

# 6206

GEOLOGICAL AND GEOPHYSICAL REPORT

on the

BRACEBRIDGE PROPERTY

FORT STEELE MINING DIVISION, B. C.

for

MERIDIAN RESOURCES LTD.

MINERAL RESOURCES BRANCH

ASSESSMENT REPORT

NO. \_\_\_\_\_

AGILIS ENGINEERING LTD.

CONSULTING ENGINEERS & GEOLOGISTS

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## GEOLOGICAL AND GEOPHYSICAL REPORT

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BRACEBRIDGE PROPERTY

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1-00 SUMMARY:

The Bracebridge property of Meridian Resources lies 40 miles west of Kimberly in the St. Mary River Valley, B. C. Access to the property is by gravel road.

The property has been explored in the past by trenching, percussion and limited diamond drilling.

From August 25 to September 15, 1976 a field crew consisting of 4 men under supervision of the writer completed a program of gridding, geological mapping, sampling and electromagnetic survey using a Sharp S. E. 300 instrument.

The property is underlain by the Lower Purcell Kitchener - Siyeh Formation consisting of sericite, quartz schist, quartzites and magnesium limestone.

A northerly trending shearzone associated with extremely tight folding and alteration, up to 200 feet wide, has been impregnated with quartz veins and disseminated chalcopryrite. The potential ore-grade mineralization appears to be related to the crestal regions of folds or zones within the shear exhibiting silica flooding.

Alteration consists of sericite, introduction of iron carbonates, silica flooding or quartzveining and chalcopryrite, galena and minor pyrite.

Pyrite veins are indicated along the southern part of the shear. Chalcopryrite is wide spread. Copper assay vary from 0.01 to a maximum of 5% giving an average of about 2% over potential mining width and fair strike length.

The electromagnetic survey trace a conductor, coinciding with the trace of the shear zone for a distance of 3,000 feet south of the river.

Two conductors, the first can be correlated with the shear zone trenched of low magnitude, the second approximately 300 feet west of the shear. The latter can not be explained from geological information available.

2-00 CONCLUSIONS:

The work program completed on the property shows that:

1. Mineralization is confined to a shear zone up to 200 feet wide and at least 2 miles long.
2. The shear zone shows tight folding and alteration consisting of sericite, carbonates and silica flooding with chalcopyrite, galena and pyrite.
3. The best ore potential appears to be in areas of intensive shearing and quartz veining or along crestal regions of dragfolds.
4. A definite relationship between shearing and folding is indicated.
5. The shearzone lies apparently along the western limb of a northerly trending, flatly southerly plunging anticline.
6. Small scale folds show a similar orientation.
7. In vicinity of the shear small scale folds are isoclinal, slightly overturned to the west and southerly plunging.
8. Chalcopyrite mineralization appears to be localized along these folds.

RECOMMENDATIONS:


To test the continuity of mineralization and to outline ore grade sections of mineable proportions the following program is recommended.

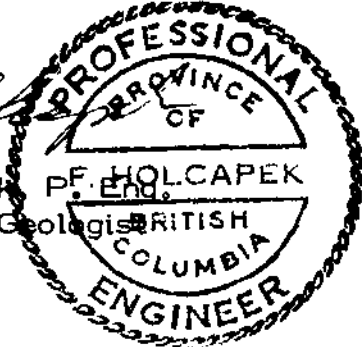
1. Trenching of the southern extent of the shearzone.
2. Diamond drilling of indicated E. M. anomaly on the north side,

and testing of the mineralized zone south of the river.

3. Detailed structural analysis of the area to locate structural settings favorable for mineralization.

Respectfully submitted.

  
F. Holcapek, P. ENG.  
Consulting Geologist



A circular professional seal for the Province of British Columbia. The outer ring contains the text "PROFESSIONAL ENGINEER" at the top and "COLUMBIA" at the bottom. The inner circle contains the text "PROVINCE OF" at the top and "BRITISH" at the bottom. The name "F. HOLCAPEK" and the title "P. ENG." are stamped across the center of the seal.

Vancouver, B. C.

3-00 INTRODUCTION:

3-10 Scope of the Report:

At the request of Mr. R. Hughes, President of Meridian Resources Ltd., Agilis Engineering Ltd. completed a program of gridding, geological mapping, detailed mapping of trenches and sampling where possible, and an electromagnetic survey over selected areas where topographic conditions were not too steep.

The program was conducted from August 25 to September 15, 1976 under supervision of the writer. A crew of five was employed.

The purpose of this report is to state the findings and make further recommendations.

3-20 Property:

The Bracebridge Property of Meridian Resources Ltd. consists of the following mineral claims:

| <u>Claim Name</u>  | <u>Record #:</u> |
|--------------------|------------------|
| Don 1, 2           | 5790 - 91        |
| Joe 1, 2           | 5792 - 93        |
| Joe 3 - 6          | 12532 - 35       |
| Silvertip Fr.      | 18229            |
| Silvertip Fr 1 - 3 | 18230 - 18231    |
| Silvertip          | 18232            |
| Silvertip 1 - 15   | 18233 - 47       |
| Wolf Fr            | 10590            |
| Winnie             | 11286            |
| Vera               | 11287            |
| Jimmie             | 11288            |
| Lilian             | 11290            |
| Gordon Fr          | 12536            |
| Monica Fr          | 12537            |
| Welcome            | Lot 1389         |
| Surprise           | Lot 3560         |

During the course of the field work the location posts for the Wolf Fr, Joe 2, Don 1, and the Silvertip # 13 mineral claims have been inspected.

4-00 GEOGRAPHY:

4-10 Location and Access:

The property is located on St. Mary River approximately 16 miles west of St. Mary Lake or 40 miles west of Cranbrook in the Kootenays of British Columbia, Fort Steel Mining Division.

Co-ordinates of the property are  $116^{\circ} 27'$  W. Longitude and  $49^{\circ} 45'$  N. Latitude.

Access can be gained from Cranbrook via paved highway to St. Maryville and from there by gravel road following the St. Mary River upstream a total distance of approximately 40 miles. Cranbrook can be reached from Vancouver by scheduled Pacific Western Airline flights.

4-20 Physiography and Climate:

The Bracebridge property lies within the physiographic province of the Purcell Mountains. The area is steep with a relief of 4000 feet between valley floor and mountain peaks.

The main showings, strike normal to the trend of the topography, and elevation of the trenches, on both sides of the river are between 4000 and 6000 feet above sea level.

Vegetation on the property consists of fir, tamarack, spruce and pine. The northern slopes are covered by thick underbrush where southern slopes are open away from the creeks.

Temperatures during the summer are hot and during the winter as low as  $-40^{\circ}$  F. Snowfall is moderate and can be expected from November to April.

5-00 HISTORY

Little is known about exploration activities on the property prior to 1966. On the Welcome, Enterprise and <sup>rows</sup>Shoberbury Crown granted mineral claims several old short adits, the majority caved, have been located. The object of this work was to follow the shear zone carrying chalcopyrite, galena and sphalerite.

During 1966 Cominco explored the property and completed 4 diamond drill holes at the northern limits, elevation 6000 feet, of the shear zone. All drill holes intersected copper values varying from 0.20% to 3.30% over widths of 5 to 22.5 feet. The best intersection was in DDH 1A 14.5 feet assaying 3.30% Cu.

In 1967 Pharaoh Mines Ltd. (NPL) held the property and executed a program of bulldozer trenching and percussion drilling of 4 holes 30 to 40 feet long. This work confirmed the presence of a continuous shear zone carrying variable amounts of copper and low silver values.

During this period Newmont Mines Ltd. and Rio Tinto examined the property. The compilation map is based on the work of T. Johnson, Rio Tinto.

During October 1973 the writer completed a property examination on behalf of Cream Silver Mines Ltd. The work program completed to date constitutes phase I as recommended in my report dated February 20, 1974 "Report on the Bracebridge Property of Meridian Resources Ltd. (NPL) for Cream Silver Mines Ltd.

Although a geochemical survey has been recommended initially, the topographic conditions, distribution of rock outcrops, mineralized float and mineralization on the property is such that the results would be meaningless.

6-00 GEOLOGY:

6-10 Regional Geology:

The area has been mapped by the Geological Survey of Canada and the information has been published in Memoir 238 "Nelson Map Area, East Half," by H.M. Rice.

Rock units underlying the area have been classified as follows:

Post Triassic Granite, granodiorite and quartz diorite.

Late Precambrian - Windemere

Hamill Series (Unit 9) Grey, green and white siliceous quartzites.

Horsethief Creek Series  
(Unit 8) Green argillaceous quartzite, Blue-grey limestone, arkose, pebble conglomerate.

Irene Volcanic Formation  
(Unit 7) Sheared andesitic volcanic rocks.  
Toby (Unit 6) Conglomerate.

