APPENDIX 3.5-A

Geologic Logs of Diamond Drill Holes Used to Construct
Geologic Sections H-H', I-I', and J-J'

GREAT LAKES EXPLORATION

FLAMBEAU 22

HOLE No 22-6

SECTION 410

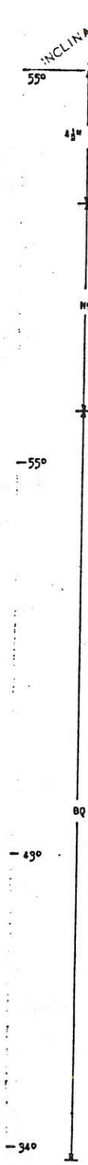
COORDINATES 40,628.74 N, 39,414.88 E

AZIMUTH 135°

ELEVATION 1117.16 ft.

DATE STARTED 4/23/69
COMPLETED 4/30/69

LENGTH OF HOLE 557 ft.



GEOLOGIC COLUMN

DESCRIPTION

0-53' OVERBURDEN: Pleistocene Till and Cambrian Sandstone (?).

53-210' QUARTZ CHLORITE SCHIST: Strongly weathered and oxidized; mafics alt. to limonite, 4 - 8% limonite casts.
Ave. C - B angle 46°.

210-360' ANDALUSITE-BIOTITE-QUARTZ-CHLORITE SCHIST: 5 - 10% diss. Py. to 283'; 6" mass. Py. at 258'. Oxidized to 243. 283-350' 20 - 25% Py. diss. and in mass. bands.
Ave. C - B angle 52°.

360-370' SERICITE-QUARTZ SCHIST:

370-405' MASSIVE SULFIDE: 60% sulfides. as Py.

405-432' SERICITE-QUARTZ SCHIST: 10 - 15% sulfides. 405-407': Che-i bed.

432-510' META-DACITE: 454-457' brecciated flt. zone, strong oxidation. 440-459': >10% sulfides with Py.

510-557' BIOTITE-QUARTZ-CHLORITE PHYLLITE: Ave. C - B angle 65°.

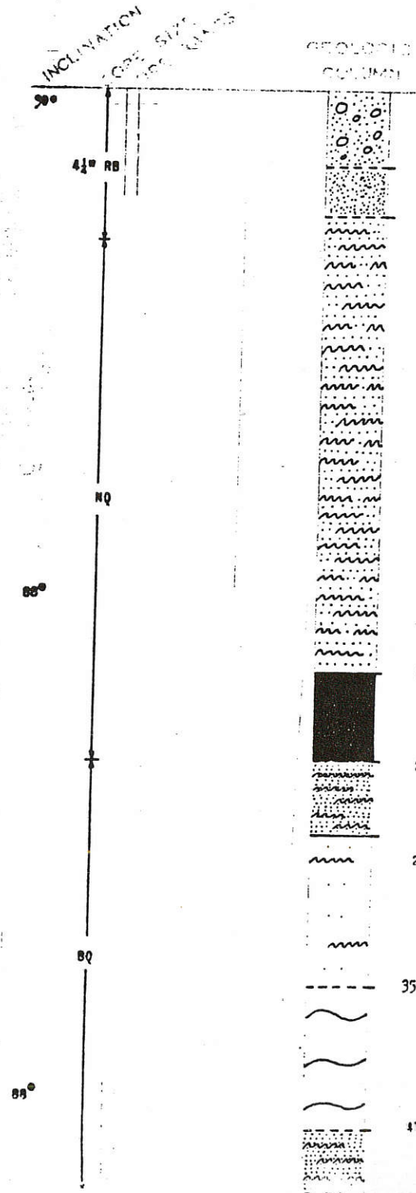
557' END OF HOLE

BEST COPY AVAILABLE

GREAT LAKES EXPLORATION
PLAMBEAU [illegible]
HOLE No 22-66

SECTION 422
COORDINATES 41,321.53 N, 40,440.45 E
AZIMUTH
ELEVATION 1138.92 ft.

DATE STARTED 3/24/70
COMPLETED 3/30/70
LENGTH OF HOLE 437 ft.



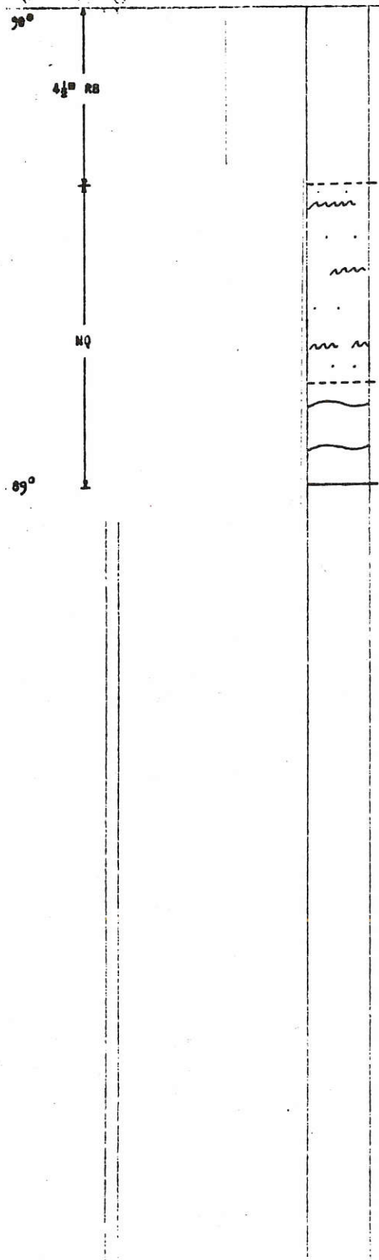
0–29.5'	PLEISTOCENE TILL
29.5–49'	CAMBRIAN SANDSTONE. Fine to crs.-gr., poorly sorted qtz. arenite. Abundant white qtz. below 47'. —ANGULAR UNCONFORMITY—
49–230'	Weathered, bleached QUARTZ-MICA SCHIST, white to v. lt. gray, fine-gr. Minor white kaolinite. A few large irregular kaolinized porphyroblasts
230–265'	MASSIVE SULFIDE. Sharp upper contact.
265–294.5'	SERICITE-QUARTZ SCHIST, lt. gray, fine-gr. Sharp upper contact. Minor white kaolinite.
294.5–355'	KAOLINITE w/minor ser. and qtz. Sharp upper contact.
355–412'	KAOLINITE-CHLORITE ROCK, lt. grayish-green, fine-gr., w/minor dolomite. A few kaolinite pseudomorphs after amphibole are present.
412–437'	SERICITE-QUARTZ SCHIST.

BEST COPY AVAILABLE

HOLE No 22-68

SECTION 422
COORDINATES 41,256.99 N, 40,518.36 E
AZIMUTH
ELEVATION 1136.99 ft.

DATE STARTED 3/31/70
COMPLETED 4/2/70
LENGTH OF HOLE 189 ft.



0–70'	TRICONE, NO CORE
70–149'	Weathered, bleached, kaolinized qtz.-mica schist (or phyllite). Massive white kaolinite from 72' to 98' and from 107' to 122'.
	Base of major supergene enrichment at 117'.
149–189'	CHLORITE-CLAY ROCK, dk. grayish-green, massive, fine-gr. to aphanitic. few kaolin and dolomite veinlets are present. 1–3% diss. fine-gr. subhedral to anhedral py.

BEST COPY AVAILABLE

PROJECT [illegible]

HOLE No. 22-71

SECTION 422

COORDINATES 41,642.63 N, 40,126.50 E

AZIMUTH 135°

ELEVATION 1143.32 ft.

DATE STARTED 4/4/70

DATE FINISHED 4/14/70

LENGTH OF HOLE 697 ft.

INCLINATION	CORE SIZE AND BANDS	GEOLOGIC COLUMN	DESCRIPTION
78°			
	4½" RB		
	91		0-91' ROTARY TRICONE (NO CORE OR SAMPLES)
	NQ		
-48°			91-191' QUARTZ AUGEN SCHIST, wh to lt. green., 10% lenticular qtz. "eyes" gen 3x5 mm. in fine grain qtz-ser. matrix, very well developed foliation, oxidized wh. goeth. stain down to 120', qtz veins up to 5" th. @ 98, 103, 142', 146', 151', one with coarse books of muscovite (pegmatite?), tr. diss. py. casts.,
			191-202' SERICITE-CHLORITE SCHIST, dk. green, fine gr. ser-chl. layers with minor thin qtz layers, limon. on fracs., no diss. sulf.
			202-281' QUARTZ AUGEN SCHIST, wh., qtz augen 2x5 mm., alternate qtz rich-ser. rich layers; wh. qtz vein @ 249'. 2% diss. py, partial oxidation mod. limon. stain
			281-352' CHLORITE SCHIST, dk. green, fine grained, layers of chl and ser gen. <2 mm. th. few qtz rich layers some up to 5 mm.; several qtz veins, 1% py, esp. in qtz rich layers. loc. wk. limon. stain.
-36°			352-369' ANDALUSITE-BIOTITE-QUARTZ-SERICITE SCHIST, greenish grey; bio. porphyroblasts 10-15%, occur as flat books up to 5 mm. across and less than 2 mm. th. gen. cut foliation, bio. Also included in clay alt. andalusite xls., sulf. diss. and in distinct bands
	BQ		369-559' QUARTZ-SERICITE SCHIST; lt.greenish grey.; distinct fol., qtz rich layers 3-5 mm. th. alternate with mica rich layers mainly ser. with poss. some chl., few andalusite xls, loc. bio. rich layers; contact with unit above gradational, distinct andalusite-biotite sch. layers up to 3" th. occur in upper 10' of unit. Mass. vein qtz. intercept 2' th. @ 488', several deformed qtz. veins less than 1" th.

BEST COPY AVAILABLE

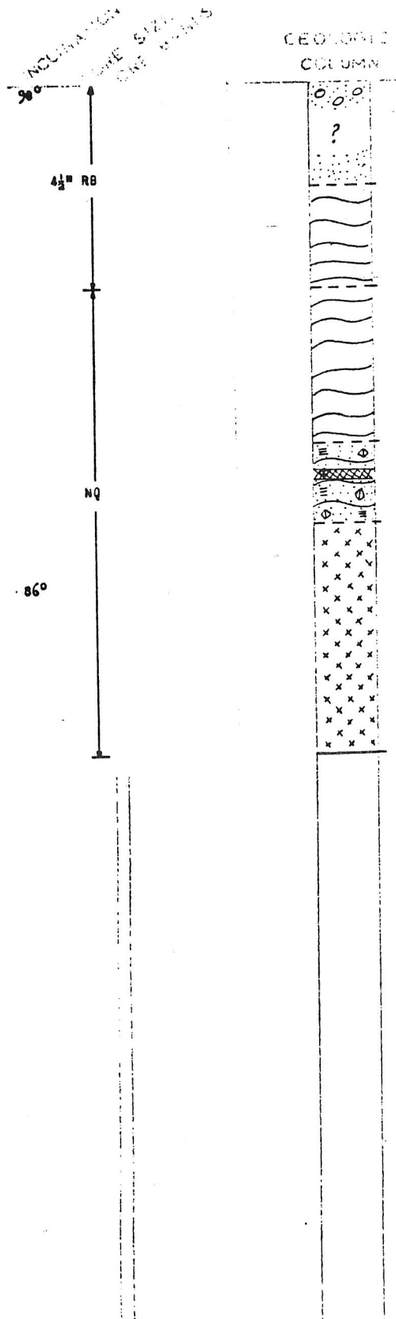
NQ		91-191'
-48°		191-202'
		202-281'
		281-352'
		352-369'
-36°		369-559'
BQ		553-566' QUARTZ-SERICITE SCHIST, wh., alternate qtz rich and mica-qtz layers.
		566-590' MASSIVE SULFIDE.
-31°		590-637' QUARTZ-SERICITE SCHIST, wh., finely laminated, tr. of bio.
		637-687' CHLORITE SCHIST, grey to dk green., numerous thin plates of randomly oriented biotite up to 2 mm. Across and few needles of actinolite in fine grained matrix of chlorite and sericite, 3% diss. py irregular veinlets of carbonate; foliation is poorly developed.
-31°		687-697' BIOTITE QUARTZ PHYLLITE, blk., very fine grain, very poorly developed foliation; diss. sulf. 2-3%, irreg. carbonate veins. Transition with unit above is gradational.
		697' END OF HOLE

BEST COPY AVAILABLE

HOLE No 22-81

SECTION 410
COORDINATES 40,349.45 N, 39,722.44 E
AZIMUTH
ELEVATION 1122.50 ft.

