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GEOCHEMICAL, GEOPHYSICAL and GEOLOGICAL
ASSESSMENT REPORT

ON

THE PICK CLAIMS 1 - 2 and 5 Fraction

and

THE CLIFF CLAIMS 1, 78 and 79 Fraction

FILMED

NANAIMO MINING DIVISION

BRITISH COLUMBIA

N.T.S. - 92111W and 12E

Latitude 50 37'

Longitude 127 25'

OWNER AND OPERATOR

John M. Mc Andrew, Prospector - Consulting Geologist

8961 Ursus Crescent, Surrey

British Columbia, V3V 6L3

BY

JOHN M. Mc ANDREW, P. ENGR.

Field Examination Period:

September 16 - October 13, 1988

Submitted: January 11, 1989

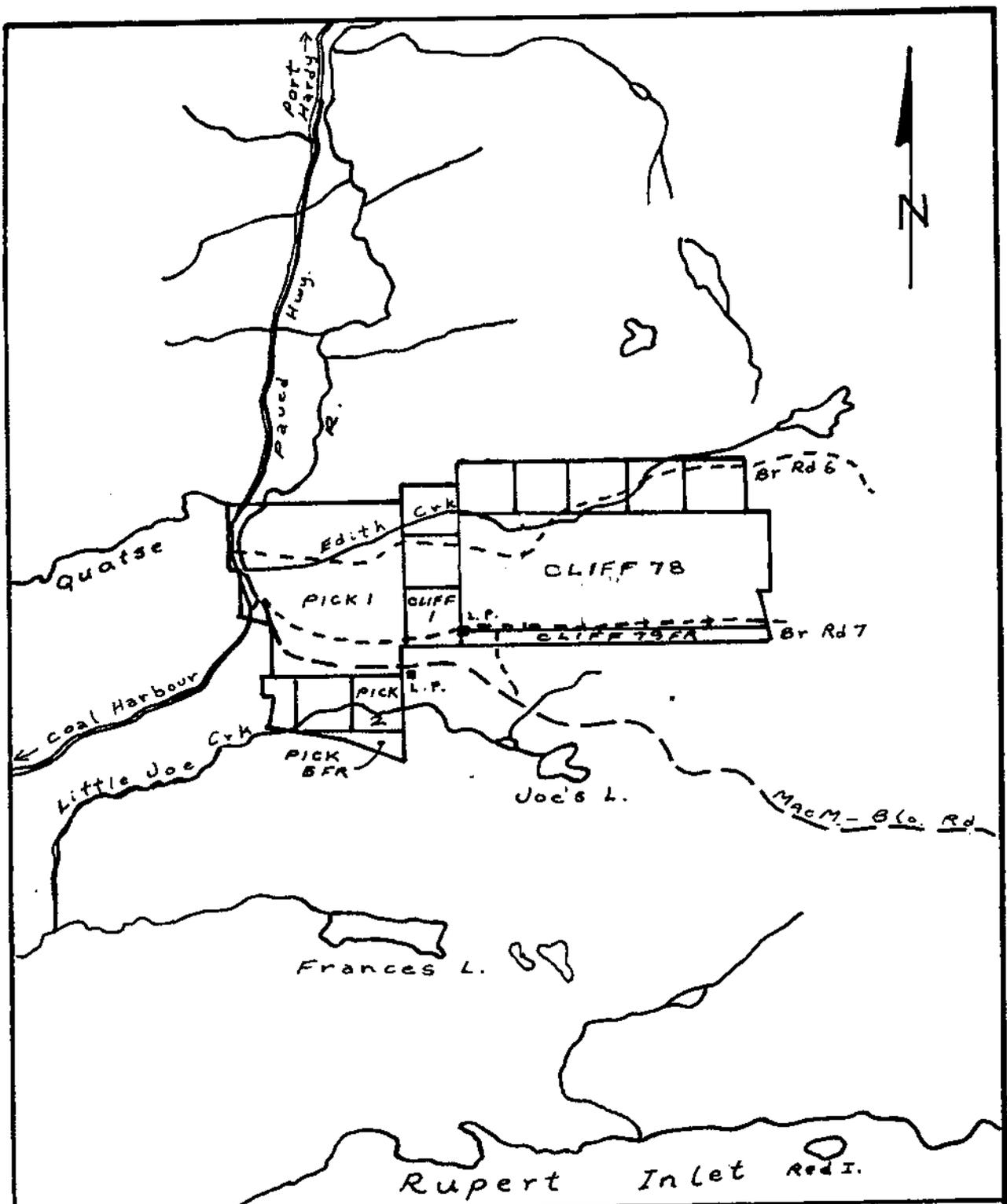
**GEOLOGICAL BRANCH
ASSESSMENT REPORT**

18,238

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PICK AND CLIFF MINERAL CLAIMS NANAIMO, M.D. NTS 92L/11W + 12E		
SCALE: 1:50,000 DATE: 1,12,1988	<i>J. Mc Andrew</i>	DRAWN BY J. MC ANDREW
<h1 style="margin: 0;">INDEX MAP</h1>		DRAWING NUMBER <div style="font-size: 2em; text-align: center; margin-top: 5px;">1</div>

INTRODUCTION

During the period September 16 to October 13, 1988 geochemical, geophysical and geological surveys were conducted on claims Pick 1, 2 and 5Fraction and Cliff 1, 78 and 79Fraction.

The surveys had three objectives 1) To complete geosurveys on the Pick claims 2) To determine what was causing the numerous unexplained geochemical and magnetic anomalies, previously defined and 3) To seek any evidence of an intrusive porphyry which might be related to the 10 mineralized zones located to date.

The Cliff Property is 3.5 kilometers due north of Rupert Inlet, Vancouver Island. The claims lie at elevations ranging from 60 to 320 meters above sea level.