Purcell

Upper Purcell  
Mount Nelson Formation  
(Unit 5) Laminate argillites magnesium limestone, quartzite.



|   |  |
|---|--|
| Dutch Creek Formation<br>(Unit 4)       | Laminate argillites magnesium limestone,<br>quartzite.                 |
| Lower Purcell                           |  |
| Kitchener - Siyeh Formation<br>(Unit 3) | Vari-colored argillites, magnesium<br>limestone, calcareous quartzite. |
| Creston Formation<br>(Unit 2)           | Green purple and grey argillaceous<br>quartzite, some argillite.       |
| Aldridge Formation<br>(Unit 1)          | Grey, rust- weathering<br>argillaceous quartzite and argillite.        |

6-20 STRUCTURAL GEOLOGY:

South of St. Mary River, the main structural feature consists of numerous large scale faults slicing the sediments into individual blocks. The strike of the rock units is in general, north to north-east and little disturbed. The regional dip is to the west or westerly.

The main structural feature, north of St. Mary River is a large open regional, northerly trending anticline. Faulting is of secondary nature only. In the vicinity of the property between Deware Creek and Crawford Creek along the St. Mary River, a northerly trending zone of more intense folding, exhibiting overturning of beds is exposed. This zone outlines a high anticlinal structure apparently superimposed along the western limb of the regional fold structure. This can be caused by overthrusting from the west.

The rock units exposed in the area are normally not or only little affected by regional metamorphism. Sedimentary structure ie ripple marks, mud cracks etc. are usually well-preserved.

Three types of metamorphism have been recognized within the general area:

1. Contact metasomatic alteration in the vicinity of the Purcell sill.
2. Thermal metasomatism along the contact of granitic bodies.
3. Development of chlorite and biotite schist along zones of faulting, shearing or intense folding. These zones can be several hundred feet wide and sedimentary structures are completely obliterated.

7-00 PROPERTY GEOLOGY:

Geological mapping at a scale of 1 inch = 200 feet using a cut grid for ground control was completed.

Outcrops were found to be limited to creeks and gullies below the 5,500 foot level, Above this level steep slopes and cliffs prevail.

In general the mapped area is underlain mainly by quartzites interbedded with minor argillites and limestone or their metamorphic equivalent. It was found difficult to trace rock units from outcrop over any distance but on a regional scale a prevailing north westerly trend is apparent. Dips of the rock units are highly variable depending on the intensity of folding and shearing. Within the sheared area bedding is completely obliterated and planar features appear to be controlled by foliation and tight folding. Attitudes of foliation and fold axis follow the same trend.

7-10 Stratigraphy:

a Massive, grey thick bedded Quartzite:

The best exposures of this rock unit were encountered north of the St. Mary River, west of the creek.

The unit forms bluffs and steep slopes. Minor white, barren quartz veins follow fracture trending N 45 W, vertical. The rock unit shows occasional foliation and micaceous bands. Attitude of bedding is N 10 W to N 10 E, 45° S.

b Limey Quartzites, possible carbonates:

This unit has been observed on both sides of the St. Mary River. It apparently underlies Unit a.

In the northern part it consists of silicious, poorly to intensive foliated tan coloured carbonates or calcareous thin bedded quartzites. Foliation trends N 10 E, 45 E. Lineation has been observed within the foliation planes plunging 10 to 25° S. This direction is parallel to the plunge of minor fold axis to the east.

c Thin bedded quartz - sericite schist:

The main characteristics of this unit are intense foliation, small scale folding with axis parallel to foliation and numerous quartz veins either following foliation planes, folded, and exhibiting boudinage

or cutting the foliation at  $45^{\circ}$ . The veins are seldom traceable over more than 150 to 200 feet but occur along a zone well over 3,000 feet long. No sulfides have been observed.

d Green Schist:

This is a thick bedded unit exhibiting in places strong foliation trending N  $100^{\circ}$  E,  $45^{\circ}$  to  $65^{\circ}$  E. Bedding where observed trends N  $30^{\circ}$ ,  $45^{\circ}$  S. Two sets of folds are indicated. The first set consists of small scale, up to 3 inches across, isoclinal folds. Shearing along the axial plane is common with offsets in the order of 2 to 3 inches.

The second set consists of folds up to 10 feet across. Shearing has been observed, but is usually associated with quartz veins.

e Quartz - Sericite Schist:

This unit is essentially an impure, limey, banded quartzite with sericite bands. Foliation observed is definitely related to folding. Folding consists of small scale, up to 5 inches across, to larger scale up to 3 feet across drag folds.

In the intensively folded section stretching of the limbs results in shearing. The shear direction is parallel to the fold axis and within the shear planes lineation plunging south are common. Extensive chloritization and biotite development combined with siderite and quartz veining or lenses containing chalcopyrite, and minor galena characterize this zone. The sheared section is discontinuous on a local scale but can be traced for over 3 miles on a regional scale. The shear is up to 200 feet wide.

f Chloritic Schist - Green stone:

The major outcrop area of this unit is confined to the north eastern part of the mapped area. Outcrop and good exposures are located mainly in road cuts.

The rock is thick bedded, slightly foliated and folded. Folds are normally up to 50 feet across with axis plunging gently to the south. Trends of fold axis, foliation and fold cleavage, where observed, are generally northerly,  $65^{\circ}$  to  $75^{\circ}$  E. Plunge of fold axis and lineation within foliation planes is  $5^{\circ}$  to  $10^{\circ}$  S.

Attitude of bedding, where observed, trends N  $10^{\circ}$  E,  $45^{\circ}$  W to  $80^{\circ}$  E.

DYKES:

A dark green partly foliated green stone dyke (andesitic?) cutting quartz - sericite schist has been observed in the eastern part of the mapped area. Limonitic bands, giving the schist a rusty banded appearance follow the trend of the dyke. The limonitic unit is up to 50 feet wide; the maximum width of the dyke is 20 to 40 feet. Trend of the dyke is northerly.

7-20 Structural Geology:

The main structural elements in the mapped area are folding and shearing. Field observation suggest that these features are inter-related.

In general the property lies along the western limb of a northerly trending, southerly plunging regional anticline. Secondary or parasitic folds are wide spread.

Development of foliation and schistosity appears to be related to the intensively folded section producing a wide shear zone in the most intensely deformed part.

Drag folding is pronounced in the immediate vicinity of intense shearing.

7-21 Folding:

a Regional:

Attitude of individual rock units away from shearing and orientation of secondary folding suggest the presence of an northerly trending open anticlinal structure. The plane dips steeply to the east and the fold axis has a gently southerly plunge.

b Detail:

During the course of the mapping it became apparent that 2 types of local folds occur on the property.

The first has been observed along the eastern and western limits of the mapped area and consist of open folding of a maximum amplitude of about 50 feet. Foliation appears to be parallel to the axial plane, and trends N 10° E, 65° to 75° E. The fold axis plunges at 10 to 15° S. Lineations within the foliation planes exhibit a southerly plunge also.

The second type of folding is isoclinal in nature. Amplitude varies from 6 inches to 5 feet maximum, with wavelength of 6 inches to 15 feet. Shearing becomes important in the intensively folded area and predominant within the centre part of the mapped area.

In the north-south direction shearing in the southern part changes to tight folding in the northern part.

Development of chlorite and mica-sericite schist is associated with the shearing.

7-22 Shearing:

South of the St. Mary River a shear up to 200 feet wide is exposed by trenching, roadcuts and in old underground workings. The shear is essentially a zone consisting of sericite-chlorite bands separated by quartz veinlets up to 1/2 inch wide carrying variable amounts of sulfides. Small scale folding is abundant along the walls of the shear changing into larger isoclinal fold structures outward to the east and west.

North of the river the shear zone is less pronounced and a change from shearing to tight isoclinal folding becomes apparent.

More detailed field work is necessary to clarify the structural relationship.

In general field observation suggests a change from shearing due to extreme stretching of small isoclinal foldlimbs, in the south to tight isoclinal folding with minor shearing in the north. Lination within shear and foliation planes plunges southerly.

8-00 ECONOMIC GEOLOGY:

Description of workings:

Extensive trenching, opencutting and several short adits have been completed in the past to test the extent and grade of the known mineralization. The showings extend intermittently from the 5,600 foot level south of the river to the 6,500 foot level north of the river a distance of approximately 2 miles.

Several of the old workings were sloughed or caved at the time of mapping.

8-10 North side of the River:

The main area of mineralization investigated lies between the 6,000

and 6,500 foot elevation. Chalcopyrite associated with quartz - siderite veins, parallel to the foliation and folded, occurs in quartz-sericite schist. The quartz veins are normally less than 4 feet wide but form lenses up to 15 feet where folded.

8-11 Description of Hand trenches:

Trench # 1:

A strongly folded quartz vein carrying minor chalcopyrite and siderite is exposed in the trench. The mineralized section is up to 18 feet wide but is caused by one quartz vein 4 feet wide as indicated down-slope from the trench, which has been repeated by folding.  
Sample # 1: 18 feet Cu 0.83%, Ag 0.68 oz/ton.

Trench # 2:

This trench is sloughed but a quartz vein approximately 2 feet wide showing malachite staining is indicated by float and rubble.

Trench # 3:

This trench exposes a quartz - siderite vein 3.5 feet wide cutting quartz - sericite schist. The quartz vein trends parallel to the foliation of the host rock.

Sample # 2: 3.5 feet Cu 1.20%, Ag 0.48 oz/ton.

Trench # 4:

No rock exposure

Trench # 5:

Sloughed, no rock exposure, but quartz float and outcrops above the trench suggest the presence of 2 veins less than 3 feet wide carrying very minor chalcopyrite.

