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ACTION:

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PROSPECTING REPORT  
ON THE COUGAR CLAIMS  
FORT STEELE MINING DIVISION  
NTS: 82G5W

Latitude: 49 20'

Longitude: 116 53'

BY

C.K.KENNEDY  
Prospector

February 15, 1991

GEOLOGICAL BRANCH  
ASSESSMENT REPORT

21,043

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## SUMMARY

This report is submitted on behalf of the recorded owners of the Cougar claims, namely : L. Morgan, J. Morgan, R. T. Banting and C.K. Kennedy.

The Cougar property, comprising of three mineral claims of 14 units is located in the Cranbrook area, near Monroe Lake.

In the summer of 1990, the writer initiated a prospecting program over the Cougar property. Prospecting located mineral occurrences of lead and zinc in limonitic oxidized shear zones of quartz material.

## 1.0 INTRODUCTION

### 1.1 Location And Access

The Cougar property is located approximately 17 km. SW of Cranbrook. Access is via paved road, Highway #3 to Green Bay, west to Monroe Lake then by gravel road to the property.

### 1.2 Physiography

The property is situated west of the Rocky Mountain Trench within the Moyie Range of the Purcell Mountains. The highest elevation in the area, at the northernmost part of the property is 2000 metres. Elevations vary between 1340 metres at the entrance road to 1800 metres.

Precipitation is high (80-180 cm) compared to other surrounding areas, while snow is moderate to high. Mean temperature compares to Cranbrook norm at 17c in July to -8c in January.

The ravines are well timbered with spruce, larch, lodgepole pine, alpine fir, white pine and thick underbrush. The upper elevations exhibit much less forest cover.

