagioclase feldspars are well formed and show clear twinning. Mafics are commonly biotite and amphiboles and these are present in varying ratios to one another. Xenoliths of fine grained igneous rocks are present in many places with some showing an altered outer margin.

2. The Younger Complex Rocks:

These are quartz diorites grading to fine grained granite and aplite. They are recognizable by the mottled and feathery texture presented by the mafics, and by the fairly common poikilitic hornblende crystals. The quartz

crystals in most specimens are somewhat rounded and are often interstitial with the orthoclase. In general, the Younger Complex rocks in the area examined are finer grained and more pinkish in colour than the Guichon quartz diorite, though in one location they are grey in colour and showed no orthoclase.

Aplite dykes appear throughout the area intruding the Guichon rocks as narrow stringers having an average width of $\frac{1}{4}$ to $\frac{1}{2}$ inch. They are thought to be from the same source as the coarser grained Younger quartz diorite since the latter type appears to grade into aplite in places.

The Younger Complex rocks occur as fine grained porphyries in some localities or show a gradation from quartz diorite to porphyry.

3. Porphyry

Some very small porphyry outcrops are probably associated with the Younger Complex. They appear to be a medium grained orthoclase porphyry with finer mafics in the groundmass. It is distinguishable from other rocks in the area by its pitted, weathered surface and its darker colour.

Joint and Fault Pattern

In the areas examined the joint and fault pattern generally follows a north-south trend with a weaker set running east-west. The dip of most of the jointing is nearly vertical. Faults and shear zones are marked by deep gulleys and canyons cutting between areas of rock outcrop. These zones are probably the cause of several swamps showing lineal development and diagnostic fault and shear zone features have been effectively obscured. East-west tensional fractures have been recognized in several places where there are well developed north-south shears.

Alteration

The areas of alteration and the fault and shear zones with which they are associated are weakly mineralized in part. The alteration appears to be controlled by faulting and shearing and to a lesser extent by joint systems.

Epidote and chlorite are the most common minerals of alteration. They normally occur as veinlets although sometimes epidote may impregnate the altered rock. Albitization also is common though not always very marked in intensity. Original mafics in these albitized areas have generally been converted to chlorite. Another mineral found in zones of strong alteration is tourmalene. This mineral usually appears as a black, fine grained veinlet $\frac{1}{4}$ inch or less in width, sometimes merely forming a coating on a joint plane. In some areas of alteration pink orthoclase veinlets occur. Iron oxide may also be present. Nearly all alteration observed was confined to the Guichon quartz diorite rocks.

The most marked area of alteration occurs on the B.X. group in a long north-south shear zone. Here several hundred feet of trenching has exposed a strongly sheared zone altered by basic emanations. This north-south trending feature has the appearance of a basic dyke but this seems unlikely since the structure of the original rock can still be detected in specimens. The altered rock is very rich in chlorite and the shear zone surrounded by partially brecciated, sheared, weathered, or decomposed quartz diorite. Calcite veinlets, rich in iron, run through the area giving rise to considerable rust staining as do hematite veins averaging from $\frac{1}{2}$ to 3 inches in width. Quartz and epidote veins are also present.

Copper Mineralization

The only area with significant amounts of copper mineralization is the altered zones described above at the center of the B.X. No's 1,2,3 and 4 claims. All copper mineralization, except for sparse disseminated chalcopyrite, occurs in fine veinlets running north-south and dipping about 45 degrees to the west. The vein minerals are malachite, generally associated with soft, chloritized zones, and azurite with minor chrysocolla confined to more siliceous areas. These veins were followed for several hundred feet and are fairly

continuous. A little chalcopyrite was found in the trenches and two old prospect pits within the zone of alteration. Pyrite is generally associated with the chalcopyrite and is more abundant.

Other Mineralization:

Minor pyrite is finely disseminated in various parts of the property, generally in slightly altered Guichon rocks.

Limonite occurs in many of the swamps and is especially heavy 1500 feet from the east end of No. 3 base line. In this area several compass deflections were noted while running transit lines.

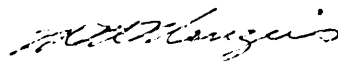
Samples (See 50 scale map)

<u>NUMBER</u>	<u>LENGTH</u>	<u>PERCENT COPPER</u>	<u>Au</u>	<u>LOCATION</u>
A 1	3'	2.60	0.01	Trench H
A 2	11'	0.80	Tr	Trench C
A 3	Grab	0.55	Tr	Prospect Pit

CONCLUSIONS

1. No important copper mineralization was found on the Highland Valley property.
2. No copper mineralization was found to be associated with the intrusions of the Younger Complex.
3. Fault and shear zones carry the bulk of the alteration and mineralization.
4. Guichon Creek quartz diorite is barren of significant mineralization.
5. The most interesting structures on the Highland Valley property, the fault and shear zones, do not appear to be particularly favorable to ore deposition.
6. Swamps and heavy drift covered areas cannot be completely written off as potential zones of mineralization but chances for important copper occurrences on this property appear slight.

