

REPORT ON THE PURCELL COMPILATION

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and

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NTS: 82F, 82G, 82J, 82K

JULY, 1989

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SUMMARY AND CONCLUSIONS

The Purcell Compilation was undertaken to evaluate the shale-hosted base metal potential of the Purcell Group and in particular the Aldridge Formation which is host to the Sullivan deposit of Cominco. At the same time the compilation examined the land situation to determine if there is any favourable ground within the Aldridge Formation that is available for option.

During the course of the compilation, information was gathered about the geology, property tenure status, and significant mineral occurrences of the subject area. The principal sources of this information were the MINFILE, assessment reports, and the company files.

The Purcell Supergroup is a sequence of dominantly sedimentary rocks which were deposited in a basin in a continental margin setting in Middle Proterozoic times. It is exposed over 26,000 square kilometres of southeastern British Columbia. The formation within the Purcell that is of principal interest for the purposes of this compilation is the Aldridge Formation because it is host to the Sullivan Mine. The Aldridge has been divided into three stratigraphic units: the Lower, Middle, and Upper Aldridge. The stratigraphic horizon near the contact between the Lower and Middle Aldridge hosts the Sullivan deposit. Alteration features which are associated with mineralization at the Sullivan are an extensive zone of boron enrichment (tourmalinite) below the footwall of the deposit. The footwall zone of the Sullivan Deposit also tends to be enriched in iron and magnesium, and depleted in sodium, potassium, and calcium. Albite-chlorite-pyrite-carbonate alteration is predominate in the hangingwall of the deposit. Intraformational breccia within the Lower Aldridge below the deposit is also considered to be an important feature.

Five specific areas within the Purcell stratigraphy of Southeastern British Columbia were selected for detailed evaluation. These fulfill the two key criteria for the purposes of this study; the geology of these areas is favourable for Sullivan-type mineralization, and the possibility of acquiring a land base is present in these areas to various extents. These are the McNeil Creek area, the St. Eugene area, the Kootenay King area, the Mount Patrick area, and the Mineral King area. All of these have been examined in detail in the compilation. The Mineral King area is the only area not hosted by the Aldridge Formation but instead is located near the top of the Purcell Group.

The Aldridge Formation outcrops over a very large area in southeastern British Columbia. The extensive area of alteration and sulphide mineralization (pyrrhotite) associated the lower to middle Aldridge Formation transition indicate that the potential of finding another orebody at the Sullivan horizon is excellent. Unfortunately, Cominco Limited holds much of the favourable

stratigraphy. However, there are at least two areas, the McNeil Creek and St. Eugene areas adjacent to the Moyie River where extensive Aldridge stratigraphy is held by junior companies, a few other majors, and even Falconbridge Limited through St. Eugene Mining Ltd. As the Sheep Creek deposit in Montana illustrates Cominco may be interested in joint venturing some of their extensive Aldridge land holdings.

The McNeil Creek area is the most promising target at present, owing to the fact that Sullivan-type mineralization has recently been discovered, and that the immediate vicinity is not held by any single major player, but rather is divided among various junior companies that might respond favourably to joint venture proposals. Drilling by Dragoon Resources on the McNeil property intersected 110 feet of weak mineralization mainly pyrrhotite and the best assay returned from the drilling program was 18% combined lead and zinc and 2.6 oz. silver/ton over 3 feet.

The area south of the St. Eugene mine appears to have the favourable Aldridge stratigraphy present. Falconbridge Limited has optioned some of its claims (through St. Eugene Mining) to Chevron and still retains some of the claims itself. Chevron has earned an interest, but never submitted any technical reports to Falconbridge.

The Mount Patrick was once held under option by Texasgulf and very incomplete records indicate that significant base metal mineralization was intersected during this work at the Sullivan horizon. The ground is currently held by Cominco Limited.

The area around the Kootenay King appears to a shallow water facies of the Aldridge and may or may not have good massive sulphide potential.

Our understanding of the stratigraphy in the Mineral King area is less than complete at this point in time as there are no recent references available. However, it is of interest to note that there is a considerable amount of open ground around the Mineral King.

RECOMMENDATIONS

The following steps should be taken towards initiating exploration activities in the Purcell region:

1). All parties which hold interesting ground in the McNeil Creek area should be approached, and inquiries should be made as to their amenability towards joint venture proposals. Edward Frost's RAM and MAR claims should be a priority in these regards. Aside from this, Lloyd Morgan and the Goldpac group (Gordon Leask et al) appear to hold the most interesting ground. The Dragoon Resources group should be approached again in order to determine if they are now interested in an agreement.

2). Chevron should be contacted and all documents pertaining to their activities from the joint venture south of the old St. Eugene mine should be obtained. The land situation should also be clarified to determine which claims of St. Eugene Mining are included in the joint venture with Chevron and which are not.

3). Inquiries should be made to Cominco as to the possibilities of entering into a joint venture arrangement with them in the Mount Patrick area.

4). The area around the Kootenay King should be visited by Falconbridge geologists to determine if the sedimentary rocks appear to be potential massive sulphide hosts.

5). Further research including a visit to the Mineral King should be carried out in an effort to determine the exact stratigraphic position and genesis of this deposit. Chris Graf's properties which are adjacent to the Mineral King deposit should also be examined, and it should be determined whether or not these merit a joint venture proposal.

6). A new project should be proposed for the 1990 season that would involve work on either the property south of St. Eugene mine that Falconbridge owns or a property that is optioned through the winter. The project would allow Falconbridge to become established in the area and also carry out regional work to evaluate other prospective properties. The proposed program would involve a typical program of orthophoto, line cutting, geological mapping, litho geochemistry, and geophysics. Minimum cost would be in the \$250,000 range, but this would depend on the property chosen.

INTRODUCTION

The purpose of the Purcell Compilation was to present an overview of the geology and property tenure status of those areas of southeastern British Columbia which are underlain by the sedimentary formations of the Proterozoic Purcell Supergroup (see Figures 1 & 2). This is intended to serve as a basis from which to evaluate the possibilities of acquiring mineral claims or entering into favourable joint venture arrangements in specific areas in this region which have the potential for hosting sediment-hosted base metal deposits of a similar nature to Cominco's Sullivan deposit. This deposit is a 160 million tonne iron-lead-zinc sulphide orebody which lays conformably near the top of the Middle Proterozoic Lower Aldridge Formation and has an average grade of 6.7 per cent lead, 5.8 per cent zinc, and 79 grams per tonne silver.

A total of 43 1:50,000 scale claim map sheets were investigated in this compilation. These cover practically all areas of British Columbia which overlay Purcell stratigraphy. These are:

82F/1E, 1W, 2E, 2W, 7E, 8E, 8W, 9E, 9W, 10E, 15E, 15W, 16E, 16W;
 82G/2W, 3E, 3W, 4E, 4W, 5E, 5W, 6E, 6W, 11W, 12E, 12W, 13E, 13W;
 82J/4E, 4W, 5W;
 82K/1E, 1W, 2E, 7E, 8E, 8W, 9E, 9W, 10E, 15E, 16E, 16W.

All of the mineral title maps for these map sheets were purchased, and a rudimentary representation of regional geology has been presented on each of these. Those areas which are underlain by Purcell stratigraphy have been coloured, while those areas which are underlain by the Upper Proterozoic Windermere Group, various Palaeozoic formations, or later plutonic bodies have been left blank. The Aldridge Formation, which is principal importance for the purposes of this compilation, has been coloured in gold, and all areas which are underlain by the Upper Purcell formations, or the Lower Purcell Fort Steele Formation, have been coloured in pink.

No distinction was made on these maps between the Lower, Middle, and Upper Aldridge Formations, and the numerous Moyie Intrusives which intrude the Aldridge Formation have not been represented.

The tenure status of all the mineral claims and the majority of the reverted crown grants in the study area was established by a title search which was conducted at the Mining Recorder's office in Vancouver in the period between March 21 and April 3, 1989. This information is contained in Volume I of the compilation text, with the names, record numbers, recorded owners, and expiry dates of all claims being listed in tabular form. This data was omitted for those claims which lie within the above listed map sheets, but which are not within or immediately adjacent to areas which are underlain by Purcell stratigraphy. The study area encompasses parts of the Fort Steele, Nelson, Slokan, and Golden

Mining Divisions.

The author has conducted a thorough search of all Minfile data which is available for the study area, and photocopies of the summary data for all lead, zinc, silver, gold, copper, and barite occurrences are included in the compilation text. In addition, for all 82F map sheets, summary data from Taiga Consultants' Southeastern British Columbia Mineral Inventory has also been included. All of the Minfile occurrences which are pertinent to this compilation are plotted by number on the mineral title maps, and the principal commodities contained in these are also listed on the maps. The author has undertaken a thorough search of all material available on the study area that is contained in the Falconbridge Limited company files in the Vancouver office. Any literature that was deemed to be of significance to this compilation was photocopied and included in the compilation text. This material includes various project reports, assessment reports, joint venture proposals and other documents which have been accumulated over the years. Much of this material was generated by the activities of Texas Gulf Sulfur Company and St. Eugene Mining Corporation; both of which companies had undertaken extensive exploration programs in the region during the 1970s. Unfortunately, few complete reports or field notes remain from this work.