DATE STARTED 4/20/70
DATE COMPLETED 4/23/70
LENGTH OF HOLE 265 ft.



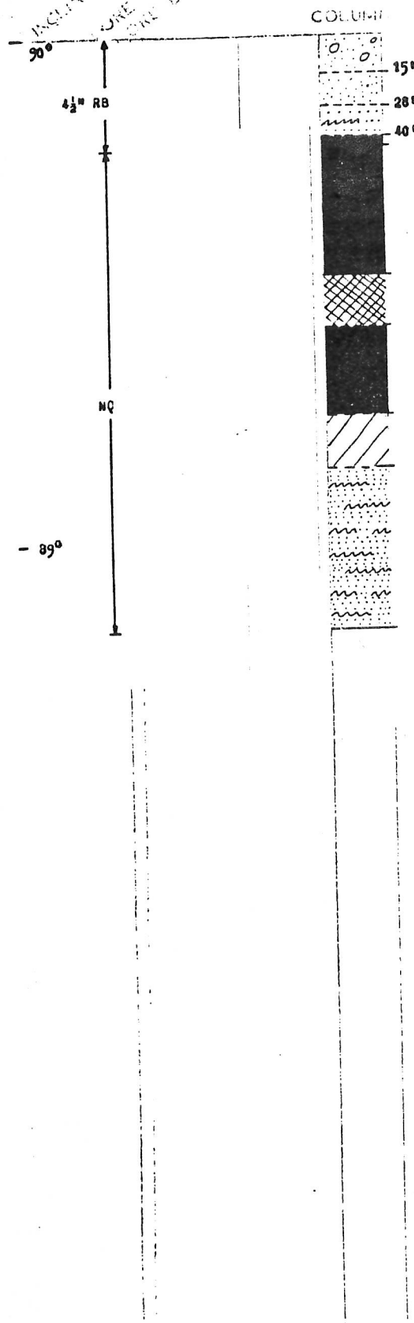
0-48'	Overburden; till and cambrian sede, contact between these units cannot be distingulshed.
48-80'	Precambrian; rotary tricone no core; top of pc based on bright red mud color
80-142'	CHLORITE SCHIST, greyish-green, lam. less than 1 mm. th. soft strong supergene bleaching in bottom 28' of interval.1' th. meta chert unit @ 140', thoroughly oxidized, strong hem. stain; deep maroon hem. on fracs; 8" th. qtz vein.
142-174'	ANDALUSITE-BIOTITE-QUARTZ-CHLORITE SCHIST Andalusite xls up to 2 cm. long which range in outline from round to sharply rectangular, micaceous matrix is pervasively hem. stained, 5' th. metachert unit @ 153; less than 1% diss. py. casts.
174-265'	PORPHYRITIC META-DACITE; grey green; 20% fldspr. phen. less than 2 mm across., lam 1-3 mm th., ser and chl. with some bio. rich layers 3% very finely diss. py.; qtz veins up to 1" th. showing boudinage.
265	T.D.

BEST COPY AVAILABLE

HOLE No 22-82

SECTION 410
COORDINATES 40,420.13 N, 39,651.69 E
AZIMUTH
ELEVATION 1121.12 ft.

DATE STARTED 4/23/70
DATE COMPLETED 4/27/70
LENGTH OF HOLE 235 ft.



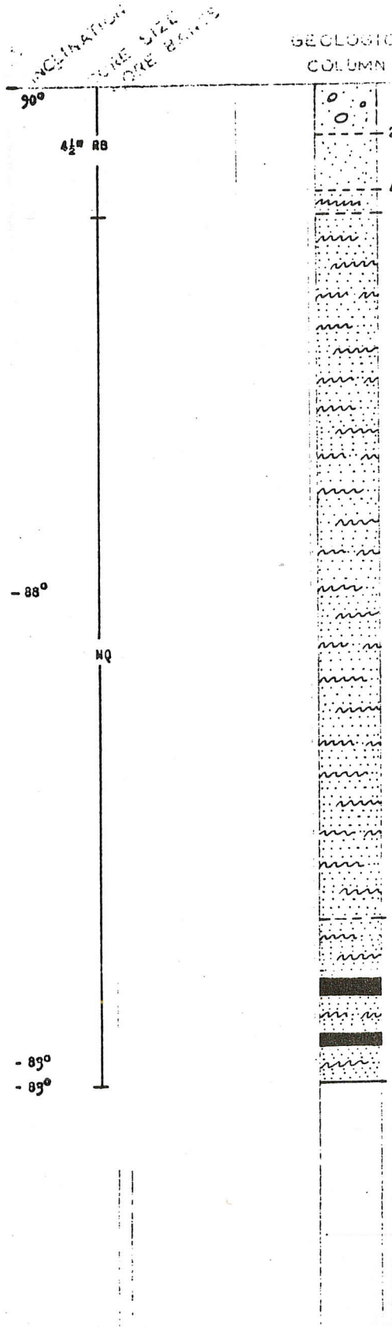
0-44'	TRICONE-ROCK CUTTINGS: 0-15; Pleistocene till, 15-28'; Cambrian sandstone, 28-44; Precambrian, 28-40; Much limonitic chips, minor py, 40-44; Massive sulfide cuttings.
44-95'	MASSIVE SULFIDES: Largely qtz gangue where not sulfides.
95-115'	META-CHERT: Sharp sulfide contact. Because of it's sugary texture meta-chert could be sericite-qtz schist with sericite replaced by qtz.
115-150'	MASSIVE SULFIDES: Sharp contact.
150-171'	SEMI-MASSIVE SULFIDES: Bedded meta-chert grading to sericite-qtz schist.
171-235'	SERICITE-QUARTZ SCHIST: Grad. upper contact. Fine grained schist. Light gray.
235'	END OF HOLE

BEST COPY AVAILABLE

HOLE NO 22-85

SECTION 410
COORDINATES 40,490.59 N, 39,579.63 E
AZIMUTH
ELEVATION 1124.82 ft.

DATE STARTED 4/27/70
DATE COMPLETED 4/30/70
LENGTH OF HOLE 395 ft.



DESCRIPTION

0-51' TRICONE-NO CORE TILL- Sandstone contact at 20'. Sandstone-precambrian contact at 42'. 42-46': Sericite fragments.

51-330' SERICITE-QUARTZ SCHIST. Fine grained, light gray. Kaolinized in varying degrees down to 330'. 51-54': Light limonitic stain, moderately kaolinized, less than 1% py casts 54-60': hematite stained.

330-395' INTERBEDDED MASSIVE AND SEMIMASSIVE SULFIDES IN SERICITE-QUARTZ SCHIST.
Fine grained, light gray schist with majority of sulfides concen. in bands with bedding. Gradational contact.

END OF HOLE.

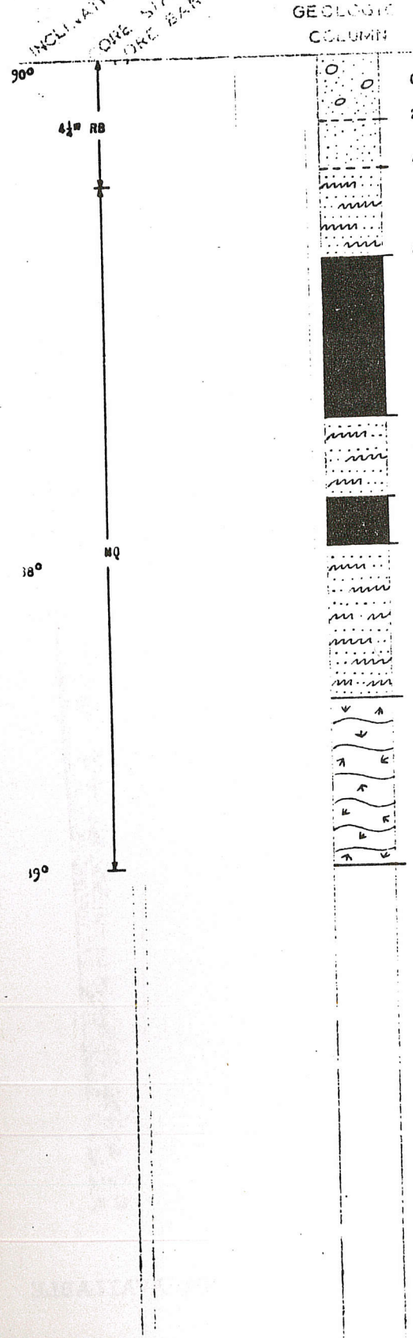
BEST COPY AVAILABLE

HOLE NO 22-98

SECTION 422
COORDINATES 41,284.10 N, 40,487.50 E
AZIMUTH
ELEVATION 1137.50 ft.

DATE STARTED 6/5/70
DATE COMPLETED 6/10/70
LENGTH OF HOLE 320 ft.

VERTICAL HOLE



DESCRIPTION

0-26' PLEISTOCENE TILL:

26-45' CAMBRIAN SANDSTONE:

45-80' QUARTZ-SERICITE SCHIST: White to light pink or tan, fine grained schist. Altered to quartz-kaolin schist with patchy limonitic staining throughout.

80-143' MASSIVE SULFIDE: Sharp contact.

143-175' KAOLINIZED SERICITE-QUARTZ-SCHIST: Sharp contact. Very fine grained light gray. 143-147; Very dense looking gray matrix with kaolinized xls (1 x 2 mm).

175-194' MASSIVE SULFIDE: Sharp upper contact. Very grainy, most is friable.

194-254' KAOLINIZED SERICITE-QUARTZ SCHIST: Gradual contact. Fine grained, white to light gray.

254-320' KAOLINIZED CHLORITIZED AMPHIBOLE CHLORITE SCHIST: Sharp contact. Fine grained, medium to dak green, light gray-green chlorite schist. Altered amphibole 1 x 3 mm.