Trench # 6:

The trench is partially slough. Quartz - siderite veins carrying good chalcopyrite has been reported in isoclinal folds.

The widest mineralized section is essentially a series of fold noses containing quartz, siderite and varying amounts of sulphides.

The folds plunge south and mineralization could not be traced on the surface for any distance. Several quartz veins strike into the folded area, but only 1 vein was found down slope from the trench. Sample # 3: 15 ft, Cu 2.29%, Ag 0.50 oz/ton.

Trench # 7:

The mineralization exposed in this trench is nearly identical to that of Trench 1 and 6. The main difference is the larger area mineralized. A short adit, located in the centre of the trench appears to have been driven underneath the mineralized fold.

| <u>Sample #</u> | <u>Width ft</u> | <u>Cu %</u> | <u>Ag oz/ton</u> | <u>Au oz/ton</u> |
|-----------------|-----------------|-------------|------------------|------------------|
| 4               | 6.5             | 2.95        | 1.04             | 0.01             |
| 5               | 10.00           | 2.65        | 0.42             | 0.003            |
| 6               | 23.00           | 0.93        | 0.08             | tr               |
| 7               | 3.50            | 4.40        | 0.94             | -                |

Cominco Ltd. completed 5 diamond drill holes in vicinity of Trench 6 and Trench 7. The following mineralized sections were encountered. A sketch showing the location of the drill holes is attached.

| <u>DDH #</u> | <u>Footage</u>                | <u>Width</u> | <u>Cu %</u> |                              |
|--------------|-------------------------------|--------------|-------------|------------------------------|
| DDH # 1      | no mineralization intersected |              |             |                              |
| 1A           | 4.5 - 19                      | 14.5         | 3.30        |                              |
|              | 31.00 - 45.50                 | 14.5         | 2.30        |                              |
|              | 75.00 - 97.5                  | 22.50        | 2.40        |                              |
|              | 125.00 - 130.00               | 5.00         | 0.60        | average: 97.5 ft<br>Cu 1.40% |
| 2            | no mineralization intersected |              |             |                              |
| 3            | 70.5 - 84.00                  | 13.5         | 1.20        |                              |
| 4            | 12.00 - 22.00                 | 10.00        | 0.20        |                              |
| 5            | 63.00 - 73.00                 | 5.00         | 1.60        |                              |

The exact bearing and inclination of the drill holes is not available.

An adit driven easterly for 80 ft. located 200 ft. south of Trench # 7 failed to intersect copper mineralization. The rock unit driven on is quartz-sericite schist.

8-12 Description of Cat Trenches:

Trenches 1A to 5A have been examined during the mapping. It was found that the trenches are sloughed and only minor sulfides are visible in places. Mineralization is normally associated with quartz -

siderite veins or as lenses localized by folding. No samples were taken by the writer.

The following assay results were obtained from old records of work completed by Pharoh Mines Ltd. and Rio Tinto.

| Trench # | Pharoh Mines Ltd. |      |           | Rio Tinto |      | Cominco  |      |
|----------|-------------------|------|-----------|-----------|------|----------|------|
|          | Width ft          | Cu % | Ag oz/ton | Width Ft  | Cu % | Width ft | Cu   |
| 1A       | 10                | 0.36 | 0.16      | no sample |      | --       |      |
| 2A       | 70                | 2.09 | 0.75      | "         |      | --       |      |
| 3A       | 30                | 1.61 | 2.02      | 29        | 0.75 | 35       | 0.40 |
| 4A       | 20                | 0.99 | 0.69      | 9         | 0.90 | --       |      |
| 5A       | 40                | 2.28 | 2.14      | grab      | 0.08 |          |      |

No mineralization representing grades and widths reported by Pharoh Mines Ltd. have been seen in place during the mapping. High grade chalcopyrite float and boulders have been seen in several trenches.

During 1967, Pharoh Mines Ltd. completed a preliminary percussion drill program. The object of the program was to test the continuity of the mineralization at depth. Influx of water limited the drill program to a depth of 40 feet. Four drill holes were completed in vicinity of Trench 2A.

| Hole #   | bearing | dip             | depth ft | footage | Cu%  | Ag oz/ton |
|----------|---------|-----------------|----------|---------|------|-----------|
| S - 1    | N 10° E | -70             | 40       | 0 - 5   | 1.35 | 1.53      |
|          |         |                 |          | 5 - 10  | 0.69 | 0.08      |
|          |         |                 |          | 10 - 15 | 0.41 | 0.06      |
|          |         |                 |          | 15 - 20 | 0.80 | 0.22      |
|          |         |                 |          | 20 - 25 | 1.20 | 0.26      |
|          |         |                 |          | 25 - 30 | 1.00 | tr        |
|          |         |                 |          | 30 - 35 | 0.55 | tr        |
| average: | 40 ft   | 0.92% Cu        |          |         |      |           |
|          |         | 0.181 oz/ton Ag |          |         |      |           |
| S - 2    | -       | -90             | 30       | 0 - 5   | 0.72 | 0.36      |
|          |         |                 |          | 5 - 10  | 0.17 | 0.04      |
|          |         |                 |          | 10 - 15 | 0.06 | 0.16      |
|          |         |                 |          | 15 - 20 | 0.13 | tr        |
|          |         |                 |          | 20 - 25 | 0.17 | tr        |
|          |         |                 |          | 25 - 30 | 2.11 | 0.14      |
| average: | 30 ft   | 0.57% Cu        |          |         |      |           |
|          |         | 0.10 oz/ton Ag  |          |         |      |           |
| S - 3    | N 10° W | -28             | 30       | 0 - 5   | 0.09 | tr        |
|          |         |                 |          | 5 - 10  | 0.27 | 0.24      |
|          |         |                 |          | 10 - 15 | 0.04 | tr        |



| <u>Hole #</u> | <u>bearing</u> | <u>dip</u> | <u>depth ft</u> | <u>footage</u> | <u>Cu%</u> | <u>Ag oz/ton</u> |
|---------------|----------------|------------|-----------------|----------------|------------|------------------|
|               |                |            |                 | 15 - 20        | 0.08       | tr               |
|               |                |            | average: 30 ft  | 20 - 25        | 0.32       | tr               |
|               |                |            | 0.19% Cu        | 25 - 30        | 0.34       | tr               |
|               |                |            | tr Ag           | 0 - 5          | 0.11       | tr               |
| S -4          | N 25 W         | -18        | 30              | 5 - 10         | 1.39       | 0.39             |
|               |                |            |                 | 10 - 15        | 0.18       | tr               |
|               |                |            |                 | 15 - 20        | 0.41       | 0.36             |
|               |                |            | average: 30 ft  | 20 - 25        | 1.10       | 0.44             |
|               |                |            | 0.845% Cu       | 25 - 30        | 1.88       | 0.72             |
|               |                |            | 0.35 oz/ton Ag  |                |            |                  |

8-20 Southside of River:

Workings on the south side of the river consist of several, partly sloughed trenches and 3 adits, with 2 of them caved and hence inaccessible.

8-21 4300 level Adit:

Surface outcrop at this locality exhibit extensive shearing and silicification carrying good values in chalcopyrite. The host rock is essentially a limey - quartz - sericite schist. Two large quartz veins or zones of quartz veining are exposed. The first to the west consists of massive quartz with siderite veinlets or blebbs carrying variable amounts of sulfides. The vein appears to have been affected by folding.

The second is a zone of quartz veining lying east of the adit. Individual quartz veins are up to 2 feet wide and contain irregular disseminated siderite and chalcopyrite. Sulfides have been observed within the intervening limey sericite schist.

Outward from each quartz zone the rock unit is tightly folded. Fold axis trend northerly and have a gentle southerly plunge.

The adit has been driven along the shear zone for a distance of 30 feet and follows the footwall 15 feet east. Two crosscuts, the first 15 feet from the portal, North cross cut, the second at the end of the drift, the South cross cut 10 feet east.

South Crosscut: This crosscut is 10 feet long and crosses part of the mineralized shearzone. Chalcopyrite occurs in a zone of limey sericite schist which has been silicified and impregnated with quartz-veinlets generally less than 1 inch wide. Siderite occurs as distinct veinlets or as bunches.

North Crosscut: Mineralization in this place is nearly identical to the south cross cut except chalcopyrite mineralization is more continuous.

Both of the crosscut stop within the mineralized shear and do not reach the hanging wall.

| <u>Location</u> | <u>Width ft</u> | <u>Cu %</u> |
|-----------------|-----------------|-------------|
| South x-cut     | 10              | 1.20        |
| North x-cut     | 11              | 2.90        |
|                 | 4               | 1.00        |
|                 | 4               | 1.06        |

8-22 4500 level - Crosscut:

At the time of the mapping the workings were caved. Two trenches above the adit were partly sloughed. Mineralization observed consists of quartz veins up to 3 feet wide cutting limey quartz - sericite schist. Chalcopyrite and siderite have been observed. No samples were taken.

8-23 4600 level - Creek showing:

This is the best mineralized outcrop south of the St. Mary River.

A zone, up to 20 feet wide of limey, quartz - sericite - schist is exposed within the creek. Strong foliation and in part shearing appear to control the emplacement of quartz veins and veinlets and mineralization.

