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ECONOMIC GEOLOGY OF THE WEST * HALF

OF THE ASHCROFT MAP AREA ,

BRITISH COLUMBIA , CANADA .

BY: G. G. KRAUSE P. GEOL.
Alberta.

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ECONOMIC GEOLOGY OF THE WEST-HALF OF THE

ASHCROFT MAP AREA, BRITISH COLUMBIA,

CANADA, by G. G. KRAUSE P.GEOL.

A. SUMMARY:

The writer has attempted to define Geologically the potential mineralization resulting from Jurassic Intrusions into a favorable sedimentary area; Essentially employing an expansion of established Geochemical techniques into the zone of Wall-rock Alteration or Hydrothermal Envelope. The Geochemical Method is "Trace Analysis of Soils", the "Trace Analysis of the Wall-rock" is an attempt to outline Buried Ore Deposits, in the alteration zone.

Acceptance of low order anomalous values as being significant is necessary for extrapolation of the surface indications. It became apparent that the Geochemical values must be defined in terms of detailed Surface Geology, including surface outcrop, transported and residual mantle, topography, mobility of ions, especially those economic significance.

It is suggested that as an exploration tool trace analysis has merit because cost factors, areal coverage, and the fact that most significant visible indicators have been examined and explored. The area in this report is accessible having been on the main route into the interior of British Columbia since discovery. The writer assumed that the above

visible indicators were lacking. Memoir #262 described extensive areas of Alteration in the sedimentary rocks adjacent to the intrusions and it was felt that examination of these favorable areas might in turn lead to development of economic mineral deposits.

B. AREA OF INTEREST:

Geographically the area is in the South-Central region of British Columbia, fifteen miles North-west of the Highland Valley porphyry copper deposits. The encompassing co-ordinates are 121 deg. 00 min. to 121 deg. 30 min. of longitude; and from 50 deg. 30 min. to 50 deg. 50 min. of North Latitude. Bounded locally on the west and north by Hat Creek, the Bonaparte and Thomson Rivers on the east and the town of Spences Bridge to the south.

C. PREVIOUS WORK:

This is summarized by the "Geological Survey of Canada, Memoir # 262, Ashcroft Map Area, British Columbia by S. Duffel and K. C. McTaggart, 1952". This report is on a reconnaissance scale of 1" to 4 miles but supplied the essential elements which attracted the writer and led to a detailed examination. An airborne Magnetometer Survey was released to the public in 1968, and indicated anomalous behaviour in the west portion. Since the above only minor published references are available.

BACKGROUND AND PURPOSE OF REPORT:

The west portion of the Ashcroft Map Area was selected for detailed examination because of the intimate association of the Cache Creek Limestones (Marble Canyon Formation) and the Jurassic Age Intrusions. Study and interpretation of the available data suggested a Geological Province favorable for economic Mineral Deposits. Initial geological reconnaissance indicated a potential variation in type of deposit; From Sericite - Quartz zones, contact Replacement to possible Magmatic Segregation. Utilization of Geological and Geochemical Surveys, both detailed and reconnaissance, Magnetometer (airborne) Survey with minor ground Magnetometer, a limited shallow diamond drilling program of 12 holes, maximum depth 150 feet, 750 feet in total, has led the writer to certain conclusions.

This report is a summation of the data compiled to date, with interpretation and extrapolation suggesting a program of further development.

The Writer has accumulated some 164 mineral claims of approximately 50 acres each, in 3 separate blocks but within an area of 5 miles by 20 miles. (map # I).

A company has been formed " Lone Creek Mines Ltd." in an attempt to obtain Public or Private Funds to continue exploration and development of the above claims, perhaps to expand the present holding. Historically, the Geological Province suggests that a relatively high grade type of mineral deposit can be expected.

E: JEFF GROUP OF CLAIMS:

The area of the Jeff #1 - 20 (map #1, #3) claims was originally investigated by reason of a grab sample of "comb" Quartz, which on analysis gave a Molybdenum value 125 ppm. This Quartz proved to be "local float", however in the course of the investigation Sericite - Quartz outcrops were observed, mineralized with disseminated Pyrite and minor Chalcopyrite. A reconnaissance Geochemical Survey was undertaken (Crest Lab.), resulting in some anomolous Copper values, one outcrop at the rockface and downslope analyzed 7300, 4000, 2200 ppm Copper, respectively. In this area of Jeff #3, Crest Lab. were contracted to detail on the East-West lines (100 feet N-S) a 50 foot interval (map #3). The Geochemical results were then tæed directly by a careful Geological survey to the surface features. All anomalous Copper values correlated directly with Mineralized Outcrop. The dead areas between proved to be covered with Recent outwash or drift. Glacial featyres lie directly to the North but in this immeadiate area of the anomalous Copper values the surface has been visibly scoured by Glacial action and Recent outwash deposited as a thin mantle, no doubt from a westerly direction.

Drill sites were selected to probe the subsurface, starting in bedrock where possible (map #3). Core recovery was very poor to non-existent, although Jeff #1 (L9-1350'west) recovered 35%, indicating minor barren Quartz veins. The drilling samples were forwarded to Crest Lab. for analysis, the results are shown in the tables. Redrilling was done on Jeff's 2 and 3.

In the drill holes Jeff's 2 through #5, Disseminated Sulphides were encountered within 10 feet of surface and continued to total depth. Sericite, Chlorite? and Quartz were prominent in the drilling samples, max. Cu - .08, Sb - .012, Zn - .064, Mo -.0027, As - .012. The maximum depths were 80 to 100 feet in Jeff #5 the max. of 100 feet was attained. Using Limonite as an expression of weathering, all holes bottomed in the weathered zone. It is felt that enough significant values have been obtained to warrant further development. As shown on Map #3, the trend and areal extent are open N by NW and S by SE: In view of the relatively large area an I.P. Survey is recommended to determine the locale of the maximum concentration of Sulphides. A larger drilling unit should then be contracted to probe to a more realistic depth than the X-Ray unit used previously.

F: BOB GROUP OF CLAIMS:

A contoured lineation is apparent in the Magnetometer Map, South and North of the Jeff's. This may be an expression of the topography, however, on page 107 of the Memoir #262, a short description of the Martel property with assays of 1.25 % Molybdenite and 0.11 % Copper suggested that the intervening area should be checked. A roadside reconnaissance was conducted (map #4) which led directly to the staking of the Bob Group. Two lines of detail were completed showing anomalous Cu., Mo., Zn., The Cache Creek outcrops in the vicinity are highly "Silicified" with veins of Mineralized Quartz running through it. Because of this 'Hydrothermal Envelope', and reference is made to the conclusions reached on the Jack area, the writer feels that a replacement type of deposit is a possibility.

Two " 20 foot " drill holes were drilled on the Bob's , some significant values were obtained, Maximum Cu.-0.4, % Mo.- 0.003 %, Zn.- 0.078 %, in the samples and core. The initial results have not been followed up but it is recommended that a detailed Geochemical Survey or other procedures be followed in conjunction with a detailed Geological examination to provide some deep drill sites. (see map #4, tables).

G: JACK GROUP OF CLAIMS:

Jack's # I - 18 were originally located because of the Magnetic Anomaly adjacent to the small Stock which lies directly to the North. Geological investigation had shown a " highly Silicified to a completely Silicified " facies of the Cache Creek Limestones (Marble Canyon Formation). In this Silicified Cap rock vein material was present showing traces of Chalcopyrite and Secondary Malachite. Initial Geochemical results showed some anomalous Copper and Nickel values and a detailed program was completed (map #5, #6). The detailed Geochemical results correlated in conjunction with the detailed Geological Survey and demonstrated that the anomalous Copper values were directly related to the Silicified outcrop. Copper ions in this environment have no mobility, and the writer had by this time accumulated sufficient " Background Values " to Statistically define this anomaly as an " HIGH ORDER " Copper Anomaly. It is felt that the Mineralized veins are offshoots from the main Replacement type ore body at depth. The Nickel Anomaly as demonstrated by Map # 6 can be utilized to estimate the depth of burial, (leakage anomaly see cross-section attached).

The Nickel ion is mobile under this environment, certainly more mobile than the Copper, and this is demonstrated by combining the configurations of the Copper and Nickel anomalies; The concentrations coincide but the Nickel shows greater dispersion. The concentration of the high Nickel values in the " Drainage Gully " is an excellent example of a Nickel " Leakage Anomaly ".

A drill site was selected at I6 -N and 6 - E (map #50) and is called Jack # I. Direction of the drill was S 45 W at an angle of 60 deg. to the horizontal. The following brief description demonstrates the complete silicification of the Cache Creek rocks. From 0 to 30 feet , Silica type? , with replacement textures and a hardness greater than 6. Values Copper - Surface 0.025%, 9 feet - 0.065%, 17 feet - 0.14%. From 30 feet to 150 feet, the pseudomorphs remain but the hardness is reduced in part to 3. A color change is apparent becoming in part Greenish (ie: facies change to the Greenstones?) , minor clear to milky calcite is present as thin veins at 140 feet. Copper max. 0.19% @ 142'.

Geochemical reconnaissance indicates additional potential in the area, of the same mineral suite.

Using a Copper Threshold value of 60 ppm, an area of 1.5 million sq. feet is enclosed by the anomaly, if an thickness of ore was 10 feet, 1.5 million tons of ore would be indicated.

H: CORNWALL GROUP OF CLAIMS:

A more complicated exploration province is present on Cornwall, however they perhaps offer the greatest potential.

The problems are manifold , inter-

pretation is much less certain and subject to greater error. Find enclosed a report by A.L. Burgoyne of Crest Lab. which is a summation up to Jan. 1970. Some additional data has been compiled to date with an access trail and 6 trenches completed. The analysis on the trench samples (see chart) some low order anomalous values are evident, the most definitive indicators of mineralization in the area of the Stock is concluded to be the Copper - Nickel ratio as high Nickel out of Serpentine is accompanied by very low Copper. The erratic Nickel content of the Serpentine itself suggest a contemporaneous formation as the Diorite, and the variation of Serpentine type is a function of the original rock type.

A lineation analysis suggests a similar fault system present as those described by Walter E. Clarke in his paper, GEOLOGY AND ORE CONTROLS, Giant Mascot Mines Ltd. Hope, B.C.. The rock types are similar from a Hornblende Diorite to a Hornblendite with the complicating Serpentine. Of note is lineation and the reconnaissance. Geochemical Survey superimposed low order Nickel-Copper anomalies occur. Since the Ore bodies are fault controlled at Mascot, it is suggested that a detailed photogeological map in conjunction with geochemical detail would provide a useful exploration guide.

The limestone - Diorite contact is of interest, strong silicification and "baking", mineralization is present (low order), Geochemistry would provide exploration controls.

It is felt by the writer that the combination of a " Second Order Magnetic " Anomaly at the conjunction

of two fault systems and accompanied by large amounts of Disseminated Magnetic Pyrrhotite in the host rock suggests a large magnetic Pyrrhotite body Nickeliferous by virtue of the values obtained in the Geochemical Survey.

I: CONCLUSIONS AND RECOMMENDATIONS:

The approach to the initial exploration and development in this area may be considered somewhat unorthodox in part and in view of this, validation of the basic reasoning and conclusions is necessary. Thus the writer recommends a program that would substantiate the conclusions either by the use of remote sensing devices such as an electrical program, or by drilling the main prospects (Jack, Jeff, Cornwall). The program, of necessity, should be determined and recommended by those exper^{ER}enced in that field.

The recommendations made for each group of claims in individual discussions are considered valid, however implementation should await the testing of the concepts.


GERALD G. KRAUSE


Bsc. Alberta 1952, P. GEOL:

CERTIFICATE:

I, Gerald G. Krause of 2000 - Elanco Ave., Eugene ,
Oregon, U.S.A. , do hereby certify that:

Phone ⁵⁰³ 342-3969

1. I am a Consulting Geologist , self - employed for 9 years,
in Calgary, Alberta; Victoria, B.C. , and recently of
Eugene, Oregon, To attend University.
2. I am a graduate of the University of Alberta ,
with a B. Sc (Geology), 1952.
3. I have practised my Profession as a Geologist since
1952.
4. I have personally conducted and supervised the results
as described in this report.
5. I am a member in good standing of the Professional
Engineers of Alberta , as a Professional Geologist.


Gerald G. Krause B Sc. P.Geol.

Dated September 15 , 1970.

REPORT ON NICKEL, CHROMIUM, COBALT, COPPER, ZINC, LEAD,
SILVER, MOLYBDENUM, AND MANGANESE SOIL SURVEY

CORNWALL GROUP OF CLAIMS
CORNWALL MINERAL CLAIMS 1-41
LONE TREE CREEK AREA
KAMLOOPS MINING DIVISION, BRITISH COLUMBIA
50° 42' N, 121° 26' W

by

Alfred A. Burgoyne, M.Sc.

Work Performed For:

Mr. G. Krause
3425 Beach Dr.
Victoria, B. C.

Work By:

Crest Laboratories (B.C.) Ltd.
1068 Homer Street
Vancouver, B. C.

Work Dates:

Geochemical Survey - November 4-10, 1969

December 23, 1969

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CREST LABORATORIES (B.C.) LTD.

B.C. REGISTERED ASSAYERS
INDUSTRIAL and RESEARCH CHEMISTS

1068 HOMER STREET
VANCOUVER 3, B.C.

INTRODUCTION:

A geochemical soil survey for nickel, chromium, cobalt, copper, zinc, manganese, lead, silver, and molybdenum was completed on the Cornwall Group of Mineral Claims in the period of November 4 - 10, 1969. The Cornwall Group of Claims are situated approximately 8 miles south-west of Cache Creek and 6½ miles west of Ashcroft. Access is provided in part by a good all weather road and in part by a four wheel drive road. The topography is rolling to steep, the main block of the claims being situated on a plateau-like area. The area is sparsely to moderately wooded and has in part been previously burned.

GENERAL GEOLOGY AND MINERALIZATION:

The geology has been described in some detail by Mr. G. Krause in his "Preliminary Geological Report of the Cache Creek - Ashcroft Area" and reference is made to this report and from this writer's observations in the field. Basically, the geology consists of an intrusive diorite stock of the Mt. Lytton Batholith of Jurassic Age. Within the diorite there is abundant disseminated pyrrhotite and numerous zones of weakness (faulting, fracturing) in which sulphides (pyrrhotite, chalcopyrite, chalcocite) limonite, and garnierite have been identified. In one main north-south trending fault zone a gossan zone was discovered. Intruded into the diorite, possibly guided by faulting and fracturing are small irregular serpentine bodies thought to be of Lower Cretaceous Age. The diorite is bounded by limestones and greenstones on its west to south and north to east sides respectively. The latter rocks comprising the Cache Creek Group and Marble Mountain Limestone. Mr. Krause has found evidence of replacement deposits on the west side of the claim block at the diorite-limestone contact. Further observations concerning geology and mineralization are given under the geochemical survey results.

SOIL COLLECTION AND CLASSIFICATION:

Soil sampling was completed on the N45°E - S45°W claim location lines and the N45°W - S45°E tie or base lines. (Note Figures 1A - 1G). Sampling intervals on these lines was at 200 foot spacings as measured by chain. Each sample location was marked according to its footage along the line and well

flagged with orange tape. In addition, a detailed soil grid was placed on Cornwall Mineral Claims 5 and 6. Here lines were placed at 200 foot intervals in a N45°W direction and sample sites were marked at 100 foot intervals. A line was also placed on the N8°W fault zone and marked at 200 foot intervals. In addition to the soil sampling completed by Crest Laboratories (B.C.) Ltd. Mr. G. Krause has placed several traverses over the property. Approximately 44,000 feet of line was sampled by Crest Laboratories (B.C.) Ltd.

The soil sampling was done simultaneously with the marking of the lines. At each soil sample location a pit or hole was dug with a grub hoe to a depth of 4-16 inches depending on the soil development and the depth of bedrock. In most cases, a "C" soil sample (weathered bedrock) was sampled except in a few instances where it was not possible to obtain this type of horizon; this occurred only in very heavily wooded or in swampy areas and here a "A₁" soil was sampled. At each sample site 3-4 ounces of the soil was taken and any large rock fragments were rejected. The soils for the most are residual in nature and the overburden is generally less than 3 feet in thickness. The soil development is moderately mature - the soil horizon development for the area is:

- Ao: Organic litter, undecayed leaves, twigs, 0-1 inches thick in sparsely wooded areas, and 2-4 inches thick in heavily wooded areas.
- A₁: Partially decomposed organic debris, organic rich humus, black in colour, 0-2 inches thick.
- B: Brown to orange in colour, loose structure, 0-4 inches thick, and erratic in distribution.
- C: Weathered bedrock.

The soil sampling was done by Mr. B. Needham and Mr. C. Blakey and the field work was completed in the period of November 3-10, 1968.

ANALYTICAL TREATMENT OF SOIL SAMPLES:

The samples were analysed by Crest Laboratories (B.C.) Ltd. and the analyst was chemical technician, Harold Coughlan, supervised by this writer. The analytical work was done on November 7 - December 4, 1969. The samples were dried in their respective sample bags at a temperature of 150°F. and then sieved to -80 mesh through a stainless steel screen. For nickel, cobalt, copper, zinc, manganese, lead, silver and molybdenum one-half gram portions of these screened soils were placed in 25 X 200 millimeter culture tubes and then

digested in a mixture of perchloric and nitric acids at 425°F. for a period of three hours. the resulting digested samples were then made up to 25 millilitres volume in 10 percent perchloric acid. The respective sample solutions were aspirated into a Techtron Atomic Absorption Spectrophotometer Model 5 and absorption readings were recorded first for nickel and then for cobalt, copper, zinc, manganese, lead and silver. Calibration of the atomic absorption spectrophotometer is effected by preparation and analyses of respective metal standards each day.

Molybdenum was determined by the colorimetric thiocyanate method. Briefly, an aliquot (10 ml) of the sample solution is placed into a separatory funnel, and stannous chloride is added to reduce iron; ammonium thiocyanate is added to complex molybdenum; and isoamyl alcohol is added to extract the molybdenum-thiocyanate complex. The intensity of the colour of this complex was measured with a Spectronic 20 colorimeter which has been calibrated with standards. The colour of this above complex is a function of the molybdenum content.

For chromium analyses 0.25 grams of soil is fused with sodium peroxide in a nickel crucible at 800°C. for 3 minutes. The resulting fused material is then dissolved in water, filtered, and made to 50 milliliters volume with water in a culture tube. The chromium was then analysed by atomic absorption spectroscopy.

RESULTS:

Nickel.

Separate statistical programmes were completed on all soils north of the limestone-diorite contact (over the diorite) and for those south of the contact, predominately on limestone (Figure 1A). The limestone-diorite contact has been established on the basis of field and geochemical evidence. In Figure 2A, plots of cumulative percent against concentration for soils north and south of the contact are given. For those soil samples north of the contact, two discrete log-normal populations are present. One population varies from 30 to 140 ppm and is thought to be representative of the diorite. From 140 to 250 ppm a zone of overlap is present, probably representing both nickel from diorite and serpentine. From 240 to 440 ppm the nickel values are distinctly representative of serpentine. Nickel values from 450 to 700 ppm are considered possibly anomalous and may represent serpentine and/or

nickel mineralization. Values in excess of 700 ppm nickel are considered distinctly anomalous and caused by nickel mineralization. The high nickel values at the north ends of L26 and L24 west are contained within a swamp and the explanation for their anomalousness is due to sorption and accumulation under acid pH conditions and is thought not to represent mineralization. All nickel values in the N8°W fault zone are considered anomalous.

