

Silica Prospects in the Anyox Area, B.C.

Jennifer Pell, 1982

Introduction

The deserted copper smelting town of Anyox is located on Hastings Arm, approximately 60 km south of Stewart BC (fig 1), and 120 km north of Prince Rupert. It may be accessed only by air or water. Float planes may be chartered out of Prince Rupert and either boat or helicopter from Stewart. The nearest helicopter base to Anyox is in the mining town of Kitsault, on Alice Arm (fig 1). A road to Kitsault has recently been constructed, & during the spring of 82 upgraded to allow passage of 2 wheel drive vehicles.

Anyox operated as a copper smelting town from the early 1900's (circa 1905) until it was shut down by a strike during the depression (1935). Quartz veins were mined locally to be used as flux for the smelter during this period. A week long re-examination of the area in terms of its silica potential was conducted during August of 1982.

The effects of the smelting process are still evident today, as the land in the immediate area is sparsely vegetated, and therefore easy to travel through. Away from the smelter (eg. at the south end of Granby Bay, see fig 2) the forest cover is heavy, and the underbrush, which is largely devil's club & berry bushes, dense.

General Geology

The predominant lithologies in the Anyox area are argillaceous metasediments and ^{some} mafic metavolcanics, Upper Triassic to Lower Jurassic in age (Carter & Grove, 1972).

The argillites are dark grey to black, locally rusty weathering and in general, silty (Appendix 1, JPX-4A & B). They are in places interbedded with medium to dark grey, massive argillaceous sandstones (Appendix 1, JPX-3B). Where observed metamorphism has had very minor effects on these sediments.

The metavolcanics are reputed to be pillow basalts, tholeiitic in composition (Sharp, 1980). They are brown weathering, massive, medium grained and composed primarily of chlorite or amphiboles (hornblende or actinolite) depending on degree of metamorphism (see Appendix 1, JPX-13D).

The argillite sequence stratigraphically overlies the metabasalts (Carter & Grove, 1972). It is near the contact of these two units, ~~at~~ at the top of the basalt package that most of the sulphide mineralization occurs (Sharp, 1980).

Late dykes of two types were observed to have cut the volcanic/sedimentary package. Firstly there are fine grained, massive, buff to rusty brown weathering mafic dykes, of probable diabasic composition. The second type of dyke is white weathering and more felsic than the first, possibly dioritic.

Geology of the Quartz Veins

Two main types of quartz veins are present at Anyox. The first type is characterized by large white quartz veins, usually barren or containing only traces of sulphides and present only in the argillite. These veins usually occur in a lit par lit fashion with the argillite, and are subparallel to bedding, generally shallow dipping. (see plates 2, 3 & 4, and figure 3). Zones containing lit par lit veining may be over 10m thick (see fig 3). The individual pure quartz veins rarely exceed 2m in true thickness, and may be as thin as a few centimetres. The quartz in these veins has coarse to medium ~~gr~~ equant grains and is milky white. Orange to red brown rust staining is common along fractures (eg Appendix 1, JPX 11A & B). Only very minor amounts of sulphides were noted (Appendix 1, JPX-1B, 1C, 4A, 4B, 11A), dominantly pyrite. Veins of this type on the north end of Granby Peninsula carry low gold values (Sharp, 1980). The larger veins of this type were quarried for use as silica flux in the blast furnaces of the smelter.

The second type of quartz veining is also best developed in argillite, but does occur in ~~argillite~~ the metabasalts. They are strongest developed near mineralized zones at the volcanic/sedimentary interface (Sharp, 1980). These veins crosscut bedding & foliation, often at sharp angles. They can be 1mm to 30 cm wide, but are on average on the thinner side (Plate 1) and rarely over 1m long. The vein quartz is fine to coarse grained with a granular to anhedral massive texture. (Appendix 1, JPX-13A & B)

Although originally milky white, in many places these veins are extensively rust stained (Appendix 1, JPX 3A, 5A, 5B, 6). Sulphides (pyrite, pyrrhotite & occasionally galena & sphalerite) are commonly present (eg. Appendix 1, JPX 5A & 5B). Whispy inclusions of country rock, less than 1mm thick, are ubiquitous, and oriented parallel to the vein edge.

Veins of type I were noted at stations JPX-4, 9, 10, & 11 (figure 2). Type II veins occur at stations JPX-3, 5, 6, & 13 (figure 2).

