GEOLOGIC REPORT ON

THE

ST. BRIDGET CLAIMS 54 - 55; 60 - 61; 67 - 68; 74 - 75; 81; 88 - 89; 95 - 98; 102 - 104; 108 - 110; 133 - 138.

N.T.S. 116 A/12
64°39'N; 137°51'W
MAYO MINING DISTRICT

BY
T. G. O'NEILL
FOR WORK DONE BETWEEN
JULY 1, 1982 AND JULY 10, 1982

091366

This report has been examined by the Geological Evaluation Unit under Section 53 (4) Yukon Quartz Mining Act and is allowed as representation work in the amount of $ 2,700-

P Wasson

for Regional Manager, Exploration and Geological Services for Commissioner of Yukon Territory.

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Introduction

The St. Bridget group was staked in July and August, 1981 after a regional prospecting program located an 11 kilometre long trend of barite mineralization. 135 Bridget claims were staked. In July, 1982 a geologic survey was conducted over 27 of the claims. 21 other claims were not renewed. In lieu of payments were made on the remaining 87 claims.

This report covers the 27 St. Bridget claims examined in the geological survey. The survey was conducted between July 1 and July 10, 1982 by the writer and Thomas Naughten of Dawson City, Yukon. A fly camp was set up on the claims for the survey. Preparation of the report was aided by Thomas Boruta of Houston, Texas.

Summary

The 27 St. Bridget claims covered in this report lie 25 kilometres east of Kilometre 93 on the Dempster Highway, 100 kilometres northeast of Dawson City.

Six different rock units occur on or near the claims. On the claims, five of the units form 1098 metres of continuous stratigraphic section. Formations represented by the units are the Road River formation, Canol formation, and Imperial formation.

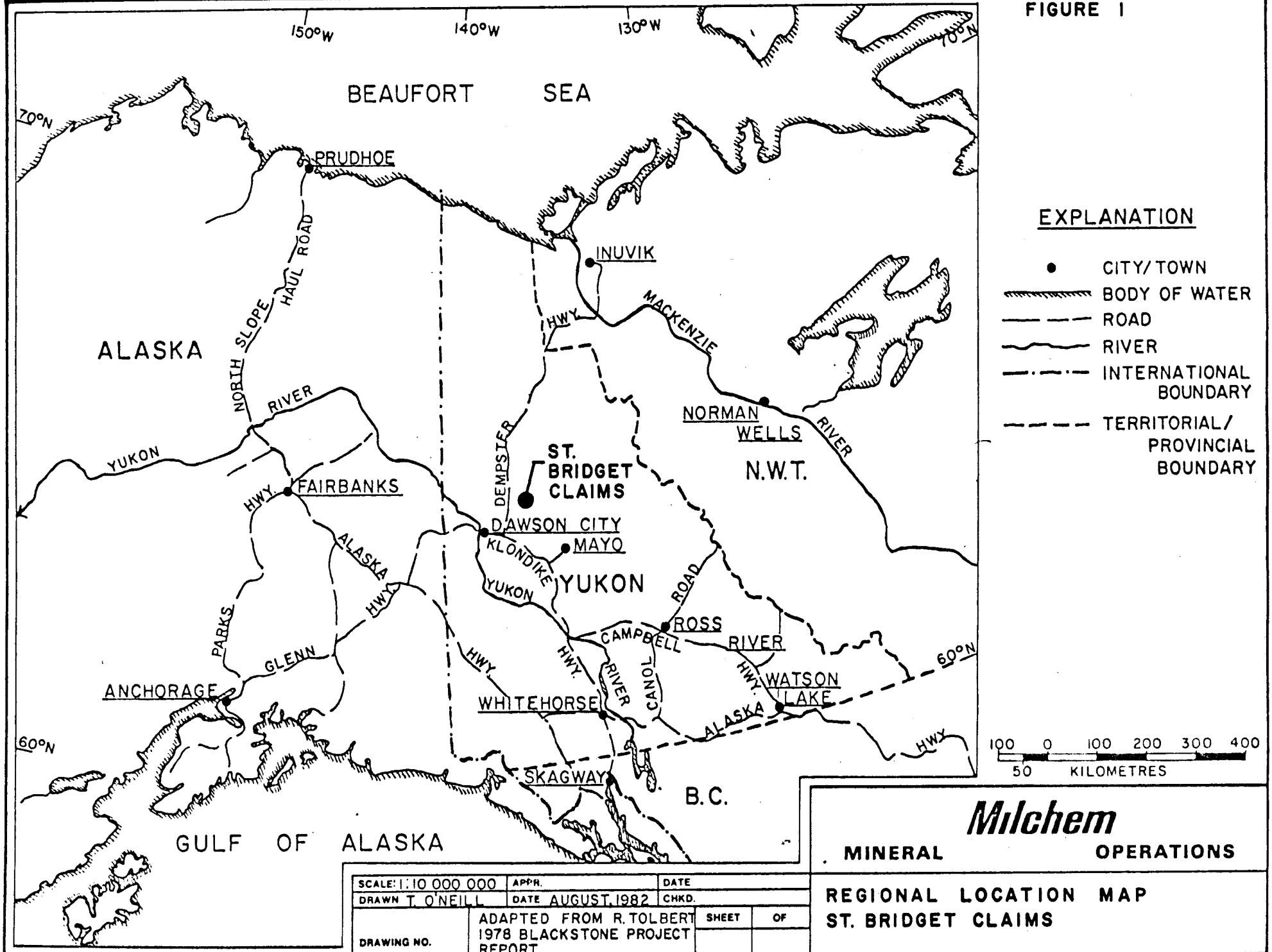
Unit I on the property is the Road River formation. It consists premarily of black siliceous shale, black shale, black chert. The youngest beds in the formation are upper Silurian in age, possibly lower Devonian.

Unit II and Unit III are the Canol formation. Unit II is mainly black siliceous shale. A zone of barium mineralization occurs near the top of the Unit. Unit III is composed of black chert. Unit II is lower to middle Devonian in age, Unit III is middle to upper Devonian.

Unit IV is the Imperial formation. It is late Devonian in age, possible early Mississippian. It is composed primarily of black and brown shale, gray argillite, chert grained sandstone, red vesicular tuffs, turbidites. The turbidite sequence is substantial enough to have its own subunit, Unit IV A.

The barite in the Canol formation occurs in a zone up to 4.6 metres thick. The zone occurs in a series of 12 discontinuous outcrops

FIGURE 1



SCALE: 1:10 000 000	APPR.	DATE	
DRAWN T. O'NEILL	DATE AUGUST, 1982	CHKD.	
DRAWING NO.	ADAPTED FROM R. TOLBERT 1978 BLACKSTONE PROJECT REPORT	SHEET	OF

Milchem

MINERAL OPERATIONS

REGIONAL LOCATION MAP
ST. BRIDGET CLAIMS

along a 2.5 kilometre strike length. Up to 3 separate barite beds occur in the zone, the thickest being 3.0 metres. Quartz and witherite are the most common contaminants in the barite. Only one barite outcrop shows any economic potential. A 2.8 metre thick bed of barite with a moderate stripping ratio had a sample with a 4.25 specific gravity. A loose estimate is that 100 000 tonnes of barite could occur.

The property shows some potential for lead-zinc occurrence. A gossan and several areas of intense iron staining occur in the lower Canol and upper Road River formations. Geochemical samples taken to test for lead-zinc occurrences had mediocre results, however.

Future work on the claims should be:

1) trenching along the strike length of the most promising barite outcrops to determine quality and quantity of the barite bed

2) further geochemical sampling to check for lead-zinc occurrences

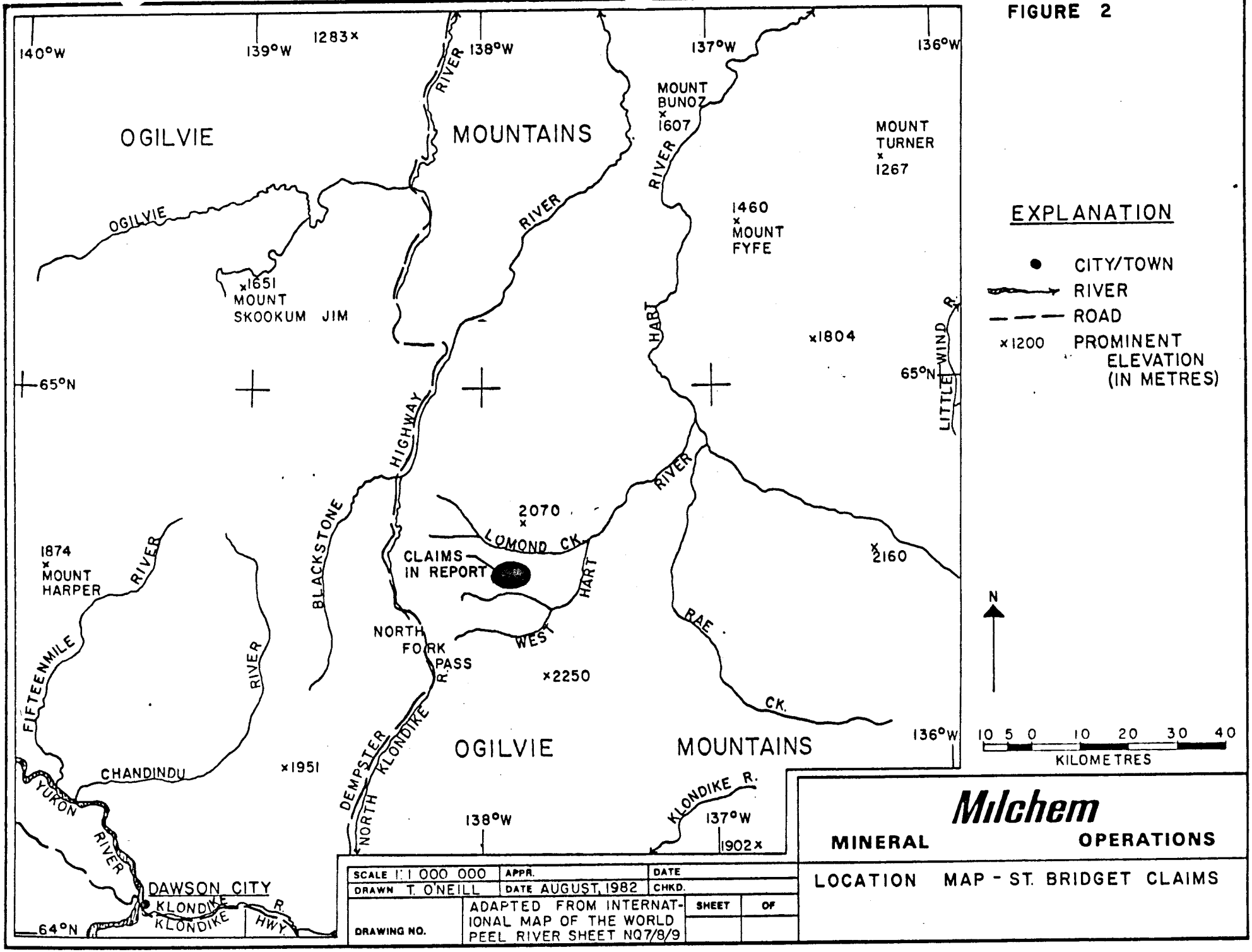
3) trenching at the site of the gossan and areas of intense iron staining to find the source of the features.