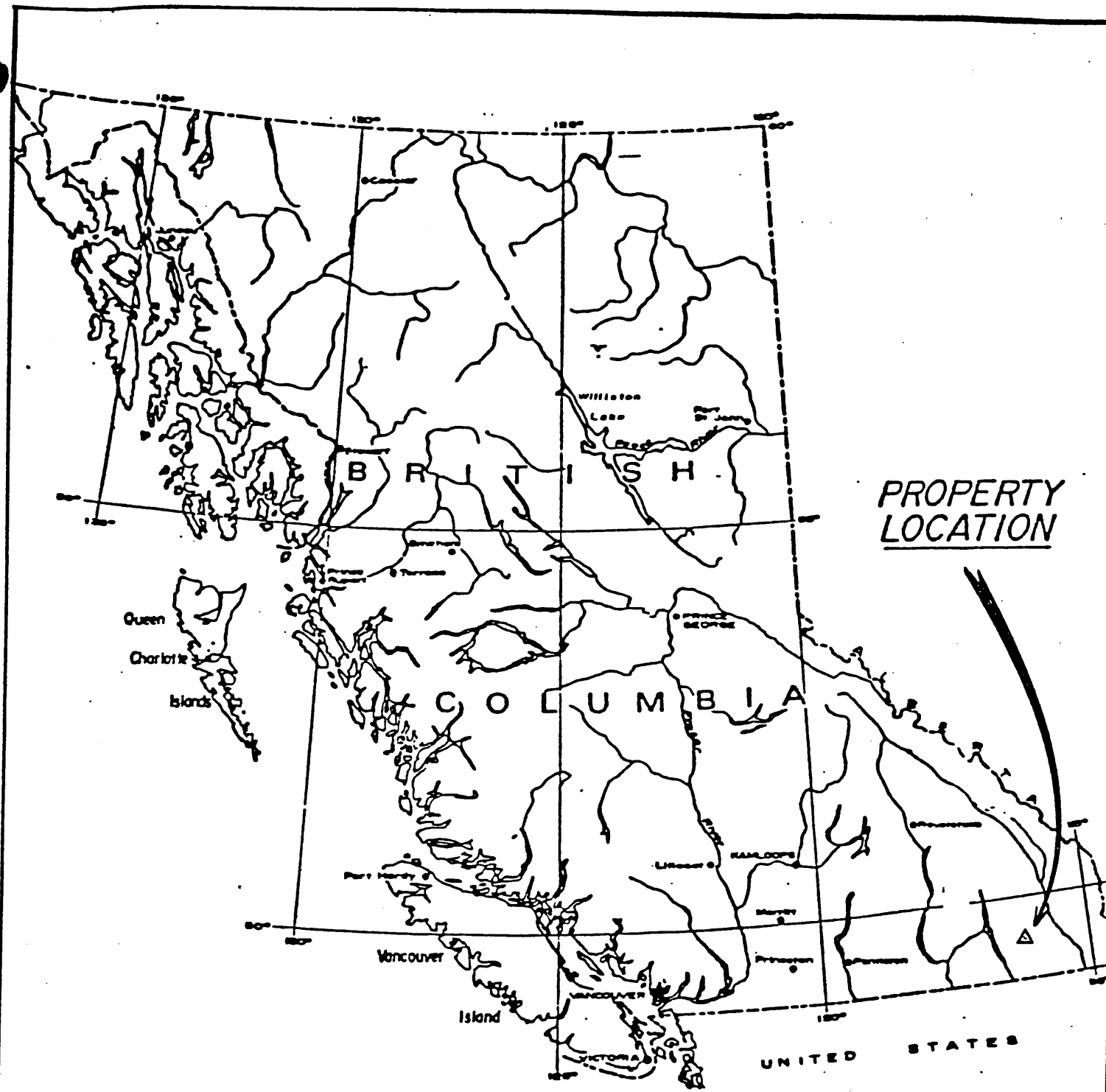
### 1.3 Claim Information

The Cougar property is comprised of three mineral claims of 14 units. The mineral claims, so named Cougar 4,5,6 are owned by L.Morgan, R.T. Banting and C. Kennedy of Cranbrook, B.C. and J. Morgan of Victoria, B.C.

#### CLAIM STATUS

TABLE 1.3

<u>Claim Name</u>	<u>Record #</u>	<u>Recorded Date</u>	<u>Expiry Date</u>	<u># Units</u>
Cougar 4	3908	Dec. 9,1989	Dec. 9,1991	12
Cougar 5	3909	Dec. 7,1989	Dec. 7,1991	1
Cougar 6	3910	Dec. 7,1989	Dec. 7,1991	1