The Port Hardy - Coal Harbour Highway goes through the west side of the property. Gravel logging roads Branch Road 6, Branch Road 7 and MacMillan - Bloedel provide access to the north and south parts of the claims.

The property consists of the following claims.

<u>CLAIM</u>	<u>RECORD #</u>	<u>UNITS</u>	<u>RECORDED</u>
Cliff 78	301	10	September 21, 1978
Cliff 79Fr.	513	1	December 19, 1979
Cliff 1-8	736-743	8	December 15, 1980
Pick 1-4	744-747	12	January 9, 1981
Pick 5Fr.	748	<u>1</u>	January 9, 1981

32 Units

The owner, John M, Mc Andrew, of 8961 Ursus Crescent, Surrey, British Columbia, was also the operator

Selective open pit mining of copper-silver-zinc ore, at the Rainbow and Cranberry Showings, could have started years ago if a

INTRODUCTION (contd)

custom mill had been available nearby. The Swamp Showing indicates good potential for the development of a small tonnage, high grade copper-zinc-lead deposit with silver and gold values.

Summary of Work

98 soil and silt samples were brought in for geochemical analysis, of which, 96 were geochemically analysed for copper and zinc; 2 for silver, arsenic and lead and 1 for gold and 1 for molybdenum. Nine rock chips were assayed for gold.

The total meters of line surveyed with the proton magnetometer was 5,178.

Geological mapping was done at a scale of 1:2500 and covered an area of approximately 9 claim units. Available topography was added to the geological maps and 3 cross-sections prepared across the geological trend of the property.

4 kilometers of control lines were established on the Pick claims by brunton and chain.

Schedule of Surveys

The field work for the surveys was done by John M. Mc Andrew, P. Engr. assisted by John Struzewski, miner and driller.