LIST OF CLAIMS

NUMBER	NAME
YA 64053	St. Bridget 54
YA 64054	St. Bridget 55
YA 64059	St. Bridget 60
YA 64060	St. Bridget 61
YA 64066	St. Bridget 67
YA 64067	St. Bridget 68
YA 64073	St. Bridget 74
YA 64074	St. Bridget 75
YA 64080	St. Bridget 81
YA 64086	St. Bridget 88
YA 64087	St. Bridget 89
YA 64092	St. Bridget 95
YA 64093	St. Bridget 96
YA 64094	St. Bridget 97
YA 64095	St. Bridget 98
YA 64099	St. Bridget 102
YA 64100	St. Bridget 103
YA 64101	St. Bridget 104
YA 64105	St. Bridget 108
YA 64106	St. Bridget 109
YA 64107	St. Bridget 110
YA 64187	St. Bridget 133
YA 64188	St. Bridget 134
YA 64189	St. Bridget 135
YA 64190	St. Bridget 136
YA 64191	St. Bridget 137
YA 64192	St. Bridget 138

Milchem Canada Limited, No. 102, 309 Second Ave., SW, Calgary, Alberta, Canada is the holder of all the claims. All work was done on behalf of Milchem Canada Limited.

FIGURE 2



EXPLANATION

- CITY/TOWN
- RIVER
- ROAD
- x1200 PROMINENT ELEVATION (IN METRES)

SCALE 1:1 000 000	APPR.	DATE	
DRAWN T. O'NEILL	DATE AUGUST, 1982	CHKD.	
DRAWING NO.	ADAPTED FROM INTERNATIONAL MAP OF THE WORLD PEEL RIVER SHEET NO7/8/9	SHEET	OF

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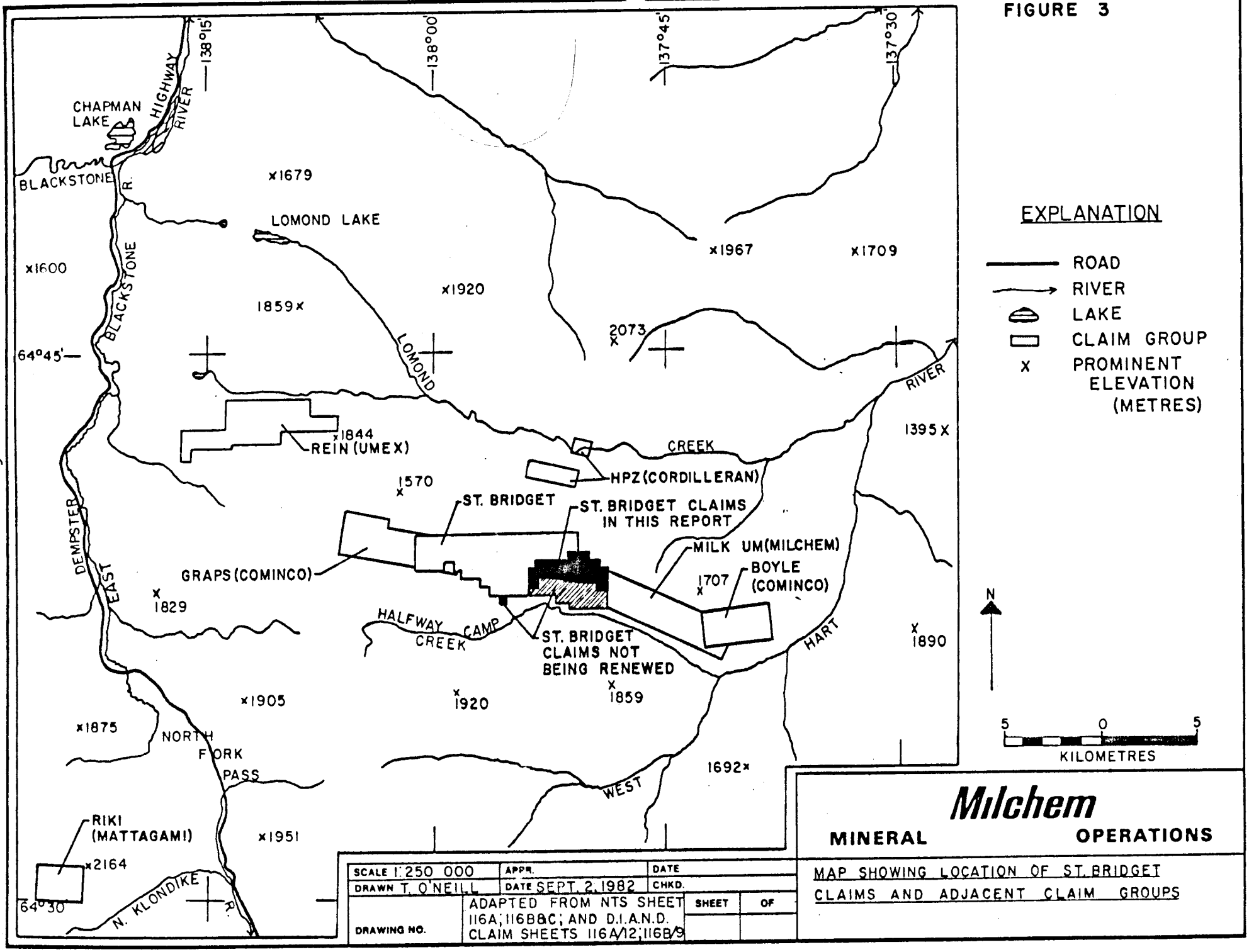
MINERAL OPERATIONS

LOCATION MAP - ST. BRIDGET CLAIMS

FIGURE 3



-9-

SCALE 1:250 000	APPR.	DATE	
DRAWN T. O'NEILL	DATE SEPT. 2, 1982	CHKD.	
DRAWING NO.	ADAPTED FROM NTS SHEET 116A; 116B&C; AND D.I.A.N.D. CLAIM SHEETS 116A/12; 116B/9	SHEET	OF