A list of all available assessment reports for the study area is included in the compilation text. This is contained on photocopied pages of the BCDM Assessment Report Index. A copy of this has been inserted at the beginning of each section in the text, and the numbers and titles of all reports pertinent to the given NTS sheet are shaded in pink. Several of these assessment reports which describe work were purchased and applied to those parts of the study area which are considered to be of special interest.

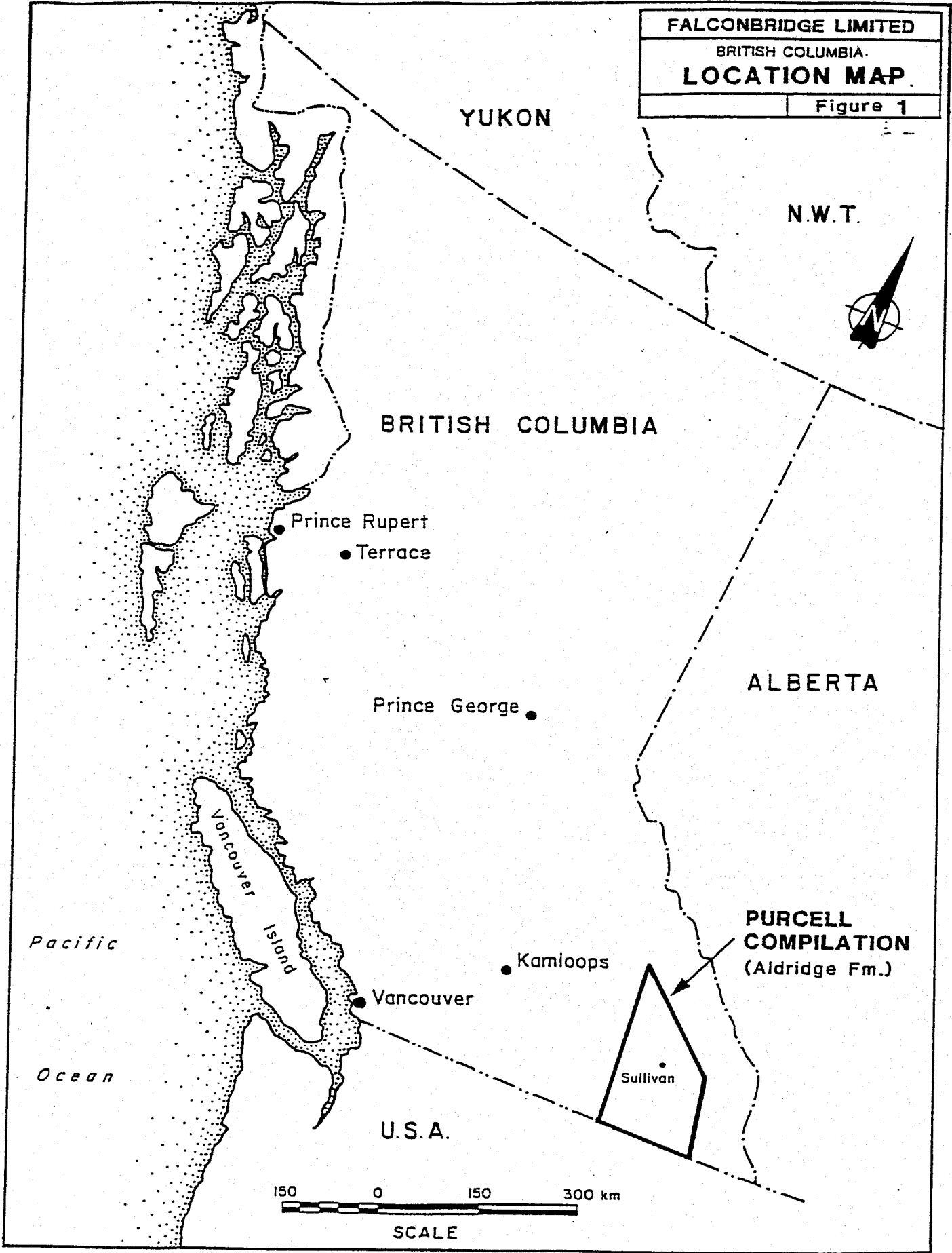
Five specific areas of special interest were identified within the Purcell stratigraphy and they are:

- 1) The McNeil Creek area which lies in NTS map sheets 82F/8E and 82G/5W;
- 2) The area which is to the south and adjacent to the old St. Eugene mine. This lies in NTS map sheets 82G/5W and 82G/4W;
- 3) The Kootenay King area, which lies in NTS map sheets 82G/12E and 82G/13E. The principal focus of our interest here is that area which lies to the north of the Kootenay King and Estella deposits.
- 4) The Mount Patrick area, which lies in NTS map sheet 82F/16W;

5) The Mineral King area which lies in NTS map sheet 82K/8W.

Each of these areas will be discussed in some detail in the following sections.

FALCONBRIDGE LIMITED
BRITISH COLUMBIA
LOCATION MAP
Figure 1



YUKON

N.W.T.

BRITISH COLUMBIA

Prince Rupert
Terrace

Prince George

ALBERTA

Pacific

Vancouver Island

Ocean

U.S.A.

