

GEOLOGICAL REPORT ON THE
AS AND GH MINERAL CLAIMS
NEAR MIKE LAKE,
DAWSON MINING DISTRICT,
YUKON TERRITORY
FOR
BEAUFORT MINES LTD. (NPL)



This report has been examined by the
Geological Evaluation Unit and is recom-
mended to the Commissioner to be consider-
ed as representation work in the amount of
\$ 6308.02

6308.02

Resident Geologist or
~~Resident Mining Engineer~~

Considered as representation work under
Section 53 (4) Yukon Quartz Mining Act.

Commissioner of Yukon Territory

AUGUST, 1973

VANCOUVER, B.C.

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MAPS

Location Map	1" = 80 miles
Regional Geology	1" = 100 feet
Geology	1" = 100 feet

GEOLOGICAL REPORT ON THE
AS AND GH MINERAL CLAIMS
NEAR MIKE LAKE,
DANSON MINING DISTRICT,
YUKON TERRITORY
FOR
BELMORAL MINES LTD. (NPL)

1-00 INTRODUCTION:

As a follow-up to staking and prospecting of the gold and copper mineralized AS Group Claims of Belmoral Mines Ltd. in 1972, further assessment of the claims was carried out by personnel of Agilis Engineering Ltd., during July 1973.

This work consisted of detailed prospecting and mapping of the claims as well as the establishing of a grid over the mineralized zone where detailed mapping, trenching and sampling was carried out. In addition a regional reconnaissance program of mapping and prospecting was conducted over the entire intrusive stock, to which the mineralization of the AS Group is related.

Six (6) new claims were staked in the area; two over mineralization, similar to that of the original 8 AS claims and 4 over a roof pendent of carbonaceous sediments which carried fluorite mineralization. Assessment work, conducted on the two GH claims is included in this report.

2-00 PROPERTY:

The AS Group consists of the following 8 contiguous mineral claims:

<u>Claim Numbers</u>	<u>Record Numbers</u>	<u>Date Recorded</u>
AS - 1 - 8	Y65640 - Y65647	Sept. 6, 1973

The GH Group, staked nearby, consists of the following two claims:

<u>Claim Numbers</u>	<u>Record Numbers</u>	<u>Date Recorded</u>
GH 1 - 2	Y81731 - Y81732	July 11, 1973

They are located in the Dawson Mining District, Yukon Territory, on claim sheet No.116-A-5.

3-00 LOCATION AND ACCESS:

The claims are located 46 miles in a N 70° E direction from Dawson City in the Yukon Territory. They lie within the Ogilvie Mountains approximately 17 miles east of the North Klondike River.

Co-ordinates of the group are 64°15' N latitude, 137°55'W longitude.

Access is by helicopter from Dawson City, however, camp and supplies can be ferried in from the Dempster Highway which parallels the north Klondike River some 17 miles to the west. The Department of Highways maintains a work camp at mile 41 where a vehicle can be left.

4-00 PHYSIOGRAPHY:

Topography over the claim group is rugged. Elevations vary between approximately 5,000 and 6,500 feet above mean sea-level. Jagged, razor-back ridges and cirques with steep slopes of coarse rubble and talus underlie the entire property except on the extreme western edge where a glacial lake occurs on the valley floor.

Tree line in the area is about 4,000 feet above sea-level succeeded by alpine vegetation to 5,500 feet in the valleys and on the more stable slopes.

Soil development is virtually non-existent over the property.

Snow is gone over the major portion of the property from early or mid-June to September. Annual precipitation is moderate.

Water is readily available for exploration purposed on the eastern and western sides of the property.

5-10 GEOLOGY:

5-10 Regional Geology and Mineral Occurences:

5-11 Summary:

Regional mapping over the Laurier Creek Map Sheet at 1" = 4 miles by L.H. Green and J.A. Roddick of the Geological Survey of Canada in 1961, (published as Map 14 - 1962 accompanying GSC paper 62-7), outlined several small syenite stocks cutting weakly metamorphosed sedimentary rocks of Precambrian to Cambrian age.

The AS and GH mineral claims are located on and near the contact of one of these intrusions in the Mike Lake area, southwest corner of the map sheet.

5-12 Precambrian and/or Cambrian Sediments:

Mapped as Unit 3 and given an approximate age of Precambrian and/or Cambrian by Green and Roddick, these rocks underlie much of the south half of the Larsen Creek Map Sheet.

In the area of Mike Lake they consist of thin to thick bedded sedimentary and weakly metamorphosed (lower green schist facies) sedimentary rocks of widely variable composition. No attempt was made by the author to stratigraphically map this sequence though two distinct units were observed in the field.