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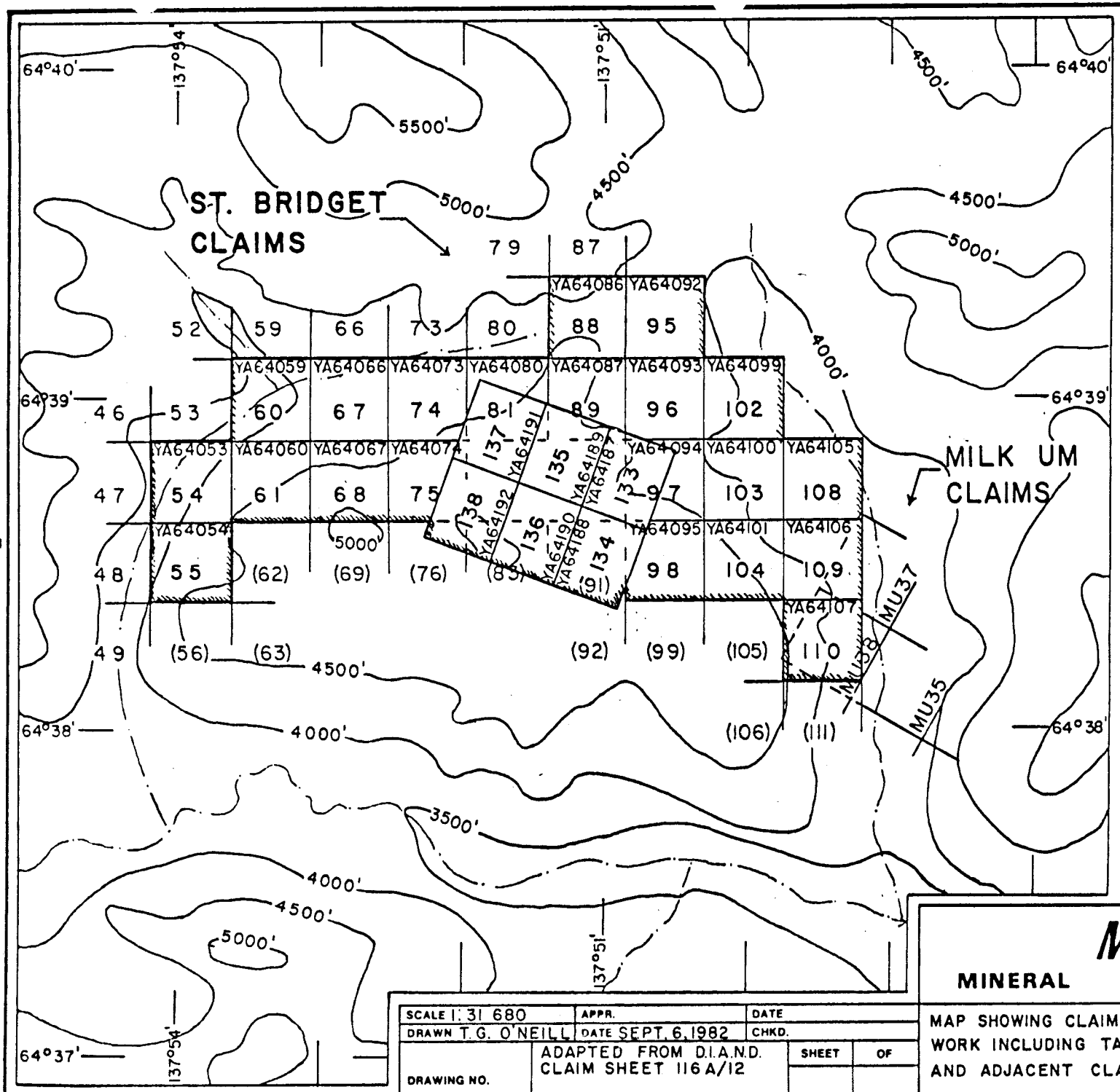
MINERAL OPERATIONS

MAP SHOWING LOCATION OF ST. BRIDGET CLAIMS AND ADJACENT CLAIM GROUPS

FIGURE 4



EXPLANATION

- CLAIMS COVERED IN THIS REPORT
- ( ) CLAIMS NOT BEING RENEWED THIS YEAR
- TOPOGRAPHIC CONTOURS(FT)
- STREAMS

N

CONTOUR INTERVAL
500 FEET
(152 METRES)

300 0 300 600 900 1200
METRES

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MINERAL OPERATIONS

SCALE 1: 31 680	APPR.	DATE	
DRAWN T.G. O'NEILL	DATE SEPT. 6, 1982	CHKD.	
DRAWING NO.	ADAPTED FROM D.I.A.N.D. CLAIM SHEET 116A/12	SHEET	OF

MAP SHOWING CLAIMS COVERED BY 1982 ASSESSMENT WORK INCLUDING TAG NUMBERS, CLAIM NAMES, AND ADJACENT CLAIMS.

Property Location

The St. Bridget Claims included in this report lie at 64°39'N, 137°51'W. They are 25 km east of kilometre 93 on the Dempster Highway, 12 km west of the West Hart River, 6 km south of Lomond Creek. Access to the property is by helicopter from Dawson City, about a 30 minute trip, one way. For our camp the equipment was slung into the claims from a landing area near kilometre 76 on the Dempster Highway.(Figures 1, 2)

Other claim groups in the area are Graps (Cominco), Boyle (Cominco), Milk Um (Milchem), HPZ (Cordilleran), and Rein (Umex).(Figure 3)

General Geology

Six identifiable rock units were found on and near the claims covered by this report. On the claims, five of the units were found to represent 1,098 metres of continuous stratigraphic section. Following are descriptions of the 6 rock units.

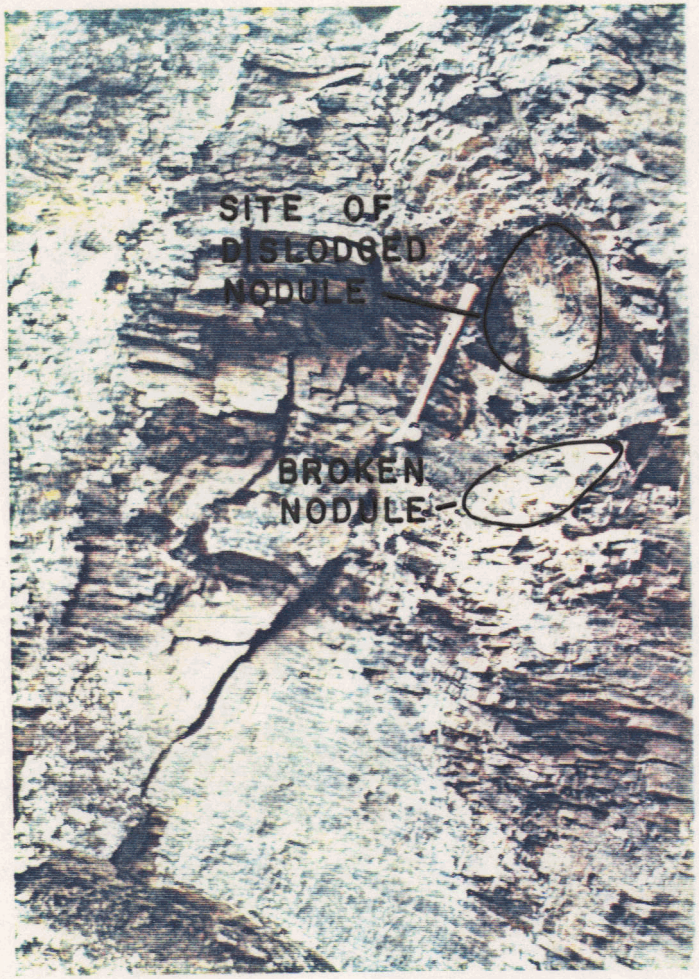
Unit I

Unit I consists primarily of black siliceous shale and black chert with some black shale. The base of the formation was not observed but a 421 metre section was examined. The formation is poorly exposed and generally forms low, sloping, vegetation covered hills.

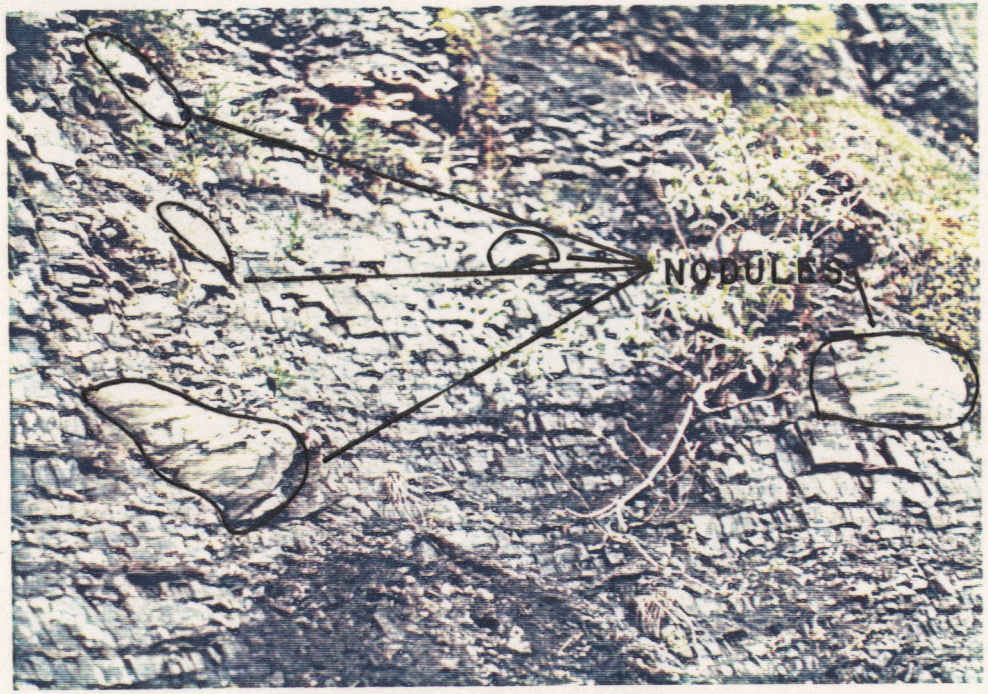
A 50 cm thick bed of black limestone marks the top of Unit I. Below this lies a blue weathering black thin bedded siliceous shale. Beds generally are 50 mm or less in thickness. Intermixed with the thin bedded shale are ribs of black chert in 2 to 6 cm beds. Some calcite veinlets and rare pyrite veinlets are found in the siliceous shale. Quartz veinlets are found in the black chert. Graptolites are common in the thin bedded shale.

Below the intermixed siliceous shale and chert lies black bedded cherts and siliceous shale in 1 to 7 cm thick beds, often inter-bedded with fissile black shale in beds less than 1 cm thick. The chert and siliceous shale range from argilaceous to highly siliceous and contain quartz and calcite veinlets less than 5 mm thick.

Some of the siliceous shale breaks off in shard-like shapes upon weathering. Often the chert and siliceous shale are iron stained on weathering surfaces, some areas being intense red. Lime coatings occasionally occur on weathering surfaces. Minor black limestone beds 1 to 3 cm thick occur, occasionally being up to 10 cm thick. Limestone concretions are abundant in a zone measuring 1 by 17 metres. The concretions range in size from 10 x 15 cm to 30 x



BLACK SILICEOUS SHALE WITH
LIMESTONE NODULES; UNIT II



LIMESTONE NODULES IN BLACK SILICEOUS
SHALE WITH BLACK SHALE INTERBEDS; UNIT I

60 cm. Graptolites occur throughout the unit, primarily in fissile black shale.