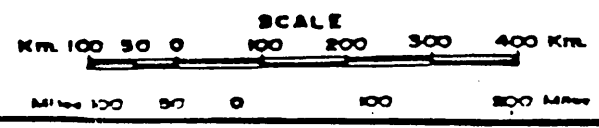


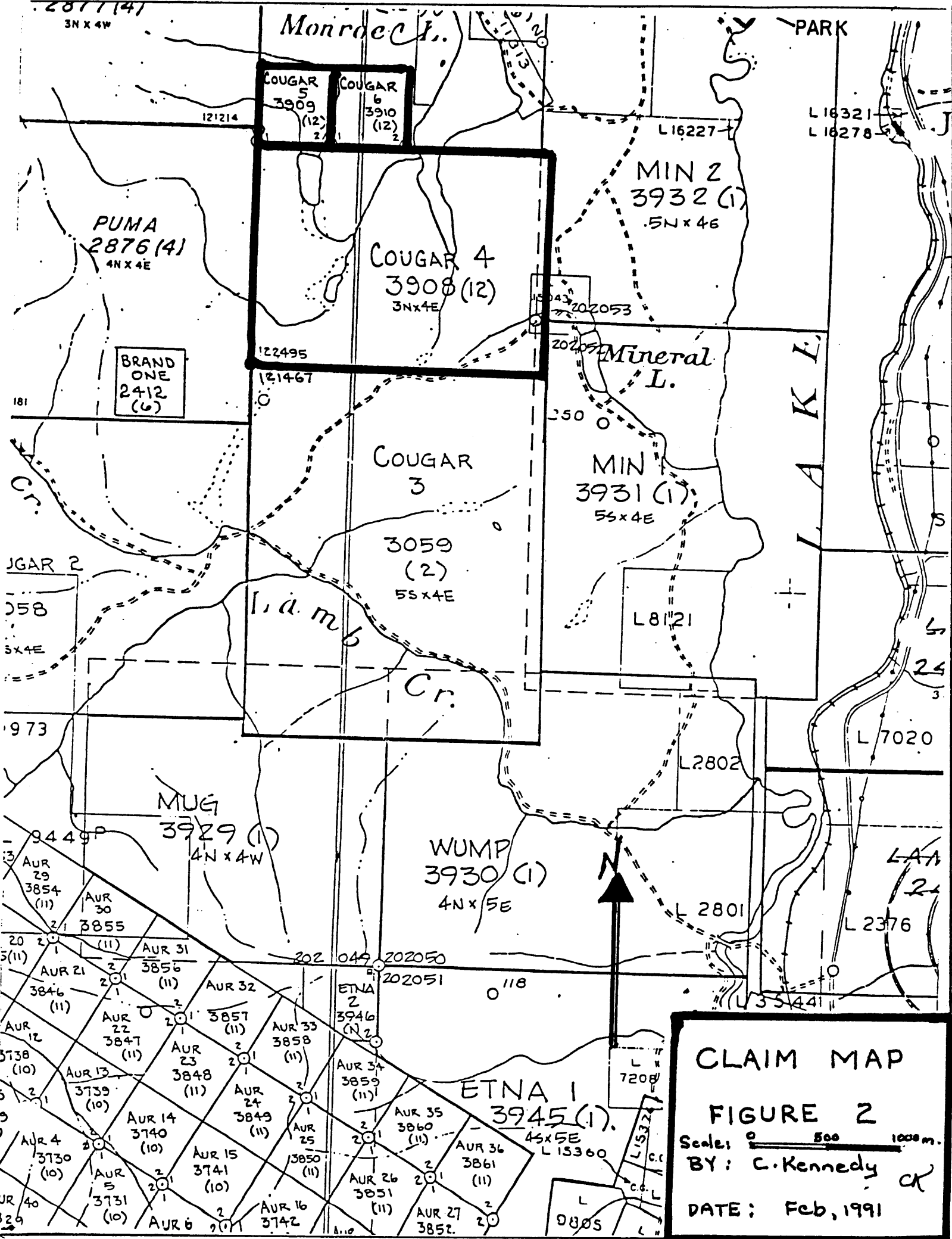
PROPERTY LOCATION

C. Kennedy. 2/91

Figure 1

# LOCATION MAP





#### 1.4 History

Mining was initiated in the East Kootenays in 1864 by the discovery of placer gold on the Wild Horse River, Moyie River, Perry Creek and Palmer Bar Creeks. Although there is no reliable record of the total amount of gold recovered, it is mentioned that the Wild Horse alone produced over 20 million dollars in placer gold in early 1900's. Perry Creek followed as "one of the richest placer gold creeks ;within the Cranbrook Map area".

Besides being a major placer gold camp in B.C., Cranbrook area heralded as having the largest lead and zinc producer in Canada, the Sullivan orebody. The Sullivan is one of the largest base metal deposits in the world, having produced in excess of 125 million tons of ore. This deposit is by far the most important economic deposit in the region.

Although the majority of these base metal mines are not in operation today, the largest, the Sullivan continues production with an estimated reserve of 30 million tons of ore.

The Moyie - St. Eugene mine produced in excess of 1 million tons or ore containing 5M ounces of silver and 229M pounds of lead.

#### 1.5 Economic Potential

The mineral deposits of Cranbrook area are many and varied. For purposes of description they have been classified into 3 main types:

- A) replacement deposits in sedimentary rocks, not localized along fractures.
- B) deposits associated with Moyie Intrusion.
- C) veins and replacement deposits localized along fractures.

The Sullivan, North Star and Stemwinder deposits are representative of the first type. Deposits of the second type, associated with Moyie intrusion have produced mineral occurrences on a reduced scale due to their erratic distribution. The third type included gold bearing quartz veins and sulphide rich fissure vein systems. The Fors property exhibits mineral occurrences similar to both fissure vein and a replacement sulphide system.

## 1.6 Property History

There is no known work performed on the Cougar claims, although extensive exploration programs have been carried out over the Fors property, adjacent and to the west of the Cougar property.

Work entailed geochemistry, geophysics and diamond drilling. Available results point to a potential for a lead-zinc deposit as the soil geochemistry demonstrated major anomalous zones of lead and zinc.

## 2.0 GEOLOGY

The following descriptions of the geology of the Purcell Range and the Perry Creek area are taken from G.S.C. Memoirs by Schofield, Rice and Hamilton.

### 2.1 Regional & Local Lithology

The Purcell Range is separated from the Selkirk range on the west and from the Rocky Mountain system on the east.

The rocks of the Purcell Range form the western part of the ancient group of sediments deposited in the Rocky Mountain geosyncline. These sediments, called the Purcell series, and of Pre-Cambrian Beltian age, consist of a great thickness of fine grained quartzites, argillaceous quartzites, argillites and limestones, all remarkable for their homogeneity.