Chalcopyrite occurs along foliation planes as dissemination or as massive lenses within quartz veins or siderite zones along the hanging wall side. Galena is predominant along the footwall part of the shear and occurs disseminated within the schist or as massive lenses.

| <u>Sample</u> | <u>Location</u>       | <u>Width ft</u> | <u>Pb %</u> | <u>Cu %</u> | <u>Ag oz/ton</u> | <u>Au oz/ton</u> |
|---------------|-----------------------|-----------------|-------------|-------------|------------------|------------------|
| 1             | foot wall             | 7.5             | 15.90       | 0.26        | 4.80             | tr               |
| 2             | centre                | 7.0             | 0.86        | 1.69        | 1.70             | tr               |
| 3             | hanging wall<br>South | 3.5             | 0.05        | 3.20        | 1.20             | 0.02             |
| 4             | H. W. centre          | 5.2             | 0.04        | 4.81        | 1.10             | 0.01             |
| 5             | H. W. North           | 5.8             | 0.03        | 4.77        | 1.70             | 0.02             |

8-24 Above 5,000 Level:

Several old trenches were found between the 5,000 and 5,600 level.

All trenches are sloughed and need cleaning before mapping and sampling can be completed. Mineralized schist and quartz rubble give evidence of possible oregrade material. The zone as indicated is about 15 to 20 feet wide and appears to be the southern extension of the Creek Showing.

Galena, chalcopyrite and bands of massive pyrite have been found within a quartz - sericite schist or white quartz. No samples were taken for assaying.

Sampling completed by Newmont gave the following results:

| <u>Sample width:</u> | <u>Cu %</u> |
|----------------------|-------------|
| 11 ft                | 0.17        |
| 10 ft                | 1.77        |
| 10 ft                | 1.77        |

9-00 ELECTROMAGNETIC SURVEY:

9-10 Instrument and Coil Configuration used:

The Sharp SE 300 transceiver electromagnetic instrument was employed. The SE 300 consists of 2 identical units each embodying a coil which can be used for transmitting or receiving, a battery pack as power source, 400 c.p.s and 1600 c.p.s oscillators for transmitting at these frequencies; high gain amplifier for receiving and a set of earphones. The instrument is a dip angle, null measuring device. The transmitter coil was held with its plane vertical pointing towards the receiver coil. The receiver coil is held with its plane horizontal and tilted about the axis joining the transmitter and receiver, until a "null" or minimum signal is observed. The angle of inclination from the horizontal and the direction of dip is recorded for each, the 400 c.p.s and 1600 c.p.s frequency.

9-20 Field Method:

Originally it was planned to use the broadside method, but the initial trial survey showed that the elevation difference for a 200 foot spacing was too great between the lines and hence the topographic interference too high.

The method was changed to in line. The major drawback for this technique is inherent in the orientation of the conductor to the traversed lines, giving best results when the lines cross the conductor at about 30° to the strike.

The lines were at nearly  $90^{\circ}$  to the suspected strike of the conductor but this was caused by the topographic condition in the area, and hence the response obtained is not optimum.

A total of 4 miles of lines and 6 miles of roads were surveyed using 200 feet instrument separation.

9-30 Results:

9-31 South side of River:

The electromagnetic survey traced the mineralized shearzone from line 20 + 00 S to 36 + 00 S, the limit of the survey. The indicated E.M. conductor shows good coincidence with the known showings.

The length of the surveyed lines was limited by extremely steep topography east and west and hence the possibility of a parallel conductive zone has not been discounted.

North of line 20 + 00 S overburden increases toward the St. Mary River and the extremely high dip angles measured along the road are possibly caused by overburden. It should be noted that it was difficult to obtain a clear null on many of these stations. Further south of line 20 + 00 S null widths of up to  $6^{\circ}$  tilt angle were the norm, but north of the line null widths of  $20^{\circ}$  tilt angles plus were common.

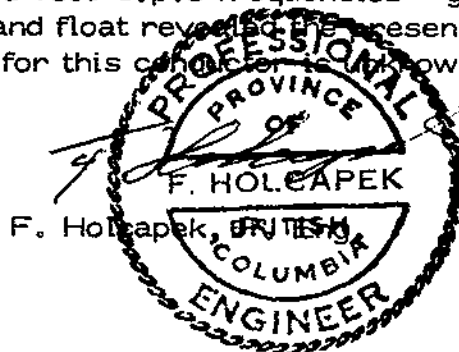
9-32 North side of River:

Line 12 + 00 N and 16 + 00 N were surveyed on this part of the property. All lines north of these are in extremely steep topography and it was found too dangerous to survey.

Two conductors are indicated on both lines. The first located at about 4 + 00 W appears to be the continuation of the shear tested by bulldozer trenching. The conductivity indicated is very low and from the trenches mainly due to shearing.

The second conductor is located at about 12 + 50 W. It shows good correlation between the 400 c.p.s and 1600 c.p.s frequencies - good conductivity. Checking of outcrops and float revealed the presence of barren quartz veins. The source for this conductor is unknown.

Vancouver, B. C.  
October, 1976

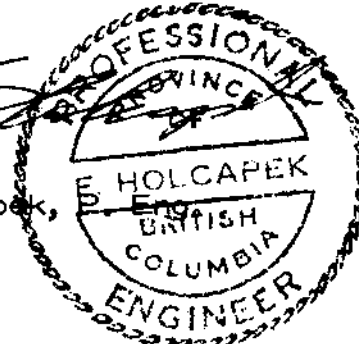


CERTIFICATION

I, Ferdinand Holcapek, of 92 - 10842 152nd Street, Surrey, B. C. do hereby certify that:

1. I am a graduate of the University of British Columbia, with a Bachelor of Science Degree in Geology, 1969.
2. Since graduation I have been engaged in mining exploration in British Columbia, Yukon Territory, Northwest Territories, Quebec, Nevada, Arizona, and Australia.
3. I am a registered member, in good standing of the Association of Professional Engineers of British Columbia.
4. This report is based on the exploration program conducted during the period of August 25 to September 15, 1976, under the supervision of the writer.
5. I have not received, nor do I expect to receive, any interest, directly or indirectly in the properties or securities of Meridian Resources Ltd.

  
F. Holcapek,  
Geologist



Vancouver, B. C.  
October, 1976

DOMINION OF CANADA:  
PROVINCE OF BRITISH COLUMBIA:

In the Matter of gridding, geological and geophysical surveys conducted on the Bracebridge Property.

To Wit:

I, Erne Sabo

of c/o 101 - 325 Howe Street, Vancouver, B. C. V6C 1Z7

in the Province of British Columbia, do solemnly declare that the following personnel were employed and costs incurred in conducting the surveys during August and September, 1976.

Personnel

|                            |                      |                  |
|----------------------------|----------------------|------------------|
| F. Holcapek, P. Eng.       | 22 days @ 163.63/day | \$ 3,600.00      |
| D. K. Reinke, Prospector   | 22 days @ 88.59/day  | 1,949.00         |
| O. Graf, Field Assistant   | 22 days @ 85.09/day  | 1,871.98         |
| D. Hammer, Field Assistant | 14 days @ 54.70/day  | 765.81           |
| D. Hopper, E.M. Operator   | 10 days @ 78.00/day  | 780.00           |
| S. Visser, E.M. Operator   | 10 days @ 85.80/day  | 858.00           |
| E. Sabo, Draughtsman       | 12 days @ 50.00/day  | 600.00           |
|                            |                      | <u>10,424.79</u> |

Disbursements

|                              |               |                    |
|------------------------------|---------------|--------------------|
| Airfares                     | \$311.40      |                    |
| Sharp SE 300 Rental          | 615.00        |                    |
| Groceries and meals          | 620.00        |                    |
| Hotel                        | 73.50         |                    |
| Field Supplies               | 244.64        |                    |
| Gasoline                     | 151.56        |                    |
| Camp Equipment Rental        | 160.00        |                    |
| Topochaix Rental             | 85.00         |                    |
| Geochemical testing          | 100.00        |                    |
| Engineering supplies         | 155.37        |                    |
| Drafting supplies            | 50.00         |                    |
| Printing and telephone       | <u>145.00</u> |                    |
|                              |               | 4,274.97           |
| 15% overhead on Disbursement |               | <u>641.27</u>      |
| TOTAL AMOUNT                 |               | <u>\$15,341.00</u> |

And I make this solemn declaration conscientiously believing it to be true, and knowing that it is of