Respectfully submitted,



Morris N. Menzies P.Eng.

APPENDIX

BIBLIOGRAPHY:

- Cookfield, W. E. (1948): Geology and Mineral Deposits of
Nicola Map-Area, British Columbia;
Geol. Surv., Canada. Memoir 249
- Duffell, S. and McTaggart, K.C. (1951): Ashcroft Map-Area.
British Columbia;
Geol. Surv., Canada. Memoir 262
- Rice, H.M.A. (1947): Geology and Mineral Deposits of the
Princeton Map-Area, British Columbia;
Geol. Surv., Canada Memoir 243
- White, W.H., Thompson, R.M., McTaggart, K.C. (1958);
The Geology and Mineral Deposits of
Highland Valley, B.C.;
C.I.M. Transactions Vol. LX, 1957, PP 273-289

Report 244

NORANDA EXPLORATION COMPANY LIMITED

GEOPHYSICAL SURVEY

of the

HIGHLAND VALLEY PROPERTY

INTRODUCTION:

Noranda Exploration Company Limited optioned two adjoining Highland Valley properties in the spring of 1958. These properties are the B.X. and the Torvan groups with 28 and 54 mineral claims respectively. The large group of claims thus formed, called the Highland Valley Property, lies to the east and north of Bose Lake in the northeastern portion of the Highland Valley mining area. A camp was built on the southeast shore of Bose Lake and road construction, line cutting, geological mapping, and geophysical surveying were carried on from early June to late September.

DESCRIPTION:

Bose Lake is 20 miles southeast of Ashcroft and 29 miles northwest of Merritt. By road the distances are 28 and 42 miles respectively. Two rough but serviceable roads lead to Bose Lake from the main Highland Valley road. One route follows the Trojan Mine road as far as the North Lodge camp where a branch leads in an easterly direction to Bose Lake. The other route leaves the main road about 2 miles east of the Bethlehem camp and follows a winding course around gravel ridges and swampy areas.

Highland Valley property elevations range from 4600 to 5000 feet. On the B.X. and Cow claims rocky ridges and ravines are numerous with the remaining area covered by gravel benches and swamps. North of Bose Lake there are many gravel hills and gulleys. Large areas of outcrops occur farther north on the Bob and Star claims.

Trenching had previously been carried out on the B.X. No's 1, 2, 3 and 4 claims by the B.X. Mining Company. Additional bulldozer work on these claims and the B.X. No. 14 claim was done by Noranda Exploration Company Limited in June 1958.

Two roads were built during June and July 1958. The first, over two miles in length, was built to the northeast of the Outrider claims and passed through the Cow and B.X. groups. It joined the old B.X. road near the southeast corner of Cow No. 11 claim and the Outrider road on the Lodge No. 3 claim. The second road was built from a point on the Lodge No. 7 claim northwest of Bose Lake in a northeasterly direction for more than $2\frac{1}{2}$ miles across both the Star and Bob groups of claims. Considerable repair and maintenance work was done on existing roads in the area.

Copper mineralization was discovered in the Highland Valley area in 1899 and spasmodic prospecting and development work has been carried on ever since. Large tonnages of low grade copper ore have recently been indicated on the Bethlehem Copper property which includes the Iona, Snowstorm, Jersey and East Jersey zones. Of these copper occurrences only the Snowstorm has produced. In 1915 and 1916, 136 tons of bornite ore averaging 28 percent copper was shipped. The O.K. or Chataway property 5 miles to the west produced 2000 tons of 12 percent ore during World War 1. Between 1907 and 1926, 1800 tons of $6\frac{1}{2}$ percent copper ore was shipped from the Aberdeen property located 14 miles to the southeast in the Guichon Creek valley. Craigmont mine at the extreme southern end of the Guichon Creek batholith is a recent copper discovery of major importance. These properties lie within or adjoin the Guichon Creek batholith.

During the summer of 1958 many companies, syndicates, and individuals conducted exploration programmes within the Guichon Creek batholith or along its contacts with Nicola Group rocks.