320' END OF HOLE

BEST COPY AVAILABLE

GREAT LAKES EXPLORATION

FLAMBEAU

HOLE No 22-99

SECTION 410

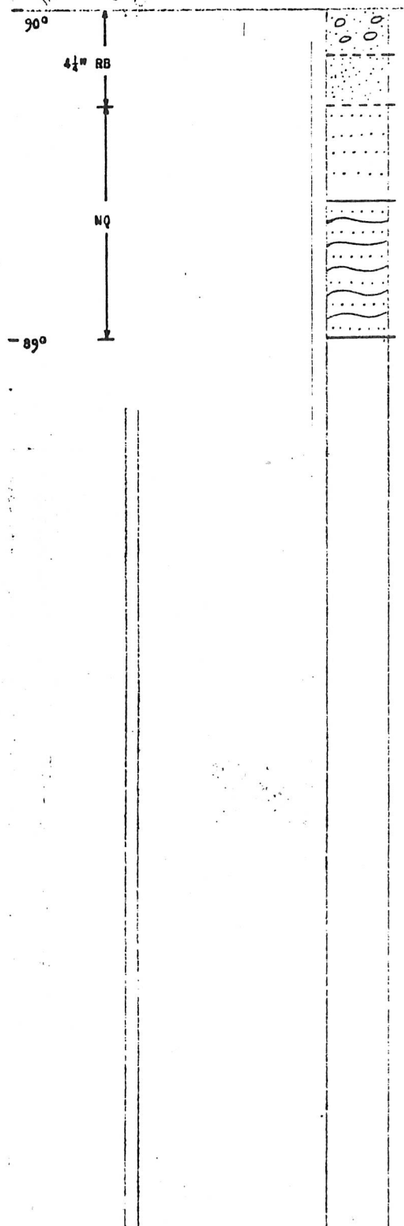
COORDINATES 40,383.60 N, 39,687,87 E

AZIMUTH

ELEVATION 1121.75 ft.

DATE STARTED 6/11/70
DATE COMPLETED 6/15/70

LENGTH OF HOLE 130 ft.



	DESCRIPTION
0 - 18'	PLEISTOCENE TILL:
0 - 38'	TRICONE: Till - ss contact at 18'. SS - Precambrian contact at 38'.
18 - 38'	CAMBRIAN SANDSTONE:
38-76'	QUARTZ-KAOLIN: Rock very fine grained, white and light gray. 38 - 42: Massive kaolin, still shows bedding. Minor limonite staining. 42 - 55: Limonite stained kaolin thruout, many pits containing earthy hematite, Minor qtz fragments Friable.
	60 - 76: Massive kaolin with qtz frag. Predominant pattern of white kaolinized "pyroclastic frag. (?)" in web of gray kaolin material.
76-130'	CHLORITE SCHIST: Minor qtz increasing downhole. Sharp contact. Semi-bleached and/or hematite stained down to 110. Quite broken down to 106; local clay.
130'	END OF HOLE

BEST COPY AVAILABLE

GREAT LAKES EXPLORATION

FLAMBEAU

HOLE No 22-101

SECTION 410

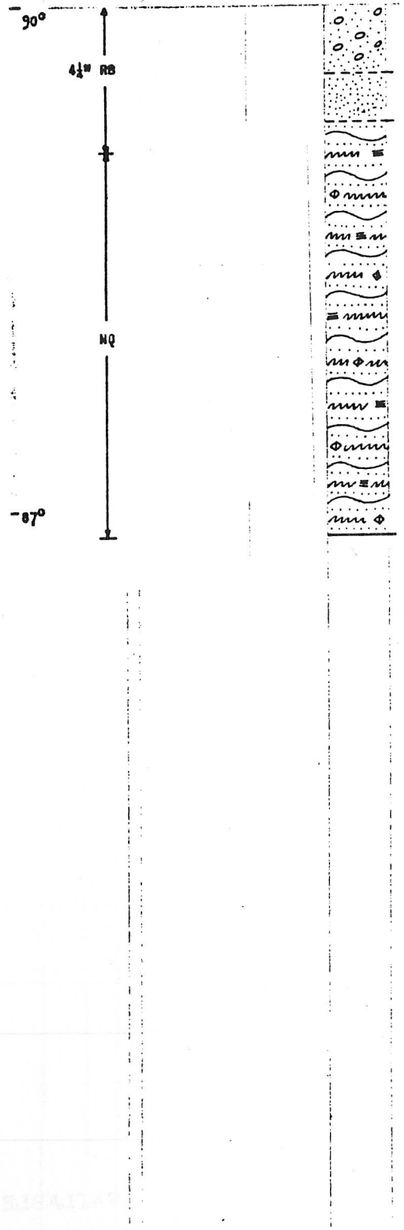
COORDINATES 40,537/20 N, 39,544.20 E

AZIMUTH

ELEVATION 1126.70 ft.

DATE STARTED 6/16/70
DATE COMPLETED 6/17/70

LENGTH OF HOLE 210 ft.



	DESCRIPTION
0-27'	PLEISTOCENE TILL.
27-46'	CAMBRIAN SANDSTONE
46-210'	ANDALUSITE-BIOTITE-SERICITE-QUARTZ-CHLORITE SCHIST: Strongly oxidized to 147. Bleached and kaolinized to bottom with minor hematite on fractures. 58-147; Much hematite, friable, some places muddy. 125-126; Several bands of massive botyriodal hematite up to 20 mm wide.
210'	END OF HOLE

BEST COPY AVAILABLE

22-126

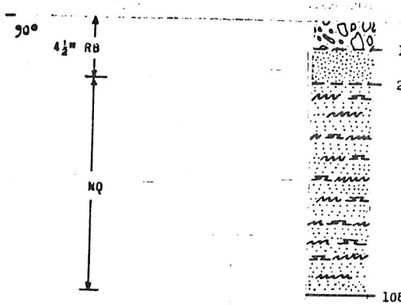
410

40,456.90 N, 39,614.94 E

5/7/74
5/8/74

108.2 ft.

1120.18 ft.



14'	0 - 14'	RECENT ALLUVIUM AND PLEISTOCENE GLACIAL DRIFT, unconsolidated clay, silt, sand and boulders. Tricone, no core.
24.8'		
	14 - 24.8'	CAMBRIAN(?) SANDSTONE. Lt. gray, fn. to med. grained, well rounded, poorly sorted quartz (>95%). 1% gray-green clay (especially in seams at 20.5', 23.5'). 2% yellowish-brown iron oxide staining (particularly at 23.5-24.8')
108.2'	24.8-108.2'	PRECAMBRIAN TALC-QUARTZ-SERICITE SCHIST, lt. and silver gray, fine grained w/strong schistosity. Folia ave. 2 mm thick. Rock consists of 40% sericite, now highly altered to white kaolinite, 30% quartz, 20% talc in separate folia up to 2 cms thick, 10% sulfides. Base of red-brown iron oxides is 45'. 24.8-27': cream-yellow, soft, sericite-clay mixture. 27.4-30': dense, highly fractured and broken metachert. A few cm-size fragments, possibly felsic lapilli.
108.2'		END OF HOLE

BEST COPY AVAILABLE

Hole 22-136

SECTION 410

COORDINATES 40406.3794N, 39666.1500E

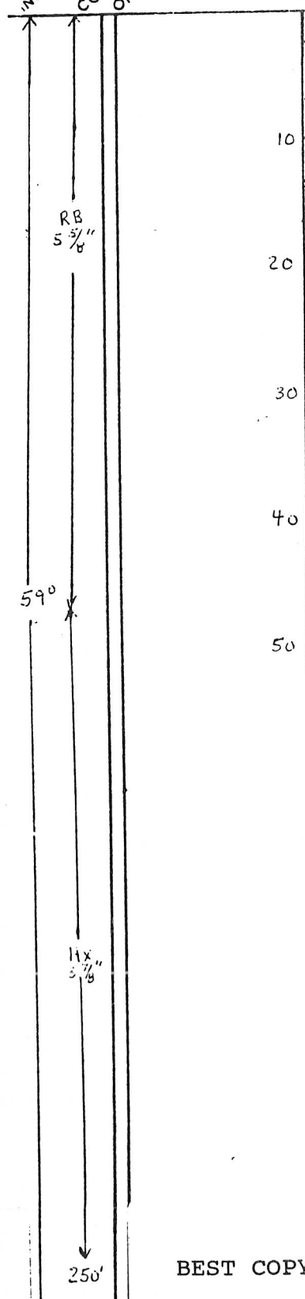
AZIMUTH 135°

ELEVATION 1121.70

DATE STARTED 10-27-87
DATE COMPLETED 11-5-87

LENGTH OF HOLE 250'

% ORE RECOVERY —



GEOLOGIC DESCRIPTION

0-18' GLACIAL OVERBURDEN
Cuttings typically iron-oxide stained, consisting of fine quartz, medium-coarse-grained feldspar, black mafic minerals and rare micaceous grains; local clay horizons, especially near base of unit, stained deep red.

18-31' CAMBRIAN SANDSTONE
Drilling fluid turns yellow brown or gray. Distinct large well-rounded quartz grains predominate cuttings. Local oxidized clay layers as in glacial till.

31-39.8' QUARTZ-EYE-SERICITE-FELSIC CRYSTAL TUFF (UNIT 1b)
Gray, porphyritic, aphanitic, coarse-grained, compact, brittle.
7-12% feathery sericite define an incompletely developed foliation.
10-15% medium-very coarse-grained (up to 5mm), blue-gray-white, sub-angular-angular quartz "eyes" set in silceous aphanitic matrix.
5-7% irregular, stretched vugs may be glass vacancies; more blocky, iron-oxide-stained spaces may be former pyrite sites; more sericite-rich interlayers (1-3" wide) have weathered to a crusty yellow-white material, locally impregnated by secondary quartz (as 33-36'). Cherty lithic fragments (up to 3 cm) are observed rarely in 2-3" zones (as 32.5' and 38.5'). Irregular, yellow-brown patches of finely-milled quartz-eye tuff engulf larger fragments in a few areas between 34-36'

39.8-43.4' METACHERT (UNIT 1b)
Leached limonite cap; medium-grained-very fine grained, purple/black/gray-green, very thinly bedded (¼-½ cm) metachert, locally interlayered with above quartz-eye unit. Discrete layers are strongly limonite-stained and vuggy. The chert is locally brecciated along bedding until 40.7'; after which the sequence is largely brecciated chert and quartz fragments (up to 3.5 cm), sealed by fine-grained quartz-limonite. The vugs can

(continued next page)

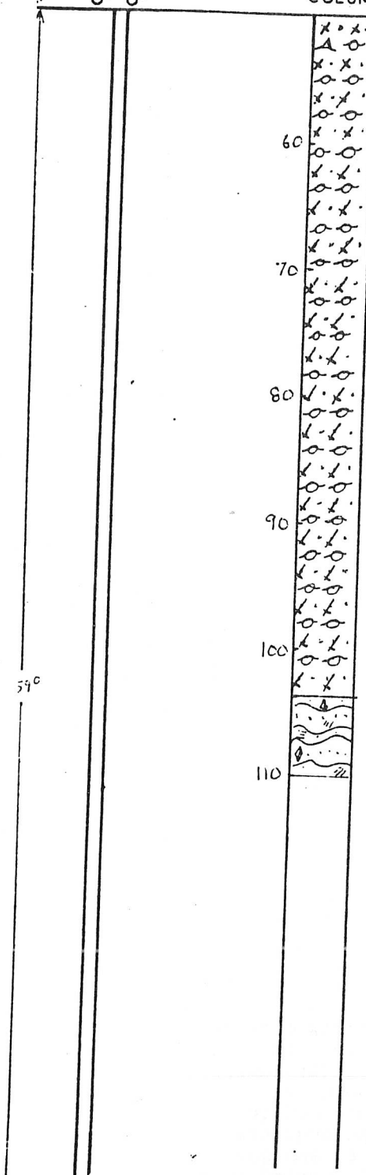
BEST COPY AVAILABLE

BEAR CREEK MINING CO.