Unit II

Conformably overlying the black limestone of Unit I, Unit II averages 177metres thick. It is composed of black siliceous shale. The unit in general has sharp bedding planes and bold outcrops. Beds usually are between 1 and 4 cm thick but occasionally range up to 8 cm thick. The siliceous shale varies from argillitic to highly siliceous and dense. Minor warping, folding, and fracturing are common in Unit II.

Often interbedded with the siliceous shale is black chert and black fissile shale. The chert beds are usually 4 cm thick or less while the fissile shale beds are usually less than one cm thick.

In two locations near the base of Unit II an oxidized tan, greenish hued tuffaceous bed occurs. 4.5 metres of the bed outcrops but the bottom of the bed was not visible. The bed lies in black siliceous shale and has no apparent bedding. A gossan measuring 2 metres by 1 metre forms a vertical feature in the bed. Small pyrite crystals are disseminated throughout the bed. Pyrite and calcite also occur in veins up to 3 mm wide.

Quartz veins and veinlets are common in the siliceous shale and chert with the larger veins (up to 4 cm thick) being in the chert and highly siliceous shale. The veinlets, common in the siliceous shale, rarely exceed 1 mm wide. Rare calcite veins 1 cm or less thick occur in the siliceous shale. In some locations the quartz veins are internally lined with calcite veins.

Occasionally weathering surfaces and fractures planes have a blue hue. Often the siliceous shale has a lime coating on weathering surfaces.

Minor limestone beds less than 2 cm thick and limestone nodules up to 20 cm in diameter occur in the lower half of Unit II. Barium mineralization that includes barite, witherite, and barytocalcite occurs near the top of Unit II in a zone ranging from 0 to 4.6 metres thick.

Unit III

The black siliceous shale of Unit II grades into a massive black chert, Unit III. Unit III averages 122 metres thick. Interbeds of black siliceous shale up to one metre thick are common near the base of the black chert. The main basis for differentiating the chert from the siliceous shale is the chert's general lack of bedding. The chert occurs in either massive form or in a rudely bedded fashion with beds between 2 and 12 cm thick. Although

BLACK AND BROWN SHALES; UNIT IV

LARGE QUARTZ VEIN IN RUDELY
BEDDED CHERT; UNIT III

the chert is a resistant unit, its lack of structure makes for poor outcrops and the unit usually forms large gradual sloping vegetation covered ridges.

The chert can be argilaceous, grungy, or highly siliceous. It sometimes weathers with a bluish hue and sometimes shows iron staining on weathering surfaces, particularly on the grungy chert. In some areas the chert is highly fractured. Folding and warping of the bed is common.

Unit III is conformably overlain by Unit IV and IVA.

Unit III A

Unit III A is a black chert that lies below Unit IV in the areas east of the claims covered in this report. It is a highly fractured and warped unit. It has no bedding and generally forms a structureless mass. The unit is a dense glossy black, and generally has a conchoidal fracture. Float from the unit is rounded and averages 6 cm in diameter. Quartz and calcite veinlets occur in the chert and some quartz veins measure up to 6 cm wide.

Unit III A appears to unconformably lie above the underlying sediments. It is believed that the bottom of Unit III A is the plane of a southward dipping thrust fault. A north-south fault separates the Unit III A assemblage from the Unit III assemblage, and cuts off the thrust fault.

Unit IV

Unit IV averages 378 metres thick and is interbedded with black chert at the contact between Units III and IV. It consists primarily of dense interbedded markedly fissile black and brown shale and gray argillite. Accumulations of the fissile beds range from a few centimeters to 6 metres. Randomly interbedded with the shales and argillite are chert grained sandstone, red vesicular tuffs, thin bedded limestone, buff to tan volcanic conglomerate, and quartzite. Quartz veins up to 30 cm wide occur in the gray argillite.

The chert grained sandstone is pyritiferous, often weathering red, and ranges from a sometimes banded fine grained material to a coarse nearly conglomeratic rock. Bedding ranges from 1 to 6 cm thick with accumulations of the beds up to 6 metres. Some of the more conglomeratic material has a limey matrix.

Thin bedded limestone occurs in 1 to 6 cm beds, often is recrystallized, and contains minor calcite veins up to 3 cm wide. The limestone is not very common and usually is found near the red

vesicular tuffs.

The red vesicular tuffs usually show no bedding and can occur in thicknesses of up to 6 metres. They occur in a sporadic fashion, rarely having a strike length greater than 15 metres.

The quartzite is usually found interbedded with the black and brown shales and gray argillite. It occurs in single beds from 1 to 5 cm thick.

The dense, fissile black and brown shales and gray argillite form the highest peaks on the property and usually form near vertical cliffs. The chert grained sandstone forms poor outcrops while the tuffs and volcanic conglomerate form bold featureless outcrops.

Unit IV A

A subunit of Unit IV, Unit IV A averages 120 metres thick. It is almost entirely within unit IV and is primarily composed of chert grained sandstone identical to that found scattered throughout Unit IV. Minor fissile black and brown shale and gray argillite occur with the chert grained sandstone, as do red tuffs. Two impressive turbidite occurrences are found at the base of Unit IV A.

The turbidites consist of dark gray limestone fragments and minor black chert fragments in a light gray limestone matrix; dark gray rip-up structures (2 cm x 18 cm) in a light gray matrix; and red tuffs, vesicular and non-vesicular, 1 cm to 1 metre thick. 2 to 6 cm beds of black and brown shale and chert grained sandstone are minor interbeds with the turbidites. The entire turbidite sequence can be up to 20 metres thick.

Barium Mineralization

Twelve outcrops of gray bedded barite and two areas of orphan float were located along a distance of 2.5 kilometers.

The host rock for the barite is the black siliceous shale of Unit II. The barite lies in the upper portion of Unit II, ranging from one to over 20 metres below the top of the bed.

The barium mineralization actually occurs in a zone rather than one bed. Up to 3 beds can occur in the zone. The zone varies in thickness, pinching out altogether in many areas. Average thickness of the zone is 2.55 metres, ranging from 0.51 to 4.6 metres thick. Individual barite beds range from 0.05 to 3.0 metres thick, averaging 0.79 metres thick.

The barite usually displays laminations up to 2 mm thick. Color of the laminations ranges from light gray to dark gray. The major contaminant in the barite is quartz, usually represented in the

