

Evaluation of Geology & Mineralization
on the Suskwa Prospect
Omineca Mining Division
British Columbia
Can-Am Exploration, Inc.

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EVALUATION OF
GEOLOGY AND MINERALIZATION
ON THE
SUSKWA PROSPECT
OMINECA MINING DIVISION
BRITISH COLUMBIA

CAN-AM EXPLORATION, INC.

December, 1971

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SUMMARY

The Suskwa Prospect comprises a near-square block of 26 adjacent claims, covering approximately 2 square miles, which lie on the northwest slopes of Thoen Mountain. The property lies approximately 45 miles north of Smithers, B.C. and access is by helicopter from the Smithers base.

The presently known area of copper-molybdenum mineralization straddles the crest of a narrow ridge and is believed to be a minor part of a more extensive, through-going contact zone. The exposures lie between 5,500' and 6,700' in elevation and are well above timberline. Nearly all of the exploration to date was accomplished in the summer of 1968 and consisted of 6 hand trenches in bedrock and systematic sampling of the trenches and outcrops in the general area. No systematic prospecting of the favorable intrusive contact zone outside the area of sampling has been done.

Sediments of the Bowser Assemblage consisting of argillite, quartzose-arkosic sandstone, graywacke, and minor tuff underlie the general area. These are in contact with a large stock of general quartz monzonite composition and are complexly intruded by minor offshoots from the major intrusive. The sediments have been converted to hornfelsic and quartzitic rocks near the contact and the intrusive material is also fractured and altered along the contact zone.

The copper-molybdenum-gold-silver mineralization occurs in both hornfels and altered quartz monzonite as fine disseminations and narrow veinlets within the northeast-southwest-trending contact zone. Sulfides consist of pyrite, chalcopyrite, molybdenite, and minor bornite. To date, mineralization has been traced across the hornfels-intrusive complex for some 800 feet; due to prevalent talus-rubble cover, it has been effectively traced for less than 400 feet along strike of the zone.

From present evidence, the mineralized and potentially mineralized zone is inferred to have a more or less continuous length of 2 miles within the claim group. Even with as little as one-eighth of this zone being substantially mineralized, there would be good possibilities for a large tonnage, low-grade deposit.

The alteration associated with the sulfides, secondary biotite, sericite, tourmaline, and apatite, suggest that the mineralization is relatively high temperature in origin

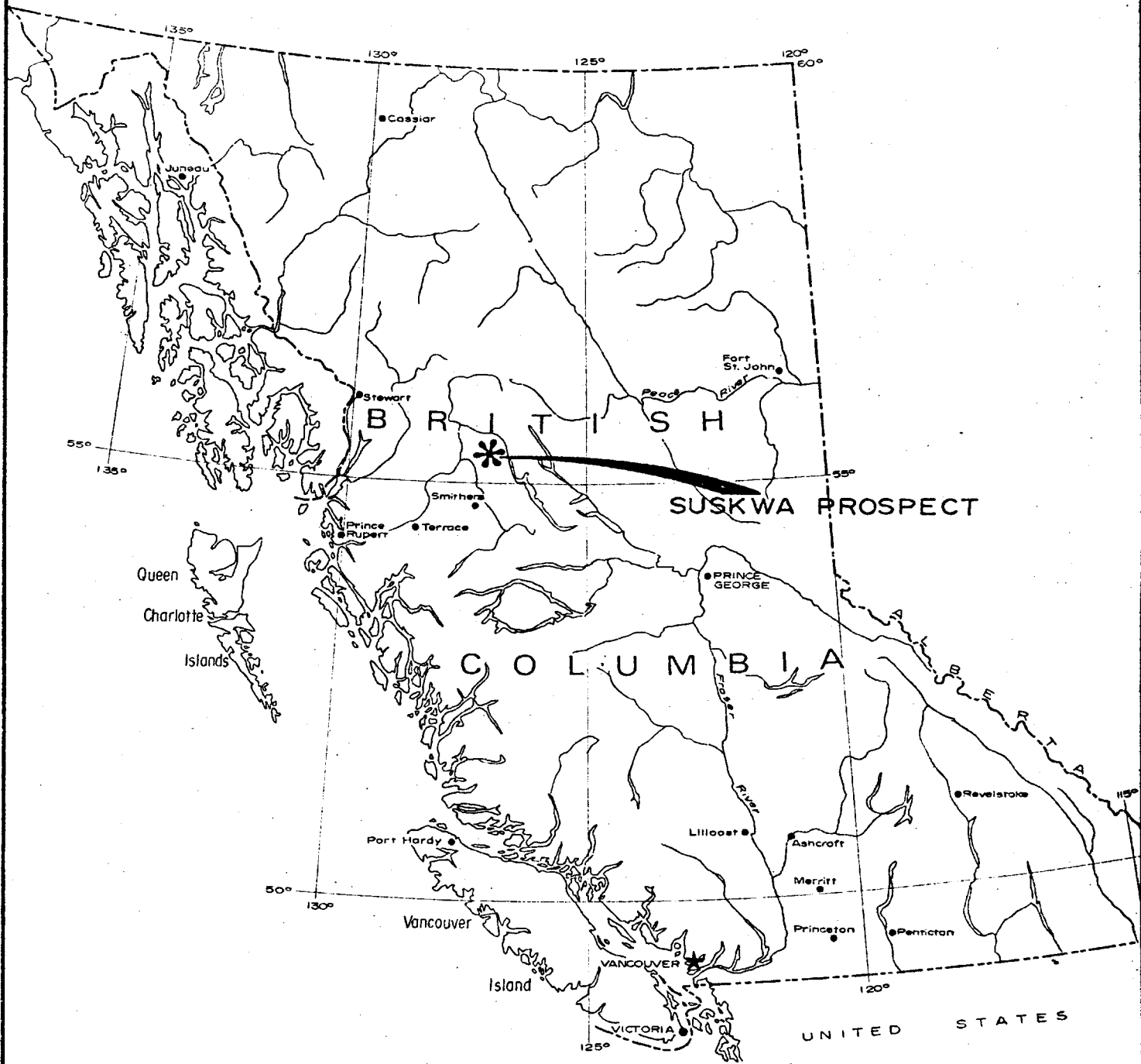


FIG. 1

CAN-AM EXPLORATION, INC.