In southeastern British Columbia, the Purcell Super group exceeds 10,000 m in thickness. In the vicinity of the Sullivan deposit at Kimberley the lowermost subdivision of the Purcell Supergroup, the Aldridge formation, is 4,000 m thick succession of fine-grained siliclastic rocks. Most of the Aldridge formation, was probably deposited by turbidity currents. East of Kimberley, in the western Rocky Mountains, the oldest rocks are greater than 2,000m thick, fining-upward platformal/deltaic sequence called the Fort Steele Formation. A transitional contact exists between the Fort Steele and the succeeding Aldridge Formation. The Fort Steele Formation is interpreted to be the facies equivalent of the lower part of the Aldridge Formation in the Kimberley area.

The Aldridge Formation is gradationally overlain by up to 1,800 m of grey, green and maroon wacke of the tidal flat to deltaic Creston Formation. Conformably overlying the Creston Formation is 1,200 m of dominantly platformal dolomite and terrigenous-dolomite admixtures of the Kitchener formation. The Kitchener is in turn overlain by 200 to 400 m of green, slightly dolomitic and calcareous fine-grained sedimentary rocks of the Van Creek Formation and up to 500m of andesitic volcanic rocks of the Nicol Creek Formation.



In the Purcell Mountains, about 1,200m of grey to dark grey, dominantly platformal carbonates and fine-grained siliciclastic rocks of the Dutch Creek Formation rest with apparent conformity of the Lower Purcell sequence. The Dutch Creek Formation is overlain by 1,000m of grey, green and maroon wacke and buff orthoquartzite of the Mount Nelson Formation.

Middle Proterozoic gabbros of two ages intrude the Purcell Supergroup in southeastern British Columbia. The oldest (1433 ± 10 Ma) are sills, slightly discordant sheets and dykes of the Moyie Sills, which are most commonly developed in the lower part of the Aldridge Formation. Gabbro sills are most abundant in the Purcell Mountains, where they attain an aggregate thickness of up to 2,000m. The youngest event of gabbro intrusion is thought to be comagmatic with the volcanics of the Nicol Creek Formation, and is represented by abundant sills in the upper part of the Creston Formation and in the Kitchener and Van Creek Formations. Potassium-argon methods indicate an age of 1075 Ma for the Nicol Creek Formation.

The claim area studied is underlain by Precambrian sedimentary rocks of the Proterozoic age, either of the Kitchener, Creston or Aldridge Formations.

In the Perry Creek area, the Creston and Kitchener Formations predominate, and are lenticularly Northeast trending, commonly in a fault contact and bounded to the North and South by the Aldridge Formation. The Aldridge formation outcrops predominantly within an area south and east of the Baldy and Cranbrook faults - on the Moyie River side. Precambrian diorite sills are distributed throughout the map area, in concentrated form along fault zones.

## 2.2 Geology - Regional & Local Structure

The Purcell Mountains exhibit a pronounced North East trending structural grain, delineated by late transverse faults.

The two major transverse faults zones, the St. Mary and Boulder Creek (Wildhorse) on the North, and the Moyie and Dibble Creek on the South, are hypothesized to coincide with a southwest trending Precambrian rift that continues beneath the Rocky Mountains in Alberta. Several deep reflecting horizons of anomalous magnetic and gravity trends show that the rift is continuous across Alberta and British Columbia, more specifically throughout the Kimberley lead-zinc field, and possibly the Coeur d'Alene mining district of Idaho.