BIBLIOGRAPHY:

- Cockfield, W.E. (1948): Geology and Mineral Deposits of Nicola Map-Area, British Columbia; Geol. Surv., Canada. Memoir 249
- Duffall, S. and McTaggart, K.C. (1951): Ashcroft Map-Area. British Columbia; Geol. Surv., Canada. Memoir 262
- Rice, H.M.A. (1947): Geology and Mineral Deposits of the Princeton Map-Area, British Columbia; Geol. Surv., Canada. Memoir 243
- White, W.H., Thompson, R.M., McTaggart, K.C. (1958): The Geology and Mineral Deposits of Highland Valley, B.C.; C.I.M. Transactions Vol. LX, 1957, PP 273-289

GENERAL GEOLOGY:

The Highland Valley property is in the northeastern section of the Guichon Creek batholith. The batholith is bounded by Guichon Creek on the east and the Thompson and Nicola rivers on the west, and extends from the Craigmont mine in the south to the Thompson river in the north. The rocks of the batholith, a member of the Coast intrusions, are generally quartz diorites and granodiorites. The batholith is intrusive into the Upper Triassic Nicola Group rocks wherever they are in contact and is overlain by Upper Jurassic sediments near Ashcroft. This implies a Lower Jurassic age for the batholith and it is therefore older than the main Coast intrusions west of the Fraser river. Much of the northern part of the batholith is overlain by basalts and andesites of Miocene age. At the Krain property on Forge mountain thoroughly oxidized copper deposits are partly capped by fresh basalt.

Copper deposits have been found at a number of properties in and near Highland Valley. These deposits are associated with rocks of the Guichon Creek batholith, with granodiorite and quartz diorite intruding the Guichon batholith, and with breccias probably derived in part from rocks of the batholith. The largest deposits so far found in the Guichon batholith are on the property of Bethlehem Copper Corporation, Ltd., 2 miles southwest of Bose Lake.

Most of the rock found on the Highland Valley property is massive quartz diorite and some quartz monzonite of the Guichon Creek batholith. Some rocks believed to be part of the Younger Complex intruding the Guichon batholith were found. These are quartz diorites grading into fine grained granite and aplite. They can be distinguished from rocks of the Guichon batholith by their finer grain and content of pink orthoclase. Small aplite dykes are found throughout the area. Some small outcrops of a medium grained orthoclase porphyry were found and these are probably associated with the Younger Complex.

Joints and faults in the area generally have a north-south strike and near vertical dip. A weaker set of joints has an east-west strike. Faults and shear zones are marked by deep gulleys and canyons cutting across rock ridges. Epidote and chlorite alteration is found in and near shear and fault zones.

The only significant copper mineralization found is in an altered zone on the B.X. No's 1, 2, 3 and 4 claims. In the altered zone the rocks are sheared and are very rich in chlorite. Some sparse disseminated chalcopyrite is present but most of the copper occurs in fine veinlets of oxidized copper minerals with a northerly strike and 45 degree westerly dip. The main minerals are malachite, azurite and chrysocolla. Pyrite is found associated with chalcopyrite here and in very minor amounts elsewhere on the property. Limonite occurs in a number of swampy areas and is especially noticeable east of Bob No. 24 claim.

REASONS FOR INVESTIGATION:

1. Location within the Guichon Creek batholith.
2. Proximity to Trojan mine and other properties on Forge mountain.
3. Proximity to Bethlehem Copper property.
4. A zone of alteration and shearing containing veinlets of copper mineralization exposed by trenching on B.X. No's 1-4 claims.
5. Apparent zones of shearing and faulting observed on air photographs of the region.
6. The possibility of geophysical and geological surveys discovering commercial copper mineralization.

CONTROL:

A north-south, east-west grid of line, 3000 feet on the side, was cut and chained by transit crews. The two main parts of the Highland Valley property were connected by a common base line and a proper relationship established between them. In addition, picket lines were cut on the B.X. and Cow groups. Geological and geophysical surveys were carried out by pace and compass along east-west traverses tied into two known chainage points on the grid system. A chain and compass survey was made to establish the positions of all claim posts and the boundaries of the properties. Geological and geophysical work was plotted at a scale of 1 inch to 400 feet and a 1000 scale map was prepared showing claim locations, roads, and other physical features. B.X. trenches were mapped in detail at a scale of 1 inch to 50 feet.

ELECTROMAGNETIC EQUIPMENT:

The electromagnetic instrument used in this survey is called the Junior E.M. It was developed and tested over a period of years by Crone Geophysics, Toronto, Ontario, a division of Noranda Mines Limited. While the basic principles are the same as those for standard E.M. instruments a number of radical new developments, now being patented, have been incorporated which give the Junior E.M. many advantages over the familiar equipment commonly used in this type of survey. It is very light in weight and designed for rapid coverage of rough terrain.

METHOD OF SURVEY:

Three men comprised the Junior E.M. crew. The chief and helper, maintaining a distance of 200 feet between transmitter and receiver, traversed east-west lines taking readings at 100 foot intervals and noting dips in degrees. Where significant angles were obtained, readings were taken every 50 feet. The east-west lines were spaced at 400 foot intervals over most of the property with a few at 100 and 200 foot intervals. Readings were also

taken along all east-west base lines.