SUSKWA PROSPECT

and other metal occurrences of lower temperature origin within a radius of several miles suggest that the prospect is the center of mineralization in the Thoen Mountain area. The zoning is typical of that surrounding many porphyry copper-molybdenum deposits and in particular is similar to that surrounding the porphyry molybdenum deposit on Hudson Bay Mountain near Smithers.

The weighted average of a large number of samples taken from the one small area sampled to date is 0.46% copper-equivalent with small additional values in gold and silver. On the basis of present knowledge and the probability that significant extensions and repetitions of the copper-molybdenum mineralization will occur elsewhere along strike of the contact zone, chances are considered good that a porphyry copper-molybdenum deposit exists on the property.

LOCATION AND ACCESSIBILITY

The 26 claims which comprise the Suskwa Prospect are situated on the northwest side of Thoen Mountain, within the Babine Range, approximately 45 miles north of Smithers. Elevations on the property range from 4,400 to 6,700 feet. Helicopters operating out of the Smithers base provide the most convenient transportation for small crews and preliminary exploration supplies and equipment. Substantial savings could be made in transportation costs where larger numbers of personnel and supplies were involved by using truck transportation over logging roads along branches of the Suskwa River, followed by helicopter transportation for the remaining 6 to 8 miles from a road depot to the property.

The mineralized showings are situated well above timberline and outcrops are plentiful on steeper slopes. Elsewhere, exposures are obscured by frost-heaved rubble and talus.

PROPERTY

The property consists of 26 full-sized mineral claims, the outline of which is shown on Figure 3. The claims, which cover an area of approximately two square miles, were staked on September 16, 1971 immediately after expiry of a group of claims held by Manex Holdings Ltd.

The claims lie within the Omineca Mining Division and the property record numbers are 91856-91881 inclusive.

HISTORY

The copper-molybdenum showings were discovered by Victor Niedolin during 1967. In 1968, he continued prospecting and staked the 54-claim "Nich" Group for Mastodon-Highland Bell Mines Ltd. The balance of the 1968 season was spent on rock-trenching and sampling of a relatively small area surrounding the original discovery.

The copper-molybdenum mineralization occurs in hornfelsed sediments and adjoining feldspar porphyry adjacent to their mutual contact. This favorable contact extends for at least two miles within the property limits but no attempt was made by Mastodon to systematically prospect the zone with the exception of the small area near the original discovery. Mastodon in 1968 held a large number of attractive prospects in the Smithers region but the following year abruptly ceased all exploration activity. Several of Mastodon's prospects have since reached advanced stages of exploration under the ownership of other mining companies.

The Nich Group came open in 1969 and was immediately re-staked by Michael Beley of Vancouver for Manex Holdings Ltd; in 1970, the area was again re-staked in Manex' name. No work was done on the property during this two-year period.

The Hot Claim Group was staked on September 16, 1971 and work this fall was confined to a brief geologic examination to confirm the validity of the previous work. A program of geologic mapping, leached capping examination, and rock sampling was planned for mid-October but an early snow at elevations above 4,000 feet forced cancellation.

REGIONAL GEOLOGY

The Smithers region in west-central British Columbia promises to become one of the premier copper-producing areas in Western Canada, perhaps second only to or even exceeding the Highland Valley in Southern British Columbia. To date, six porphyry copper-molybdenum deposits have been discovered within a 55-mile radius to the north and east of Smithers. One of these is currently in production and another is nearing production. In addition, four other deposits have been discovered within a 75-mile radius to the southwest of Smithers.



LEGEND

- II QUATERNARY - drift and alluvium
- 2G,F LARAMIDE - intermediate intrusives
- 2P - porphyritic intrusives
- 7 CRETACEOUS - siltstone, greywacke
- 6 JURASSIC - volcanics
- Outline of HOT CLAIM GROUP
- 233 Copper and/or Molybdenum Project

REFERENCE: B.C. DEPT. MINES MAP 69-1

FIG. 2

CAN-AM EXPLORATION, INC.
SUSKWA RIVER AREA
<i>REGIONAL GEOLOGY</i>
BRITISH COLUMBIA
SCALE: 1" = 4 MILES
DECEMBER, 1971

The region is characterized by the presence of numerous small Laramide intrusive stocks of intermediate composition which cut rocks ranging from Triassic to Cretaceous in age.

The copper-molybdenum deposits are found within or adjacent to the Laramide stocks usually intruding a series of Triassic volcanics and sediments (locally termed the Hazelton Series) or a series of lower Cretaceous argillites and siltstones (locally termed the Bowser sediments). The region lies astride and to the south of a major regional geologic feature, the Skeena Arch. The Skeena Arch trends eastward from the coast into Central British Columbia and appears to have been the locus of igneous intrusion through much of its length.

Hydrothermal alteration associated with the porphyry-type deposits is characterized by an inner zone with development of secondary biotite, quartz, and secondary potash feldspar surrounded by an outer zone with quartz, sericite, and chlorite. The pattern is similar to that in most of the porphyry copper deposits in the Southwestern United States and, as is the case in the southwest, the highest grade primary ore is associated with minerals of the inner alteration zone.