Conclusions

Although quartz veins in the Anyox Area were once mined for smelter flux, their usefulness as such today is uncertain, due to transport distances involved. Pure quartz veins rarely exceed 2m and are on average much thinner. Thick quartz veins reported (GSC memoir 32, p 92 & GSC memoir 175, p 93) were not encountered. It is presumed that, rather than single clean quartz veins, they are veins of the lit per lit type.

References

- Carter, N.C., & Grove, E.W. (1972) Geological compilation map of the Stewart, Anyox, Alice Arm & Terrace areas: B.C. M.E.M.P.R. Preliminary Map #8.
- Sharp, R.J. (1980) The Geology, Geochemistry & Sulphur Isotopes of the Anyox Massive Sulphide Deposits. Univ. of Alberta Masters Thesis.

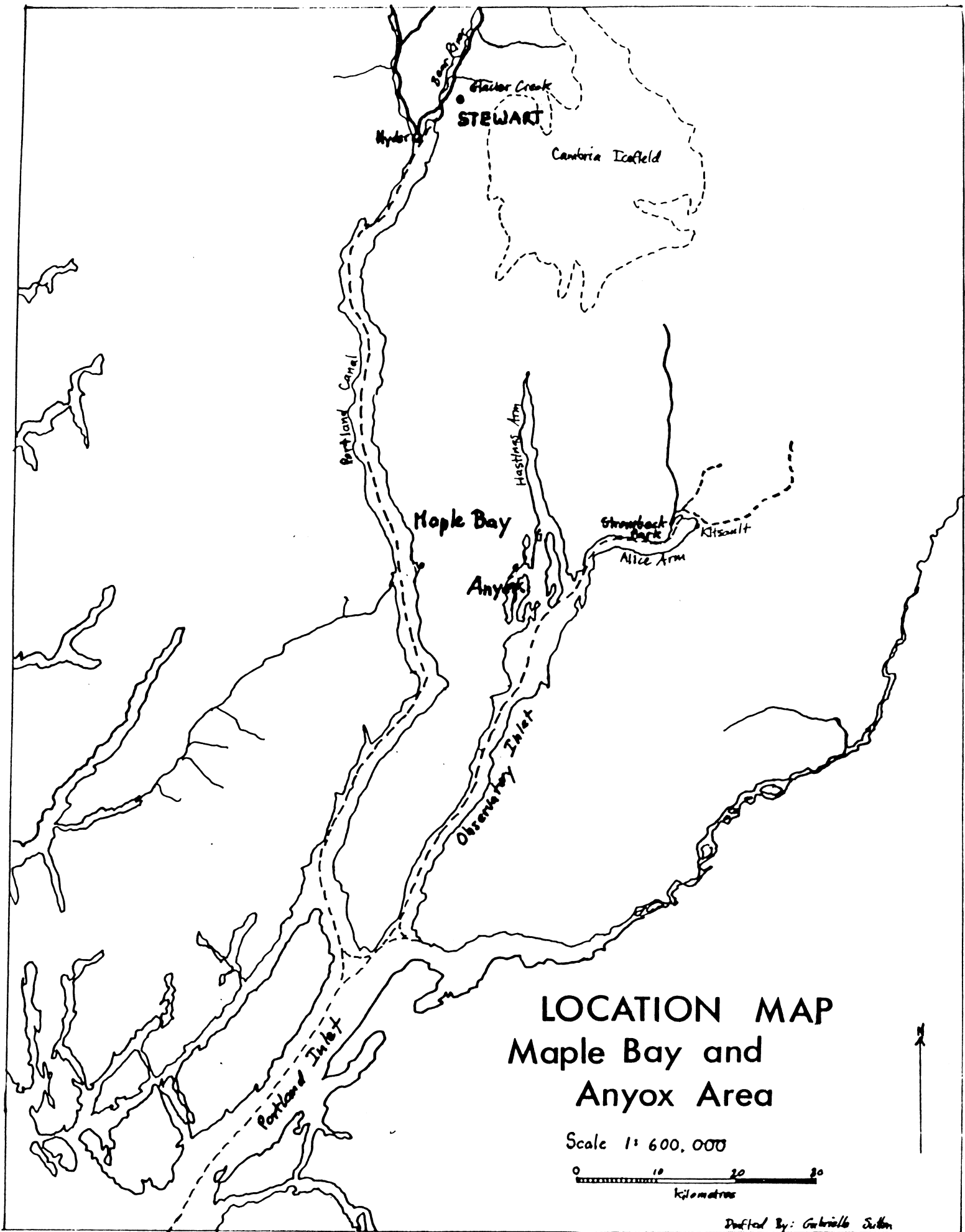


Figure 1.

