TOTAL ENERGOLD CORPORATION

LOG NO: JAN 16 RD.

ACTION:

FILE NO:

REPORT ON 1991 EXPLORATION OF THE CHAIN CREEK AREA

Northern British Columbia

Liard Mining District

NTS 104 G/2 NE and G/7 SE

Latitude 57° 15 N, Longitude 130° 35' W

Claims: Whip 1 to 9

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GEOLOGICAL BRANCH
ASSESSMENT REPORT

22,045

By: P. Jamet, Geol. Engineer

October, 1991

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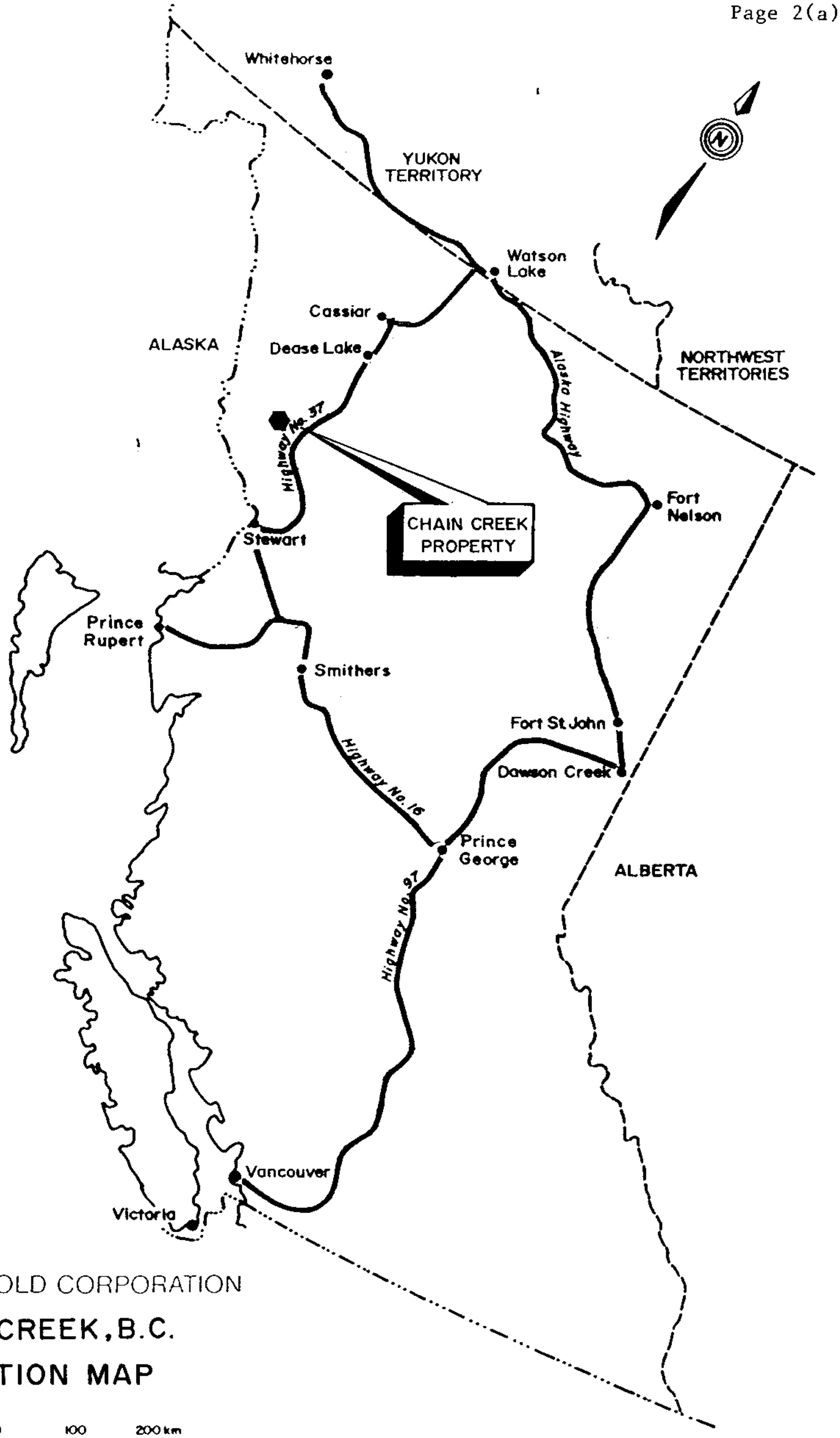


TOTAL ENERGOLD CORPORATION

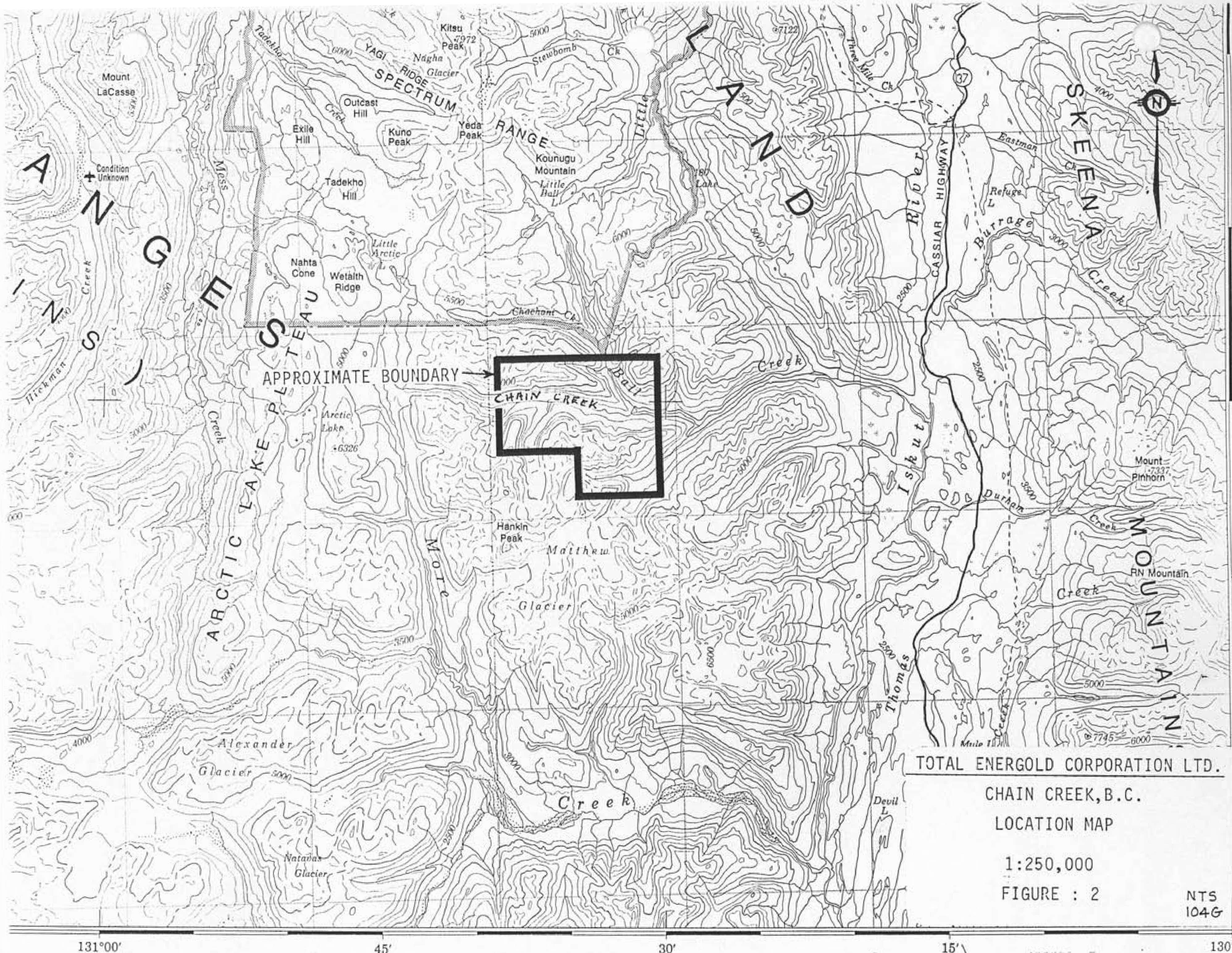
CHAIN CREEK, B.C.

LOCATION MAP

100 50 0 100 200 km

SCALE 1:7,500,000

FIGURE 1



TOTAL ENERGOLD CORPORATION LTD.

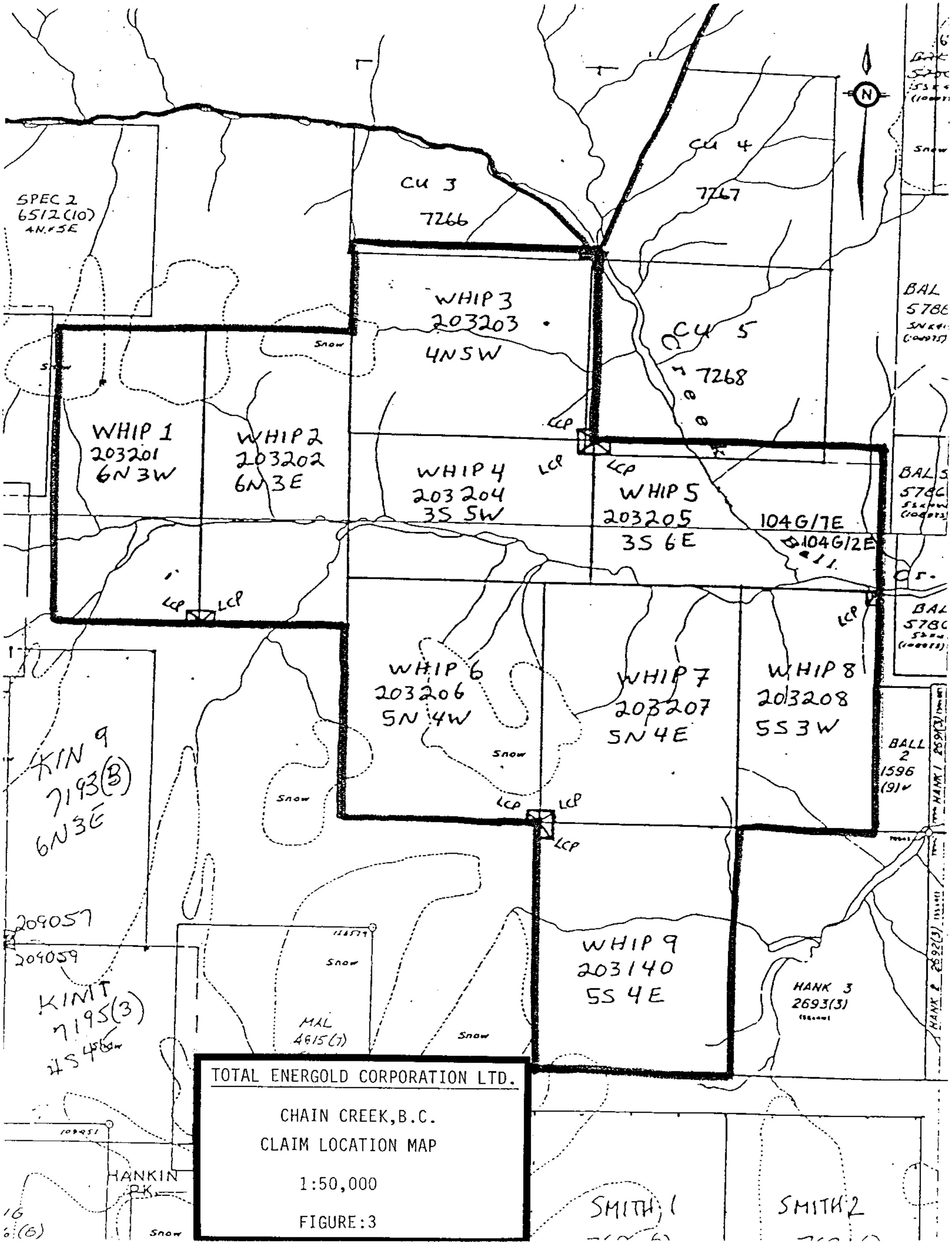
CHAIN CREEK, B.C.

LOCATION MAP

1:250,000

FIGURE : 2

NTS 104G



TOTAL ENERGOLD CORPORATION LTD.

CHAIN CREEK, B.C.

CLAIM LOCATION MAP

1:50,000

FIGURE: 3

SUMMARY

The Chain Creek property, located 80 kilometres southeast of Telegraph Creek, in northern British Columbia, was staked in November 1990 by TOTAL Energold. It is composed of 9 claims (167 units for a total surface area of 42 square kilometres.

After initial reconnaissance sediment and soil geochem sampling in 1990, a geological and geochemical exploration program was undertaken in September 1991.

The geology of the area consists of Mississipian sediments, (cherts with minor limestones) Triassic volcano-sedimentary andesitic tuffs, lower Jurassic basalts and a number of small felsic dykes which intrude these formations.

Seventy-two soil and silt samples as well as 27 rock samples were collected for geochemical survey.

Four areas have been identified with good geochemical anomalies:

- Porphyry copper-molybdenum type with up to 800 ppm copper, 73 ppm Molybdenum, in two areas at west of the property;
- Gold mineralization in a shear zone with up to 3.5 grams per tonne gold in outcrop;
- Polymetallic shear zone type of mineralization with copper, zinc (up to 1317 ppm) and gold.

Alteration seen in numerous sheared outcrops is mostly diffuse silicification with calcite, chlorite, some potassic alteration, disseminated pyrite and abundant limonite.

More detailed geological mapping and geochemical sampling as well as geophysics (IP/Resistivity) are recommended for the area.

Helicopter support
for Prospecting

1. INTRODUCTION

Following the Company's regional reconnaissance in 1990 and subsequent staking, a brief but intensive geological and geochemical exploration of the Whip claims was undertaken the third week of September, 1991.

This very rugged area is underlain mainly by cherts, volcanics and volcano-sedimentary tuffs with a number of small intrusive felsic dikes and plugs. Several faults with intense shearing have associated wide alteration zones and rusty outcrops, sometimes showing traces of copper and/or zinc-lead mineralization.

The soil geochemical survey returned good anomalies in copper, zinc, molybdenum, arsenic and local anomalies in gold and barium.

The style of anomalies and mineralization suggest potential for shear hosted copper-zinc-gold mineralization or a deep seated copper-molybdenum porphyry system.

2. LOCATION, TOPOGRAPHY AND ACCESS

The Chain Creek area is located seven kilometres northeast of Hankin Peak in Liard Mining District, northern British Columbia. The claims are centered on latitude 57° 15' N and longitude 130° 35' W; map sheets 104 G/2 and 104 G/7. The area is approximately 80 kilometres southeast of Telegraph Creek (refer to Figure 1).

Topography of the Chain Creek area is very rugged, with a relief of 1,200 metres, ranging from 900 metres at the bottom of Chain Creek to local mountain tops at 2,100 metres (plates 2 and 5). Hankin Peak, just south of Chain Creek area, is the most prominent mountain in the region at 2,556 metres. Most of the area is above the 1,300 metre tree line. North facing slopes are characterized by alpine glaciers, ice fields, cirques, cliffs, jagged ridges, and steep talus slopes at high elevations with glacial moraines, braided streams, and U-shaped valleys at low elevations. South facing slopes are moderate to steep and include cliffs, talus, and local grassy areas.

Access to the claims is by helicopter (Plate 1). Helicopters were based at Bob Quin (35 kilometres), Telegraph Creek (80 kilometres), and Dease Lake (145 kilometres) at the time of the survey. The Stewart-Cassiar Highway passes 15 kilometres to the east. (Refer to Figure 1 and 2.)

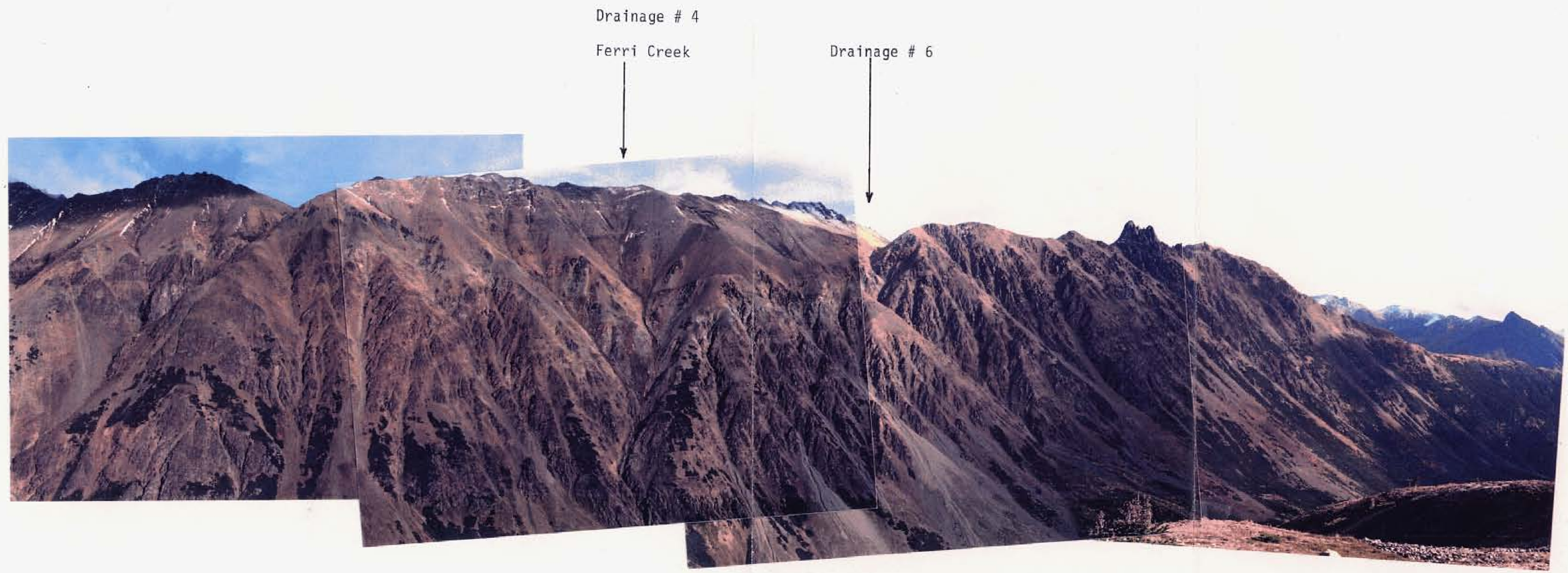


PLATE : Panoramic view looking north of south facing slopes across Chain Creek.

3. CLAIM STATUS

TOTAL Energold staked 9 claims on Crown land, Whip 1 to 9 for a total of 167 units, on November 10 and 11, 1990. They were recorded in Vancouver, BC, on November 23, 1990. The total surface area is 4,178 hectares. The property is owned 100% by TOTAL Energold Corporation.

It is proposed to abandon the Whip 8 claim (18 units).