Schedule of Surveys (contd)

Sept. 15* Drove to Property

	<u>CLAIMS</u>	<u>TYPE OF SURVEY</u>
Sept. 16	Pick 2, 5Fr	Geochemical sampling
17	" "	" "
18	" 1, 2	" "
19	" 1	" "
20	" 2, 5Fr	Magnetometer
21	" 1, 2	" (McA.), Trench P134 (S)
22	Cliff 78	Examined vandalized core
23	Pick 1	Geochemical sampling
24	"	Magnetometer(McA.), Trench P147 (S)
25	Cliff 78	Geological mapping, Test Pit 88-1
26	"	Geol. map., TP 88-2
27	"	" " , TPs 88-3 to 88-6
28	Pick 1	Geological mapping
29	"	" "
30	Cliff 78	Geol. map., TPs 88-7, CF 71, CF 79 & CF 101
Oct. 1	Cliff 78	" " " 88-8, CF 323, CF 326 & CF 343
2	"	" " " CF 539, CF 541, & CF 542
3	" , Pick 1	" " " CF 185, CF 187, CF 220, CF 224, CF 225 & CF 271
4	" , 79Fr, Pick 1	" " " 88-9 to 88-11 CF 247, CF 248 & CF 251
5	Pick 1, 2	" " , TP P 45, Trench P 124 (Stuzewski)
6	Cliff 78	" " , TPs CF 146, CF 147 & CF 149
7	" 79Fr	" " , TP 88-12
8	Cliff 78	" " , TPs CF 62 & CF 65
9	"	Geological mapping
10	"	Geol. map., TP CF 161
11	"	Geological mapping
12	"	Geol. map., TPs CF 513, CF 514 & CF 517
13	"	Geological mapping and Geochemical sampling

Oct. 14* Drove to Surrey.

NOTE: * Days not applicable to assessment.

GEOLOGY

General

The Property lies within a series of Upper Triassic to Lower Jurassic eugeosynclinal rocks consisting of the Karmutsen and Quatsino Formations and the Bonanza Subgroup of the Vancouver Group. These rocks have been intruded by late Jurassic to Tertiary (?) predominately hornblende granodiorite and quartz diorite plutons and dykes of andesite, basalt and hornblende porphyry.

Rocks of the Karmutsen Formation consist largely of massive basalt, andesite flows and minor tuff.

Conformably overlying the Karmutsen is approximately 150 meters of Quatsino limestone which is intruded by a large stock of hornblende granodiorite in the west portion of the Property. The limestone exhibits skarnification, recrystallization to marble or silicification along intrusive and Karmutsen contacts. Chalcopyrite, bornite, sphalerite, galena and magnetite mineralization, carrying silver and gold values, commonly occurs in the skarn zones.

The Bonanza Subgroup can be subdivided into a sedimentary unit and an upper volcanic unit. The sedimentary section, also referred to as the Parsons Bay unit, consists of thin bedded black argillaceous and carbonaceous limestones, calcareous shales, siltstones and greywackes. Basaltic and andesitic breccias and flows, tuffs and tuff breccias comprise the bulk of the upper part of the Bonanza Subgroup.

Structurally this is a region of block faulting with northwesterly and northeasterly trends being the most prominent.

Property Geology

Three profiles were prepared across the Property approximately at right angles to the trend of the major zones of mineralization. Unknown dips of inferred faults were shown as vertical.

A number of test pits were successful in uncovering bedrock in areas of anomalous and geologic interest.

Vandalized core piled north of the Cranberry Showings was examined in the hope that further insights would be gained regarding the geology of the property.

Sedimentary Rock

Limestone - Quatsino limestone outcrops extensively on the Cliff claims and sparsely on the Pick claims. It is medium to dark grey, slightly argillaceous, very fine to medium grained, locally irregular nodules stand in relief on weathered surfaces.

Volcanic Rocks

Andesite - The Bonanza andesite, on the Pick claims, is medium to dark green, massive, competent and differs from the Karmutsen andesite in being non magnetic.

The Karmutsen andesite is medium to dark green to grey, locally amygdaloidal and weakly to strongly magnetic. Amygdules contain quartz, calcite, epidote, chlorite and occasionally minute disseminations of chalcopyrite and bornite. White feldspar phenocrysts occur locally as well as minor disseminated bornite and chalcopyrite.