Kamloops

Vancouver

**PURCELL
COMPILATION**
(Aldridge Fm.)

Sullivan

150 0 150 300 km

SCALE

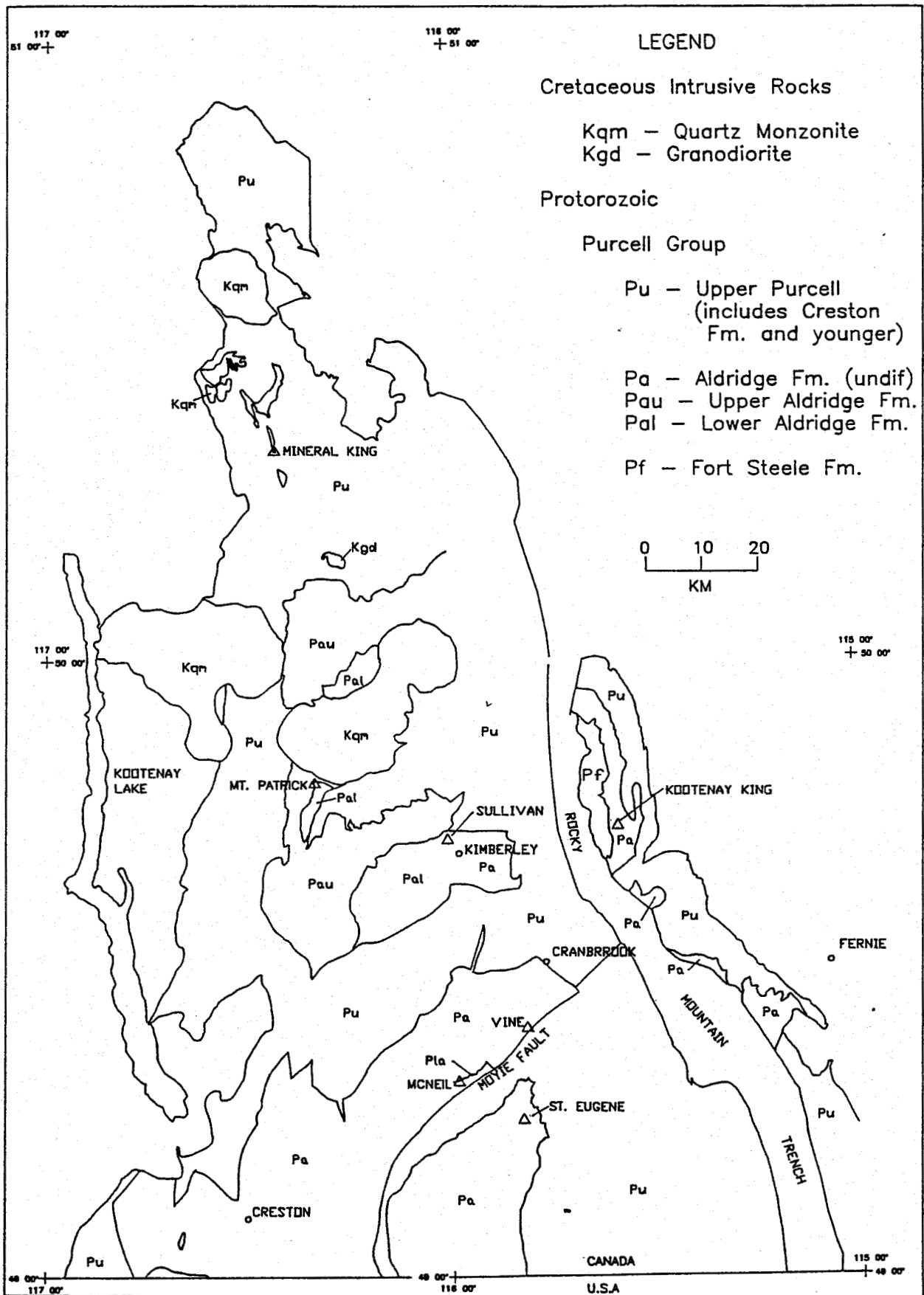


FIGURE 2 : PURCELL GROUP GEOLOGY

PURCELL STRATIGRAPHY

The Middle Proterozoic Purcell Supergroup is exposed over some 26,000 square kilometres of southeastern British Columbia and adjacent parts of Alberta (Hamilton et al., 1983). The following discussion is taken largely from Hamilton et al., 1983. It is a predominantly sedimentary sequence which thins eastward toward the North American craton. Thicknesses may exceed 20 kilometres in the western part of the Supergroup, and facies changes and contacts between units tend to be gradual in these areas. In the eastern part of its exposure, its thickness does not exceed 6 kilometres, and here it is primarily a sequence of shallow marine and fluvial carbonates and coarse to fine clastic rocks. The contacts between units are better defined in this area, and facies changes tend to be abrupt.

The Purcell Supergroup, and its American equivalent, the Belt Supergroup together are generally interpreted to represent a miogeoclinal succession that formed during the Proterozoic as a prograding continental terrace wedge. It is debated as to whether or not the depositional basin was a product of rifting in the Middle Proterozoic, or whether it occurred at an older continental margin.

The stratigraphic column for the Purcell Supergroup is shown in Figure 3.

The Fort Steele Formation is the oldest formation in the Purcell Supergroup. In British Columbia, its occurrence is restricted to those areas of the Purcell which lie to the east of the Rocky Mountain Trench. This is a fining upward platformal/deltaic sequence which exceeds 2 kilometres in thickness. The contact between the Fort Steele Formation and the succeeding Aldridge Formation tends to be transitional, and the Fort Steele Formation is considered to be the facies equivalent of the lower part of the Aldridge Formation which lies to the west of the Rocky Mountain Trench.

In the area of the Purcell which lies to the west of the Rocky Mountain Trench, the Aldridge Formation is the oldest unit. This is a 4 kilometre thick sequence of fine grained siliciclastic rocks, most of which were laid down by turbidity currents. It is generally divided into 3 map units. These are referred to as the Lower, Middle, and Upper Aldridge Formations. The Lower Aldridge Formation is a rhythmic sequence of very fine wacke that is thin to medium bedded and typically graded. The internal structures which can be recognized in the Lower Aldridge are grading, even, parallel laminations, and local development of cross bedding. Matrix becomes more abundant and grain size decreases toward the top of the Lower Aldridge Formation. Intervals of laminated subwacke are interbedded in the Lower Aldridge. These contain laminae and discontinuous blebs of pyrrhotite, which impart the

rusty weathering that is diagnostic of the Lower Aldridge Formation. Intraformational conglomerate occurs locally in elongate lenses near the top of the Lower Aldridge Formation. These are massive to poorly bedded with clasts of material from the Aldridge Formation which range from granule to boulder size, and are set in a siliciclastic matrix of variable composition. The above mentioned intraformational conglomerates in the upper part of the Lower Aldridge Formation, are present below much of the footwall of the Sullivan deposit and thus are considered to be a significant stratigraphic horizon for the intents and purposes of exploration for Sullivan-type deposits in the area.

The Middle Aldridge Formation is characterized by the appearance of distinct graded arenaceous beds which have weathering colours that are distinctly lighter than those observed in the Lower Aldridge. Thin beds of rusty weathering rock similar to the Lower Aldridge material are occasionally interspersed with the dominant arenaceous material. Sedimentary structures which are typical of coarse grained and fine grained turbidites are common in the Middle Aldridge Formation.

The Upper Aldridge Formation is a 300 meter thick sequence of thinly bedded and laminated argillites. The contact between the Middle and Upper Aldridge may be gradational over stratigraphic thicknesses of a few meters to tens of meters. Pyrrhotite is frequently disseminated along bedding planes, and this imparts a rusty weathered surface in some localities in the Upper Aldridge.

The Aldridge Formation is overlain by the Creston Formation, which is a sequence of grey, green, and maroon wacke which was deposited under deltaic to tidal flat conditions. It is up to 1,800 meters in thickness. The Creston Formation is conformably overlain by the Kitchener Formation; the latter being a 1200 meter thick sequence of dominantly platformal dolomites, and terrigenous-dolomite admixtures.

The Van Creek Formation, previously known as the Siyeh Formation, overlies the Kitchener Formation. It is a 200 meter to 400 meter thick sequence of slightly dolomitic and calcareous fine grained sedimentary rock, which in turn is overlain by 500 meters of andesitic volcanics of the Nicol Creek Formation (formerly the Purcell Lavas). This is the uppermost formation of the Lower Purcell sequence.

In the Purcell Mountains, the Lower Purcell sequence is conformably overlain by the Dutch Creek Formation, which is a 1,200 meter thick sequence of grey to dark grey, dominantly platformal carbonate and siliciclastic rocks. The Mount Nelson Formation overlies the Dutch Creek Formation, and comprises 1 kilometre of grey, green, and maroon wacke and buff orthoquartzite.

There are two groups of gabbroic intrusives which intrude the Purcell Supergroup. These are the Moyie sills and a younger group of sills which are believed to be comagmatic with the Nicol Creek Formation lavas. The Moyie sills are estimated to be roughly 1430 million years of age, and comprise sills, slightly discordant sheets, and dykes. These are most frequently occur as intrusions in the lower part of the Aldridge Formation, and are especially abundant in the Purcell Mountains, where they may maintain an aggregate thickness of 2000 meters.

The younger sills which are considered to be genetically related to the Nicol Creek Formation are estimated to be roughly 1075 million years of age. These are frequently encountered in the upper part of the Creston Formation, and in the Kitchener and Van Creek Formations.

The Purcell Supergroup has been affected by at least three episodes of deformation and metamorphism. These have been:

- 1). The East Kootenay Orogeny (1300 to 1350 Ma), which was associated with the emplacement of some granitic intrusions.
- 2). The Goat River Orogeny (800 to 900 Ma), which involved regional uplift and block faulting.
- 3). Late Mesozoic thrust faulting and related folding.

Metamorphic grade tends to increase with depth in the Purcell stratigraphy. In the pelitic rocks of the Kitchener Formation, the dominant metamorphic minerals are muscovite and chlorite, while biotite does not generally occur as a metamorphic mineral above the Aldridge Formation.

ALTERATION OF THE SULLIVAN DEPOSIT

Wallrock alteration is pervasive in the vicinity of the western part of the Sullivan orebody, and affects extensive amounts of rock in the footwall and hangingwall of the deposit, as well as within the orezone itself. The eastern part of the deposit, by way of contrast, is relatively unaltered.

Tourmalinite is the dominant alteration product in the footwall of the deposit. The tourmalinite zone is a funnel-shaped body which is situated below the Sullivan orebody. It has an elliptical shaped top which has dimensions of roughly 1400 by 950 meters. The emplacement of this zone was the result of boron enrichment which may have been the product of volcanic processes within the Purcell Basin. In addition to boron, the tourmalinite zone of the footwall is also enriched in iron and magnesium relative to normal Aldridge sediments, whereas it is depleted in potassium, sodium, and calcium.

The dominant alteration minerals in the rocks of the hangingwall of the Sullivan deposit are chlorite, albite, pyrite, garnet, and carbonates. These are also encountered in restricted crosscutting footwall structures, and in a zone which crosscuts the orebody itself. In the albite-chlorite-pyrite-carbonate rocks of the hanging wall zone, silica has been greatly reduced and potassium is virtually absent.