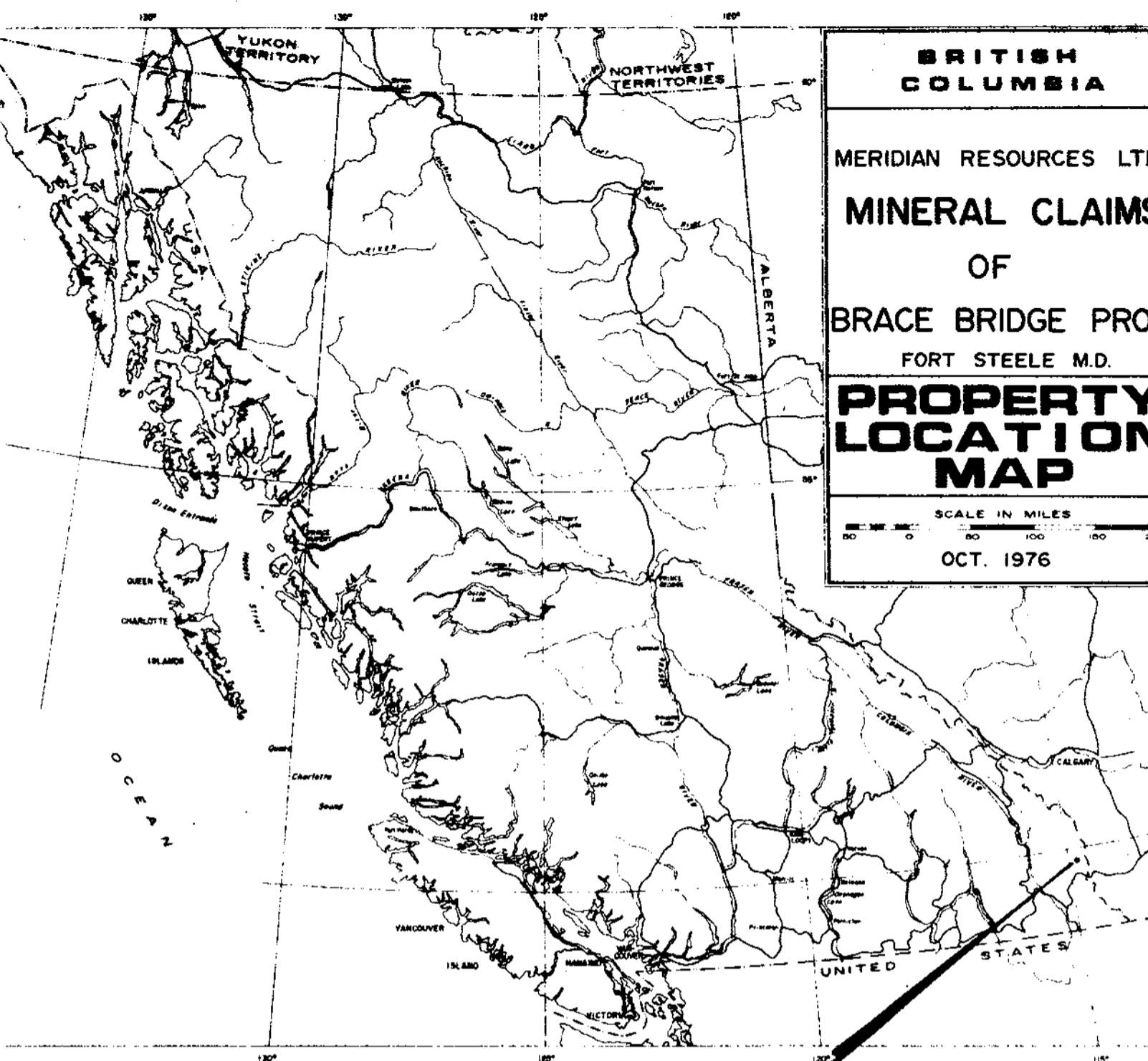
the same force and effect as if made under oath and by virtue of the "Canada Evidence Act."

Declared before me at the City  
of Vancouver, in the  
Province of British Columbia, this 21  
day of February 1977, A.D.)

Erne Sabo

W. Mild Black

A Commissioner for taking Affidavits for British Columbia or  
A Notary Public in and for the Province of British Columbia.



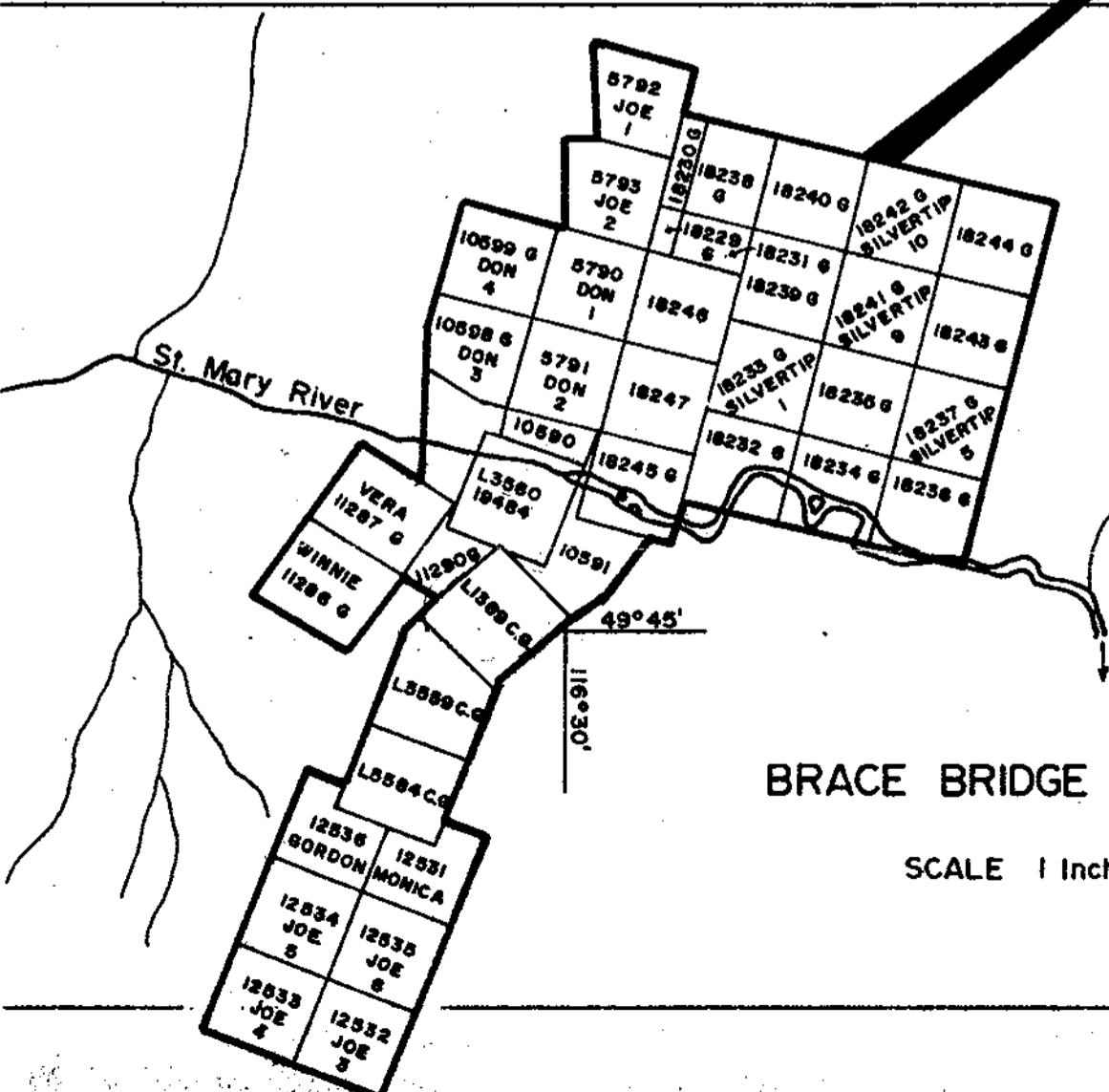
**BRITISH COLUMBIA**

MERIDIAN RESOURCES LTD  
**MINERAL CLAIMS**  
 OF  
**BRACE BRIDGE PROP**  
 FORT STEELE M.D.