They are most readily divided by their weathering characteristics into a rusty weathering (pyrrhotite and pyrite bearing) black to grey shale, green to black quartzite and meta-siltstone and purple to green argillaceous quartzite and minor quartz-mica schist, grading to buff weathering, dolomite and limestone interbedded with the above; and b) non-rusty, white to buff weathering, white to green limey rocks and white to grey, generally very fine grained quartzite and meta-siltstone.

The color and blocky weathering of unit (b) make it very difficult to distinguish it from the intrusive rocks without actually breaking a fresh surface.

Thermal (contact) metamorphism has developed narrow zones of hard, nondescript hornfels along the syenite stock and most of the dykes. These zones are rarely mineralized and are not an aid to outlining intrusive rocks because of wide variability in sedimentary rock types and their weathering characteristics.

The sedimentary rocks are strongly folded and thrust into tight southwesterly plunging isoclinal folds. Bedding is steeply dipping and generally strikes approximately east-west, but can be more flat lying as recumbent folds sometimes occur.

5-13 Cretaceous Syenite:

The major intrusive rock underlying the area is mapped as a syenite porphyry by the GSC and is exposed as an irregular stock contained within an area of about 3 square miles. As a result of the strong relief not only the contact zone is visible but also up to 1,000 feet within the core beneath the sediments; It is within this syenite and along the contact zone that the mineralization occurs.

The rock is white to grey, biotite and hornblende bearing and generally porphyritic with white potash feldspar phenocrysts up to 1 inch in length grading down to ground mass size of approximately one-fifth inch. Ground mass consists largely of fine grained potash feldspar with apparently minor quartz and plagioclase although it is difficult to distinguish these minerals in hand specimens.

Overall it is texturally and mineralogically consistent except along the contact zone where it is sometimes chilled (fine grained) or slightly contaminated by wall rock. Xenoliths of country rock are rare. This intrusion has caused minor hornfelsing in the sedimentary rocks and rarely pockets of hydrothermal or contact metaomatic minerals are found in limestones.

Except for minor pyrite scattered throughout, the intrusion is barren of sulphides. Minor disseminated arsenopyrite, chalcopyrite, pyrrhotite and pyrite were observed near the contact in several locations, these being apparently related to tight fractures along which hydrothermal fluids have passed.

5-14 Dykes & Sills:

(Probably of similar age to the Syenite Stock)

Dykes and narrow sills varying in composition from the above described porphyritic syenite and more basic varieties to lamprophyric dykes, cut most of the sedimentary rocks underlying the map area.

The sills are related to the intrusive but were rarely observed to carry mineralization.

More basic dykes are commonly up to 40 feet in width and apparently preceded the intrusive as they do not cut it.

Mineralization has been observed to occur within and along them in the form of chalcopyrite and more rarely arsenopyrite as disseminations and fracture fillings.

One lamprophyric dyke with a width of about 10 feet, was observed over a distance of 2,000 feet. Biotite crystals up to one-half inch were abundant, however no sulphides were found associated with it.

5-15 Mineralization:

Arsenopyrite with or without chalcopyrite occurs in narrow veins in tension fractures which are seen to continue for long distances along strike. Quartz is the dominant gangue mineral and is later than the sulphides which line the walls of fractures. Hydrothermal alteration for up to 2 feet into the wall rock causes rusty weathering over a much wider zone than the mineralization exists. These zones weather out preferentially and appear gossanous on surface. Mineralized zones are thus easily traced, however fresh rock is hard to find even where trenching has been carried out to several feet in depth.

Several claim groups are located on this type of mineralization in the area and some high gold and copper values have been found. Other syenite stocks found to the east are similarly mineralized and exploration work has been carried out on them by various groups.

5-20 Property Geology:

5-21 Work Completed:

Detailed prospecting and mapping was carried out over the 8 claims of the AS Group as a follow-up of several gold and copper occurrences on the property. The purpose was to define the nature and extent of the showings, and to correlate them with surrounding mineralization.

The running of grid lines is hampered by the ruggedness of the area. However, mapping was facilitated by strong topographic relief which allows points to be accurately located on a contour map.

Areas along the south of the property and the south end of a north-south running ridge towards the east side of the property could not be fully examined because of their inaccessibility. Mineralization is known to occur in these areas as chalcopyrite and arsenopyrite are found in rocks along the talus slopes beneath the ridges.