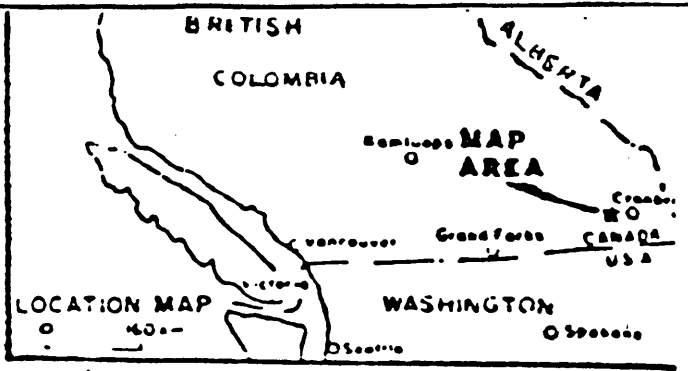
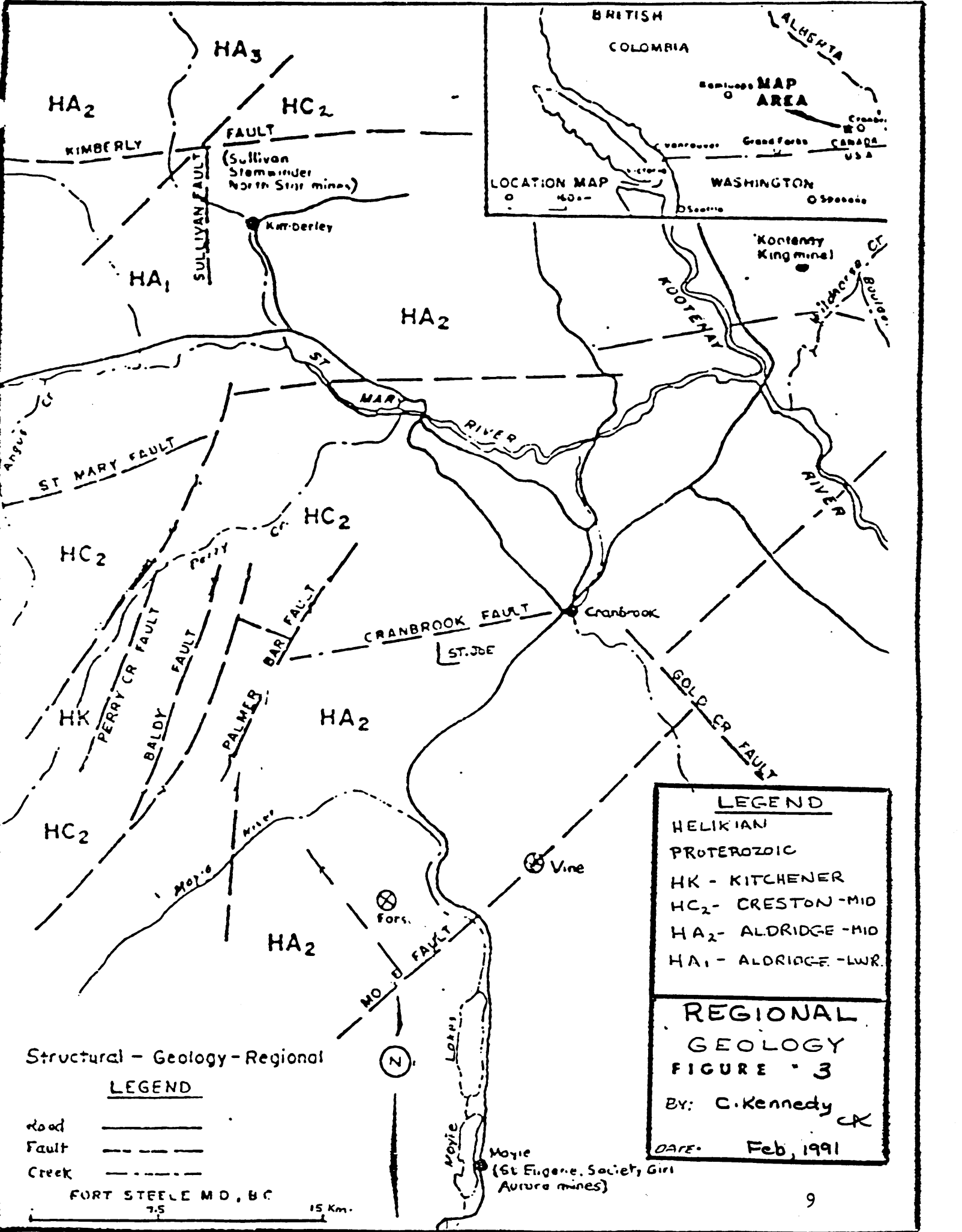
There is evidence that synsedimentary faulting perhaps near the northern edge of a transverse rift structure, locally controlled and modified the distribution of Purcell rocks in Lower and Middle Aldridge time. The lead zinc deposits such as Sullivan, North Star, Stemwinder and Kootenay King are also located near the northern edge of this transverse structure, suggesting a close link between mineralization and synsedimentary faulting.