**PROPERTY LOCATION MAP**

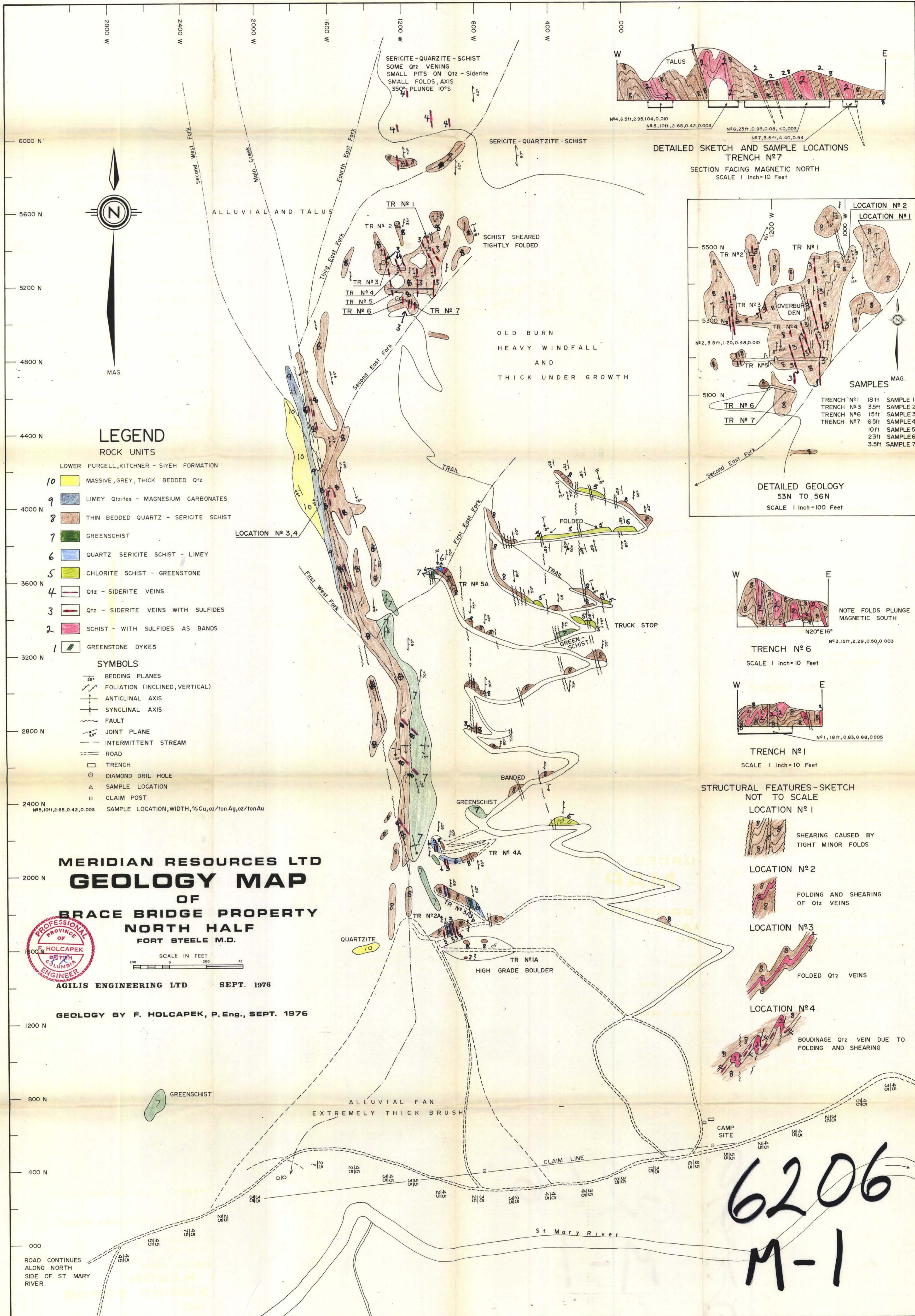
SCALE IN MILES  
 0 50 100 150 200

OCT. 1976



**BRACE BRIDGE PROPERTY CLAIMS**

SCALE 1 Inch = 1/2 Mile



**LEGEND**  
ROCK UNITS

- LOWER PURCELL, KITCHNER - SIYEH FORMATION
- 10 MASSIVE, GREY, THICK BEDDED Qtz
  - 9 LIMY Qtzites - MAGNESIUM CARBONATES
  - 8 THIN BEDDED QUARTZ - SERICITE SCHIST
  - 7 GREENSCHIST
  - 6 QUARTZ SERICITE SCHIST - LIMY
  - 5 CHLORITE SCHIST - GREENSTONE
  - 4 Qtz - SIDERITE VEINS
  - 3 Qtz - SIDERITE VEINS WITH SULFIDES
  - 2 SCHIST - WITH SULFIDES AS BANDS
  - 1 GREENSTONE DYKES

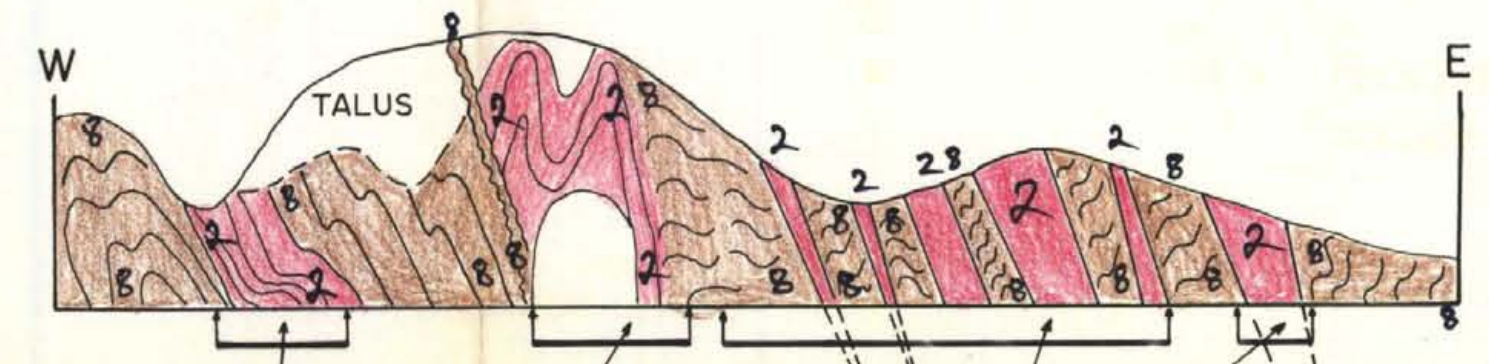
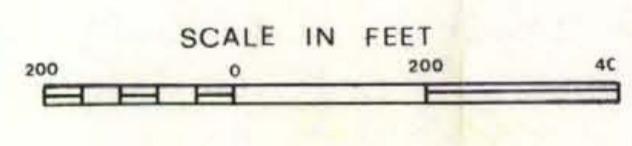
**SYMBOLS**

- 25° BEDDING PLANES
  - ✓ FOLIATION (INCLINED, VERTICAL)
  - ANTICLINAL AXIS
  - SYNCLINAL AXIS
  - FAULT
  - JOINT PLANE
  - INTERMITTENT STREAM
  - ROAD
  - TRENCH
  - DIAMOND DRILL HOLE
  - △ SAMPLE LOCATION
  - CLAIM POST
- $\frac{1}{100000}$  SAMPLE LOCATION, WIDTH, % Cu, oz/ton Ag, oz/ton Au

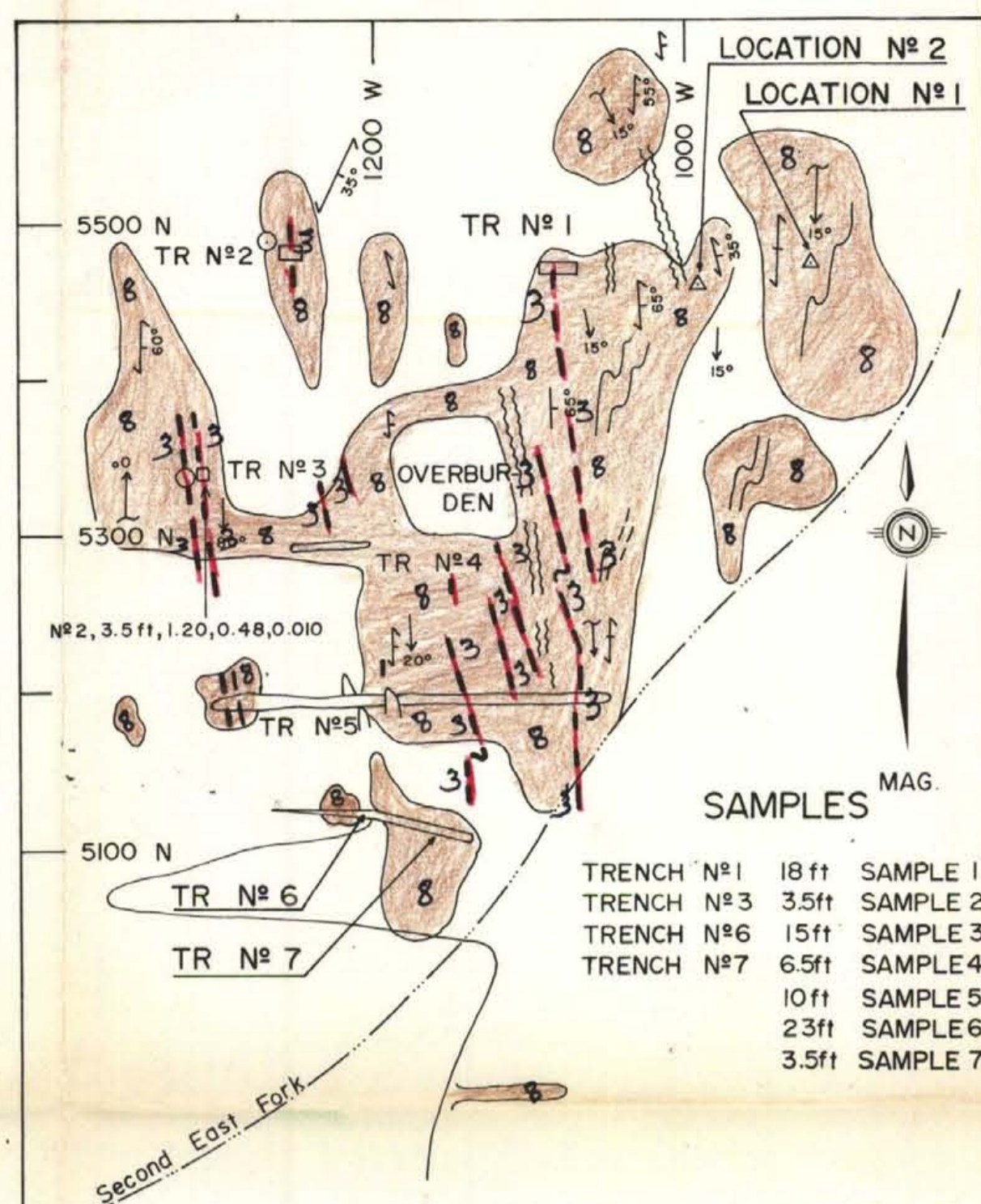
**MERIDIAN RESOURCES LTD**  
**GEOLOGY MAP**  
OF  
**BRACE BRIDGE PROPERTY**  
NORTH HALF  
FORT STEELE M.D.



