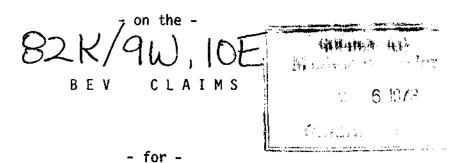
GEOLOGI



Canadian Johns - Manville Company Ltd.,

P. O. Box 1500, ASBESTOS, P.Q.

COVERING:

Bev 1 - 12 Mineral Claims

LOCATED:

- 1) 50° 40' N 116° 30' W
- 2) N. T. S. 82 K/10E
- 2 miles north of Forster Creek, 22 miles West of Radium, B. C.

Danas anna 18

Prepared By: 300

John R. Kerr, P. Éng.,

KERR, DAWSON & ASSOCIATES LTD.,

#9 - 219 Victoria Street,

KAMLOOPS, B. C.

February, 1973.

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#5 FIGURE 407 - 5 - Location of Sample Stations 1":500'

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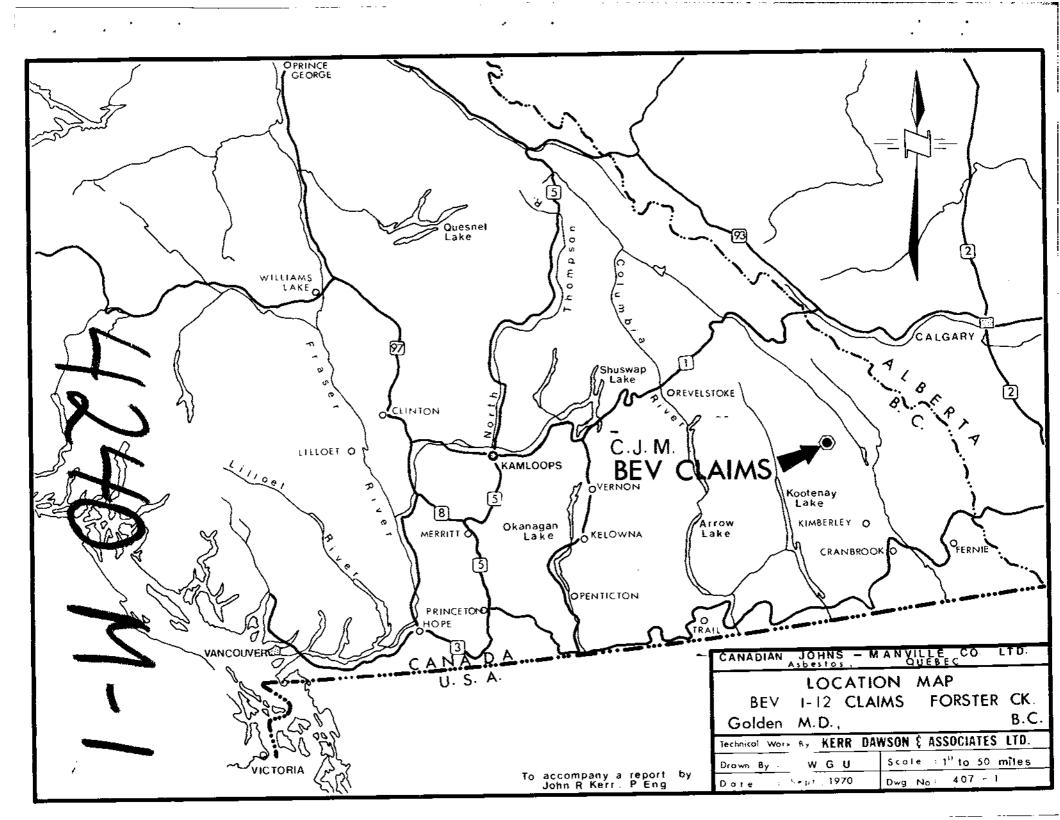
SUMMARY & CONCLUSIONS

During August, 197%, crews of Canadian Johns - Manville Co. Ltd. staked 6 additional Bev claims over a possible south east extension of an MoS₂ showing 22 miles west of Radium in the Purcell Mountain Range. Regional talus sampling and prospecting were completed over the entire claim block. Detailed mapping was completed over the showing areas. A total of 226 samples were collected, and analyzed for molybdenum only.

Detailed mapping of the surface showings indicate a portion of one showing is certainly of economic significance. Geochemistry suggests a southeasterly extension of this same surface showing. Better geochemical techniques are suggested to correlate known showings to geochemical anomalies. Diamond drilling and rock trenching are recommended to investigate content of molybdenite in the best portion of the showing area.

RECOMMENDATIONS

- (1). A series of rock trenches be established across large outcrop approximately 600 ft. northwest of Molly Lake. Trenches should be oriented perpendicular to the main vein trend, and be at least 2 feet deep to allow for a shallow leached capping. Continuous channel samples along the full length of each trench, should establish the ${\rm MoS}_2$ content of surface rocks.
- (2). One diamond drill hole collared 200 ft. northwest of Molly Lake, bearing ${\rm N50}^{\rm O}{\rm W}$, and dipping at 45°. Anticipated depth of the hole would be 1,000 ft.
- (3). Rock geochemistry to accompany talus fine sampling in detailed geochemical investigations over showing, gossan and known geochemical areas.