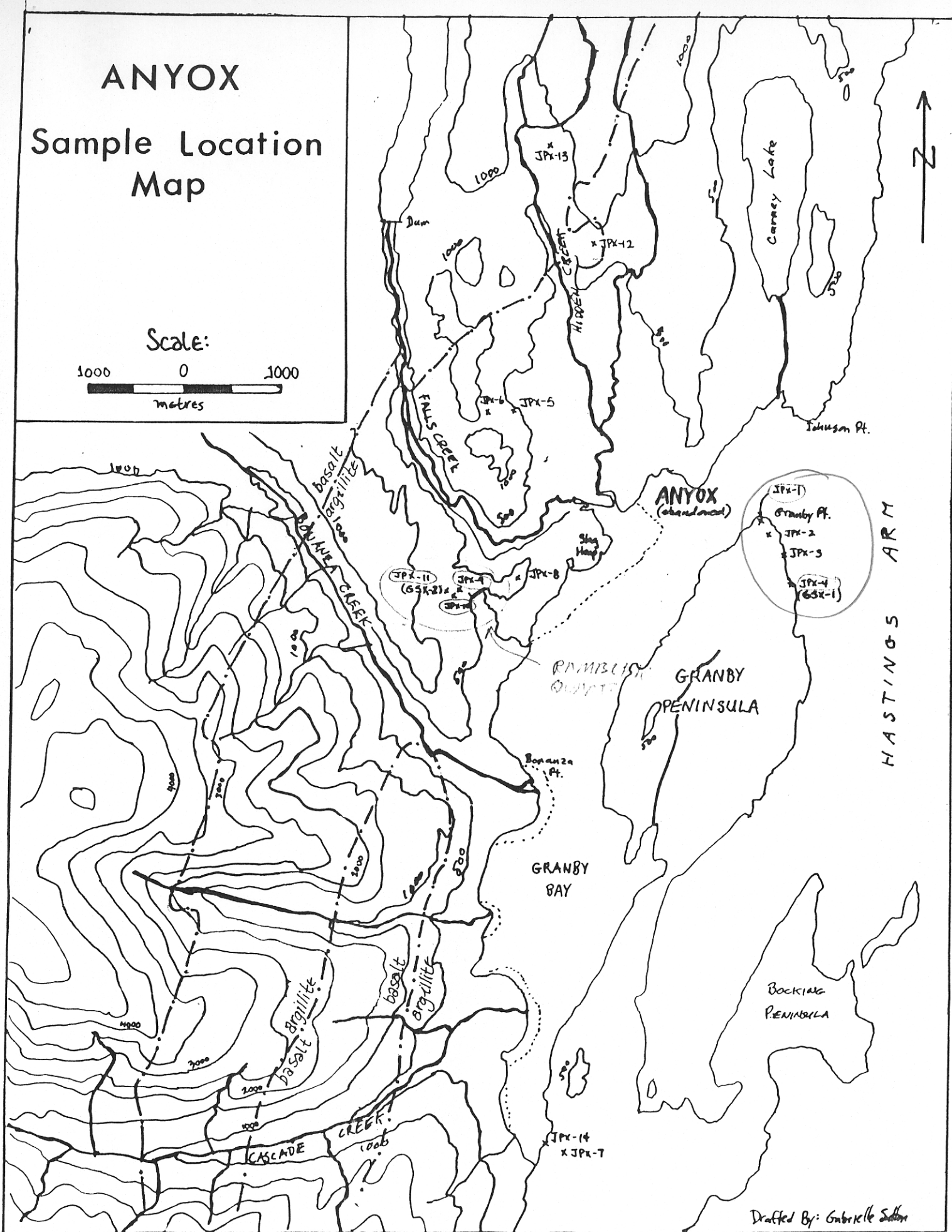


Figure 2.

basalt/argillite contact modified from Carter & Grove, 1972.

