MRS → Property File

019951

PRELIMINARY

GEOLOGICAL SUMMARY
OF THE
GOLDEN BEAR PROJECT

104K 079

NTS 104K/1 AND 8

ATLIN M.D.

*Information from: E.D. Titley, 1987
N.J. Lehrman & S.W. Caddey, 1989

1.0 INTRODUCTION

1.1 LOCATION

The Golden Bear joint venture involves approximately 11,850 hectares (29,282 acres or 45.75 sq mi) of rugged alpine terrane, located in northern British Columbia approximately 135 km (84 mi) west of Dease Lake at long. 132 deg 17' W, lat. 58 deg 11' N. Rugged alpine terrain and deeply incised valleys on the property range in elevation from 600 m to 2200 m asl.

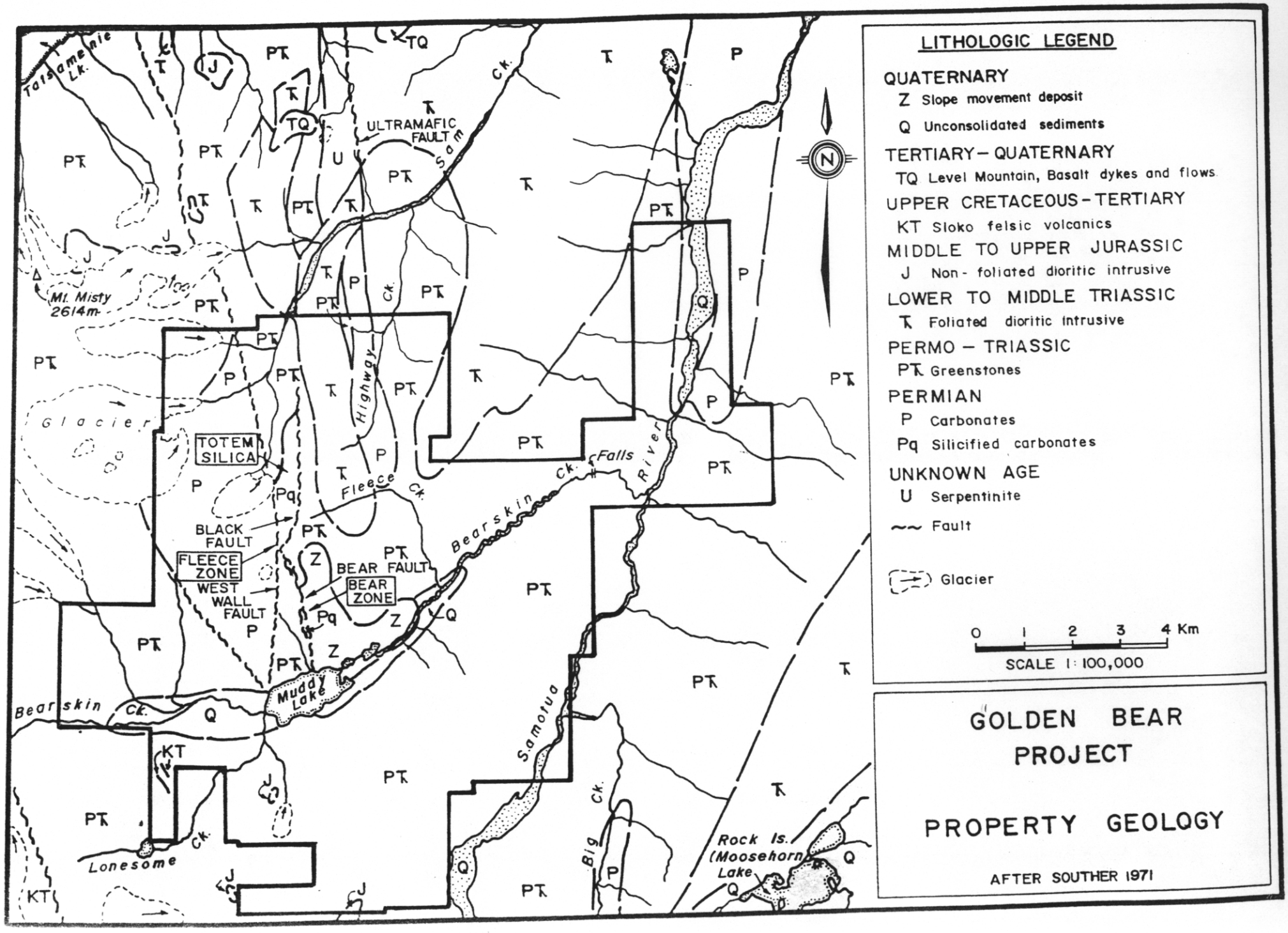
1.2 HISTORY

Gold was originally discovered on the property in 1981 by a CML regional soil geochemistry program. Chevron spent 1981 up to early 1986 in surface exploration and diamond drill work on the project. North American Metals Corp. optioned the property in June 1986 and conducted diamond drilling and underground exploration in that year. Further exploration and feasibility work was conducted by NAMC in 1987.