Hole 22-136

SECTION 410
COORDINATES 40406.3794N, 39666.1500E
AZIMUTH 135°
ELEVATION 1121.70

DATE STARTED 10-27-87
COMPLETED 11-5-87
LENGTH OF HOLE 250'
% ORE RECOVERY —



GEOLOGIC DESCRIPTION

39.8-43.4' (cont'd) approach several cm's in size and are often lined with white, powdery clay minerals. The top several inches of the unit is typical leached gossan caprock. Fine-medium-grained, squarish pyrite vacancies (3%) are evident throughout footage; trace manganese-oxide.

43.4-49.6' SERICITE QUARTZ SCHIST (UNIT 1a)
45-48.5' sequence almost completely kaolinized-white, very soft, friable; local fractures coated with manganese-oxide and iron-oxide.

48.5-49.6' kaolinized sericite quartz schist with 5-7% fine, blue-gray quartz eyes still preserved.

Gradational contact.

49.6-103.8' PORPHYRITIC METADACITE (UNIT 5)
49.6-66' white, soft, moderately-kaolinized quartz-feldspar crystal tuff; strong iron-oxide staining along fractures. Lathlike and rectangular remnant, saussuritized remnant feldspars (15-25%) still evident

66-81' less altered version of above; wispy chlorite (altered to illitic clays) wraps around saussuritized feldspar, forming a weak-moderate foliation. Trace-2% very fine-grained pyrite as disseminated grains or as discontinuous lenses along foliation (first observable fresh pyrite); mild iron-oxide staining along fractures

Local kaolinized fractures.

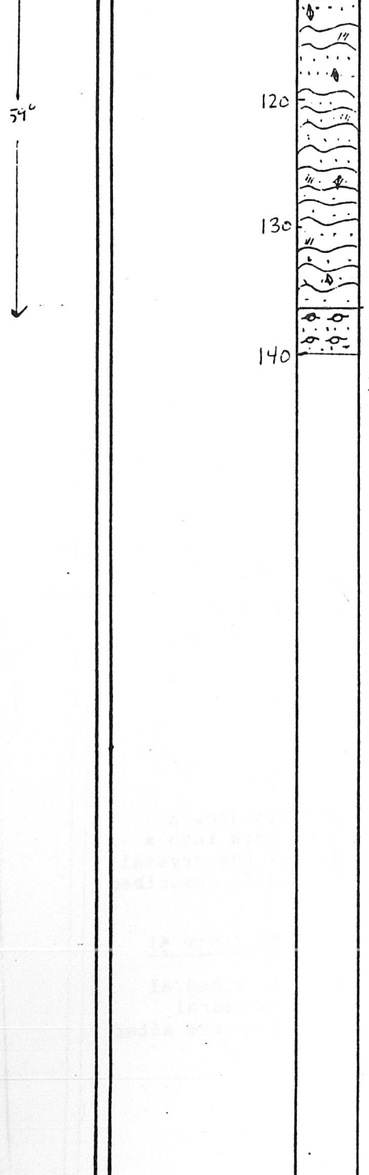
81-103.8' still fresher sequence. Partially altered, blue-gray, porphyritic (coarse/fine-grained), weakly-moderately foliated intermediate-mafic crystal lithic tuff. Consists of 10-15% medium-coarse-grained, blocky, altered feldspar, 1-2% medium-coarse-grained biotite, 3-6% fine-grained, anhedral, blue-gray quartz, (usually masked by groundmass) 3-6% partially altered blue-black chlorite, 1% lensoidal or ovoid, quartz-feldspar. Lithic fragments. The groundmass is mainly altered fine-grained chlorite. Trace euhedral-subhedral, very fine-fine-grained pyrite.

BEST COPY AVAILABLE

Hole 22-136

SECTION 410
COORDINATES 40406.3794N, 39666.1500E
AZIMUTH 135°
ELEVATION 1121.70

DATE STARTED 10-27-87
COMPLETED 11-5-87
LENGTH OF HOLE 250'
% ORE RECOVERY —



GEOLOGIC DESCRIPTION

49.6-103.8' (cont'd) After 90' this unit becomes quite heterogenous, and has intercalated units of chlorite phyllite, altered, massive actinolite-chlorite (metabasalts or andesites) and tuffaceous rocks with 3-5% lithic fragments and very few crystal phenocrysts.

Gradational contact.

103.8-136.5' ANDALUSITE-BIOTITE-QUARTZ-CHLORITE SCHIST (UNIT 2c)
Mainly a well-foliated, chlorite phyllite with very few observable accessory minerals.

Hematite-coated partially-completely weathered, fine-medium-grained pyrite is more or less ubiquitous from trace-2% to 3-5%. Much of the footage is iron-oxide-stained and shows argillic alteration and bleaching of the chlorite minerals.

103.8-104.5', a gray-white, translucent, 1-2" wide chlorite-bearing quartz vein separates Units 3a and 2. Just above the vein the chlorite phyllite has almost completely been altered to white kaolinite. Better preserved layers show partial serpentinization of the chlorite and elongated gray quartz lapilli. A second foliation, crosscutting the primary foliation is well-developed, locally. This grades into an argillized, iron-oxide-stained chlorite phyllite.

(continued next page)

BEST COPY AVAILABLE

BEAR CREEK MINING CO.

Hole 22-136

SECTION 410
COORDINATES 40406.3794N, 39666.1500E
AZIMUTH 135°
ELEVATION 1121.70

DATE STARTED 10-27-87
COMPLETED 11-5-87
LENGTH OF HOLE 250'
% ORE RECOVERY —

INCLINATION | CORE SIZE ORE BANDS | GEOLOGIC COLUMN | GEOLOGIC DESCRIPTION

103.8-136.5' (cont'd) Locally, especially between 110-120', discontinuous lenses and occasionally coarse-grain aggregates of pyrite are more common. These pyritiferous areas sometimes form more strongly stained hematitic layers 1/4-3/4" wide and may have 6-10% altered pyrite.

Minor fracture zones (½-2" wide) occur throughout the interval and are marked by quartz-stringer infilling along fracture planes, the most prominent at 101.9, 114', 114.8'. Open hematite and manganese-oxide-coated fractures are also observable locally, and generally parallel to foliation (122.6', 122.9', 124-125', 127', 130'). Numerous, minute hematite-filled fractures occur throughout. Sometimes the fractures border notably softer iron-oxide-stained layers

In several areas (as between 111-112') a set of filament fractures are perpendicular to foliation and exhibit left-lateral displacement.

The chlorite phyllites show a gradational contact back into a sequence dominated by the crystal and crystal-lithic tuffs described at 49.6-103.8'.

136.5-151.4' PORPHYRITIC METADACITE (UNIT 5)
As 49.6-103.8'.
Trace-3% fine-grained, euhedral pyrite and subhedral-anhedral fracture smears; less pyrite after 140'.

BEST COPY AVAILABLE

BEAR CREEK MINING CO.

Hole 22-136

SECTION 410
COORDINATES 40406.3794N, 39666.1500E
AZIMUTH 135°
ELEVATION 1121.70

DATE STARTED 10-27-87
COMPLETED 11-5-87
LENGTH OF HOLE 250'
% ORE RECOVERY —

INCLINATION | CORE SIZE ORE BANDS | GEOLOGIC COLUMN | GEOLOGIC DESCRIPTION

60°

160

170

180

151.4-161' ANDALUSITE-BIOTITE-QUARTZ-SERICITE-CHLORITE SCHIST (UNIT 2a)
Yellow (W), white-brown (F) sericite phyllite and bleached chlorite with fine-medium-grained quartz (1-3%), trace of gray-white fine-medium-grained "knobby" andalusite and 1-3% black-brown biotite. The biotite occurs as individual sub-grains or in patchy irregular grain aggregates

Quartz also occurs as large gray-white lithic fragments, stretched along foliation (trace-½%). Local fractures are iron-oxide stained. Discontinuous, wispy pyrite lenses (trace-2%) form hematite-stained streaky patches, parallel to foliation. Chlorite phyllite is occasionally interlayered and forms a gradational contact toward the bottom of the sequence.

Gradational contact.

161-174.3' PORPHYRITIC METADACITE (UNIT 5)
Similar to 49.6', but generally has a more abundant lithic component. These lithic fragments (up to 3 cm) are stretched along foliation and consist mainly of quartz and altered feldspar. The fragments can make up to 15-20% of the core, locally. Pyrite occurs as local fracture smears (1%) plus fine-grained euhedral-subhedral disseminations (1-2%). Trace-1% epidote along fractures. Minor quartz-replaced zones (2") at 170.1'.

174.3-180' ANDALUSITE-BIOTITE-QUARTZ-SERICITE-CHLORITE SCHIST (UNIT 2a)
Similar to earlier-described above unit, but with much more abundant andalusite (3-6%), as squarish, red-brown, coarse-grained crystal sections. Locally, andalusite up to 7-10%. Pyrite as very fine disseminations and as patches parallel to foliation (½-1%).

Gradual contact with porphyritic metadacite after 178'.

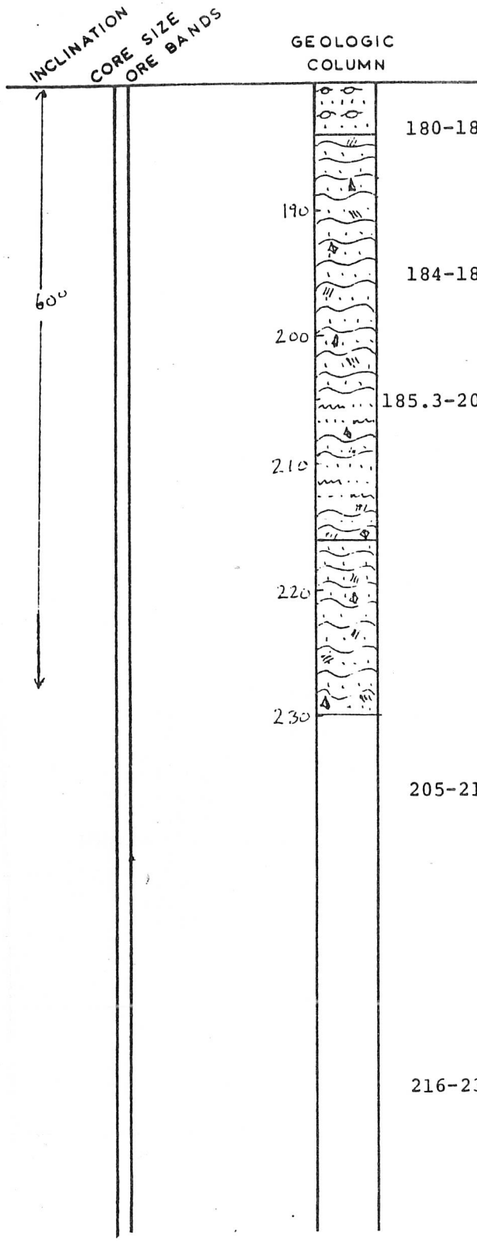
BEST COPY AVAILABLE

BEAR CREEK MINING CO.

Hole 22-136

SECTION 410
COORDINATES 40406.3794N, 39666.1500E
AZIMUTH 135°
ELEVATION 1121.70

DATE STARTED 10-27-87
COMPLETED 11-5-87
LENGTH OF HOLE 250'
% ORE RECOVERY —



GEOLOGIC DESCRIPTION

180-184' PORPHYRITIE METADACITE (UNIT 5)
Crystal and crystal-lithic tuffs. Locally biotite-rich (6-8% coarse-grained, subhedral); local quartz stringers. Trace-1% pyrite.

184-185.3' QUARTZ VEIN
Gray-white, medium-coarse-grained, translucent, chlorite-bearing fractures. Trace-½% fine-coarse-grained, subhedral pyrite.