The area lying just north of the Suskwa River is characterized by an east-trending group of Laramide intrusives ranging from quartz monzonite to quartz diorite in composition and granitic to porphyritic in texture. The Suskwa Prospect is one of six porphyry copper prospects associated with this group of intrusives. General geologic relations in the Suskwa River area are shown on Figure 2.

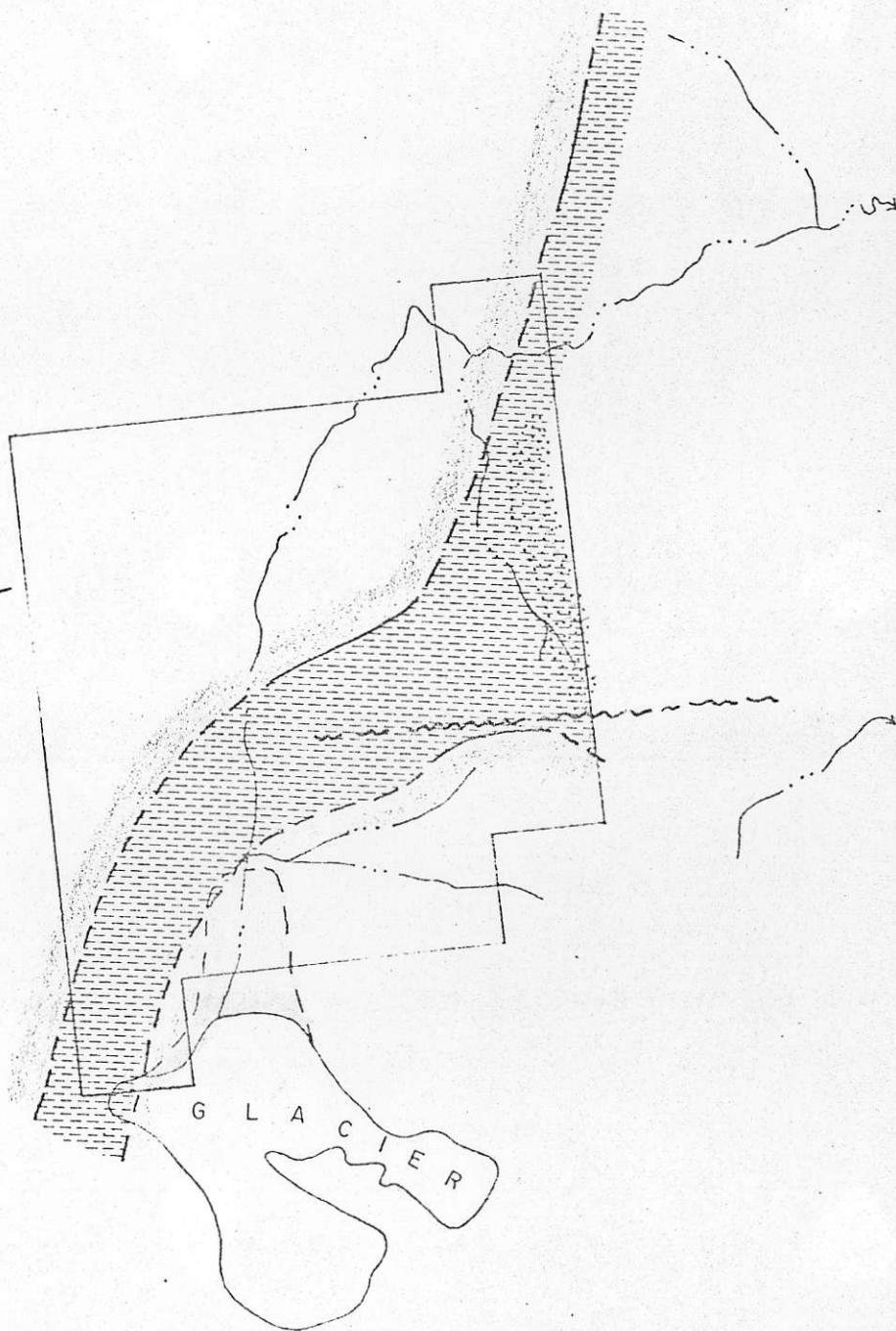
The Suskwa Prospect, which appears to have the most outstanding surface showing of the above group of prospects, also lies along the north extension of a north-northwest-trending zone of faulting and intrusion with which three additional porphyry-type prospects are associated. Intersection of north-northwest-trending with east-west or east-northeast-trending zones of faulting and intrusion appears to be the most important regional feature associated with orebodies in the region and the Suskwa Prospect area appears to lie within or near one of these.

PROSPECT GEOLOGY

The general Thoon Mountain area is situated within a southeasterly section of the Bowser Basin. Underlying rocks



HOT GROUP



LEGEND

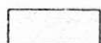



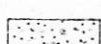
-  Recent moraine
-  Laramide monzonite and quartz - feldspar porphyry
-  Cretaceous hornfelsed argillite
-  Fault
-  Pyrite gossan zone

FIG. 3

CAN-AM EXPLORATION, INC.
SUSKWA PROSPECT
<i>GENERALIZED GEOLOGY</i>
OMINECA MINING DIVISION
BRITISH COLUMBIA
SCALE: 1" = 1/2 MILE
DECEMBER, 1971

comprise units of the regional "Bowser Assemblage" of middle Juraissic to lower Cretaceous age. In the Thoen Mountain area, this sequence includes argillite, quartzose and arkosic sandstones, graywackes, and minor intercalated andesitic tuffs and lavas. The bedded sequence has been rather complexly intruded by tongues and fingers of the Thoen Mountain stock which in itself ranges in composition from quartz diorite to quartz monzonite. Adjoining the stock, marginal sections, embayments, and inclusions of Bowser sediments have been thermally metamorphosed to generally siliceous-quartzitic and hornfelsic rock types.