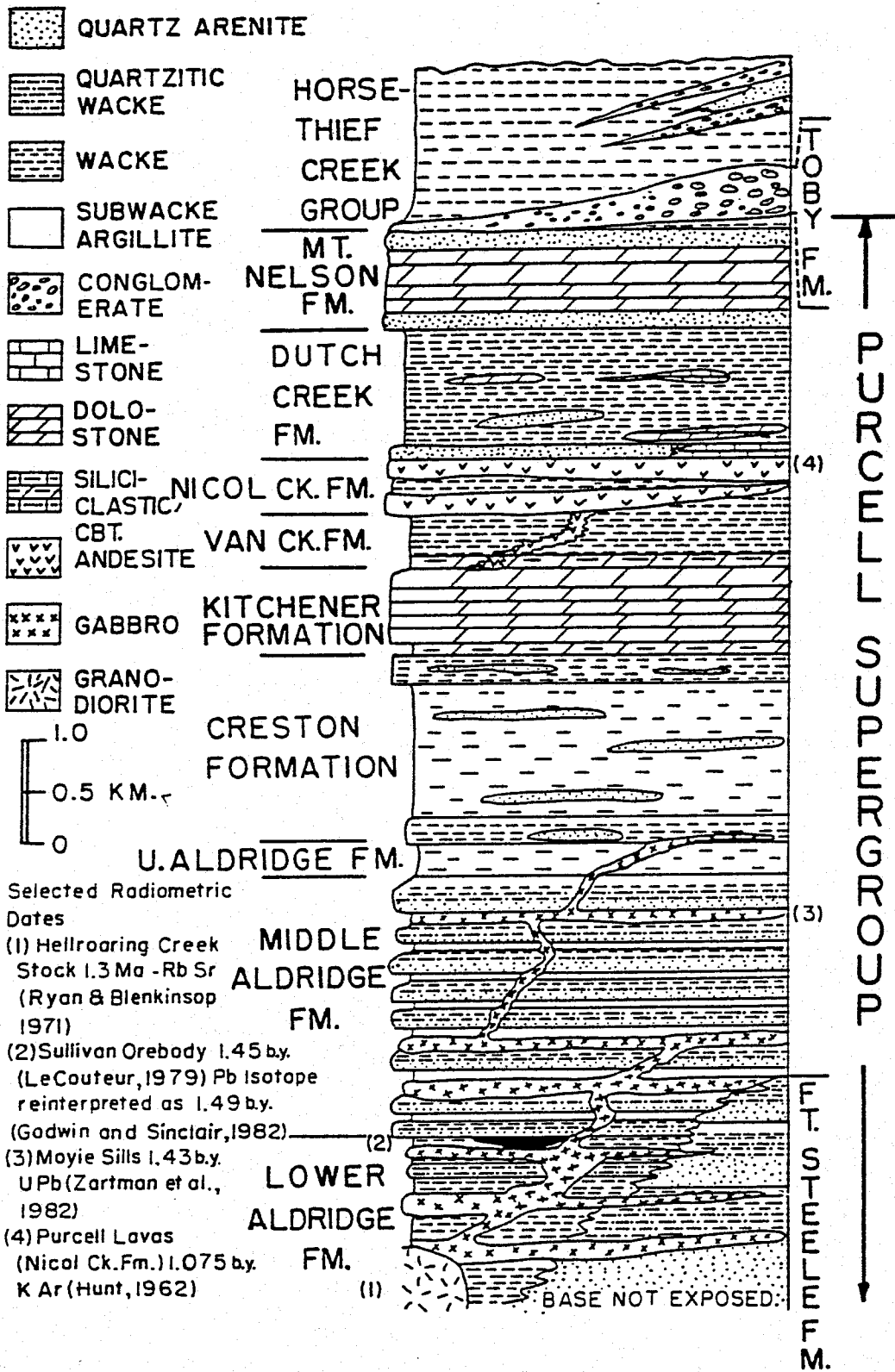


Fig. 3. Stratigraphic subdivisions, Purcell Supergroup, Kimberley area, southeastern British Columbia.

THE MCNEIL CREEK AREA

The McNeil Creek area became a focal point of the Purcell Compilation after our attention was drawn to an announcement which appeared in the April 7, 1989 edition of the George Cross Newsletter [no.67(1989)]. According to this announcement, which was made by Dragoon Resources and Greenstone Resources, 106 feet of banded or bedded lead-zinc-silver mineralization of the Sullivan type was intercepted at a depth of 2,785 feet in the initial drill hole of the program. Intervals of slump-type conglomerate clasts which are rimmed with pyrrhotite after the fashion of those which occur within the western edge of the Sullivan deposit were observed in the mineralized intersection. A second hole drilled 2.1 miles to the southeast intersected the contact between the Lower and Middle Aldridge Formations at a depth of 900 feet and contained 110 feet of weak mineralization which terminated in a Moyie sill. The best assay returned from the drilling program at the time of the George Cross announcement was 18% combined lead and zinc and 2.6 oz. silver/ton over 3 feet.

The McNeil Property is situated approximately 20 kilometres southwest of Cranbrook, and covers a portion of the exposure of Lower and Middle Aldridge sediments, which lies to the north of the Moyie Fault, and is at least 20 kilometres long by 12 kilometres wide. It is comprised of the SHYANN, SHYANN #2, and SUNNY #1-6 mineral claims; a total of 105 claim units (see Figure 4). The recorded owner of the SHYANN claims is South Kootenay Goldfields Inc., which is an operating company formed on a 50/50 basis by Dragoon Resources Ltd. and Greenstone Resources Ltd, while Robert J. McGowan, who is the president of Dragoon Resources Ltd., is the recorded owner of the SUNNY claims.

The exact locations of the above two drill holes which were described in the George Cross announcement are not known. However, the assumption that they were drilled in the southwestern part of the property in the SHYANN #2 and SUNNY #1 claims is consistent with our understanding of the geology of this particular area, as derived from Hoy's geology map (Hoy, 1986) of the Moyie Lake area. It is unfortunate that the western portion of the McNeil property lies outside of the area covered by this map sheet, and that no geology map of this calibre is available for the east half of the property. The principal structural feature in the eastern portion of the McNeil property is a northeasterly plunging synform. The northern part of the property is uniformly underlain by strata of the Middle Aldridge Formation.

The McNeil property effectively surrounds the MAR 3 and 4 and RAM 1 and 2 claims which are held by Edward Joseph Frost of Fort Steele. The connection between Frost and South Kootenay Goldfields, if any such connection exists, is unknown at this point in time. The Mar 3 claim was once held by St. Eugene Mining Corporation, and was part of the St. Helen claim group which was

staked in 1979 and 1980. Assessment report no. 07660 describes a geological and geochemical program undertaken on two one unit two post claims in October, 1979, in which St. Eugene was the operator. The claims were named GEM 1 and 2, and were held by Kathleen Ann Frost, and were situated within the area which is now encompassed by the Mar 3 claim. Anomalous values in silver, lead, and zinc were reported in soil samples taken during the course of this program.

Several minor exploration programs have been undertaken in the past in the area which now lies within the properties which are discussed above, including a drilling program conducted by St. Eugene Mining Corporation in May, 1981 on the ST HELEN 2 claim, which covered part of the area now encompassed by the SHYANN #2 claim. Assessment report no. 09712 describes this program rather briefly. It consisted of the drilling of a single 157.6 meter B.Q. hole for the purpose of obtaining lithological information. This hole was drilled in Aldridge(?Middle), and terminated in diorite of a Moyie sill, with the last 25 meters of the hole having been drilled in this material. No significant mineralization was encountered during the course of this program. The program which St. Eugene conducted on the Gem claims revealed some modestly anomalous soil geochem results, with high values in lead, zinc, and silver. Anomalous values were also obtained from a sheared quartz which was discovered on the survey grid in the course of that program. The Mary claim group which was held by St. Eugene at that time covered the area that now lies within the eastern portion of the property. All assessment work on these claims which we are aware of has been conducted to the north of the McNeil property, across the Moyie River. A hole which was drilled there intercepted the Middle Aldridge Formation.

The area which comprises the northern part of the SUNNY #5 and #6 claims was previously within the BULLS EYE claim group which was held by Owen Kenneth Bakewell of Edmonton. Assessment report no. 12894 describes a program which was conducted on this claim group in the summer of 1984, with Bridgetown Resources of Edmonton being the operator. Morris Geological was the consulting firm which conducted the program. This program was rather limited in scope, and it appears that no samples were taken from the area which now lies within the McNeil property.

The southeastern part of the McNeil property was formerly held by Cominco. This was the Pee Pee claim group. Assessment Report no. 1063 describes a geological and geochemical program which was undertaken by Cominco staff in 1967. Some lead occurrences in restricted quartz veins were reported, and a summary description of these is given under Minfile occurrence numbers: 082GSW038, 042, and 043. Assessment report no. 10846 describes a UTEM survey which S. Visser conducted on the LEW and VINE claims for Cominco in 1982. There is no map to accompany this report, but results were negative. However, from the description of the

location which Cominco provides, it seems probable that these claims had been staked over the old PEE PEE claim group. Cominco has since allowed all of these claims to lapse.