185.3-205' ANDALUSITE-BIOTITE-QUARTZ-CHLORITE SCHIST (UNIT 2c)
Mainly chlorite phyllite with intercalated porphyritic metadacite. Pyrite generally leached and not as well preserved as previous sequences. Local pyrite-biotite-rich, iron-oxide-stained layers.
Local, quartz-chlorite fractures crosscutting prominent foliation. Hematite-stained fractures particularly prevalent from 187-187.3' and 191-191.5'.
Occasional 1/4-3/4" wide quartz-impregnated stringer zones.

After 192' coarser, wispy chlorite appears.

205-216' INTERCALATED ANDALUSITE-BIOTITE-QUARTZ-CHLORITE and ANDALUSITE-BIOTITE-QUARTZ-SERICITE UNITS (CHLORITE AND SERICITE SCHISTS)
Sericitic schists are creamy white and have a pearly luster. Locally, foliation is kinked; a larger zone (3") occurs at 209.2'. Trace-1% hematite-stained pyrite vacancies.

216-231' ANDALUSITE-BIOTITE-QUARTZ-CHLORITE SCHIST (UNIT 2c)
Typical chlorite-rich andalusite-biotite-quartz-chlorite schist with 10% large (up to 3.5 cm) lensoidal pyrite-biotite clasts stretched along foliation. 8-12% blue-gray quartz eyes (fine-grained, subhedral). Pyrite also present as medium-grained, subhedral grains and aggregates and as smears along foliation (1-3% overall.

(continued next page)

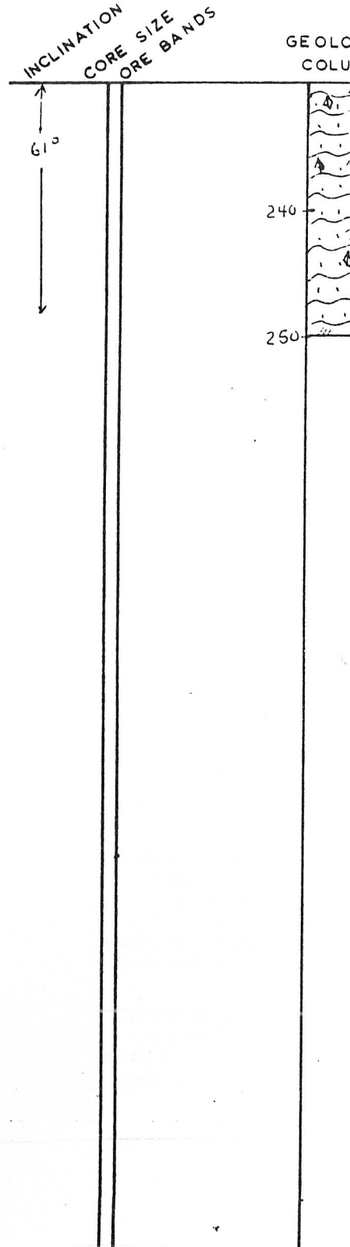
BEST COPY AVAILABLE

BEAR CREEK MINING CO.

Hole 22-136

SECTION 410
COORDINATES 40406.3794N, 39666.1500E
AZIMUTH 135°
ELEVATION 1121.70

DATE STARTED 10-27-87
COMPLETED 11-5-87
LENGTH OF HOLE 250'
% ORE RECOVERY —



GEOLOGIC DESCRIPTION

216-231' (cont'd)
Local minor fractures (1/8-1/2") 45° to foliation, exhibiting right lateral displacement; more prevalent from 224-229'. Chlorite is almost completely bleached over this interval.

231-250' ANDALUSITE-BIOTITE-QUARTZ-CHLORITE SCHISTS (UNIT 2c)
Chlorite is less bleached; biotite-pyrite lenses less common; chert and quartz-feldspar fragments with a pale orange color are common after 240'. Andalusite is more prominent as brown-white squarish crystal sections.

BEST COPY AVAILABLE

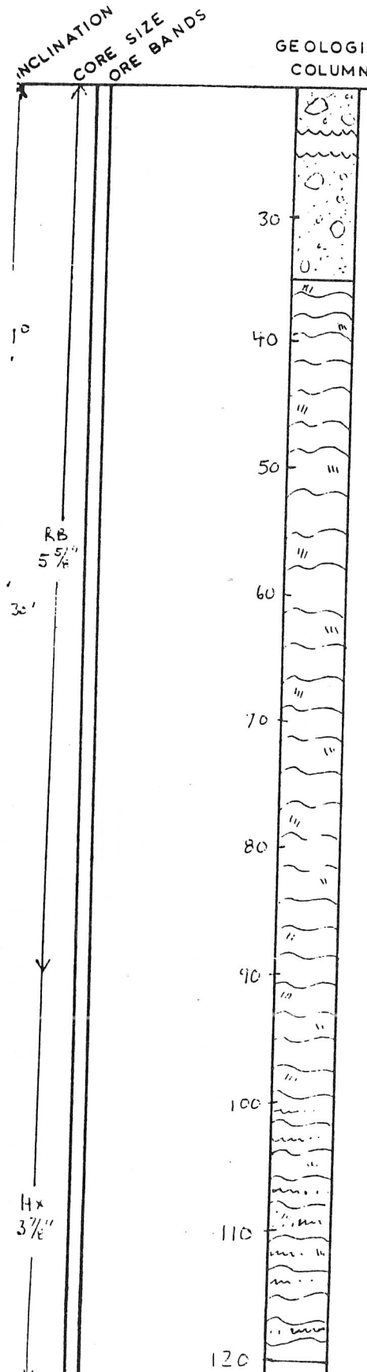
BEAR CREEK MINING CO.

BEST COPY AVAILABLE

Hole 22-137-A

SECTION 401
COORDINATES 40034.7509N, 38723.6845E
AZIMUTH 135°
ELEVATION 1101.12

DATE STARTED 12-18-87
COMPLETED 12-20-87
LENGTH OF HOLE 230'
% ORE RECOVERY



GEOLOGIC DESCRIPTION

0-35' GLACIAL OVERBURDEN
Sandy till with boulders and cobbles. Local clean sand layers toward bottom of interval.
Rotary drilling - no core.

35-90' PRECAMBRIAN CONTACT
First micaceous flakes appear at 35'. The drilling pressures indicated the first 5-8' of the sequence were clay rich, probably saprolitic Precambrian.
Rotary drilling - no core.

90-100' BIOTITE-CHLORITE SCHIST (UNIT 2c)
Strongly-stained along foliation and fine fractures. 6-8% iron-oxide stained, fine-grained, tabular and squarish, relict crystal sites, probably of pyrite and a mafic mineral.

100-222' BIOTITE-CHLORITE SCHIST (UNIT 2c, LOCAL 2a)
Same as 90-100', but generally less altered. Core is more typical chloritic green. Local quartz stringers parallel to foliation.

105.7-107.3' better argillized, iron-oxide-stained; biotite stands out as altered bronzey grains, local relict quartz fragments.

123.8-128' better argillized.

100-135' generally intercalated with more sericitic Unit 2a.

After 132' biotite is more common, occasionally concentrated in discontinuous lenses or thin beds. Typical bronzey-brown and partially iron-oxide-stained weathered surface (3-6%). Trace-1% partially leached fine-grained pyrite.

152-164', 171-172'. Although lithic fragments occur locally as quartz, or quartz-sericite/kaolinite, lithic fragments are particularly abundant over limited intervals.
The most obvious fragments (2-4%) are 1/4-3/4", irregular, sub-rounded and typically iron-oxide-stained quartz-sericite schist fragments; sericite usually altered in some degree to kaolinite. The iron-oxide staining is usually along the fragment selvedges; trace-1% iron-oxide-stained pyrite vacancies.

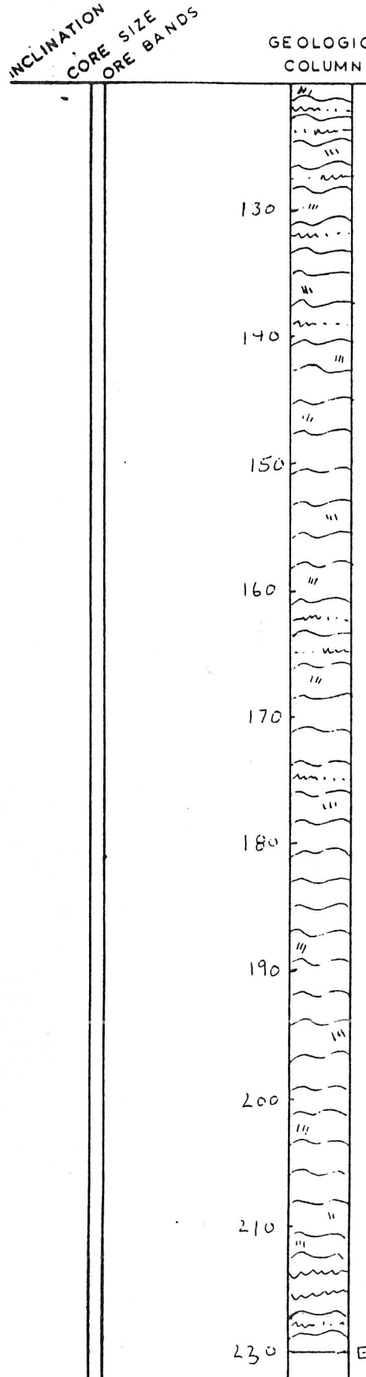
(continued next page)

BEAR CREEK MINING CO.

Hole 22-137-A

SECTION 401
COORDINATES 40034.7509N, 38723.6845E
AZIMUTH 135°
ELEVATION 1101.12

DATE STARTED 12-18-87
COMPLETED 12-20-87
LENGTH OF HOLE 230'
% ORE RECOVERY



GEOLOGIC DESCRIPTION

100-222' (cont'd) After 102', core is commonly mildly-strongly stained by small amounts of iron-oxide concentrated along hairlike-filament fractures, generally not over 1/16" wide. The fractures are prevalent in minor (½-3") zones between 185-195' and 200-213'.

216-222' locally fractures open up into stringers ½-3" wide; these wider, healed fractures usually consist of light-gray, coarse-grained quartz with minor hematite-stained fracture smears. Trace of blue-green chlorite; trace partially altered pyrite sites. This quartz infills local, minor (<2" wide), mildly brecciated chlorite schist.

222-230' BIOTITE-CHLORITE-SCHIST AND BIOTITE-SERICITE-QUARTZ-CHLORITE SCHIST (UNIT 2c and 2a)
Sub-units of lithic-rich (up to 20%) rocks become intercalated with more typical biotite-chlorite schist. Lithic fragments are usually either gray quartz-dark quartz-sericite schist.

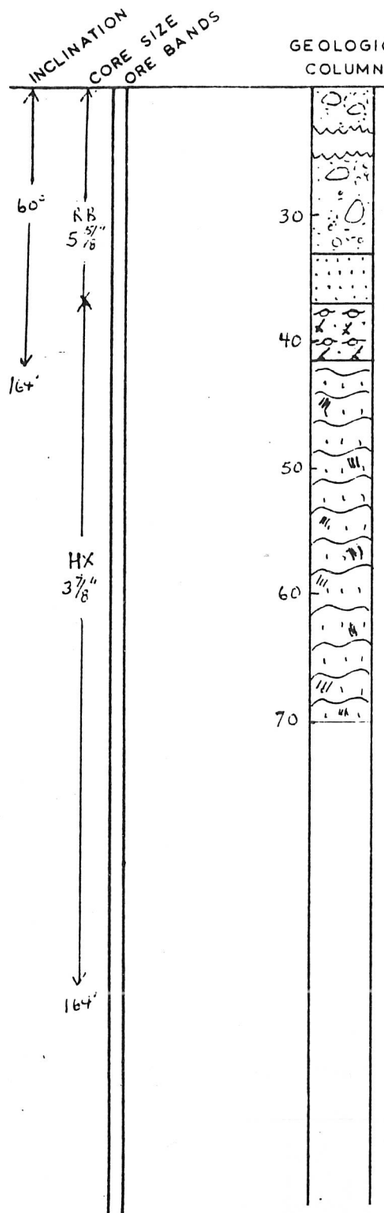
BEST COPY AVAILABLE

BEAR CREEK MINING CO.