4. GEOLOGY OF CHAIN CREEK AREA

4.1 Regional Geology

The geology of this area is comprised mainly of a belt of north-south trending Triassic rocks intermediate to mafic volcanics and tuffs, and Mississipian sediments; (cherts silts and limestones). This belt of rocks is 20 to 25 kilometres wide. These rocks are locally intruded by small stocks and dykes of Mezozoic age.

The belt is flanked to the east by a thick sequence of Jurassic/Cretaceous sediments - grey wacke, siltstone, limestones, shales - of the Skeena Mountains.

West of More Creek, it abuts against a Jurassic granodiorite batholith of the Arctic Lake plateau.

A few prospects are known in the area:

- West of the property, the Dago prospect: copper, silver, lead, zinc
- East of the property, the ME prospect: copper, molybdenum, silver, lead, zinc, gold
- East of the property, the Mary prospect: molybdenum, copper
- Southeast adjoining the property, the Hank prospect: gold, silver, lead, zinc, copper.

The Hank prospect covers a mineralization hosted in carbonate veins in a large alteration zone. A drill indicated reserve of 227,000 tonnes at 0.07 ounces per ton gold, is reported.

4.2 Chain Creek Geology

Sixty to 80 outcrops were examined and 7 rock samples were sent to Vancouver Petrographics for thin section studies. (See Appendix 1.)

4.2.1 *Volcanic-Sedimentary Rocks:*

An important part of the claims, mostly the southern part as well as the north-central and northwestern part of the property is occupied by thick formations of greenish or black cherts, most probably Mississipian, with very few thin beds or lenses of dark grey cherty limestone, 1 to 5 metres thick.

A few beds of black chert over 10 metres thick are locally graphitic near strong shear zones, with pyritization and some quartz injections (i.e. upper part of drainage 6 - Plate 4).

Andesitic tuffs and silts of upper Triassic, underlie a more than 2 kilometres wide section of the central part of the property (see description of Sample 21). Locally, the andesitic tuffs contain pieces and lenses of the underlying chert or limestone (i.e. the outcrop located at UTM coordinates x = 404.630, y = 47.270).

A large portion of these tuffs resemble chloritic schist in outcrop as they have been metamorphosed by an intense strain. (See petrographic description of Samples 24 and 33).

In the southeast portion of the property, a large unit of magnetite-bearing basalt correlates with a strong government airborne magnetic anomaly, centered on latitude 57° 13'30" north and longitude 130° 32'30" east (reference: Mag airborne map at 1:50,000 More Creek, BC, 9226G - sheet 104 G2). This basalt is hypabyssal in nature (see description of Sample 6) and probably upper Triassic or lower Jurassic. Some potassic alteration is seen in the ground mass. Its contact with Mississipian cherts in drainage 35 occurs along a strong shear zone.

A well bedded arkosic sandstone formation (Tertiary) caps part of this basalt (Unit 21a).

Several brecciated and limonitic veins (Jurassic?) cross-cut the basalt.

4.2.2 *The Intrusive Rocks:*

The intrusive rocks occur in small plugs or dykes.

Sub-volcanic derivatives are observed as latite porphyry which outcrops close to the confluence of Ball Creek and Chain Creek (see description of Sample 25). In outcrop the rock is a beige coloured micaceous, potassic altered latite with large black rounded patches 2 centimetres to 1 metre in diameter. The black colour is due to opaque carbon in the matrix. The rock looks more like a volcanic conglomerate than an intrusive.

Several small dacitic or latite light coloured dykes 1 or 2 metres thick are found in a shear zone in drainage 35. They appear to have minor copper mineralization associated with them (see description of Sample 9).

A diorite plug outcrops over 20 to 30 metres in a highly sheared area in drainage 15 (UTM coordinates x = 404.860, y = 44.640).

Close to the western boundary of the property (drainage 2 and 3), dykes are more numerous, particularly porphyritic monzonite dykes with amphiboles (called alkalic latite in the thin section study of Sample 13).

One dark lamprophyre dyke of 1.5 metres thick over 40 metres long is also found in the same area (x = 400.680, y = 46.380).

4.2.3 *Tectonic and Structural Geology*

The Mississipian cherts, limestones and the triassic andesitic tuffs are strongly folded with steep dips (from 60° to vertical) to the west or east.

Southeast of Chain Creek, most of the formations strike northwest-southeast.

North of Chain Creek, beds strike close to north-south, while in the western part of the property, strikes are mostly N 25° E to N 45° E.

Several anticlinal axis are seen in outcrops (Plate 4), with amplitudes in metres or tens of metres, for example in the Ferri Creek area (x = 401.500, y = 47.240). Here, the fold axis strikes N 173° E and plunges 53° north.

Several large shear zones were noted:

South of Chain Creek and in the Bondage Creek area, a major shear zone at least 20 metres wide can be traced over 5 kilometres, with a strike of N 150° E. It has a number of parallel structures nearby 1 to 3 kilometres long.

In the Ferri Creek area, in drainages 4 and 6, shear zones 20 to 100 metres wide strike more north-south. They could nonetheless be the northwest extension of the ones discussed above.

4.3 Mineralization

About 30 limonitic outcrops were noted and examined. Most of them were sampled as composite samples (several big chips of rock from an outcrop were to make up approximately a 3 kilogram sample). A total of 27 samples were sent to Bondar Clegg Laboratory in Vancouver and analyzed for Au, Cu, Pb, Zn, Mo, Ni, As, Sb, W, Hg, Ba, Ag (see Appendix 2).

4.3.1 *Bondage Creek Area - South Part of the Property*

The following describes the mineralization found by area with UTM coordinates ("x" for Eastings and "y" for Northings):

* x = 406.99, y = 40.65: Limestone interbedded with cherts, display very prominent limonitic beds, 2 to 20 metres thick, partly sheared and brecciated with pyrite, disseminated or in veinlets, calcite (and minor quartz) veining (Plate 6). They are obviously associated with the major shear zone referred to above.

  From these outcrops, one composite chip sample (#6865) returned only a weak anomaly in Hg (0.379 ppm). Another sample (#3213) 150 metres away on another vein was not anomalous.

  A chip sample (#6866) from a large boulder of very silicified black chert with many of fine quartz veinlets with pyrite returned only background values.

* x = 405.90, y = 42.28: Boulder rock chip samples #3203, 3204, from drainage 29 coming from the large rusty stained shear zone up-slope.

  One boulder, sample #3203, shows quartz veining and pyrite with a weak anomaly in Hg (0.314 ppm) and Ni (140 ppm). Another boulder (#3204), of mostly quartz veining with some calcite contains disseminated pyrite, sphalerite, galena and chalcopyrite. The values were lower than expected: copper = 622 ppm, lead = 1494 ppm, zinc = 1760 ppm.

* x = 406.72, y = 43.06 - Drainage 35: A shear zone in black graphitic shales contains rusty areas with disseminated pyrite and calcite or quartz veinlets over 50 to 100 metres wide. Some malachite occurs in places after digging, particularly around the latite felsic dykes. The general strike of shearing is N 123° to 138° E.

  One composite chip sample (#6854) has a good anomalous copper content of 1257 ppm. The outcrops are very weathered.

• Head of Drainages 30, 31, 32: Several rusty veins from 1 to 2 metres wide and 15 metres long to 10 metres wide and 100 metres long occur in basalt. The outcrops consist of sheared and brecciated basalt with local quartz and/or calcite veinlets, chlorite, limonite and fine disseminated pyrite. The vein strike is N 148° to 168° E with a dip 50° to 70° W.

  Composite samples from these veins (#6851, 52, 53) show only weak Hg anomalies (0.309 to 0.541 ppm).

4.3.2 *Center of the Property*

* At the head of drainages 15, 16, 17 and 18, the area of the Diablo Peak is strongly sheared with a number of rusty veins and stained outcrops. The following areas were sampled:

  x = 404.69, y = 44.59: An 80 centimetre brecciated shear, with hematitic veinlets and traces of pyrite, (N 38° E 63° W), gives an interesting gold result (Sample #6855): Au = 3.53 grams per tonne with anomalous values in copper (141 ppm), zinc (342 ppm), arsenic (97 ppm). The shear cuts chert with beds of limestone nearby.

  Last year, another sample from a boulder on the west side of Diablo Peak returned a similar value in gold.

  x = 404.75, y = 44.60: Sample #6856, limonitic breccia float from the shear zone, 60 metres from the previous sample is also anomalous in gold: Au = 0.356 ppm, arsenic = 90 ppm.

  Sample #6857 on brecciated outcrop, another 50 metres further, did not return any interesting values.

Sample #6858, on brecciated outcrop 550 metres east of the above samples is anomalous in Au (0.191 ppm) and strongly anomalous in As (1120 ppm). Sample #3208, close by, is anomalous in As (296 ppm) and strongly anomalous in Hg (1.149 ppm).

x = 404.60, y = 44.46: Composite Sample #3205 is anomalous in As (164 ppm), Sb (27.5 ppm), Hg (0.806 ppm).

x = 404.60, y = 44.51: Composite Sample #3206 is strongly anomalous in Au (0.249 ppm), Cu (232 ppm), As (688 ppm), Sb (13 ppm).

x = 404.61, y = 44.73: In drainage 15, a float of massive pyrite with box-works (Sample #6859) is strongly anomalous in Au (0.497 ppm), Cu (3051 ppm), and Ag (28 ppm).

* At the confluence of Ball Creek and Chain Creek, a 20 metre wide, rusty shear zone (N 68° E) with calcite veinlets cuts through latite outcrop. A chip sample (#3207) did not return any interesting values.

4.3.3 *West of the Property - Ferri Creek Area*

The major shear zones with rusty outcrops are found in drainage 4 (Ferri Creek) and 6.

* In Ferri Creek, limonite stained outcrops are seen in an area at least 100 metres wide. They represent sheared and brecciated cherts, very silicified, with limonite probably originating from disseminated pyrite, with a few quartz veinlets. The headwaters show a large seepage of white colloidal gypsum mixed with limonite (Plate 3).

Chip and composite samples of this area are very leached, the only anomalies were:

- (x = 401.50, y = 47.25) Sample #6863: Zn = 248 ppm
- (x = 401.58, y = 47.25) Sample #6864: Zn = 1500 ppm, Mo = 117 ppm, Ni = 176 ppm, Sb = 16 ppm, Hg = 0.337 ppm, Ba = 1500 ppm
- (x = 401.66, y = 47.37) Sample #3212: No anomalies

* In drainage 6, a strong 100 metre wide shear zone, (N 43° E), follows the creek, in cherts, graphitic shales and silts (Plate 4), creating a number of brecciated areas with quartz veinlets, abundant limonitic staining and traces of pyrite.

The composite samples taken are very oxidized and return anomalies in:

- (x = 402.46, y = 47.69) Sample #3211: Zn = 233 ppm, Hg = 0.498 ppm
- (x = 402.53, y = 47.68) Sample #6861 : Cu = 165 ppm, Zn = 485 ppm, Mo = 78 ppm, Ni = 110 ppm, Hg = 0.616 ppm, Ba = 1300 ppm
- (x = 402.41, y = 47.57) Sample #6862: Cu = 113 ppm, Zn = 513 ppm, Mo = 120 ppm, As = 77 ppm, Hg = 0.531 ppm

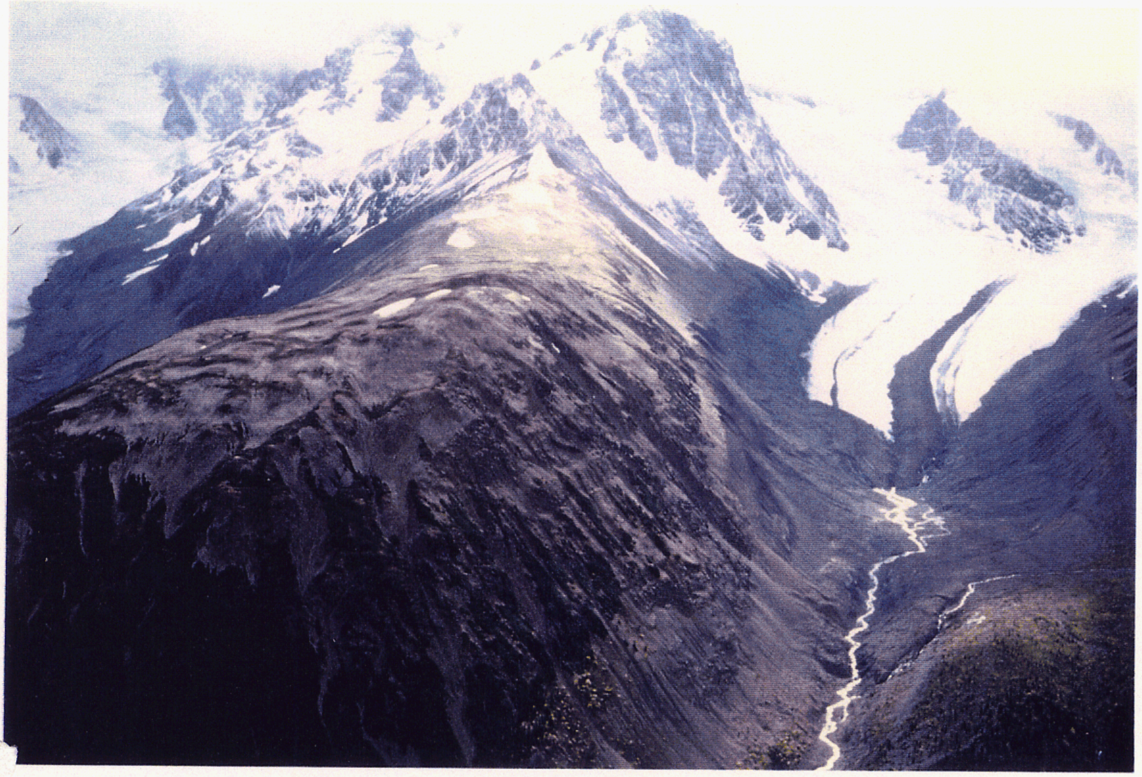
Headwaters of Ferri Creek,
Drainage # 4 with gypsum
and limonitic precipitate

Headwaters of Drainage # 6 with graphitic beds and rusty outcrops

Graphitic shear zone at headwaters of Drainage # 6

Folded chert and argillites at headwaters of Drainage # 6

Chain Creek - Sampling shear zone on Bondage Creek area.North facing slope,South of Bondage Creek



Chain Creek Drainage # 12

Chain Creek-Bondage Creek Area - Rusty limestone and chert shear zone at South East corner of property

5. GEOCHEMICAL SURVEY

A preliminary geochemical reconnaissance was undertaken in 1990.

In 1991, further sampling was completed in several areas of the property, by collecting and sending 72 soil and sediment samples to Bondar Clegg Laboratory in Vancouver for analysis. Most of the sampling was done above the tree line.

The samples, weighing 300 grams, were collected at the bottom of a 30 centimetre deep hole dug with a short pick.

All samples were analyzed for 12 elements: Au, Cu, Pb, Zn, Mo, Ni, As, Sb, W, Hg, Ba, Ag (see Appendix 2).

Soil and sediment samples can be interpreted together as all of them are actually composed of fine talus slope silts.

Interpretation by P. Jamet using a log normal statistical analysis, with cumulative frequency curve of logarithmic percentages leads to the definition of a background value (B: average content of unmineralized silts) a first threshold of anomaly (O_1: threshold of weak anomaly generally chemical in origin); a second threshold of anomaly (O_2: threshold of strong and significant anomaly, chemical and mechanical in origin). (See Appendix 3.)

The summary of the interpretation is given in the table below:

Number of Samples: 72							CHAIN CREEK - September, 1991
Element Au: ppb Others: ppm	Lowest Value	Highest Value	Background β	Threshold Θ_1	Number of Anomalies $>\Theta_1$	Threshold Θ_2	Number of Anomalies $>\Theta_2$
Au (ppb)	6	186	15	25	18	95	1
Ag	< 0.2	2.4	0.4	1.0	11	-	0
Cu	35	843	123	175	24	340	12
Pb	< 2	69	< 2	No significant anomalies			
Zn	57	1317	140	180	23	340	7
Mo	< 1	93	4	8	25	48	3
Ni	5	182	30	78	9	-	0
As	3	296	14	20	32	98	8
Sb	0.6	19	1.8	4.2	20	10	5
Hg	< 0.033	0.576	0.074	0.110	10	0.200	1
Ba	370	11,500	1200	1900	11	4100	4
W	< 2	7	< 2	No significant anomalies			

The interpretation of the results leads to the following conclusions:

- The best geochemical response for copper-molybdenum mineralization is found at the extreme west of the property, north of Chain Creek in the area of drainage 2 and 3, with copper up to 800 ppm and molybdenum up to 55 ppm.

- The best geochemical results for gold mineralization are found in the Diablo Peak area at the center of the property, with high As, Au (up to 186 ppb), and 3.5 grams of gold per tonne in a rock sample.

- The best results for polymetallic mineralization: Cu, Zn, Mo, Au, are found to the south, on both sides of Bondage Creek, in drainages 29, 35, and 36.

- North of Chain Creek, the Ferri Creek area (drainages 4, 5, and 6) is attractive despite the otherwise weak geochemical results, but with a high Mo value up to 73 ppm. More sampling is recommended for this area.

6. CONCLUSION

The Chain Creek property shows at least 4 areas with high geochemical anomalies and a number of limonitic sheared or brecciated outcrops.

Porphyry copper-molybdenum mineralization may be indicated in the extreme western area by high copper and molybdenum anomalies, associated with a large number of monzonitic dykes. This favourable area could extend to Ferri Creek and drainage 6 area where limonitic alteration and shearing occurs.

Gold mineralization may be found around Diablo Peak where there is an impressive number of rusty and sheared outcrops, mostly in cherts associated with limestone beds. Gold mineralization is found in outcrop on the property, associated with high anomalies in As, Hg and Ba.

The best potential for polymetallic Cu, Zn, Au, Mo mineralization extends from Diablo Peak to Bondage Creek area to the south, where most of the soil samples have returned high Zn and Ba anomalies, good Cu, Mo, Au, As anomalies, associated with extensive shear zones in the Mississipian cherts and minor limestone, and several felsic (latite) dykes.

The rock sampling did not return good mineralized values probably because the outcrops are extensively leached. The general observation of the outcrops suggest that if economic mineralization exists, it will not be close to surface.

Detailed soil sampling followed by IP/Resistivity is recommended for the areas described above.