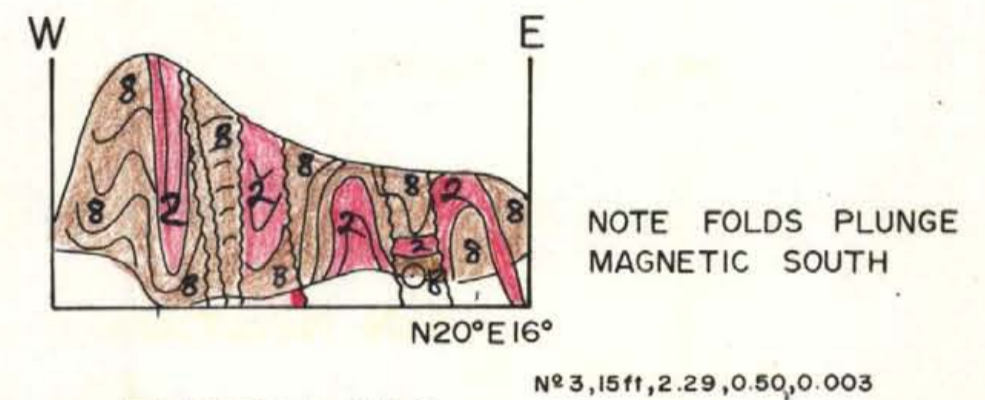
AGILIS ENGINEERING LTD SEPT. 1976  
GEOLOGY BY F. HOLCAPEK, P. Eng., SEPT. 1976



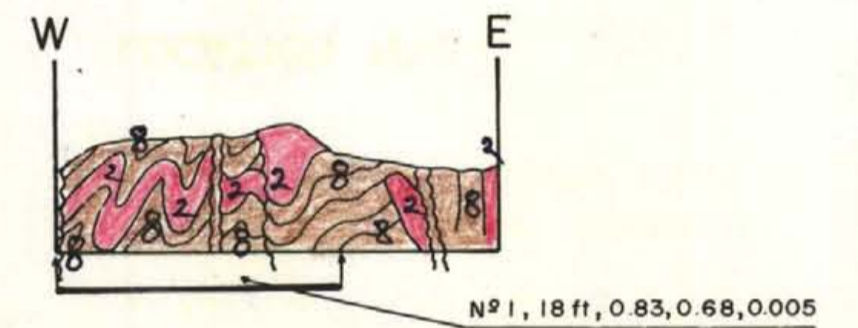
**DETAILED SKETCH AND SAMPLE LOCATIONS**  
TRENCH N° 7  
SECTION FACING MAGNETIC NORTH  
SCALE 1 Inch = 10 Feet



**DETAILED GEOLOGY**  
53N TO 56N  
SCALE 1 Inch = 100 Feet



**TRENCH N° 6**  
SCALE 1 Inch = 10 Feet



**TRENCH N° 1**  
SCALE 1 Inch = 10 Feet

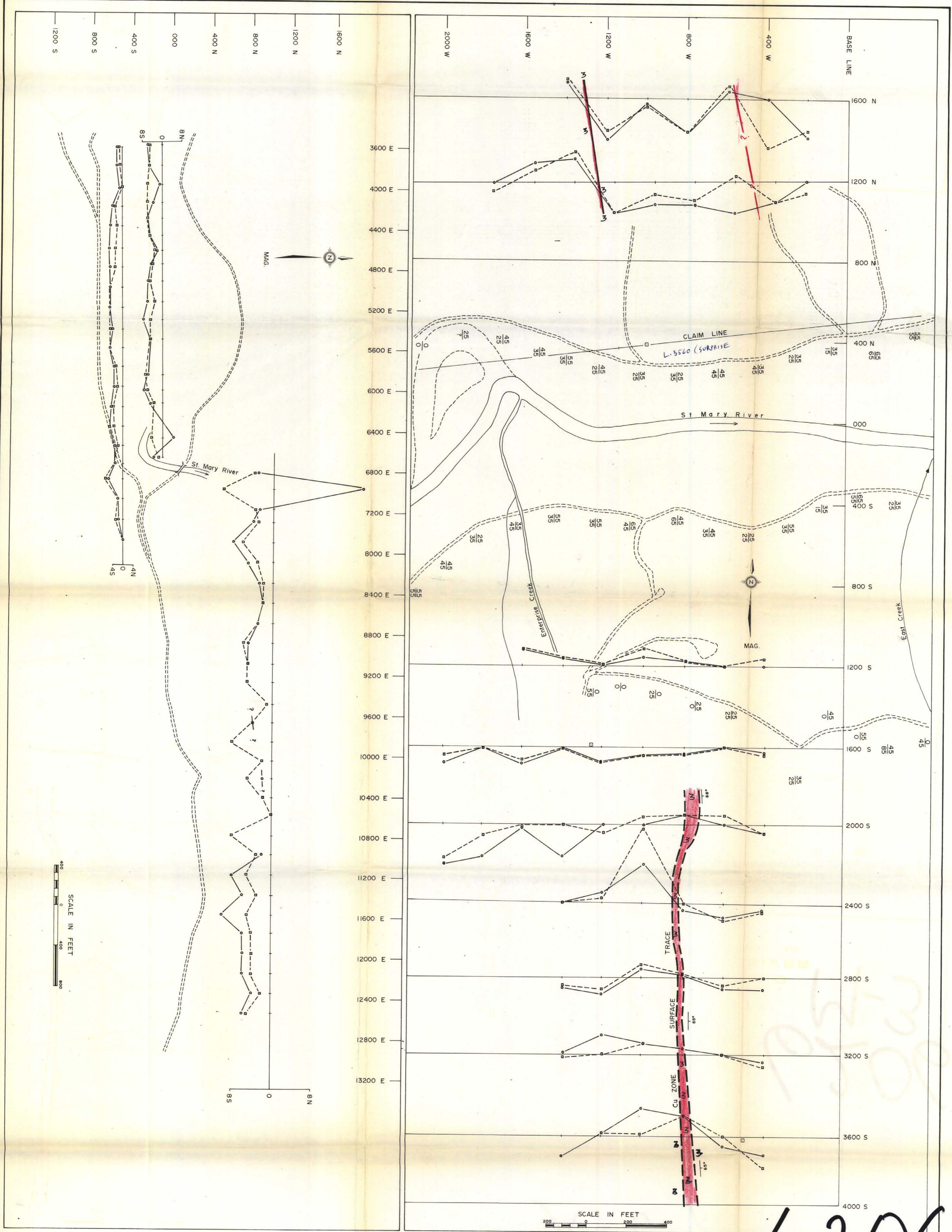
**STRUCTURAL FEATURES - SKETCH**  
NOT TO SCALE

- LOCATION N° 1: SHEARING CAUSED BY TIGHT MINOR FOLDS
- LOCATION N° 2: FOLDING AND SHEARING OF Qtz VEINS
- LOCATION N° 3: FOLDED Qtz VEINS
- LOCATION N° 4: BOUDINAGE Qtz VEIN DUE TO FOLDING AND SHEARING

6206  
M-1







SCALE IN FEET  
0 400 800

SCALE IN FEET  
0 200 400

- LEGEND**
- SURVEY LINE
  - HIGH FREQUENCY ANOMALY (400 C.P.S.)
  - LOW FREQUENCY ANOMALY (1600 C.P.S.)
  - E.M. CONDUCTOR
  - 35 400 C.P.S. ANOMALY
  - 25 1600 C.P.S. ANOMALY
  - CLAIM POST
  - ROAD