2.0 GEOLOGY

2.1 REGIONAL SETTING

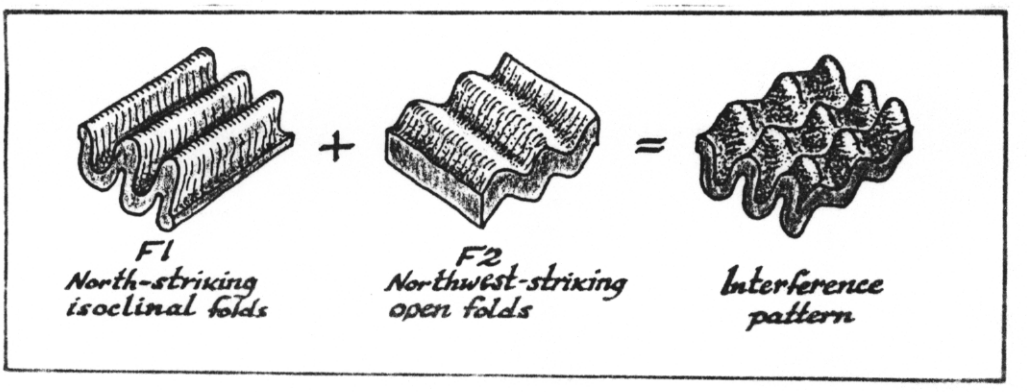
The Golden Bear property and its immediate surroundings are underlain by a complexly folded and faulted sequence of Permo-


Tatsamenie Lk.
Mt. Misty 2614m
Glacier
TOTEM SILICA
BLACK FAULT
FLEECE ZONE
WEST WALL FAULT
BEAR FAULT
BEAR ZONE
ULTRAMAFIC FAULT
Sam Ck.
Highway
Fleece Ck.
Bear skin Ck.
Falls River
Mudd Lake
Bear skin Ck.
Lonesome Ck.
Samotua Ck.
Big Ck.
Rock Is. (Moosehorn Lake)
PT
TQ
KT
J
P
Pq
Z
Q
U
T
N
LITHOLOGIC LEGEND
QUATERNARY
Z Slope movement deposit
Q Unconsolidated sediments
TERTIARY – QUATERNARY
TQ Level Mountain, Basalt dykes and flows
UPPER CRETACEOUS – TERTIARY
KT Sloko felsic volcanics
MIDDLE TO UPPER JURASSIC
J Non - foliated dioritic intrusive
LOWER TO MIDDLE TRIASSIC
T Foliated dioritic intrusive
PERMO – TRIASSIC
PT Greenstones
PERMIAN
P Carbonates
Pq Silicified carbonates
UNKNOWN AGE
U Serpentinite
Fault
Glacier
0 1 2 3 4 Km
SCALE 1:100,000
GOLDEN BEAR PROJECT
PROPERTY GEOLOGY
AFTER SOUTHER 1971

Triassic carbonates, cherts, and mafic volcanics locally intruded by mid-Triassic foliated diorite stocks. The terrane is metamorphosed to greenschist facies.

The upward transition from limestone to chert to mafic volcanics is considered regionally to be fully conformable. It has been proposed that the change from biogenic limestones to cherts may reflect increasing amounts of silica added to the seawater by submarine hotsprings associated with the onset of volcanism. Rocks stratigraphically below the Permian carbonates are not known in the region.