To date, only preliminary geologic mapping of a small part of the Thoen Mountain complex has been completed; however, brief reconnaissance and examination of air photographs of the area indicates that the known copper-molybdenum mineralization occurs within a broad contact band or roof-pendant of fractured, contact metasomatized rocks which extends south-southwesterly across the northern slopes of Thoen Mountain. General geology on the prospect is shown on Figure 3.

The copper-molybdenum-gold-silver mineralization occurs in both altered sediments and intrusive material in a contact metasomatic environment. There is some uncertainty as to structural relationships within the zone but at present it appears to lie peripheral to the main body of quartz monzonite; this simple relationship is complicated in detail by numerous minor tongues and finger-like intrusions into the adjoining sediments with both intrusive material and sediments being fractured, altered, and mineralized.

Hand specimen and petrographic examination of the mineralization reveals that alteration associated with the sulfides is characterized by the development of secondary biotite, sericite, tourmaline, and apatite. The latter minerals suggest that the sulfide mineralization may be of somewhat higher temperature origin than that in many deposits in the region but is in no way a negative factor. Typical mineralization in the hornfelsed host rocks is composed, in decreasing order of abundance, of pyrite, chalcopyrite, molybdenite, and bornite. The sulfides generally occur as very fine grained disseminations and thin fracture fillings; examination with a 14x or 20x hand lens is usually necessary for an estimation of actual mineral content.

The copper-molybdenum mineralization appears to favor the more siliceous varieties of hornfels although soft biotitic varieties are often also well mineralized. The

most significant concentrations occur within the more closely fractured areas of bedrock and particularly within intensely altered and fractured zones at or between sedimentary-intrusive contacts.

A number of vein showings are present in the sediments surrounding the Thoen Mountain stock and mineralization in these suggests that mineral zoning, typical of many porphyry copper deposits, is present outward from the Suskwa Prospect area. Mineralization on the True Fissure-O.K. properties, situated in Thoen Basin about one mile southeast of Thoen Mountain (presently held by Phelps Dodge Corp.), consists of vein-filling argentiferous lead and zinc sulfides in a siliceous breccia gangue containing considerable rhodonite. Showings in the Bergsten Basin, about one mile northeast of Thoen Mountain, are similar except that the quartzitic host rocks contain appreciable disseminated chalcopyrite. The vein filling also contains rhodonite. The Copper Basin mineralization, one mile southwest of Thoen Mountain, consists of chalcopyrite replacements in sheared granodiorite dikes and that at the Babine Prospect, two miles west of Thoen Basin, consists of gold-bearing arsenopyrite in quartz veins.

Zoned mineralization, where a central area of disseminated copper and/or molybdenum mineralization is flanked by radial vein zones wherein the contained metals change progressively outward from Cu-Zn to Zn-Pb to Pb-Ag-Mn, is also present on Hudson Bay Mountain just west of Smithers where American Metal Climax have a major porphyry molybdenum deposit.

The assay data shown on Figure 4 provide direct evidence that significant Cu-Mo mineralization extends for at least 400 feet northwestward along the ridge in the one portion of the prospect selected for detailed sampling. Examination of the intrusive outcrop pattern also suggests that a nose of intrusive material may plunge beneath the area of lower grade showings shown on the north edge of Figure 4. If this is the case, the mineralization could be expected to improve considerably with depth within the roof-zone overlying the plunging intrusive. Correlation of available field and photo-geological evidence permits the inference of a 2-mile strike length of more or less altered and fractured contact zone rocks within the claim group. The writer believes that an important portion of this favorable "panel" is substantially mineralized with the possibility that the zone could include one or more large volume-low grade mineable situations.

SAMPLING DATA

Figure 4 represents a composite of outcrop and trench sampling which has been accomplished on the prospect to date in the main showings area. Metal values are expressed in terms of percent copper and percent molybdenite (MoS₂). The area of trench sampling was confined to the easily accessible ridge exposures and is open to extension in most directions. Examination of the trenched area indicates that it is reasonable to surmise that equivalent or better mineralized extensions could be revealed by extending the trenching into adjacent rubble and talus-covered areas and/or into accessible sections of the deep gully to the east.

It should be noted that, although oxidation is surficial (6 inches to 1 foot) for the most part in the area shown on Figure 4, the grade of the outcrop samples outside the trenched area has been significantly lowered by leaching of copper values and mechanical weathering of the oxidized molybdenum from the material which was taken in the samples.

The weighted average of all samples taken within blocks A, B, C, and D in the area of trench sampling results in an overall estimate of 23,000 square feet at 0.35% Cu, 0.044% MoS₂, 0.27 oz/ton Ag, and 0.01 oz/ton Au. Using a MoS₂:Cu value ratio of 2.5, the above may be expressed as the following:

23,000 sq. ft. @ 0.46% Cu-equivalent
0.27 oz/ton Ag
0.01 oz/ton Au

Gross value of this material would be \$5.38/ton using the following prices:

Cu @ \$ 0.50 per lb.
Mo @ \$ 1.70 per lb.
Ag @ \$ 1.40 per oz.
Au @ \$40.00 per oz.

The area of trench sampling would be representative of approximately one million tons if mineralization extended to a depth of 500 feet.

CONCLUSIONS

The presence of commercial or near-commercial grade copper-molybdenum mineralization within the contact zone of

the Thoen Mountain stock and the possibility of its extension along the 2-mile long contact zone on the prospect indicates that the Suskwa Prospect warrants a program of systematic exploration. Other known metal showings in the Thoen Mountain area suggest that metal zoning is present in an area centered on the prospect and chances are considered good that a porphyry-type copper-molybdenum deposit is present on the prospect.