CHAIN CREEK STATEMENT OF EXPENDITURES

Work

Geological Mapping & Geochemical Sampling - September 18 October 24, 1991

Personnel

Patrick Jamet, Chief Geologist,#1500-700 W.Pender St.Vancouver,BC
16 days @ $575/day = $9,200.00

R.J. Zuran, Geologist,#21, First Ave. Whitehorse,YT Y1A 1A3
6 days @ $183.17/day = $1,099.00

Travel

P. Jamet, Sept.16,17,21,22 = 4 days
Vehicle: 3164 km @ .30 = $949.20
Vehicle service and gas = $242.40 = $1,191.60

R. Zuran, Sept.16.17,21 = 3 days
Vehicle - Thrifty Car Rental 6 days @ $85.11 = $ 514.87
- Gas $ 69.25 = $ 584.12

Meals & Lodging - 13 man days @ $75.35/day = $ 974.46

Field Supplies sample bags, etc. = $ 153.63

Photographs. Maps. Reproductions = $ 192.36

Geology -
Vancouver Petrographics Ltd-8080 Glover Rd, Fort Langley,B.C.
7 thin sections = $ 570.04

Geochemical Analyses -
Bondar Clegg & Company Ltd.,130 Pemberton Ave. North Vancouver, B.C.
100 samples analysed for Ag,Au,Cu,Pb,Zn,Mo,Ni,As,Sb,W,Hg,Ba,@ $20.28 = $2,027.65

Helicopter -
Vancouver Island Helicopters Ltd.#1 - 9600 Canola Rd. Sidney, B.C.
Sept.18,19,20 - 5.6 hrs @ $716.90 = $4,014.64

Drafting - 4 days @ $160.00 = $ 320.00

Report Typing and Supplies = $ 420.00

TOTAL = $20,737.50

STATEMENT OF QUALIFICATIONS

I, Patrick E. Jamet, 219 - 1230 Haro Street, Vancouver, BC, V6E 1E6, do hereby certify that:

1. I graduated as a Geological Engineer from the National Superior School of Applied Geology, Nancy, France, in 1968.

2. I have been engaged in mineral exploration since 1968 for base metals, gold, uranium and a number of other commodities in Guatemala, Costa Rica, Peru, Brazil, France, Portugal, Spain, Madagascar, Namibia, Western United States, and Canada (British Columbia, Yukon, Northwest Territories, Ontario, and Quebec).

3. I have been Chief Geologist of TOTAL Energold since August, 1989.

P. E. Jamet, Geol. Engineer
November 1, 1991

STATEMENT OF QUALIFICATIONS

I, Richard Joseph Zuran, hereby certify that:

1. I am a graduate of the University of British Columbia, having obtained a Bachelor of Science degree in 1988 with a major in Geology;

2. I have been active in both academic geologic studies and mineral exploration on a full time and part time basis for 14 years in Ontario, the Northwest Territories, Newfoundland, Saskatchewan, British Columbia and the Yukon Territory;

3. I participated in the work described in this report as an employee of Total Energold Corporation;

4. I have no interst in the claims or securities of Total Energold Corporation, nor do I expect to receive any.

signed at Whitehorse, Yukon Territory on this 13th day of December, 1991.

Richard J. Zuran, B.Sc.

APPENDIX 1:

- **Petrographic Studies (Vancouver Petrographic)**

Vancouver Petrographics Ltd.

JAMES VINNELL, Manager
JOHN G. PAYNE, Ph.D. Geologist
CRAIG LEITCH, Ph.D. Geologist
JEFF HARRIS, Ph.D. Geologist
KEN E. NORTHCOTE, Ph.D. Geologist

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Report for: **P. Jamet,**
Total Energold Corp.,
1500 - 700 Pender Street,
VANCOUVER, B.C., V6C 1G8

Job 242
October 1991

Samples: 6, 9, 13, 21, 24, 25, 33

Summary:

Individual samples are summarized below, and detailed descriptions follow. K-feldspar in the groundmass of samples was identified from the stained offcut blocks.

The fragmental rocks are of volcanic origin, being dominated by mafic volcanic rocks, but containing variable amounts of several other rock types, including intermediate to felsic volcanic rocks, hypabyssal diorite, and fine tuff and mudstone. Phenocrysts from the porphyritic volcanic rocks are common fragments.

The well foliated rocks were flattened during a regional deformation, which produced a moderate foliation. In Sample 33, deformation was more intense, resulting in segregation and recrystallization of chlorite and lesser sericite in seams parallel to foliation.

Sample 6 is a **Hypabyssal Basalt** containing phenocrysts of clinopyroxene and plagioclase in a groundmass dominated by plagioclase with much less chlorite/phlogopite and moderately abundant opaque. Several veinlets are of calcite or calcite-(chlorite).

Sample 9 is an **Altered Hypabyssal Latite/Andesite Porphyry** containing phenocrysts of plagioclase and less abundant hornblende in a groundmass dominated by plagioclase and less abundant chlorite. Plagioclase phenocrysts are altered moderately to sericite, and those of hornblende are altered completely to chlorite-calcite-Ti-oxide. Veinlets are of ankerite-quartz-(chlorite). A large vein up to two cm across is dominated by early quartz with later veinlets and patches of ankerite.

Sample 13 is a **Hypabyssal Alkalic Latite Porphyry** containing phenocrysts of plagioclase, hornblende, and minor sphene and apatite in a groundmass dominated by K-feldspar and plagioclase. Although the phenocrysts are moderately similar to those in Sample 9, the groundmass is much more potassic, suggesting strong fractionation between phenocrysts and magma. Veins and veinlets are of epidote, locally with K-feldspar halos.

(continued)

__Sample 21__ is a **Heterolithic Andesite Coarse Tuff** containing fragments of several types of mafic to intermediate flow and hypabyssal rocks, of plagioclase, clinopyroxene and hornblende phenocrysts, and of fine mafic tuff to mudstone in a sparse groundmass dominated by plagioclase, chlorite, and semiopaque. A vein is of calcite-K-feldspar and another is dominated by plagioclase with less tremolite and minor carbonate.

__Sample 24__ is a **Metamorphosed Andesite Crystal Tuff** containing crystal fragments of plagioclase and minor opaque grains and a few fragments of aphanitic rocks in a slightly foliated, extremely fine grained groundmass dominated by chlorite with less plagioclase. The abundance of fragments varies widely from layer to layer. A few veinlets are of calcite-(quartz).

__Sample 25__ is an **Altered Latite Porphyry** containing phenocrysts of plagioclase and less hornblende and biotite in a groundmass dominated by cryptocrystalline feldspars and possibly kaolinite, with replacement patches of ankerite. Hornblende phenocrysts altered completely to calcite and/or quartz. The yellow stain on the offcut block indicates a high content of K-feldspar in the groundmass. A few diffuse replacement bands up to several mm across contain abundant opaque and quartz in the groundmass. Veins and veinlets are of calcite.

__Sample 33__ is a **Metamorphosed, Sheared Andesite Lithic-Crystal Tuff** containing fragments of andesite flows, crystal fragments and phenocrysts of plagioclase, and minor fragments of a few other types in a strongly sheared groundmass dominated by chlorite with less plagioclase and calcite and minor Ti-oxide. Zones of strong shearing are dominated by coarser grained chlorite and/or sericite. Textures suggest metamorphism under a strongly strained environment, such as on the limb of an isoclinal fold.

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Sample 6 **Hypabyssal Basalt; Calcite-(Chlorite) Veinlets**

Phenocrysts of clinopyroxene and plagioclase are set in a groundmass dominated by plagioclase with much less chlorite/phlogopite and moderately abundant opaque. Several veinlets are of calcite or calcite-(chlorite).

phenocrysts	
plagioclase	12-15%
clinopyroxene	7- 8
groundmass	
plagioclase	60-65
chlorite/phlogopite	10-12
opaque	4- 5
K-feldspar	2- 3
veinlets	
calcite-(chlorite)	0.5

Clinopyroxene forms subhedral phenocrysts averaging 0.4-1.5 mm in size, with a few grains and clusters of grains over 1.7 mm across. Alteration is slight to moderate along fractures to calcite and chlorite/phlogopite.

Plagioclase forms subhedral, stubby prismatic phenocrysts averaging 0.5-0.8 mm in size, with a few over 1 mm long. Several show moderate growth zoning near their margins from broad, uniform, more calcic cores to more sodic rims. Textures suggest that the overall composition is labradorite/andesine. Alteration is slight to moderate in patches to pale, brownish green chlorite and less sericite, and is concentrated in cores of grains.

The groundmass contains prismatic to lathy plagioclase grains from 0.1-0.3 mm in size with interstitial patches of extremely fine grained, feldspars and light brownish green chlorite/phlogopite. The weak yellow stain on the offcut block indicates a small amount of K-feldspar in the groundmass. Opaque forms anhedral to subhedral, equant grains averaging 0.05-0.08 mm in size, with a few up to 0.2 mm across. Textures suggest that opaque is mainly oxide, probably hematite after magnetite. This rock is not magnetic, indicating a high degree of alteration of magnetite to hematite. More magnetic varieties would be less strongly altered. Opaque also forms grains averaging 0.02-0.05 mm in size interstitial to groundmass plagioclase.

Several veinlets averaging 0.03-0.15 mm wide are of calcite or calcite-(chlorite).

Sample 9 **Altered Hypabyssal Latite/Andesite Porphyry; Quartz-Ankerite Vein; Ankerite-Quartz-(Chlorite) Veinlets**

Phenocrysts of plagioclase and less abundant hornblende are set in a groundmass dominated by plagioclase and less abundant chlorite. Plagioclase phenocrysts are altered moderately to sericite, and those of hornblende are altered completely to chlorite-calcite-Ti-oxide. Veinlets are of ankerite-quartz-(chlorite). A large vein up to two cm across is dominated by early quartz with later veinlets and patches of ankerite.

main rock (65% of section, 85% of hand sample)	
phenocrysts	
plagioclase	25-30%
hornblende	7- 8
apatite	0.2
groundmass	
plagioclase	45-50
chlorite	10-12
Ti-oxide	0.5
apatite	0.1
limonite	0.1
replacement patches	
quartz-ankerite	0.3
veinlets	
ankerite-quartz-(chlorite)	2- 3
vein (35% of section, 15% of hand sample)	
quartz	75-80%
ankerite	20-25

Plagioclase forms subhedral to euhedral phenocrysts averaging 0.3-1.5 mm in size, with a few from 2-3.5 mm long. Textures suggest that the composition is andesine-oligoclase. Alteration is moderate to disseminated flakes of sericite. A few are cut by wispy veinlets of calcite.

Hornblende forms subhedral, prismatic grains averaging 0.3-1.5 mm long. Alteration is complete to patchy aggregates of extremely fine grained chlorite, minor to moderately abundant very fine grained calcite, and moderately abundant disseminated Ti-oxide patches.

Apatite forms scattered, euhedral, prismatic phenocrysts averaging 0.2-0.3 mm in size. A few smaller grains occur as inclusions in hornblende phenocrysts.

The groundmass is dominated by interlocking, in part feathery plagioclase grains averaging 0.01-0.03 mm in size. Hornblende forms grains averaging 0.05-0.1 mm in size, similar in texture and alteration to the phenocrysts. Apatite forms disseminated, prismatic grains averaging 0.03-0.07 mm long. Ti-oxide forms disseminated patches averaging 0.1-0.15 mm in size.

A few patches up to 0.25 mm across are dominated by limonite showing delicate replacement textures; these probably are after original pyrite.

Near the main vein are a few replacement patches form 0.3-0.8 mm in size of very fine grained quartz and less abundant ankerite.

Veinlets up to 0.3 mm across are of very fine grained ankerite and quartz, with minor patches of very fine grained, light green chlorite.

(continued)

The main vein contains extremely coarse grains of quartz up to 1.5 cm long. These contain moderately abundant dusty semiopaque inclusions. Quartz grains are strained slightly to moderately, and locally are recrystallized slightly to extremely fine grains. Later patches and veinlike zones of ankerite from Ø.3-2 mm wide cut the quartz, commonly along zones of partial recrystallization of quartz. Bordering many of these ankerite patches, quartz is free of dusty inclusions. Textures in some ankerite veinlets suggests that they were sheared and recrystallized slightly after formation.

Sample 13 **Hypabyssal Alkalic Latite Porphyry; Epidote Vein and Veinlets**

Phenocrysts of plagioclase, hornblende, and minor sphene and apatite are set in a groundmass dominated by K-feldspar and plagioclase. Although the phenocrysts are moderately similar to those in Sample 9, the groundmass is much more potassic, suggesting strong fractionation between phenocrysts and magma. Veins and veinlets are of epidote, locally with K-feldspar halos.

phenocrysts			
plagioclase	15-17%		
hornblende	4- 5		
mafic patches	1- 2		
K-feldspar	0.7-1		
sphene	0.3		
apatite	minor		
groundmass			
K-feldspar	40-45	epidote	0.2%
plagioclase	20-25	sphene	0.1
hornblende	1- 2	apatite	0.1
chlorite	1- 2	pyrite	minor
quartz	0.3		
veins, veinlets			
epidote	2		

Plagioclase forms subhedral to euhedral phenocrysts averaging 0.3-1 mm in size, with a few from 1.5-4 mm long. Some are strained slightly. Several show moderate growth zoning. Alteration is slight to moderate to disseminated flakes of sericite and less commonly to disseminated patches of epidote.

Hornblende forms anhedral to subhedral grains averaging 0.2-0.5 mm in size. Pleochroism is from light to medium green. Grains range from fresh to altered moderately to patches of light green chlorite.

Other mafic patches of uncertain origin (possibly altered hornblende grains) are replaced completely to aggregates of light to medium green chlorite and biotite and abundant extremely fine grained Ti-oxide.

K-feldspar forms anhedral phenocrysts averaging 0.15-0.25 mm in size.

Sphene forms elongate, subhedral grains averaging 0.1-0.2 mm in size, with a few from 0.5-1 mm long.

Apatite forms subhedral grains averaging 0.15-0.2 mm in size.

The groundmass is dominated by slightly interlocking grains of K-feldspar and much less plagioclase averaging 0.01-0.15 mm in size. Hornblende and less epidote form disseminated grains averaging 0.02-0.05 mm in size. Chlorite forms disseminated patches of extremely fine grains. Quartz is concentrated in a few equant to elongate patches up to 0.5 mm in size as very fine grains, in part intergrown with hornblende and epidote. Pyrite forms euhedral grains averaging 0.1-0.15 mm in size. Alteration is complete to red-brown to opaque hematite.

A vein averaging 0.3-0.8 mm wide and a few veinlets up to 0.1 mm wide are of extremely fine grained epidote. Locally, bordering the vein, plagioclase phenocrysts are replaced by K-feldspar.

Sample 21 Heterolithic Andesite Coarse Tuff; Veins of Calcite-K-feldspar and of Plagioclase-Tremolite-(Calcite)

Fragments of several types of mafic to intermediate flow and hypabyssal rocks, of plagioclase, clinopyroxene and hornblende phenocrysts, and of fine mafic tuff to mudstone are set in a sparse groundmass dominated by plagioclase, chlorite, and semiopaque. A vein is of calcite-K-feldspar and another is dominated by plagioclase with less tremolite and minor carbonate.

fragments	
mafic flows	50-55%
clinopyroxene	7- 8
plagioclase	3- 4
hornblende	1- 2
mafic tuff/tuffaceous sediment	5- 7
diorite	4- 5
mudstone	2- 3
rhyolite flow	0.3
vein	0.1
groundmass	15-17
veins	
calcite-K-feldspar	1- 2%
plagioclase-tremolite-(calcite)	2- 3

Dominant fragments are of porphyritic basalt/andesite flow, containing moderately abundant plagioclase phenocrysts averaging 0.2-0.8 mm in size in a groundmass dominated by plagioclase with much less chlorite and minor Ti-oxide. A few contain clinopyroxene phenocrysts up to 1.5 mm across. Plagioclase phenocrysts commonly are altered slightly to moderately to sericite. Minor K-feldspar maybe present in the groundmass of some of the fragments.

Several fragments are of aggregates of fine to medium plagioclase and clinopyroxene phenocrysts. Other fragments averaging 0.5-1.5 mm in size are of single phenocrysts. Pyroxene is fresh, and plagioclase is altered slightly to sericite. Some pyroxene grains contain interstitial(?) patches of pale yellow chlorite and orange Ti-oxide(?).

Hornblende forms grains up to 1.7 mm in size. Pleochroism is from pale to light or medium brownish green.

One fragment 6 mm across is of a very fine andesite/basalt tuff containing grains of plagioclase and clinopyroxene averaging 0.03-0.07 mm in size and wispy lenses and patches of opaque up to 0.15 mm across in a cryptocrystalline to extremely fine grained groundmass.

One diorite fragment is an aggregate of slightly interlocking, prismatic plagioclase grains averaging 0.5-1 mm in size. Grains show wavy extinction. A second diorite fragment consist of very fine to medium grained plagioclase and hornblende. Hornblende is pleochroic from light brownish green to medium, slightly reddish brown. One hornblende grain contains a core 0.2 mm across of primary colorless clinopyroxene. Another fine grained diorite fragment is dominated by interlocking plagioclase with minor clinopyroxene, interstitial patches of chlorite and abundant acicular grains of apatite averaging 0.2-0.4 mm long.

One fragment 2 mm across of a porphyritic latite/andesite(?) is dominated by a phenocryst of plagioclase which was replaced strongly by muscovite with irregular patches of calcite.

(continued)

A few fragments up to 1.5 mm in size are of extremely fine grained mafic tuff or siltstone. They contain minor plagioclase grains up to Ø.Ø2 mm across in a groundmass of plagioclase and light to medium brown semiopaque.

One fragment 2.5 mm long is of a cryptocrystalline mudstone containing moderately abundant dusty semiopaque.

One fragment 1.5 mm long is of an extremely fine grained rhyolite flow dominated by K-feldspar. A prominent flow-banding is defined by trains of dusty semiopaque.

One fragment Ø.6 mm long is of a vein(?); it has an outer zone of subhedral opaque surrounding a core of calcite.

The sparse groundmass is of cryptocrystalline plagioclase, chlorite, and medium brown semiopaque.

A vein Ø.3-Ø.8 mm wide is of very fine to fine grained plagioclase with ragged patches of tremolite, and patches of chlorite and of carbonate. Plagioclase is altered moderately to cryptocrystalline clinozoisite(?).

A discontinuous vein up to Ø.5 mm wide is of very fine grained K-feldspar with an irregular core of interstitial, fine to medium grains of calcite.

Sample 24 **Metamorphosed Andesite Crystal Tuff**

Crystal fragments of plagioclase and minor opaque grains and a few fragments of aphanitic rocks are set in a slightly foliated, extremely fine grained groundmass dominated by chlorite with less plagioclase. The abundance of fragments varies widely from layer to layer. A few veinlets are of calcite-(quartz).

fragments	
plagioclase	25-30%
opaque	2- 3
mudstone(?)/tuff	0.3
groundmass	
chlorite	45-50
plagioclase	17-20
Ti-oxide	1
chlorite lenses	2- 3
veinlets	
calcite-(quartz)	0.1

Plagioclase forms crystal fragments averaging 0.05-0.5 mm in size. A few are bent slightly. Alteration is weak to disseminated sericite and locally moderately to patches of chlorite.

Opaque forms equant to lensy grains averaging 0.05-0.2 mm in size.

Fragments averaging 0.3-0.6 mm in size are of a variety of aphanitic rocks dominated by plagioclase with less chlorite and disseminated Ti-oxide.