A base-line trending 170° with cross-lines turned off at intervals of 200 feet was run for 1,600 feet along the eastern side where most of the showings occur. Stations were marked every 100 feet on the cross-lines which were generally 400 feet long and ended in talus slopes or cliff edges. A geochemical grid was not necessary as there is no soil development on the property. Bed-rock is well exposed except where covered by talus or felsenmeer. The veins were hand-trenched in areas where exposure was poor and each showing was chip sampled perpendicular to the strike of the zone. Areas of disseminated mineralization were grab sampled at close intervals.

5-22 Geology:

The property is underlain by both the intrusives and the sedimentary units as described previously under regional geology.

The syenite-sedimentary contact runs north-south approximately through the middle of the claim group on claims AS 3 and 4, the intrusives lying to the east and the sediments to the west. The contact, however, is quite irregular with common protrusion of syenite sills for up to about 500 feet into the sedimentary rocks.

The southernmost 2 claims lie on a near vertical cliff south of the small lake, and are largely underlain by rusty sediments although non-rusty quartzite and limey rocks also occur. Many dykes and sills from several feet to 40 feet in width cut the area. They range in composition from porphyritic syenite to fine grained diorite. Mineralization as disseminations or fracture fillings was found in place on the lower cliffs and very abundantly in the talus slopes.

Dyke rocks occur quite frequently along the less steep slopes north of the lake. Very little rock is found in place and no mineralization was noted. The rubbly rock and talus indicated that the entire area is underlain by rusty sediments and basic dyke rocks.

Most detailed mapping was done over the contact zone where four of the five mineral showings are located.

No textural or compositional variations of any extent were noted in the porphyritic syenite along this zone. Baking of the sedimentary rocks to hornfels has occurred only very near the intrusive. Pockets of even-textured, fine grained intrusive

are most likely xenoliths of granitized country rock as their extent is limited to a maximum of several square feet. Jointing along the ridge in upper parts of the stock dips vertically. At a distance of 75 to 100 feet below the ridge top, on either side, jointing dips about 35° forming smooth, steep dip-slopes facing east and west. The mineralization is apparently related to east-west trending tension fractures and does not follow this jointing.

Several linear fracture or fault zones can be followed for several hundred feet in a NE-SW direction. In all but one location sulphide minerals were not associated.

5-23 Mineral Occurrences:

Mineralization on the property occurs in two distinctively different but spatially related forms. One, as chalcopyrite and arsenopyrite disseminated with pyrite in sediments or intrusives within one hundred feet of the contact zone; the other as arsenopyrite and/or chalcopyrite in narrow quartz veins located in fracture zones within the porphyritic syenite.

The disseminated mineralization is erratic and apparently discontinuous. Samples were taken over a broad area, and give a good indication of the distribution of copper minerals. One such showing lies along cliffs south of the lake on claims 7 and 8 and could not be fully examined. Malachite stain is seen on cliff faces and mineralized rock occurs in the talus.

Showing A:

The showing of arsenopyrite and chalcopyrite in quartz veins is contained within a fracture zone striking 065° and dipping vertically. The zone extends about 200 feet west of the baseline partially under soil and boulder

rubble. Although the west end is obscured, a change in strike indicates that the vein branches from showing B fracture zone at approximately 250 feet west.

To the east the extension disappears under large boulder rubble after 30 feet.

The veins are from 2 inches to 4 inches wide and contain from 10% to 70% by volume arsenopyrite in a quartz gangue. Chalcopyrite occurs irregularly in the vein and as disseminations in the wall-rock within 2 inches of the vein.

Two trenches were dug near the ridge-top to enable sampling of fresh rock and to expose the continuity of the veins within the fracture zone.

- Trench #1 - Location 16 + 60S - BLO + 40W
- Dimensions 9 feet x 2 feet x 1 foot
- Trench #2 - Location 16 + 60S - BLO + 60W
- Dimensions 4 feet x 2 feet x 1 foot

The following samples were taken from trench #1:

Sample 12 - Vein containing about 50% quartz,
50% arsenopyrite

Assay - Silver 0.69 oz/ton
Gold 1.1 oz/ton

Sample 13 - Chip sample across 4 feet 6 inches containing two arsenopyrite/chalcopyrite mineralized veins of 4 inches and 3 inches in width. Disseminated chalcopyrite and arsenopyrite occur in the wall rock to a maximum of 2 inches from the vein.

Copper 0.40%

Assay - Silver 0.10 oz/ton
Gold 0.14 oz/ton

Sample 14 - Chip sample over 15 inches of leached rock containing minor quartz stringers. Sample point begins 24 inches north of sample 13.