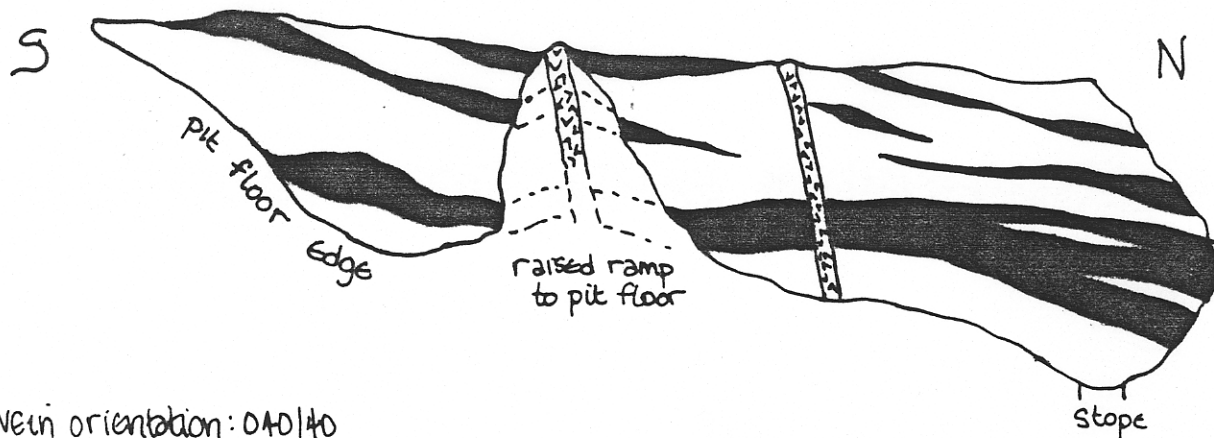
Drafted By: Gabrielle Sutton

Figure 3

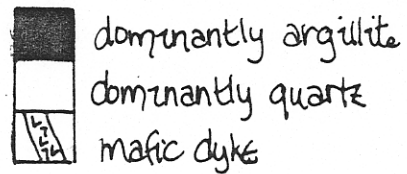
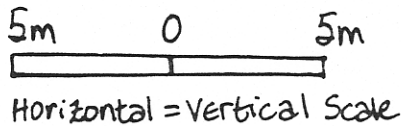
Sketch Map, Pit West Wall

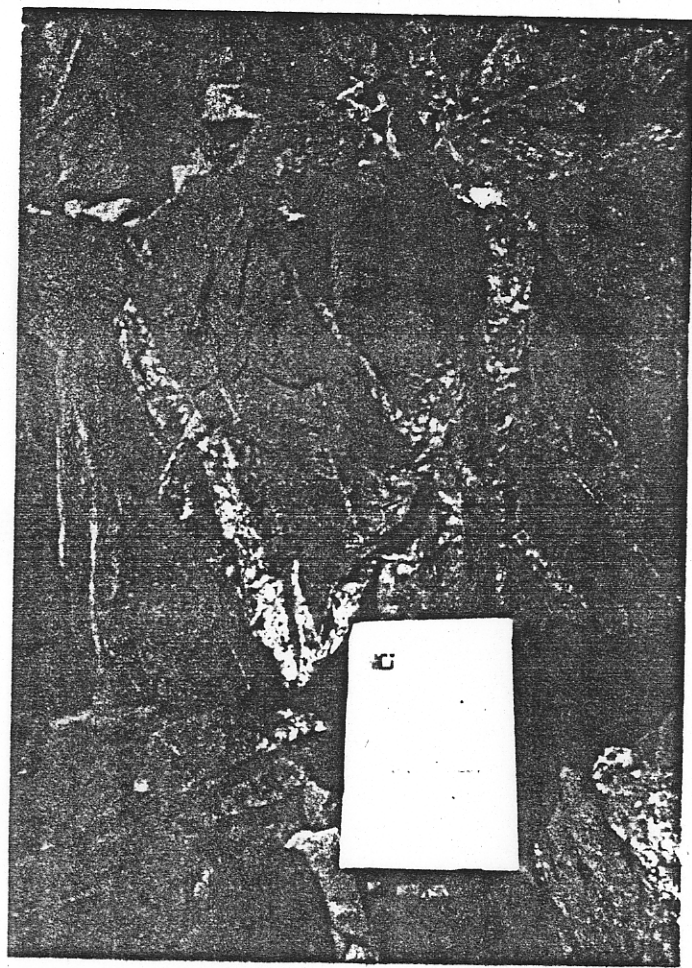
Station JPX-11

(RAMBLER QUARTZ)