The 500 ppm contour over the detailed grid on Cornwall Claims 5 and 6, and adjacent to L11 serves to illustrate the spatial distribution of the possible anomalous nickel values. The significance of these nickel values will become clearer after the discussion of chromium and chromium : nickel ratio is completed.

The statistical treatment for nickel values south of the limestone-diorite contact is also given in Figure 2A. The cumulative frequency-concentration graph is interpreted as follows:

- A) The log normal population from 15-55 ppm nickel is thought to be representative of limestone and related sedimentary rocks.
- B) Values from 55-85 ppm nickel are thought to be representative of admixtures of limestone and diorite or a zone of overlap.
- C) Values in excess of 85 ppm nickel are log normally distributed and may represent diorite at the contact zone and/or possibly anomalous in the contact zone. It is extremely important that the cause of these nickel values be ascertained. These possible anomalous nickel values are in association with anomalous copper values and above background zinc values.

Chromium:

North of the Limestone-Diorite Contact:

The purpose of analyzing all soils for chromium was performed in the hope of delineating the areas of serpentine and comparing these zones to the nickel distribution. The plot of chromium values is given in Figure 1B and the cumulative frequency-concentration graph is given in Figure 2B. The statistical analyses yields the following conclusions:

- A) A log normally distributed population from 60 to 300 ppm chromium thought to be representative of diorite.
- B) Values from 300 to 500 ppm chromium are thought to represent admixtures of diorite and serpentine and is statistically a zone of overlap.
- C) Values in excess of 500 ppm chromium are thought to be indicative of serpentine. No anomalous chromium values are present. The chromium values

have been contoured at the 500 and 700 ppm values to represent possible expression of serpentine bodies.

South of the Limestone-Diorite Contact:

One distinct log normal population and possibly two are present as illustrated in Figure 2B. The lower population from 20 to 220 ppm chromium and a second population in excess of 200 ppm which is probably representative of the contact zone. No anomalous chromium values are present.

Chromium-Nickel Ratio:

In Figure 3A a plot of chromium-nickel ratio is given. By knowing the range of background nickel and chromium values a threshold $\frac{Cr}{Ni}$ ratio of less

than or equal to 0.90 has been calculated to be possibly anomalous. That is, the ratios of less than or equal to 0.90 exclude background nickel and chromium values due to serpentine. These possibly anomalous Cr/Ni ratio values as illustrated in Figure 3A are coincidental, to most of the anomalous nickel values and appear to be in part controlled by the N8°W fault zone and another fracture or fault zone trending acutely to the northwest and intersecting the N8°W fault zone. The full significance of these fault zone and their relation to potential nickel mineralization and the serpentine bodies cannot be completely appraised with the known data.

Cobalt:

North of the Limestone-Diorite Contact:

The cobalt results have been plotted on Figure 1D and the statistical results on Figure 2C. Like nickel and chromium, two distinct log normal populations are present. Values from less than 15 ppm to 40 ppm are considered to be representative of the diorite. Values from 40-50 ppm are a zone of overlap representing admixtures of diorite and serpentine. Values in excess of 50 ppm are again distributed log normal and are thought to represent the serpentine. This population is represented by the 50 ppm contour in Figure 1D. No cobalt values are considered anomalous with exception of those within the N8°W fault zone which may be possibly anomalous, and the odd erratic, i.e., LL1 - 0 feet, LL4 - 2,200 feet.

South of the Limestone-Diorite Contact:

The cobalt values have an erratic distribution on the cumulative frequency-concentration graph. With the exception of sample location, LL1 -

1,800 feet, which is 112 ppm, no possible cobalt anomalies are present.

Copper:

North of the Limestone-Diorite Contact:

Figure 1E is a plot of all copper values and Figure 2D is a graph of the cumulative frequency-concentration. Statistically, only those values in excess of 65 ppm are considered distinctly anomalous and those values in the 50 to 65 ppm range are possibly anomalous. Other than erratic anomalies the only significant anomalous areas are the N8°W Fault zone and its southerly extension across LL4, and in the swamp at the north ends of Lines 24 and 26 west. The anomaly in the swamp is considered to be only a possible anomaly because of the organic nature of these samples. The copper anomaly on the N8°W fault zone is highly significant because of its mutual association with nickel anomalies.

South of the Limestone-Diorite Contact:

Possible and distinct anomaly values have the same range as for those north of the contact. A limited low order copper anomaly is present north and south of LL1 at the limestone-diorite contact. This anomaly could become highly significant if it could be extended in area and intensity, the inference being that there is possible contact metamorphic or replacement copper mineralization.

Zinc:

North of the Limestone-Diorite Contact:

Figure 1F is a plot of all zinc values and 2E is the cumulative percent-concentration graph. In Figure 2E one and possibly two distinct log normal populations are present. No anomalous zinc values are present north of the contact.

South of the Limestone-Diorite Contact:

From inspection of the cumulative frequency-concentration graph the distribution of the zinc values is not clear. One poorly distributed log normal population or two separate log normal populations are present. A possible anomaly is equal to or greater than 180 ppm. It is seen that there are ~~four~~¹¹ sample locations just south of the postulated contact zone. These possible anomalies are in association with the low order copper anomalies, although not coincidental.

Manganese:

The manganese analyses were done to determine if any outstandingly anomalous metal values were simply a function of manganese sorption processes. In figure 1G the manganese values have been plotted. The N8°W fault zone and its extension to the south over L14 has above average manganese values. On L11 in the vicinity of the limestone-diorite contact above background manganese values are present. On L24W - 8N a high manganese value in swamp is coincidental with high copper values. In the vicinity of the limestone-diorite contact above average manganese values are either coincidental or associated with the low order copper anomalies. It does not appear that manganese scavenging effect are responsible for any significant metal anomalies with the possible exception of in the swamp mentioned above.

Lead, Silver, Molybdenum:

No significant anomalous lead, silver, or molybdenum values were obtained in the geochemical soil survey.

CONCLUSIONS AND RECOMMENDATIONS:

From the results of the present geochemical soil survey anomalous zones of nickel, cobalt, copper, and zinc have been outlined. The areas of priority are basically three:

- 1) The N8°W fault zone where anomalous nickel, cobalt and copper occur.
- 2) Intimately associated with the first area are the anomalous nickel values possibly associated with faulting and fracturing and the serpentine bodies west of the N8°W fault zone on Cornwall Claims 5 and 6 and outlined on the nickel and nickel : chromium ratio maps. It should be noted that it has not been demonstrated conclusively that the anomalous nickel values are in fact a function of nickel mineralization, i.e., nickeliferous pyrrhotite although garnierite has been found in this general area.
- 3) The limestone-diorite contact east and west of L11. Here low order anomalous copper values and possible zinc anomalies occur. This area is significant in that potential base metal replacement or contact metamorphic deposits are geologically favourable.

All of these areas warrant further work; the type and sequence being guided as exploration progresses:

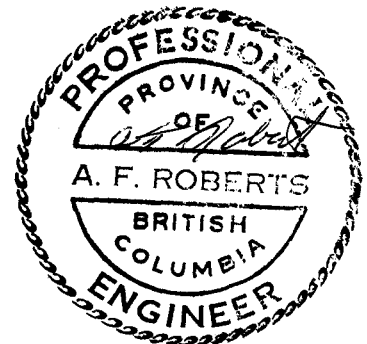
- 1) Initially the area of the limestone-diorite contact where anomalous copper and zinc values occur should be subjected to a moderate geochemical soil survey and if any area of anomalous values are found the survey should be expended to cover the complete limestone-diorite contact. The values from the present survey although anomalous are of low order.
- 2) A magnetic survey should be completed over and west of the N8°W fault zone where the anomalous nickel values occur.
- 3) Results from the magnetometer survey should be correlated to the nickel and chromium surveys and trenching should be done over these anomalous zones. Alternatively, trenching could be completed over the anomalous nickel areas before any magnetometer work is done.
- 4) If trenching from 3) uncovers significant mineralization a geochemical and/or magnetometer survey should be extended outside of the detailed area covered to that date.
- 5) A photogeological study of the area should be done in order to study distribution and frequency of faulting and fracturing. It appears that the fracturing and faulting has in part controlled the distribution of the nickel anomalies and has possibly controlled localization of the serpentine bodies.

Respectively Submitted,
CREST LABORATORIES (B.C.) LTD.

Alfred A. Burgoyne

Alfred A. Burgoyne, M.Sc.
Geologist-Geochemist.

AAB/seb



CERTIFICATE

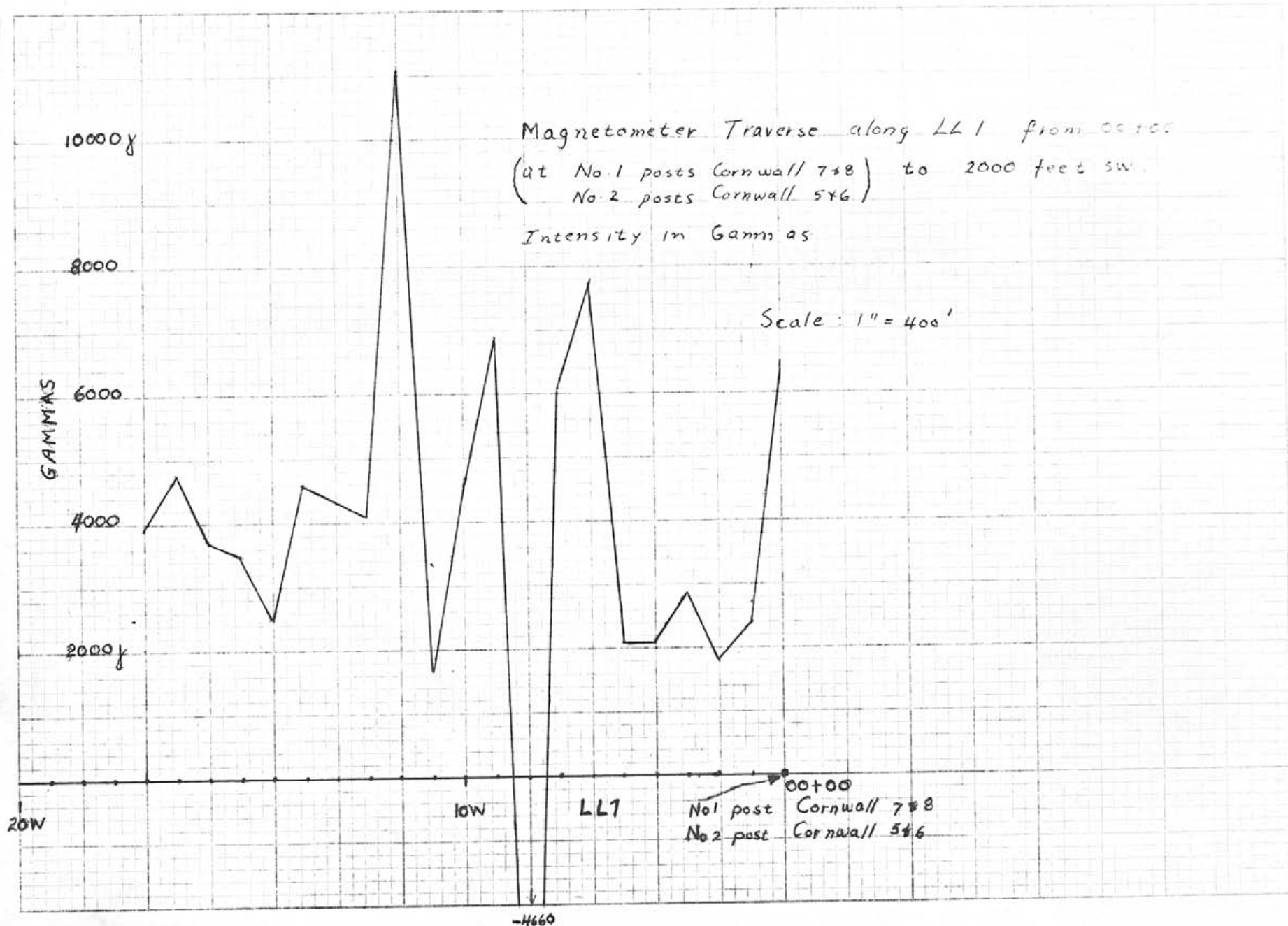
I, Alfred A. Burgoyne, of Burnaby, British Columbia, do hereby certify

That:

- 1) I am a geologist-geochemist employed by Crest Laboratories (B.C.) Ltd., 1068 - Homer Street, Vancouver 3, B. C.
- 2) I am a graduate of the University of British Columbia (B.Sc. Geology and Chemistry, 1962), and of the University of New Mexico, (M.Sc., Geology, 1967).
- 3) I have practised my profession as a geologist-geochemist since 1962.
- 4) I personally have examined the property as described in this report.

Alfred A. Burgoyne, M.Sc.
Geologist-Geochemist

Dated, December 23, 1969



20W

low

LL1

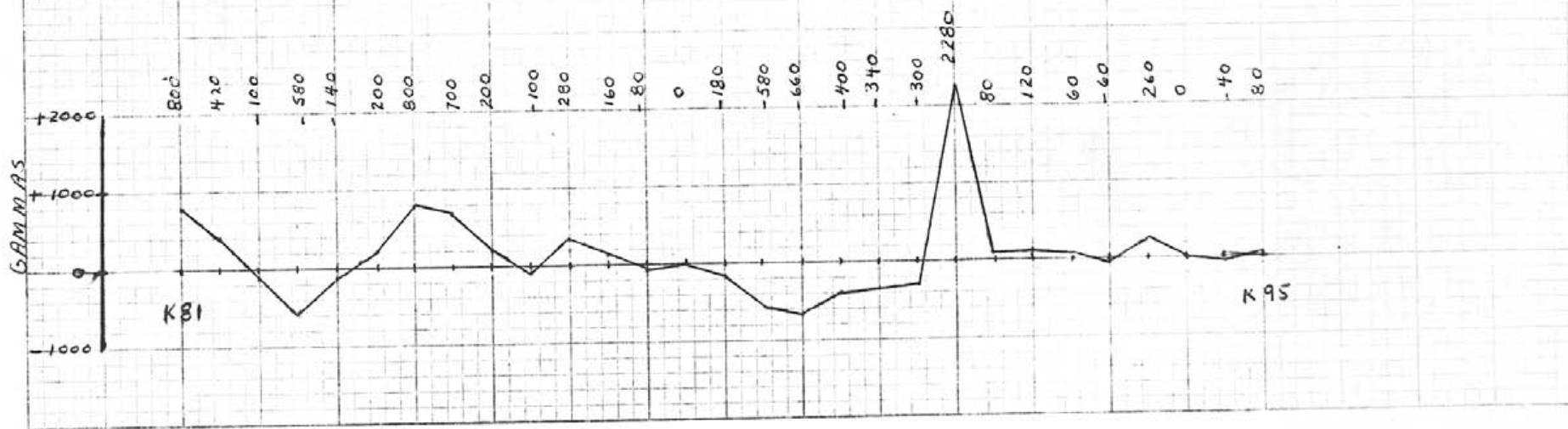
No 1 post Cornwall 7+8
No 2 post Cornwall 5+6

00+00

-4660

Magnetometer Traverse along N 8° W Fault Zone
Intensity in Gammas

Scale 1" = 400'



CREST LABORATORIES (B.C.) LTD.B.C. REGISTERED ASSAYERS
GEOCHEMISTS1068 HOMER STREET,
VANCOUVER 3, B.C.

Sept. 11, 1970.

Mr. Gerald Krause
2000 - Elanco Lane
EUGENE, Oregon, 97401Lot No. 329 G: Geochemical Analysis for Molybdenum, Copper, Lead, Zinc,
Silver, Nickel, Cobalt, Mercury, Arsenic, Antimony,
and Gold:Size Fraction: Do Not Sieve
Analytical Method: Atomic Absorption and Colourmetric
Digestion Method: $\text{HNO}_3 + \text{HClO}_4$

Sample #:	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Hg ppb	As ppm	Sb ppm	Au ppb
Cornwall #1 50'		85		75	3	400	54	83	8	130	
55'		80		100		325		282	40		
60'		85		110		350				120	
65'		100		100		420				110	-30
Cornwall#2 68'	-2	85		100	2.2	560	80	112	-4	160	
Cornwall#3 23'		45				840	74		-4		
32'		30			1.5	1320	90		-4	120	
Cornwall#4 50'		170				415	62		-4		
55'		170				500	68		-4		
60'		175				475	56		-4	130	
65'		160				500	56		-4		
70'	-2	110		45		495	52		-4		
75'		135				440	64		-4		
80'		100				26	32		-4		
Jack #1 33'		145		145	1.5	220	48		4	120	
38'		110		90		184	50		-4	130	
45'		95		110	1.7	220	54		-4	130	
48'		110		210		114	36		-4	90	

Mr. Gerald Krause
 Lot No. 329 G
 Sept. 11, 1970.
 Page 2...

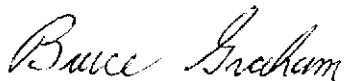
Sample #:	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Hg ppb	As ppm	Sb ppm	Au ppb
Jack #1 146;		210		220	1	64	24		-4	70	
Jeff #2 22'	3	70		75	1	26	40				-30
35'	7	130		165	1.5	48	40		-4	120	-30
41-43'	3	160		150		30	42		4		-30
53'	2	300	20	420		28	38				-30
59'	-2	170		360	1.5	26	48				-30
63-65'	5	215		140	1.5	16	40				-30
73-75'	4	100	14	65	0.7	26	20				-30
81'	-2	145	22	95	1.7	70	66		-4	120	-30
83'	-2	80	21	75	1.5	94	60				-30
85'	2	60	15	45	1.2	50	36				-30
89'	2	40	13	30	1	16	16				-30
Jeff #3 40'	3	110		85	2.5	28	8		4	65	-30
53-55'	2	95	15	75	3	36	14				-30
60-62'	2	80	25	95	1.7	36	16				-30
70'	2	65	84	95	1.2	22	8				-30
80'	5	110	72	85	2.2	38	22				-30
84'	5	100	18	70	1.5	42	22		4	95	-30
87'	2	125	14	240	1.5	30	16		-4	80	-30
Jeff #4 37'	27	330	21	300	2.5	26	18		20	80	-30
41'	5	340	20	640		30	18		40	80	-30
49-51'	2	500	18	570		26	18		12	65	-30
61'	-2	80	18	180		16	16		4		-30
Jeff #5 10'	-2	175		95		44					-30
20'		75	15	100	1	22	10				-30
30'	4	290		275	1	84	34				-30
40'	20	165	24	70	1	156	38		120		-30
50'	2	70	19	60	1.5	34	26				-30
60'	2	90		70	1	32	16				-30
70'	2	70	12	70	1	22	14		4	70	-30

Mr. Gerald Krause
Lot No. 329 G
Sept. 11, 1970.
Page 3...

Sample #:	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Hg ppb	As ppm	Sb ppm	Au ppb
Jeff #5 80'	2	200	14	85	1	30	14		-4	60	-30
90'	2	375	17	115	1.5	36	24		4	85	-30
100'	4	200	13	75	1	60	24		4	65	-30

Yours truly,

CREST LABORATORIES (B.C.) LTD.,



Bruce Graham

Chemist

BG:mk

CREST LABORATORIES (B.C.) LTD.B.C. REGISTERED ASSAYERS
INDUSTRIAL and RESEARCH CHEMISTS1068 HOMER STREET
VANCOUVER 3, B.C.