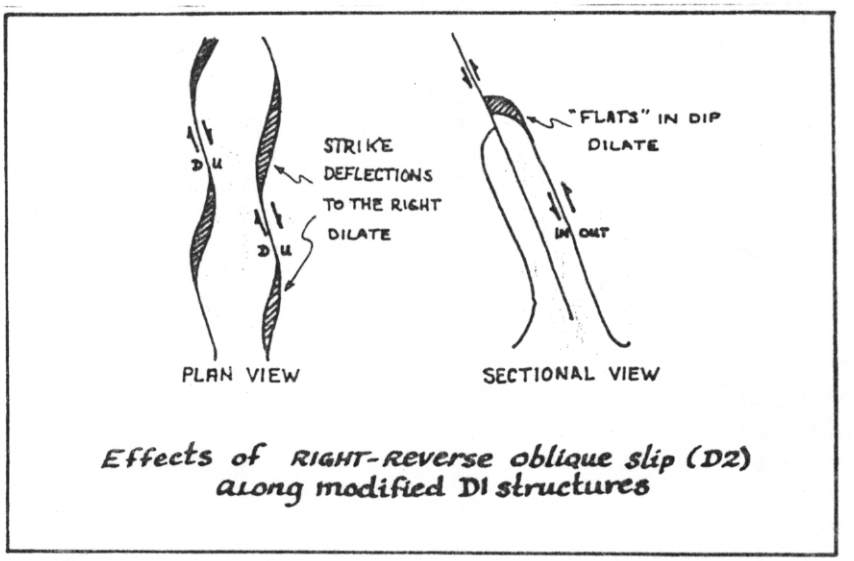
Folding and faulting is related to three superimposed deformational events, the first two of which are most important. During the first event, termed the Tahltanian orogeny, the region was tightly folded into a sequence of north-south trending isoclinal folds with steeply east-dipping axial planes. Greenschist facies metamorphism and development of regional foliation occurred during this event. As deformation progressed, folding gave way to brittle faulting including the precursor faults of the "Ophir break", the large-scale host of district mineralization.



Early to mid Jurassic refolding resulted in broad, open, northwest-trending folds along with their usual complement of brittle structures. The superimposition of these younger folds and faults on the products of the earlier deformation resulted in complex interference patterns.

Some of the structures and stratigraphic contact geometries developed during the earlier Tahltanian orogeny were oriented such that they were modified and reactivated during the second event. This reactivation was coincident with Golden Bear mineralization, and apparently produced the structural dilations along the Ophir break which host known mineralization.

A third block-faulting extensional event further modified the area during Tertiary time.



Effects of RIGHT-Reverse oblique slip (D2) along modified D1 structures

2.2 GOLDEN BEAR MINERALIZATION

The Bear Main orebody is a relatively small, highly structure-controlled, single oreshoot of bonanza-grade mineralization (18.6 g/t or 0.543 o/t) with a vein-like overall geometric form. Strictly, it is not a "vein", but a body of hydrothermally-cemented chert/carbonate breccia occupying a structural dilatancy. This unit, termed "quartz breccia", is adjoined by a more diffusely mineralized hanging wall of pyritic mafic tuff.

A clayey seam of post-mineral fault gouge commonly intervenes between the two dominant ore types, and contains mechanically comminuted particles derived from adjacent mineralized material. Minor secondary enrichment has given rise to some coarser gold in the gouge.

Mineralization is commonly associated with approx. 3% pyrite, and is locally accompanied by bleaching and chlorite-sericite-ankerite-fuchsite alteration. The presence of fine-grained pyrite is often a good visual recognition criterion for ore.