The third man of the crew started each line at a known point on a base line. From there he ran a compass line east or west to the next base line or to the property boundary, blazing frequently and chaining at 100 foot intervals. If the east or west line ended on a base line it was tied in to a known point. This method was found to be both fast and accurate.

A special effort was made to see if the copper mineralization known to exist on the B.X. No's 1, 2, 3 and 4 claims could be detected by the Junior E.M.

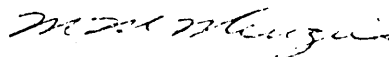
OBSERVATIONS :

1. The Junior E.M. instrument has an effective range of penetration in excess of 100 feet. Much outcrop exists in the area covered and except for the central portion of the property overburden is believed light. A large proportion of the Highland Valley property has therefore been thoroughly tested for electrical conductors.
2. A few anomalous readings were obtained but these are completely isolated and are believed to be of no importance.
3. Readings obtained over the known copper mineralization on B.X. No's 1, 2, 3 and 4 claims show insufficient sulphide present to form an electrical conductor.

CONCLUSIONS:

It is readily acknowledged that the Junior E.M. instrument would probably fail to detect large areas of very low grade disseminated sulphide, short lenses or pods of relatively high grade material, and deep-seated ore deposits. However, it can be stated with reasonable certainty that in areas of moderate overburden no sulphide zones approaching ore grade were encountered.

Respectfully submitted,



M. M. Monziez P.Eng.

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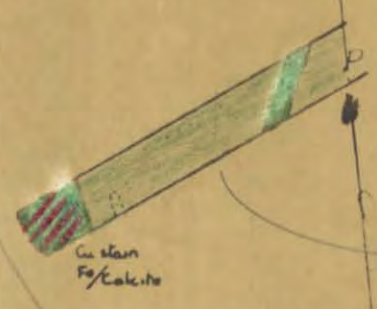
BX 1

Bx 2

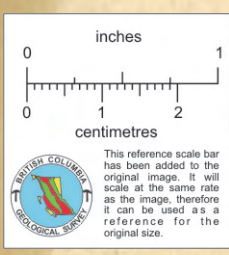
Assessing Exp. to Ltd.
Highland valley
Detail of transect on
BX 12, 3 of 12
scale 1" = 50'



PROSPECT PIT
CP, PS

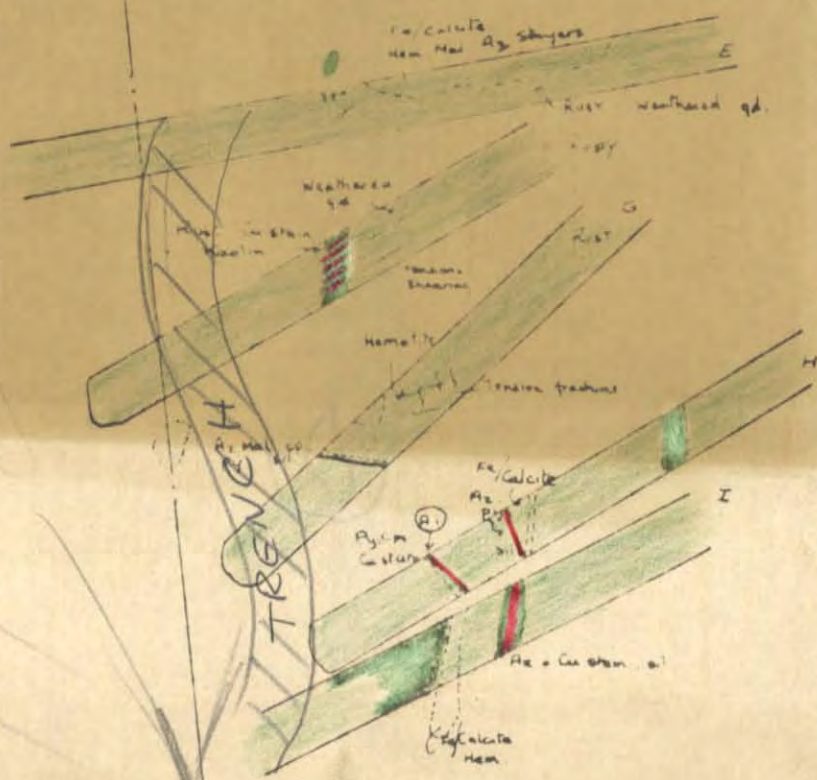


Bx 3
X 3



BX 4

TOPO
LOW



Highly altered lit. Dark
- red to slightly altered lit. Dark
- weathered lit. Iron to
- copper to mineral gation.

Dop
Minos and P.
ASSESS
NO. 24/6

LEGEND

UNITS

Highly ALTERED QUARTZ DIORITE