Assay - Silver 0.10 oz/ton
Gold 0.015 oz/ton

Although the narrow veins are continuous along strike within the fracture zone and carry silver, gold and copper values of ore grade over narrow widths, sampling indicates that ore grade does not extend over a mineable width.

Showing B:

Chalcopyrite, arsenopyrite and pyrite occur in veins and as disseminations and fracture fillings in the wall-rock. The zone strikes 065° and dips vertically. Hydrothermal alteration has accompanied the veining and causes the entire fracture zone to be preferentially weathered with respect to the surrounding intrusive rocks.

The zone itself is seen to extend over a least 300 feet, however, mineralization within it is erratic and veining is minor.

Trenching of the zone near the base line failed to expose fresh bedrock and the extensions were deeply covered by snow at the time of examination.

Trench - Location 15 + 80S - BLO + 40W
- Dimensions 6 feet x 4 feet x 3 feet

Sample 15 - Weathered rock with malachite and wall rock containing disseminated arsenopyrite. Sample length 3 feet.

Silver .04 oz/ton
Assay - Gold <.003 oz/ton
Copper nil

Samples taken by Mr. Garth Hawley in 1972, along this zone approximately 400 feet to the west, yielded appreciable values in copper, gold and silver. Unfortunately at the time of the present survey this extension was deeply snow-covered and could not be examined.

Showing C:

Several narrow ($\frac{1}{2}$ inch to 4 inches) arsenopyrite and chalcopyrite veins occur over a width of 20 feet and are continuous over a length of 150 feet before disappearing under talus. The strike of the zone is approximately 080° and the dip is vertical.

The veins occur in massive unaltered porphyritic syenite and although the mineralization is bounded by a narrow fracture zone on the south, fracturing and hydrothermal alteration do not occur as in showings A and B. Minor disseminated chalcopyrite and pyrrhotite are found as disseminations throughout the wall-rock between the veins.

Two trenches expose the zone along the western side of the ridge.

Trench #1 - Location BLO + 10W - 13 + 30S
Dimensions 4 feet x 1 foot x 0.5 feet
Trench #2 - Location BLO + 20W - 13 + 30S
Dimensions 5 feet x 1 foot x 0.5 feet

Sample 16 - Located in Trench 1, sample distance is 1 foot over a $\frac{1}{2}$ inch vein of often massive arsenopyrite; It sometimes carries minor chalcopyrite and pyrite.

Assay - Silver 0.06 oz/ton
Gold 0.037 oz/ton

Sample 16a - Located in Trench #2, sample distance is 18 inches over a single vein 4 inches wide containing up to 20% by volume arsenopyrite with lesser chalcopyrite and pyrite in a quartz gangue.

Copper 0.44%
Assay - Silver 0.24 oz/ton
Gold 0.083 oz/ton

Sample 18 - Grab samples of intrusive rock ranging from porphyritic syenite to fine grained granodiorite. Sample width is 7 feet between the veins plus 10 feet south of the veins to the fracture zone. Disseminated chalcopyrite pyrrhotite and arsenopyrite occur throughout.

Copper 0.13%
Assay - Silver 0.03 oz/ton
Gold < .003 oz/ton

Showing D:

Located over a large area between line 0 to 6S and lines 1W to 3E this showing consists of disseminated chalcopyrite, pyrrhotite and rarely arsenopyrite in the sedimentary rocks as well as in the dykes and the contacting syenite. Mineralization is related to the contact zone and occurs in the sediments up to 200 feet from the intrusive. The contact, however, is highly interfingered causing the mineralized zone to be more widespread. Copper values are widely dispersed and apparently erratic.

The following grab samples were taken over the showing:

Sample 1 - Green siltstone containing minor disseminated chalcopyrite.

Assay - Copper 0.14%
Silver 0.01 oz/ton
Gold < .003 oz/ton

Sample 3 - Purple, rusty weathering siltstone with pyrrhotite and pyrite disseminated throughout.

Silver 0.03 oz/ton
Assay - Gold 0.003 oz/ton

Sample 4 - Buff weathering, fine grained quartzite containing minor disseminated chalcopyrite.

Copper < 0.01%
Assay - Silver < 0.01 oz/ton
Gold < .003 oz/ton

Sample 5 - Fine grained intrusive rock from within the chilled contact zone. Contains finely disseminated chalcopyrite and pyrite.

Copper 0.04%
Assay - Silver < 0.01 oz/ton
Gold < 0.003 oz/ton

Sample 6 - Porphyritic syenite containing malachite and very minor chalcopyrite along fracture surfaces.