INTRODUCTION

This report is a supplement of a previous report entitled "Geological and Geochemical Report on the Bev Claims" by H. K. Conn and C. P. Lin, February, 1972. Normal introductory remarks regarding location access, topography, etc. are well documented in the earlier report, and are summarized below. During the 1972 field season, from August 21st. - 30th., a two man crew completed further detailed sampling and geological mapping on the Bev claims. An additional 6 claims, Bev 7 - 12, were staked to the southeast of the Bev 1 - 6 claims, to cover a possible southeast extension of the known zone. This report summarizes the 1972 field programme.

The Bev claims are situated in the rugged Purcell Mountain range on the divide between Forster Creek and Frances Creek. Both of these creeks flow into the Columbia River at Radium, B. C., 22 miles due east of the claims. Topography on the claims is generally quite precipitous, except for the flat - bottomed cirque containing Molly and Dolly Lakes. Total relief within the claim block is 2,000 ft., varying from 6,800 ft. a.s.l. in the northwest corner to over 8,800 ft. a.s.l. in the eastern portion of the claims. Vegetation is very limited on the claims, consisting of alpine grasses and stunted hemlock and juniper on the floor of the Molly Lake Cirque.

Access into the claims is possible, however impractical, on the ground, along gravel roads up Forster Creek or Frances Creek, and thence a 3 - 5 mile hike up rugged terraine to the 7 - 8,000 ft. elevations of the claims. Helicopter assistance is most practical from road end, to haul personnel, camp and field equipment.

GEOLOGY

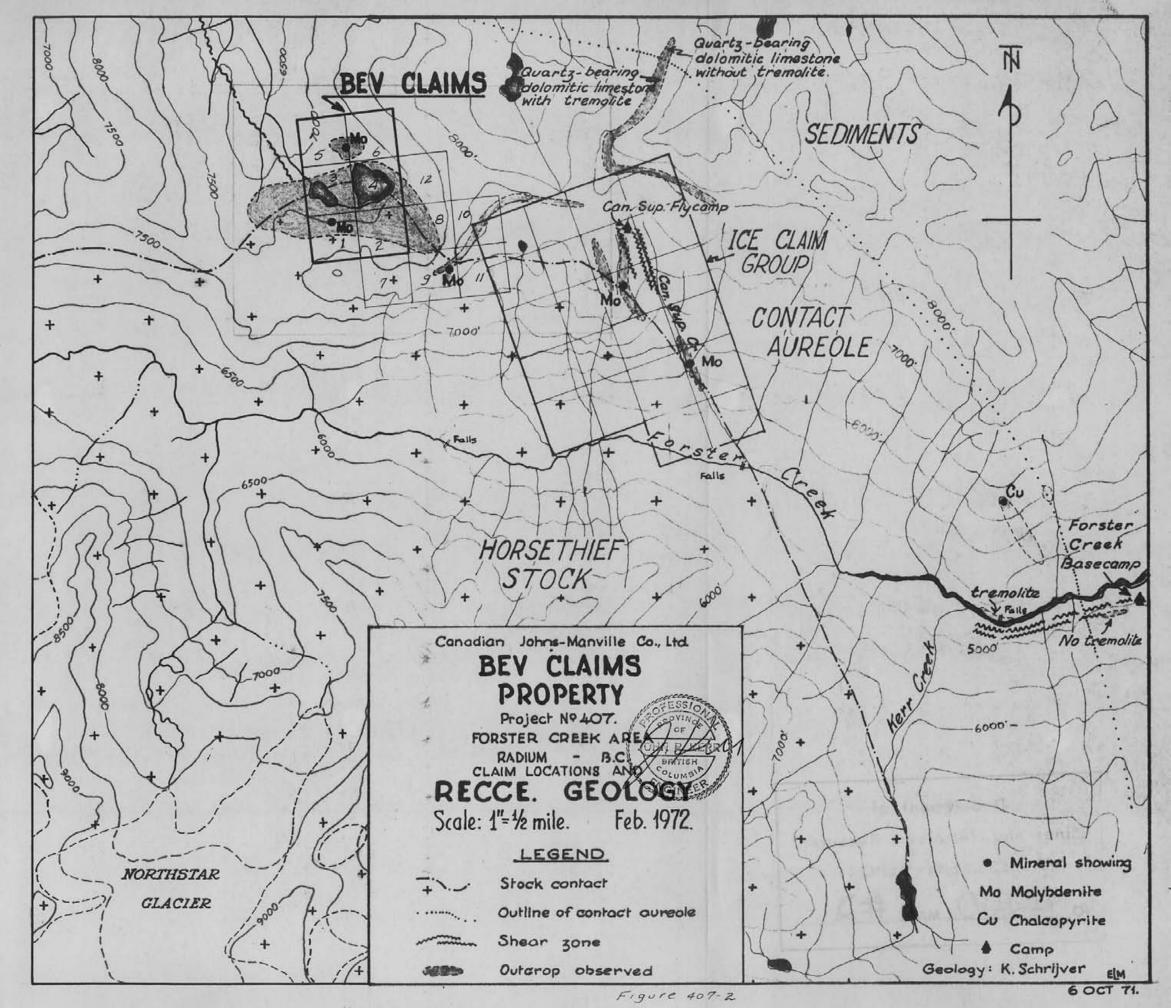
GENERAL REGIONAL GEOLOGY:

The general geology of the Forster Creek area is well documented by the G. S. C. map sheet 12 - 1957. Geology of the Lardeau Map Sheet 82K East Half, and by previous map sheets prepared by the staff of Canadian Johns - Manville Co. Ltd. of the Horsethief - Forster Creek area for earlier assessment reports. The claim block is shown to be underlain by the northern contact of the Horsethief Stock. The Horsethief Stock was recognized by K. Schrijver, 1971, as a concentrically zoned stock or small batholith, grading from a fine-medium grained granodiorite, with occasional large orthoclase phenocrysts in the center, to a coarse - grained, somewhat pegmatitic, pink and purple quartz monzonite in the outer rim. The coarse quartz monzonite is the most dominant rock type of the stock, comprising 75% of the exposed surface area, and is the only variety of the stock, underlying the Bev Claims.

The Horsethief Stock intrudes sedimentary rocks of the Upper Purcell Group; more specifically divided into two sedimentary formations

- Mt. Nelson Formation
- Dutch Creek Formation

Rocks underlying the Bev claim group are thermally altered slates, argillites, dolomites, and quartzites of the Dutch Creek Formation. Schrijver, 1971, and Choi, 1972, recognized a distinct thermal alteration aureole, grading outward from the contact of the batholith for a distance of $1 - 1\frac{1}{2}$ miles. Thermal alteration minerals such as staurolite, cordierite, and alusite, biotite, muscovite, and tremalite have been found. In part, some of the grains of these thermal alteration minerals are quite large within the contact aureole, giving the rock a somewhat spotted texture. Some rocks within the



aureole are referred to as hornfels or spotted hornfels. Figure 407 - 2 shows the general geology of the Bev claims and surrounding area.

DETAILED GEOLOGY AND MINERALIZATION:

During the period of August 21st. - August 30th., 1973, C. I. Choi, geologist with Canadian Johns - Manville Co. Ltd. mapped a good portion of the Bev claim block. Results of this mapping programme are shown on Figure 407 - 3, Geology of Bev Claims (2":200'). In the area inbetween and just north of Molly and Dolly Lake, the area referred to as ${\rm MoS}_2$ showing #2, a reference line was established, and this area was mapped to 1":50 ft. scale detail (Figure 407 - 4). This map shows in detail all exposed barren and ${\rm MoS}_2$ bearing quartz veins and aplite dikes.

The detailed maps of the claim group correspond to the regional geological concept. The contact of the Horsethief Stock roughly divides the claim group in half, passing through the north portion of both Dolly and Molly Lakes. Rocks of the stock are shown to be of the coarse - grained quartz-monzonite variety. Well developed veining and jointing of the quartz-monzonite is prevalent over the entire claims, dominant in the area just south of Dolly Lake. Secondary alteration, in the form of silicification, K-feldspar, sericite, pyrite and molybdenite accompany veins and fractures in this area. A surface area, approximately 1,000 ft. in a N - S direction, and 400 ft. in an E - W direction, shows pervasive, however low - grade MoS₂ mineralization in joints and veins. The MoS, bearing veins are quite wide spaced, up to 20 ft. apart, and it is by visual estimation methods that this zone is well below the economic limits of being commercial, from what is exposed on surface. This zone is referred to as Molly Lake Showing #1.

Choi has attempted to subdivide the thermally altered sediments of the Dutch Creek Formation into two groups, according to intensity of termal alteration.

A - 2 - Schistose muscovite - biotite rich hornfels. This zone is described as intense thermal alteration of sedimentary rocks. Pervasive schistosity is probably related to the forceful intrusion of the stock. This zone envelopes the stock from 400 - 1,200 ft. from the contact.

A - 1. Mainly thermally altered grey and black siliceous slate and quartzite, with minor argillite and dolomite. This zone flanks rocks of A - 2 at distances greater than 400 - 1,200 ft. from the stock contact.

Well developed veining and fracturing are developed in both types of rock, most dominant in the area just north of Molly and Dolly Lakes. Veining is mainly quartz veins, 1" - 12" wide; however aplite dikes are present, and occasionally grade into quartz veins. Molybdenite mineralization accompanies quartz veins and aplite dikes. Choi has delineated a surface area approximately 2,400 ft. in a general SE - NW direction, approximately paralleling the stock contact, by 400 - 1,000 ft. wide, that contains MoS₂ bearing quartz veins. The southeast extension of this zone grades into a large and intense gossan zone, marked by bright red - brown - orange colourations, due mainly to leached pyrite.