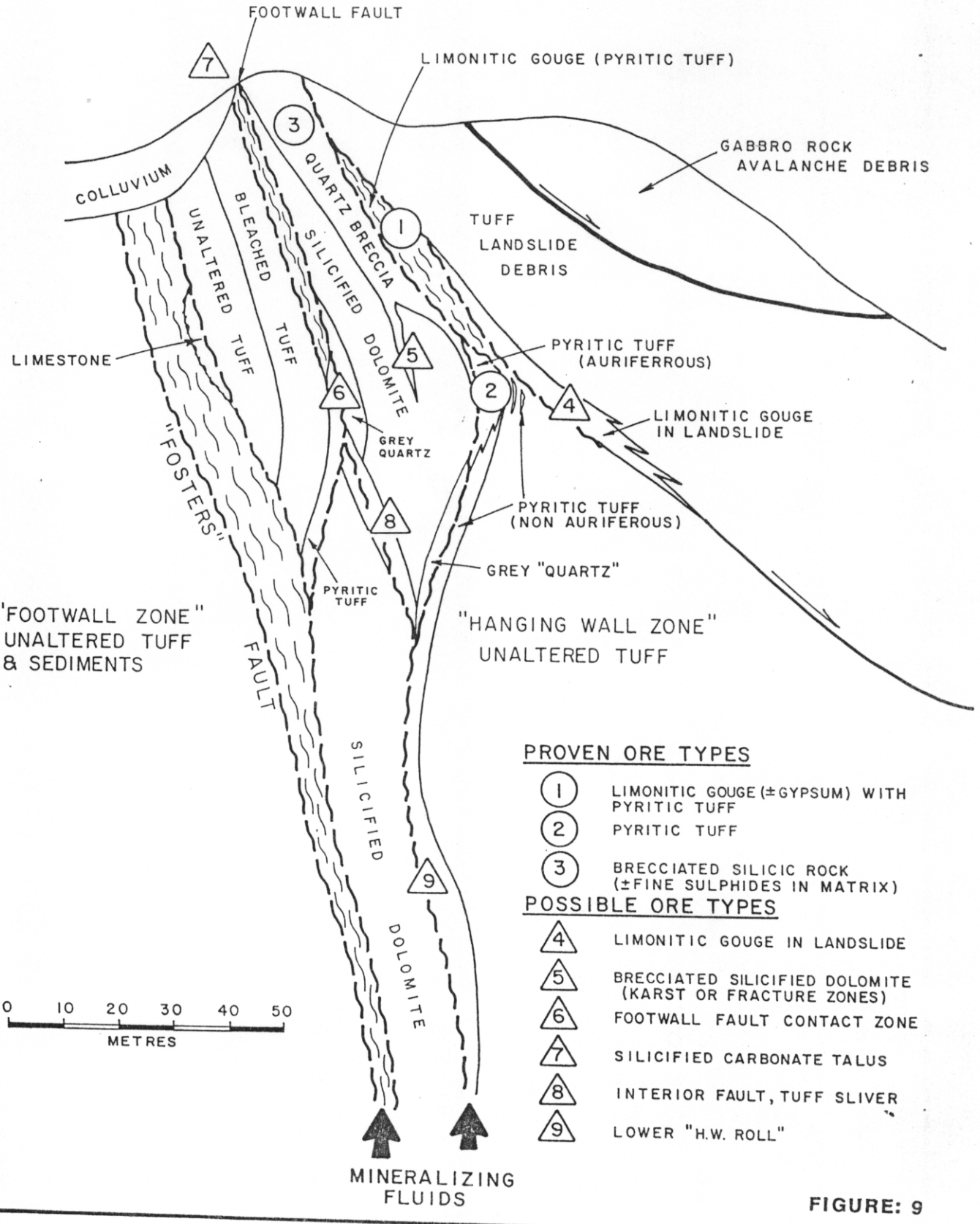
Golden Bear is an unusual, if not unique, shear-zone hosted epithermal gold-silver telluride deposit. Characteristics distinguishing it from other epithermal deposits are as follows:

- Well defined veins or veinlets are inconspicuous at all scales.

- Hydrothermal quartz is inconspicuous and devoid of sequential depositional features.

BEAR MAIN ZONE

IDEALIZED CROSS-SECTION SHOWING MINERALIZATION (LOOKING NORTH)



PROVEN ORE TYPES

1. LIMONITIC GOUGE (±GYPSUM) WITH PYRITIC TUFF
2. PYRITIC TUFF
3. BRECCIATED SILICIC ROCK (±FINE SULPHIDES IN MATRIX)

POSSIBLE ORE TYPES

4. LIMONITIC GOUGE IN LANDSLIDE
5. BRECCIATED SILICIFIED DOLOMITE (KARST OR FRACTURE ZONES)
6. FOOTWALL FAULT CONTACT ZONE
7. SILICIFIED CARBONATE TALUS
8. INTERIOR FAULT, TUFF SLIVER
9. LOWER "H.W. ROLL"

FIGURE: 9

- Mineralization occurred as a single stage event resulting in brecciated sedimentary/diagenetic chert rather than hydrothermal quartz.

- Characteristic epithermal alteration phenomena are weak or absent.

- Metallic mineralogy is unusual, including native tellurium, native mercury, mercury telluride, silver telluride, gold-silver telluride, as well as native gold, native silver, tetrahedrite, pyrrhotite, pyrite, arsenopyrite, and minor chalcopyrite, sphalerite, galena, and bravoite. Only pyrite is megascopically obvious.