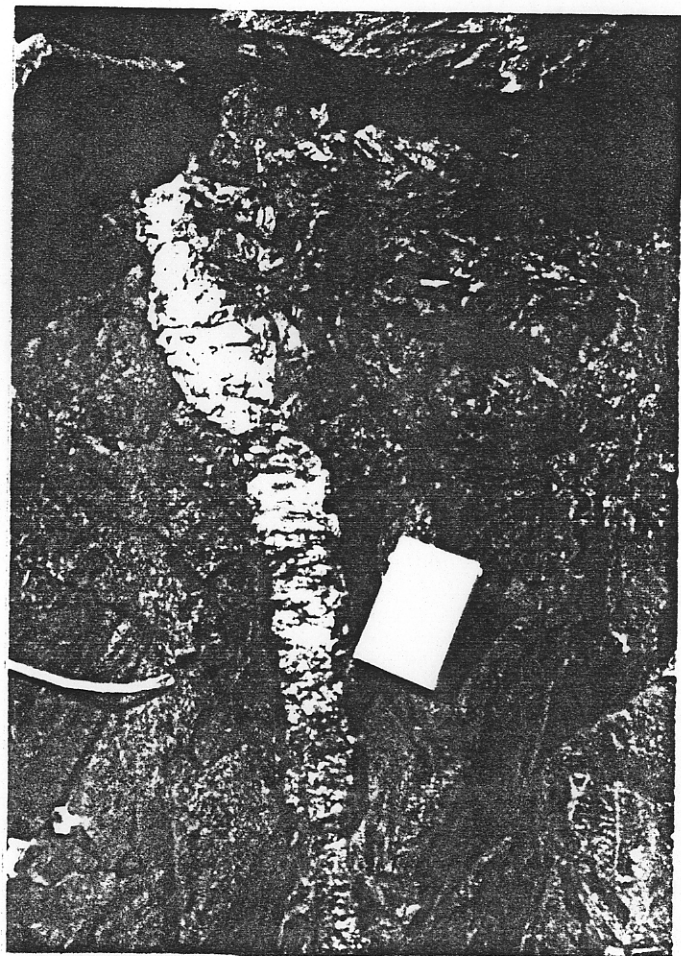


vein orientation: 040/40





a)



b)

Plate 1 a & b) Quartz veining in black argillite, station JPX-3. a) vertical face
b) horizontal view. Dominant vein orientations $245/70NW$ & $010/SV$.

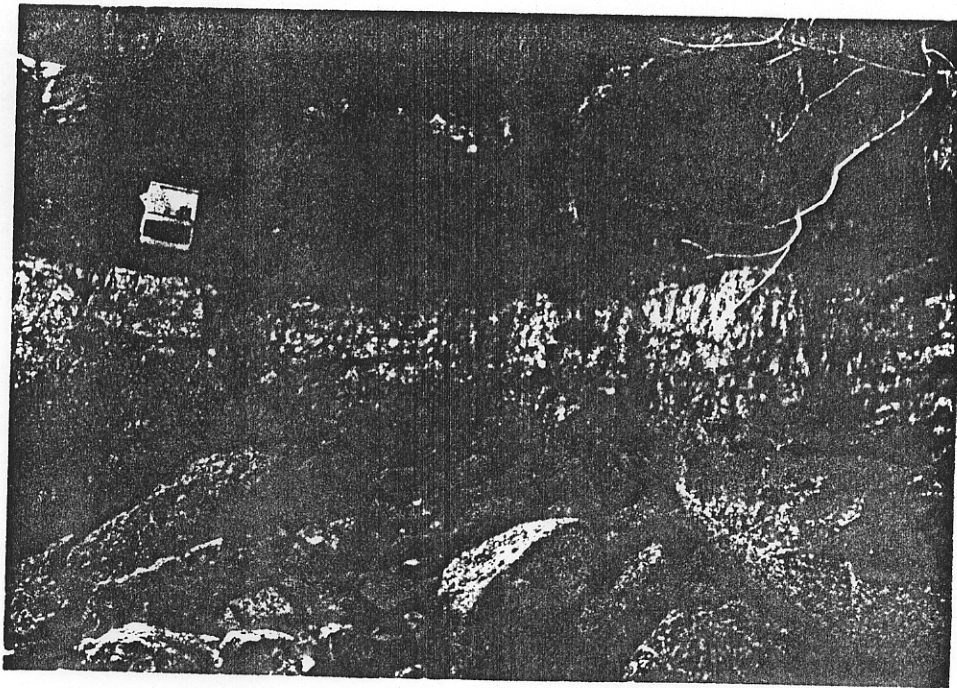


Plate 2: Sub horizontal quartz veining in grey argillite, on east shore of Granby Peninsula, north of station JPX-3. Veining in this vicinity up to 1m thick, & subparallel to bedding.