The most intense veining and ${\rm MoS}_2$ mineralization occurs in an outcrop 600 ft. x 500 ft., approximately 600 ft. NW of Molly Lake. Surface counts of the veins, consideration given to the width of each vein, suggest that veining as exposed on surface makes up 2% of the rock. In order for the exposed veins to yield economic content of ${\rm MoS}_2$, in the entire rock (.2% ${\rm MoS}_2$), the average content of ${\rm MoS}_2$ in veins would have to be 10%. Visual estimates of ${\rm MoS}_2$ content in veins is 1 - 5%. Therefore, if the zone is to be found economic, at least twice as many veins would have to be exposed, plus ${\rm MoS}_2$ would have to occur as fracture fillings. This is quite possible, as outcrops

are somewhat covered with moss and scattered surface debris. Rock trenching and/or diamond drilling through this section of the zone would be the only accurate method of establishing ${\rm MoS}_2$ content.

Major structural features of the claim area are two faults which traverse the northern portion of the claims. Both faults appear to be pre stock intrusions as they have not been traced into the granitic rock. The fault at the western end of the claims apparently cuts - off dominant veining. Rocks on the west side of this fault have been mapped as meta-sediments of the Mt. Nelson Formation.

Major joint, fracture and vein system have a dominant trend in a N $30 - 40^{\circ}$ E direction, dipping $60 - 80^{\circ}$ SE. All MoS₂ bearing veins mapped in Showing #2 are found with these attitudes. The logical location of a drill hole would be at the north west corner of Molly Lake, drilling N 50° W, with a dip at 45° .

GEOCHEMISTRY

FIELD TECHNIQUES:

During the period of August 22nd. - August 30th., 1972, a total of 226 soil and talus samples were collected from the Bev claim area. 155 of these samples were collected on a reconnaissance basis along preselected 500 ft. interval contours, samples collect at 200 ft. intervals along all contours. 71 samples were collected off a reconnaissance compass and chain grid over the flat cirque valley and showing #2 area. 3 lines were spaced at 700 ft. intervals, and samples located at 100 ft. intervals along the lines. Samples collected from contours were identified by M - to distinquish project, T - to distinquish Talus Fines, and numbered in sequence of collection. Samples from the grid were identified M - for the project, G - for grid samples, and numbered in sequence of collection.

Samples collected from contours were all talus fines, and generally were collected from the surface or near surface of talus slopes. Samples from the grid were an assortment of varieties and very difficult to code. Samples taken on the grid were talus, loose soil on outcrop from glacial debris, or from a poor "B" horizon soil under a light vegetation layer. One sample may consist of a combination of the above types. In addition to attempt to distinquish the various type of sample, notes were recorded regarding colour, texture, depth and general remarks, e.g. terraine, rock - type and noted mineralization. All samples were collected by Mr. A. Gussen, a capable and well experienced field technician.

ANALYTICAL TECHNIQUES:

All samples were packaged and submitted to the Vancouver Laboratories of Bondar - Clegg & Co. Ltd. The samples were dried at $40-50^{\circ}$ C. in infra - red ovens, and sieved to -80 mesh in Tyler screens. An aliquot of the -80 mesh fraction was digested in hot

aqua regia to extract the molybdenum, and the metal content of each sample was determined by atomic absorption methods at a detection limit of 1 ppm.

CLASSIFICATION OF DATA:

A statistical analysis was completed on the sample results, treating all results as one population. A cumulative frequency diagram was plotted on probability log paper, and the best fit straight line was drawn (See Appendix A). The resulting straight line shows slight deviation from the actual plot of individual sample points, and this is probably due to one of two reasons:

- (1). The nature of various sample types collected in the bottom of the cirque off of the grid area.
- (2). Samples have been collected over at least three various rock types, each probably with individual background contents of molybdenum.

If all sample types over each rock type were considered as individual parameters, there would be at least 6 various populations. Some of these populations would have very few samples, and statistical analysis for each group would be meaningless. The difficulty in proper classification of each sample was collected would also give rise to specifically assigning each sample to a specific population. The validity of sampling soil in such an environment is further discussed in the next chapter.

The sample data were thereby classified into the following anomalous categories, as one population:

| Negative | o - b | 0 - 14 ppm |
|----------------------|-----------|-------------|
| Possibly Anomalous | b - (b+s) | 15 - 68 ppm |
| Probably Anomalous | (b+s)-t | 69 -315 ppm |
| Definitely Anomalous | ア t | >> 315 ppm |

where b - background (geometric mean)

s - standard deviation

t - threshold, derived from 2nd. probit of cumulative frequency distribution.