Several lead-zinc-silver veins are present in the area some of which have received considerable attention by owners in the form of narrow open cuts and adits. These veins strike at 135 az. and dip steeply, as do all important vein systems within the Aldridge. The structures tend to be very persistent along strike with pinch and swell characteristics resulting in tabular steeply dipping ore shoots.

Occurrences of this type with major economic importance in the Aldridge include the St. Eugene from which approximately 1 million tonnes grading 7oz/tonne Ag and 8% combined and Estella Mine which produced 250,000 tonnes grading 10oz/tonne Ag with 10% lead and zinc.

Other prospects include the Try-Again, the Best Facini Mine, and the Hamilton Mine.

Of interest is the recent discovery of the lead-zinc VINE deposit only 10km directly east of the Fors prospect. The Vine vein deposit has reserves approaching the grade and tonnage mined at the St. Eugene but has yet to be exploited. A 1 metre wide sulphide zone has been confirmed by drilling to continue on strike of 135 azimuth for 500 metres.



**LEGEND**

HELIKIAN  
PROTEROZOIC

HK - KITCHENER  
HC<sub>2</sub> - CRESTON-MID  
HA<sub>2</sub> - ALDRIDGE-MID  
HA<sub>1</sub> - ALDRIDGE-LWR.

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**REGIONAL  
GEOLOGY  
FIGURE 3**

BY: C. Kennedy CK

DATE: Feb, 1991

Structural - Geology - Regional

**LEGEND**

Road —————

Fault - - - - -

Creek - - - - -

FORT STEELE M.D., B.C.

7.5                      15 Km.

### 3.0 EXPLORATION PROGRAM 1990

#### 3.1 Prospecting Report

The claim blocks were staked during the late winter of 1989 with initial prospecting completed during the month of July 1990.

The adjoining property to the West and South is maintained by the same individuals who hold the reported claims. The block of ground to the South and West was most recently under option to Placer Dome. Although the property was returned to the optionees, Placer Dome's work indicated potential for two mineralized targets on the adjacent ground. With these ideas as a motivating factor, the ground in question was staked when it became available.

Placer Dome's work provided indications of a soil anomaly high in Pb and Zn with associated Cu and As trending easterly off the property onto the newly staked ground. The second idea of interest was generated by significant Au anomalies in bulk samples from the lower reaches of Little Lamb Creek, and a small drainage running parallel to the Western boundary of the reported ground.

The initial prospecting was commenced with the hope of finding evidence for the existence of economic Pb, Zn, and Au mineralization. To this end a majority of the prospecting was concentrated along the western boundary of the property, (Area #1) and the trace of the Moyie transverse fault.

A major inhibiting factor associated with the prospecting of the projected soil anomaly is overburden and the resultant lack of outcrop. Outcrop examined was a mixture of thinly laminated siltstone and narrow quartzite beds of the Middle Aldridge formation. Subtle alteration can be found in both lithologies. The siltstones develop limited zones of leaching with varying amounts of sericite coating fracture planes. Occasional narrow green chlorite veins erratically developed within leached zones were also noted. These chlorite veins were generally seen cutting bedding planes, but in some instances also as filling within bedding planes. Blebs or clasts of star shaped chlorite was also recognized in less altered siltstones and quartzites, associated with the leached zones. The continuity of the leached beds is undetermined due to the lack of continuous exposure.

Quartzite beds show alteration mainly in the form of increased amounts of silica, and discontinuous zones of patchy pyrrhotite; rare pyrite was noted along fracture planes. Again tracing of these beds was ineffective due to overburden cover. Narrow quartz veins were occasionally seen cutting both lithologies. These veins contained coarse clear crystalline quartz with only limited amounts of Fe and Me staining.

They may however be an indication of hidden mineralized parallel trending structure.

All quartz veins encountered had a NW orientation. Occasional pieces of angular float were encountered which contained an abundance of pyrrhotite; one piece examined had zinc and chalcopyrite within the pyrrhotite zones. This float also may be originating from a hidden mineralized zone.

Down slope, south-east of the geo-chem area, (Area #2) a strong shear zone exists within a section of exposed Aldridge siltstones. The shear itself is two meters in width, and strikes in a NW direction with a moderate dip to the NE. The zone has a strong oxidized look with Fe staining with limonite development prevalent. The core of the shear associated with the heaviest limonite development is a 20 cm wide broken quartz vein. Faint traces of pyromorphite and some sporadic disseminated galena was seen in the quartz material. In both directions along the trend, overburden masks further signs of exposure. This could be a glimpse at a favorable exploration target.