Copper 0.06%
Assay - Silver < 0.01 oz/ton
Gold < .003 oz/ton

Sample 8 - A nearly equigranular, mafic intrusive rock from near the contact. Contains finely disseminated chalcopyrite and pyrite.

Assay - Copper 0.04%

Sample 9 - A green fine grained quartzite, again from next to contact. Contains disseminated chalcopyrite.

Copper .11%
Assay - Silver .04 oz/ton
Gold < .003 oz/ton

Sample 10 - A hornblende-rich, porphyritic syenite from near the contact. Contains disseminated pyrite, pyrrhotite and chalcopyrite.

Silver < 0.01 oz/ton
Gold < 0.003 oz/ton

Sample 11 - A fine grained xenolith rich in pyroxene and biotite. It carries disseminated chalcopyrite, pyrite and pyrrhotite.

Copper 0.07%
Lead 0.01%
Assay - Zinc 0.01%
Silver 0.04 oz/ton
Gold 0.003 oz./ton

This widespread occurrence of low grade copper with minor gold and silver could be of economic interest should the content increase below the zone of surface weathering and the zone be proven continuous along +1,000 feet of the contact.

Showing E:

This occurrence of chalcopyrite is located over a widespread area on claims AS 1, 7 and 8 which lie southwest of the area of detailed gridding.

The showing is geologically similar to showing D and lies approximately 2,000 feet to the southwest. It is largely inaccessible because of the rugged relief, but is interesting as further indications of the widespread copper mineralization associated with the intrusives on the AS claims.

Float rock, containing chalcopyrite as disseminations and fracture fillings and arsenopyrite in veins, is found along the talus slopes for at least 1,000 feet. Malachite coatings are seen on the cliff faces in several locations.

Sample 22 - This is a grab sample of various dykes and sedimentary rocks from the talus slopes. The rocks contain malachite, disseminated chalcopyrite and narrow quartz veins.

Assay - Copper 0.02%

Assay - Lead < 0.01%
Zinc < 0.01%
Silver 0.03 oz/ton
Gold 0.005 oz/ton

GH Group Showings:

The two GH claims are located over syenite porphyry approximately 2,000 feet southeast of the area detailed gridding. Mineralization is the same in type and mode of occurrence as that on the AS claims described above. Several of the veins occur along inaccessible cliffs but can be located by their associated rusty weathering and by mineralization found in talus slopes.

Altogether four veins were located, all having strike lengths of from 200 to 500 feet and widths of several inches.

The following samples were taken over Vein 1 which is the best mineralized of the three.

Sample 19 - Chip sample across porphyritic syenite wall-rock over a distance of 15 feet between two arsenopyrite mineralized quartz veins.

Assay - Silver 0.01 oz/ton
Gold 0.003 oz/ton

Sample 20 - Channel sample over vein (4 inches) and into the wallrock 4 inches on either side of the vein.

Copper 0.01%
Lead 0.0101%
Assay - Zinc 0.01%
Silver 0.07 oz/ton
Gold 0.31 oz/ton

6-00 CONCLUSIONS AND RECOMMENDATIONS:

Mapping and prospecting has shown that gold, silver and copper mineralization is widespread over the AS Group and GH Group mineral claims. Veins and dissemination occur along and near the contact of a syenite stock with low grade meta-sediments.

Although the mineralized veins are narrow they are continuous over strike lengths of several hundred feet and the combined gold, silver and copper values approach ore grade over widths of four feet in some samples taken. Continuity of the mineralization along the veins has not been fully tested.

Low grade disseminated copper mineralization (chalcopyrite) is widespread over much of the same area as the veins. The average assay of grab samples taken over a broad area (in the zone of surface oxidation) is only 0.05% copper with traces of silver and gold. Because of the inaccessibility of certain mineralized zones, and the poor representation of fracture mineralization in the samples, the above value is not a good representation of the entire area.

Although there is little chance of developing the veins to mineable widths, sampling by diamond drilling of the entire mineralized area may develop a widespread zone of low grade copper, gold and silver ore.

Further surface work other than blast trenching and sampling and mapping of cliff faces using ropes and climbing gear, is felt to be unnecessary as bedrock is well exposed and without soil development. Deep talus and felsenmeer rubble covers the rest of the area. Geophysical tools would be difficult to employ.

Bulldozer work would be impossible in all but the lower extremities of the claim group. The most effective way of sampling the zones would be to drive adits into the base of the ridges and diamond drill from underground. Otherwise, helicopter supported drill platforms would have to be blasted out along the ridges.