Hole 22-137

SECTION 401
COORDINATES 40029.8900N, 38751.3102E
AZIMUTH 135°
ELEVATION 1101.40

DATE STARTED 11-7-87
DATE COMPLETED 11-11-87
LENGTH OF HOLE 164'
% ORE RECOVERY



GEOLOGIC DESCRIPTION

0-33' GLACIAL OVERBURDEN
Large boulders up to 2' were encountered. Red clay layers particularly prevalent toward bottom of interval.
Rotary drilling - no core.

33-37' PRECAMBRIAN
Sericite or bleached chlorite grains first appear in cuttings at 33',

Drilling still "soft".
Set casing at 37'.
Rotary drilling - no core.

37-41.5' PORPHYRITIC METADACITE (UNIT 5)
Green, porphyritic (aphanitic, fine-grained/coarse grained), foliated muscovite/sericite-chlorite schist. Variable (3-20%) coarse-grained sericite in blocky growths,

Large (up to 2.5 cm) iron-oxide-stained, sericite crystal aggregates

Local fine-grained, bronzey, weathered biotite; fine-grained, kaolinized feldspar crystals (trace-1%).

Iron-oxide staining common along foliation. Core is extremely soft and friable.
Iron-oxide stained, chlorite-bearing, ½" wide quartz stringer at 37.2'.

41.5-73.3' BIOTITE-QUARTZ-CHLORITE SCHIST (UNIT 2c)
Weathered bleached white-green, iron-oxide-red, well foliated chlorite phyllite with rare partially altered medium-coarse-grained biotite. Trace coarse-grained, leached, hematite-stained, squarish pyrite vacancies. Local quartz-feldspar fragments (½%) stretched along foliation

Sequence from 61.4-64' particularly iron-oxide stained and soft; in several areas between 54-66' the foliation is kinked or a second foliation is partially developed. Chlorite has weathered in varying degrees to purplish-white or blue-green clay and alteration minerals.

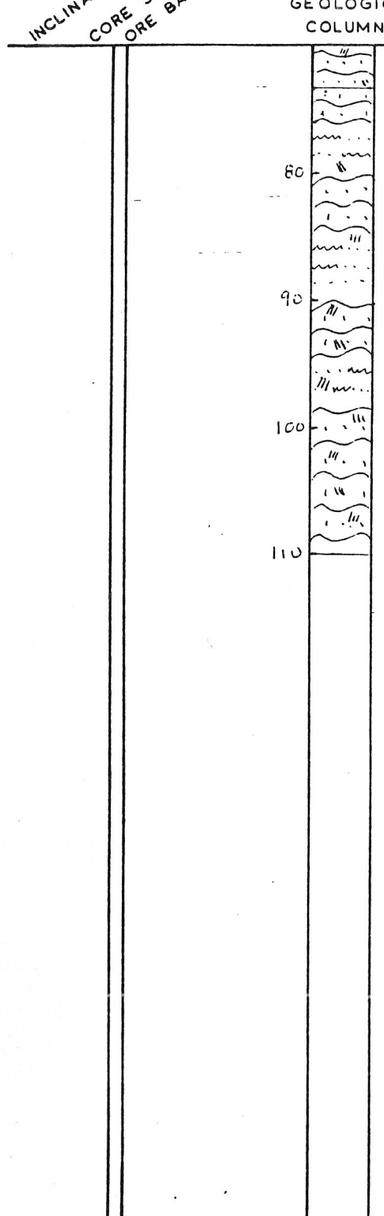
(continued next page)

BEST COPY AVAILABLE

Hole 22-137

SECTION 401
COORDINATES 40029.8900N, 38751.3102E
AZIMUTH 135°
ELEVATION 1101.40

DATE STARTED 11-7-87
DATE COMPLETED 11-11-87
LENGTH OF HOLE 164'
% ORE RECOVERY



GEOLOGIC DESCRIPTION

41.5'-73.3' (cont'd) Quartz has replaced several fracture seams between 46-47' and opens up into a 3" wide, iron-oxide stained, chlorite-bearing quartz stringer at 47'. Trace of black, boitryoidal iron-oxide

73.3-91.5' BIOTITE-QUARTZ-CHLORITE SCHIST (UNIT 2c and 2a)
Less-weathered version of above interval Most of the core has more typical chloritic green color. Trace-⅛ medium-grained pyrite vacancies.

91.5-114.3' SERICITE-BIOTITE-QUARTZ-CHLORITE SCHIST (UNITS 2c and 2a)
Similar to previously described units except biotite is generally more common (3-6%) and frequently forms segregated, biotite-rich interlayers. The biotite has weathered to a reddish bronze color. These interlayers are slightly richer in leached, medium-grained pyrite vacancies than the rest of the core. Local kaolinization along fractures and fine foliation. Occasional, large (1-2 cm) quartz-weathered feldspar. Lithic fragments.

BEST COPY AVAILABLE

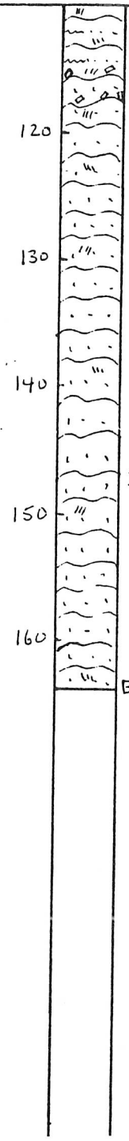
BEAR CREEK MINING CO.

Hole 22-137

SECTION 401
COORDINATES 40029.8900N, 38751.3102E
AZIMUTH 135°
ELEVATION 1101.40

DATE STARTED 11-7-87
COMPLETED 11-11-87
LENGTH OF HOLE 164'
% ORE RECOVERY

INCLINATION | CORE SIZE | ORE BANDS | GEOLOGIC COLUMN | GEOLOGIC DESCRIPTION



114.3-117' BIOTITE-QUARTZ-CHLORITE SCHIST (UNIT 2c)
Footage has choppy core return, clay and iron-oxide alteration, and is marked by local ½-2" wide layers of distinct coarse-grained rock that occur parallel to foliation. This rock consists of 35-45% coarse-grained, blocky weathered white feldspar crystals set in a chlorite matrix.

Toward the top of the sequence the rock has an abundance of quartz and kaolinized, quartz-bearing lithic fragments or clasts.

117-130.4' BIOTITE-QUARTZ-CHLORITE SCHIST
Typical of unit as described at 91.5-114.3'.

130.4-164' BIOTITE-QUARTZ-CHLORITE SCHIST (UNIT 2c)
130.4-133' the core is ground to large fragments and small pieces up to 4" long. Most of the material is finely foliated chlorite phyllite.
Large fragments of chlorite-bearing, gray-white, transluscent quartz are commonly encountered.

After 133' the andalusite-biotite-quartz schist becomes more competent, the chlorite is slightly fresher, and partially leached, medium-coarse-grained, subhedral pyrite grains become more common. Pyrite generally 1-3%, up to 5-8%, over significant footages. The pyrite is often more concentrated along purplish interlayers that are strongly iron-oxide stained. Local intercalated biotite-quartz-chlorite schist (as 91.5') and porphyritic meta-dacite. Carbonate-bearing, limonite-stained filament fractures are commonly observed, especially from 140-147'.
Two distinct sets are present: (1) pre-foliation-crosscut by foliation in a left-lateral direction, and (2) post-foliation-crosscutting foliation in a right-lateral direction. Local quartz and carbonite-smeared fractures, also better-observed from 140-147'.

(continued next page)

BEST COPY AVAILABLE

BEAR CREEK MINING CO.

Hole 22-137

SECTION 401
COORDINATES 40029.8900N, 38751.3102E
AZIMUTH 135°
ELEVATION 1101.40

DATE STARTED 11-7-87
COMPLETED 11-11-87
LENGTH OF HOLE 164'
% ORE RECOVERY

INCLINATION | CORE SIZE | ORE BANDS | GEOLOGIC COLUMN | GEOLOGIC DESCRIPTION

130.4-164' (cont'd) 153-164' local quartz-replaced zones more frequent, the major ones occurring from 153-153.4' and 162-163'.
In these zones, fragments of schist are sealed by two types of quartz: (1) fine-medium-grained, sugary, white quartz with carbonite-smeared fractures, and (2) coarse-grained, gray-white, transluscent quartz. Both calcite and dolomite are found as carbonate infillings.

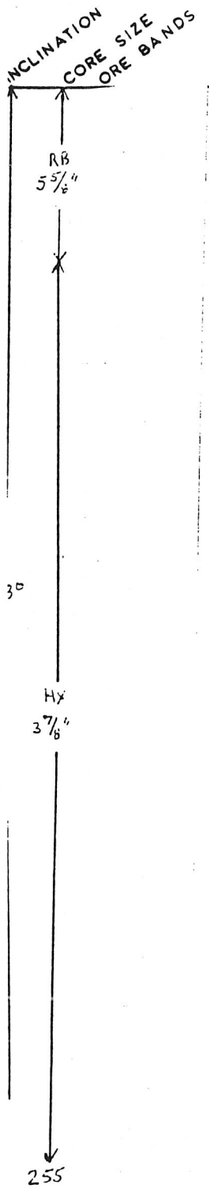
BEST COPY AVAILABLE

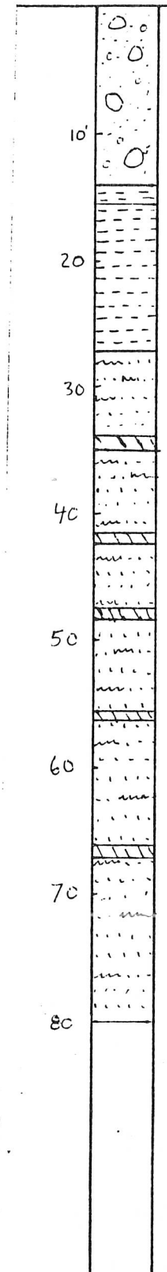
BEAR CREEK MINING CO.

Hole 22-138

SECTION 401
COORDINATES 39823.9677N, 38975.9522E
AZIMUTH 135°
ELEVATION 1103.05

DATE STARTED 11-17-87
COMPLETED 11-19-87
LENGTH OF HOLE 255'





GEOLOGIC DESCRIPTION

0-14' GLACIAL OVERBURDEN
Sandy, poorly sorted till with local clay-rich zones; local boulders and cobbles.

14-27.3' GOSSAN-LEACHED CAPROCK
Leached, vuggy, limonitic clay with pervasively iron-oxide-stained, medium-coarse-grained, subangular, moderately-poorly cemented chert. Relict "quartz eyes" to .4", observed locally.