Basalt - The Karmutsen basalt shares many of the andesite characteristics and it is often difficult to differentiate one

Basalt (contd)

from the other in the field. The basalt is usually aphanitic to fine grained and dark green to black and these characteristics were used in mapping. The basalts are largely flows but intrusive dykes do occur.

The porphyritic basalts are the least common of the volcanics but very distinctive because of the white, anhedral to euhedral feldspar crystals in a black aphanitic matrix. A large outcrop of this porphyry occurs 280 meters north of Branch Road 7 on line 20W. Both flow and intrusive varieties occur.

Metamorphic Rock

Marble - The marble may be locally highly fractured, sugary-textured to coarsely crystallized and in part of high purity. In mineralized areas the limestone has been metamorphosed, in part, to white, cream and grey marble. This marbleization serves as an excellent guide in seeking mineralization.

Intrusive Rocks

Andesite Dykes - Light to dark green, aphanitic to fine grained, competent andesite dykes intrude the volcanics and limestone throughout the Property. On the Cliff claims they appear to be genetically related to the skarn zones.

Hornblende Porphyry Dykes - Occur in Hole 6 of the vandalized core and may occur in Test Pit CF 343. They are similar to the porphyritic basalt flows and also have numerous anhedral to euhedral hornblende crystals, up to 1.5 centimeters in diameter, in a black aphanitic matrix. Their relationship to the skarn mineralization has not been determined.

Intrusive Rocks (contd)

Quartz Diorite - Fine to medium grained, equigranular quartz diorite was exposed in Test Pit 88-2. It is highly fractured, weathered surfaces are pale green, due to the presence of chlorite and epidote and contains iron oxide and manganese stain. The texture also indicates a hypabyssal origin.

Hornblende Granodiorite - The hornblende granodiorite is leucocratic, medium to coarse grained, moderately magnetic and fresh looking, away from contacts with intruded rocks.

Structure

Major faults on the Cliff claims strike east-west and northeasterly. If the limestone at the Cranberry and Drillsite Showings is the same unit, the maximum displacement along one of these faults is 120 meters. Some of the faults may have served as channelways for mineralizing solutions. Vertical displacements observed to date do not exceed 11 meters.

Alteration

The Karmutsen volcanics are commonly altered to epidote, chlorite, sericite and calcite. Epidote characteristically stands in relief as nodules on weathered surfaces and occurs in veins with quartz and calcite.

Contact with intrusives has caused silicification, pyritization and, or skarn consisting of epidote, yellow, brown and red garnet, amphiboles (tremolite, actinolite, hornblende), pyroxene, diopside, ilvaite and hedenbergite within the volcanics and sediments.

Vandalized Core

On the road 100 meters north of Cranberry A Showing there are 2 large piles of vandalized core thought to be the remnants of Yellowknife Bear's, 10 hole 1970 drilling program, for which, no report is available. Many of the boxes are rotten and the core spilled, some footage blocks are still readable but hole numbers and footage intervals were weathered off most of the boxes. The core was examined to see if any quartz feldspar porphyry had been intersected. No porphyry was seen and the various rock types examined were the same as those mapped on the Cliff Property.

Mineralization

A hornblende granodiorite dyke, less than 10 centimeters thick, occurs at the intersection of 2 fractures in an outcrop of porphyritic basalt, 30 meters southeast of the Swamp Showing. It is probably an offshoot of the stock to the west. Grab sample CF159, of the partly skarnified dyke carrying abundant seams and disseminations of chalcopyrite, assayed 10,600 ppm copper, 460 ppm zinc, 53 ppm silver and 0.02 grams/tonne gold.

Marbleized and skarnified limestone and magnetite float uncovered in Test Pits 88-4, 88-5, 88-6 and CF101, accompanied by highly anomalous magnetic readings and soil samples, suggest concealed copper-zinc-magnetite mineralized zones in the immediate vicinity of these pits.