The area is one of continuing interest in the search for gold deposits. Should a road be driven into the area or other deposits in the area be developed the feasibility of continuing work on this property would be greatly enhanced.

Submitted by:



J. Needoba, Geologist

Endorsed by:



R.H.D. Philp, P. Eng., Geologist

August 1973

Vancouver, B.C.

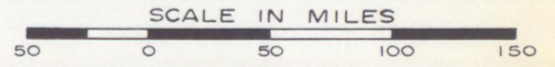
YUKON TERRITORY

BELMORAL MINES LTD. (NPL)

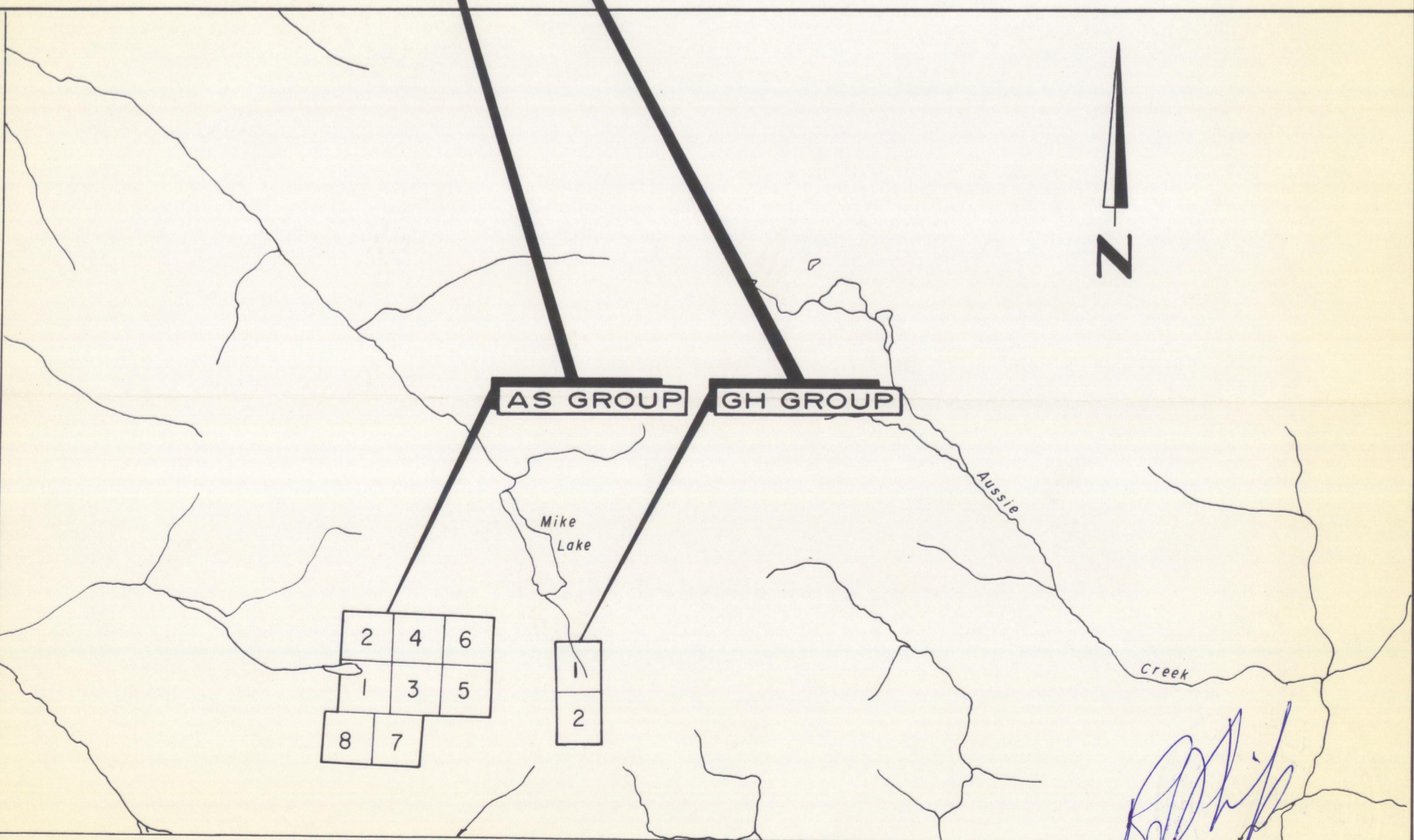
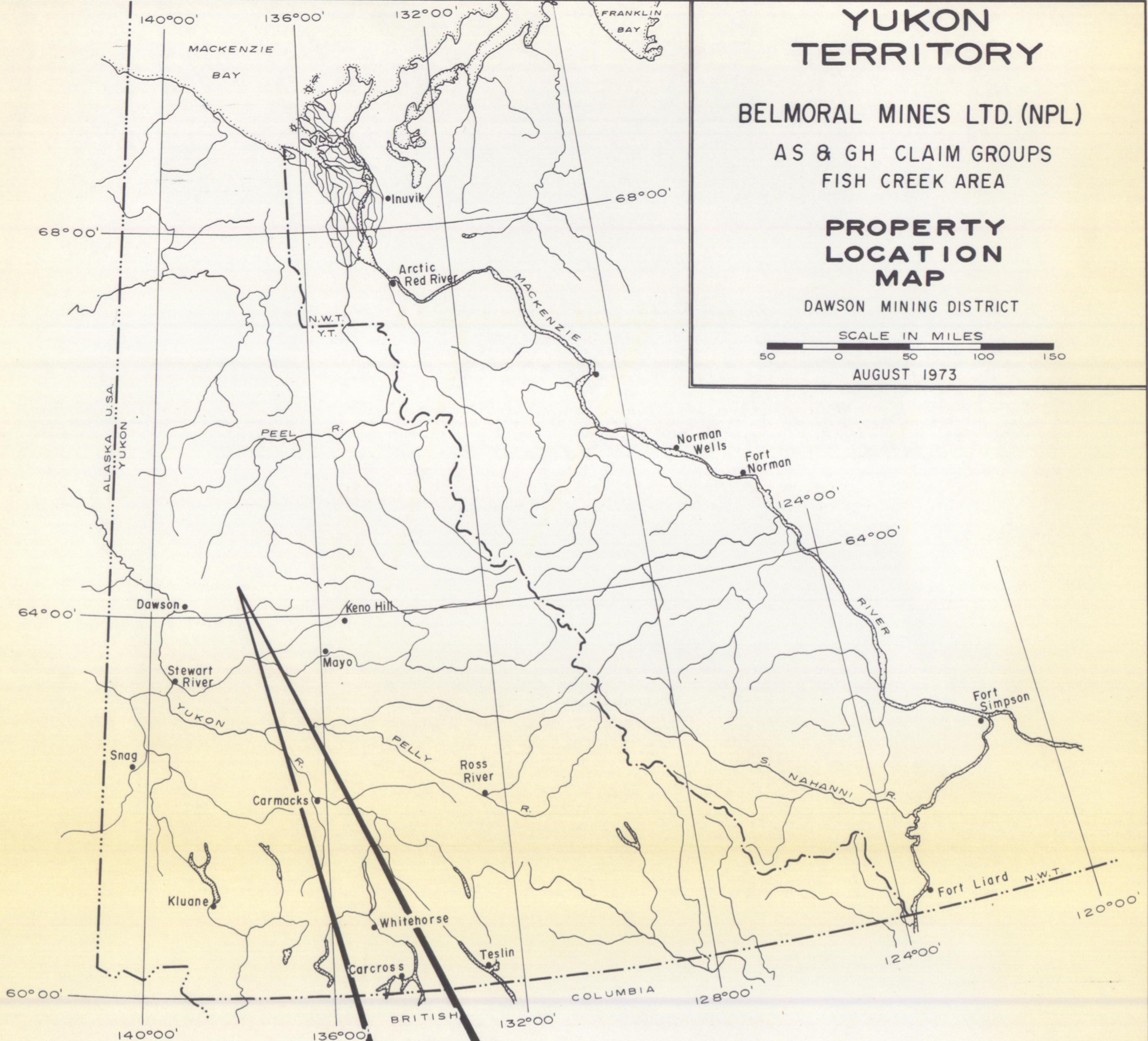
AS & GH CLAIM GROUPS
FISH CREEK AREA