The NW trend is the most common mineralized trend associated with massive Pb, Zn, Hg sulphide mineralization in the Cranbrook area. The Vine Vein of Kokanee Exploration which is in an advanced stage of development is a NW trending structure with encouraging grades of Pb, Zn, Ag and Au.

The recommendation would be to establish a grid along strike which would then be used for a Geo-chem, and geo-physical survey. The possibility exists that when the shear encounters more quartzite, rich lithologies and better mineralization may also exist. A wider zone could be expected in the more fracturable quartzites.

In following the contour at the base of the slope, in a northerly direction, north of the geo-chem anomaly, more outcrops of Aldridge siltstone, and quartzites are encountered (Area #3) Most exposures show less signs of alteration, although many narrow crystalline quartz veins were encountered, none with sulphides.

Most veins contained blebs of coarse grained biotite with varying degrees of Fe and Mn staining. Abundant gabbro float was seen in one talus slope; the float had a coarse grained texture with rare blebs of pyrrhotite noted. In close association with the gabbro float, quartz float was found.

Although the float was crystalline, it did contain smokey sections of disseminated pyrite, galena and chalcopyrite. Tracing the float did not result in discovery of the vein.

Once off the talus, outcrop becomes scarce with many narrow draws running in an east west direction. One area of alteration was encountered during this traverse. In an area of limited outcrop a zone of silica rich argillite was found. The material was heavily fractured with substantial amounts of pyrrhotite throughout.

A short distance north of this zone a narrow North West trending shear was seen; no sulphides were seen in the adjacent wall rock, although the crushed shear material is quite iron rich. Although the above mentioned quartz float indicated it came from a narrow vein 10 to 20 cm, the disseminated sulphides should not be ignored. Because of the associated gabbro float, the opportunity exists that the vein may be within the gabbro. If so, the possibility of an economic mineralized build up along the gabbro contact exists. Two short contour soil geo-chem lines upslope of the talus could effectively test this opportunity.

Traversing in a south east direction to the shore of Monroe Lake (Area #4) did not encounter any areas of high interest. Though many outcrops were encountered and examined, no mineralization of importance was found. Most outcrop is heavily weathered and fractured, only narrow beds with bedding parallel zones of pyrrhotite were seen, this being a common feature of the Middle Aldridge.