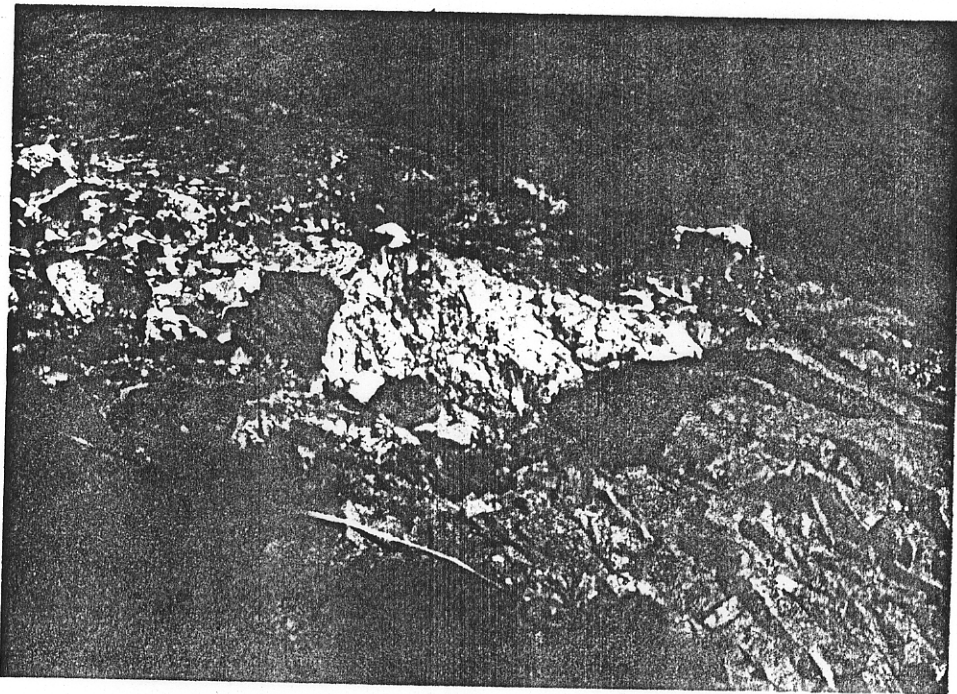
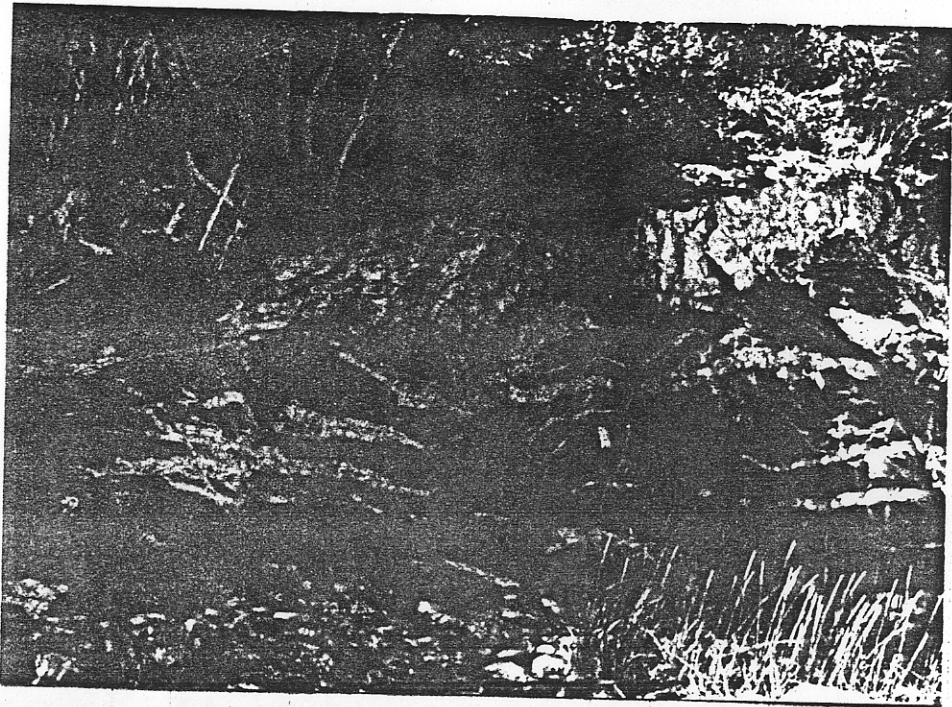
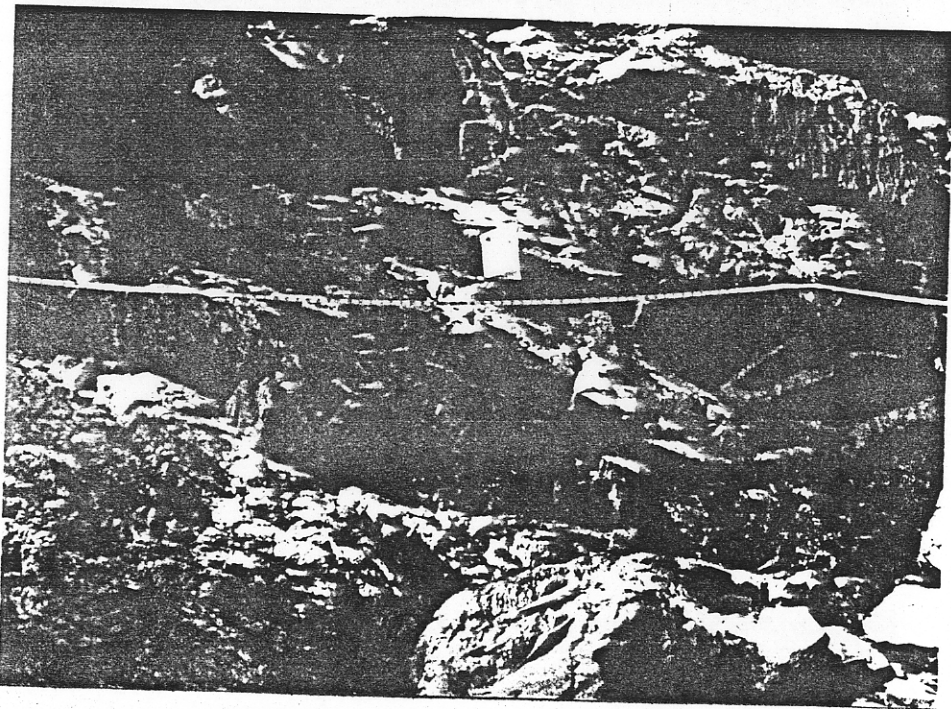