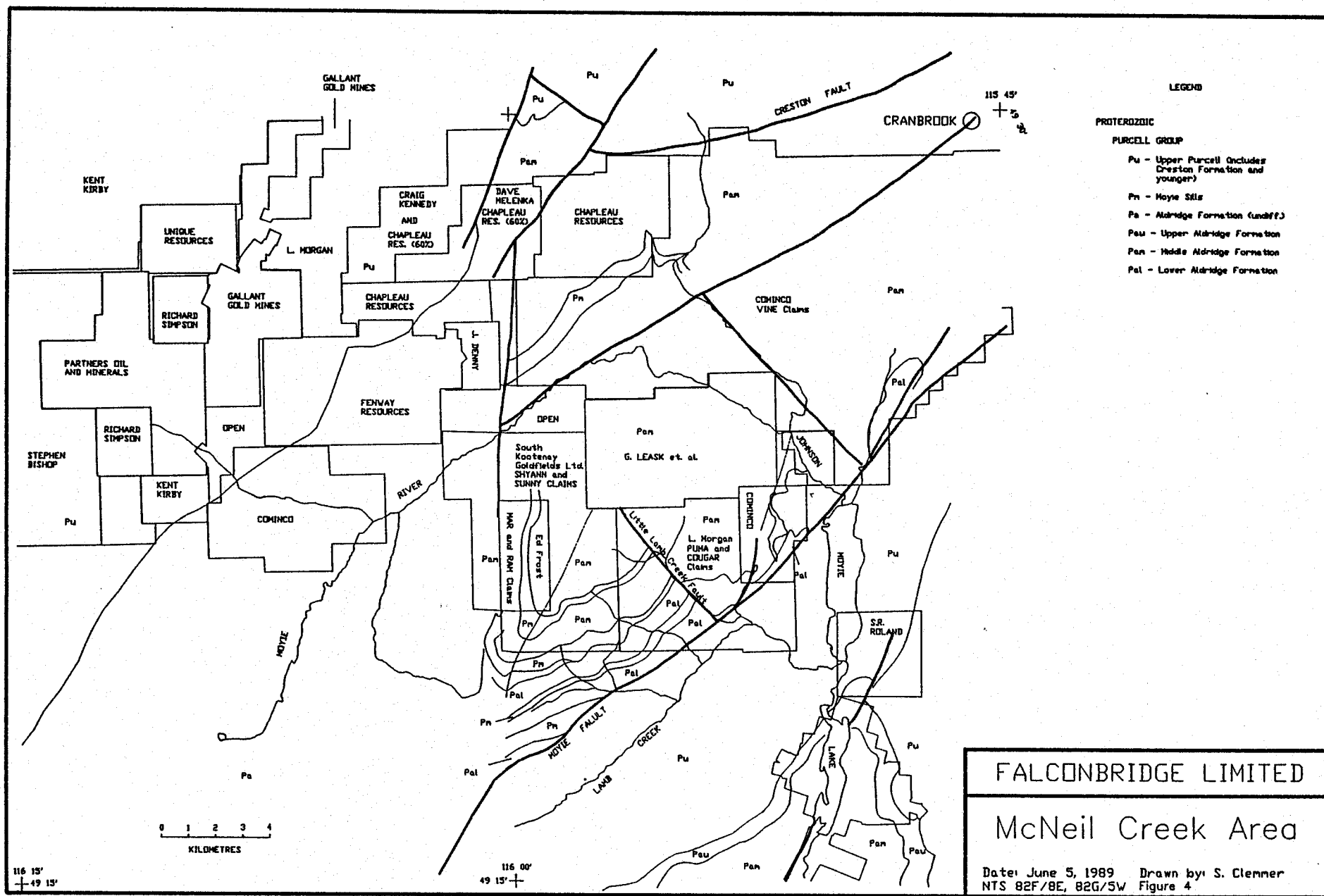
The areas which lie to the south and east of the McNeil property (see Figure 4) are especially interesting. The ground immediately south of the property is shown to be open on our mineral title maps, but it is very unlikely that this situation has prevailed after the disclosures were made about the McNeil property. The recorded owner of the PUMA and COUGAR claims which lie to the east of the property is Lloyd David Morgan of Cranbrook, with the exception of the claim that is named simply PUMA, that is recorded under the name of John E. Morgan of Victoria. The geology of this claim group appears to be hold good potential for Sullivan type mineralization; particularly in those areas which lie to the northwest of the Moyie Fault, and to the southwest of the Little Lamb Creek Fault. Morgan holds a considerable amount of ground in the Cranbrook region, and has optioned a group of claims to the north of McNeil area to Chapleau Resources. He should be approached in regards to this group of claims, as there is no evidence of any third party involvement here.

Another interesting group of claims is the AMY, WHITEY, CURLY, SHORTY, HAP, LEIGH, and MR claims which are held by Gordon Leask and a group of associated individuals. This may be part of the holdings of the Goldpac company, as Leask is purported to be a principal in that company (Ken Murray, personal communication). The claims lie to the north of the clearly favourable stratigraphy in the area, but Hoy's map (Hoy, 1986) indicates that there is a paucity of outcrop over much of the property.

The Vine discovery, which was made by Cominco in 1976, is situated to the east of the McNeil area, on the west side of the Peavine Valley. A memo issued by Dr. G.W. Mannard and R.G. Gifford in November, 1976, describes the discovery as consisting of angular shaped boulders of massive sulphide material comprised primarily of pyrrhotite, with associated galena and sphalerite, which bear resemblance to the ore from the Sullivan mine which is situated 23 miles (37 kilometres) to the north. Mannard and Gifford have not ruled out the possibility that the source of this material is, in fact, the Sullivan deposit, however the angular shape of the boulders holds out the promise that this material may be locally derived, and the stratigraphy is certainly right for a Sullivan type occurrence. The contact between the Lower and Middle Aldridge formations is shown to underlay the immediate vicinity of the Vine discovery on Trygve Hoy's geology map (Hoy, 1986). Cominco staked approximately 400 claims on the basis of this discovery, and still holds most of them. The discovery location is situated in the VINE 1 claim, and all of the ground for several kilometres to the north of this is held by Cominco. The location of the Vine occurrence which is indicated on Hoy's geological map would fall within the VINE 1 claim. However, there is reason to suspect that a vine

showing may occur in outcrop on the DEB or JUD claims which are held by Fran and W.R. Johnson.

The areas to the north and west of the McNeil property are heavily staked (see Figure 4) and there are a number of known gold occurrences in the area. Major players in this area are Chapleau Resources Ltd., Gallant Gold Mines Ltd., Fenway Resources Ltd., Partners Oil and Minerals Ltd., and Endurance Minerals Inc. The stratigraphy which underlies these properties is well above the Sullivan Time Horizon, as the Creston and Kitchener Formations are the hosts for the most promising gold showings in this area. Reports from all of the above mentioned companies are included in the compilation text. However, the location of their properties within the Purcell stratigraphy is not especially favourable for our purposes.



116 15'
 49 13'

0 1 2 3 4
 KILOMETRES

116 00'
 49 15'

THE ST. EUGENE AREA

A belt of Aldridge stratigraphy approximately 35km long and 25km wide is exposed in a broad antiformal structure, the Moyie Anticline, to the southwest of the former St. Eugene mine (see figure 5). The St. Eugene and related deposits are vein type occurrences which are hosted in the Middle and Upper Aldridge Formations and at the contact of the Upper Aldridge and Creston Formations, as is the case for the Society Girl occurrence. All of these are in the vicinity of Moyie Lake.

The area which lies to the south of the St. Eugene crown grants is of interest as the Lower-Middle Aldridge contact zone has been intercepted in drill core in this area. Of particular interest are the claim groups which Chevron has optioned from St. Eugene, which are located several kilometres to the southeast of the St. Eugene mine in the southern part of the 82G/4W map sheet (see Figure 5). Chevron is now the recorded owner of the MEL, EARL, ERIK, CHARMAINE, and TOONA claims; while the TOURM, YAHK, ALDER, TOP, PINE, TNT, LARCH, AME, and MEAD claims are recorded under the name of St. Eugene Mining Corporation Ltd. The latter group is located to the south of Chevron's claims. This is a large parcel of ground, and a considerable amount of exploration work has been performed here by St. Eugene prior to 1983, and by Chevron after the latter had optioned the properties. Since St. Eugene Mining Corporation Ltd. is owned by Falconbridge Ltd., all technical data generated by Chevron's activities on these properties should be accessible to Falconbridge. No significant bodies of sulphide mineralization were found in the course of work on these claims. However, the contact between the Lower and Middle Aldridge Formations has been intercepted, and tourmaline rich horizons similar to those in the Sullivan area are known to occur.