The recommended work program is outlined below:

WORK RECOMMENDATION

Although some geologic and rock sampling data are available on the Suskwa Prospect, a basic exploration program is indicated because of the very limited area in which the previous work was carried out. Geologic mapping, line cutting, geochemical sampling, induced polarization surveys and bedrock trenching are recommended. The focus of the program would be based on the contact zone of the Thoen Mountain intrusive and mapping of geology, alteration, and leached capping should cover the two miles or so of favorable contact. The geochemical sampling program would also be designed to investigate copper-molybdenum distribution along the contact zone.

Surficial soil and vegetation cover is extensive along the edges of the known mineralized areas and also along other favorable portions of the contact and, consequently, induced polarization surveys may be very useful in outlining mineralized areas. Trenching to bedrock is recommended for testing induced polarization-geochemical anomalies.

If size and grade potential of anomalies indicated by the above program are adequate, a Phase II program consisting of three diamond drill holes to depths of 500 feet would be recommended.

Estimated costs of the two-phase exploration program are listed below.

Phase I:

1. Geologic mapping of rock types, alteration, and leached capping.
2. Geochemical soil sampling survey (500 samples).
3. Induced Polarization survey of geochemically anomalous zones (10 line miles).
4. Trenching to bedrock in anomalous areas.

Estimated Cost \$24,000.

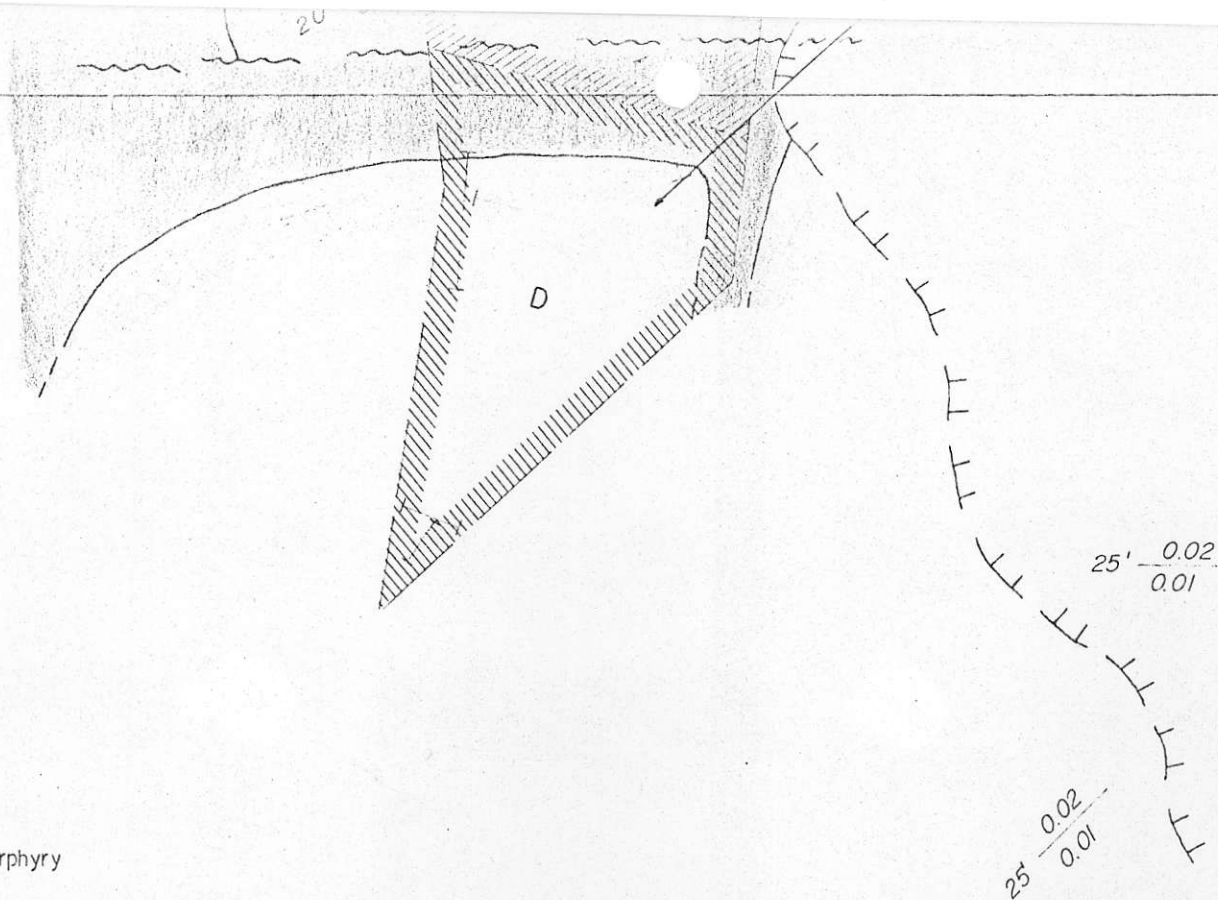
Phase II:

1. Drilling of three holes @ 500 feet each to test anomalous zones revealed by work in Phase I.

Estimated Cost \$36,000.

Total Cost Phase I and Phase II \$60,000.