Quartz veins, less than 20 centimeters thick, at Test Pit 88-8 and the Quarry on Branch Road 7 strike northeasterly and dip

Mineralization (contd)

vertically to 50 degrees northwesterly. They contain appreciable chalcopyrite, bornite, chalcocite and malachite and assayed 0.02 gram/tonne and 0.1 gram/tonne gold respectively.

Trenching

Trenches Pl24, Pl34 and Pl47 were dug to determine what was causing the zinc and copper anomalies in these areas and attempt to expose an inferred limestone - hornblende granodiorite contact, in the hope that auriferous, polymetallic skarn mineralization, similar to that at the Swamp Showing, would occur at said contact.

Trench Pl24 (Pick 2) - 2mdxlmwx2mN-S - This trench at a depth of 1 meter entered an old stream bed of fine to coarse sand, pebbles and boulders. A sample of the sand, just below the overlying anomalous, organic AH horizon, ran 610 ppm zinc but at a depth of 2 meters similar material had dropped to 129 ppm zinc. This anomaly may be due to the mineralized fill, containing chalcopyrite and bornite, 90 meters to the northeast in Road 9.

Trench Pl34 (Pick 1) - 2mdxlmwx3mN-S - Although the original BF soil horizon ran 1,250 ppm zinc, at a depth of 2 meters in this trench the soil still assayed 427 ppm zinc and could be reflecting bedrock conditions. Subangular andesite float up to 0.3 meters in diameter also occurs in the trench. The andesite contains abundant seams and disseminations of pyrite.

Trench Pl47 (Pick 1) - 2mdxlmwx3mN-S - The original BF soil horizon sample ran 65ppm copper and 320ppm zinc; at a depth of 2 meters in this trench the soil still assays 124ppm copper and 248ppm zinc. Many pieces of subangular, totally silicified and pyritized rock,

Trench Pl47 (contd)

up to 1 meter in diameter, occur in the trench. Grab sample Pl47A, from this rock, assayed 159ppm copper, 26ppm zinc and 0.03 gram/tonne gold. This float could be responsible for the copper anomaly. Trench Pl47 is only 20 meters west of an inferred Bonanza volcanic contact and the rock, in the trench, is probably altered andesite from the contact area.

Sampling

Five rock chip samples were collected from known showings and assayed for gold to check previous sampling. Sample DS 3 across a 0.30 thickness of Zone A of the Drillsite Showing assayed 0.01 gram/tonne (1981 - 0.003 ounce/ton). DS 1&2 grabs from Zone B of the Drillsite Showing assayed 0.03 gram/tonne and 0.01 gram/tonne respectively (1981 -> 0.003 o./t.). S 2&1 grabs from Zones B and D of the Skidroad Showing assayed 0.01 gram/tonne and 0.12 gram/tonne respectively. These samples consisted of massive pyrite and magnetite.

Grab sample S 3 from Zone D of the Skidroad Showing was collected from a black calcite containing pyrobitumen and assayed 3.6ppm silver.

GEOCHEMICAL SURVEY

Soil and silt sampling was completed on the Pick claims and check samples were collected at a few sites where previous operators had collected anomalous samples.

Not all samples were brought in for analysis but all were field tested using a Bloom kit. Min-En Laboratories, of North Vancouver, did the geochemical analysis and assaying; their

GEOCHEMICAL SURVEY (contd)

analytical reports are attached to the back of this report along with their analytical methods and Bloom kit test.

An attempt was made to sample the top of the BF horizon but in swampy areas it was often necessary to take the black, organic AH horizon. At some sites of thick logging debris or organic material no sample could be obtained.

Stream sediments were collected from the finest silt.

The BF horizon, which ranges from 15 to 45 centimeters thick, occurs at a depth of from 10 centimeters to 1 meter. It has a characteristic pale yellow to orange brown to maroon colour due to the presence of earthy limonite and hematite; locally it can contain a high percentage of clay and usually has an earthy - sandy texture.

Overburden on hills and ridges is probably less than 2 meters thick and soil samples in these areas should reflect bedrock mineralization. In valleys and swamps overburden thicknesses could exceed the upward migration limit for metal ions in this area i.e. 7 meters approximately.