PROPERTY LOCATION MAP

DAWSON MINING DISTRICT



AUGUST 1973



64°15'

138°00'

SCALE 1:50,000



- LEGEND:**
- Sedimentary
 - Intrusive
 - Outcrop
 - Contact-definite, approximate
 - Slope
 - Strike & dip of bedding

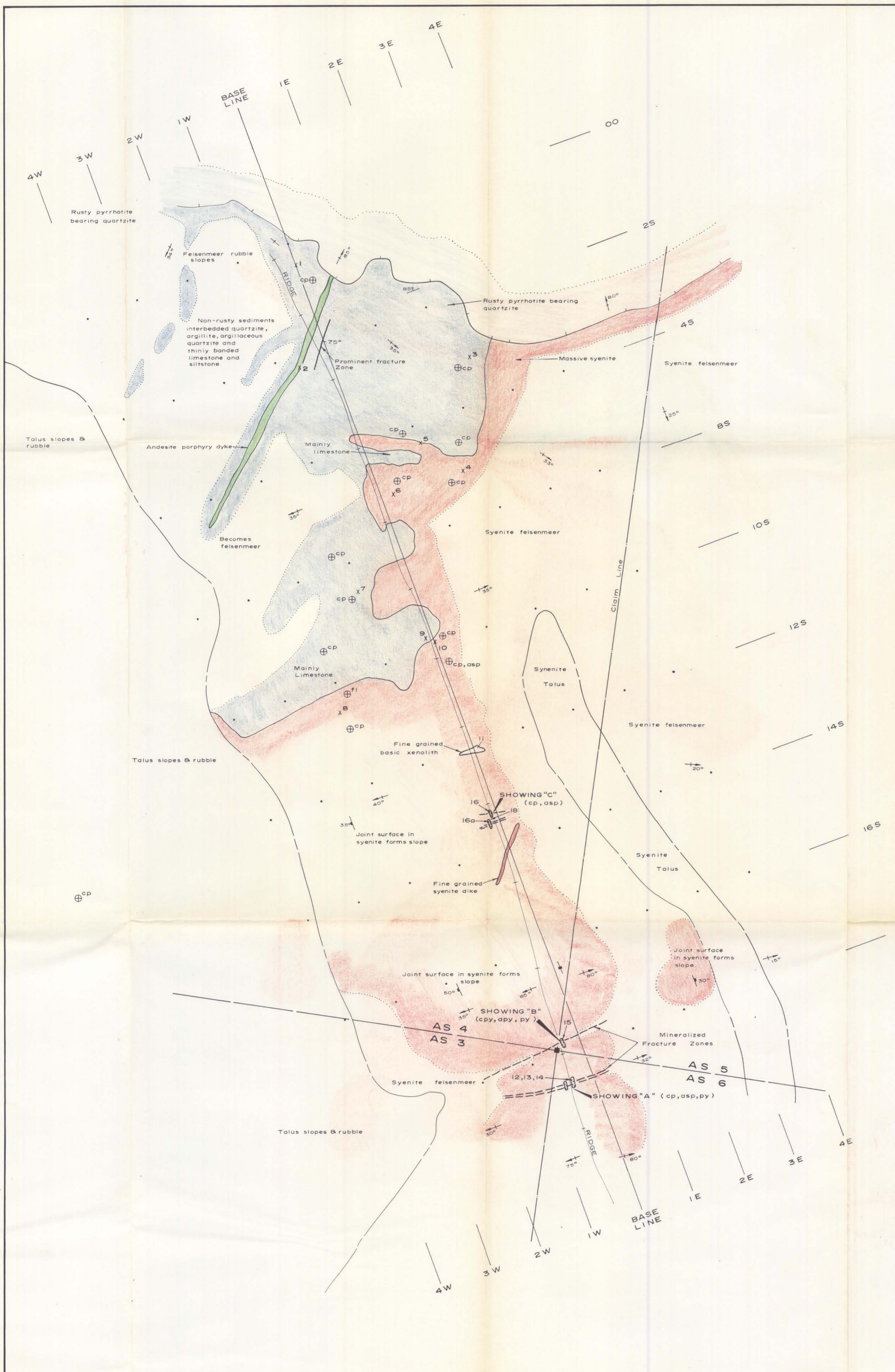
 - Mineral showing
 - cp - chalcopyrite
 - asp - arsenopyrite
 - fl - flourite
 - mal - malachite
 - Float

BELMORAL MINES LTD. (NPL)
AS CLAIM GROUP - FISH CREEK AREA
DAWSON MINING DISTRICT, Y.T.

**REGIONAL
GEOLOGY MAP**

SCALE IN FEET
1000 0 1000 2000 3000

AGILIS ENGINEERING LTD. AUGUST 1973



LEGEND:

- Sedimentary
- Intrusive, syenite
- Outcrop
- Contact
- Cliff, slope
- Strike & dip of bedding
- Strike & dip of fracture
- Trench
- Mineral showing
- cp - chalcopyrite
- asp - arsenopyrite
- fl - flourite
- py - pyrite

BELMORAL MINES LTD. (NPL)
 AS CLAIM GROUP - FISH CREEK AREA
 DAWSON MINING DISTRICT, Y.T.

**GEOLOGY MAP
 OF MAIN
 MINERAL SHOWINGS**

SCALE IN FEET
 100 0 100 200 300

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