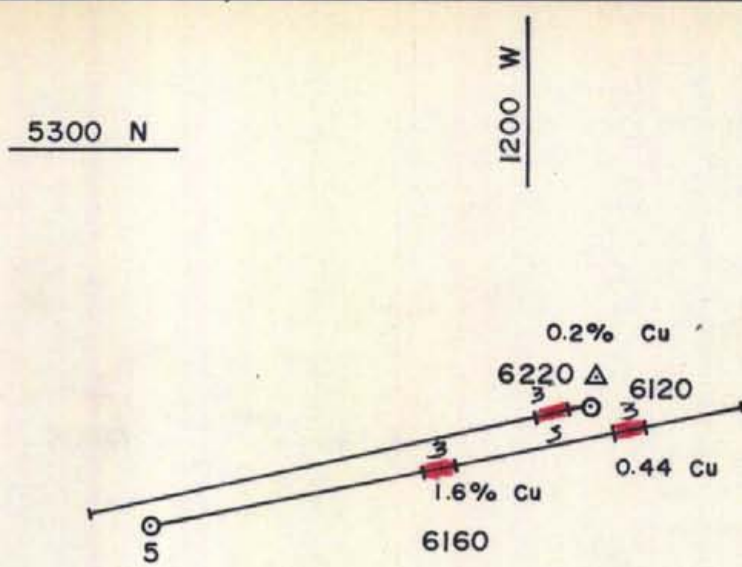
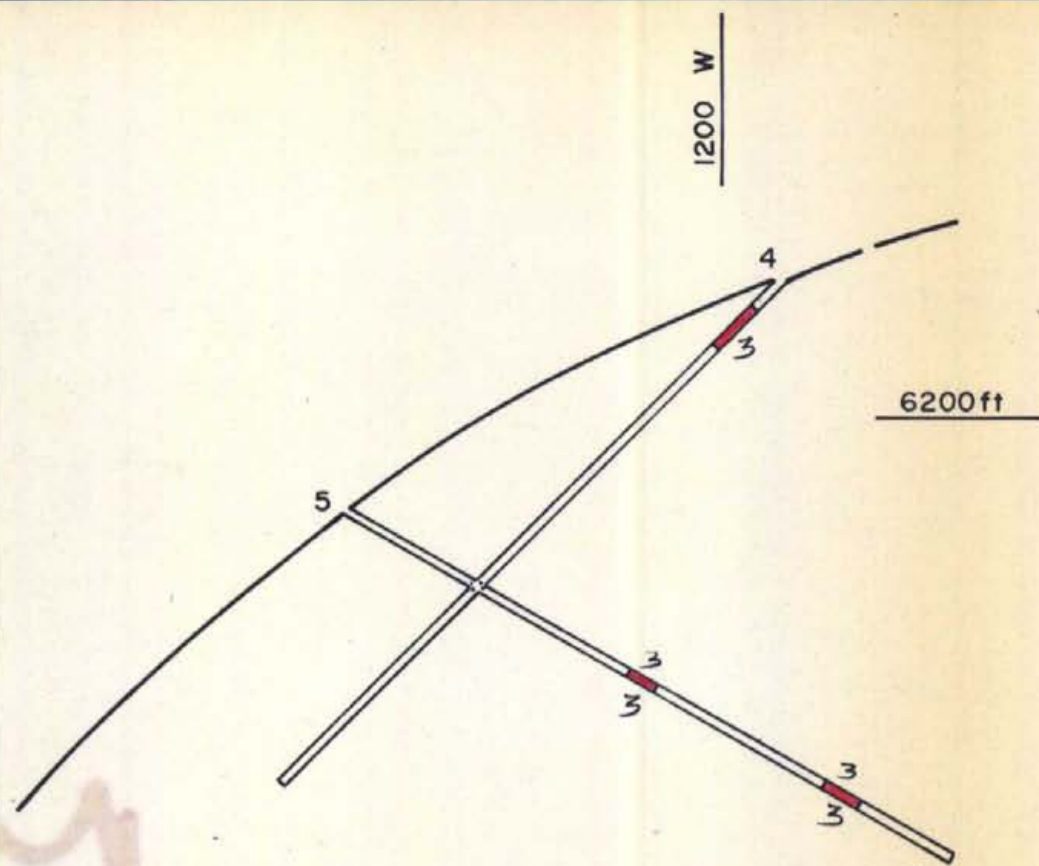


**MERIDIAN RESOURCES LTD**  
**EM SURVEY**

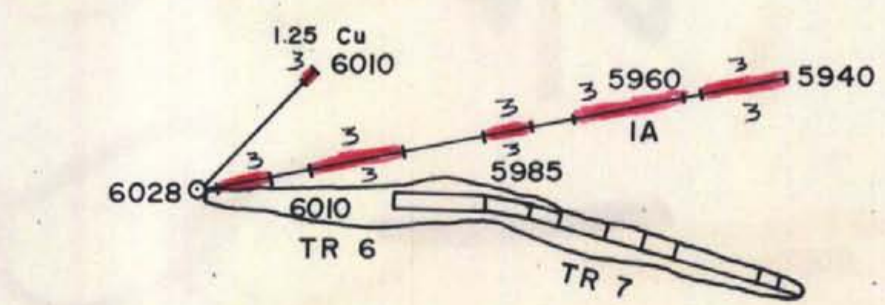
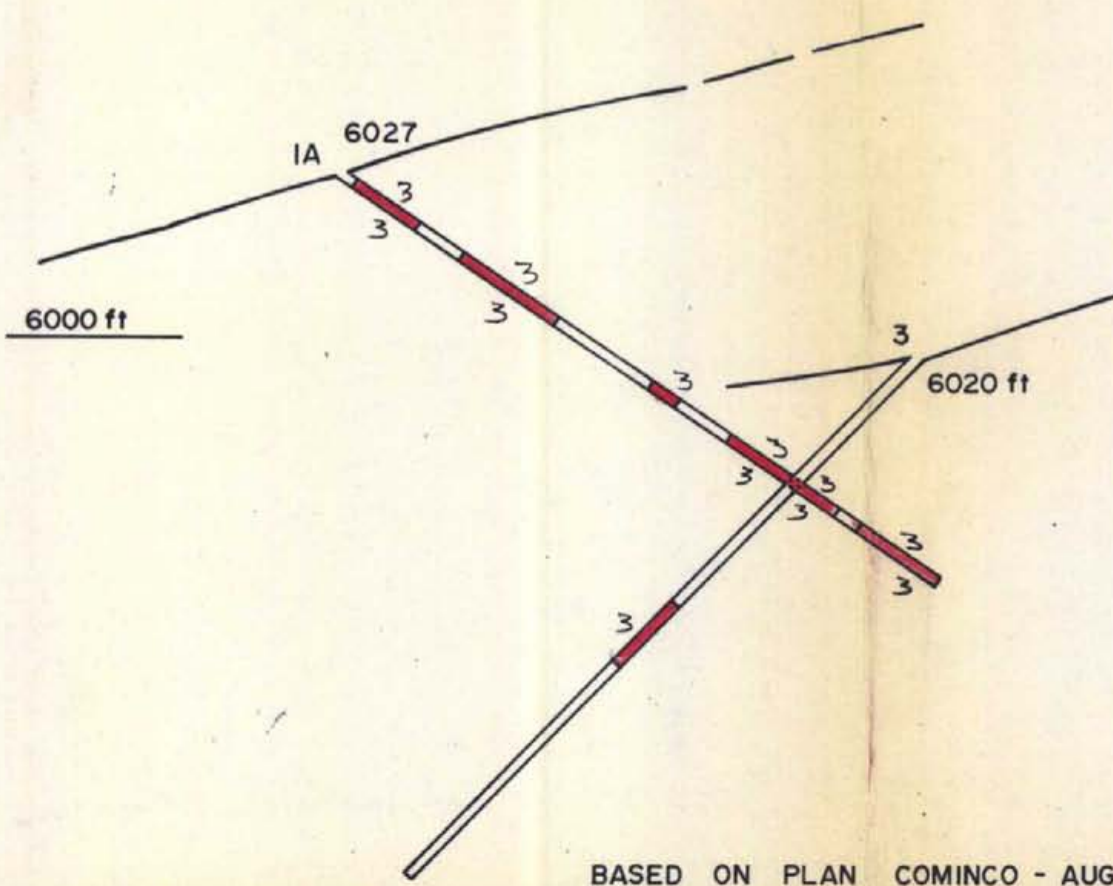
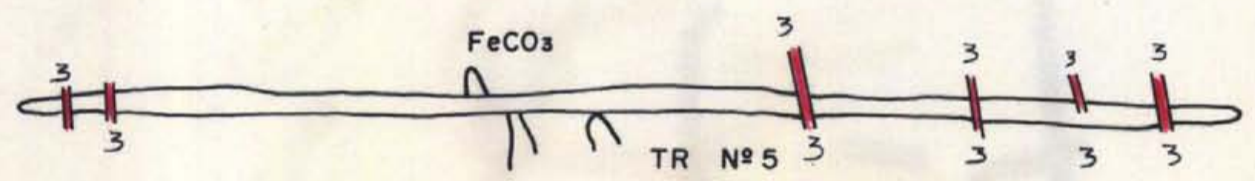
OF  
**BRACE BRIDGE PROPERTY**  
FORT STEELE M.D.  
**SHARPE S-300, IN LINE METHOD**  
**TRANSMITTER EAST OF RECEIVER**  
AGILIS ENGINEERING LTD

6206  
M-3

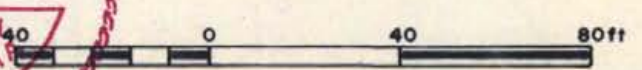
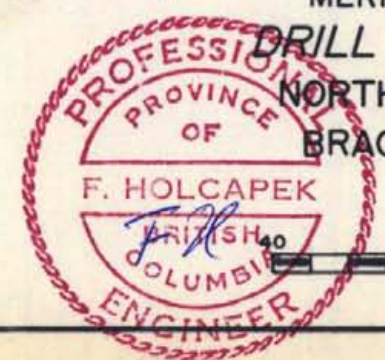
SEPT. 1976



M-4  
6206



MERIDIAN RESOURCES LTD  
DRILL LOCATION SKETCH  
NORTH OF ST. MARY RIVER  
BRACE BRIDGE PROPERTY



BASED ON PLAN COMINCO - AUG. 1976.