Geochemical Results on the Pick 1, 2 and 5Fr Claims

Statistical analysis of geochemical results has established anomalous values for the following elements on the Pick and Cliff claims.

Copper	-	greater than	100	parts per million		
Zinc	+	"	"	100	"	"
Mercury	-	"	"	300	"	billion
Lead	-	"	"	10	"	million
Silver	-	"	"	0.4	"	"
Arsenic	-	"	"	20	"	"
Bismuth	-	"	"	0.2	"	"

Based on this some highly anomalous samples were collected

Geochemical Results (contd)

during the 1988 Survey.

P191 - 19 ppm Cu, 1050 ppm Zn - an organic AH sample from the swamp in the southeast corner of Pick 5Fr.

P193 - 83 ppm Cu, 560 ppm Zn - due northwest of Bonanza andesite which bounds the above swamp to the north.

P239 - 68 ppm Cu, 550 ppm Zn - northeast corner of Pick 2.

P182, P188, P190, P195, P214 and P218 in the southeast portion of Pick 1 and in Pick 2 and 5Fr ranged from 114 to 142 ppm Zn. P226 due east of Road 9 ran 104 ppm Cu.

In the large swamp, between Branch Roads 6 and 7 in Pick 1, samples P255 to P261 all contained more than 100 parts per million copper. Locally in this swamp, the thickness of organic matter exceeds 2.5 meters and samples could not be collected.

MAGNETOMETER SURVEY

The magnetometer survey was completed on the Pick claims in 1988. The instrument was also used as a prospecting tool to locate the highest readings within magnetic anomalies, previously defined, prior to test pitting.

A GEM Systems GSM 8 proton magnetometer, serial no. 1593, was rented from White Geophysical Inc. of Richmond, British Columbia. Professional engineer John M. Mc Andrew conducted the survey.

A base station was established at 29400W on MacMillan-Bloedel's Road. Survey loops were planned so returns to the base station were accomplished in periods of less than 2 hours. During

MAGNETOMETER SURVEY (contd)

the survey magnetic conditions were very stable and diurnal variations minor. Corrections were treated linearly in respect to elapsed time.

Readings were taken along roads and control lines every 25 meters, but in areas of particular interest at 12.5 meter intervals. Survey details are tabulated below.

<u>Date</u>	<u>Claims</u>	<u>Line</u>	<u>From</u>	<u>To</u>	<u>Distance (in meters)</u>
Sept. 20	Pick 2,5FR	27+10W	11+00S	6+65S	435
	" 2	7+00S	27+10W	27+80W	70
	" " "	27+80W	6+62S	10+00S	338
Sept. 21	Pick 2,5FR	28+50W	9+25S	6+65S	260
	" " "	S. side L.J. Crk.	28+50W	29+50W	100
	" " "	29+50W	6+25S	8+50S	225
	Pick 1,2	Mac-Blo. Road	28+50W	27+10W	140
	" " "	27+10W	3+25S	6+25S	300
	" " "	6+00S	27+10W	27+80W	70
	" " "	27+80W	6+25S	3+25S	300
	" " "	28+50W	3+25S	6+25S	300
	" " "	6+25S	28+50W	29+00W	50
Sept. 24	Pick 1	Branch Road 7	36+00W	34+00W	200
	" "	34+00W	0+00N	5+40N	540
	" "	Branch Road 6	33+50W	39+75W	625
	" "	Mac-Blo. Road	0+00S	6+50S	650
	" "	36+00W	0+00N	5+75N	575
					<u>5,178 meters</u>

Magnetometer Results

The corrected readings, ranging from 56,055 to 58,269 were plotted on Map 2 and contoured at 500 gamma intervals.

The anomaly exceeding 58,000 gammas due south of Little Joe Creek, partially defined in 1987, has now been completely outlined.

No reason was found to change the inferred contacts established in 1987 for the Pick claims, i.e. less than 56,500 gammas - area underlain by Bonanza andesite, 56,500 to 57,000

Magnetometer Results (contd)

gammas area of Quatsino limestone and greater than 57,000 gammas a concealed intrusive.