3.0 DESCRIPTIVE CHARACTERISTICS

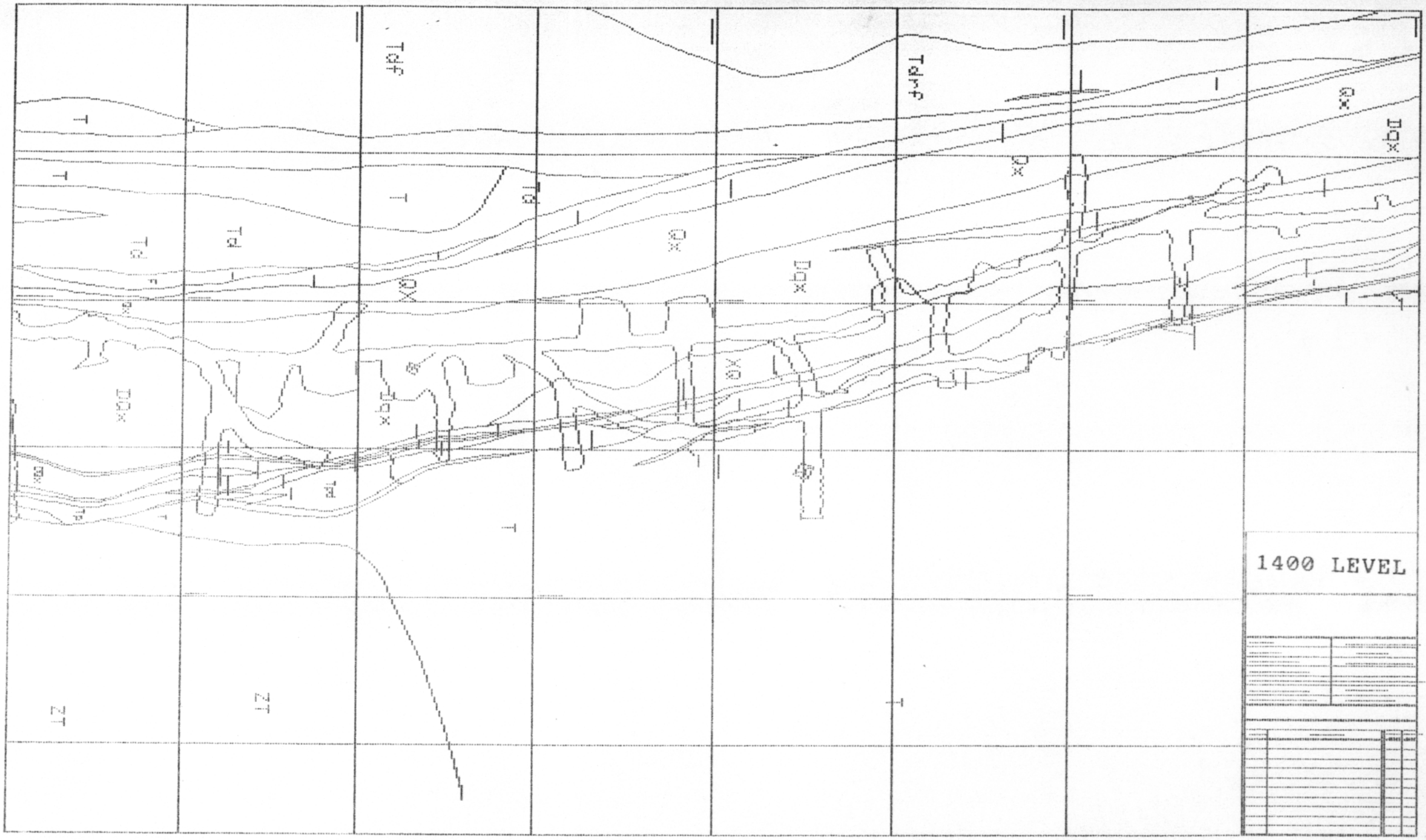
- Proven mineable or reserves in the Bear Main zone are stated as 625,390 tonnes @ 18.63 g/t Au (689,369 short tons @ 0.543 opt)(cutoff grade/dilution parameters: 7 g/t over 2 m width threshold + 15% dilution at 0 grade); 5.5 years production time.