Plate 3. Quartz vein enclosed in diabase dykes, station JPX-4, Granby Peninsula.



a)



b)



c)

Plate 4 a,b,c) Various views of lit-par-lit quartz veining in black argillite, station JPx-4, Granby Peninsula.



Plate 5. East wall of the Hidden Creek Deposit,
Anyox Area (station JPX-12). Dominantly massive
copper sulphides, some possible quartz veining
left centre of photo.

Appendix 1
Hand Sample Descriptions

Sample #	Location	NTS	Description
JPX-1A	Anyox (Granby Point)	103 P/5	- rusty weathering, dark grey, fine grained silty argillite - massive
JPX-1B	Anyox (Granby Point)	103 P/5	- medium grained milky white vein quartz, massive - some orange rust stain along fracture - minor disseminated sulphides, pyrite and galena (<3%)
JPX-1C	Anyox (Granby Point)	103 P/5	- similar to 1B, slightly greater amount of sulphides present
JPX-1D	Anyox (Granby Point)	103 P/5	- massive, medium to coarse grained milky white vein quartz containing disseminated galena (<3%) - also contains chips of thin (0.5cm) layers of grey silty argillite - rock fragments constitute ~ 10-15% of sample.
JPX-2	Anyox (Granby Point)	103 P/5	- buff weathering, medium to fine grained diabase, ophitic texture - massive
JPX-3A	Anyox (Granby Point)	103 P/5	- medium grained white vein quartz, extensively fractured and much rust staining (dark orange to red-brown) along fracture surfaces - contains minor inclusions of dark grey silty argillite, and also
JPX-3B	Anyox (Granby Point)		- medium to dark grey, massive argillaceous sandstone - also part of a quartz veinlet

Sample #	Location	DTS	Description
JPA-3C	Anya (Granby Point)	103P/5	<ul style="list-style-type: none"> - sample taken from hinge of folded quartz vein - coarse grained massive milky white quartz with some orange rust stain on randomly oriented fracture surfaces - some large (<5cm) angular silty argillite chips - argillite / quartz \approx 10/90 - also minor (5%) disseminated pyrite