PRESENTATION OF DATA:

Sample numbers are plotted at each sample station on Figure 407 - 5, and is used as sample location map. Figure 407 - 6 shows the sample results with the following coding of anomalous categories:

0 - Negative

Possibly Anomalous

Probably Anomalous

Definitely Anomalous

Anomalous zones are represented by contours of the various anomalous limits.

DISCUSSION OF RESULTS

Two surface showings of molybdenite have been found and mapped in detail on the Bev 1 - 12 claims. Showing #1 is found as molybdenite rosettes in quartz - veins within quartz - monzonite of the Horsethief Stock, and has a surface area of 1,000 ft. x 400 ft. Visual estimations of the grade would suggest this showing is far below necessary requirements of an economic deposit. Geochemical interpretation suggests no continuation of the zone.

Showing #2 found as MoS₂ in quartz veins whichin thermally altered sediments and hornfels of the Dutch Creek Sediments, and has a mapped surface area of 2,400 ft. long by 400 - 1,100 ft. wide. Although no surface rock samples have been assayed, a visual estimate would suggest portions of this zone are of economic interest. On the basis of the outcrop exposures alone, one diamond drill hole, approximately 1,000 ft. deep is suggested to test the grade of mineralization at depth. Surface trenching, with trenches 2 - 3 feet deep should be completed to investigate grade of mineralization below a possible surface leached capping.

The general validity of geochemical results is questioned under the Geochemical section of this report, and is further discussed in this section. The possibly anomalous limits of geochemical interpretation outline the two known zones of mineralization. However, the probably anomalous limits (>68 ppm) suggest the steep talus slope and intense gossan area to the southeast of Molly Lake to be the prime geochemical target. Samples taken from this zone indicate 350 and 500 ppm Mo. Very little molybdenum in rock has been found from this area.

The geochemical values over Showing #2 where known mineralization occurs are very eratic, and certainly not as high as the values on the talus slope. This would suggest that the sampling of soils and material from the floor of the cirque is unreliable, and cannot be compared to the interpretation of talus fines without further criteria for evaluation. However, one should not be misled by the foregoing statement, and discard interest in the southeasterly extending gossan area. The area is obviously leached, and molybdenite mineralization in economic content may exist under a leached capping. Rock chip sampling is suggested as an alternative geochemical technique to be completed in detail over the known showing area, geochemical anomaly and gossan zone. Results of this programme may be better related to the talus sample results.

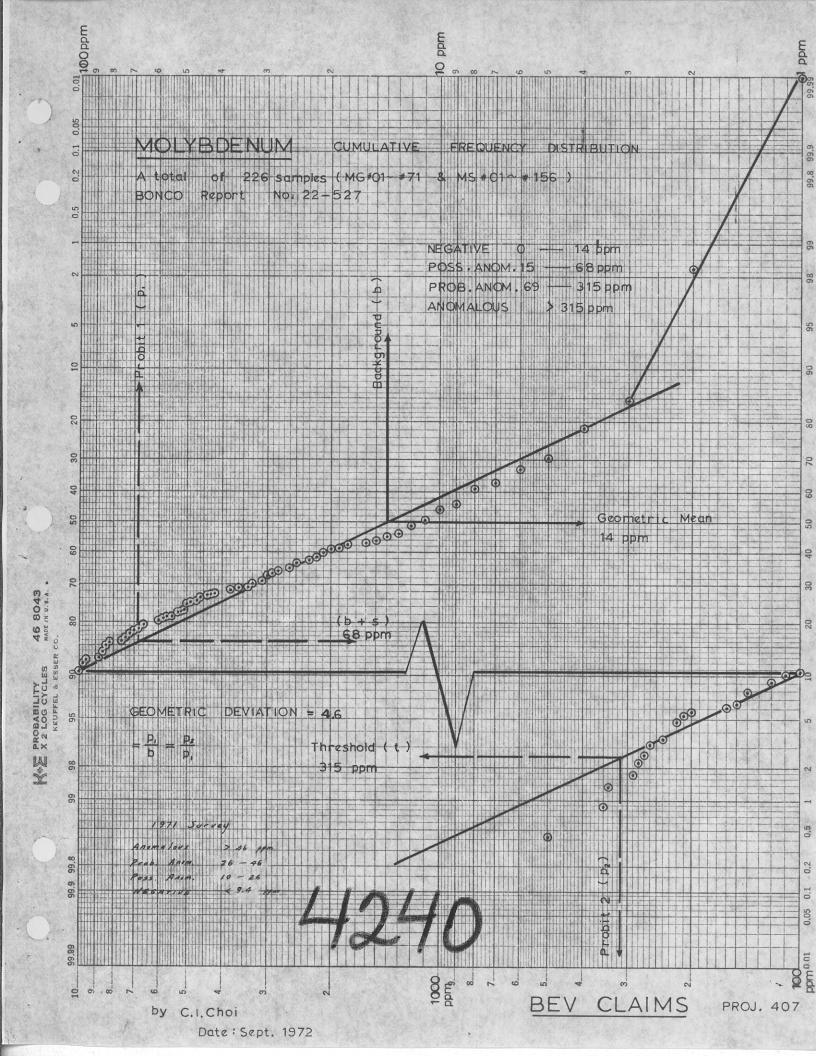
Respectfully Submitted by:

John R. Kerr, P. Eng.,

KAMLOOPS, B. C., February, 1973.