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E G E N D

Quartz Monzonite and feldspar porphyry

Hornfelsed Sediments

Fault

Outcrop Samples

Area of trench sampling
Sampled section

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SUSKWA PROSPECT

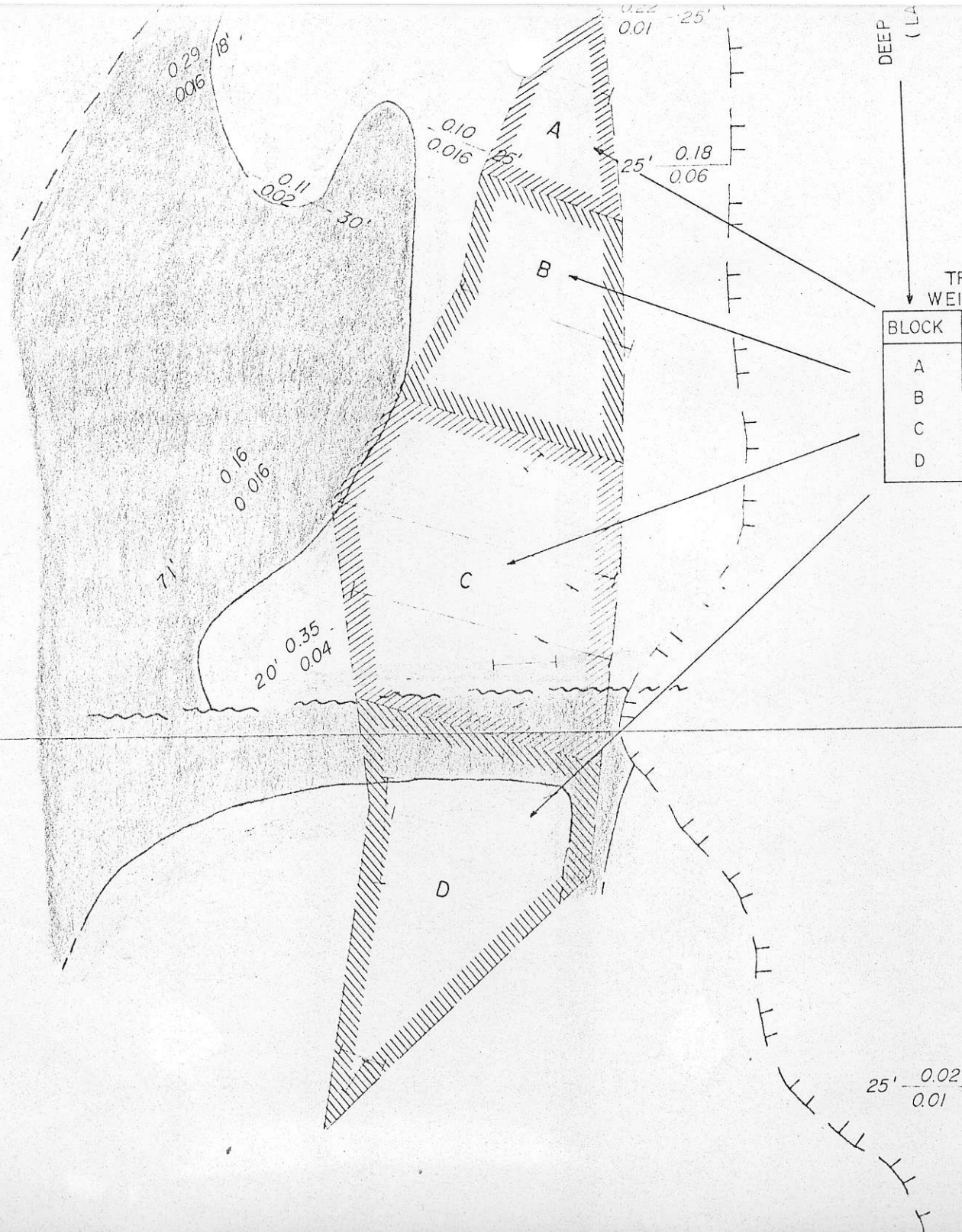
SAMPLING RESULTS

NORTHWEST RIDGE SHOWINGS

FIG. 4

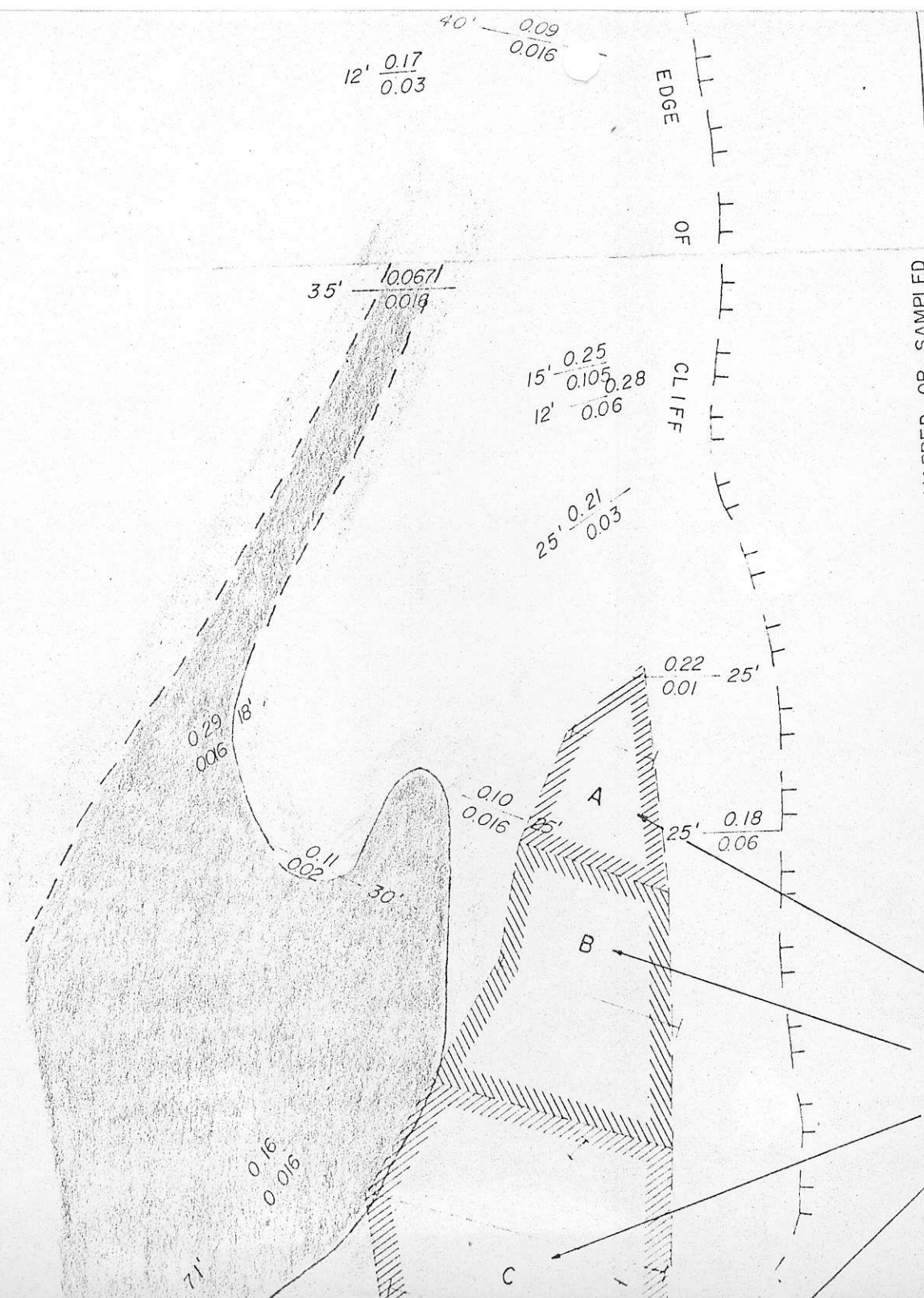
SCALE: 1" = 50 Ft.

DATE: DECEMBER 1971



TRENCH SAMPLING
WEIGHTED AVERAGES

BLOCK	% Cu	% MoS ₂
A	0.27	0.057
B	0.32	0.030
C	0.37	0.041
D	0.36	0.054



DEEP GULLY - NOT MAPPED OR SAMPLED