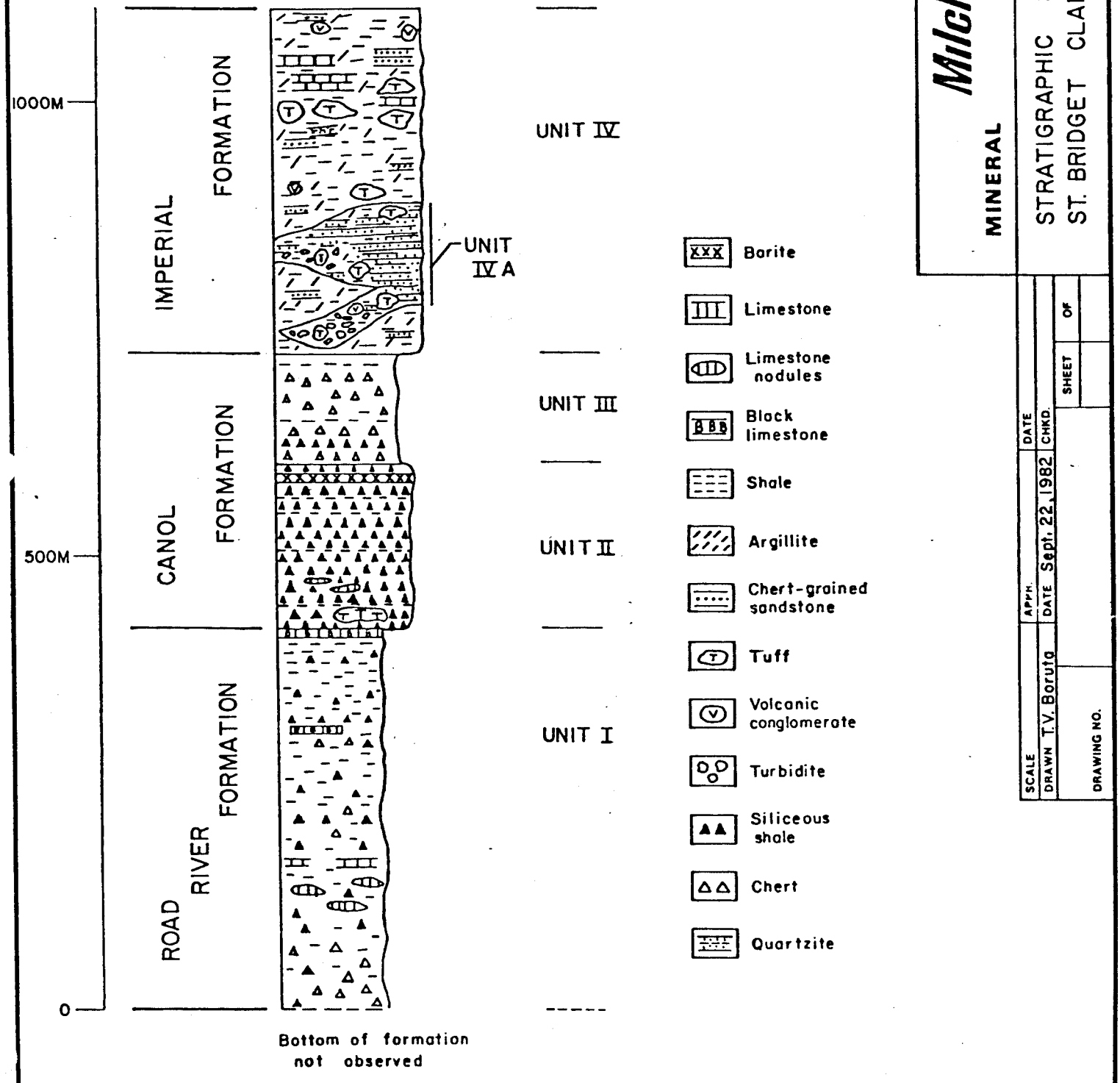

1000M
500M
0
IMPERIAL FORMATION
CANOL FORMATION
ROAD RIVER FORMATION
UNIT IV
UNIT IV A
UNIT III
UNIT II
UNIT I
Barite
Limestone
Limestone nodules
Black limestone
Shale
Argillite
Chert-grained sandstone
Tuff
Volcanic conglomerate
Turbidite
Siliceous shale
Chert
Quartzite
Bottom of formation not observed
Milchem
OPERATIONS
MINERAL
STRATIGRAPHIC SECTION
ST. BRIDGET CLAIMS
SCALE
DRAWN T.V. Boruta
APPR.
DATE Sept. 22, 1982
CHKD.
DATE
SHEET
OF
DRAWING NO.

FIGURE 5

outcrop by wavey chert laminations less than 1 mm thick. Witherite and baritocalcite also occur with the barite. Often the witherite occurs as discreet interlaminations with the barite. Occasionally pods of witherite occur, measuring up to 1.25 metres in length and .9 metres wide. These pods are entirely composed of horizontally laminated witherite. Surrounding the pods is horizontally interlaminated barite and witherite. This grades away from the pods into all barite laminations. The witherite is light gray in color and can only be identified separately from the barite in outcrop in that it weathers more like a carbonate than like barite and will react to hydrochloric acid.

X-ray diffraction of hand samples taken from the outcrops showed that besides barite, quartz, and witherite, a minor amount of dolomite, calcite, and feldspar are found in many of the samples.

A complete description of each barite outcrop is in Appendix I.

Location of the outcrops are shown on plate 1 in the back pocket.

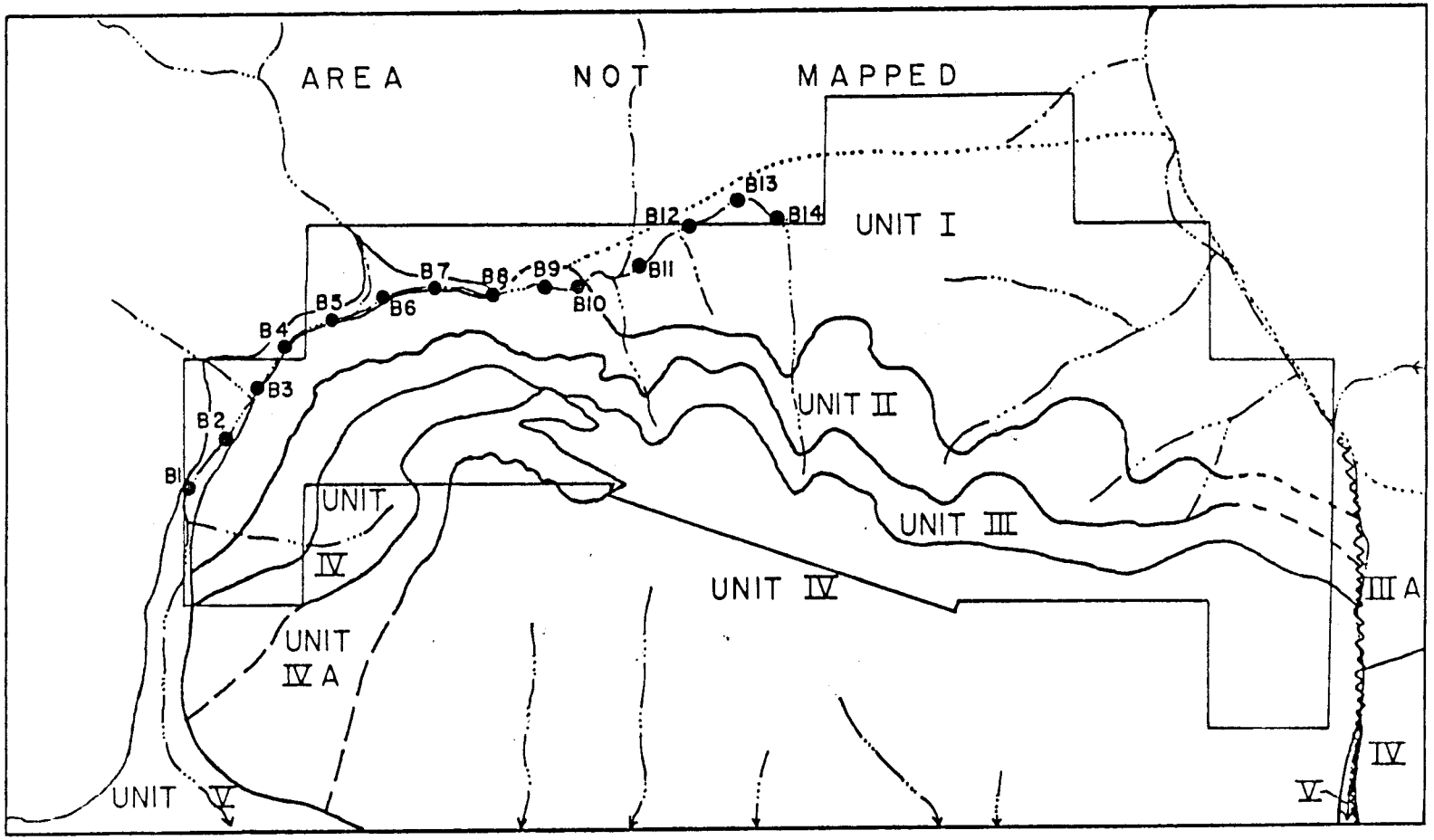
The only outcrop that yeilded a sample with a specific gravity greater than 4.20 was outcrop 9 with a specific gravity of 4.25. Another sample from outcrop 9 had a specific gravity of 3.28 and contained witherite. The bed at outcrop 9 is apparently continueous from outcrop 8. While the bed at outcrop 8 is only .8 metres thick, the upper bed at outcrop 9 is one of the thicker beds on the property at 2.82 metres. The thickest bed, at outcrop 7, is 3.0 metres thick and contains a large amount of witherite. Aside from outcrops 8 and 9, the beds on the property appear discontinueous, even the beds located relatively close to one another.

Samples from outcrops 10 and 11 had specific gravities of 3.91 and 4.13, respectively. The outcrops are really zones of interbedded siliceous shale and barite. Outcrop 10 measures 120 metres long and 3.2 metres thick. Outcrop 11 measures 85 metres long and 4.6 metres thick.

Samples from outcrops 1 through 7 and outcrop 12 had specific gravities ranging from 2.90 to 4.07. With the exception of outcrop 7, bed thicknesses are below .61 metres. Some of these outcrops have zones of up to 4.6 metres thick which contain two or three separate beds.

Geochemical Sampling

Fourteen stream sediment samples were collected at 200 metre intervals along the main drainage from the central and northwest portion of the claims covered in this report. Only 13 sample results were received. Sample locations are shown on figure 6. Sample results are shown on figure 7.



EXPLANATION

- FAULT
- SAMPLE LOCATION
- STREAM
- CLAIMS IN THIS REPORT
- GEOLOGIC CONTACT (KNOWN, INFERRED)

N

500 0 500 1000
METRES

FIGURE 6

Milchem
MINERAL OPERATIONS

SCALE 1:25 000	APPR.	DATE	
DRAWN T.G. O'NEILL	DATE SEPT. 9, 1982	CHKD.	
DRAWING NO.	ADAPTED FROM N.T.S. SHEET 116A/12	SHEET	OF

MAP SHOWING GEOCHEMICAL SAMPLE LOCATIONS IN RELATION TO GEOLOGY.

1982 SAMPLE DATA

Sample No.	Pb (ppm)	Zn (ppm)	Ba (ppm)
B1	22	1050	1475
B2	*	*	*
B3	16	775	1975
B4	14	600	1500
B5	6	850	2000
B6	19	725	650
B7	16	680	600
B8	16	675	700
B9	16	850	650
B10	16	615	950
B11	14	815	600
B12	20	1000	450
B13	20	950	650
B14	18	850	750
Sample mean	16.38	802.69	996.15

Regional Data

Medians

Pb	Zn	Ba
15.44	482.9	554.5

Thresholds

Pb	Zn	Ba
28	1480	1200

* NO RESULT

FIGURE 7

Milchem
MINERAL OPERATIONS

SCALE	APPR.	DATE
DRAWN T.V. BORUTA	DATE SEPT. 17, 1982	CHKD.
DRAWING NO.		SHEET / OF

1982 SAMPLE DATA

The samples were tested for lead, zinc, and barite by atomic absorption. Lead values ranged from 6 to 20 ppm, averaging 16.4 ppm. Zinc values ranged from 675 to 1050 ppm, averaging 802.7 ppm. Barite values ranged from 450 to 1475 ppm, averaging 996.2 ppm.