The groundmass is dominated by extremely fine grained chlorite and less plagioclase. Chlorite/sericite is concentrated in wispy seams parallel to foliation. Ti-oxide forms disseminated patches averaging 0.02-0.07 mm in size of cryptocrystalline aggregates. Light green chlorite is concentrated in a few lenses up to 1.5 mm long of very fine grained flakes oriented parallel to foliation.

Sample 25 Altered Latite Porphyry; Replacement Bands of Opaque-Quartz; Veins and Veinlets of Calcite

Phenocrysts of plagioclase and less hornblende and biotite are set in a groundmass dominated by cryptocrystalline feldspars and possibly kaolinite, with replacement patches of ankerite. Hornblende phenocrysts altered completely to calcite and/or quartz. The yellow stain on the offcut block indicates a high content of K-feldspar in the groundmass. A few diffuse replacement bands up to several mm across contain abundant opaque and quartz in the groundmass. Veins and veinlets are of calcite.

phenocrysts			
plagioclase	17-2Ø%		
hornblende	4- 5		
biotite	2- 3		
lithic fragments			
hypabyssal dacite/granodiorite		Ø.3	
groundmass			
K-feldspar/plagioclase/kaolinite(?)			5Ø-55
ankerite		7- 8	
opaque		5- 7	
quartz		2- 3	
calcite/ankerite		2- 3	
Ti-oxide		Ø.5	
apatite		Ø.3	
veins			
calcite		2- 3	

Plagioclase forms subhedral to euhedral phenocrysts averaging Ø.2-1 mm in size. Alteration is moderate to disseminated flakes of sericite and patches of ankerite. Some are replaced more strongly by patches of ankerite and minor to moderately abundant kaolinite; such patches commonly are concentrated in broad cores of zoned grains, and are surrounded by relatively fresh, more-sodic plagioclase.

One euhedral, rectangular phenocrysts of hornblende 1 mm long is altered completely to calcite. Another Ø.9 mm long is replaced completely by very fine grained quartz and much less carbonate with minor apatite. Numerous patches averaging Ø.1-Ø.3 mm in size are of very fine grained aggregates of quartz; most contain several subhedral grains of apatite averaging Ø.Ø3-Ø.Ø6 mm long. A few contain moderately abundant opaque. Some of these have subhedral outlines, suggesting that they are secondary after hornblende phenocrysts. Other patches up to 1 mm across dominated by carbonate with less quartz and minor apatite probably also are after hornblende phenocrysts.

Biotite forms equant flakes averaging Ø.2-Ø.6 mm in size. Grains are altered slightly to moderately towards muscovite and disseminated patches of Ti-oxide, and are pleochroic from pale to light brown. Many contain a lens of ankerite parallel to cleavage.

A few lithic fragments up to 1 mm in size are of fine grained plagioclase, quartz, and less calcite, with minor euhedral, acicular apatite grains up to Ø.1 mm long.

(continued)

The groundmass contains minor lathy plagioclase grains averaging 0.02-0.03 mm long in a cryptocrystalline groundmass of K-feldspar-plagioclase/(kaolinite?). Ankerite forms ragged replacement patches averaging 0.05-0.1 mm in size; it has unusually high relief, suggesting that it is gradational to siderite. Calcite/ankerite forms subrounded grains averaging 0.2-0.4 mm in size; their origin is uncertain, but they may be secondary after hornblende.

Apatite forms euhedral to subhedral, prismatic grains averaging 0.1-0.15 mm in length. Many are colored light brownish grey by trains of dusty inclusions parallel to the c-axis.

Opaque and quartz are concentrated in diffuse bands up to several mm across, mainly as extremely fine grained aggregates. Quartz-opaque patches replace the groundmass, and opaque also occurs in plagioclase grains.

A few veins up to 0.8 mm wide are of medium grained calcite. Veinlets from 0.05-0.15 mm in width are of very fine grained calcite.

Sample 33 **Metamorphosed, Sheared Andesite Lithic-Crystal Tuff**

Fragments of andesite flows, crystal fragments and phenocrysts of plagioclase, and minor fragments of a few other types are set in a strongly sheared groundmass dominated by chlorite with less plagioclase and calcite and minor Ti-oxide. Zones of strong shearing are dominated by coarser grained chlorite and/or sericite. Textures suggest metamorphism under a strongly strained environment, such as on the limb of an isoclinal fold.

fragments	
andesite flow	10-12%
plagioclase crystals	7- 8
latite	0.5
mudstone	0.5
quartz-calcite vein	one fragment
quartz phenocryst	one fragment
groundmass	
plagioclase	30-35
chlorite	40-45
calcite	1- 2
sericite	1- 2
Ti-oxide	0.3

Fragments up to 2.5 mm in size are of andesite flows dominated by very fine grained, in part lathy plagioclase with interstitial chlorite and calcite. Most of these are flattened in the foliation plane. A few fragments with similar texture are dominated by calcite; these may be more strongly altered andesite fragments or, less probably, calcareous sedimentary rocks.

Plagioclase forms crystals and crystal fragments averaging 0.3-1 mm in size, with a few up to 1.5 mm across. Alteration generally is slight to sericite. A few grains are altered moderately to patches of calcite. One grain is altered moderately to chlorite and calcite.

One fragment 2 mm across of latite/andesite contains minor lathy plagioclase in a groundmass of unoriented plagioclase and minor chlorite. Apatite forms one euhedral prismatic grain 0.08 mm long.

One fragment 0.65 mm across is of a vein consisting of an aggregate of strained, very fine grained quartz and minor calcite.

One fragment 2 mm long contains a plagioclase phenocryst in a groundmass of extremely fine grained plagioclase and limonite.

One fragment is a quartz phenocryst 0.5 mm across.

One fragment 2.5 mm long is of cryptocrystalline mudstone.

The groundmass is dominated by intergrowths of extremely fine grained plagioclase and light green chlorite, showing a variety of textures. Calcite is concentrated in irregular patches as disseminated, extremely fine grains. Chlorite is concentrated moderately to strongly in slightly coarser grained seams up to 1 mm wide parallel to foliation; chlorite in these is slightly darker green than the disseminated grains in the groundmass. A few similar seams up to 0.2 mm wide are of sericite. In places, foliation is warped around fragments, especially plagioclase crystal fragments. Ti-oxide/opaque forms disseminated, extremely fine grains and aggregates, concentrated moderately in seams parallel to foliation, and commonly associated with seams of chlorite.

APPENDIX 2:

- **Soils and Rocks Analytical Results and Methods of Analysis (Bondar Clegg)**

Bondar-Clegg & Company Ltd.
130 Pemberton Ave.
North Vancouver, B.C.
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(604) 985-0681 Telex 04-352667

BONDAR-CLEGG

Geochemical Lab Report

A DIVISION OF INCHCAPE INSPECTION & TESTING SERVICES

REPORT: V91-01475.0 (COMPLETE)

REFERENCE INFO: CHAIN CREEK B.C.

CLIENT: TOTAL ENERGOLD CORPORATION
PROJECT: 21223

SUBMITTED BY: P. JAMET
DATE PRINTED: 21-OCT-91

ORDER		ELEMENT	NUMBER OF ANALYSES	LOWER DETECTION LIMIT	EXTRACTION	METHOD
1	Au	Gold - Fire Assay	100	5 PPB	Fire-Assay	Fire Assay AA
2	Cu	Copper	100	1 PPM	HNO3-HCl Hot Extr.	Ind. Coupled Plasma
3	Pb	Lead	100	2 PPM	HNO3-HCl Hot Extr.	Ind. Coupled Plasma
4	Zn	Zinc	100	1 PPM	HNO3-HCl Hot Extr.	Ind. Coupled Plasma
5	Mo	Molybdenum	100	1 PPM	HNO3-HCl Hot Extr.	Ind. Coupled Plasma
6	Ni	Nickel	100	1 PPM	HNO3-HCl Hot Extr.	Ind. Coupled Plasma
7	As	Arsenic Direct INAA	100	1 PPM		Inst. Neutron Activ.
8	Sb	Antimony Direct INAA	100	0.1 PPM		Inst. Neutron Activ.
9	W	Tungsten Direct INAA	100	1 PPM		Inst. Neutron Activ.
10	Hg	Mercury	100	0.010 PPM	HNO3-HCl-SnSO4	Cold Vapour AA
11	Ba	Barium	100	20 PPM		X-Ray Fluorescence
12	Ag	Silver	100	0.2 PPM	HNO3-HCl Hot Extr.	Ind. Coupled Plasma
13	Weight	Sample Weight 0.1 gm	72	0.1 GM		
14	Weight	Sample Weight 0.1 gm	72	1.0 GM		

SAMPLE TYPES	NUMBER	SIZE FRACTIONS	NUMBER	SAMPLE PREPARATIONS	NUMBER
S SOILS	72	1 -80	72	DRY, SIEVE -80	72
R ROCK OR BED ROCK	28	2 -150	28	CRUSH,PULVERIZE -150	28
				TOO WET TO CRUSH	5
				PULVERIZING	12
				WEIGHING	144

REMARKS: 1st weight column is the +80 mesh fraction.
2nd weight column is the -80 mesh fraction.

REPORT COPIES TO: MR. PATRICK JAMET

INVOICE TO: MR. PATRICK JAMET

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PROJECT: 25523

SAMPLE NUMBER	ELEMENT UNITS	Au PPB	Cu PPM	Pb PPM	Zn PPM	Mo PPM	Ni PPM	As PPM	Sb PPM	W PPM	Hg PPM	Ba PPM
S1 1001		12	78	<2	85	<1	12	8	1.6	<2	0.140	1100
S1 1002		53	399	<2	1200	17	171	28	7.1	<2	0.079	3700
S1 1003		11	206	<2	297	3	50	16	6.1	2	0.073	4700
S1 1004		17	117	8	231	16	41	24	4.3	<2	0.105	2000
S1 1005		22	373	2	141	5	27	8	1.4	2	0.061	1100
S1 1006		12	269	5	135	11	20	8	0.8	<2	0.062	910
S1 1007		12	125	<2	135	31	19	12	1.4	<2	0.069	970
S1 1008		186	121	<2	100	4	125	296	12.0	7	0.170	3000
S1 1009		70	73	4	142	5	115	126	5.2	4	0.120	1100
S1 1010		6	35	<2	137	3	11	18	1.8	<2	0.051	720
S1 1011		50	78	<2	149	6	86	181	8.6	<2	0.065	670
S1 1012		12	74	<2	88	3	9	16	1.2	<2	0.080	470
S1 1013 *		8	130	11	615	73	98	74	12.0	<2	0.576	2800
S1 1014		6	35	<2	57	3	17	4	1.2	<2	0.044	370
S1 1015		28	149	15	271	6	32	50	3.2	<2	0.067	1500
S1 1016		60	223	31	960	44	118	203	15.0	<2	0.162	11500
S1 1017		49	284	69	601	12	42	162	5.9	6	0.068	1800
S1 1018		20	123	12	240	5	33	49	2.9	<2	0.065	1400
S1 2001		6	75	<2	132	2	26	18	1.8	<2	0.045	1100
S1 2002 *		10	74	<2	134	4	25	16	2.2	<2	0.054	1200
S1 2003		13	128	<2	206	10	47	29	3.7	<2	0.048	1400
S1 2004		14	154	<2	244	15	58	37	4.5	<2	0.049	1500
S1 2005 *		8	106	<2	157	6	36	22	2.3	<2	0.035	1200
S1 2006		10	135	10	242	6	30	35	3.5	<2	0.068	1700
S1 2007		14	270	<2	139	12	49	22	3.0	<2	0.057	1600
S1 2008 *		8	152	<2	112	<1	34	9	1.6	<2	0.040	1100
S1 2009		14	251	<2	166	2	36	21	2.9	<2	0.084	1300
S1 2010		27	92	<2	156	17	59	53	4.8	<2	0.067	2400
S1 2011		26	558	<2	1317	23	182	59	7.7	<2	0.123	3600
S1 2012		15	154	<2	314	25	61	43	6.8	<2	0.054	2500
S1 2013		49	84	<2	179	6	23	33	2.3	<2	0.063	1300
S1 2014		16	101	<2	178	7	31	52	3.7	4	0.068	1200
S1 2015		38	210	<2	194	17	75	225	6.8	<2	0.146	1400
S1 2016 *		16	101	<2	115	7	43	71	2.9	<2	0.056	1200
S1 2017		17	408	21	255	29	42	22	3.6	<2	0.070	1400
S1 2018 *		10	161	2	127	9	18	10	1.3	<2	0.033	1200
S1 2019 *		6	497	<2	107	21	16	3	0.6	<2	0.054	760
S1 2020		8	467	10	150	36	23	10	1.5	<2	0.092	820
S1 2021		15	825	17	118	55	19	8	1.1	<2	0.074	900
S1 2022		29	843	<2	141	18	19	9	1.3	<2	0.091	810

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SAMPLE NUMBER	ELEMENT UNITS	Ag PPM	Weight GM	Weight GM
S1 1001		<0.2	532.6	57.2
S1 1002		2.3	432.1	26.2
S1 1003		1.4	336.4	65.9
S1 1004		0.8	521.8	36.9
S1 1005		<0.2	345.6	47.7
S1 1006		0.3	301.4	59.3
S1 1007		0.3	169.3	27.0
S1 1008		0.8	672.8	41.7
S1 1009		0.3	625.7	63.7
S1 1010		<0.2	425.7	75.7
S1 1011		0.3	497.1	56.8
S1 1012		<0.2	539.1	48.4
S1 1013		2.4	456.7	13.2
S1 1014		<0.2	248.0	37.7
S1 1015		0.5	578.9	37.8
S1 1016		1.9	552.1	65.7
S1 1017		1.2	541.7	68.7
S1 1018		0.5	655.8	40.5
S1 2001		0.4	353.8	36.0
S1 2002		0.4	284.7	9.9
S1 2003		0.6	318.0	51.6
S1 2004		0.7	280.2	40.4
S1 2005		0.4	266.8	14.3
S1 2006		0.6	274.1	40.6
S1 2007		0.5	298.3	33.5
S1 2008		0.4	305.0	15.2
S1 2009		0.6	206.0	40.7
S1 2010		0.8	313.0	39.8
S1 2011		1.5	250.7	33.5
S1 2012		0.7	287.4	37.5
S1 2013		0.6	211.0	50.1
S1 2014		1.0	226.2	62.0
S1 2015		0.9	296.3	43.9
S1 2016		0.5	357.9	15.6
S1 2017		1.2	344.1	47.6
S1 2018		0.4	356.1	18.5
S1 2019		<0.2	264.7	19.6
S1 2020		0.3	169.4	51.4
S1 2021		<0.2	333.1	38.2
S1 2022		0.4	407.5	28.5

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SAMPLE NUMBER	ELEMENT UNITS	Au PPB	Cu PPM	Pb PPM	Zn PPM	Mo PPM	Ni PPM	As PPM	Sb PPM	W PPM	Hg PPM	Ba PPM
S1 2023		37	475	<2	106	6	15	11	0.9	<2	0.077	770
S1 2024		16	365	<2	145	5	21	14	1.2	<2	0.076	930
S1 2025		8	256	<2	142	6	22	12	1.2	<2	0.053	930
S1 2026 *		12	181	<2	109	2	14	9	0.7	<2	0.037	850
S1 2027		14	115	<2	248	21	59	22	4.2	<2	0.111	1100
S1 2028		10	71	<2	112	4	24	11	1.2	<2	0.100	790
S1 2029		6	72	<2	140	3	18	12	1.6	<2	0.070	870
S1 2030		10	84	<2	143	5	25	14	2.0	<2	0.062	1100
S1 2031		10	145	<2	310	10	60	19	5.8	<2	0.162	1600
S1 2032		14	141	<2	229	4	53	16	2.8	<2	0.089	1200
S1 2033		12	91	<2	177	5	31	12	2.1	<2	0.071	970
S1 2034		11	166	<2	213	2	43	16	3.5	<2	0.098	1100
S1 2035		10	100	<2	164	3	39	13	2.2	<2	0.054	1100
S1 2036		14	117	<2	191	4	39	19	3.1	<2	0.078	1100
S1 2037		14	114	<2	176	3	38	15	3.5	<2	0.087	1100
S1 2038		6	35	<2	87	5	5	11	1.0	2	0.073	360
S1 2039		12	96	<2	100	2	14	16	1.5	<2	0.057	690
S1 2040		6	61	<2	88	4	10	10	1.0	<2	0.053	610
S1 2041		17	131	<2	106	<1	18	15	1.3	<2	0.052	780
S1 2042		6	55	<2	88	4	9	12	1.2	2	0.081	580
S1 2043		26	236	<2	123	2	16	33	2.4	<2	0.087	640
S1 2044		10	99	<2	102	2	13	13	1.3	<2	0.052	710
S1 2045		14	144	<2	105	1	15	15	1.5	<2	0.057	700
S1 2046		13	144	<2	117	2	18	15	1.5	<2	0.050	650
S1 2047		6	117	<2	126	2	12	12	1.3	<2	0.076	550
S1 2048 *		8	66	<2	113	1	23	39	3.2	<2	0.073	1100
S1 2049		19	401	<2	156	<1	29	16	1.4	3	0.059	610
S1 2050		79	187	25	800	39	101	178	13.0	<2	0.151	10300
S1 2051		40	140	16	442	93	182	102	19.0	<2	0.086	6900
S1 2052 *		43	127	<2	145	5	33	69	4.6	<2	0.063	1800
S1 2053 *		50	177	<2	89	6	23	86	4.7	<2	0.062	1200
S1 2054 *		23	716	10	192	13	42	22	3.2	2	0.073	1100
R2 3203		21	21	<2	38	<1	140	7	12.0	<2	0.314	<20
R2 3204		18	622	1494	1760	<1	6	13	10.0	<2	0.323	360
R2 3205		44	99	10	103	2	7	164	27.5	5	0.806	290
R2 3206		249	232	<2	19	<1	23	688	13.0	<2	0.280	270
R2 3207		10	77	<2	65	<1	34	8	6.0	<2	0.212	1200
R2 3208		87	23	27	42	<1	9	296	26.9	6	1.149	360
R2 3209		10	15	<2	38	<1	5	4	2.7	<2	0.094	130
R2 3210		12	8	26	5	6	1	4	3.5	<2	0.100	1800