27.3-91.4' SERICITE QUARTZ SCHIST WITH LOCAL SEMI-MASSIVE-MASSIVE SULPHIDES (UNIT 1a)
Bleached white, well-foliated, sericite-quartz schist. Fine-grained quartz grains, lenses and laminated bands (40-60%) in a partially kaolinized sericite schist. Sulphide-bearing-averaging 7-9% pyrite disseminated grains, discontinuous lenses and laminations or thin beds.

(continued next page)

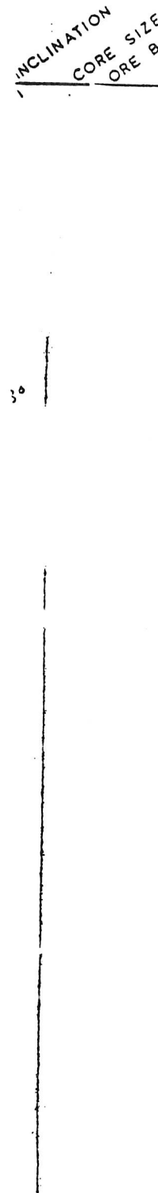
BEST COPY AVAILABLE

BEAR CREEK MINING CO.

Hole 22-138

SECTION 401
COORDINATES 39823.9677N, 38975.9522E
AZIMUTH 135°
ELEVATION 1103.05

DATE STARTED 11-17-87
COMPLETED 11-19-87
LENGTH OF HOLE 255'



GEOLOGIC DESCRIPTION

27.3-91.4' (cont'd)

91.4-103' MASSIVE SULPHIDE

103-110.4' SEMI-MASSIVE SULPHIDE
103.5-105.2', pyrite interlayers in sericite-quartz schist;

BEST COPY AVAILABLE

BEAR CREEK MINING CO.

Hole 22-138

SECTION 401
COORDINATES 39823.9677N, 38975.9522E
AZIMUTH 135°
ELEVATION 1103.05

DATE STARTED 11-17-87
COMPLETED 11-19-87
LENGTH OF HOLE 255'

INCLINATION | CORE SIZE ORE BANDS | GEOLOGIC COLUMN | GEOLOGIC DESCRIPTION

63°

190

200

210

220

230

240

250

64°

E O.H.

178-190' BIOTITE-QUARTZ-SERICITE-CHLORITE SCHIST (UNIT 2a)
Light-dark green, moderately-poorly foliated, chloritic phyllite with isolated grains or lenses of biotite-sericite.

Local, < 1/16-1/4" argillite-filled fractures with iron-oxide staining selvedges, especially 181.3-185'.

190-193.4' ANDALUSITE-BIOTITE-QUARTZ-CHLORITE-SERICITE SCHIST (UNIT 2a)
Bleached chlorite, local greasy yellow-white sericite. 3-4% biotite; trace-½% blocky, fine-grained, red-brown andalusite. A few local slickenside surfaces and iron-oxide-clay-filled fractures.

193.4-202' QUARTZ AUGEN SCHIST (UNIT 3a WITH LOCAL 2a)
Distinct, sub-rounded, medium-grained, blue-gray quartz eyes (3-6%), 6-8% white-gray, coarse-grained stretched quartz lithic fragments, 5% rectangular, saussuritized or kaolinized relict feldspar crystals. Local 1/8-1/4" healed quartz-filled, iron-oxide stained fractures. Local interlayers of Unit 2a.

202-220' ANDALUSITE-BIOTITE-QUARTZ-CHLORITE (UNIT 2a)
As 178-190'.
Local iron-oxide-stained, clay-filled filament fractures.

220-255' QUARTZ AUGEN SCHIST (UNIT 3a)
As 193.4-202'.
Rare quartz-healed, tight fractures (especially 224-227'). Local slickenside surfaces, in sericitic interlayers 225-230'.
252.6, 3/4", white, coarse-grained, quartz stringer within kinked foliation surfaces.

BEST COPY AVAILABLE

BEAR CREEK MINING CO.

Hole 22-138

SECTION 401
COORDINATES 39823.9677N, 38975.9522E
AZIMUTH 135°
ELEVATION 1103.05

DATE STARTED 11-17-87
COMPLETED 11-19-87
LENGTH OF HOLE 255'

INCLINATION | CORE SIZE ORE BANDS | GEOLOGIC COLUMN | GEOLOGIC DESCRIPTION

63°

130

140

150

160

170

180

64°

110.4-135.7' QUARTZ-SERICITE SCHIST WITH BIOTITE-QUARTZ-CHLORITE SCHIST (UNIT 2b with 2a)
Moderately-strongly kaolinized, bleached sericite-rich schist. Similar to 27.3-91.4', but with less quartz. Trace-3% medium-coarse-grained pyrite
Intercalated biotite-chlorite-rich schist (2a).

135.7-160.2' BIOTITE-QUARTZ-SERICITE-CHLORITE SCHIST (UNIT 2a)
Bleached chlorite, locally sericite-rich phyllite. Trace-½% sub-rounded fine-coarse, gray-white quartz and fine-grained crystals of biotite. Trace-2% pyrite.
Sericite areas better argillized.

149-155' less sulphides (trace-½%).

160.2-165' CHLORITE SCHIST (UNIT 4a)
Heterogenous unit with distinct mafic lithic tuff and moderate-dark green chlorite schist. Porphyritic (very coarse to fine-grained), gray-green well-foliated lithic tuff. 10-15% dark green, soft, very coarse (up to .3") chloritic lithic fragments with whitish, blocky relict feldspar crystals. The fragments have a feathered texture and white altered rims. 1-3% pyrite-bearing medium-coarse grained, elongated chlorite lithic fragments. Pyrite (trace-1%) along foliation and local fractures. Intercalated with moderately-poorly foliated chlorite schists

165-178' CHLORITE SCHIST (UNIT 4a)
Same as above sequence but core is generally iron-oxide stained. A few minor (< ¼-½") fractures filled with earthy iron-oxides, quartz and clay. Chlorite is usually bleached and partially altered to bluish-green argillite.

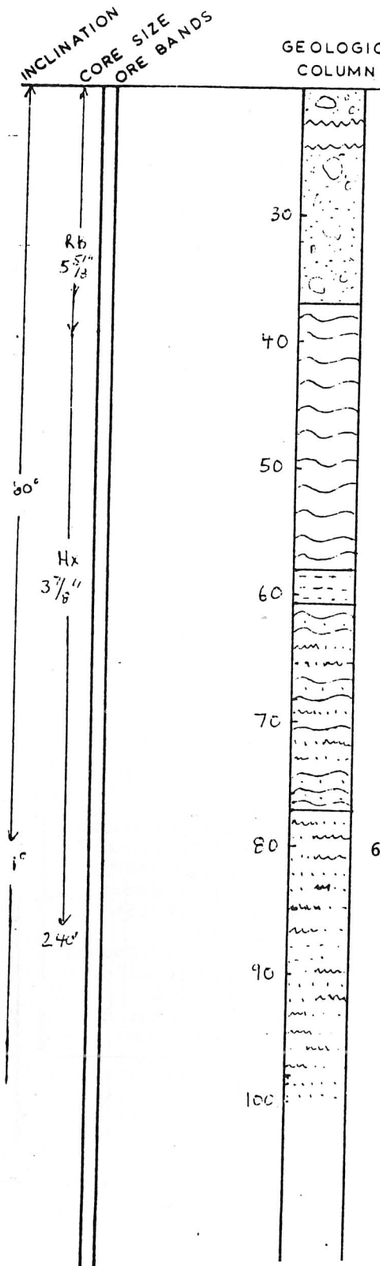
BEST COPY AVAILABLE

BEAR CREEK MINING CO.

Hole 22-139

SECTION 401.65
COORDINATES 39980.7130N, 38911.5264E
AZIMUTH 0°
ELEVATION 1101.21

DATE STARTED 11-20-87
COMPLETED 11-23-87
LENGTH OF HOLE 240'



GEOLOGIC DESCRIPTION

0-37' GLACIAL OVERBURDEN
Sandy, poorly-sorted till with frequent cobbles and boulders. First sericite or bleached chlorite in cuttings at 37'.

37-58' CHLORITE SCHIST
Soft, weathered, argillized, moderately-foliated chlorite-schist. Commonly iron-oxide stained, and chlorite has altered in some degree to bluish-gray-maroon clay minerals. 39-43' very soft, clay-rich interval with local relict quartz fragments.

58-60.3' HEMATITE-RICH METASEDIMENT
Iron-oxide stained, massive, medium-coarse-grained "dirty" hematite-rich interlayer. Locally, quite vuggy (5% of interval). 40-55% hematite, frequently pisolitic-colloidal growths, coated with a limonite "shell". The vugs are lined with drusy very fine-grained, dark green crystalline mineral (probably epidote). The remainder of this rock is fine-grained non-descript, red-brown argilliceous matrix. Trace of carbonate along vugs. Trace-½% rectangular, leached pyrite vacancies. Local hematite/epidote veinlets.

60.3-68' WEATHERED SERICITE-QUARTZ-CHLORITE SCHIST (UNIT 2a)
As 37-58'.

68-77' SERICITE-QUARTZ-CHLORITE SCHIST (UNIT 2a)
Similar to above, but less weathered. Chlorite bleached, but only weakly argillized. Partially-leached, squarish, fine-medium-grained pyrite vacancies (trace-½%). Local quartz-sericite laminations, better altered; more frequent toward bottom of interval.

Gradational contact.

77-98' QUARTZ-SERICITE SCHIST WITH SERICITE-QUARTZ SCHIST (UNIT 2b with 1a)
White, bleached, well-foliated Local gray, cherty laminations.

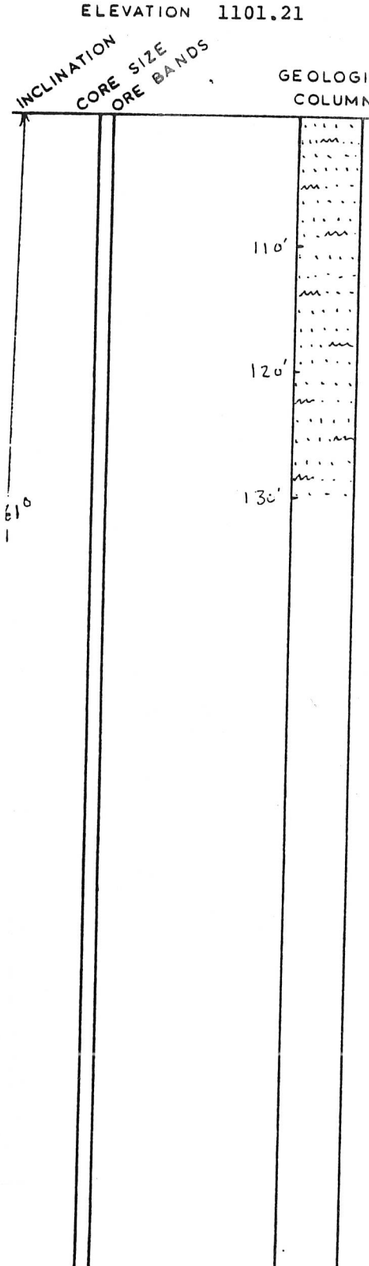
BEST COPY AVAILABLE

BEAR CREEK MINING CO.

Hole 22-139

SECTION 401.65
COORDINATES 39980.7130N, 38911.5264E
AZIMUTH 0°
ELEVATION 1101.21

DATE STARTED 11-20-87
COMPLETED 11-23-87
LENGTH OF HOLE 240'



GEOLOGIC DESCRIPTION

98-109' SERICITE-QUARTZ SCHIST (UNIT 1a)
Quartz increases as cherty blue-gray laminae and thin beds; local large (up to 3.5 cm) subangular white quartz lapilli. Fine-very fine-grained pyrite as fracture/foliation smears (trace-½%).