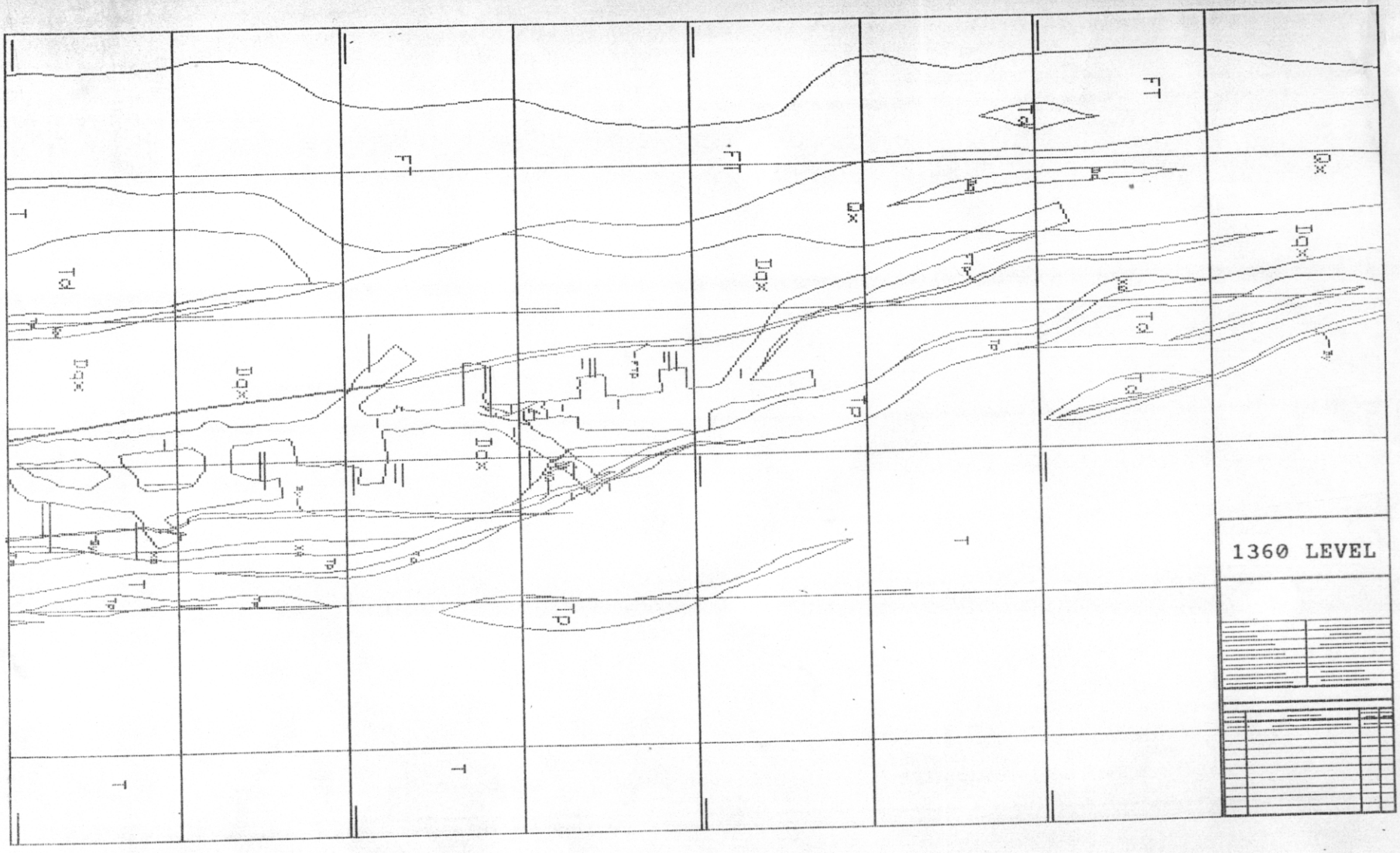
- Bear Main zone dimensions: strike length, 350 m (1148 ft); vertical extent 140 m (460 ft); both vertical and southern strike dimensions truncated by erosion and landslides.

- Host lithologies consist of regionally metamorphosed carbonates, cherts, and mafic volcanics of Permo-Triassic age. Ore tonnages: 45% chert/carbonate breccias, 33% pyritic mafic tuff, 20% post-mineral fault gouge.

- Deposit-scale structural control expressed by preferential mineralization along and within right-handed strike defections and flatter east dip segments in the master fault; lesser mineralized zones follow splits and splays off the main fault. Overall configuration constitutes a classic cymoid loop.

- Deposit age per radioisotope (K/Ar) determinations on sericite: 177 to 206 my (lower Jurassic) coincident with period of regional uplift, erosion, and NW-trending open fold development.


1400 LEVEL


1360 LEVEL