June 10, 1970

Mr. Gerald Krause
3910 - Scotton Drive
VICTORIA, B.C.Lot No. 225 G: Geochemical Analysis for Molybdenum, Copper and Zinc:Re: Cashe Creek:Mash Size: -80
Analytical Method: Atomic Absorption
Digestion Method: HClO₄ - HNO₃

Sample Number:	Moly., ppm	Copper ppm	Zinc ppm	Sample Number:	Moly., ppm	Copper ppm	Zinc ppm
Bob #1 10' 4	11	75	350	Jeff #2 54'	-2	275	160
Jack #1 12'	2	630	520	58'	-2	190	145
Jack Core #1 17'	3	1500	1163	59'	-2	85	70
Jeff #2 0-23'	2	80	140	60'	-2	110	80
27-29'	2	165	180	63'	-2	130	100
28'	-2	465	185	Jeff #3 to 11'	-2	145	100
31'	-2	170	175	13'	-2	170	55
35'	-2	350	145	16'	-2	70	40
40-43'	-2	630	265	18'	-2	340	50
46'	-2	820	700	20'	-2	190	30
49'	-2	190	200	21-22'	2	145	60
51'	-2	105	100	23'	-2	185	60
				26'	-2	190	90

Yours truly,

CREST LABORATORIES (B.C.) LTD.

*Bruce Graham*Bruce Graham
Chemist

BG/sab

CREST LABORATORIES (B.C.) LTD.

B.C. REGISTERED ASSAYERS
GEOCHEMISTS

1068 HOMER STREET,
VANCOUVER 3, B.C.

August 20, 1970.

Mr. Gerald Krause
2000 Elanco Lane
Eugene, OR. 97401

Lot No. 316 G:

Geochemical Analysis for Copper, Zinc, Silver & Nickel:

Analytical Method: Atomic Absorption
Digestion Method: $\text{HNO}_3 + \text{HClO}_4$

Sample Number:	Copper ppm	Zinc ppm	Silver ppm	Nickel ppm
JACK#1 140 ft.	120	55	1	230
142 ft.	1600	80	2	360
144 ft.	145	70	2	250
Cornwall#1 70 ft.	90	90	1.5	320
Cornwall #1 77 ft.	95	95	2	290
Cornwall #4 80 ft.	145	45	1.5	390
Cornwall #4 87.5 ft.	110	40	1.5	360
Cornwall #4 92 ft.	130	40	1.5	340
JACK #1 140 54'	165	190	1.5	165
142 96'	170	105	1.5	220
144 116'	145	120	2.2	220
146 132'	150	255	1.5	210
148 74'	175	120	2	240

Yours truly,

CREST LABORATORIES (B.C.) LTD.,

Bruce Graham

Bruce Graham
Chemist

BG:mk

CREST LABORATORIES (B.C.) LTD.B.C. REGISTERED ASSAYERS
INDUSTRIAL and RESEARCH CHEMISTS1068 HOMER STREET
VANCOUVER 3, B.C.

June 10, 1970

Mr. Gerald Krause
3910 - Scotton Drive
VICTORIA, B.C.Lot No. 225 G: Geochemical Analysis for Molybdenum, Copper and Zinc:Re: Cache Creek:Mash Size: #80
Analytical Method: Atomic Absorption
Digestion Method: HClO₄ - HNO₃

Sample Number:	Moly., ppm	Copper ppm	Zinc ppm	Sample Number:	Moly., ppm	Copper ppm	Zinc ppm
Bob #1 10' 4	11	75	350	Jeff #2 54'	-2	275	160
Jack #1 12'	2	630	520	58'	-2	190	145
Jack Core #1 17'	3	1500	1163	59'	-2	85	70
Jeff #2 0-23'	2	80	140	60'	-2	110	80
27-29'	2	165	180	63'	-2	130	100
28'	-2	465	185	Jeff #3to 11'	-2	145	100
31'	-2	170	175	13'	-2	170	55
35'	-2	350	145	16'	-2	70	40
40-43'	-2	630	265	18'	-2	340	50
46'	-2	820	700	20'	-2	190	30
49'	-2	190	200	21-22'	2	145	60
51'	-2	105	100	23'	-2	185	60
				26'	-2	190	90

Yours truly,

CREST LABORATORIES (B.C.) LTD.

*Bruce Graham*Bruce Graham
Chemist

BG/ceb

CREST LABORATORIES (B.C.) LTD.

1068 HOMER STREET
VANCOUVER 3, B.C.
PHONE 688-8586

CREST LABORATORIES LTD.
7911 ARGYLL ROAD
EDMONTON 82, ALBERTA
PHONE 469-2391

CERTIFICATE OF ASSAY

TO Mr. Gerald Krause
3910 - Scolton Road
Victoria, B.C.

August 18, 1970.
Lab. No. 1390.

I hereby certify THAT THE FOLLOWING ARE THE RESULTS OF ASSAYS MADE BY US UPON THE HEREIN DESCRIBED SAMPLES.

MARKED	GOLD		SILVER	COPPER	NICKEL	ZINC					TOTAL VALUE PER TON (2000 LBS.)
	Ounces per Ton	Value per Ton	Ounces per Ton	Percent	Percent	Percent					
JACK#1 140ft.				0.02	0.03	0.01					
JACK#1 142ft.				0.19	0.05	0.01					
JACK#1 144ft.				0.02	0.03	0.01					

NOTE:

Rejects retained one month.
Pulps retained three months
unless otherwise arranged.

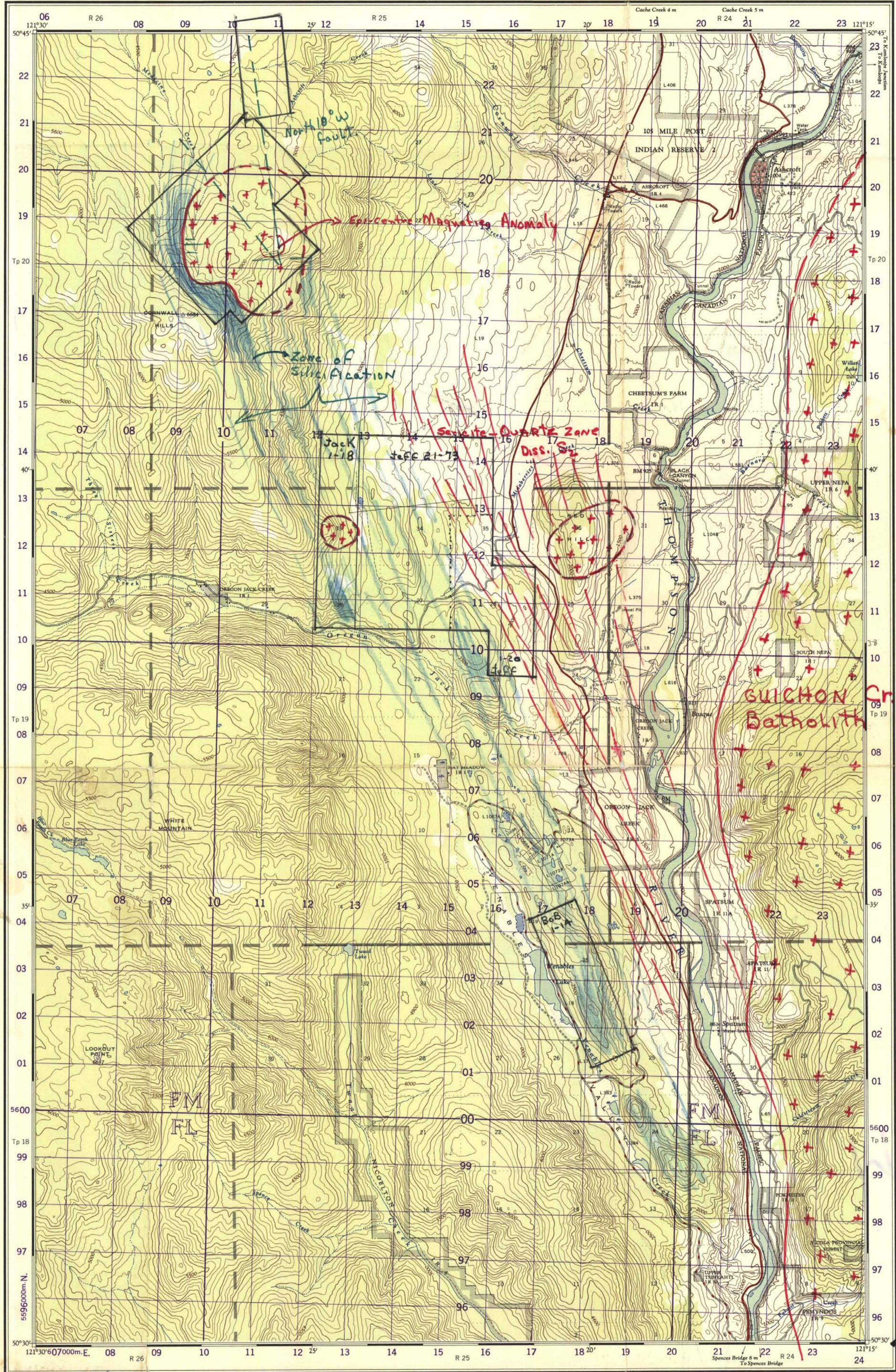
Gold calculated at \$..... per ounce

F. Burgess
.....
Registered Assayer, Province of British Columbia

JEFF, BOB, CORNWALL, JACK

List of Maps:

1. Topographic Map
2. General Geology Map
3. Aero-Mag Map
4. Soil Geochemical Survey - Bob Claims
5. Jeff & Jack Mineral Claims - Soil Geochem Survey - Copper
6. Jeff & Jack Mineral Claims - Soil Geochem Survey - Zinc
7. Jeff & Jack Mineral Claims - Soil Geochem Survey - Nickel
8. Jeff Claims - Detailed Soil Geochem Survey - Copper & Molybdenum
9. Jack 1 - 4 - Detailed Soil Geochem Survey - Copper
10. Jack 1 - 4 - Detailed Soil Geochem Survey - Nickel
11. Jack 1 - 4 - Detailed Soil Geochem Survey - Nickel:Copper
12. Cornwall Claims - General
13. Cornwall Claims Trench Chan. Samp.
14. Cornwall Claims Soil Geochem Survey - Nickel
15. Cornwall Claims Soil Geochem Survey - Chromium
16. Cornwall Claims Soil Geochem Survey - Chrom:Nickel
17. Cornwall Claims Soil Geochem Survey - Cobalt
18. Cornwall Claims Soil Geochem Survey - Copper
19. Cornwall Claims Soil Geochem Survey - Zinc
20. Cornwall Claims Soil Geochem Survey - Mang.



Department of Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2947
MAP

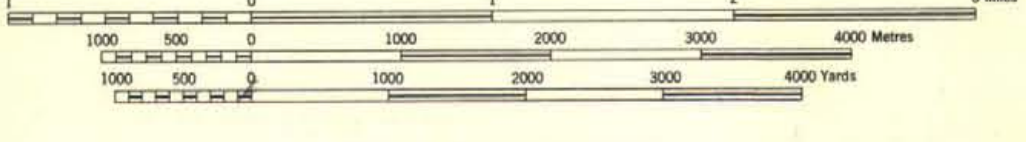
2947



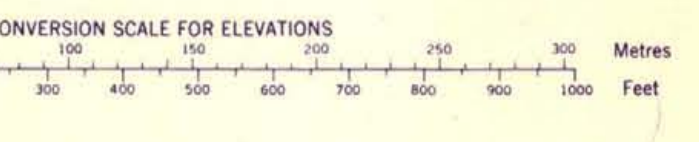
Produced and printed by the SURVEYS AND MAPPING BRANCH, DEPARTMENT OF MINES AND TECHNICAL SURVEYS, 1958, from air photographs taken in 1957.

ASHCROFT
KAMLOOPS DISTRICT
BRITISH COLUMBIA
WEST OF SIXTH MERIDIAN

SCALE 1:50,000
1.25 inches to 1 mile approximately



CONTOUR INTERVAL 100 FEET
Elevations in Feet above Mean Sea Level
North American Datum 1927
Universal Transverse Mercator Projection



GRID ZONE IDENTIFICATION

GRID ZONE DESIGNATION	10U
EXAMPLE BUILDING	FM 560

TO GIVE A REFERENCE TO NEAREST 100 METRES

EASTING	143
NORTHING	09

MILITARY GRID REFERENCE 143099

REFERENCE

Roads:	hard surface, all weather	more than 2 lanes	2 lanes
	hard surface, all weather	less than 2 lanes	less than 2 lanes
	loose surface, all weather	2 lanes or more	less than 2 lanes
	loose surface, dry weather		
	winter, cart track		Winter road
	trail or portage		
Railways:	normal gauge, multiple track		
	normal gauge, single track		
	narrow gauge, single track		
	abandoned or under construction		
Bridges:	road, railway		
Boundaries:	provincial		
	township surveyed, unsurveyed		
	municipality, village		
	park, reserve, etc.		
	section line, with number		
	Lot number		
	Horizontal control point, with elevation		
	Bench mark, with elevation		

REFERENCE

Mine or Open cut	Elevator
Building, Barn	School, Post Office
Church	Cemetery
Built up area	
Telephone line	
Streams:	
intermittent or dry	
Lake intermittent, indefinite	
Inundated land, seasonal	
Marsh or Swamp	
Foreshore flats	
Wharf or Pier, Breakwater	
Rocky reef	
Small island, rock bare or wash	
Contours:	
elevation	
depression	
approximate	
Cliff	
Cutting, Embankment	
Forest	

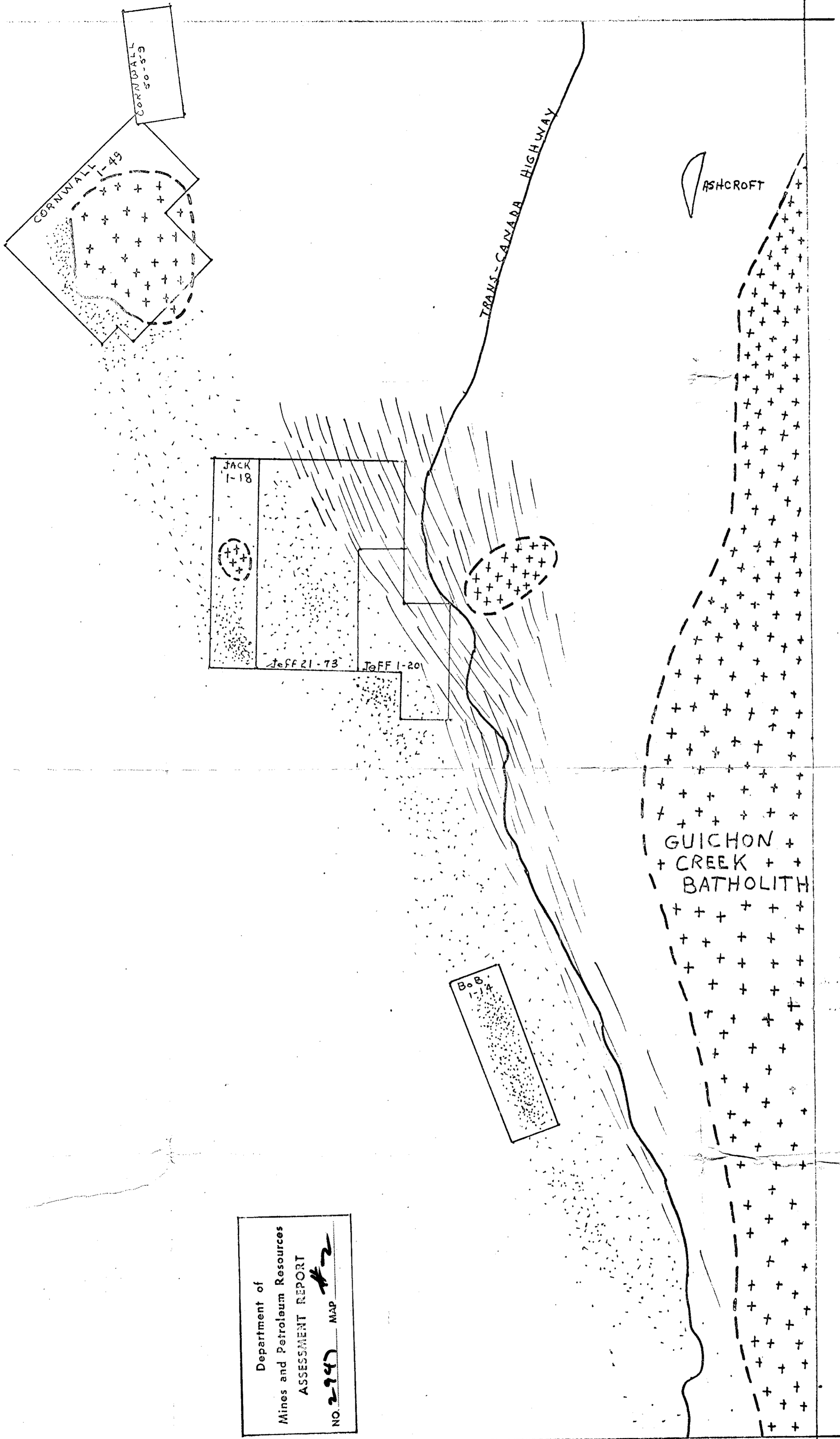
ONE THOUSAND METRE
UNIVERSAL TRANSVERSE MERCATOR
ZONE 10

INDEX TO ADJOINING SHEETS

92/11	92/14	92/15
CACHE CREEK	TRANQUILLE RIVER	
92/12	92/11	92/10
ASHCROFT	CHERRY CREEK	
92/5	92/6	92/7
STEIN RIVER	SPENCES BRIDGE	

ASHCROFT
92/11 WEST
EDITION 1 A

M-1



- +++++ INTRUSIVE
- ||||| SERICITE-QUARTZ
- ALTERATION ZONE

Department of
 Mines and Petroleum Resources
 ASSESSMENT REPORT
 NO. 2947 MAP #2

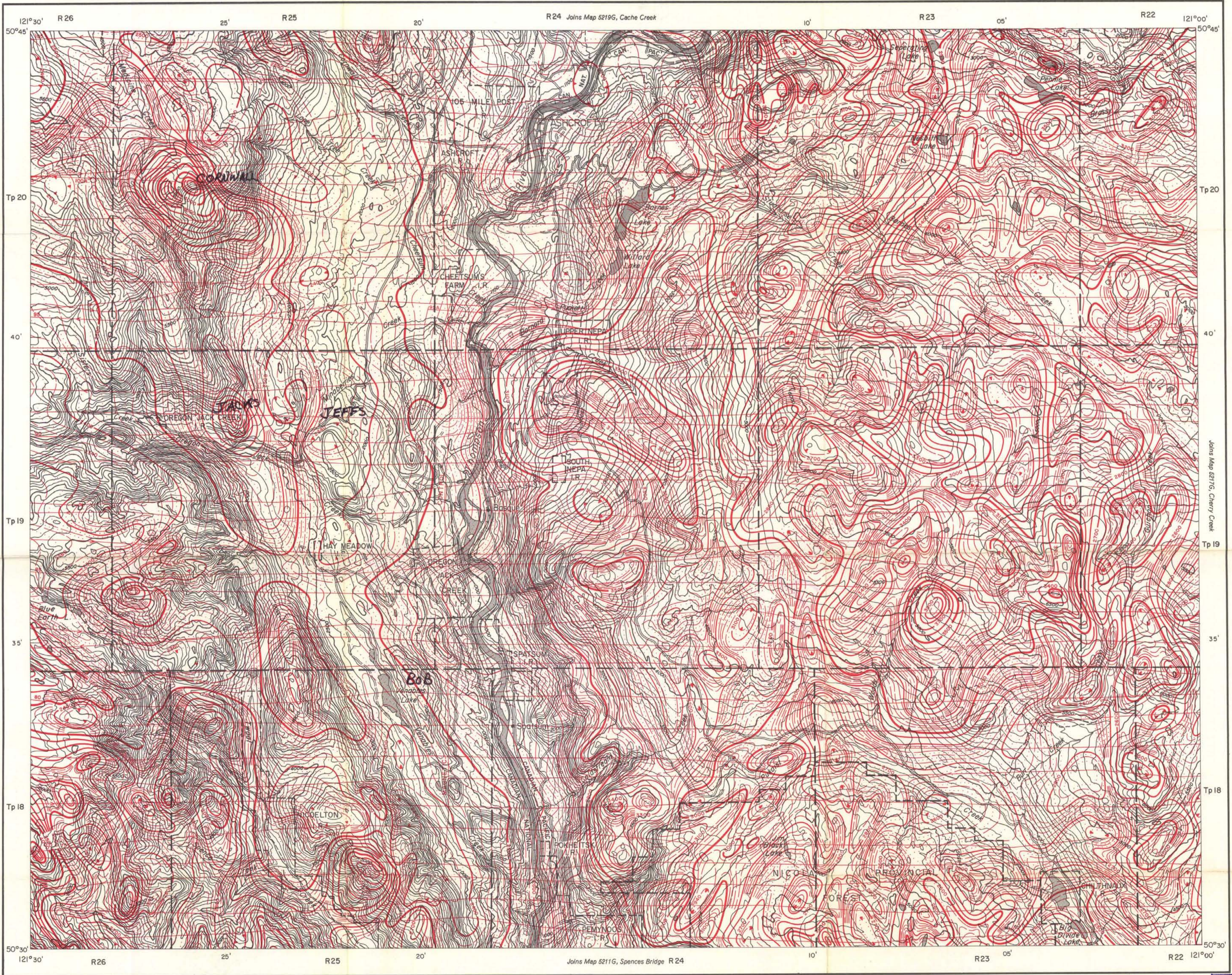
92-I-11 W $\frac{1}{2}$

ASHCROFT
 1:25" = 1 mile.