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S1 2023		0.5	271.8	55.7
S1 2024		<0.2	409.4	34.3
S1 2025		<0.2	214.1	46.6
S1 2026		<0.2	413.4	8.9
S1 2027		0.9	254.8	65.5
S1 2028		<0.2	189.4	66.0
S1 2029		<0.2	317.8	71.5
S1 2030		<0.2	236.1	54.3
S1 2031		1.3	336.7	37.1
S1 2032		0.6	258.5	61.1
S1 2033		0.4	305.6	47.0
S1 2034		0.5	293.6	55.3
S1 2035		0.4	364.1	38.5
S1 2036		0.5	305.9	64.3
S1 2037		0.7	238.1	40.5
S1 2038		<0.2	158.8	54.8
S1 2039		<0.2	347.3	62.5
S1 2040		<0.2	266.9	51.2
S1 2041		0.2	286.9	43.6
S1 2042		<0.2	304.9	47.0
S1 2043		<0.2	300.1	36.2
S1 2044		<0.2	252.9	49.2
S1 2045		<0.2	325.1	48.7
S1 2046		<0.2	323.4	38.6
S1 2047		<0.2	208.6	46.4
S1 2048		0.3	521.8	6.0
S1 2049		<0.2	330.7	49.5
S1 2050		1.6	386.3	29.6
S1 2051		1.0	333.4	48.1
S1 2052		0.7	441.6	18.1
S1 2053		0.8	415.1	18.7
S1 2054		0.8	395.2	13.9
R2 3203		0.8		
R2 3204		2.2		
R2 3205		1.6		
R2 3206		1.6		
R2 3207		0.3		
R2 3208		2.6		
R2 3209		<0.2		
R2 3210		0.3		

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R2 3211		6	40	15	233	46	56	41	8.1	<2	0.498	870
R2 3212		13	17	<2	79	3	29	4	4.9	<2	0.127	350
R2 3213		19	38	<2	44	1	14	50	3.4	<2	0.141	620
R2 6851		10	26	<2	40	2	6	39	4.0	<2	0.309	120
R2 6852		10	17	<2	29	<1	3	24	7.3	<2	0.370	320
R2 6853		8	32	<2	38	2	5	8	6.3	<2	0.541	290
R2 6854		27	1257	3	60	5	50	59	7.3	<2	0.124	700
R2 6855		3529	141	2	342	2	8	97	3.4	6	0.188	460
R2 6856		356	93	<2	25	<1	13	90	5.2	<2	0.114	320
R2 6857		50	19	3	61	5	15	10	2.3	<2	0.036	210
R2 6858		191	99	<2	51	3	54	1120	9.0	<2	0.099	160
R2 6859		497	3051	<2	319	<1	3	52	14.0	<2	0.223	<20
R2 6860		8	156	8	38	<1	7	8	1.2	<2	0.041	210
R2 6861		18	165	15	485	78	110	67	7.8	<2	0.616	1300
R2 6862		8	113	6	513	120	84	77	12.0	<2	0.531	1000
R2 6863		6	38	18	248	22	37	10	3.7	<2	0.095	780
R2 6864		6	31	<2	1500	117	176	57	16.0	<2	0.337	1500
R2 6865		8	50	<2	68	1	17	45	5.7	<2	0.379	870
R2 6866		8	17	8	29	2	13	12	2.9	<2	0.069	420
R2 6867		10	111	<2	60	10	21	6	2.9	3	0.059	720

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SAMPLE NUMBER	ELEMENT UNITS	Ag PPM	Weight GM	Weight GM
R2 3211		1.0		
R2 3212		0.5		
R2 3213		<0.2		
R2 6851		<0.2		
R2 6852		0.3		
R2 6853		0.6		
R2 6854		1.5		
R2 6855		1.1		
R2 6856		1.9		
R2 6857		0.3		
R2 6858		1.0		
R2 6859		28.3		
R2 6860		0.4		
R2 6861		1.8		
R2 6862		2.0		
R2 6863		<0.2		
R2 6864		0.6		
R2 6865		0.3		
R2 6866		<0.2		
R2 6867		0.3		

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STANDARD NAME	ELEMENT UNITS	Au PPB	Cu PPM	Pb PPM	Zn PPM	Mo PPM	Ni PPM	As PPM	Sb PPM	W PPM	Hg PPM	Ba PPM
ANALYTICAL BLANK		<5	<1	<2	<1	<1	<1	-	-	-	<0.010	-
ANALYTICAL BLANK		<5	<1	<2	2	<1	<1	-	-	-	0.010	-
ANALYTICAL BLANK		<5	<1	<2	5	<1	<1	-	-	-	<0.010	-
Number of Analyses		3	3	3	3	3	3	-	-	-	3	-
Mean Value		2.5	0.5	1.0	2.3	0.5	0.5	-	-	-	0.0068	-
Standard Deviation		0.00	0.00	0.00	2.21	0.00	0.00	-	-	-	0.00318	-
Accepted Value		5	-	-	-	-	-	-	-	-	-	-
GEO TRACE STD 3 1989		-	273	23	250	2	43	28	0.4	<2	0.052	-
GEO TRACE STD 3 1989		-	-	-	-	-	-	27	0.4	<2	-	-
Number of Analyses		-	1	1	1	1	1	2	2	2	1	-
Mean Value		-	272.9	23.0	249.8	2.2	42.7	27.5	0.41	1.0	0.0520	-
Standard Deviation		-	-	-	-	-	-	0.71	0.014	0.00	-	-
Accepted Value		-	290	33	255	4	42	-	-	-	0.030	420
GEO TRACE STD1 1989		-	189	2	41	15	13	7	5.9	<2	-	490
GEO TRACE STD1 1989		-	-	-	-	-	-	6	6.8	<2	-	-
Number of Analyses		-	1	1	1	1	1	2	2	2	-	1
Mean Value		-	188.8	2.1	41.2	14.8	13.3	6.5	6.35	1.0	-	490.0
Standard Deviation		-	-	-	-	-	-	0.21	0.636	0.00	-	-
Accepted Value		-	190	15	62	17	14	-	-	-	0.054	480
GEO TRACE STD-2 1989		-	774	181	424	448	459	311	70.1	5	3.525	620
Number of Analyses		-	1	1	1	1	1	1	1	1	1	1
Mean Value		-	774.4	181.3	424.0	448.0	458.6	311.0	70.10	5.3	3.5253	620.0
Standard Deviation		-	-	-	-	-	-	-	-	-	-	-
Accepted Value		-	820	250	500	600	600	-	-	-	3.550	600
MISC STD		-	-	-	-	-	-	-	-	-	-	640
MISC STD		-	-	-	-	-	-	-	-	-	-	640
MISC STD		-	-	-	-	-	-	-	-	-	-	650
Number of Analyses		-	-	-	-	-	-	-	-	-	-	3
Mean Value		-	-	-	-	-	-	-	-	-	-	643.3

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STANDARD NAME	ELEMENT UNITS	Ag PPM	Weight GM	Weight GM
ANALYTICAL BLANK		<0.2	-	-
ANALYTICAL BLANK		<0.2	-	-
ANALYTICAL BLANK		<0.2	-	-
Number of Analyses		3	-	-
Mean Value		0.10	-	-
Standard Deviation		0.000	-	-
Accepted Value		-	-	-
GEO TRACE STD 3 1989		0.4	-	-
GEO TRACE STD 3 1989		-	-	-
Number of Analyses		1	-	-
Mean Value		0.38	-	-
Standard Deviation		-	-	-
Accepted Value		0.5	-	-
GEO TRACE STD1 1989		30.3	-	-
GEO TRACE STD1 1989		-	-	-
Number of Analyses		1	-	-
Mean Value		30.29	-	-
Standard Deviation		-	-	-
Accepted Value		36.0	-	-
GEO TRACE STD-2 1989		3.7	-	-
Number of Analyses		1	-	-
Mean Value		3.71	-	-
Standard Deviation		-	-	-
Accepted Value		5.0	-	-
MISC STD		-	-	-
MISC STD		-	-	-
MISC STD		-	-	-
Number of Analyses		-	-	-
Mean Value		-	-	-

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Standard Deviation		-	-	-	-	-	-	-	-	-	-	5.77
Accepted Value		-	-	-	-	-	-	-	-	-	-	-
1990 AU STANDARD-1		6864	-	-	-	-	-	-	-	-	-	-
Number of Analyses		1	-	-	-	-	-	-	-	-	-	-
Mean Value		6864.0	-	-	-	-	-	-	-	-	-	-
Standard Deviation		-	-	-	-	-	-	-	-	-	-	-
Accepted Value		6320	-	-	-	-	-	-	-	-	-	-
GEOCHEM STD-1, 1988		-	-	-	-	-	-	-	-	-	-	980
Number of Analyses		-	-	-	-	-	-	-	-	-	-	1
Mean Value		-	-	-	-	-	-	-	-	-	-	980.0
Standard Deviation		-	-	-	-	-	-	-	-	-	-	-
Accepted Value		-	400	325	443	14	100	-	-	-	6.500	1010
LOW AU STANDARD		50	-	-	-	-	-	-	-	-	-	-
Number of Analyses		1	-	-	-	-	-	-	-	-	-	-
Mean Value		50.0	-	-	-	-	-	-	-	-	-	-
Standard Deviation		-	-	-	-	-	-	-	-	-	-	-
Accepted Value		50	-	-	-	-	-	-	-	-	-	-

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STANDARD NAME	ELEMENT UNITS	Ag PPM	Weight GM	Weight GM
Standard Deviation		-	-	-
Accepted Value		-	-	-
1990 AU STANDARD-1		-	-	-
Number of Analyses		-	-	-
Mean Value		-	-	-
Standard Deviation		-	-	-
Accepted Value		-	-	-
GEOCHEM STD-1, 1988		-	-	-
Number of Analyses		-	-	-
Mean Value		-	-	-
Standard Deviation		-	-	-
Accepted Value		6.5	-	-
LOW AU STANDARD		-	-	-
Number of Analyses		-	-	-
Mean Value		-	-	-
Standard Deviation		-	-	-
Accepted Value		-	-	-

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SAMPLE NUMBER	ELEMENT UNITS	Au PPB	Cu PPM	Pb PPM	Zn PPM	Mo PPM	Ni PPM	As PPM	Sb PPM	W PPM	Hg PPM	Ba PPM
1006		12	269	5	135	11	20	8	0.8	<2	0.062	910
Duplicate		21	287	6	142	12	19	7	0.9	<2	0.054	930
2005		8	106	<2	157	6	36	22	2.3	<2	0.035	1200
Duplicate			108	<2	161	5	37				0.064	1240
2011		26	558	<2	1317	23	182	59	7.7	<2	0.123	3600
Duplicate		26										
2012		15	154	<2	314	25	61	43	6.8	<2	0.054	2500
Duplicate								35	5.9	<2		
2025		8	256	<2	142	6	22	12	1.2	<2	0.053	930
Duplicate			258	<2	148	6	22				0.058	910
2034		11	166	<2	213	2	43	16	3.5	<2	0.098	1100
Duplicate		12										
2036		14	117	<2	191	4	39	19	3.1	<2	0.078	1100
Duplicate								18	2.9	<2		
2042		6	55	<2	88	4	9	12	1.2	2	0.081	580
Duplicate			57	<2	89	4	9				0.076	570
3204		18	622	1494	1760	<1	6	13	10.0	<2	0.323	360
Prep Duplicate		16	599	1452	1577	4	8	12	7.6	<2	0.270	350
3205		44	99	10	103	2	7	164	27.5	5	0.806	290
Duplicate		50										
3208		87	23	27	42	<1	9	296	26.9	6	1.149	360
Duplicate								294	26.9	4		
3209		10	15	<2	38	<1	5	4	2.7	<2	0.094	130
Duplicate			16	<2	40	<1	5				0.093	130
6860		8	156	8	38	<1	7	8	1.2	<2	0.041	210
Prep Duplicate		12	148	5	33	<1	7	2	4.2	<2	0.043	250
6863		6	38	18	248	22	37	10	3.7	<2	0.095	780
Duplicate			38	18	255	22	37				0.087	760
6864		6	31	<2	1500	117	176	57	16.0	<2	0.337	1500
Duplicate		6										
Prep Duplicate		12	148	5	33	<1	7	2	4.2	<2	0.043	250
Duplicate								3	1.6	<2		

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BONDAR-CLEGG

Geochemical Lab Report

A DIVISION OF INCHCAPE INSPECTION & TESTING SERVICES

DATE PRINTED: 21-OCT-91

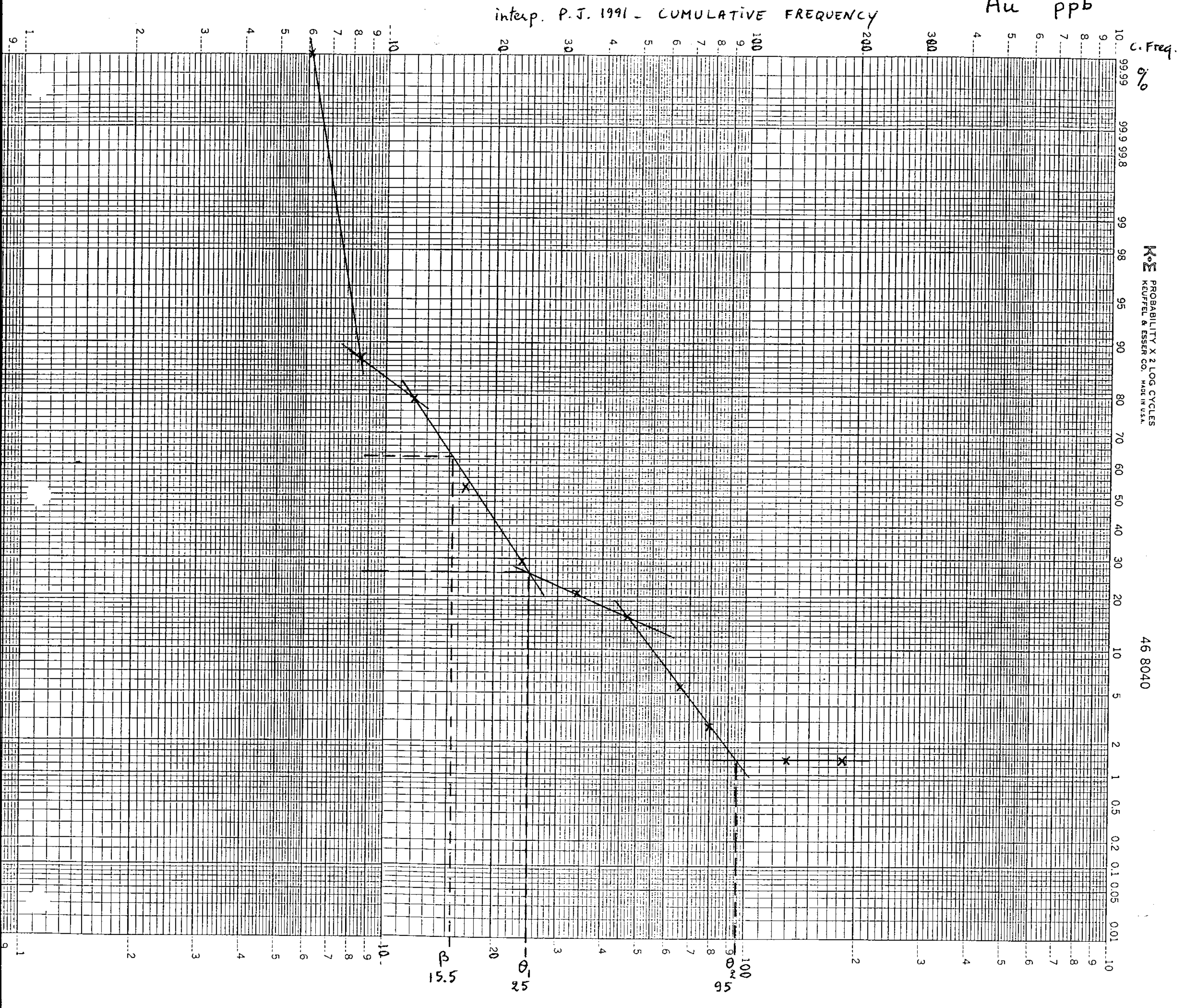
REPORT: V91-01475.0 (COMPLETE)

PROJECT: 25923

SAMPLE NUMBER	ELEMENT UNITS	Ag PPM	Weight GM	Weight GM
1006		0.3	301.4	59.3
Duplicate		0.3		
2005		0.4	266.8	14.3
Duplicate		0.3		
2011		1.5	250.7	33.5
Duplicate				
2012		0.7	287.4	37.5
Duplicate				
2025		<0.2	214.1	46.6
Duplicate		<0.2		
2034		0.5	293.6	55.3
Duplicate				
2036		0.5	305.9	64.3
Duplicate				
2042		<0.2	304.9	47.0
Duplicate		<0.2		
3204		2.2		
Prep Duplicate		1.9		
3205		1.6		
Duplicate				
3208		2.6		
Duplicate				
3209		<0.2		
Duplicate		<0.2		
6860		0.4		
Prep Duplicate		0.3		
6863		<0.2		
Duplicate		<0.2		
6864		0.6		
Duplicate				
Prep Duplicate		0.3		
Duplicate				

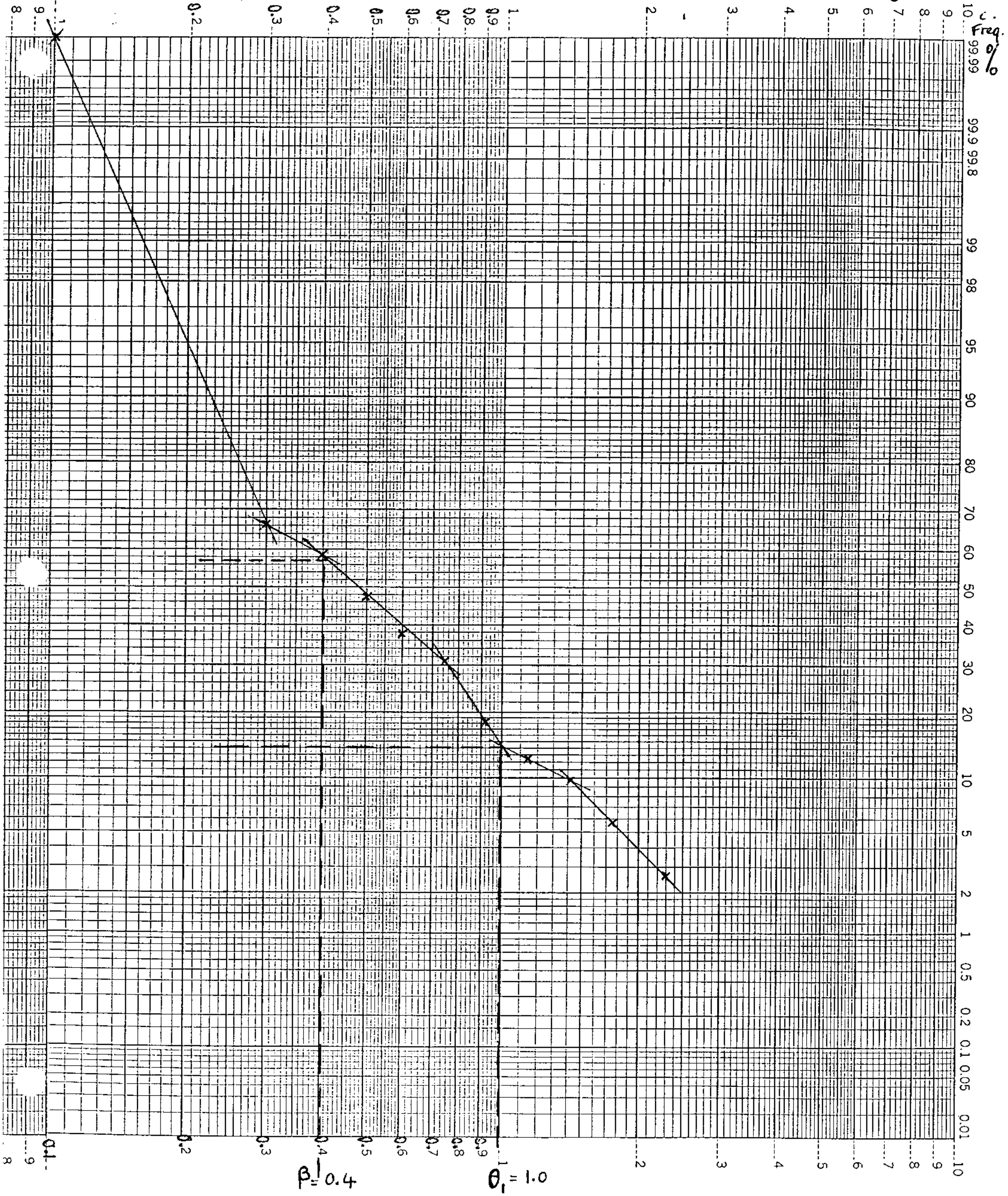
APPENDIX 3:

- **Cumulative Frequency Curves for Geochemical Interpretation**


interp. P.J. 1991 - CUMULATIVE FREQUENCY
Au ppb
C. Freq. %
K+E PROBABILITY X 2 LOG CYCLES
KEUFFEL & ESSER CO. MADE IN U.S.A.
46 8040
β
15.5
θ1
25
θ2
95

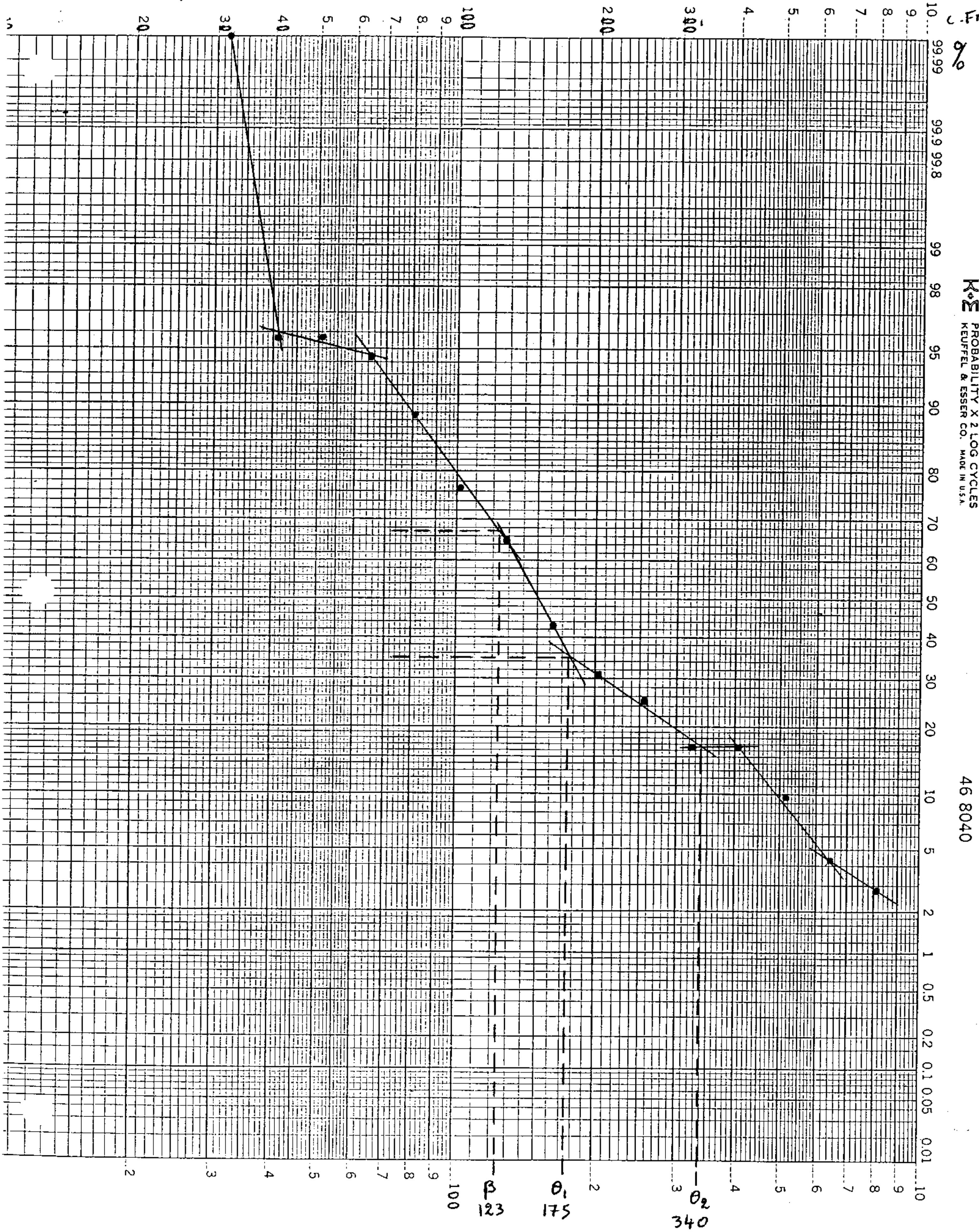
CHAIN CREEK - SOIL/SILT SAMPLES
interp. P.J. 1991 - CUMULATIVE FREQUENCY

Ag ppm



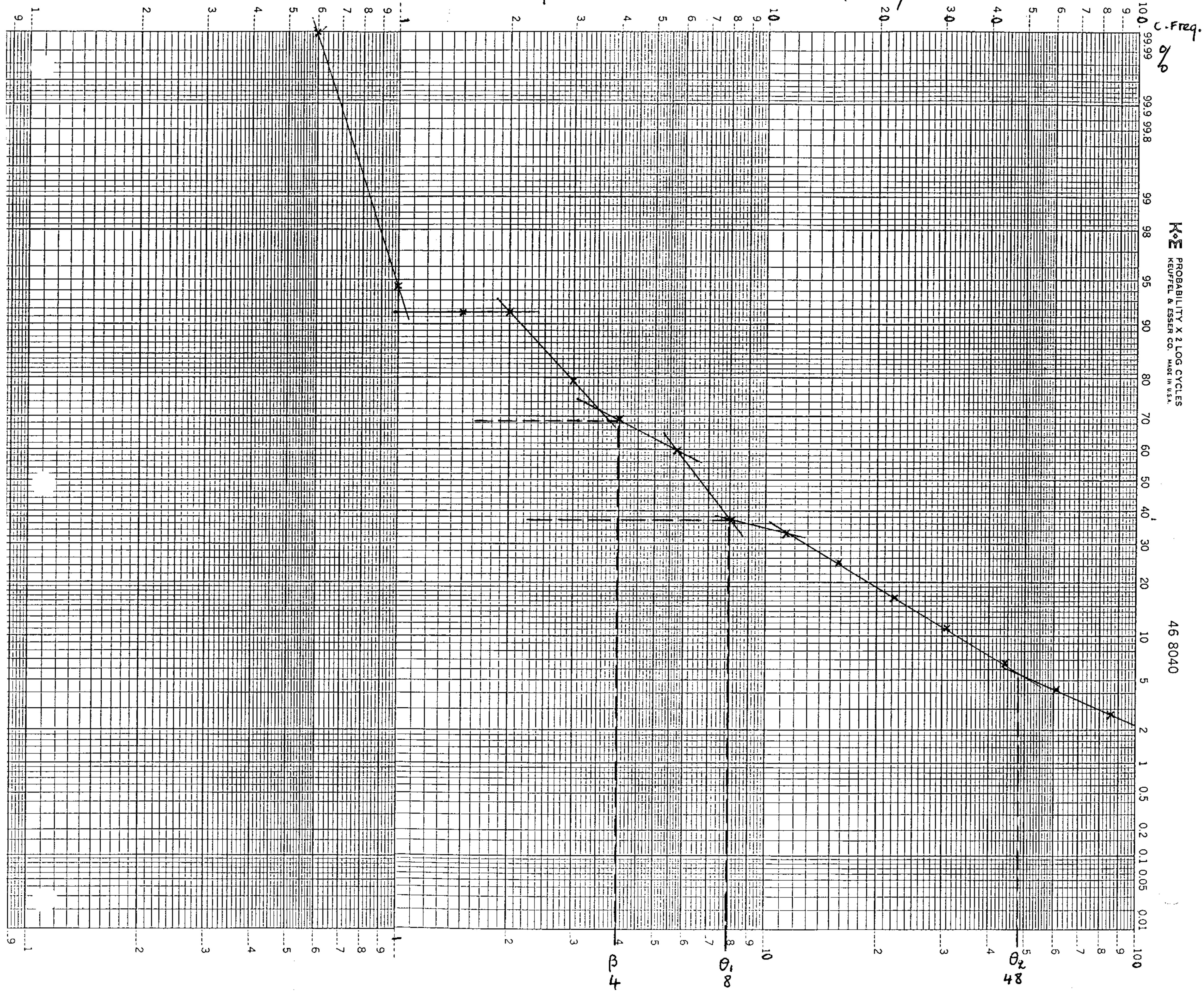
CHAIN CREEK - SOIL/SILT SAMPLES - CUMULATIVE FREQUENCY Cu ppm