APPENDIX A

CUMULATIVE FREQUENCY DIAGRAM



APPENDIX

WRITER'S CERTIFICATE

JOHN R. KERR, P.ENG. GEOLOGICAL ENGINEER

9 - 219 VICTORIA STREET KAMLOOPS, B.C.

PHONE (604) 374-6427

WRITER'S CERTIFICATE

I, JOHN R. KERR, OF KAMLOOPS, B. C. HEREBY CERTIFY THAT:

- (1). I am a member of the Association of Professional Engineers in the Province of British Columbia, and a Fellow of the Geological Association of Canada.
- (2). I am employed by Kerr, Dawson & Associates Ltd., with my office at #9 219 Victoria Street, KAMLOOPS, B. C.
- (3). I have practiced as a geologist for $8\frac{1}{2}$ years since graduation from the University of British Columbia in 1964 with a B. A. Sc. in Geological Engineering.
- (4). I have no direct interest or holdings of securities of Canadian Johns Manville Co. Ltd., or in the Bev claims described in this report.
- (5). The field work described in this report was completed from August 21st. August 30th., 1972, and was supervised directly by myself.
- (6). The costs, as shown in Appendix C of this report, are to the best of my knowledge, correct.
- (7). This report is based on published and unpublished data, my own personal knowledge of the area, and the field data collected during the field programme.

John R. Kerr, P. Eng.,

Rebruary, 1973.

APPENDIX C

COST STATEMENT

COST STATEMENT

| (1). | LABOUR: |
|------|---|
| | Field - August 21st 30th., 1972. |
| | C. Choi, Geologist, 10 days @ \$35.00 per day \$350.00 |
| | A. Gussen, Technician, 10 days @ \$27.00 per day |
| | J. Kerr, P. Eng., 2 days @ \$100.00 per day 200.00 |
| | Office - August 19th. and September 1 - 9, 1972. |
| | C. Choi, Geologist, 6 days @ \$35.00 per day |
| | A. Gussen, Technician, 2 days @ \$27.00 per day |
| (2). | ROOM AND BOARD: |
| | 22 man days @ \$6.00 per man/day |
| (3). | TRANSPORTATION: |
| | 4 x 4 truck - 10 days @ \$20.00 per day 200.00 Helicopter Ferry Charges: |
| | 5 hrs.: 55 minutes at \$150.00 per hr 888.00 1,088.00 |
| (4). | SAMPLE ANALYSIS: |
| | 226 Samples at \$1.20 per sample |
| | CARRIED FORWARD |