MAP #1

G.G. Krause

2947 M-2



MAP 5218G

ASHCROFT
BRITISH COLUMBIA

Scale: One Inch to One Mile = 1/63,360 Miles



Airborne Magnetic Survey, November 1966 to May 1968 by Lockwood Survey Corporation Ltd.

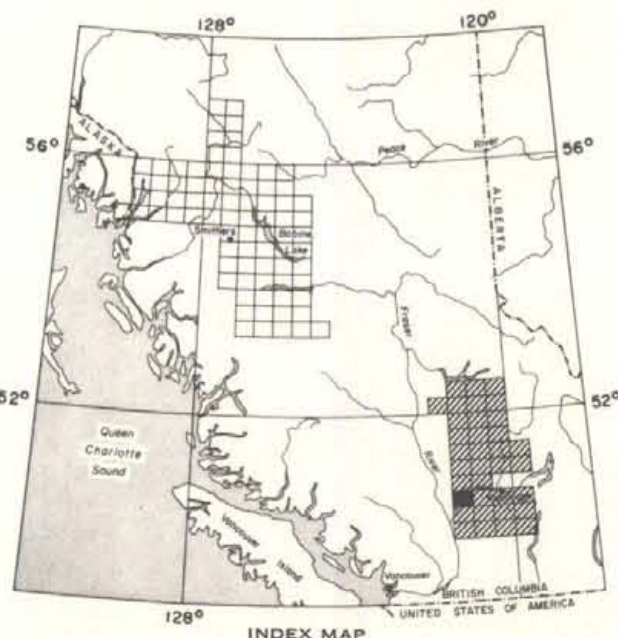
The planimetry for this map was obtained from topographical map sheets published by the Department of Energy, Mines and Resources, Ottawa.

No correction has been made for regional variation.

The magnetic data on this map were compiled from information recorded along the flight lines shown. The anomalies expressed by the magnetic contours are dependent on the variable magnetic intensities of the underlying rocks, and may be due to conditions near, or at unknown depths below the surface. High magnetic anomalies normally indicate the presence of basic rocks, such as diabase, gabbro, or serpentinite, which have a relatively high iron content, but in special instances may be due, or partly due, to concentrations of magnetic minerals. By means of the magnetic anomalies, various rock bodies or structural features, such as faults or folds, may be traced into, or across, areas of low or no outcrops. In many instances, however, no interpretation of particular anomalies may be possible without further geological information.

GEOPHYSICS PAPER 9218
ASHCROFT
BRITISH COLUMBIA
SHEET 92 1/11

M.3



PUBLISHED 1968

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT

NO. 2947 M.P. 43

3

2947

MAP # 4

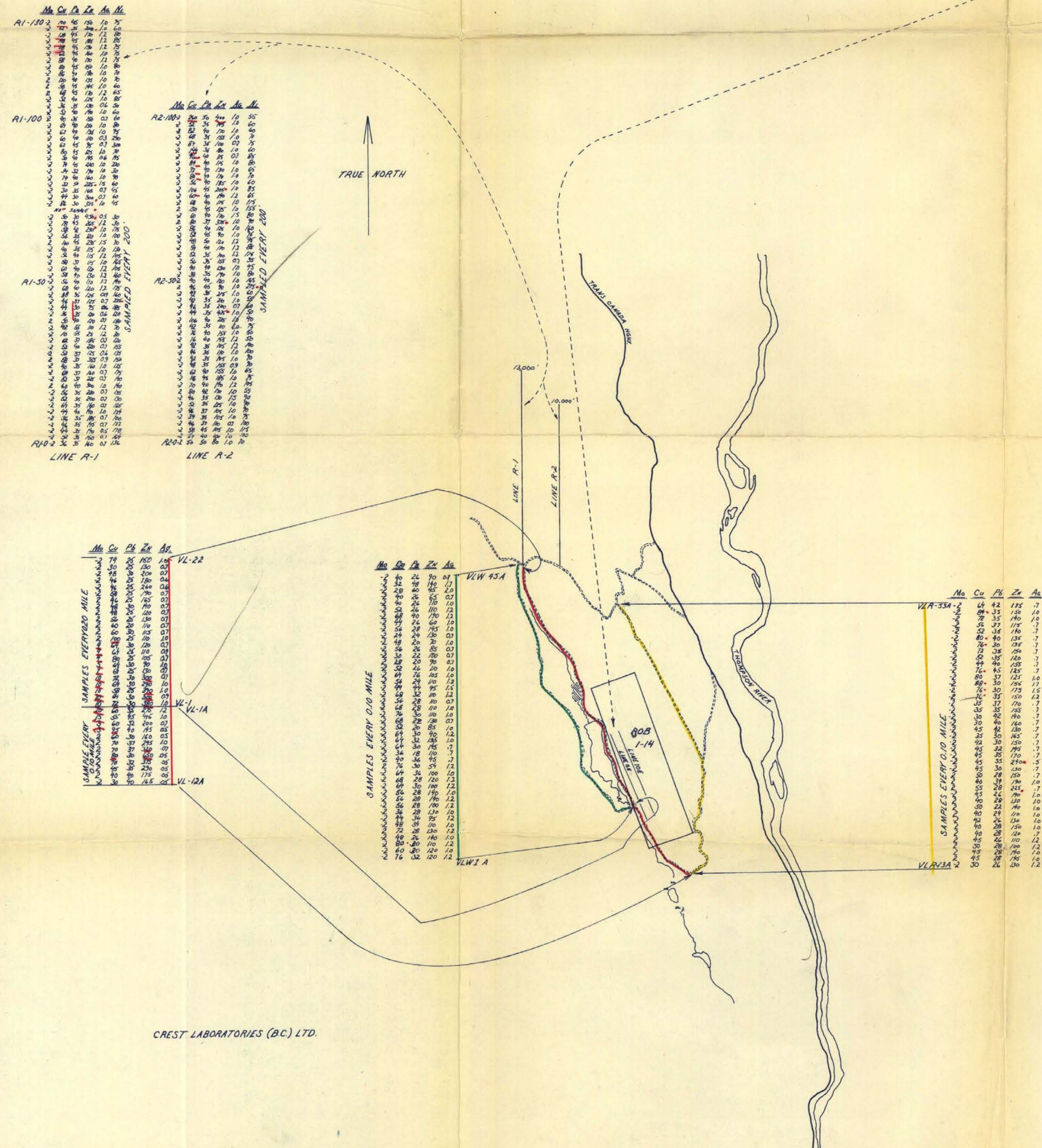
VENABLES LAKE RECONNAISSANCE,

SOIL GEOCHEMICAL SURVEY,

FOR Mo, Cu, Pb, Zn AND As (N. ON R1-R2)

0 1/2 1 MILE

MAP NO. 2947
ASSESSMENT REPORT
Mineral and Petroleum Resources
Department of



DETAIL FOR LINE SE AND IOE 1"=400'

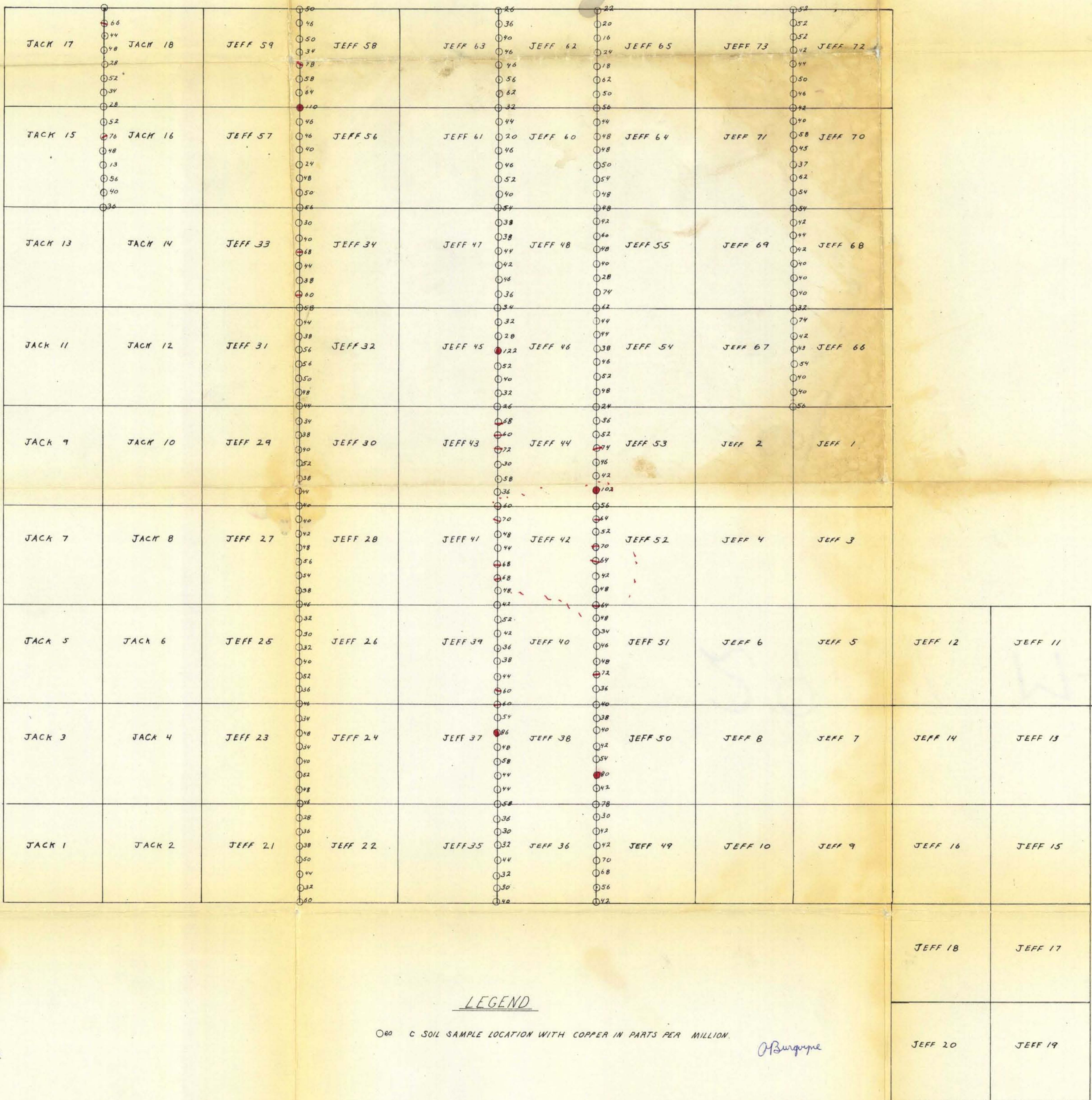
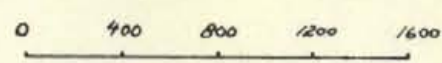
Mo	Cu	Pb	Zn	As	Mo	Cu	Pb	Zn	As			
70N	5	96	32	250	10	4	88	28	350	12		
○	2	160	32	100	17	○	10	84	30	570	10	
●	5	180	32	240	15	○	10	84	28	570	10	
●	20	200	38	500	12	○	10	76	28	500	12	
●	10	120	32	350	10	○	10	120	32	660	12	
●	15	124	39	370	12	○	4	116	92	180	22	
●	15	140	34	670	15	○	7	100	30	370	12	
●	10	140	26	650	10	○	5	120	30	340	10	
●	7	128	36	1300	07	○	10	108	30	415	15	
●	15	148	30	680	10	○	5	60	30	330	12	
60N	7	60	24	560	07	○	1	60	24	370	12	
●	10	104	36	940	12	○	7	88	30	570	12	
○	3	92	24	350	07	○	7	88	30	970	10	
●	5	80	24	270	10	○	7	128	36	460	12	
○	3	12	28	240	12	○	2	80	26	370	10	
●	5	104	34	300	20	○	2	88	34	270	10	
●	5	88	74	310	10	○	2	116	44	370	07	
●	5	76	28	300	12	○	2	64	26	320	07	
○	4	92	28	280	12	○	2	76	28	280	10	
●	5	116	34	350	17	○	5	92	28	270	12	
SON	5	120	34	530	10	○	2	52	28	270	07	
●	7	80	34	1200	10	○	5	92	28	270	12	
●	70	200	52	630	10	○	3	88	28	440	12	
●	5	76	32	920	12	○	2	76	24	330	10	
●	10	100	38	1150	20	○	4	76	26	380	10	
●	20	148	44	1000	15	○	4	68	26	360	12	
●	30	190	44	1800	20	○	2	52	28	260	10	
●	20	120	38	250	12	○	2	68	28	270	12	
●	10	100	32	770	12	○	5	92	28	370	12	
40N	7	112	34	570	20	○	3	52	24	360	10	
○	5	92	34	570	10	○	2	52	24	270	10	
●	7	112	34	570	10	○	2	40	24	270	10	
●	15	112	34	660	12	○	2	56	26	260	10	
●	15	108	34	600	12	○	4	60	24	280	12	
●	15	88	34	770	10	○	2	60	24	320	12	
●	7	88	38	570	15	○	5	60	24	270	10	
●	5	76	28	360	10	○	2	52	28	270	10	
●	7	76	78	950	12	○	2	48	20	400	07	
○	3	92	28	370	12	○	2	76	28	270	07	
SON	7	88	34	380	12	○	5	68	26	170	12	
●	5	104	32	470	05	○	7	76	28	350	10	
●	7	120	58	470	17	○	5	80	36	380	12	
●	5	84	32	440	15	○	4	76	24	240	12	
●	7	88	30	430	12	○	5	76	26	270	07	
●	5	88	30	330	15	○	5	24	24	320	12	
●	5	96	25	410	07	○	3	72	24	210	10	
○	3	92	25	440	10	○	3	84	24	210	07	
●	5	100	30	410	10	○	3	124	28	170	12	
●	5	96	25	300	10	○	3	88	30	220	10	
20N	○	2	108	35	670	25	○	3	64	25	240	10
○	2	100	27	470	12	○	20	76	30	370	15	
○	2	104	30	580	15	○	7	72	30	370	10	
○	2	80	25	270	10	○	5	68	30	310	07	
○	7	116	30	460	25	○	2	36	27	120	07	
○	2	112	30	300	15	○	2	92	30	470	15	
○	2	76	25	425	07	○	2	88	25	470	15	
○	2	76	25	370	10	○	2	88	30	415	12	
○	2	64	25	570	07	○	2	88	30	420	12	
○	10	56	25	460	10	○	2	60	25	425	12	
10N	○	3	112	30	440	10	○	2	48	20	440	10
○	3	108	27	170	10	○	2	28	25	440	10	
○	2	56	25	260	10	○	2	60	25	150	07	
○	2	64	25	170	10	○	2	36	25	125	10	
○	2	76	35	280	15	○	2	52	25	130	10	
○	10	76	30	130	10	○	2	40	25	140	10	
●	5	56	25	150	10	○	2	36	40	170	12	
○	10	80	30	120	10	○	2	44	50	120	10	
○	2	76	25	120	10	○	2	336	27	2700	10	
○	2	48	20	70	05	○	2	84	55	1600	07	
○	2	12	60	150	07	○	2	44	50	440	10	
LINE SE-00N												
LINE IOE-00N												

CREST LABORATORIES (B.C.) LTD.

2947 M-4

JEFF AND JACK MINERAL CLAIM GROUPS,
CORNWALL MNT. AREA, KAMLOOPS MINING DISTRICT B.C.
SOIL GEOCHEMICAL SURVEY FOR COPPER.

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2947 MAP #5



LEGEND

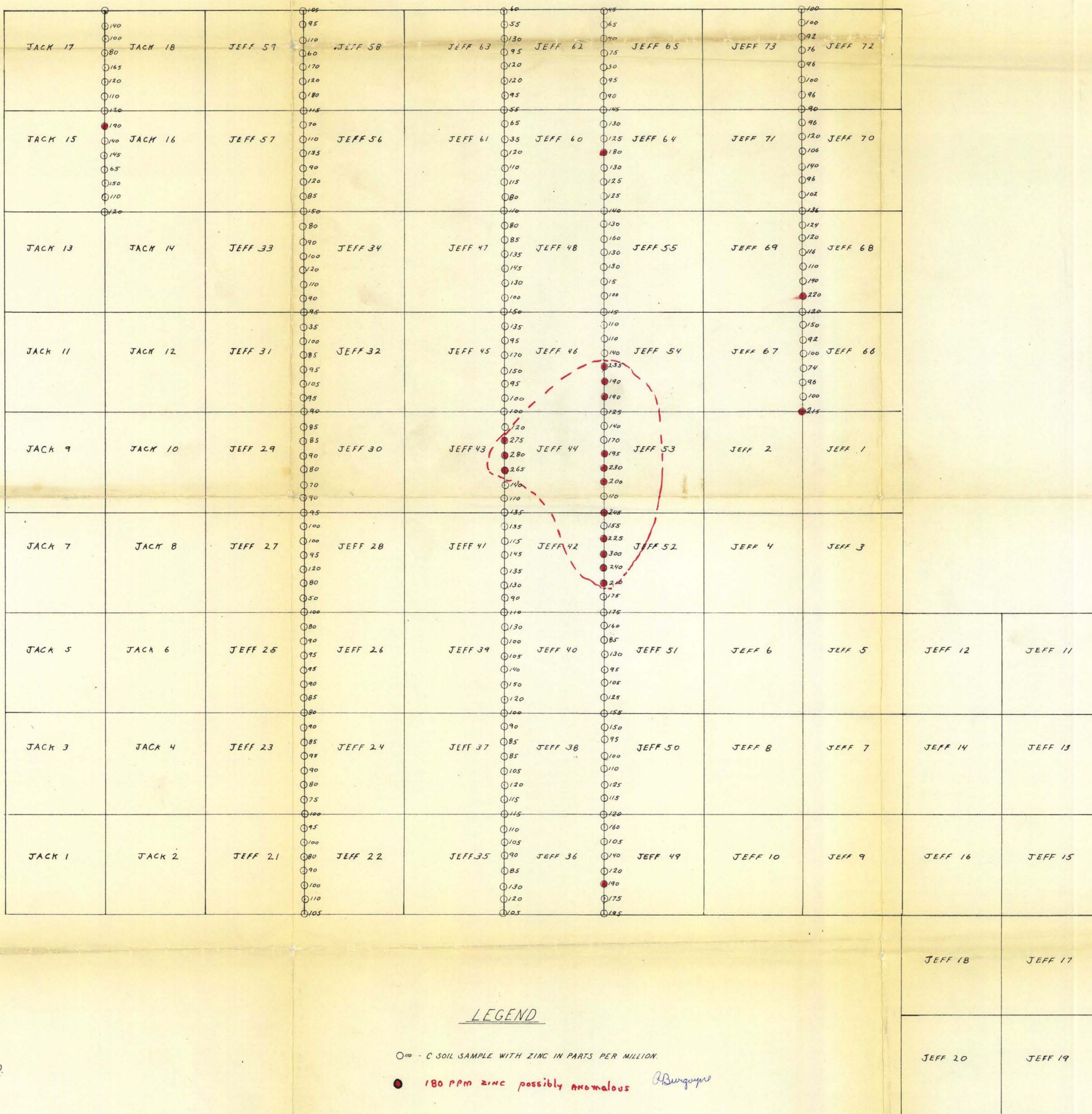
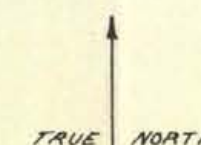
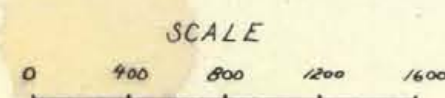
○ 00 C SOIL SAMPLE LOCATION WITH COPPER IN PARTS PER MILLION.