A regional geochemical sampling program in 1981 established threshold and median values for the black siliceous shale and black chert assemblage occurring on the St. Bridget claims. Regional threshold values were 28 ppm for lead; 1480 ppm for zinc; 1200 ppm for barite. Median values were 15.4, 482.9, 554.5 ppm for lead, zinc, barite, respectively.

None of the 13 samples had lead or zinc values over the regional threshold values. 4 of the 13 samples had barium values over the 1200 ppm threshold.

76% of the lead results were over the regional median of 15.4. All of the zinc samples were above the regional median of 483 ppm. 92% of the barium results were over the regional median of 554.5 ppm.

Costs Incurred

The geologic mapping was carried out over the period from July 1, 1982 to July 10, 1982.

The following expenses were incurred within the Yukon Territory in performing the geologic survey and preparing the report:

Wage of Thomas Naughton, Geologic Assistant, 10 days	$645.16
Workmans Compensation fees for Thomas Naughton	54.54
Wage and benefits for Timothy O'Neill, Geologist, 10 days	1,347.48
Food purchased for camp	414.00
Transportation of camp and crew by helicopter	2,050.00
Expediting fees paid to Resources Expediting, 10 days	193.55
Anasysis of geochem samples by Bondar-Clegg, Whitehorse	83.85
Subtotal	$4,788.58

The following expenses were incurred outside the Yukon Territory in compiling maps and plans and preparing the report:

Wage of Thomas Boruta, Draftsman, for drafting work	$97.50
Wage of Timothy O'Neill, Geologist, for drafting work and report preparation	3,620.45
Map reproduction expenses	30.00
Subtotal	$3,747.95

Total expenditures for performing the geologic survey and preparing the report are $8,536.53. This amount is being applied to the 27 St. Bridget claims covered by this report, amounting to $316.17 per claim.

Analysis and Interpretation

The claims examined cover an area that is considered to be the western arm of the Selwyn Basin. The rocks examined in the area are similar to those described elsewhere in the Ogilvie Mountains (Thompson, 1981) that have been termed "basinal." The claim group is bounded by several southward dipping thrust faults, similar to other areas of the Selwyn Basin that have a high number of thrust faults.

Given the stratigraphic and structural similarities of the rock units on the St. Bridget claims examined in this report with the rock units reported in better studied areas of the Yukon, the units observed on the St. Bridget claims can be correlated as follows:

Unit I is the Road River formation. It has a black limestone bed at the top of the formation. Its main composition is black siliceous shale, black shale, black chert. Monograptus was observed near the top of the formation. The youngest beds in the formation are late Silurian in age, possibly lower Devonian.

Units II and III correlate with the Canol formation. The black siliceous shale, black chert, and barite horizon are typical of the Canol formation in other parts of the Yukon. The lower part of the formation, the black siliceous shale of Unit II, is lower to middle Devonian in age. The Unit III black chert is middle to late Devonian in age.

Unit IV and IV A are the Imperial formation. Comparing Unit IV and IV A with outcrops of the Imperial formation in the Richardson Mountains and with late Devonian equivalents in the western Ogilvie Mountains, distinct similarities exist, particularly between the chert grained sandstone units. Units IV and IV A are late Devonian in age, possiby lower Mississippian.

What is represented on the claims examined is an unbroken sequence of rocks ranging from lower or middle Silurian to upper Devonian or lower Mississippian, about 70 million years of deposition. This is unusual in the structural environment the claims cover. Most of the rock assemblages in the area are cut by thrust faults.

The barite occurrences on the claims are not very promising. Only the area between outcrops 8 and 9 appears to have economic potential. Outcrop 9 has one of the thicker beds of barite at 2.82 metres. One of the samples from the outcrop had a specific gravity of 4.25. If this bed extended continuously between the two outcrops and didn't contain much witherite or quartz interbeds, 100 000 tonnes could possibly occur.

The rest of the outcrops show little economic potential. Outcrops 10, 11, and 12 are interbedded barite and siliceous shale occurrences ranging up to 120 metres long and 4.6 metres thick. They would require beneficiation to put out a marketable product. Beneficiation of almost any kind in the Yukon raises the cost of the barite enough to make it uncompetitive with other barite sources. Outcrops 1 to 7 are either too thin to be economic or have too great of a stripping ratio to make mining practical.

The claims examined have some potential for a lead or zinc occurrence. A gossan and several areas of intense iron staining occur in the lower Canol and upper Road River formations. The geochemical results were disappointing, however, as none of the lead or zinc results had values over the previously determined regional threshold. Most of the samples did have values over the regional median.

Recommendations

Further work needs to be done between barite outcrops 8 and 9 to determine if the bed is continuous and if an economic grade and thickness occur. Trenching is recommended.

Stream sediment sampling needs to be carried out on the streams draining from the Road River formation on the northeast side of the claims covered by this report. Also, trenching should be done on the gossan and areas of iron staining to determine the source of the stains.

Dwight C. O'Neill
September 30, 1982

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1982: Ogilvie Mountains project, Yukon; Part A: A new regional mapping program; Current Research, Part A, Geol. Surv. Can., Paper 82 - 1A.

APPENDIX I

LIST OF BARITE OUTCROPS

#1

A small outcrop of gray dense barite .3 metres thick. The barite is interbedded with black siliceous shale. This outcrop, along with some nearby float, represent the only evidence of barite mineralization on the west side of the report area. The nearest other outcrop, outcrop #2, lies 1200 metres along strike to the east.

#2

A .51 metre thick bed of thinly laminated light gray barite occurs in quartz veined black siliceous shale. The barite has a blocky cleavage and contains minor quartz veining. Some laminations are quite siliceous. A lime coating covers some of the barite weathering surfaces. Sample 7-1 from the outcrop had a specific gravity of 3.71 and contained only quartz as an impurity.

#3

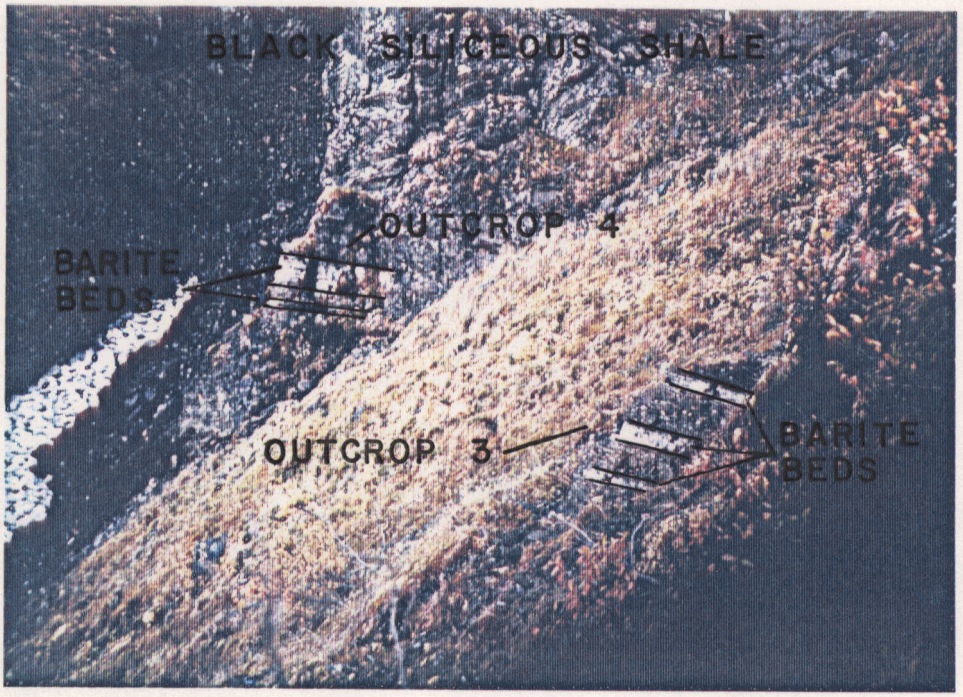
Three beds occur in a 1.06 metre thick zone. Quartz veined black siliceous shale hosts the zone and occurs between the individual barite beds. A calcium coating occurs on the barite weathering surfaces.

The upper bed is .15 metres thick. Argillite and some silica is intermixed with the fine grained blocky barite. Few laminations were seen. Sample 6-1 from the bed had a specific gravity of 3.29. Contaminants in the sample were quartz, witherite, calcite, and feldspar.

.41 metres of siliceous shale separate the .15 metre thick middle bed from the upper bed. The thinly laminated gray barite contains chert and argillite of 3.68. Contaminants in the sample were quartz, witherite, calcite, and feldspar.

The .05 metre lower bed lies .3 metres below the middle bed. It consists of 1 mm thick interlaminations of barite and witherite. The laminations vary from light to dark gray. Sample 6-3 had a specific gravity of 2.90 and was predominantly quartz. Also in the sample were barite, witherite, calcite, and feldspar.

BARITE OUTCROP FIVE.



BARITE OUTCROPS THREE AND FOUR.

#4

Two beds of barite occur in a 2.95 metre zone. The host rock and interbed is quartz veined black siliceous shale. A calcium coating appears on the barite weathering surfaces.

In the upper bed fine grained barite and witherite occur in a laminated to blocky .6 metre thick bed. Sample 5-2A from this bed had a specific gravity of 2.93 and was mainly dolomite. Also occurring were quartz, barite, and feldspar. Sample 5-2B from the bed had a specific gravity of 3.25. Accompanying the barite was calcite, barytocalcite, quartz, and dolomite.

2.2 metres below the upper bed lies a .15 metre bed of barite interbedded with chert in a blocky mass. Sample 5-1 had a specific gravity of 3.03. The sample was mostly quartz. Also in the sample was witherite, barite, calcite, and feldspar.