(LARGLEY HORNFEISED SEDIMENTS)

TRENCH SAMPLING
WEIGHTED AVERAGES

BLOCK	% Cu	% MoS ₂
A	0.27	0.057
B	0.32	0.030
C	0.37	0.041
D	0.36	0.054

40' $\frac{0.06}{0.01}$

30' $\frac{0.06}{0.01}$ 0.05 0.016 35'

20' $\frac{0.12}{0.005}$
30' $\frac{1.55}{0.01}$

30' $\frac{0.07}{0.01}$

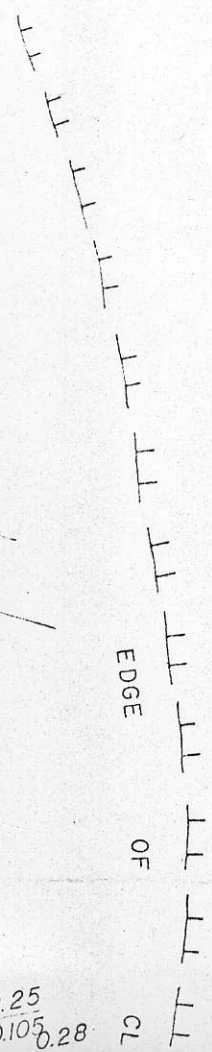
25' $\frac{0.19}{0.01}$

40' $\frac{0.09}{0.016}$

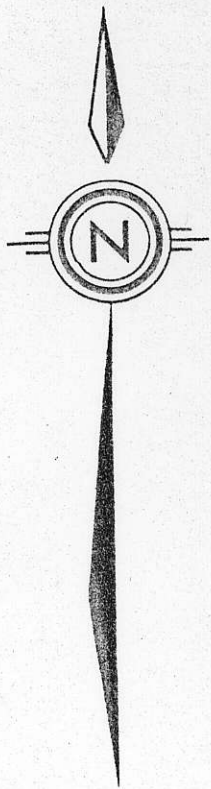
12' $\frac{0.17}{0.03}$

35' $\frac{10.0671}{1.0019}$

15' $\frac{0.25}{0.105}$ 0.28



↑
(OR SAMPLED
DIMENSIONS)



40' $\frac{0.06}{0.01}$

30' $\frac{0.06}{0.01}$ $\frac{0.05}{0.016}$ 35'