Handwritten signature

SOIL GEOCHEMICAL SURVEY BY:
CREST LABORATORIES (B.C.) LTD.

2947 M-5

JEFF AND JACK MINERAL CLAIM GROUPS,
 CORNWALL MNT. AREA, KAMLOOPS MINING DISTRICT B.C.
 SOIL GEOCHEMICAL SURVEY FOR ZINC.



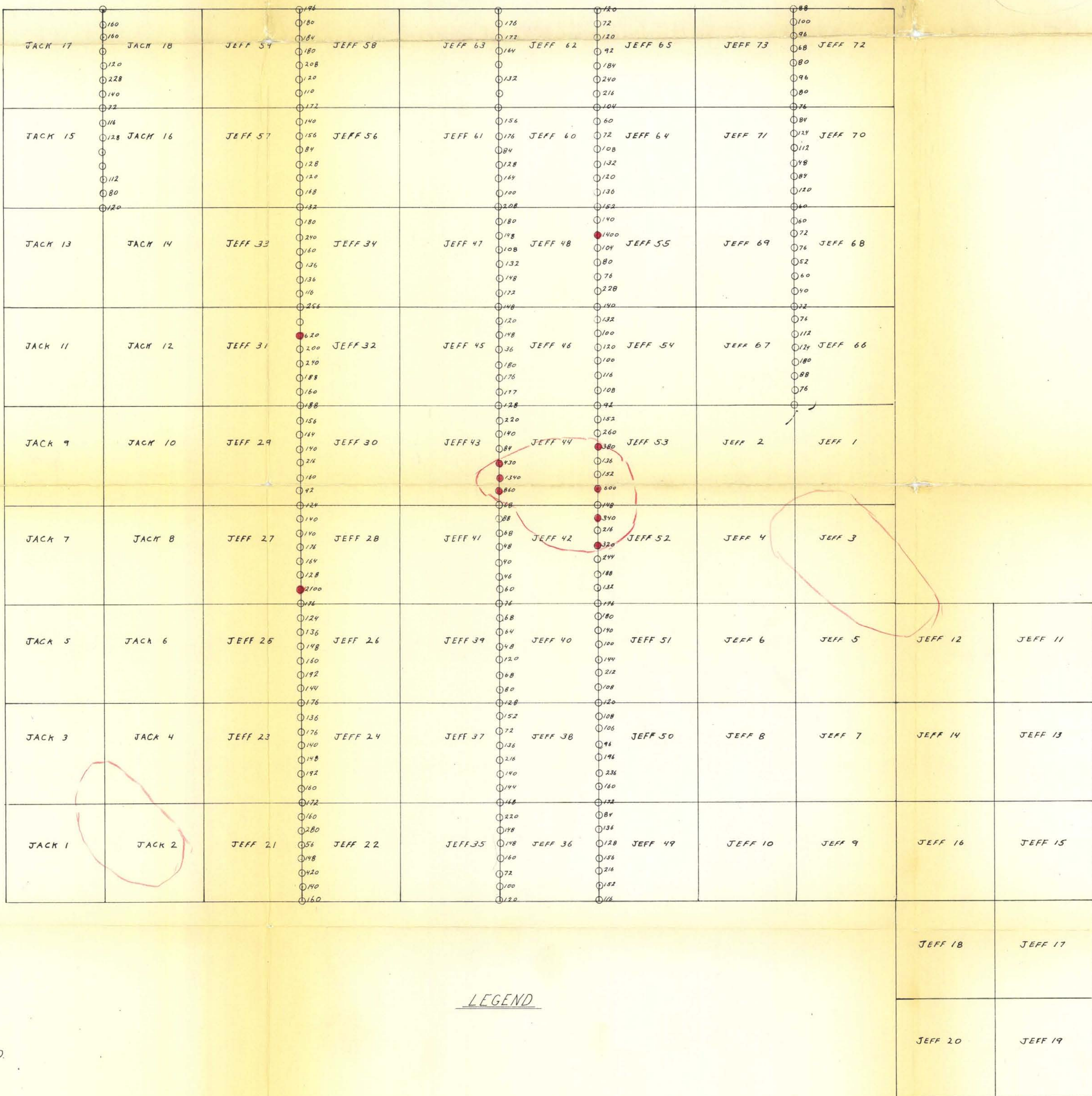
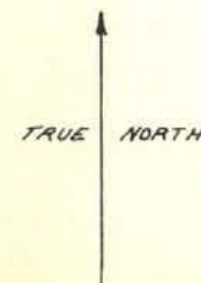
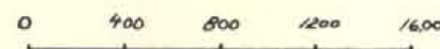
SOIL GEOCHEMICAL SURVEY BY:-
 CREST LABORATORIES (BC) LTD.

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Department of
 Mines and Petroleum Resources
 ASSESSMENT REPORT
 NO. 2947 M.P. #C

JEFF AND JACK MINERAL CLAIM GROUPS,
 CORNWALL MNT. AREA, KAMLOOPS MINING DISTRICT B.C.
 SOIL GEOCHEMICAL SURVEY FOR NICKEL.

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 ASSESSMENT REPORT
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 ON



SOIL GEOCHEMICAL SURVEY BY:
 CREST LABORATORIES (B.C.) LTD.

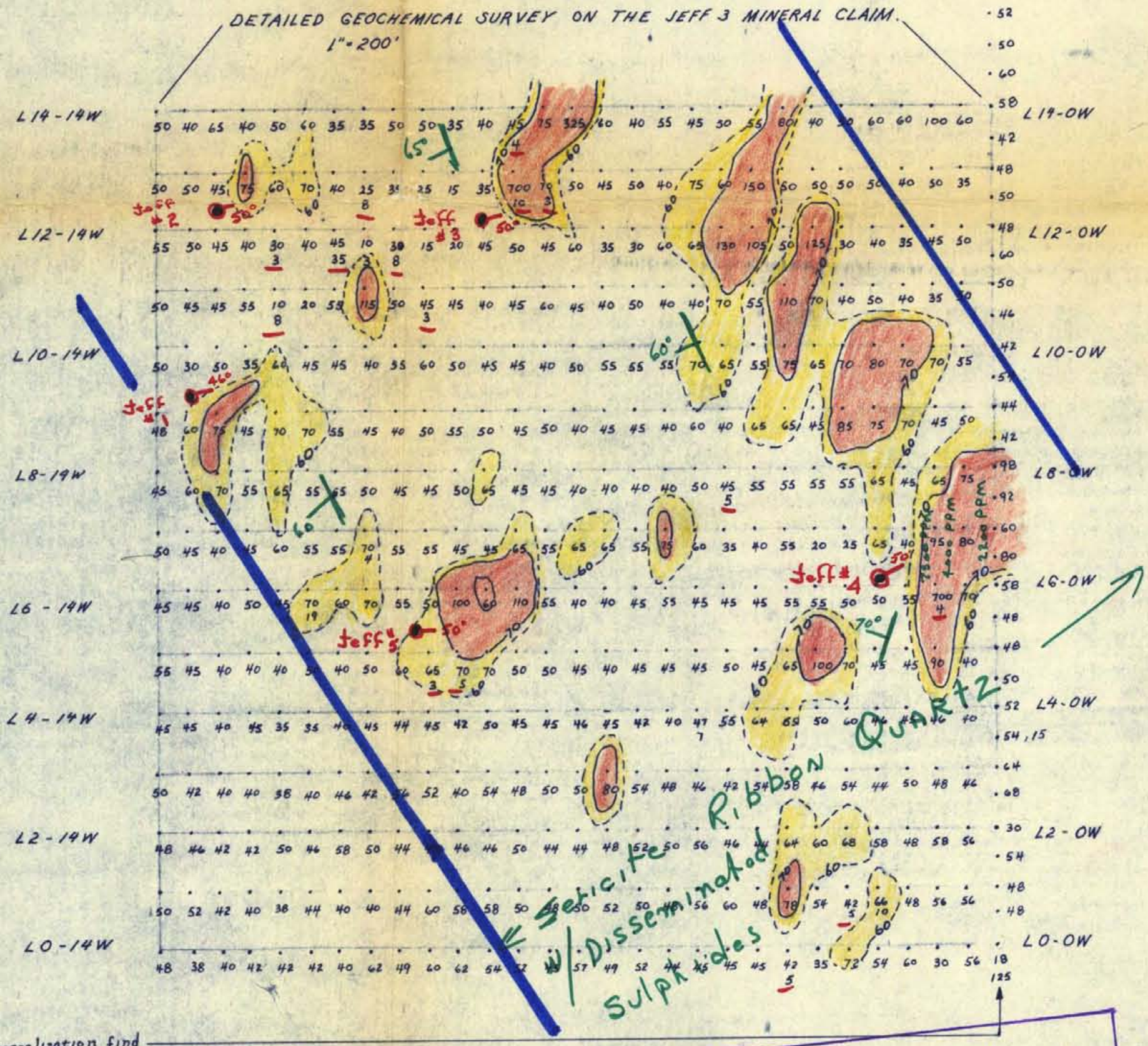
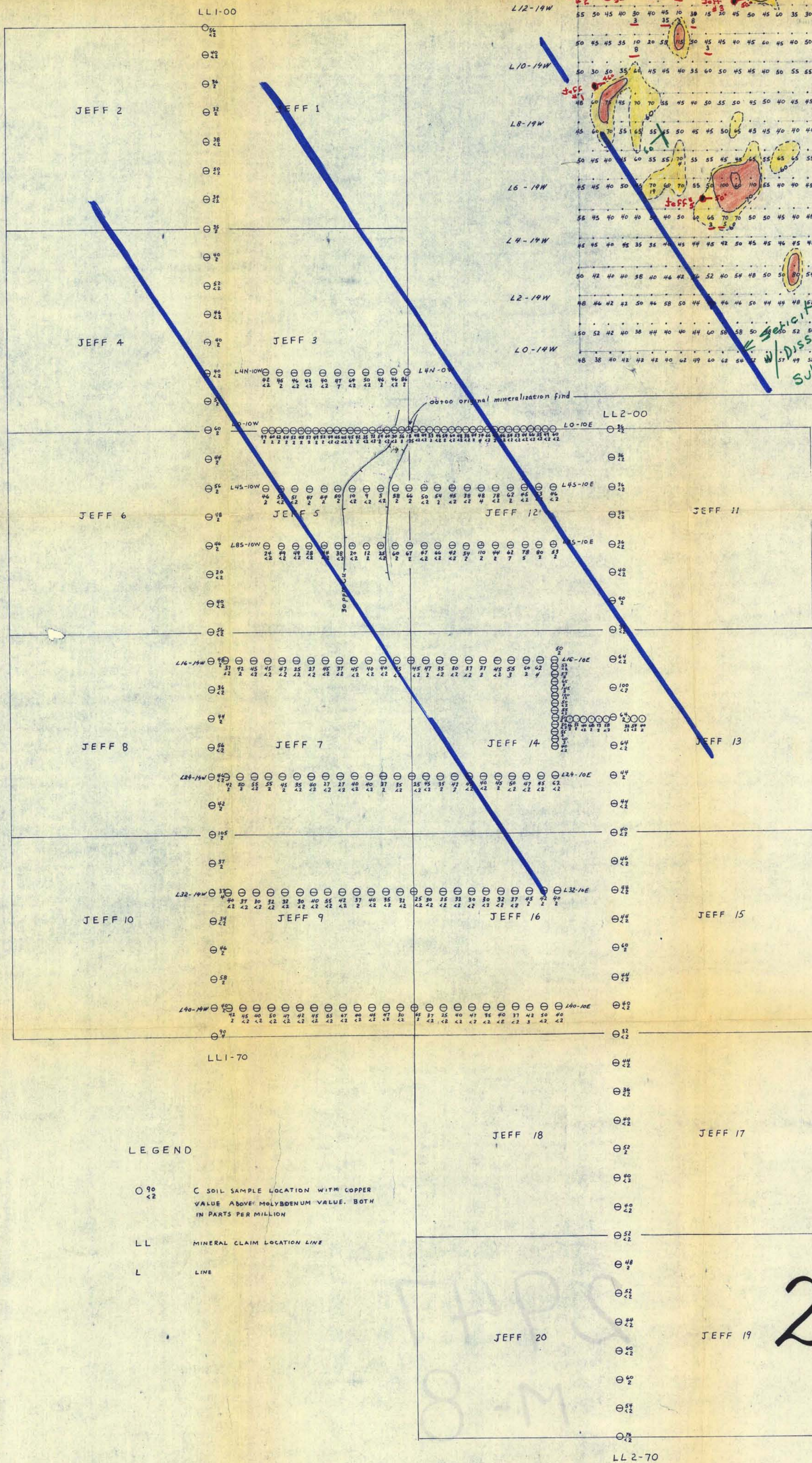
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MAP #3

FIGURE 2B
 JEFF MINERAL CLAIM GROUP
 KAMLOOPS MINING DIVISION, B.C.
 SOIL GEOCHEMICAL SURVEY FOR COPPER
 AND MOLYBDENUM



Scale:
 0 300' 600'

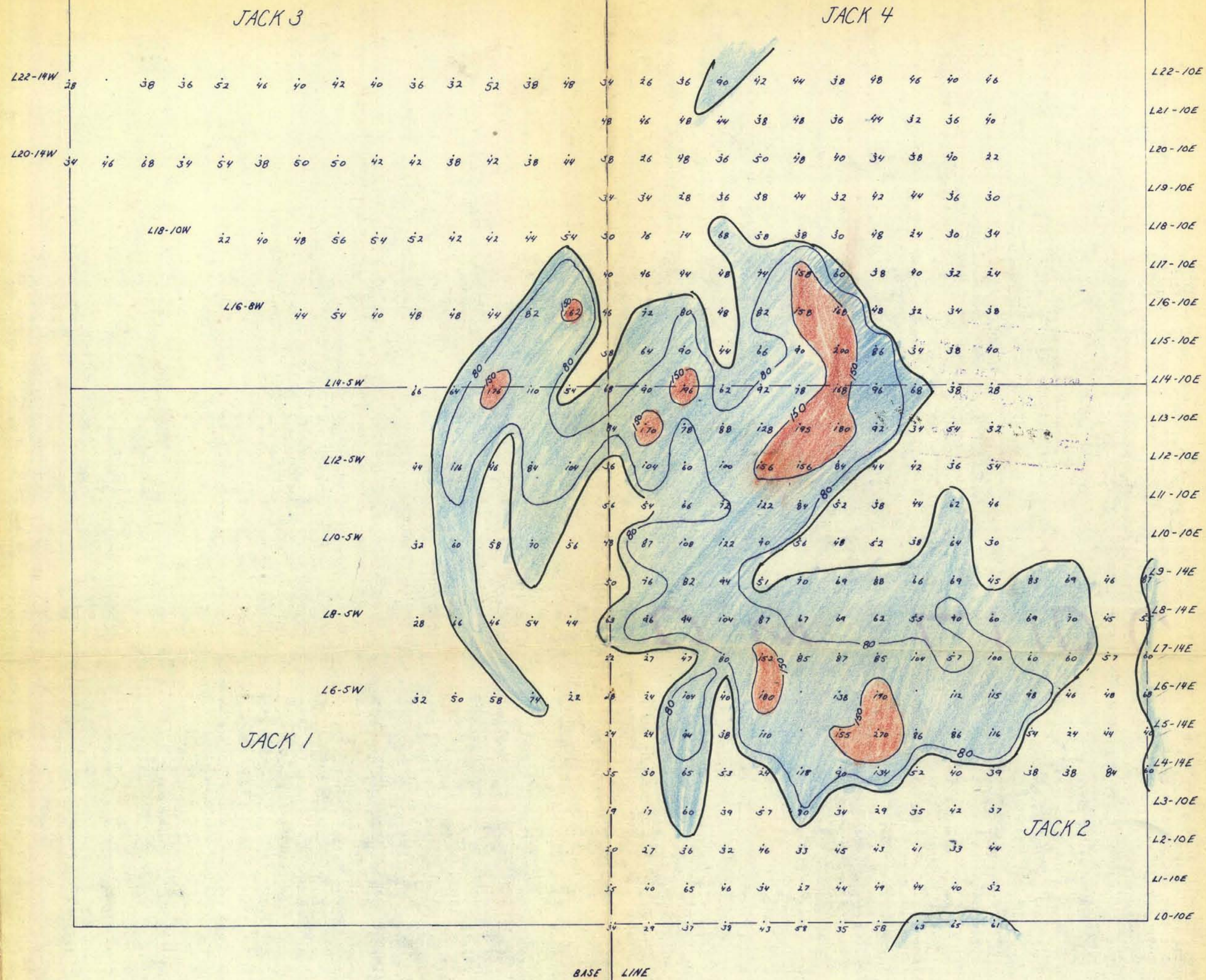


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MAP #5

JACK 1-4, DETAILED GRID SOIL GEOCHEMICAL SURVEY FOR COPPER.