The Survey confirmed the greater than 57,000 gamma anomaly defined by the 1981 aerial survey, at the junction of Branch Road 6 and MacMillan - Bloedel's Road, but the anomaly's eastern bulge is considerably less, as defined on the ground, 130 meters less to the east and approximately 50 meters less to the north.

EVALUATION of PREVIOUSLY UNEXPLAINED ANOMALIES
on the PICK and CLIFF CLAIMS

Figure 1, in the Appendix, outlines all the geochemical, magnetic and electromagnetic anomalies on the Cliff claims and the southeast portion of Pick 1.

In spite of all the work prior to 1988, there were still more than 20 unexplained anomalies. A program of geosurveys and shallow test pitting was undertaken in an attempt to determine the reason for these anomalies. During these surveys it was noted that some previous operators had not described the nature of the ground, for example, some geochemical anomalies coincided with unmapped swamps, down slope from known showings, where one would expect an accumulation of mineralization. Another problem was certain rock types, such as, basalt, quartz diorite and hornblende granodiorite contain appreciable magnetite so magnetic highs did not always indicate the presence of magnetite rich skarn zones.

All test pits have been plotted on Figure 1 and the Geology Maps, in the back pocket of this report, the findings in said pits are described in the following tabulation.

Test Pit Number	Claim	Location	Dim. (m)	To Test	Findings
88-1	Cliff78	L14W200mS of Rainbow5SH.	1dx1xl	Mag. Anom. >58,000~	Mod-str. magnet. basalt cont. abund. diss. & seams of pyrite
88-2	" "	L10+70W 80m N of Br Rd7	.5x1xl	For E. ext	Highly fract. qtz-dior. abund. Mn of ls to W & FeOx stain suggests str. to S may be surface expression of major fault
88-3	" "	L19W 135m N of Br Rd7	.5x1xl	High Cu-Zn Anomaly	Abund. basalt float, wk-mod magn. diss. & seams of py, odd qtz str. Source of highs?
88-4 *	" "	L19W 210m N of Br Rd7	1dx1xl	Mag. Anom. >58,000~	Float of marble, andes.(dike?) & magn. Probably magnetite deposit nearby.
88-5 *	" "	L18W 260m N of Br Rd7	1dx1xl	Mag. read. 57,666~ Zn Anom. >100ppm	Float of gry & wh marble & pyritic skarn. Trenching would expose mineralized skarn zone.
88-6 *	" "	L18W 265m N of Br Rd7	.5dx1xl	Mag.flt. Zn Anom. >100ppm	Angular oxidized magnetite float up to .2m in diam. Probably assoc. with above zone, trenching meritted.
88-7	" "	L16W 295m N of Br Rd7	1dx1xl	Coincid. As, Ag, Pb Anom.	Med. grn & grained andes. flt with diss. py & epid. BF-73ppmCu, 46ppmZn 0.9ppmAg, 20ppmAs. Prev. sampling confirmed. Anomalies unexplained.
88-8	" "	L5W 50m N of Br Rd7	.3dx.5x5	Soil sam. >500ppm Cu & Zn	2 qtz veins up to 20cm w. diss. cp & mal., weak calc. stockwork; in mass., comp. drk grn andesite. Illust. effectiveness of geochem.
88-9	Cliff 1	L24+70W 25m S of Br Rd7	.5dx.3x.3	Soil sam. 100ppm Cu old repor.	1988 BF 39ppm Cu, 43ppm Zn. Unsubstantiated.
88-10	Cliff79FR	L22W 90m S of ER7	.5dx.3x.3	Soil sam. 90ppm Cu	1988 BF 81ppm Cu, 32ppm Zn. Confirmed.(from old assess. report)
88-11	" "	L21W 70m S of ER7	.5dx.3x.3	Rock type	Med. grn andesite, outcrop? BF 13ppm Cu, 11ppm Zn.
88-12	" "	L4+30W 50m S of Br Rd7	1dx.5xl	Soil sam. 500ppm Cu & Zn	1988, BF 53ppm Cu, 56ppm Zn, dark grn, mass., weakly magnetic andesite float. Unsubstantiated.
Silt 1+37.5N	Cliff78	L18+45W 105m N of ER7	At depth of 1meter	For miner. along ls- andesite contact	Fine silt 96ppm Cu & 174ppm Zn. Possible but source may be area of test pits 88-4, 88-5 & 88-6.
Silt 1+25N	" "	12.5m S of above	At depth of 1.5m	"	Silt & rock fragments, 42ppm Cu & 91ppm Zn. This close to contact, if mineralized, would expect higher results.
CF 62	" "	L14W 170 N of ER7	.5dx.5x.5	Strongest EM Anom.	Massive, grey limestone float.
CF 65	" "	L14W 120m N of ER7	.5dx.5x.5	Ditto + Mag. high	Mod.-strongly magnetic basalt carrying minor dissem. pyrite.