#5

Three barite beds occur in a 1.93 metre thick zone. Black siliceous shale forms the host rock and the interbeds. A calcium coating occurs on some of the barite weathering surfaces and also on the siliceous shale above the outcrop.

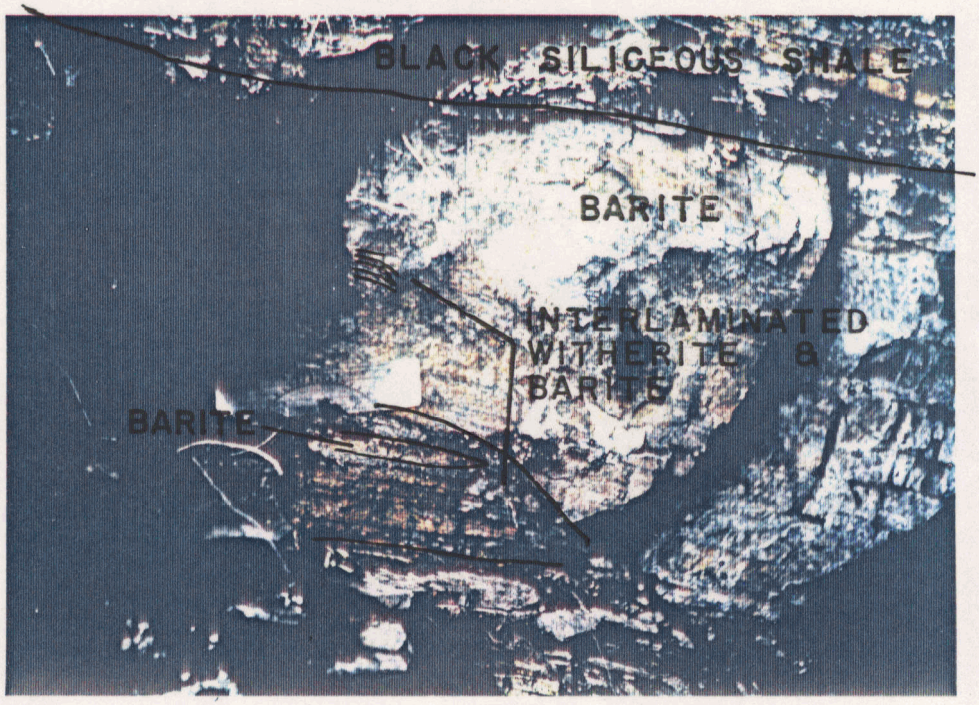
The uppermost bed in the zone is .6 metres thick and consists of gray barite with a generally blocky fracture. Some chert inclusions were observed in the bed. Sample 8-3 from the bed had a specific gravity of 3.27 and quartz, calcite, and feldspar as impurities.

.26 metres below the upper bed is a .27 metre thick middle bed consisting of a fine grained dark gray barite. The barite has vague laminations, and includes some silica in the laminations. Sample 8-2 had a 3.67 specific gravity. Only quartz and feldspar contaminated the sample.

Directly below the middle bed is a lower bed or zone consisting of .8 metres of intermixed barite and chert, interlaminated barite and witherite. Sample 8-1, with a specific gravity of 3.16, contained only quartz as an impurity.

#6

Outcrop number 9 is a 3.8 metre bed of barite intermixed with siliceous shale. Minor witherite interlaminations were observed. Fracture fillings are calcite. Quartz veinlets in the bed are common. Sample 9-1 from the bed had a specific gravity of 3.81 and had quartz and calcite as contaminants.



WITHERITE IN BARITE OUTCROP SIX

WITHERITE IN BARITE OUTCROP SEVEN

#7

Outcrop #7 is a zone 3.6 metres thick that consists of interbedded barite, chert, and witherite. Three separate beds occur in the zone.

The upper bed is 3.0 metres thick and consists of light to dark gray laminated barite. Included in the barite are witherite pods measuring up to 1.25 metres by .2 metres in size. The pods are usually over 2 metres apart. Interlaminated barite and witherite is adjacent to the pods, grading into all barite away from the pods.

.11 metres of siliceous shale separate the upper bed from a .5 metre middle bed of light gray interlaminated barite.

Another .4 metres of siliceous shale separate the lower .2 m bed of laminated gray barite from the middle bed.

#8

A .8 metre thick bed of barite outcrops at the peak of a ridge. Large amounts of barite float up to 10 cm in diameter lay on the west side of the ridge while boulders of barite up to 5.8 m x 1.9 m x .35 m lie on the east side of the ridge, along the strike of the bed. The light gray barite is somewhat argilaceous in nature with shaley type partings. It is hosted by grungy chert and siliceous shale.

#9

A 3.42 metre thick zone of barite and siliceous shale is outcrop #9. Two beds of barite occur in the zone separated by a .35 metre layer of siliceous shale.

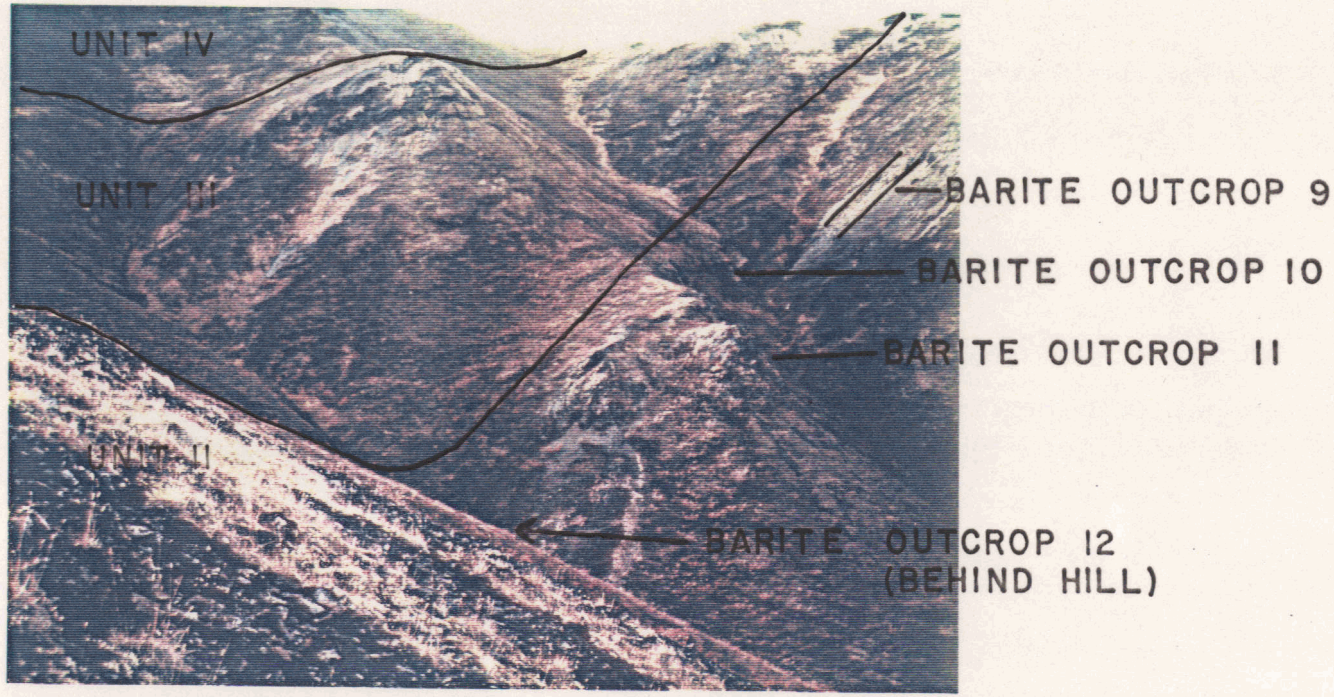
The upper bed is 2.82 metres thick and consists mainly of gray finely laminated barite. Laminations range from light to dark gray with the bed as a whole appearing dark gray. Some thin wavy laminations of chert also occur in the bed, as does witherite. The witherite is a pale light gray color and was observed only in the depressions in slight down warps in the barite bed. Sample 11-1 and 11-2 from this bed had specific gravities of 4.25 and 3.28 respectively. Besides barite, sample 11-1 contained quartz and feldspar while sample 11-2 had dolomite, quartz, witherite, and feldspar.

#10

A 3.2 metre thick zone extending for 120 metres makes up outcrop #10. The zone ranges from two 1.5 metre beds separated by .2 metres of chert to beds of randomly spaced chert and barite

UPPER BED, BARITE OUTCROP
TWELVE; UNIT II

BARITE OUTCROP ELEVEN; UNIT II



LOOKING SOUTHEAST TO ST. BRIDGET NO. 97;133

laminations. The barite appears to be shaling out to the east. Some of the laminations in the bed are dark gray undulating bands surrounded by sugary textured light to dark gray barite. Sample 12-1 from the zone had a specific gravity of 3.91 with quartz and feldspar as contaminants.

#11

Outcrop #11 is a 4.6 metre thick 85 metre long zone of gray barite with interlaminated thin wavy chert. Some of the fractures in the bed have calcite fillings. Sample 13-1 from the bed had a specific gravity of 4.13 with quartz as the only contaminant.

#12

Outcrop #12 is a 4.6 metre thick, 21.4 metre long zone consisting of two barite beds.

The upper bed is .3 metres thick and mostly consists of dark to light gray interlaminated barite and witherite. Some witherite yields a fetid odor when broken. Other parts of the bed lack the witherite interbeds. Calcite and quartz veins less than 1 mm thick are found in the bed. Sample 14-1 from the bed had a specific gravity of 3.46 and contained, besides barite, calcite, dolomite, and quartz. Sample 14-2 from the bed had a specific gravity of 4.07 with only quartz as a contaminant.