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Mines and Petroleum Resources
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LEGEND

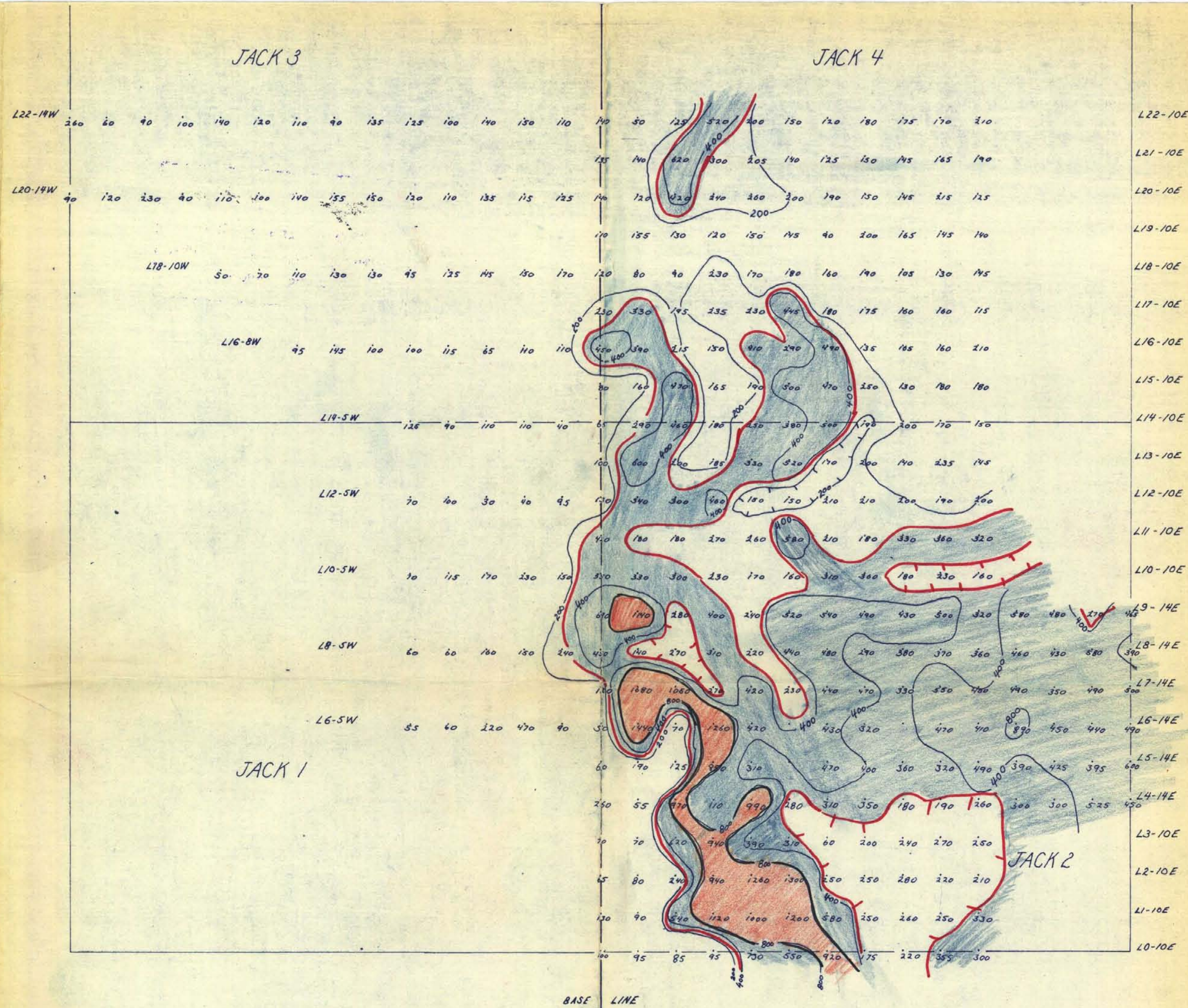
- C - SOIL SAMPLE LOCATION WITH COPPER IN PARTS PER MILLION.
- 80-149PPM - LOW ORDER COPPER ANOMALY.*
- +150 - HIGH ORDER COPPER ANOMALY.*

SOIL GEOCHEMICAL SURVEY BY :- GREST LABORATORIES (B.C.) LTD.
APRIL 3-8, 1970.

*NOTE: ANOMALIES DEFINED STATISTICALLY.

MAP #6

JACK 1-4, DETAILED GRID SOIL GEOCHEMICAL SURVEY FOR NICKEL



2947 M-10

LEGEND

"C" SOIL SAMPLE LOCATION WITH NICKEL IN PARTS PER MILLION

SOIL GEOCHEMICAL SURVEY BY - CREST LABORATORIES (B.C.) LTD.
APRIL 3-8, 1970.

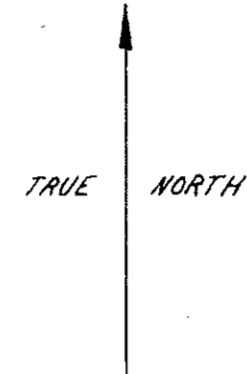
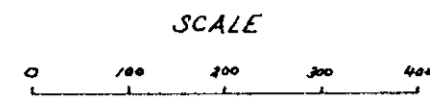
Department of
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ASSESSMENT REPORT
NO. 2947 MAP #10

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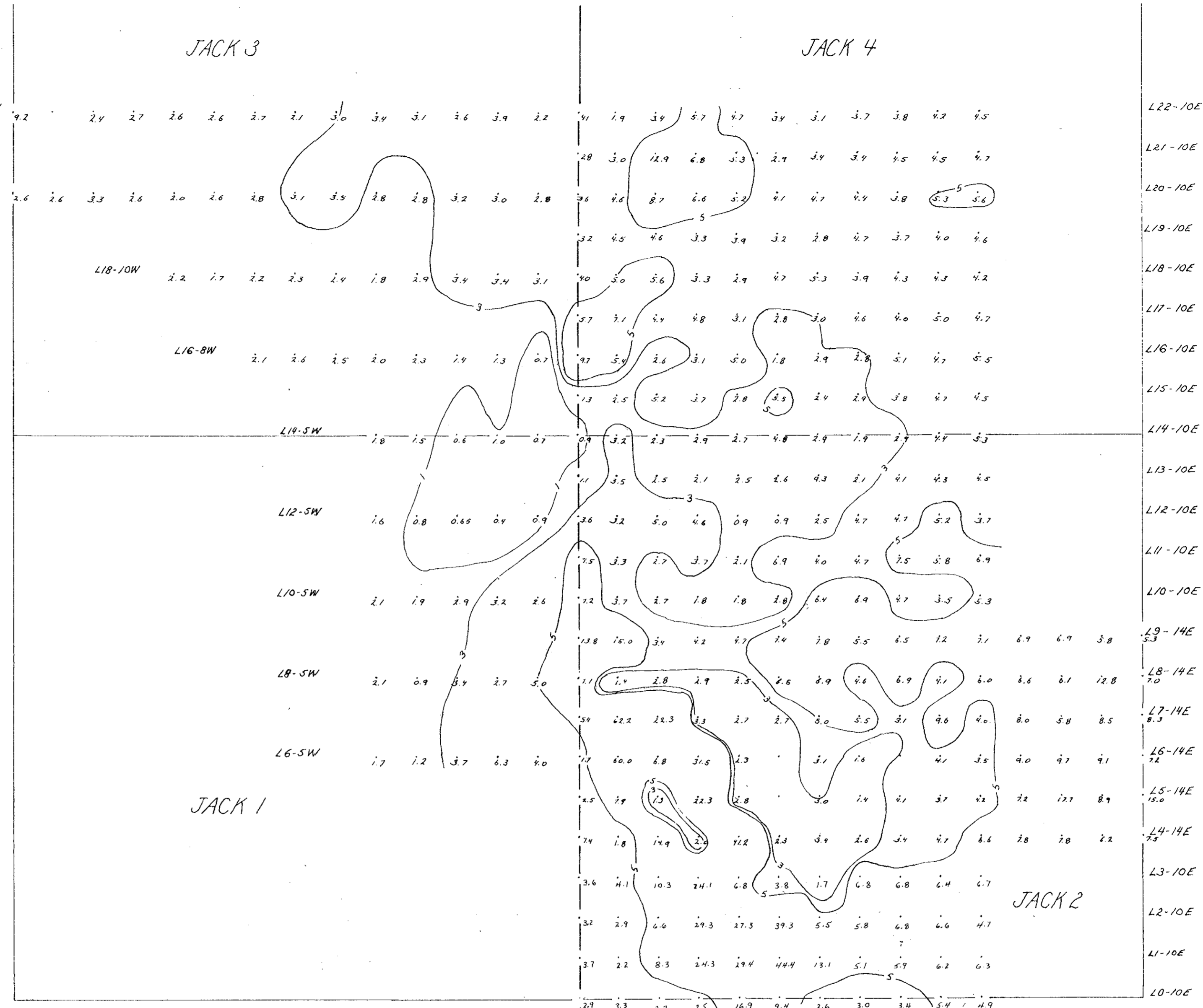
MAP #6 A

JACK 1-4, DETAILED GRID

SOIL GEOCHEMICAL SURVEY FOR NICKEL: COPPER RATIO.



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Mines and Petroleum Resources
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NO. 2947 MAP #11

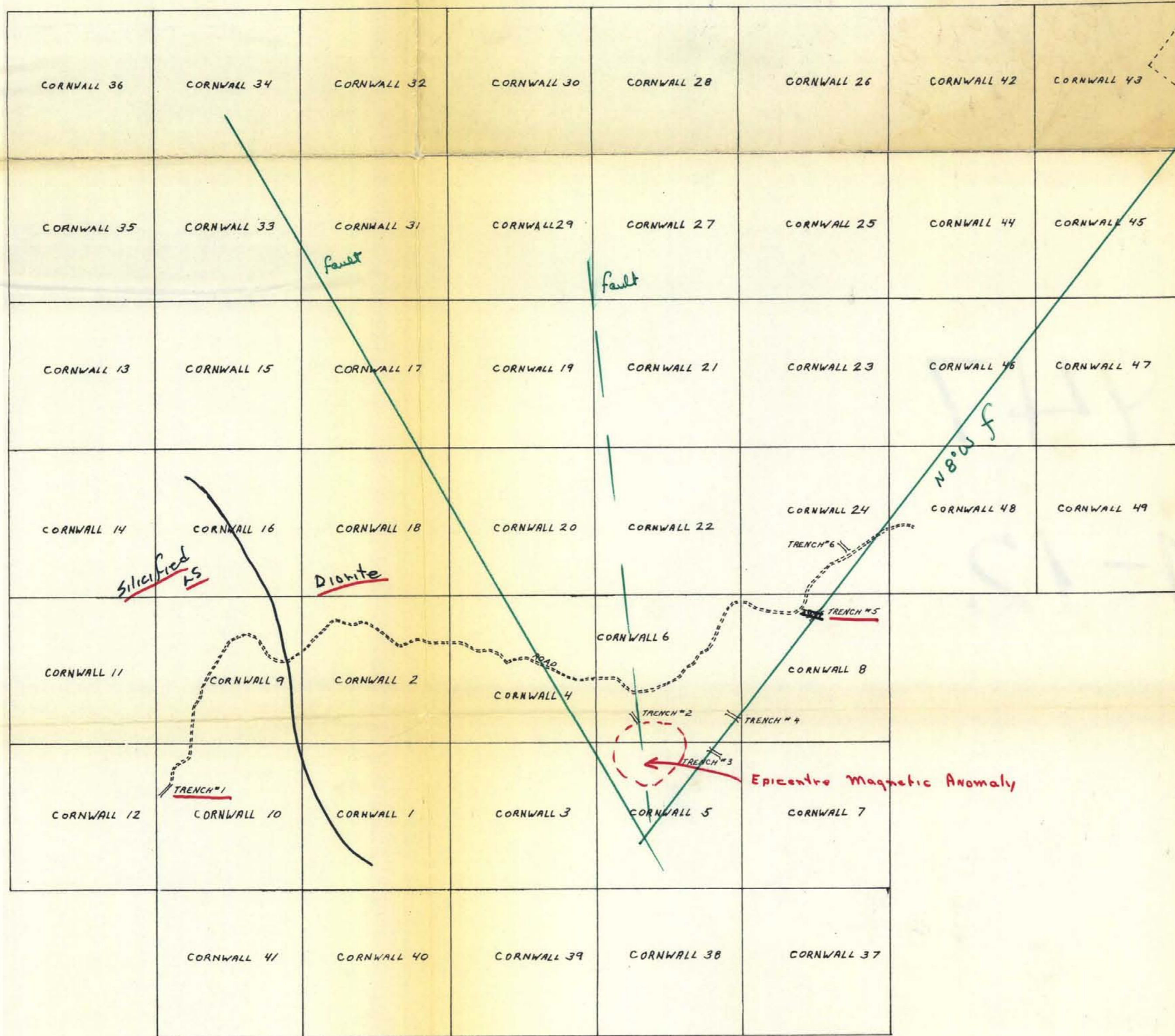
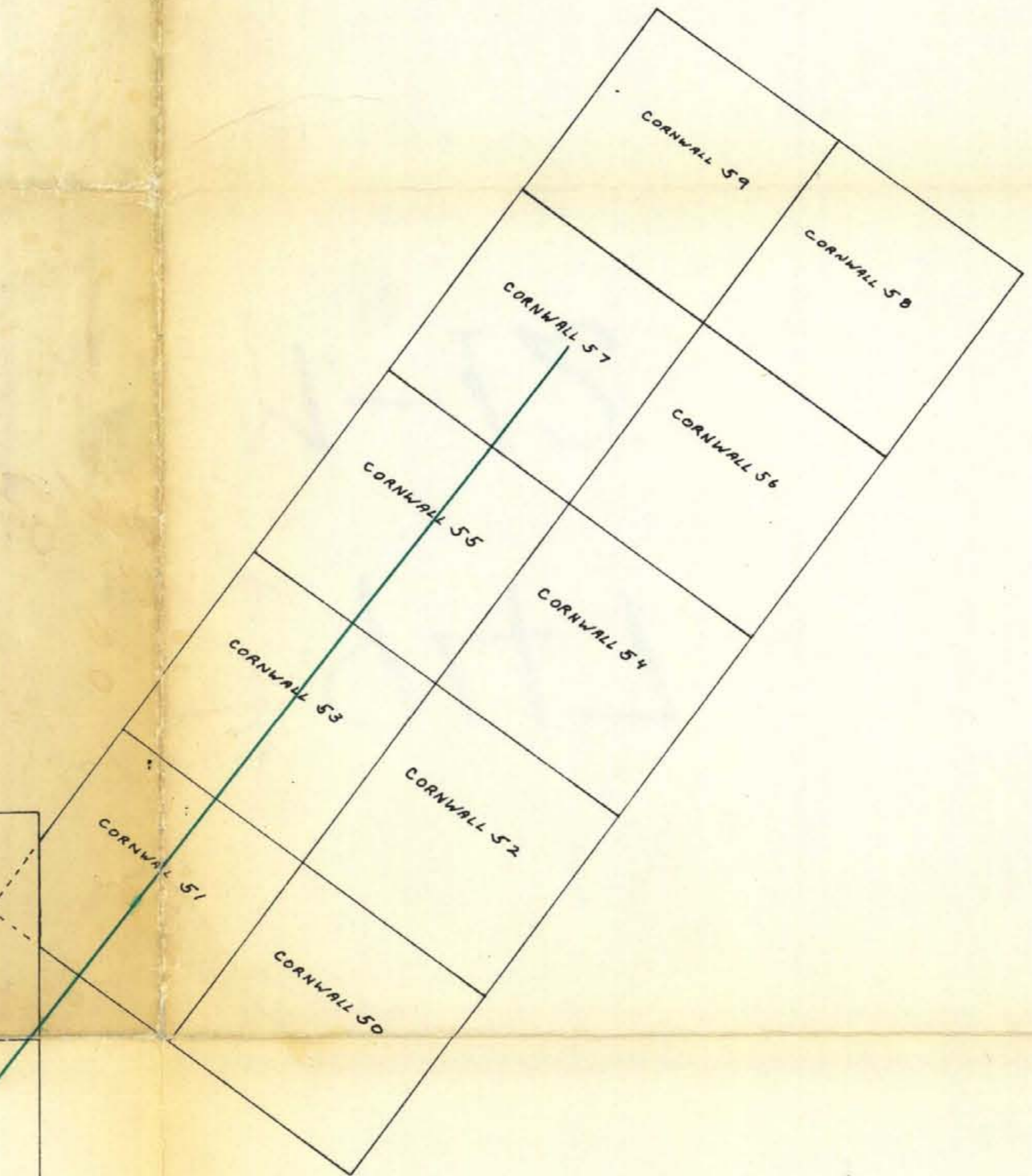
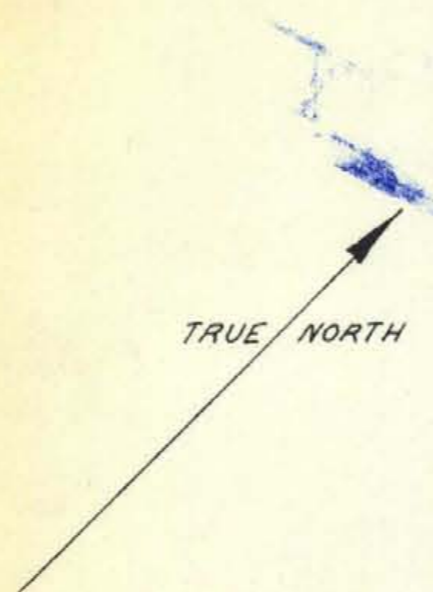
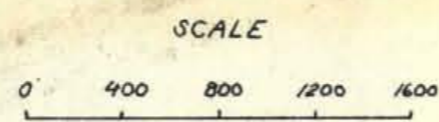


LEGEND

SOIL GEOCHEMICAL SURVEY BY - CREST LABORATORIES (B.C.) LTD.
APRIL 3-8, 1970.

2947 M-11

CORNWALL MINERAL CLAIM GROUP,
CORNWALL MNT AREA, KAMLOOPS MINING DISTRICT, B.C.



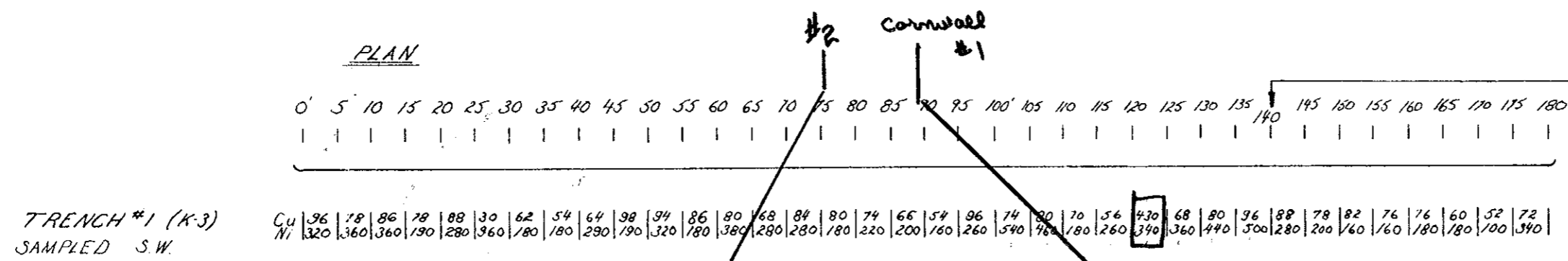
2947

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TRENCH CHANNEL SAMPLING ON THE CORNWALL MINERAL CLAIMS.

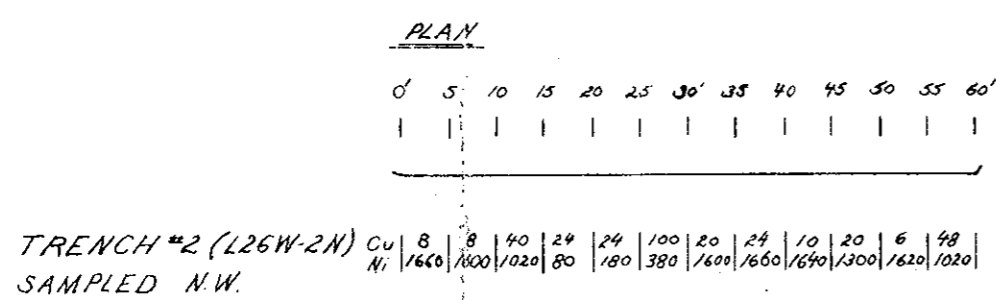
ANALYSED FOR COPPER AND NICKEL IN PARTS PER MILLION.