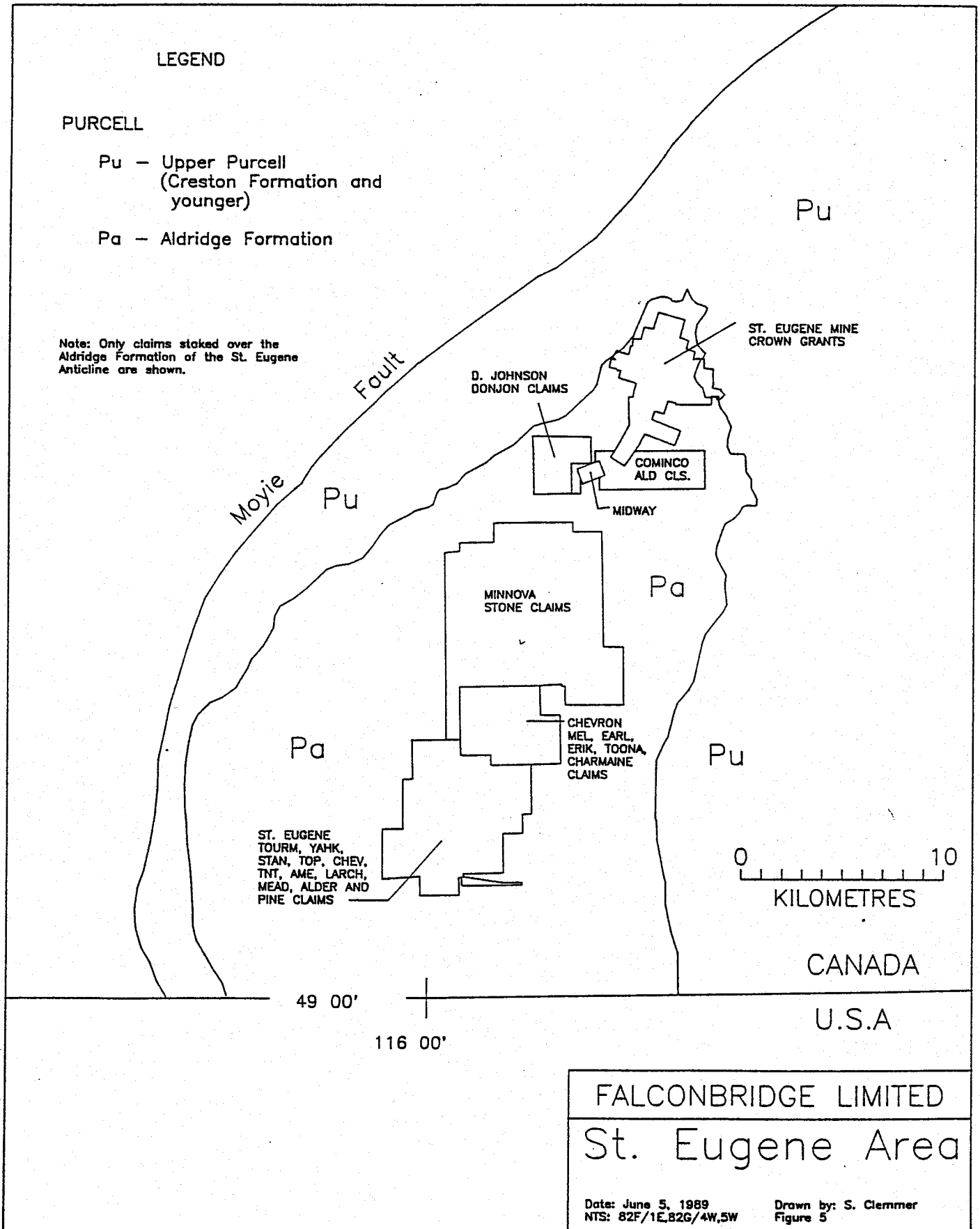
Other claim holders in the area include Cominco, that holds the ALD claims which are immediately south of the St. Eugene crown grants, and the adjacent DONJON claims are held by Don H. Johnson of Edmonton. Minnova holds the ground to the north of MEL and EARL claims. This is the STONE group of claims. The Midway Mine, which is a gold-silver vein-type occurrence, is situated immediately to the south and east of the DONJON 1 claim. It is owned by Consolidated Sea Gold Corporation.

LEGEND

PURCELL

- Pu - Upper Purcell
(Creston Formation and younger)
- Pa - Aldridge Formation

Note: Only claims staked over the Aldridge Formation of the St. Eugene Anticline are shown.



FALCONBRIDGE LIMITED
St. Eugene Area

Date: June 5, 1989
NTS: 82F/1E,82G/4W,5W
Drawn by: S. Clemmer
Figure 5

THE KOOTENAY KING AREA

The Kootenay King area is located on the east side of the Rocky Mountain trench, and is underlain by Purcell stratigraphy that has been thrust eastwards over younger Palaeozoic formations. Two lead-zinc-silver deposits which are hosted in the Middle Aldridge Formation in this area have been mined. These are the Kootenay King and the Estella (see figure 6). The Kootenay King is a stratiform deposit, which is located close to the contact between the Lower and Middle Aldridge Formations. The mineralized horizon is intercalated with dolomitic to argillaceous siltstone in Kootenay King quartzite. These units have been interpreted to be channel sandstone deposits. Intraformational breccia is closely associated with the mineralization in the Kootenay King deposit. According to the Minfile summary on the deposit, a total of 13,260 tonnes of ore from the Kootenay King were mined and milled in 1952 and 1953. Total production from this operation was 881,383 kg. zinc, 710,866 kg. zinc, 61,460 g. silver, and 715 g. gold.

The Estella deposit, on the other hand, is a structurally controlled deposit, which is hosted in a zone of fracturing and light shearing in Middle Aldridge sediments. Reserves in this deposit were calculated in 1951 to be 43,364 tonnes averaging 5.8% lead, 19.0% zinc and 50 g/tonne silver across an average width of 1.77 meters. By 1970, total production was reported to be 85,065 tonnes.

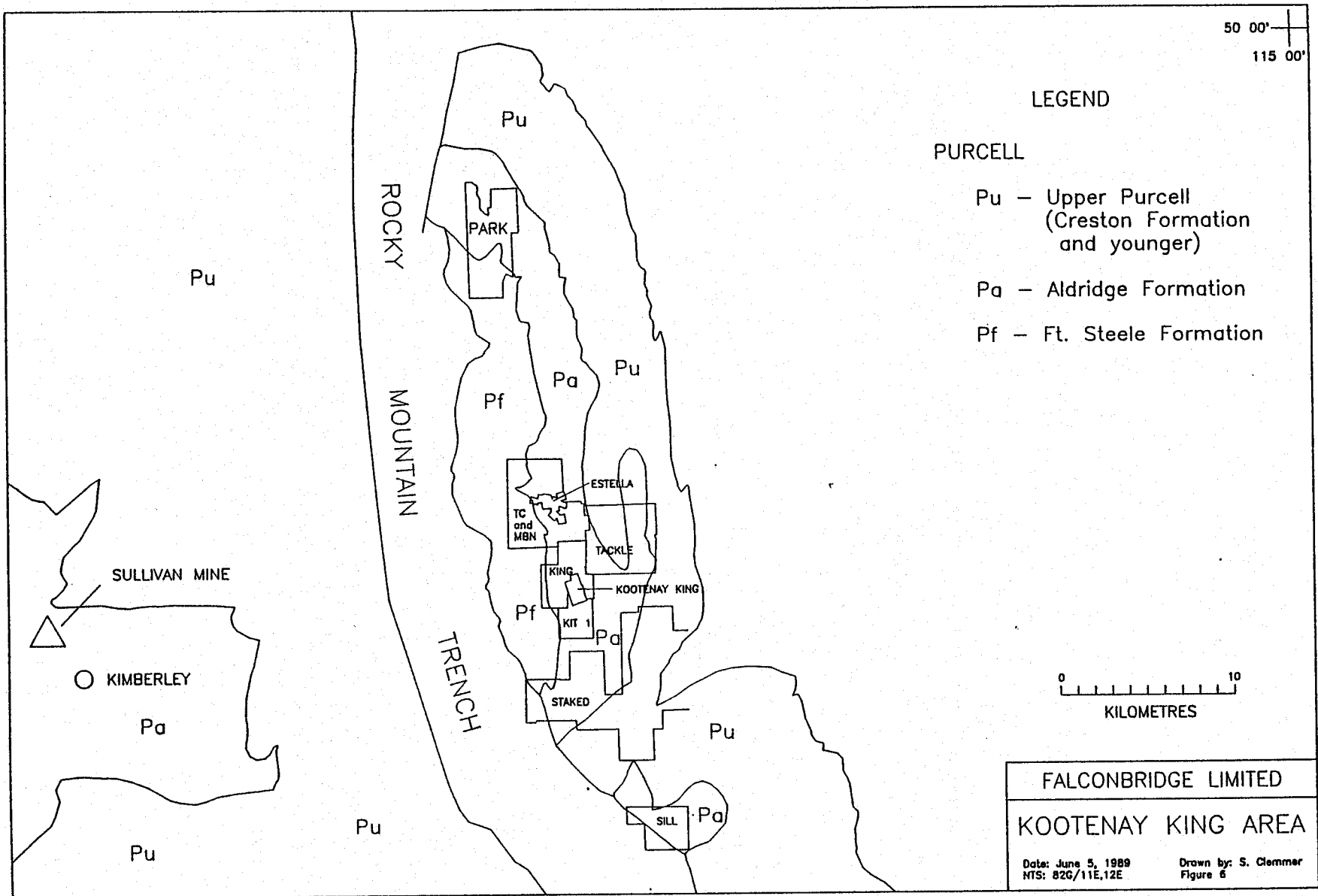
The facies of the Aldridge Formation in the Kootenay King area differ sharply from those to the south and west, as shallow water deposits tend to predominate over deeper water, turbiditic deposits.