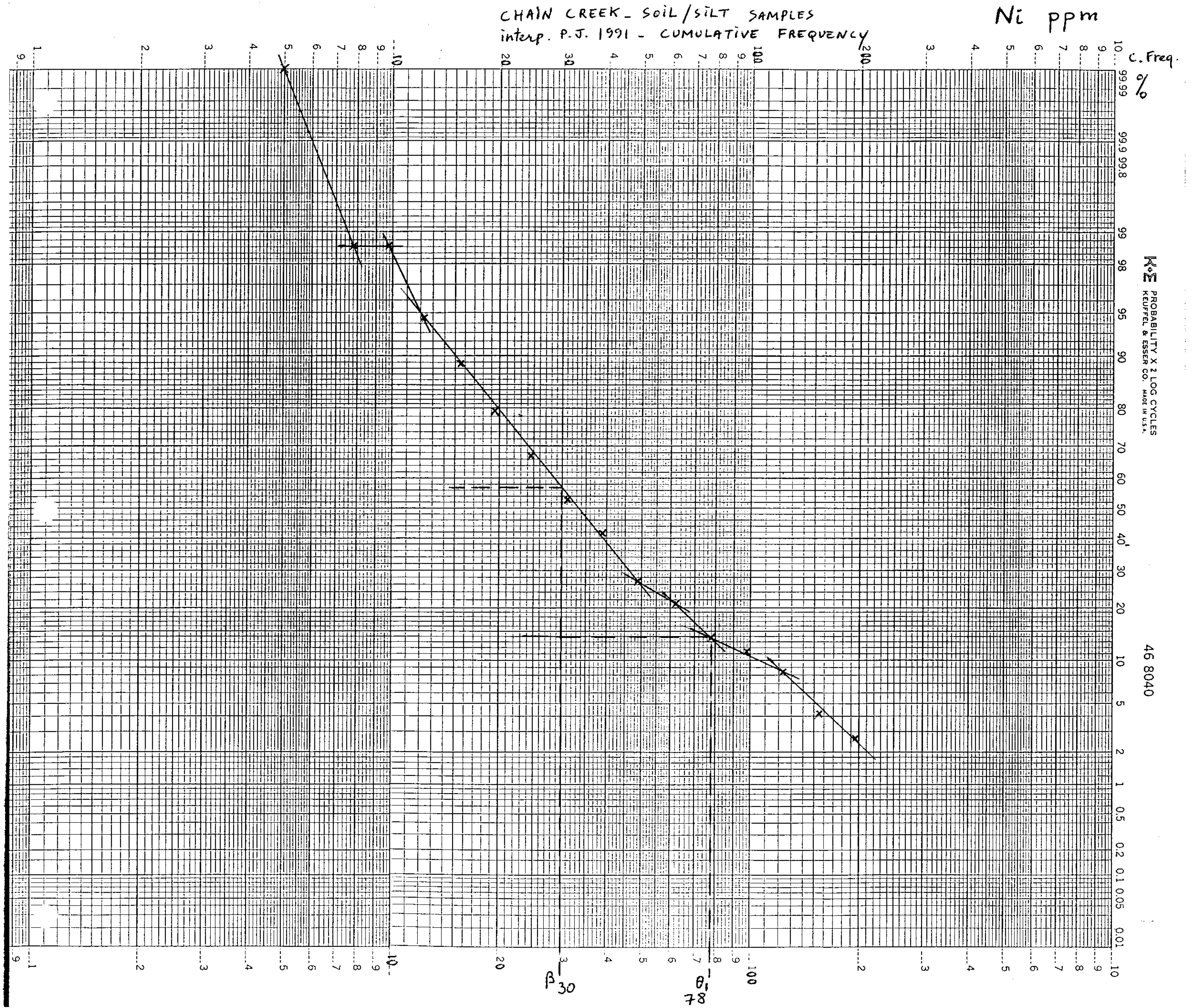
interp. P.J. 1991

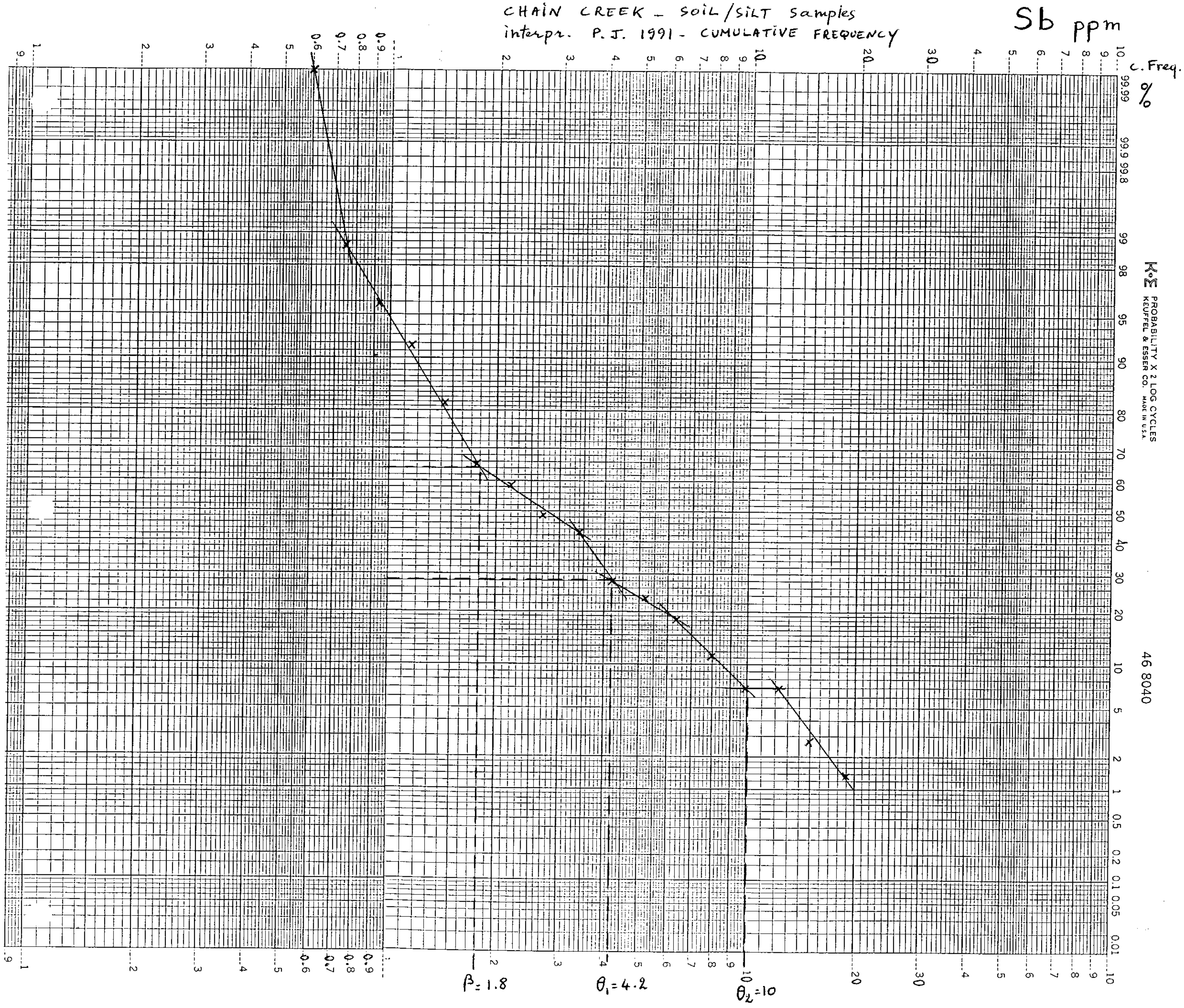


CHAIN CREEK - SOIL / SILT SAMPLES
interp. P.J. 1991 - CUMULATIVE FREQUENCY

Mo ppm

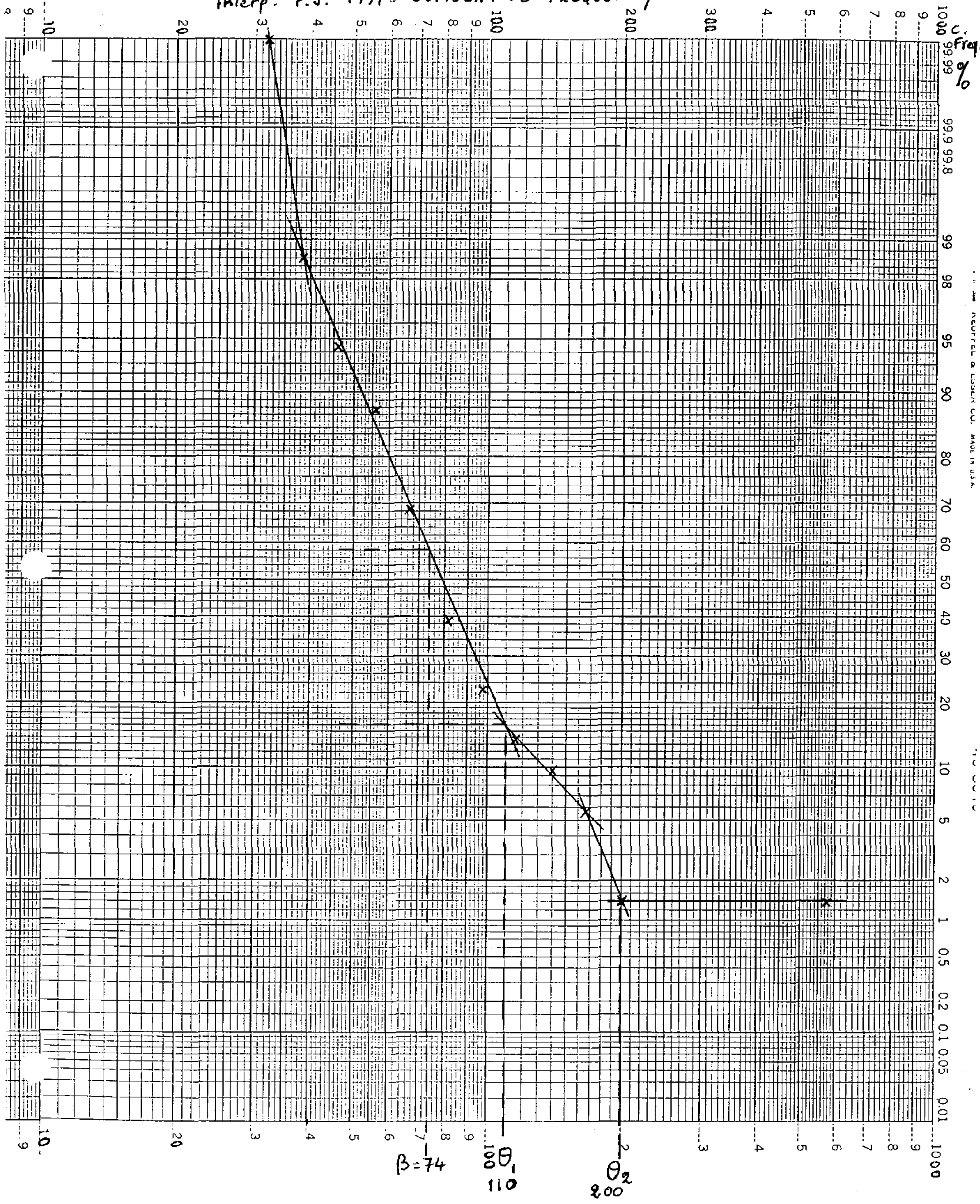


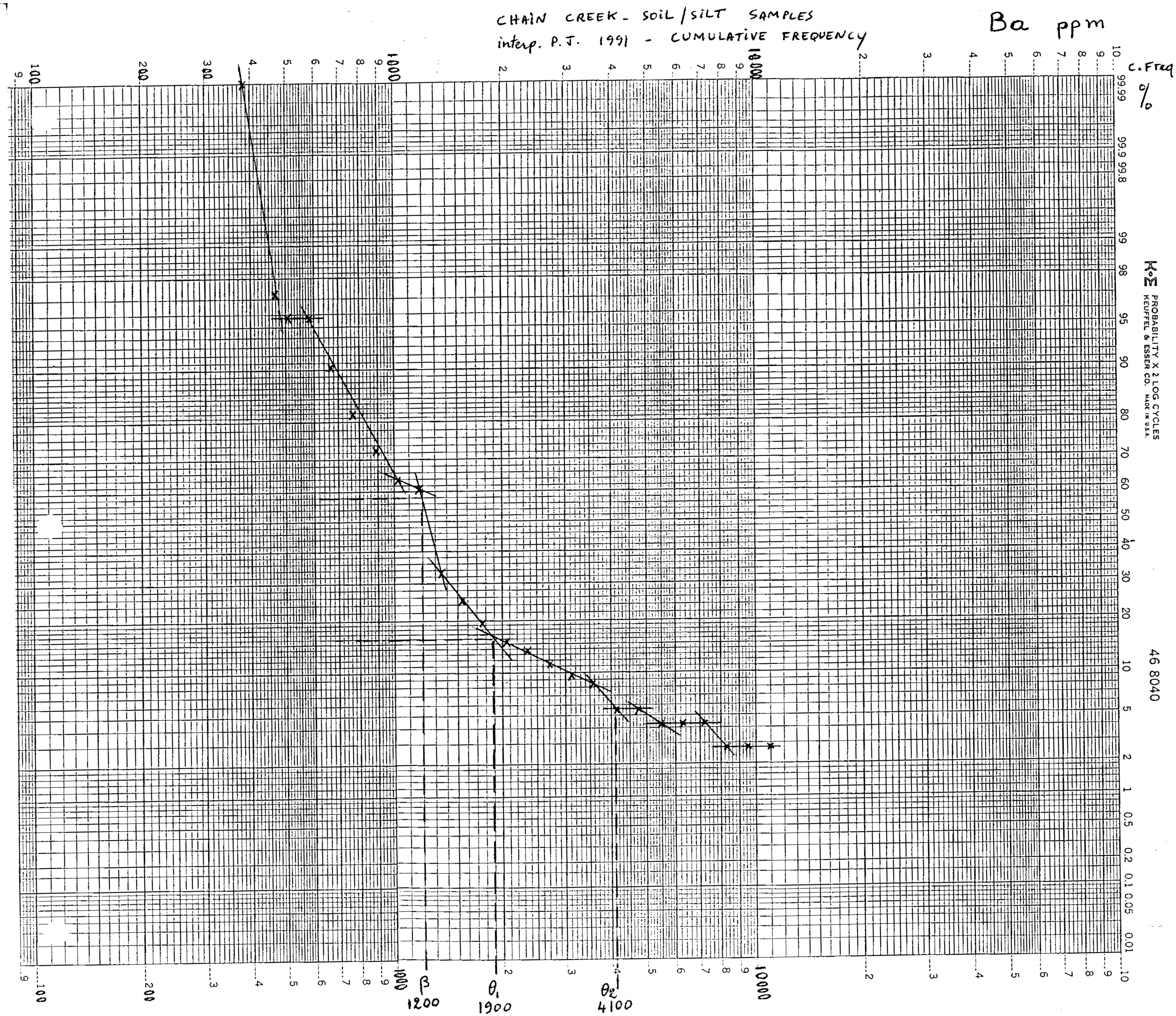

CHAIN CREEK - SOIL/SILT SAMPLES
interp. P.J. 1991 - CUMULATIVE FREQUENCY
Ni ppm
C. Freq. %
β 30
θ 78
K+E PROBABILITY X 2 LOG CYCLES
KEUFFEL & ESSER CO. MADE IN U.S.A.
46 8040


CHAIN CREEK - SOIL/SILT Samples
interpr. P. J. 1991 - CUMULATIVE FREQUENCY
Sb ppm
c. Freq. %
K+E PROBABILITY X 2 LOG CYCLES
KEUFFEL & ESSER CO. MADE IN U.S.A.
46 8040
β = 1.8
θ1 = 4.2
θ2 = 10

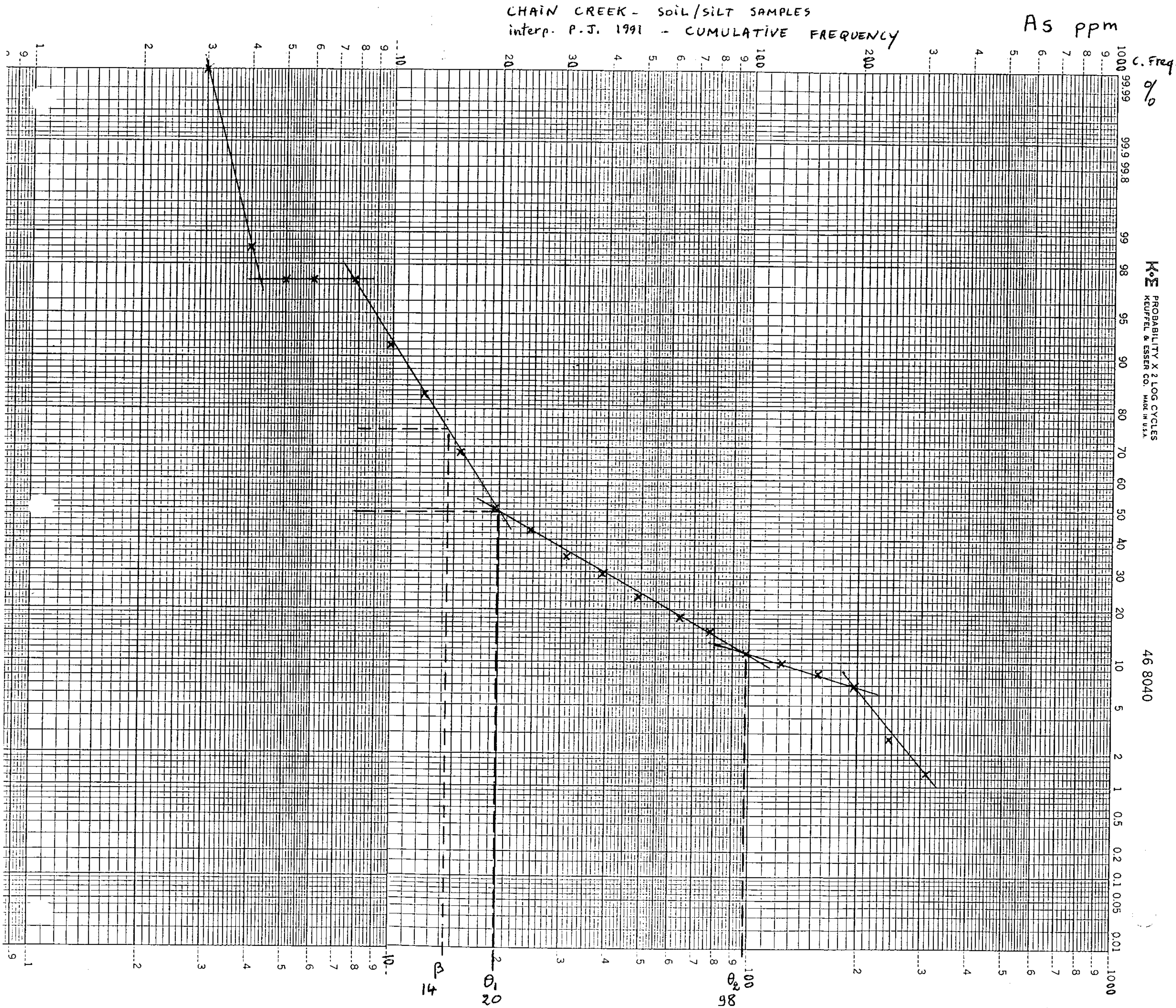
CHAIN CREEK. SOIL/SILT SAMPLES
interp. P.J. 1991. CUMULATIVE FREQUENCY

Hg ppb

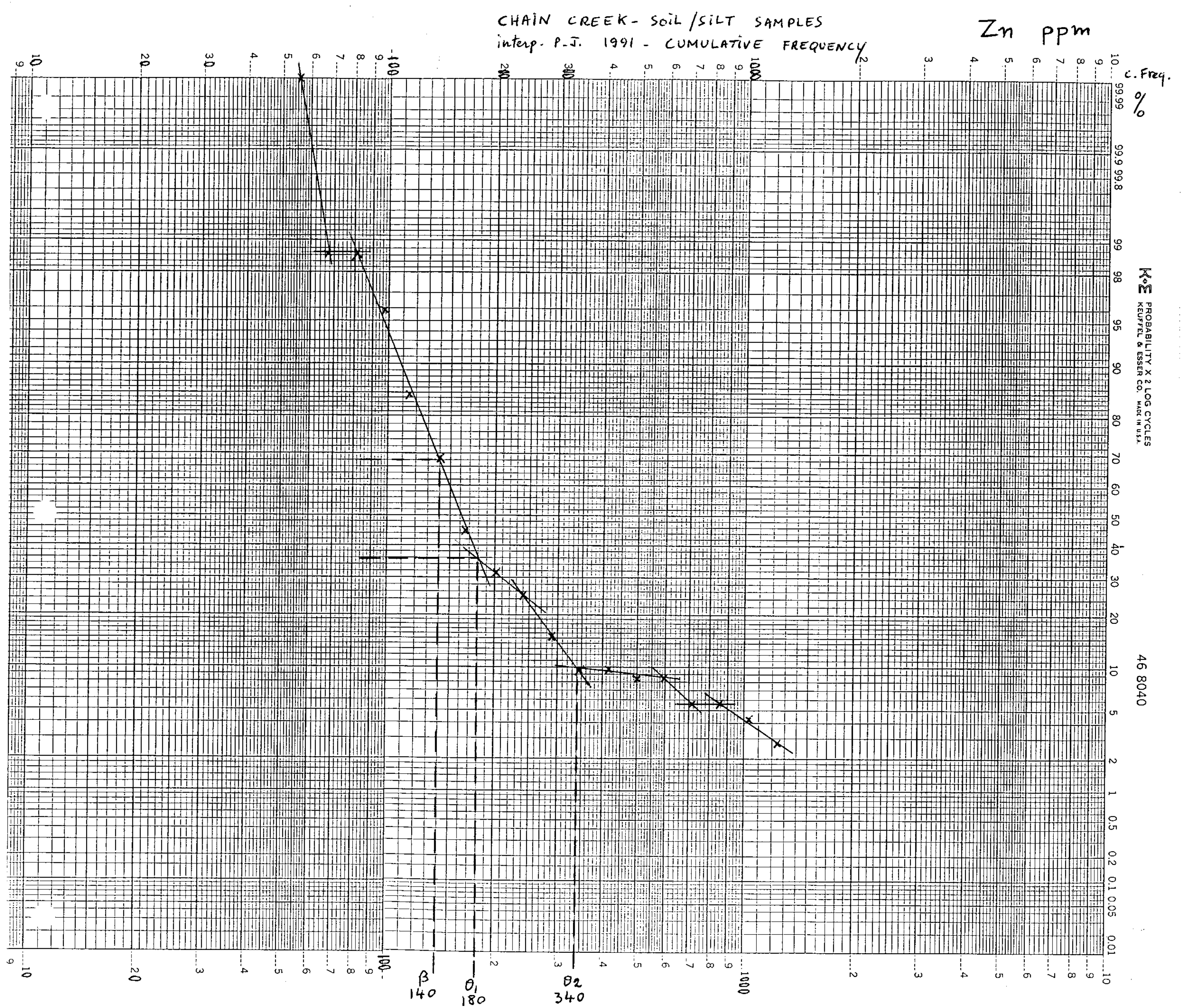


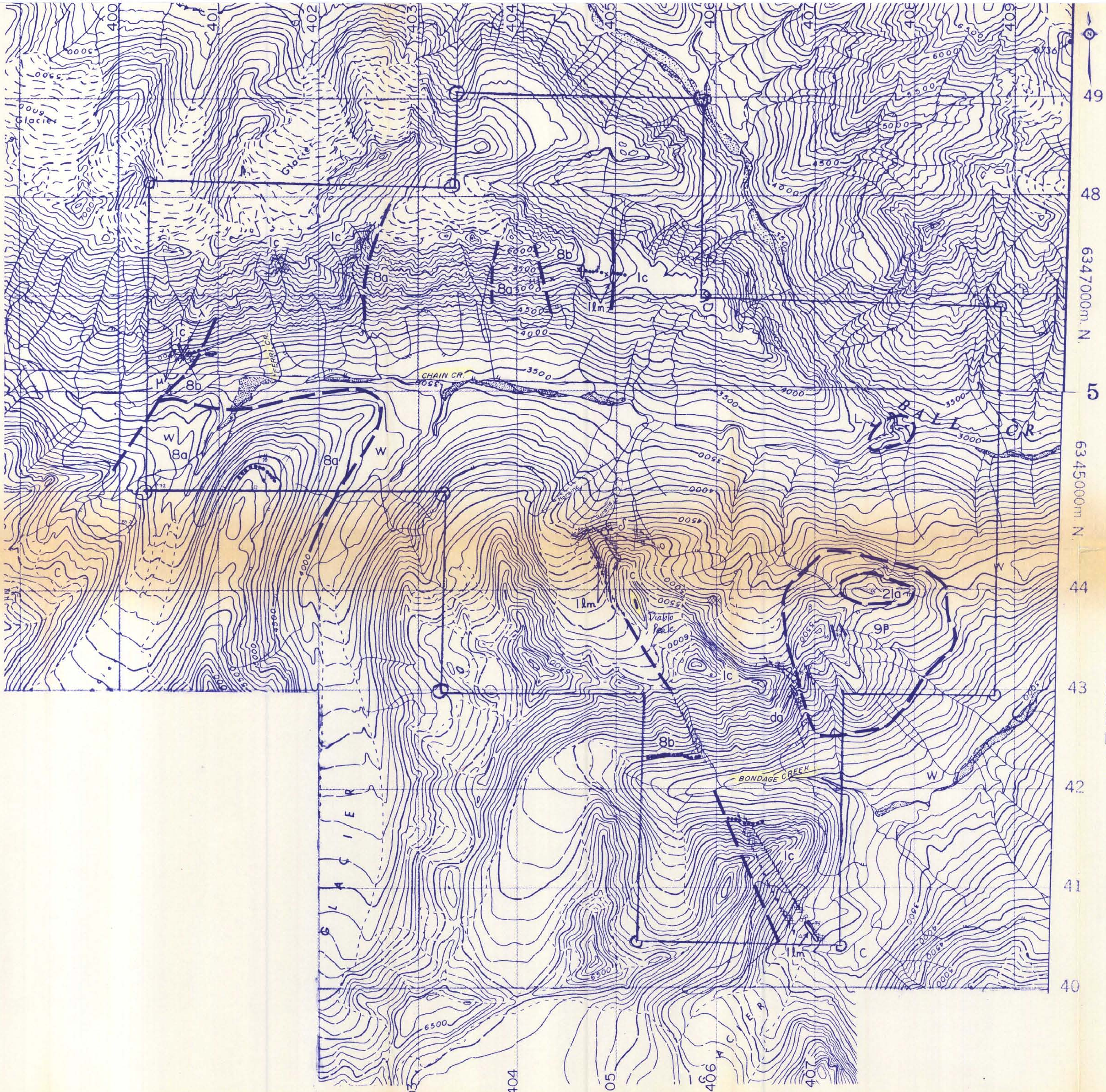


CHAIN CREEK - SOIL / SILT SAMPLES
interp. P.J. 1991 - CUMULATIVE FREQUENCY
Ba ppm
C. Freq. %
β 1200
θ1 1900
θ2 4100
K·E PROBABILITY X 2 LOG CYCLES
KEUFFEL & ESSER CO. MADE IN U.S.A.
46 8040



CHAIN CREEK - SOIL/SILT SAMPLES
interp. P.J. 1991 - CUMULATIVE FREQUENCY
As ppm
C. Freq. %
K+E PROBABILITY X 2 LOG CYCLES
KEUFFEL & ESSER CO. MADE IN U.S.A.
46 8040
β 14
θ1 20
θ2 98


CHAIN CREEK - SOIL / SILT SAMPLES
interp. P.J. 1991 - CUMULATIVE FREQUENCY
Zn ppm
c. Freq. %
K+E PROBABILITY X 2 LOG CYCLES
KEUFFEL & ESSER CO. MADE IN U.S.A.
46 8040
β 140
θ1 180
θ2 340