(FOR LOCATION OF TRENCHES SEE CORNWALL CLAIMS MAP)



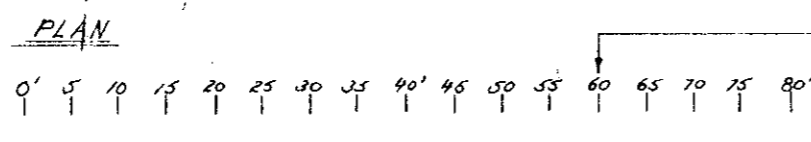
PROFILE

0'	Cu Ni
2'	58,300 - C SOIL
4'	58,300 - C SOIL
6'	44,60 - ROCK
8'	70,40 - ROCK
9.5'	108,40 - ROCK



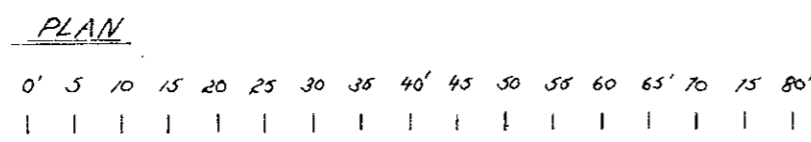
PROFILE

0'	Cu Ni
2'	28,360 - C SOIL
4'	54,580 - C SOIL
5'	12,1540 - ROCK



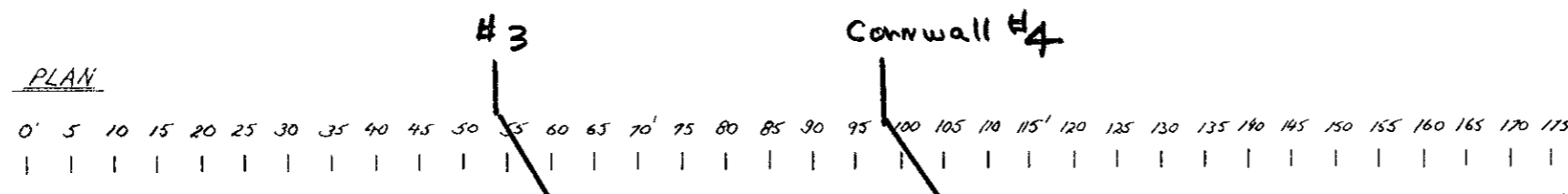
PROFILE

0'	Cu Ni
13'	30,760 - C SOIL
3'	6,1560 - ROCK
4'	6,1500 - ROCK



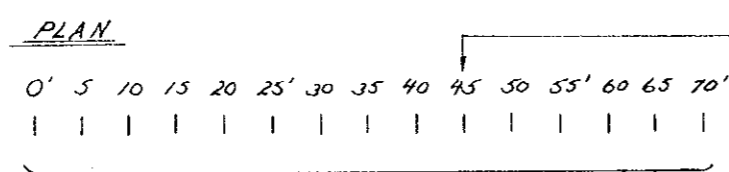
PROFILE

0'	Cu Ni
1'	22,620 - C SOIL
3'	30,120 - ROCK
4'	36,340 - ROCK



PROFILE

0'	Cu Ni
2'	50,280 - C SOIL
3'	36,240 - C SOIL
5'	38,460 - ROCK
6'	190,780 - ROCK



PROFILE

0'	Cu Ni
2'	32,120 - ROCK
4'	22,190 - ROCK
6'	12,1360 - ROCK
8'	6,1440 - ROCK
10'	6,1480 - ROCK

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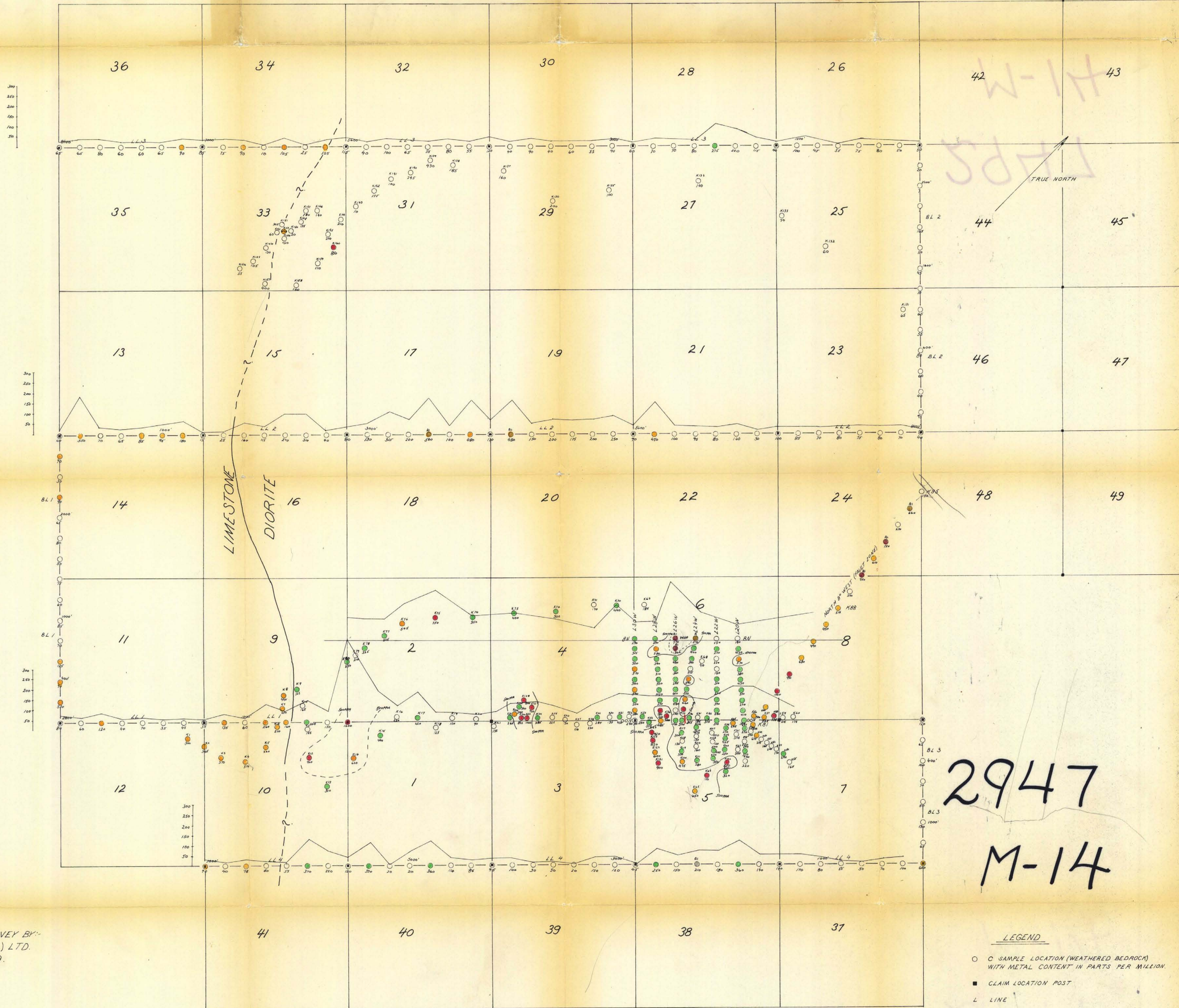
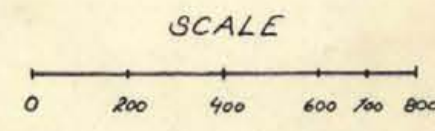
2947

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CORNWALL MINERAL CLAIM GROUP,
 CORNWALL MOUNTAIN AREA,
 KAMLOOPS MINING DISTRICT, B.C.
 SOIL GEOCHEMISTRY SURVEY - NICKEL

Department of
 Mines and Petroleum Resources
 ASSESSMENT REPORT
 NO 2947 MAP #14

FIGURE 1-A



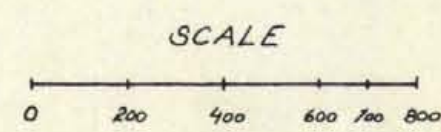
2947
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STAKING AND GEOCHEMICAL SURVEY BY:
 CREST LABORATORIES (B.C.) LTD.
 NOVEMBER 3-10, 1969.

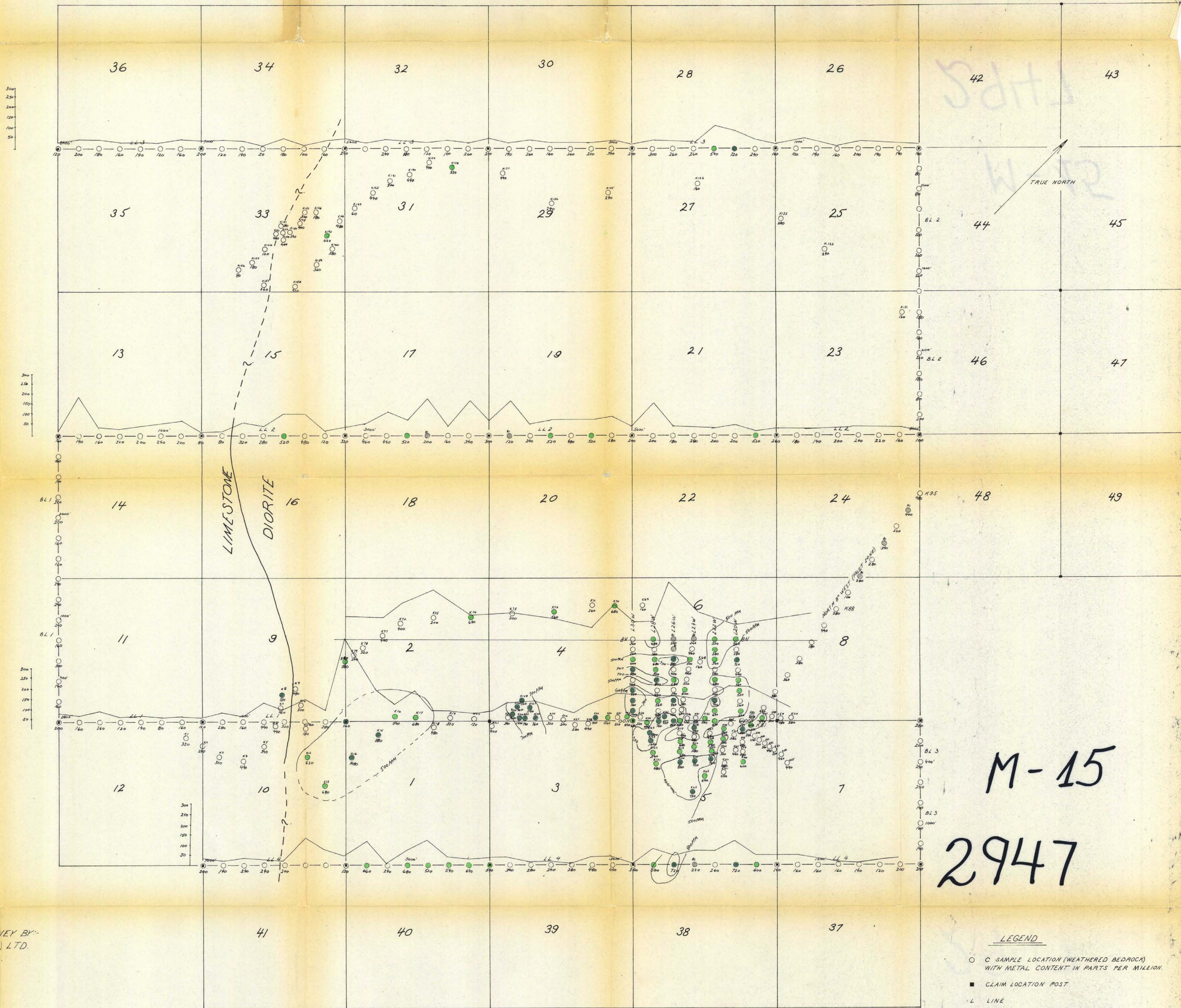
- LEGEND**
- C SAMPLE LOCATION (WEATHERED BEDROCK) WITH METAL CONTENT IN PARTS PER MILLION
 - CLAIM LOCATION POST
 - L LINE
 - N NORTH
 - W WEST
 - LL LOCATION LINE
 - BL BASE LINE
 - ORGANIC HUMUS SOIL SAMPLE
 - 100 PPM DISTINCTLY ANOMALOUS
 - 150-200 PPM POSSIBLY ANOMALOUS AND ALSO POSSIBLY REPRESENTATIVE OF SERPENTINE
 - 250-450 PPM REPRESENTATIVE OF SERPENTINE
 - 100-250 PPM REPRESENTATIVE OF BOTH (ADMIXTURE) DIORITE AND SERPENTINE
 - 75 PPM, REPRESENTATIVE OF DIORITE
 - 85 PPM, POSSIBLE NICKEL ANOMALY OR DIORITE AT CONTACT
 - 55-85 PPM, ADMIXTURE OF DIORITE AND LIMESTONE
 - 55 PPM, REPRESENTATIVE OF LIMESTONE (?)
- NORTH OF LIMESTONE-DIORITE CONTACT
- SOUTH OF LIMESTONE-DIORITE CONTACT

CORNWALL MINERAL CLAIM GROUP,
 CORNWALL MOUNTAIN AREA,
 KAMLOOPS MINING DISTRICT, B.C.
 SOIL GEOCHEMISTRY SURVEY - CHROMIUM

FIGURE 1-B



Department of
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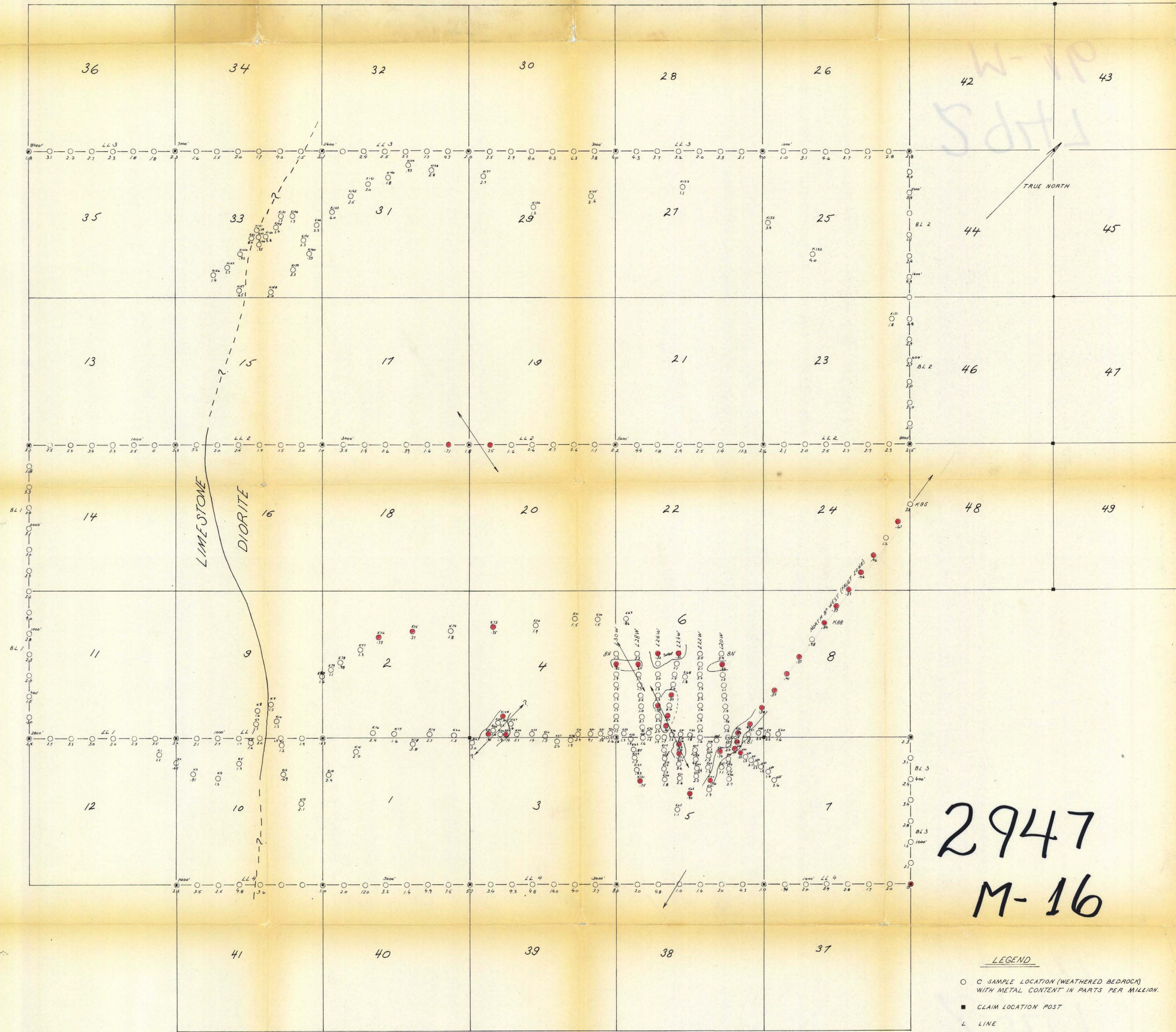
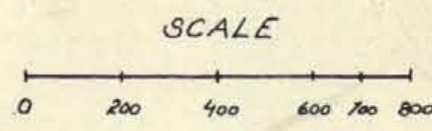
STAKING AND GEOCHEMICAL SURVEY BY
 CREST LABORATORIES (B.C.) LTD.
 NOVEMBER 3-10, 1969.