20' $\frac{0.12}{0.005}$
30' $\frac{0.55}{0.01}$

30' $\frac{0.07}{0.01}$

25
40'
12' $\frac{0.17}{0.03}$

3.5' $\frac{1.00671}{0.013}$

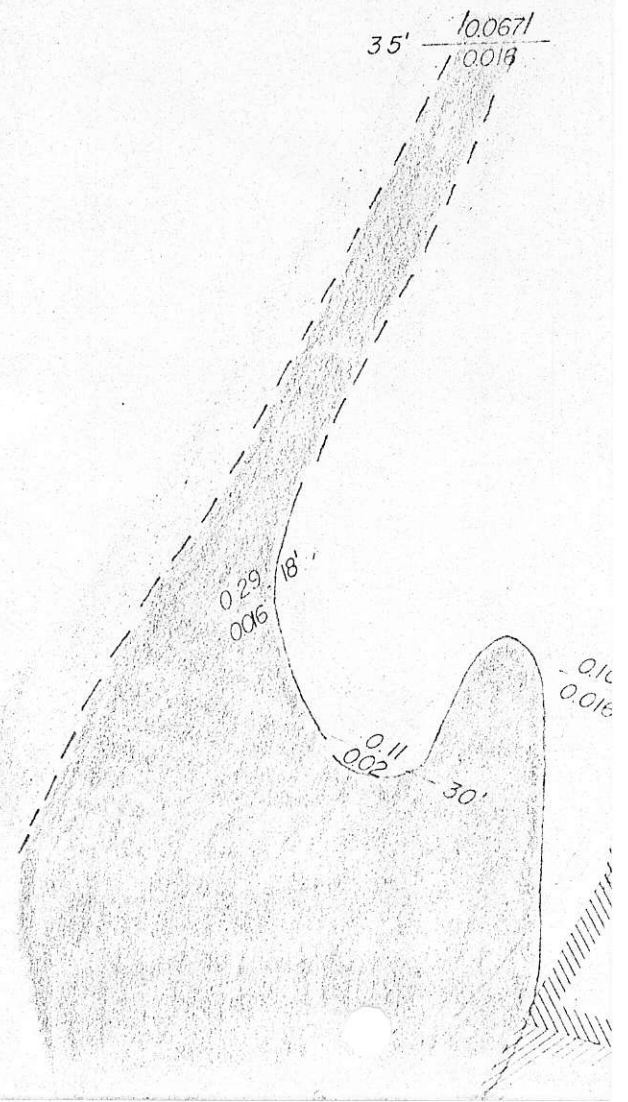
$30' \frac{0.07}{0.01}$

25'

40'

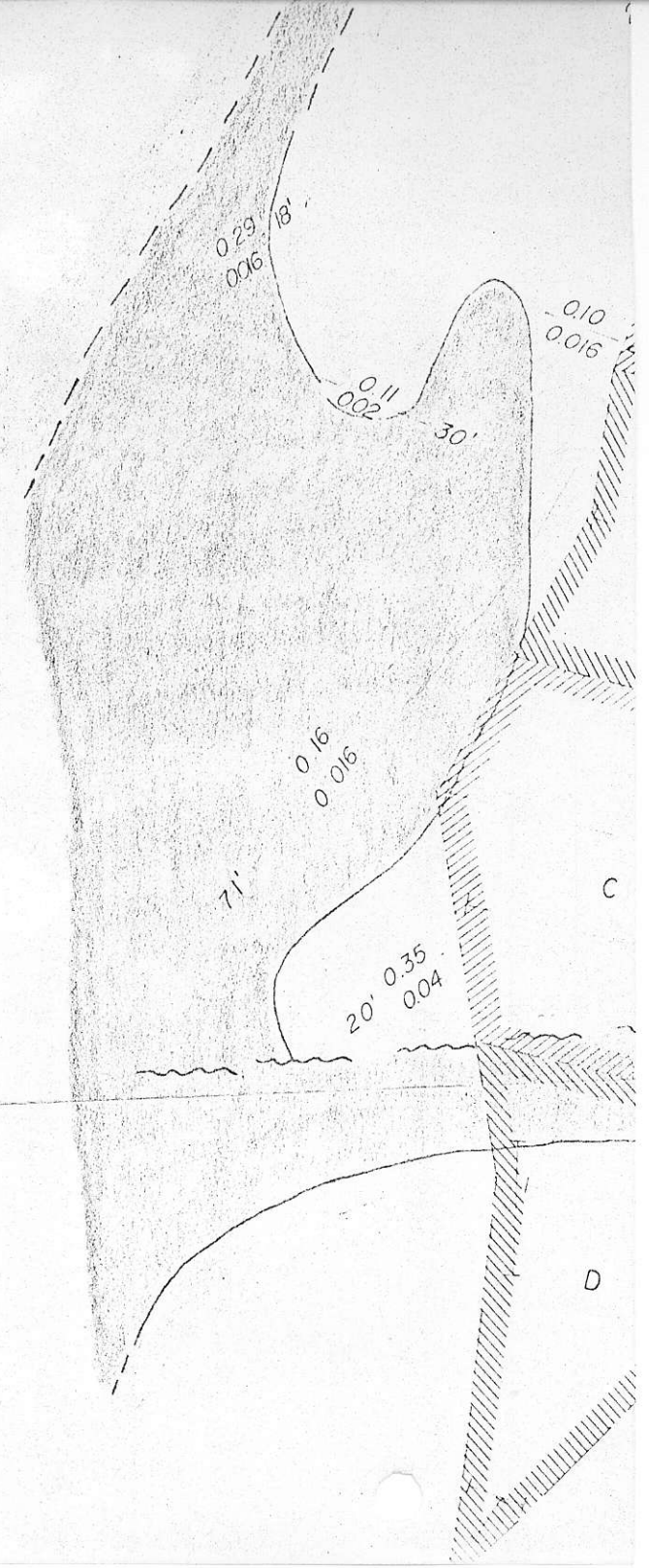
$12' \frac{0.17}{0.03}$

$35' \frac{10.0671}{0.019}$



$\frac{0.21}{0.16} = 12'$

$\frac{0.09}{0.02} = 6'$



$\frac{0.21}{0.16} \rightarrow 12'$

$\frac{0.09}{0.02} \rightarrow 6'$

20' $\frac{0.35}{0.04}$

D

L E G E N D



Quartz Monzonite and feldspar porphyry



Hornfelsed Sediments



Fault

Length $\frac{\% \text{Cu.}}{\% \text{MoS}_2}$

Outcrop Samples



Area of trench sampling
Sampled section