The lower bed is separated by the upper bed by 3.7 metres of siliceous shale. The bed is .35 metres thick and consists of thinly laminated, dark gray barite intermixed with black siliceous shale. Minor calcite veining occurs. Sample 14-3 had a 3.83 specific gravity. Quartz was the samples only contaminant.

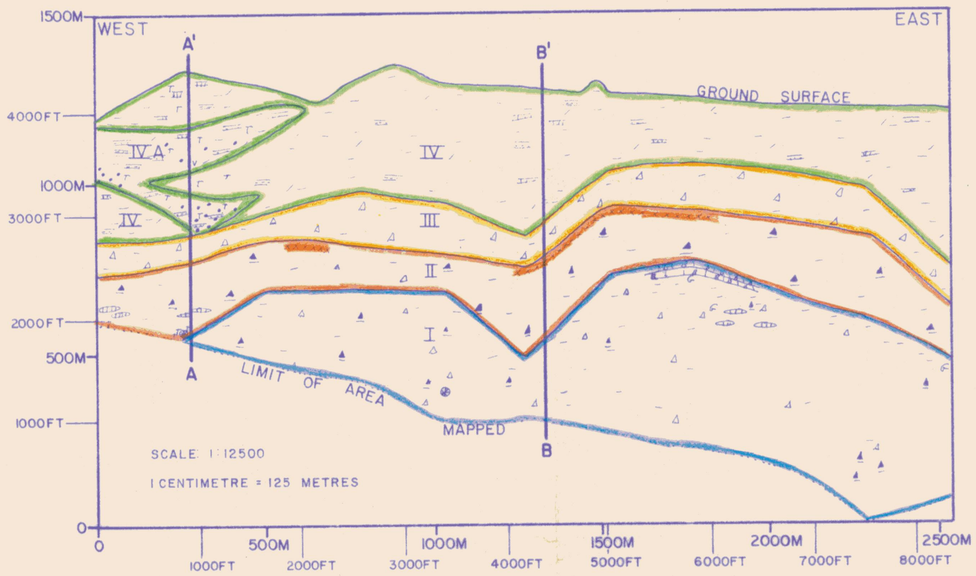
STATEMENT OF QUALIFICATION

I, Timothy G. O'Neill state that I am a practicing geologist duly qualified to perform geologic investigations of the type contained in this report.

I have worked in a professional capacity as a geologist since 1978. I am currently employed as Senior Geologist with Milchem Incorporated, 3920 Essex Lane, Houston, Texas, 77027. I received a Bachelor of Science in Geology and Geophysics from the University of Missouri at Rolla, Rolla, Missouri, in 1976. Additional schooling in geological engineering was received at the University of Arizona, Tucson, Arizona in 1977-78.

Relevant experience has included Mine Geologist at the Rossi barite mine, Battle Mountain, Nevada; Regional and local geologic mapping in Yukon and British Columbia, Canada, Nevada, Wyoming, Montana, North Dakota, Idaho, Texas, United States; Geochemical sampling programs in Yukon.

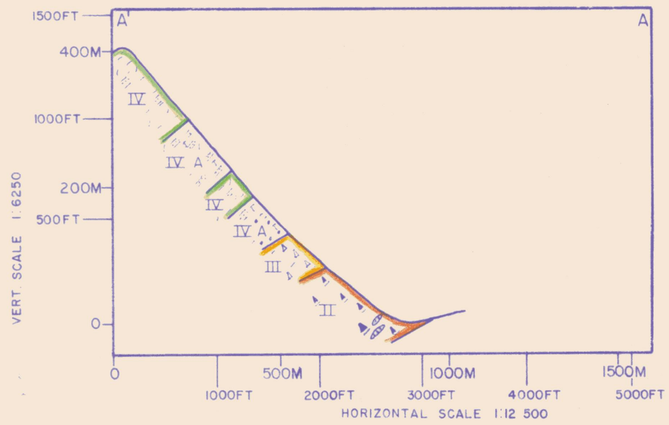
I am currently a member of the Society of Mining Engineers of A.I.M.E.



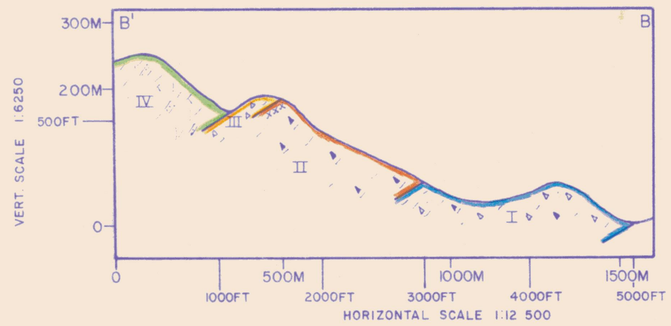
GENERALIZED
CROSS SECTION C'-C
SHOWING TRUE THICKNESSES

EXPLANATION

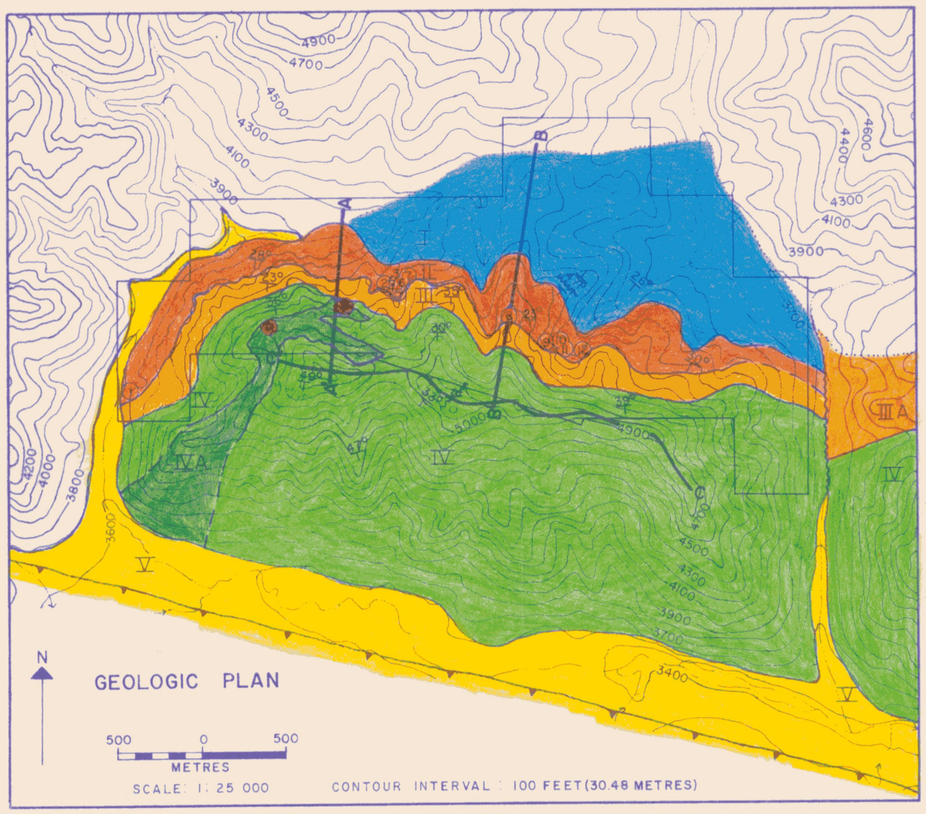
- UNIT CONTACTS
- CROSS SECTION LINE
- BARITE
- SILICEOUS SHALE
- SHALE
- ARGILLITE
- CHERT
- BLACK LIMESTONE
- LIMESTONE NODULES
- LIMESTONE
- TURBIDITES
- TUFFS
- VOLCANIC CONGLOMERATE
- CHERT GRAINED SANDSTONE
- QUARTZITE
- GRAPTOLITE
- INTENSE IRON STAINING OR GOSSAN



CROSS SECTION A'-A



CROSS SECTION B'-B



EXPLANATION

- CONTOUR LINE
- STREAM
- UNIT CONTACTS (known, inferred)
- DIP & STRIKE
- BARITE OUTCROP LOCALITY
- TURBIDITE LOCALITY
- CROSS SECTION LINE
- THRUST FAULT
- FAULT
- LIMIT OF MAPPED AREA

UNIT V: ALLUVIUM

UNIT IVA: CHERT GRAINED SANDSTONE; TURBIDITES; RED TUFF; BLACK AND BROWN SHALE, MINOR VOLCANIC CONGLOMERATE

UNIT IV: BLACK AND BROWN SHALE; GREY ARGILLITE; CHERT GRAINED SANDSTONE, MINOR LIMESTONE, RED TUFF, VOLCANIC CONGLOMERATE.

UNIT IIIA: BLACK CHERT.

UNIT III: BLACK CHERT; MINOR BLACK SILICEOUS SHALE, BLACK SHALE.

UNIT II: BLACK SILICEOUS SHALE; MINOR BLACK CHERT, BLACK SHALE, LIMESTONE.

UNIT I: BLACK SHALE; BLACK SILICEOUS SHALE; BLACK CHERT; MINOR BLACK LIMESTONE, LIMESTONE NODULES

Milchem 091366
MINERAL OPERATIONS

GEOLOGIC MAP & CROSS SECTIONS
ST. BRIDGET CLAIMS
1982 GEOLOGIC REPORT

SCALE	APPR.	DATE	
DRAWN T.O'N & T.V.B.	DATE 9/24/82	CHKD.	
DRAWING NO. PLATE I		SHEET	OF