Sample #	Location	NTS	Description
(for sample 3C see other side)			present, fine grained, granular texture with rust staining and small inclusions of country rock
JPX-4A	Anyox (Granby Point)	103 P/5	- quartz stringer veinlets in dark grey silty argillite - veinlets are sub parallel to bedding and up to 3 cm thick - quartz is massive, medium grained, contains minor (L1%) pyrite & occasional host rock chips
JPX-4B	Anyox (Granby Point)	103 P/5	- similar to JPX-4A only on slightly coarser scale - slightly higher % sulphides also.
JPX-4C	Anyox (Granby Point)	103 P/5	- coarse grained milky white vein quartz, some ^{some} buff to orange rust staining along fracture surfaces - spaced cleavage defined by parallel fractures at approximately 0.5 to 1.0 cm spacing
JPX-4D	Anyox (Granby Point)	103 P/5	- coarse grained milky white quartz - minor rust stain - also minor pockets of very soft chalky white mineral (L5%) is this weathered feldspar??

Sample #	Location	NTS	Description
JPX-5A	Anyox (Hidden Creek)	103 P/5	- fine grained granular textured white to rusty orange vein quartz - contains thin (1-mm) parallel bands of country rock (grey argillite) (10% country rock bands) - minor py
JPX-5B	Anyox (Hidden Creek)	103 P/5	- medium grained rusty orange to white vein quartz with some zones of fine grained quartz with a granular texture - sample very rusty, dirty - minor country rock inclusions - some chlorite - 5-10% pyrite
JPX-6	Anyox (Hidden Creek)	103 P/5	- 3 pieces - milky white to rusty orange coarse grained vein quartz - local patches are fine grained and granular textured with an orange hue.
JPX-8A	Anyox (Falls Creek)	103 P/5	medium to coarse grained, massive milky white quartz - rust stain along surface and fractures
JPX-8B	Anyox (Falls Creek)	103 P/5	- misplaced.
JPX-10	Anyox (Falls Creek)	103 P/5	- medium grained massive white to greyish quartz - band of deep wine red coloured

Sample #	Location	NTS	Description
			material (stained quartz?) present.
JPX-11A	Anyox (Falls Creek)	103P/5	- coarse grained massive white vein quartz - extensive dark red brown & orange rust stain on fracture surfaces - 10-12% sulphides, dominantly pyrite
JPX-11B	Anyox (Falls Creek)	103P/5	- medium grained milky white quartz with light orange rust stain along fractures and buff weathering surface.
JPX-11C	Anyox (Falls Creek)	103P/5	- medium to coarse grained, massive white vein quartz, clean
JPX-11D	Anyox (Falls Creek)	103P/5	- medium to coarse grained white vein quartz, extensively rust stained in fine grained massive silty argillite (dark grey) - quartz veinlet 3 cm thick contains minor white mica, some sulphide (pyrrhotite or pyrite) and small (3-4mm) shale chips.
JPX-13A	Anyox (Hidden Creek)	103P/5	- massive coarse grained clean white vein quartz - minor weathered out void spaces near surface
JPX-13B	Anyox (Hidden Creek)	103P/5	- white weathering white to deep rusty orange fine grained vein quartz - granular texture

Sample #	Location	NTS	Description
	...		- sample contains an inclusion of chlorite rich country rock ~ 30x4 mm size
JPX-13C	Anyox (Hidden Creek)	103 P/S	- orange to buff weathering, fine grained granular vein quartz Very rusty
JPX-13D	Anyox (Hidden Creek)	103 P/S	- medium grained amphibolite (meta meta basalt) - brown weathering, dark green fresh surface - lots of hornblende or actinolite
JPX-14A	Anyox (south end of Granby Bay)	103 P/S	- fine to medium grained grey to white vein quartz - contains inclusions of green chloritic country rock - 10% inclusions
JPX-14B	Anyox (south end of Granby Bay)	103 P/S	- medium grained light grey slightly mottled quartz vein material cut by a later generation coarse grained milky white quartz veinlet 1.5 cm in thickness

Appendix 2
Chip Sample Descriptions

Sample #	Location	NTS	Description
GSX-1	Amyok Area (Granby Pen.)	103P/5	<ul style="list-style-type: none"> - chip sample taken from a 3.5 m interval of relatively clean quartz veining (at Stn, JPX-4) - largely clean white quartz, some Sulphides present.
GSX -2	Amyok Area	103P/5	<ul style="list-style-type: none"> - chip sample taken at pit in Station JPX-11 - chip sample represents a 5-6 m vertical section of the pit from the top down. - contains grey quartz, rusty quartz & some white quartz - also minor sulphides in sample.