The Kootenay King mine is situated in crown grant L.7789, and the tenure of this crown grant has not been ascertained. However, the area immediately adjacent to it is held by Cominco (see Figure 6). Placer Dome owns the Tackle claims to the north and east, but these are predominantly underlain by younger strata, and gold appears to be the main exploration target here. The Estella Mine is on non reverted crown grants, and tenure information for these was not obtained during the course of the title search. The TC and MBN claims which surround these crown grants are held by Louie Mikulic. Mikulic had entered into an agreement with a company called Bakra Resources, and an exploration program was mounted on this property in the summer of 1987 by Shangri-La Minerals on behalf of Bakra Resources. A report by Shangri-La which describes this program is included in the prospectus for Bakra Resources Ltd. Some minor occurrences of vein-type mineralization were encountered during the course of this program, and this property may very well warrant some further investigation.

There is a strip of ground which extends north from the

Estella area that is underlain by the Aldridge Formation, including horizons of the intraformational breccia which is associated with the Sullivan and Kootenay King deposits, and which is entirely open for staking. The reason for this is not immediately apparent. However, the formidable topographic regime which is extant in this area (i.e., a very steep mountain side) could possibly be a contributing factor. The strata in this area dip into the mountain side, and this would be create some obvious problems for anyone attempting to conduct a drill program here. However, this area may warrant at least a cursory examination. The northwestern portion of this belt lies within the Premier Lake Park, and is thus not open for exploration purposes.

The Sill property, which is located to the southeast of the Kootenay King deposit and is underlain by Aldridge strata, could also be of interest. It is held by a Gearld Babcock, and the author has learned from reliable sources that Babcock is involved with a party that has been actively involved in searching for Sullivan type deposits, and that they have performed an appreciable amount of exploration work in the area.

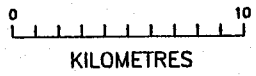


50 00'
115 00'

LEGEND

PURCELL

- Pu - Upper Purcell
(Creston Formation and younger)
- Pa - Aldridge Formation
- Pf - Ft. Steele Formation

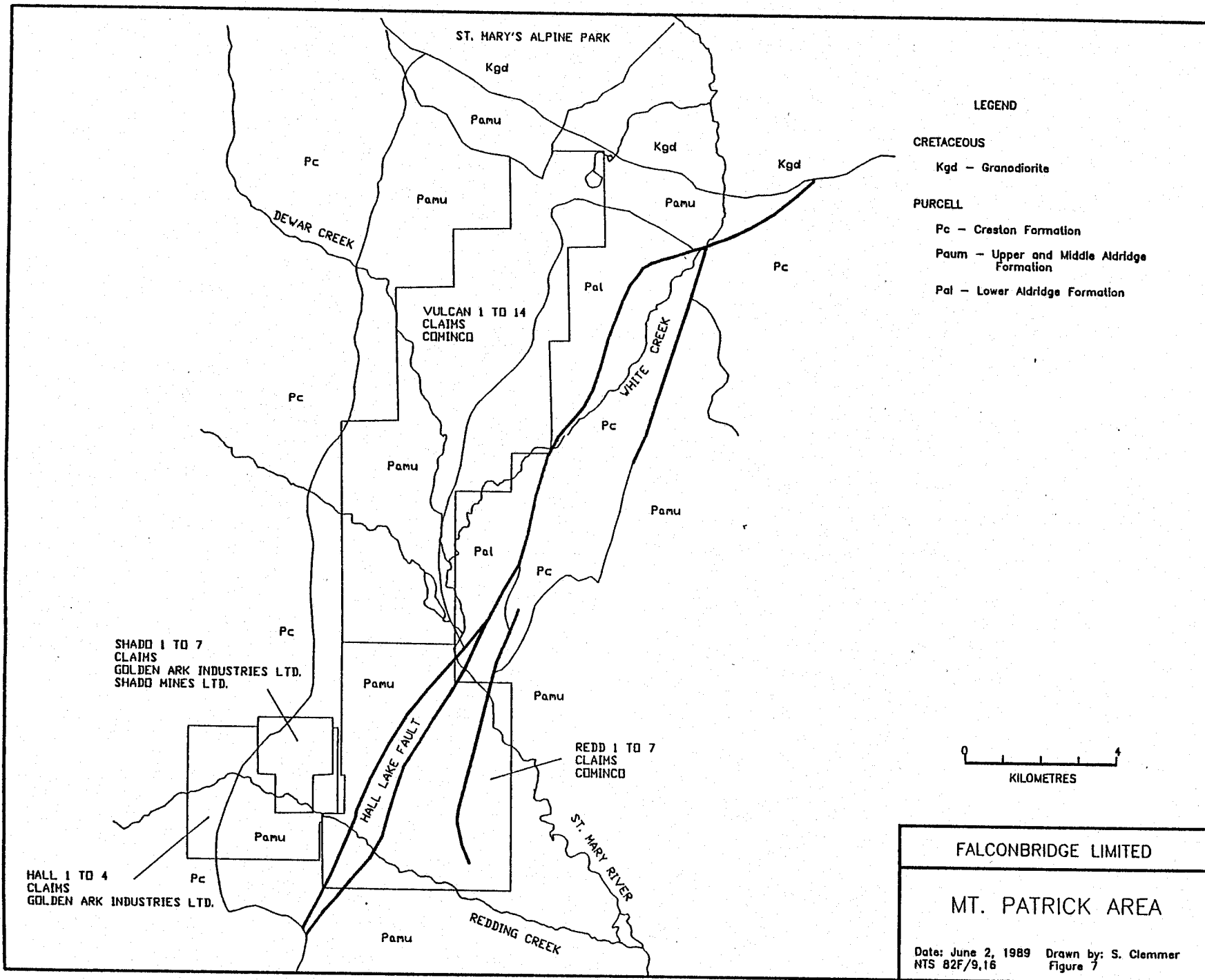


FALCONBRIDGE LIMITED
KOOTENAY KING AREA
 Date: June 5, 1989
 NTS: 82G/11E,12E
 Drawn by: S. Clemmer
 Figure 6

THE MOUNT PATRICK AREA

Several occurrences of lead-zinc-silver mineralization of various affinities are located on Mt. Patrick, which lies in NTS map sheet 82F/16W. These are situated in the vicinity of Diorite (Jurak) Lake which is near the contact of the Purcell Sediments with the White Creek Batholith. This prospect was initially included in the HILO claim group which was staked by Texas Gulf in 1970. Texas Gulf conducted exploration on this property, including diamond drilling, in the early 1970s, and subsequently allowed the claims to lapse. Again no record of this Texas Gulf work is anywhere to be found in the files, except for some very illegible hand written xerox copy notes that suggest significant base metals may have been intersected in the drilling. Cominco now owns the ground in which the prospects occur, which is now part of the VULCAN claim group (see Figure 7). Cominco's holdings extend southward from Mt. Patrick into the 82F/9W map sheet, and appear to cover an area of favourable stratigraphy. In the Mount Patrick area, the Sullivan Time Horizon occurs in the hinge zone of a major northwest trending anticline. Cominco appears to control all of the favourable stratigraphy in this structure. The areas which lie immediately to the east and west of the VULCAN and REDD claims are unstaked, but the stratigraphy in these areas is almost certainly Upper Purcell. Thus, the only practical option for acquiring an interest in this area would be to approach Cominco about a joint venture agreement.

The same trend which hosts the Mount Patrick occurrences is encountered to the north of the White Creek Batholith, in the area which is now included within the ECHO claim group which is held by Cominco. In the early 1970s, this area was included within the ACE claim group, which was held by Texas Gulf. Gifford's reports on exploration programs conducted on this property are not especially encouraging. The Purcell Wilderness Conservatory occupies some potentially interesting ground in this area, and this limits the options which one has for choosing exploration targets in this area.