LEGEND

- C SAMPLE LOCATION (WEATHERED BEDROCK) WITH METAL CONTENT IN PARTS PER MILLION
- CLAIM LOCATION POST
- L LINE
- N NORTH
- W WEST
- LL LOCATION LINE
- BL BASE LINE
- N ORGANIC HUMUS SOIL SAMPLE
- -700
- -500 PPM NORTH OF LIMESTONE-DIORITE CONTACT REPRESENTATIVE OF SERPENTINE
- -300-500 PPM NORTH OF LIMESTONE-DIORITE CONTACT REPRESENTATIVE OF MIXTURES OF DIORITE AND SERPENTINE
- -300 PPM NORTH OF LIMESTONE-DIORITE CONTACT REPRESENTATIVE OF DIORITE

CORNWALL MINERAL CLAIM GROUP,
CORNWALL MOUNTAIN AREA,
KAMLOOPS MINING DISTRICT, B.C.
SOIL GEOCHEMISTRY SURVEY.
CHROMIUM : NICKEL RATIO

FIGURE I-C



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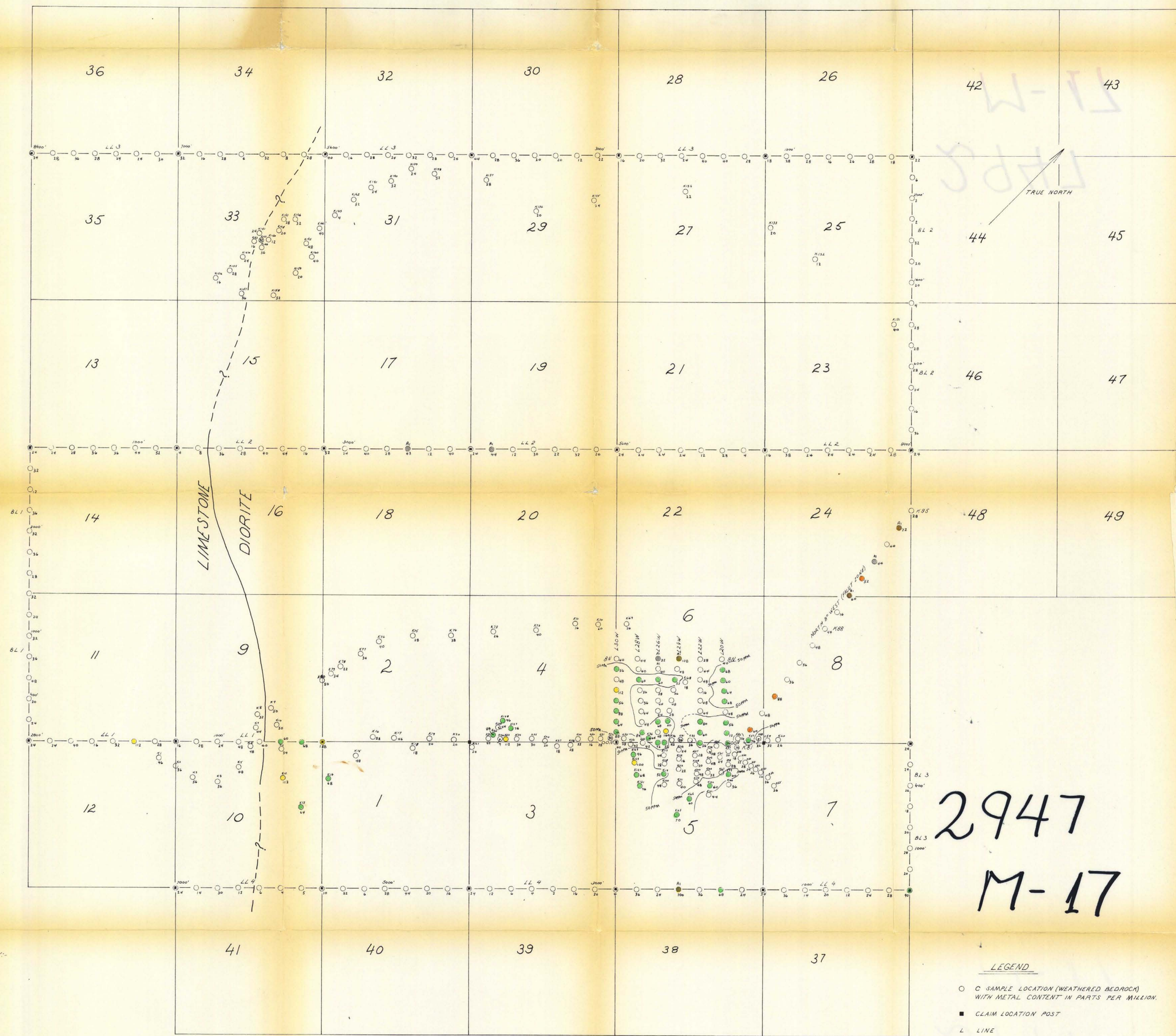
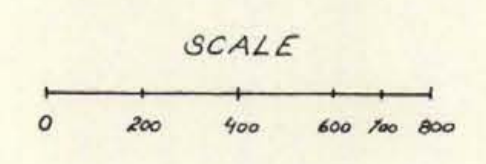
STAKING AND GEOCHEMICAL SURVEY BY:
CREST LABORATORIES (B.C.) LTD.
NOVEMBER 3-10, 1969.

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
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- LEGEND**
- C SAMPLE LOCATION (WEATHERED BEDROCK) WITH METAL CONTENT IN PARTS PER MILLION.
 - CLAIM LOCATION POST
 - L LINE
 - N NORTH
 - W WEST
 - LL LOCATION LINE
 - BL BASE LINE
 - $\frac{Cr}{Ni}$ RATIO ≤ 0.36 , CONSIDERED ANOMALOUS; NICKEL AND CHROMIUM VALUES CAUSED BY SERPENTINE EXCLUDED BY THIS RATIO
 - ↗ AXIS OF $\frac{Cr}{Ni}$ RATIO

CORNWALL MINERAL CLAIM GROUP,
CORNWALL MOUNTAIN AREA,
KAMLOOPS MINING DISTRICT, B.C.
SOIL GEOCHEMISTRY SURVEY - COBALT

FIGURE 1-D



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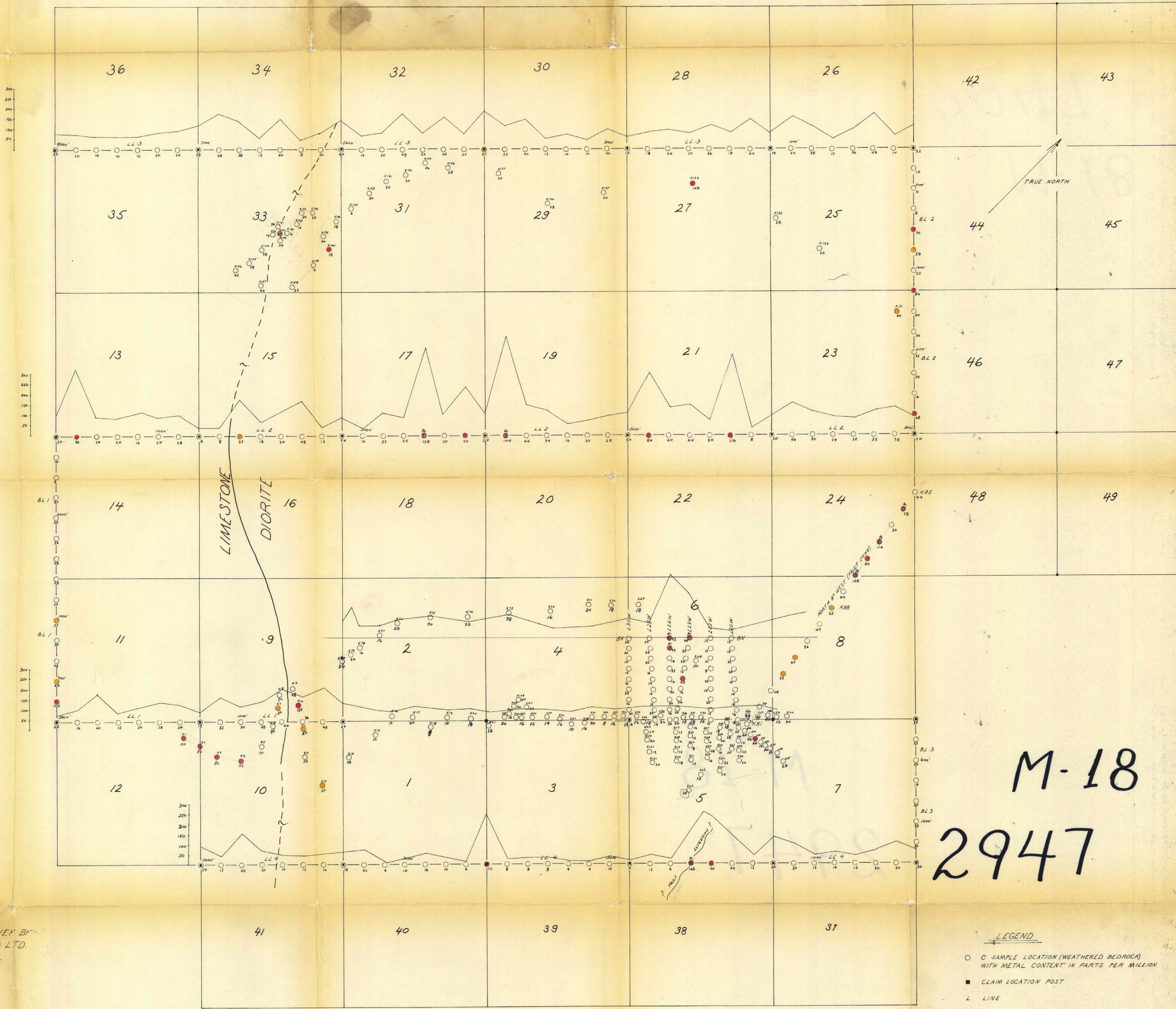
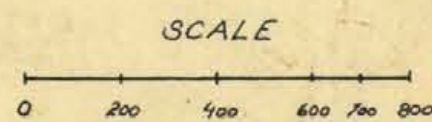
STAKING AND GEOCHEMICAL SURVEY BY
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NOVEMBER 3-10, 1969.

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MAP M-17

- LEGEND**
- SAMPLE LOCATION (WEATHERED BEDROCK) WITH METAL CONTENT IN PARTS PER MILLION.
 - CLAIM LOCATION POST
 - L LINE
 - N NORTH
 - W WEST
 - LL LOCATION LINE
 - BL BASE LINE
 - AI ORGANIC, HUMUS SOIL SAMPLE
 - +50 PPM IN N8°W FAULT ZONE, POSSIBLY ANOMALOUS
 - +100 PPM POSSIBLY ANOMALOUS OUTSIDE OF THE FAULT ZONE
 - +25 PPM NORTH OF LIMESTONE-DIORITE CONTACT REPRESENTATIVE OF SERPENTINE
 - 40-50 PPM NORTH OF LIMESTONE-DIORITE CONTACT REPRESENTATIVE OF AD MIXTURES OF DIORITE AND SERPENTINE
 - LESS THAN 40 PPM NORTH OF THE LIMESTONE-DIORITE CONTACT REPRESENTATIVE OF DIORITE.

CORNWALL MINERAL CLAIM GROUP,
 CORNWALL MOUNTAIN AREA,
 KAMLOOPS MINING DISTRICT, B.C.
 SOIL GEOCHEMISTRY SURVEY - COPPER

FIGURE 1E



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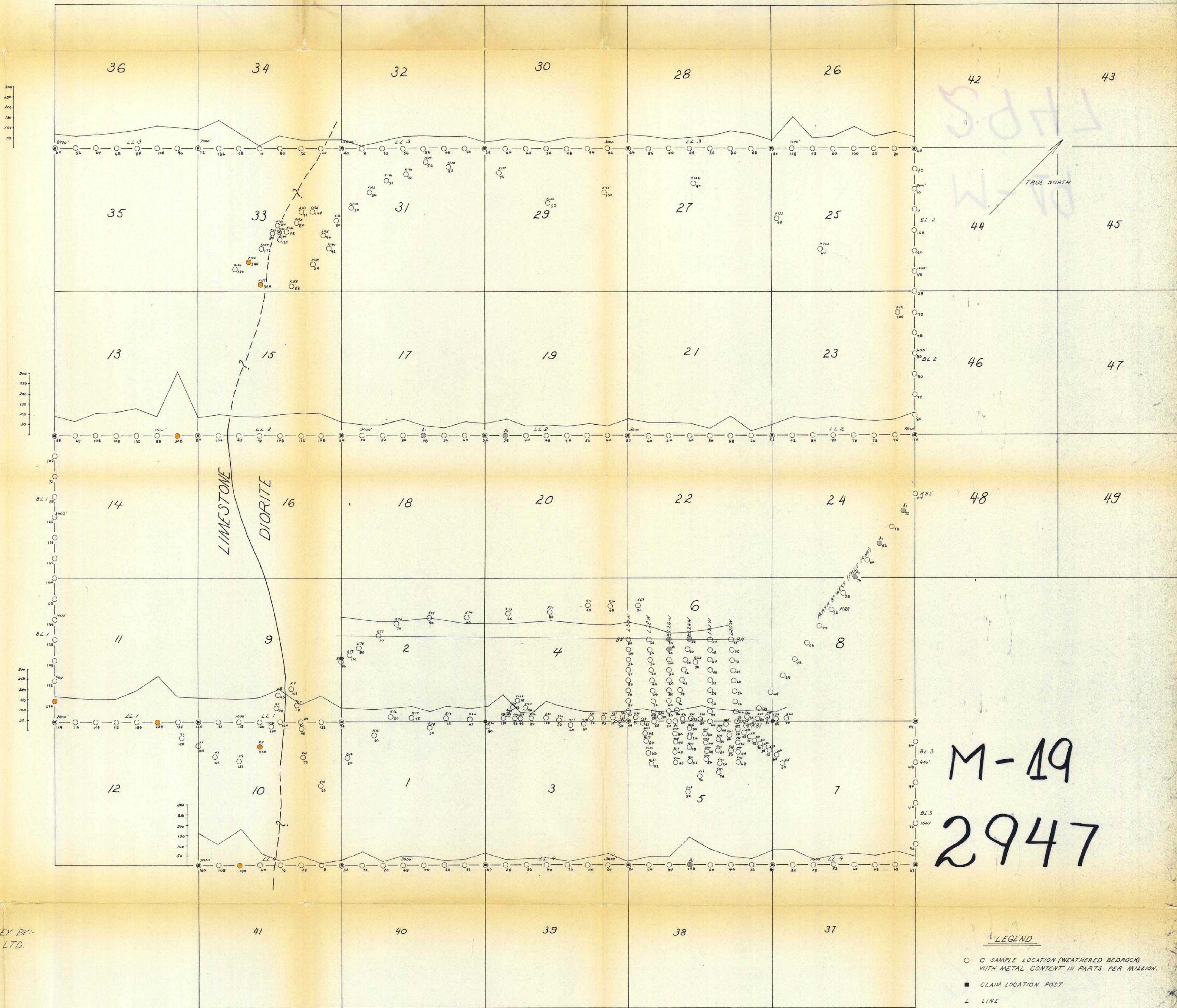
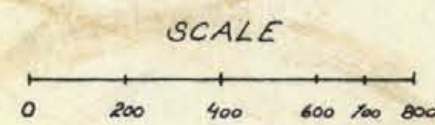
STAKING AND GEOCHEMICAL SURVEY BY
 CREST LABORATORIES (B.C.) LTD.
 NOVEMBER 3-10, 1969.

- LEGEND**
- C SAMPLE LOCATION (WEATHERED BEDROCK) WITH METAL CONTENT IN PARTS PER MILLION
 - CLAIM LOCATION POST
 - L LINE
 - N NORTH
 - W WEST
 - LL LOCATION LINE
 - BL BASE LINE
 - ORGANIC HUMUS SOIL SAMPLE
 - 165 PPM DISTINCTLY ANOMALOUS
 - 50-69 PPM POSSIBLY ANOMALOUS

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 Mines and Petroleum Resources
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CORNWALL MINERAL CLAIM GROUP,
CORNWALL MOUNTAIN AREA,
KAMLOOPS MINING DISTRICT, B.C.
SOIL GEOCHEMISTRY SURVEY - ZINC

FIGURE 1F



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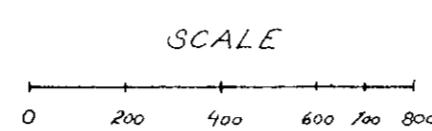
STAKING AND GEOCHEMICAL SURVEY BY:
CREST LABORATORIES (B.C.) LTD.
NOVEMBER 3-10, 1969.

- LEGEND**
- ○ SAMPLE LOCATION (WEATHERED BEDROCK) WITH METAL CONTENT IN PARTS PER MILLION.
 - CLAIM LOCATION POST
 - L LINE
 - N NORTH
 - W WEST
 - LL LOCATION LINE
 - BL BASE LINE
 - A-1 ORGANIC HUMUS SOIL SAMPLE
 - +180, POSSIBLE ZINC ANOMALY

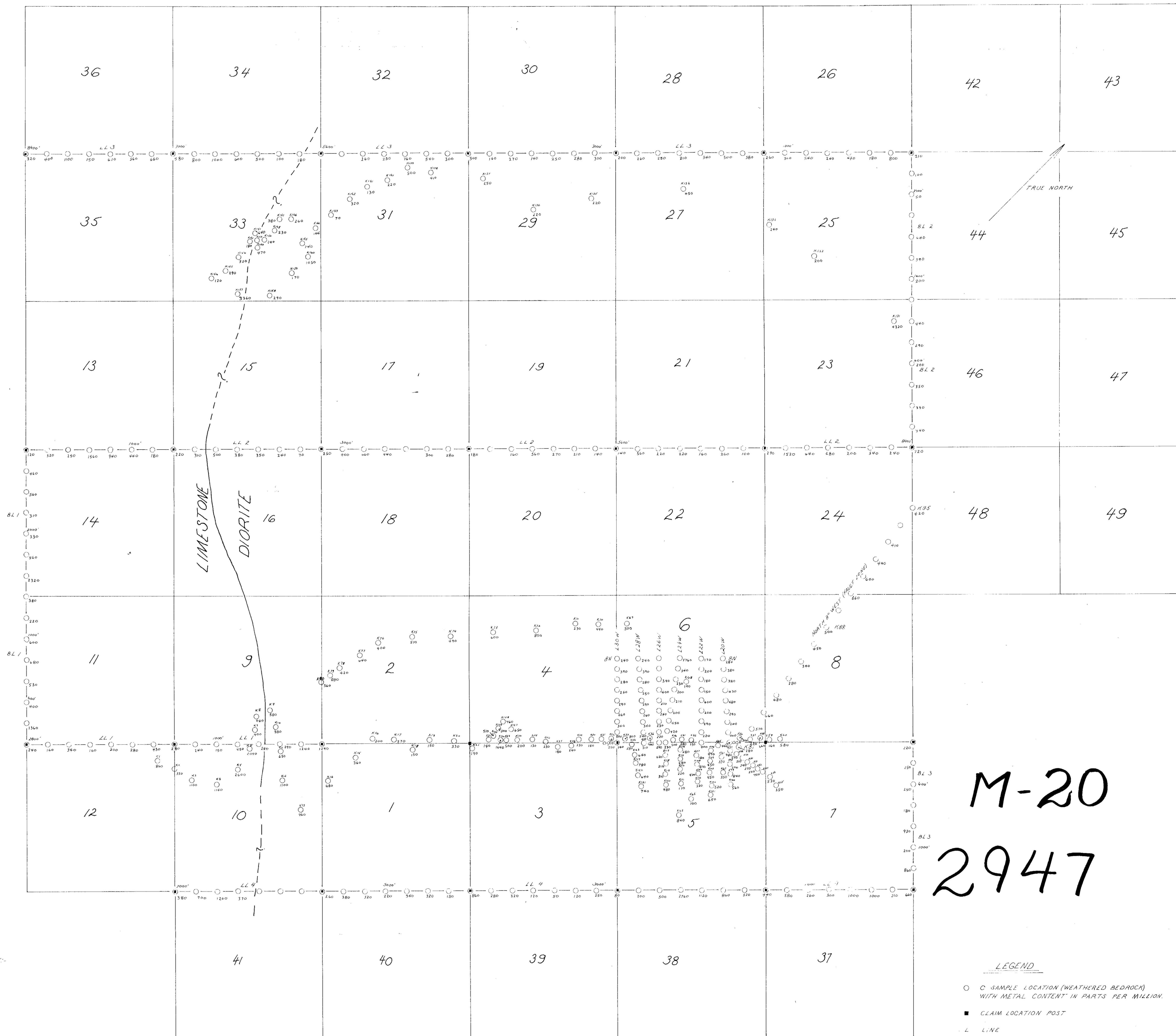
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ASSESSMENT REPORT
Map
NO 2947

CORNWALL MINERAL CLAIM GROUP,
 CORNWALL MOUNTAIN AREA,
 KAMLOOPS MINING DISTRICT, B.C.
 SOIL GEOCHEMISTRY SURVEY - MANGANESE

FIGURE I-G



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 Mines and Petroleum Resources
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 NO. 2947 MAP #20



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STAGING AND GEOCHEMICAL SURVEY BY
 CREST LABORATORIES (B.C.), LTD.
 NOVEMBER 3-10, 1969.

- LEGEND
- SAMPLE LOCATION (WEATHERED BEDROCK) WITH METAL CONTENT IN PARTS PER MILLION.
 - CLAIM LOCATION POST
 - L LINE
 - N NORTH
 - W WEST
 - LL LOCATION LINE
 - BL BASE LINE