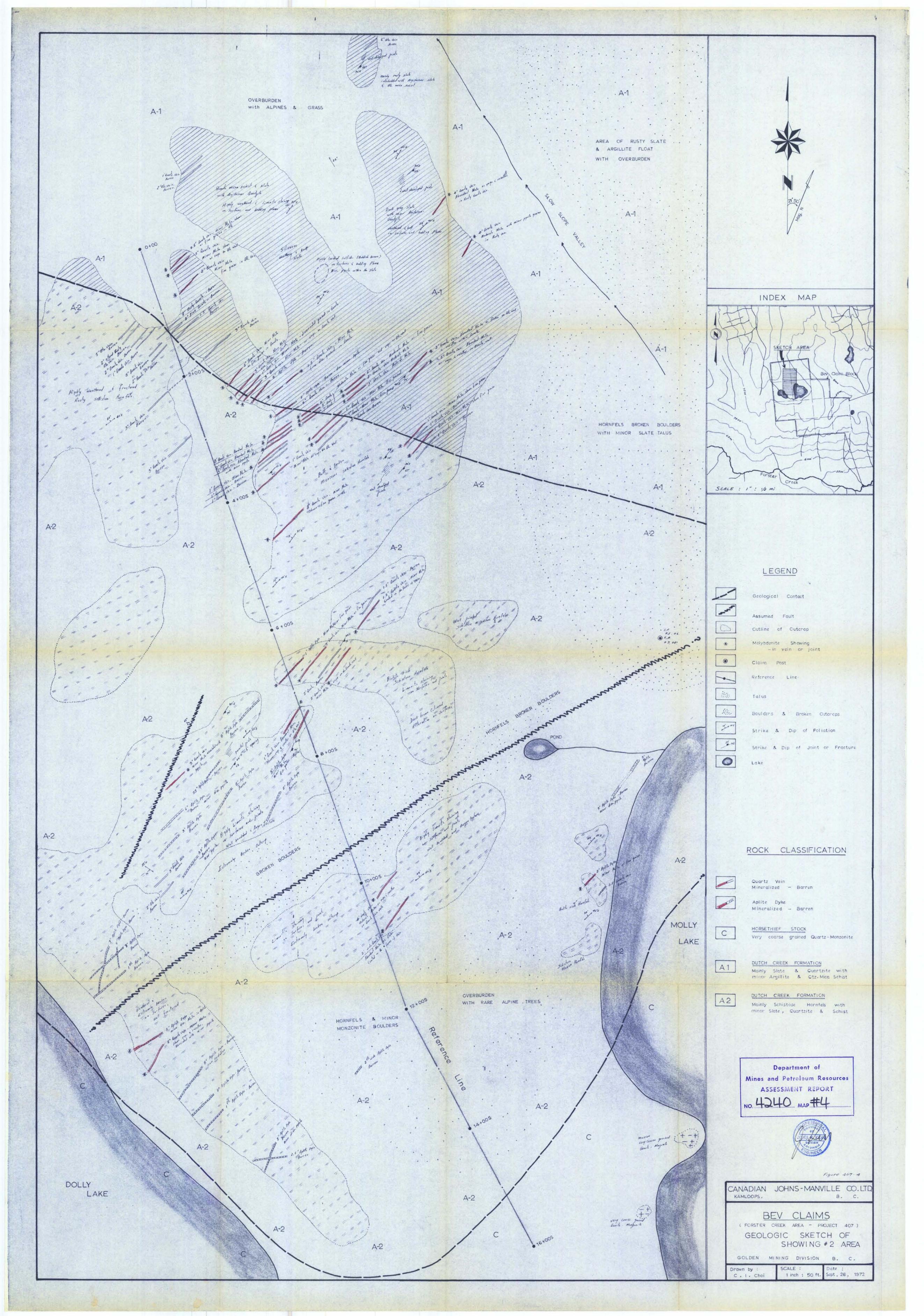
| | BROUGHT FORWARD |
|------|--|
| (5). | REPORT: |
| | J. Kerr, P. Eng. \$ 350.00 Photocopying and reproduction 35.00 Secretarial 30.00 |
| | TOTAL COST |
| | |

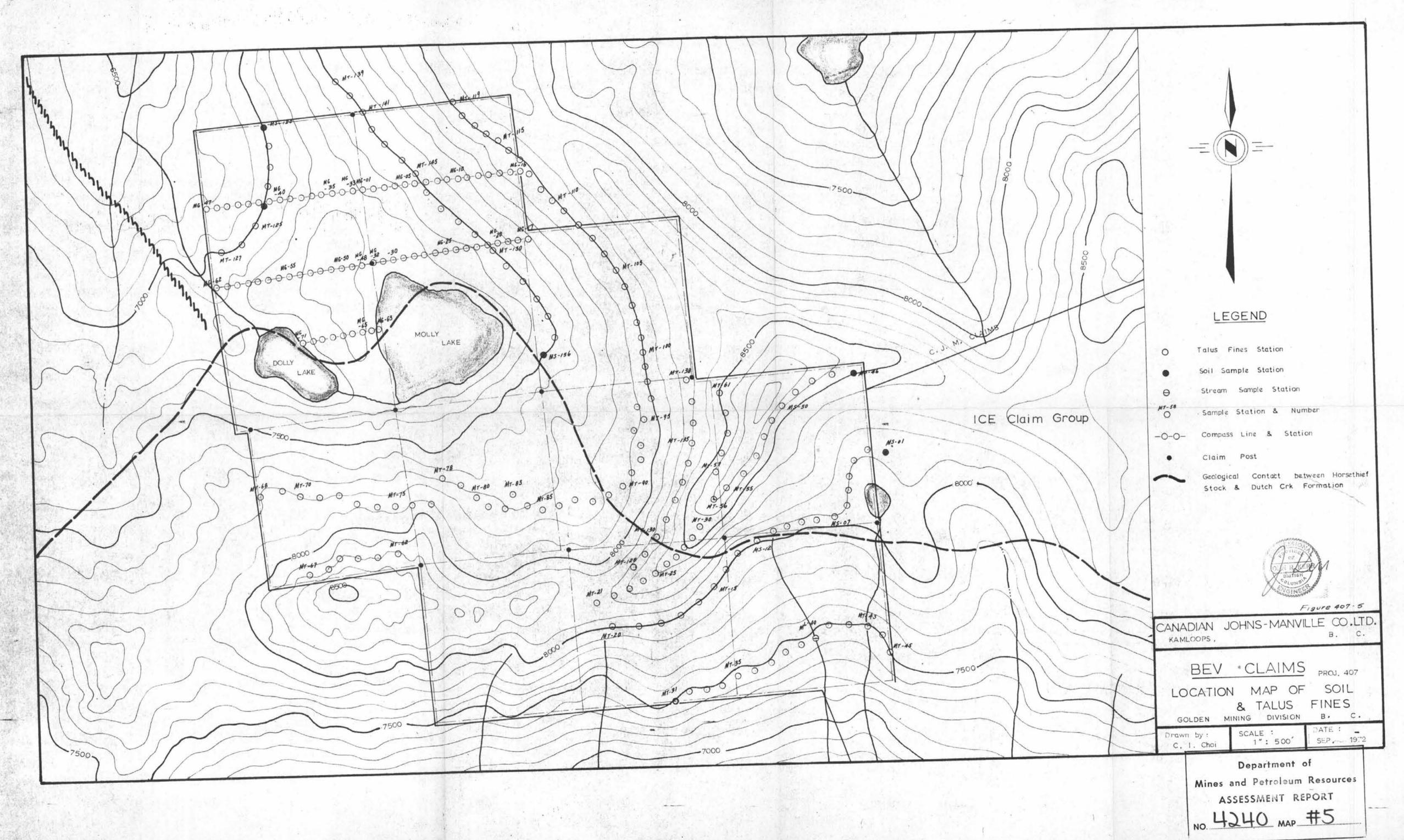
CERTIFIED CORRECT:

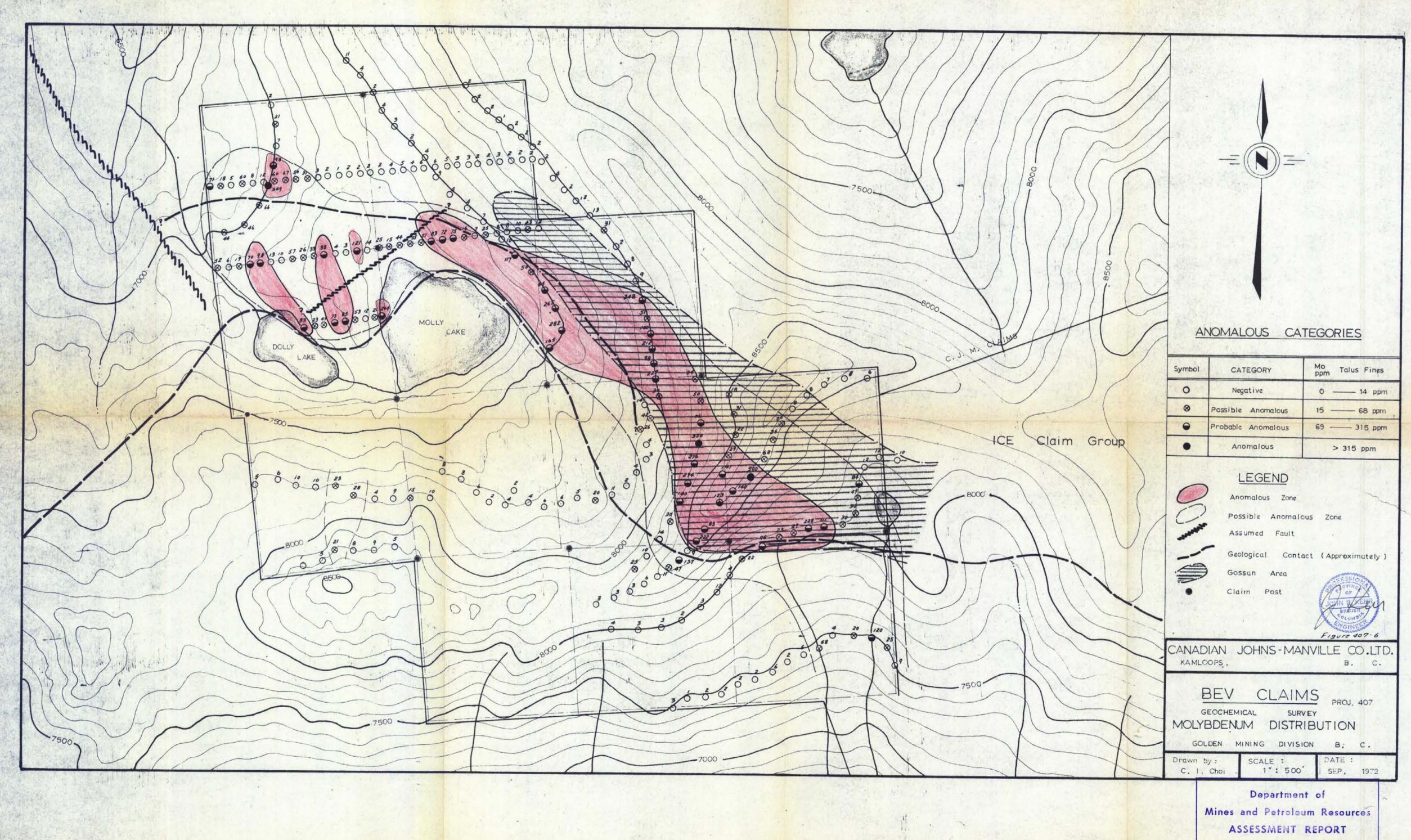
John R. Kerr, P. Eng.,

February, 1973.









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NO 4240 MAP #6