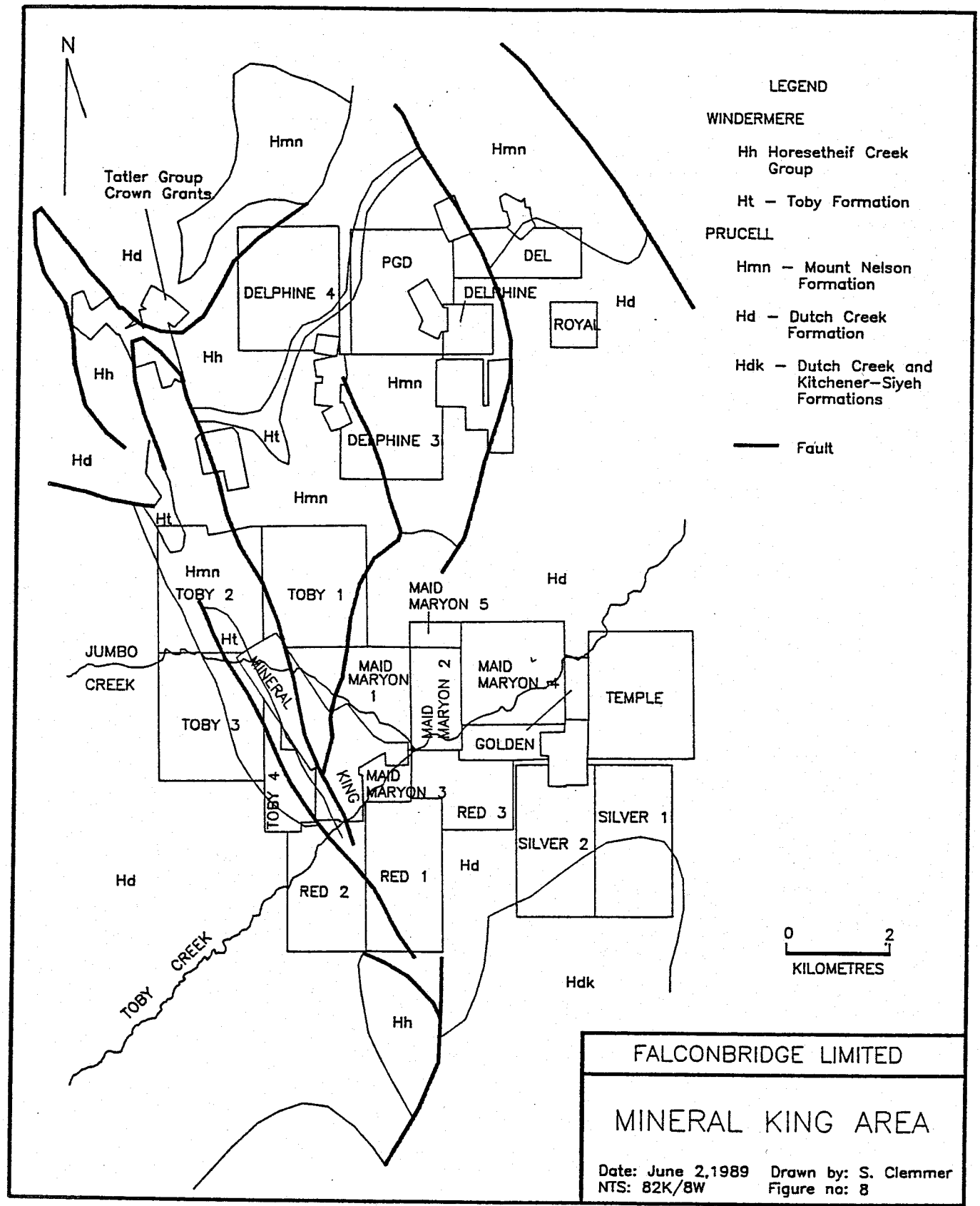


THE MINERAL KING AREA

The Mineral King deposit is situated in NTS map sheet 82K/8W. This area is unique for the purposes of this compilation inasmuch that it does not occur within the Aldridge Formation, but rather is described as a replacement deposit (Fyles, 1960) in dolomites of the Upper Purcell; presumably within the Dutch Creek Formation. However, the descriptions given of its stratigraphic location are rather vague. It is apparent that base metal mineralizing event was contemporaneous with deposition of Upper Purcell Strata. The structural regime in this area is quite complex, and the strata here have been intensely folded. The two northwest trending normal faults which transect the property are believed to have been the source of mineralization in the Mineral King deposit.

The Mineral King mine site is situated on a series of non-reverted crown grants, and the tenure status of these has not been ascertained (see Figure 8). The MAID MARYON claims, which are situated immediately to the east, are held by Mountain Minerals Co. Ltd. of Lethbridge. This company is known to be heavily involved in the search for industrial minerals. The nature of their exploration targets in this area is, however, unknown. Of greater interest are the TOBY and RED claims, which are held by Chris Graf, who is the president of Active Minerals and some other junior mining companies. The faults which are associated with the mineralization at the Mineral King mine transect these properties. The TOBY claims are in good standing until 1990, whereas the RED claims are due on June 13, 1989.

The Tatler Group property consists of a group of reverted crown grants and is situated 8 kilometres to the northwest of the Mineral King mine and is associated with the same two normal faults. A considerable amount of work has been conducted on this property over the years, and lead, zinc, copper, and barite mineralization is known to occur in quartz veins here. There is also a report which Thomas Tough wrote on this property for Silver Falls Resources in 1983. The tenure status of some of the reverted crown grants in this property was ascertained during the course of the title search, and they are currently open. This property, and the area which lies between it and the Mineral King mine may warrant some further investigation.



N

Tatler Group
Crown Grants

Hd

Hmn

Hmn

Hh

Hh

Hmn

Hd

Hd

Hh

DELPHINE 4

PGD

DEL

ROYAL

DELPHINE 3

Hmn

Hmn
TOBY 2

TOBY 1

MAID
MARYON 5

Hd

JUMBO
CREEK

TOBY 3

MAID
MARYON 1

MAID
MARYON 2

MAID
MARYON 4

TEMPLE

MINERAL
KING

TOBY 4

MAID
MARYON 3

GOLDEN

RED 3

SILVER 1

Hd

RED 2

RED 1

Hd

SILVER 2

TOBY CREEK

Hh

Hdk



MISCELLANEOUS AREAS OF INTEREST

There are some base metal occurrences in the Creston area which are hosted in the Aldridge, and might possibly warrant some consideration. The lack of a good geological map for the area confounds the understanding of the stratigraphy and structure of the area.

The Delaware crown grants, which are situated in NTS map sheet 82F/1, hold an occurrence of lead-zinc-silver mineralization in a quartz vein which is within a shear zone in quartzites of the Aldridge Formation, and has been mined in the past. These crown grants are surrounded by the ROW claims which are held by Chevron.

The Alice Gem occurrence is situated on Arrow Mountain to the northeast of Creston. This is also a past producer, with lead and silver having been produced from quartz veins which are hosted in the Aldridge Formation. The ALICE GEM claims were recorded under the names of William Murphy and Claude W.G. Macdonald. The current status of these claims is unclear, however, as the anniversary dates have passed, and it is not known to the author whether or not any further work has been applied to them. More information will be required in order to properly assess the merit of these properties.

An area which could conceivably be of some interest is that which surrounds Cominco's DODGE claims. These are located to the southwest of Creston. We have no information on these properties, but the fact that Cominco is active in this area may be indicative of some potential for Sullivan-type mineralization in this westernmost portion of the Purcell belt in British Columbia. Two junior companies hold ground immediately to the west of the DODGE claims. These are Orion Resources Ltd. which holds the SULLIVAN TWO claims, and White Knight Resources Ltd., which holds the JON claims. It would definitely be worthwhile to obtain a copy of Assessment Report no. 14951, which describes assessment work which Cominco has applied to the DODGE claims.

Ross H. Stanfield of Calgary holds mineral title to an extensive amount of ground in NTS map sheets 82G/6E, 6W, 11E, and 11W. There are some Minfile occurrences of lead-zinc-silver mineralization which are hosted in Aldridge sediments in this area. However, there is little information on these. It might be worthwhile to examine Alfred Allen's assessment reports on these properties so as to enable a better evaluation the potential of this area.

BIBLIOGRAPHY

Hamilton, J.M., Delaney, G.D., Hauser, R.L., Ransom, P.W.
Geology of the Sullivan Deposit, Kimberley, B.C., Canada in
Short Course in Sediment-hosted stratiform lead-zinc deposits,
Short Course Handbook Volume 8, May 1983, Editor D.F.
Sangster, Mineralogical Assic. of Canada, pp. 31-83.

Hoy, T. and Diakow, L. 1982
BCDM Preliminary map 49.