VOLCANIC AND SEDIMENTRY ROCKS

21a	Arkosic sandstone with fragments of cherts (Tertiary) and andesitic tuff
9β	Basalt (Hypabyssal) (Upper Triassic) magnetic in places
8b	Andesitic tuffs and flows (Upper Triassic)
8a	Schistose andesitic tuffs (Metamorphosed under strong strain)
1c	Greenish or black cherts (Mississippian)
	Graphitic bed
1ℓm	Cherty limestones (Mississippian)

INTRUSIVE ROCKS

μ/da	Monzonite (μ) or dacitic (da), latite dykes
λ	Lamprophyre dyke
L	Porphyritic latite, carbonaceous and potassic with agglomerate structure
δ	Diorite
	Sulphide or rusty shear zone
	Shear zone
	Stratification strike and dip
	Stratification strike and dip (vertical)
	Strike and dip of sulphide bearing veins or shears
x	Observation point (on outcrop)
o	Sediment sample
•	Soil or talus sample
▵	Rock float sample
▫	Rock sample composite on outcrop

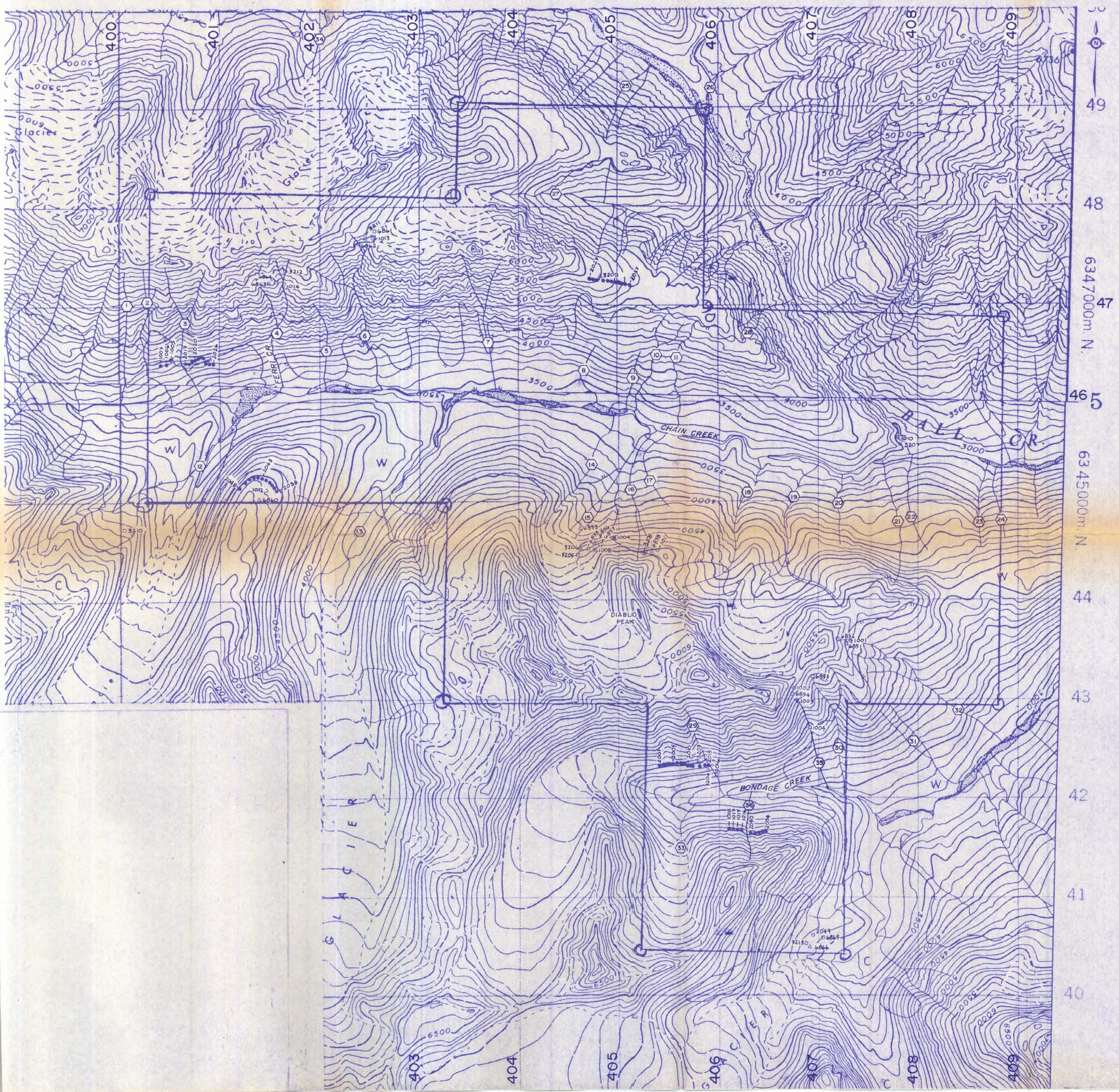
0 500 1000 meters

TOTAL ENERGOLD CORPORATION

CHAIN CREEK, B.C.

GEOLOGY

N.T.S.: 104G7&G2	TECH: P. JAMET, R. ZURAN	DATE: OCTOBER 1991
SCALE: 1:20,000	DRAUGHTING: S.SMEETON	FIGURE: 4



GEOLOGICAL BRANCH
ASSESSMENT REPORT

22,045

LEGEND

x	Observation point (on outcrop)
o	Sediment sample
•	Soil or talus sample
△	Rock float sample
□	Rock sample composite on outcrop
(16)	Drainage ID Number

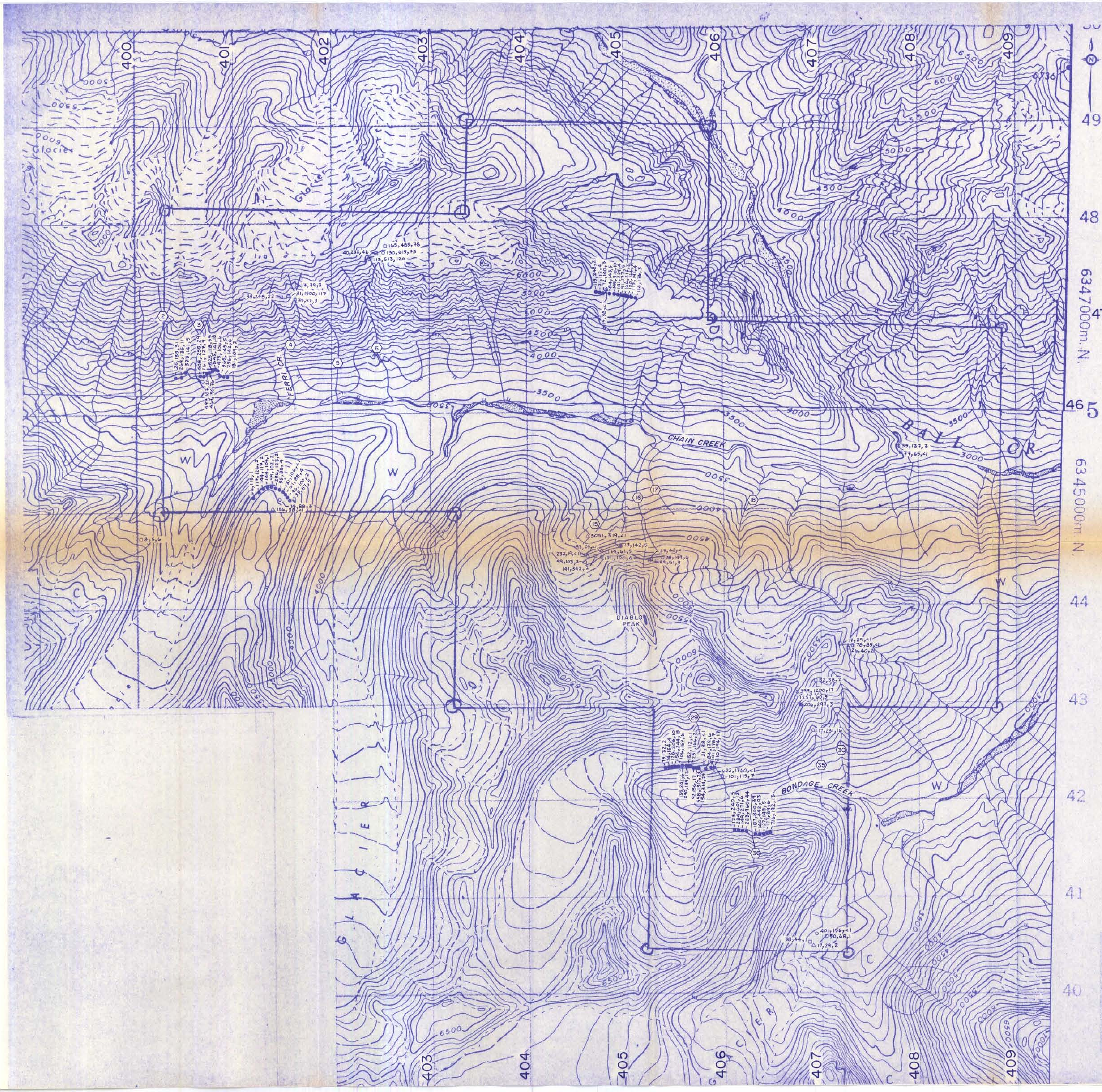
TOTAL ENERGOLD CORPORATION

CHAIN CREEK, B.C.

GEOCHEMISTRY

SAMPLE NUMBERS

N.T.S.: 104G7&G2	TECH: P. JAMET, R. ZURAN	DATE: OCTOBER 1991
SCALE: 1:20,000	DRAUGHTING: S.SMEETON	FIGURE: 5



GEOLOGICAL BRANCH
ASSESSMENT REPORT

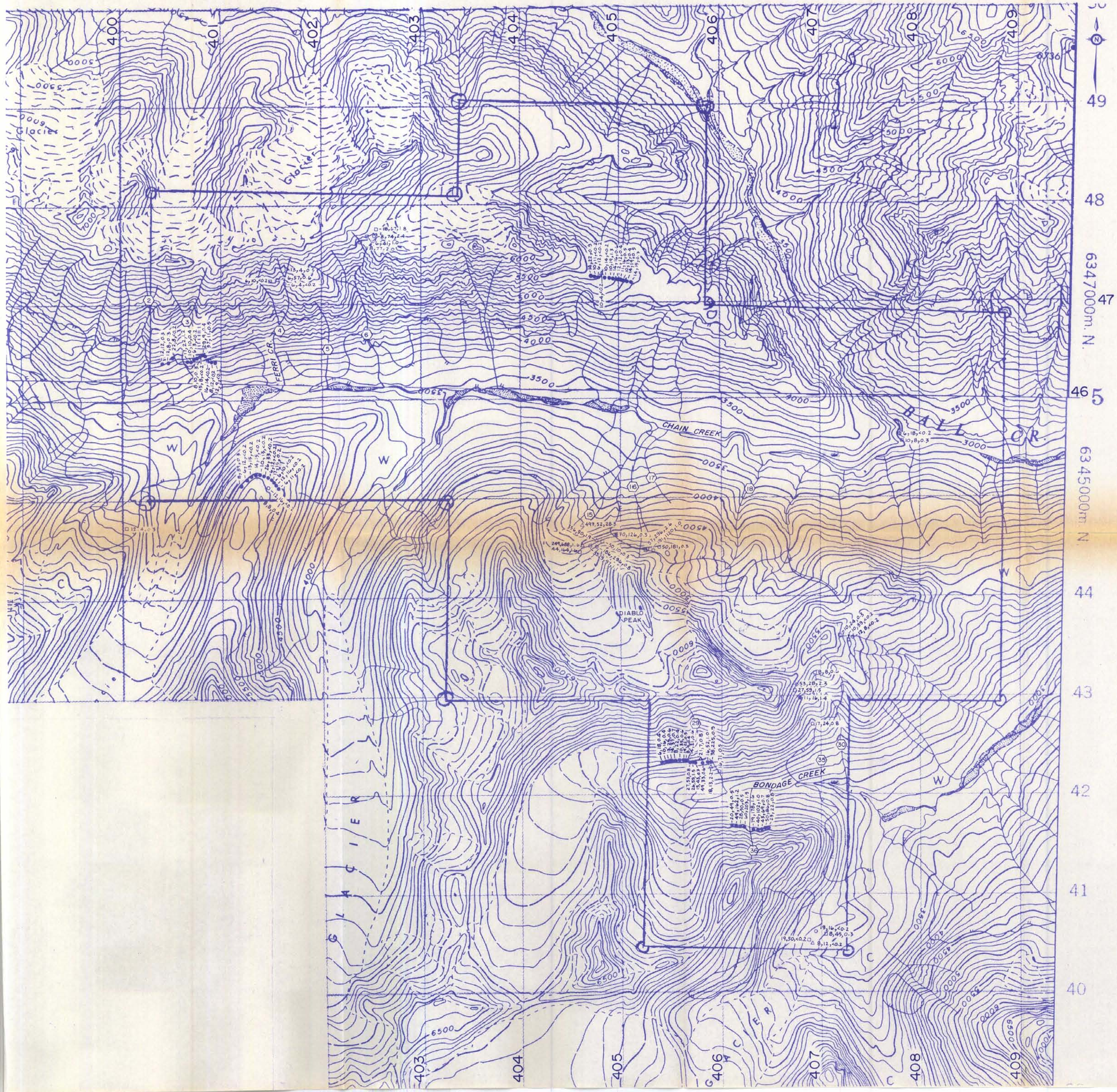
22,045

LEGEND

x	Observation point (on outcrop)
o	Sediment sample
•	Soil or talus sample
△	Rock float sample
□	Rock sample composite on outcrop
(16)	Drainage ID Number

0 500 1000 meters

TOTAL ENERGOLD CORPORATION		
CHAIN CREEK, B.C.		
GEOCHEMISTRY Cu, Zn, Mo (ppm)		
N.T.S.: 104G7&G2	TECH: P. JAMET, R. ZURAN	DATE: OCTOBER 1991
SCALE: 1:20,000	DRAUGHTING: S.SMEETON	FIGURE: 6



GEOLOGICAL BRANCH
ASSESSMENT REPORT

22,045

LEGEND

x	Observation point (on outcrop)
o	Sediment sample
•	Soil or talus sample
△	Rock float sample
□	Rock sample composite on outcrop
(16)	Drainage ID Number

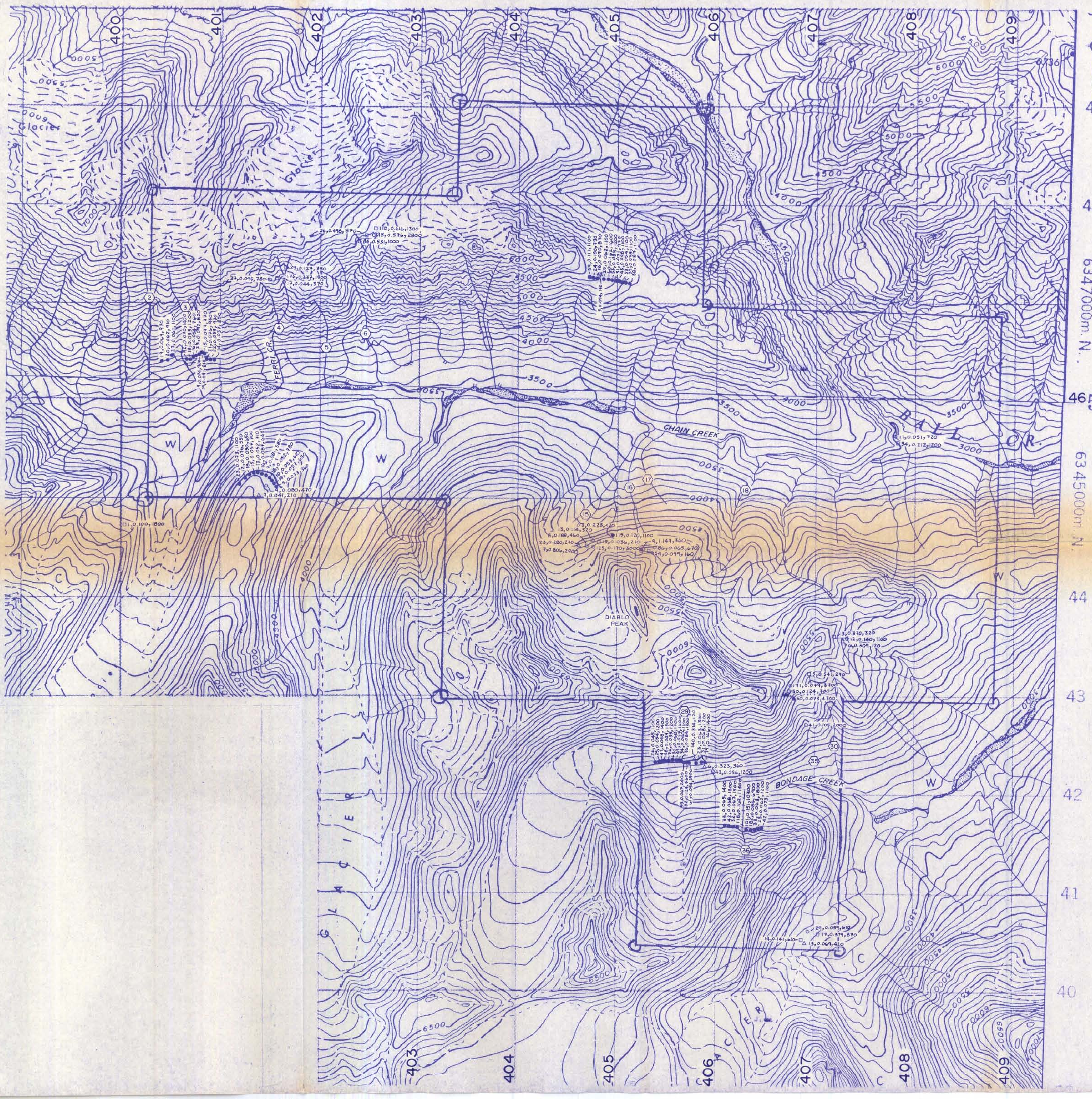
0 500 1000 meters

TOTAL ENERGOLD CORPORATION

CHAIN CREEK, B.C.

GEOCHEMISTRY
Au, As, Ag
(ppb, ppm, ppm)

N.T.S.: 104G7&G2	TECH: P. JAMET R. ZURAN	DATE: OCTOBER 1991
SCALE: 1 :20,000	DRAUGHTING: S.SMEETON	FIGURE: 7



GEOLOGICAL BRANCH
ASSESSMENT REPORT

22,045

LEGEND

x	Observation point (on outcrop)
o	Sediment sample
•	Soil or talus sample
Δ	Rock float sample
□	Rock sample composite on outcrop
(16)	Drainage ID Number

0 500 1000 meters

TOTAL ENERGOLD CORPORATION

CHAIN CREEK, B.C.

GEOCHEMISTRY
Ni, Hg, Ba
(ppm)

N.T.S.: 104G7&G2	TECH: P. JAMET, R. ZURAN	DATE: OCTOBER 1991
SCALE: 1:20,000	DRAUGHTING: S.SMEETON	FIGURE: 8