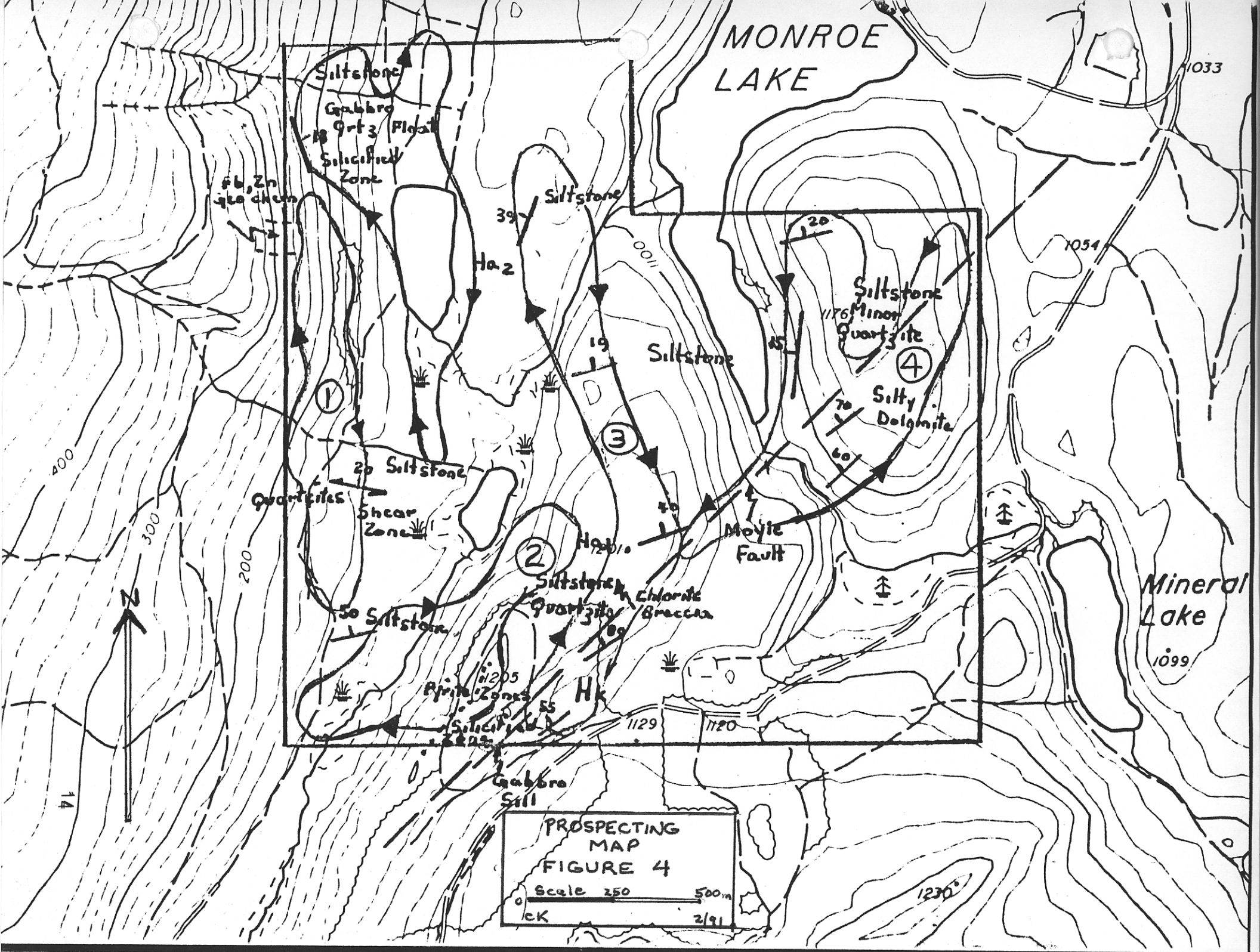
The next area prospected was the Moyie fault trace (Area #4). This provided some of the most encouraging discoveries of widespread alteration. North of the boundary, while outcrop is relatively rare, the fault can be traced easily as Lower Aldridge is on the west side, and the Kitchener formation is found on the east. The Lower Aldridge in most cases is rusty weathering siltstone with narrow one meter wide variably grained quartzite beds. The Kitchener is generally made up of argillaceous black claystone with minor beds of medium grey weakly silicified siltstones. Narrow beds of brecciated dolomite with a matrix of coarse grained white and pink dolomite are commonly seen.

Paralleling the Moyie fault on the Kitchener side, a medium grained diorite sill can be found. Though no sulphides were seen within the gabbro, it is highly altered, and in some cases soft and clay-like. Certain zones are heavily iron stained with manganese along fractures.

A short distance west of the sill, quartz veining in phyllitic greasy looking Kitchener can be found. Iron pyrite can be found both in the quartz veins and the sediments. On the Aldridge side of the fault silicified iron stained beds can be seen; these beds contain varying amounts of fine grained disseminated pyrite. Numerous narrow quartz veins can be found mostly trending North Westerly along the fault trace. Many veins are heavily Fe stained and vuggy. One vein containing galena and chalcopyrite was found cutting silicified sediments. Further north along the trace, a zone of chlorite breccia was encountered within the Aldridge, with narrow hematitic vein webbing throughout this zone.

Bedrock exposure is very limited from this point north. One large chlorite breccia zone was found but overburden covers most of the area. The Kitchener side is more exposed but no mineralization of importance was found. Disseminated pyrite was only rarely seen and in most cases only in narrow silicified dolomite beds.

On the ridge south east of Monroe Lake narrow quartz veins are again commonly seen within the Aldridge. However, most do not show as much mineralization or Fe staining as the above mentioned area. Only narrow zones of silicification was noted with very rare disseminated pyrite. The Kitchener side of the Fault in this area is completely covered by overburden. Geochemical contour soil lines should be run downslope of the Moyie fault trace. The south end of the fault trace should definitely be analysed as the alteration is quite obviously the strongest in the claim block area.





4.0 COST OF 1990 PROGRAM

Prospecting	5 days	@	\$225./ day	\$ 1125.
Vehicle	5 days	@	\$ 50./ day	\$ 250.
Report		@	\$500.	\$ <u>500.</u>
			TOTAL	\$ 1875.

Total applied to claims \$ 1400.