109-136.8' SERICITE-QUARTZ SCHIST (UNIT 1a)
Similar to above, but with a continued increase of cherty interlayers and lenses.

Local zones (½-1½") of white, very coarse-grained (up to 2cm) kaolinized fragments

Foliation/bedding forms convoluted laminations wrapping the fragments

BEST COPY AVAILABLE

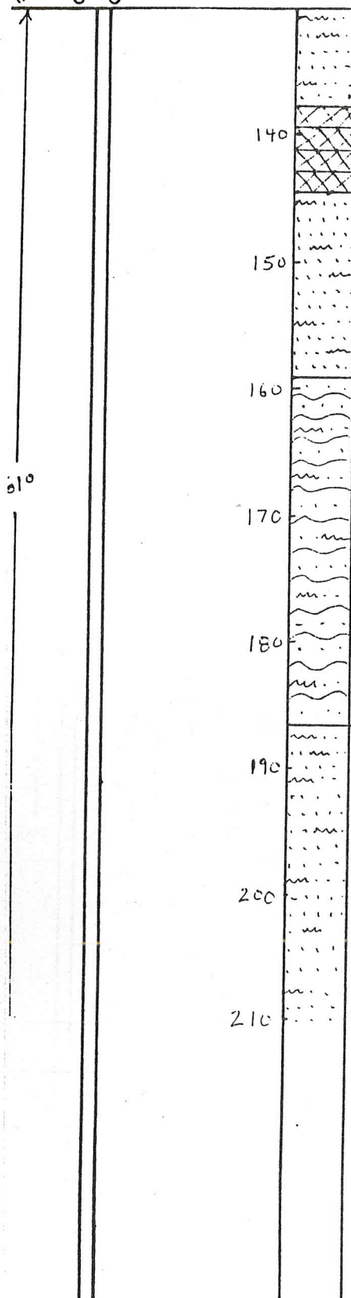
BEAR CREEK MINING CO.

Hole 22-139

SECTION 401.65
COORDINATES 39980.7130N, 38911.5264E
AZIMUTH 0°
ELEVATION 1101.21

DATE STARTED 11-20-87
COMPLETED 11-23-87
LENGTH OF HOLE 240'

INCLINATION | CORE SIZE ORE BANDS | GEOLOGIC COLUMN | GEOLOGIC DESCRIPTION



136.8-144.6' METACHERT
Gray, compact, very fine-grained aphanitic chert with local pyrite as euhedral, medium-fine-grained disseminations and lenses (2-4%). Local vuggy quartz stringers up to 2" wide with trace partially-altered pyrite

144.6-159' SERICITE QUARTZ SCHIST (UNIT 1a)
As 109-136.8'.
Local quartz stringers at angle to foliation (as at 156').

159-186.6' SERICITE-QUARTZ-CHLORITE SCHIST (UNIT 2a)
Dark-moderate green, well-foliated chlorite schist with 1-3% fine-medium-grained, subhedral-euhedral pyrite. Local pyrite-rich laminations (3-5% of interval). Pyrite sometimes partially leached. Occasional very coarse-grained porphyroblastic grain aggregates. Pyrite-bearing, iron-oxide-stained filament fractures between 159-161.8' and 170-172'.
Local intervals of pyritiferous quartz-sericite schist especially after 174'.

Gradational contact.

186.6-212.6' SERICITE-QUARTZ SCHIST (UNIT 1a)
Similar to 109-136.8'.

3-6% pyrite along local foliation planes; pyrite (½-2%) as fine disseminated grains also.

BEST COPY AVAILABLE

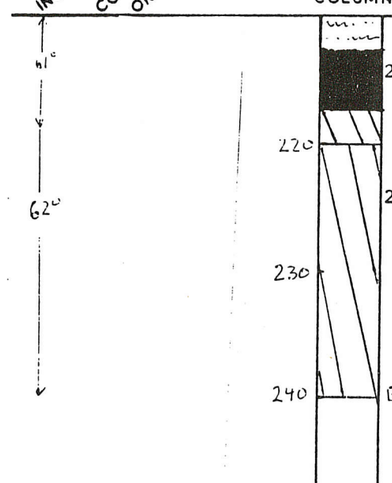
BEAR CREEK MINING CO.

Hole 22-139

SECTION 401.65
COORDINATES 39980.7130N, 38911.5264E
AZIMUTH 0°
ELEVATION 1101.21

DATE STARTED 11-20-87
COMPLETED 11-23-87
LENGTH OF HOLE 240'
% ORE RECOVERY 91°

INCLINATION | CORE SIZE ORE BANDS | GEOLOGIC COLUMN | GEOLOGIC DESCRIPTION



212.6-217.6' MASSIVE SULPHIDE

217.6-220' SEMI-MASSIVE SULPHIDE

220-240' SEMI-MASSIVE PRIMARY ORE

BEST COPY AVAILABLE

BEAR CREEK MINING CO.

Hole 22-142

SECTION 422
COORDINATES 41290.2697N, 40476.3052E
AZIMUTH 135°
ELEVATION 1139.80

DATE STARTED 12-7-87
COMPLETED 12-16-87
LENGTH OF HOLE 290'

INCLINATION CORE SIZE ORE BANDS	GEOLOGIC COLUMN	GEOLOGIC DESCRIPTION
	221-264'	BIOTITE-QUARTZ-CHLORITE SCHIST, PORPHYRITIC META-ANDESITE/DACITE, AND AMPHIBOLE CHLORITE SCHIST Heterogenous sequence, dominated by biotite-quartz-chlorite schist (Unit 2c). 229-230', 222-223', quartz and weathered chlorite fills foliation and sometimes replaces patchy areas; mild iron-oxide staining. After 245' pyrite increases to 1-3%. 265.7', 266.7', 277', 278.3', minor, brecciated zones (<2") sealed by iron carbonate (probably ankerite), quartz-chlorite. Pink carbonate (callite) as stringers in filament fractures. Local pyrite. Gradational contact.
	264-290'	PORPHYRITIC METADACITE/ANDESITE (UNIT 5) Moderate-dark green, moderately-well-foliated lithic, crystal tuff. 12-13% medium-very coarse (3/4" up to 3-1/2"), gray quartz fragments with chlorite-bearing fractures. 11-22% pale green, partially argillized fragments. 5-7% white, argillized, tabular, relict feldspar. Locally, the fragments can make up 75% of the core. Bleaching of chlorite along foliation sometimes gives core a fragmental appearance.
	E.O.H.	

BEST COPY AVAILABLE

BEAR CREEK MINING CO.

Hole 22-142

SECTION 422
COORDINATES 41290.2697N, 40476.3052E
AZIMUTH 135°
ELEVATION 1139.80

DATE STARTED 12-7-87
COMPLETED 12-16-87
LENGTH OF HOLE 290'

INCLINATION CORE SIZE ORE BANDS	GEOLOGIC COLUMN	GEOLOGIC DESCRIPTION
	115.3-136.6'	SERICITE-QUARTZ SCHIST (UNIT 1a) Similar to above, but more sericite-rich and better argillized. Trace-2% leached iron-oxide-stained pyrite sites. Local intercalated with lapilli-rich tuff. 125-129' rare, coarse (up to ¼"), brown-white, tabular-square andalusite crystals. Iron-oxide is more abundant (lenses or Unit 2b).
	136.6-188.8'	QUARTZ-CHLORITE AND AMPHIBOLE-CHLORITE SCHISTS (UNITS 4a and 4c) Dark green, moderately-poorly foliated, chlorite phyllite intercalated with amphibole-bearing chlorite schist. Amphibole as fine, prismatic crystals (½-2%). Local fragments or lapilli of dark green, wispy chlorite, quartz, with carbonate-filled filament fractures. 136.6-139.2' lighter-colored, better-argillized bleached chlorite. 139.2', 149', 155-156', 162-162.4', chlorite generally argillized to blue-green clays. Mild iron-oxide staining as smears along minute fractures. After 160' amphibole-bearing schists increase, and predominate core by 188.8'. 3-5% biotite, mainly as replacement after amphibole. 1-2% chlorite-rich lithic fragments. 3-5% white, waxy, tabular, altered feldspar. Trace-½% very fine-grained, euhedral pyrite. 6-8% fine-grained quartz and chlorite as lenses parallel to foliation. Chlorite as feathery recrystallized needles along foliation planes and minor fractures. The coarser, mafic minerals give core a "grainy" appearance. Gradational contact.
	188.8-221'	AMPHIBOLE CHLORITE SCHIST (UNIT 4c) As described above. After 200' biotite-quartz-chlorite schist (Unit 2c) becomes intercalated with Unit 4c. Gradational contact.

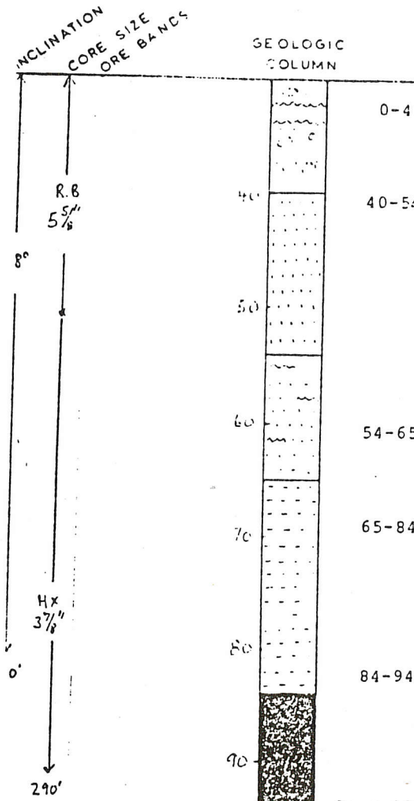
BEST COPY AVAILABLE

BEAR CREEK MINING CO.

Hole 22-142

SECTION 422
COORDINATES 41290.2697N, 40476.3052E
AZIMUTH 135°
ELEVATION 1139.80

DATE STARTED 12-7-87
DATE COMPLETED 12-16-87
LENGTH OF HOLE 290'



	GEOLOGIC DESCRIPTION
0-40'	GLACIAL OVERBURDEN Mainly sandy till with local cobbles and clay lenses. Rotary drilling - no core.
40-54'	CAMBRIAN SANDSTONE Yellow, iron-oxide-stained, medium-coarse-grained, moderately-poorly sorted, well-rounded, weakly bedded-massive sandstone. Generally poorly consolidated. Local clay and gravel horizons. Both clay and gravel are concentrated near contact with Precambrian. Rotary drilling to 51'; core dilling 51'.
54-65'	WEATHERED PRECAMBRIAN Soft, saprolitic, mottled, yellow-gray and white argilliceous schists. Relict foliation.
65-84'	GOSSAN Brick-red, massive, argilliceous gossan with local vuggy patches. Occasional sub-rounded, gray chert lithic fragments and more angular, white quartz vein shards. Limonite staining in vugs and along fractures.
84-94.3'	MASSIVE SULPHIDE Black, massive, medium-coarse-grained.
94.3-115.3'	SERICITE-QUARTZ SCHIST (UNIT 1a) Gray-white, finely foliated, moderately-well kaolinized schist. 10-15% wispy, stretched, kaolinized lithic fragments. 4-6% sulphides, 85.6' local filament fracture with hematite staining and white carbonate stringers.

BEST COPY AVAILABLE

APPENDIX 3.5-B

Geologic Logs and Soil Test Data for Borings Completed by STS Consultants, Ltd., 1972 through 1975