Test Pit Number	Claim	Location	Dim. (m)	To Test	Findings
CF 71	Cliff78	L16W 95m W of Br Rd7	1dx1xl	Coincident	Only exposed andesite Cu, Zn, Ag float. & Pb Anom.
CF 79	" "	L16W 250m N of Br Rd7	1dx1xl	Coincident	Mod. magnetic basalt float. As, Ag & Anomalies unexplained. Pb Anomal.
CF 101 *	" "	L17W 115m N of Br Rd7	Outcrop	Soil samp.	Adjacent to blk banded marble, >10,000ppb soil due S > 100ppm Cu & Zn. mercury Could be concealed mineraliz. nearby.
CF 146	" "	L20W 185m S of Br Rd6	.3dx.3x.3	Cu-Zn Ano. >200ppm	Probably due to swamp accumul. Mass., comp., angular, wk-mag. drk grn andes. float, local diss. & seams of pyrite.
CF 147 *	" "	L20W 155m S of Br Rd6	.3dx.3x.3	Mag. Anom. >58,000	Same type of float as above. May be covered extension of Rainbow Showings skarn.
CF 149	" "	L20W 85m S of Br Rd6	.3dx.3x.3	Area of weak Cu	Same type of float as above. Could be due to contamination Anomalies from Rainbow trenching.
CF 161	" "	L22W 180m N of Br Rd7	Outcrop	Coincident	Highly shattered andes. abund. Cu, Zn, Ag FeOx, chl., diss. & seams of & Hg Anom. py, mod. magn. Close to Swamp Showing.
CF 185	Cliff1	L24W 30m N of Br Rd7	.3dx.3x.3	Coincident	Only well rounded andesite & Pb & Ag hornblende-granodiorite Anomalies float.
CF 187	"	L24W 60m N of Br Rd7	.3dx.3x.3	Ditto above	Hbl-granodiorite, med. grained, mod. mag., fresh. These anom. probably glacially trans.
CF 220	"	L26W 90m N of Br Rd7	.3dx.3x.3	Coincident	Mod. mag. hbl.-granod. Trend Cu, Zn, Pb of ridges suggests these Ag, As & anomalies transported from Hg Anomal. Swamp Showing.
CF 224	"	L26W 200m N of Br Rd7	.3dx.3x.3	Ditto above	Ditto above.
CF 225	"	L26W 240m N of Br Rd7	.3dx.3x.3	Coincident	Ditto above. Pb, Ag & Hg Anomal.
CF 247	Pick1	L28W 120m N of Br Rd7	1dx.3x.3	Coincident	Drk grn andesite float, local Cu, Pb & diss. py. Anomalies probably Ag Anomal. transp. from Swamp Showing.
CF 248	"	L28W 155m N of Br Rd7	1dx.3x.3	Soil samp.	Hbl.-granodiorite float. >100ppm Cu Anomaly probably transported.
CF 251	"	L28W 240m N of Br Rd7	.3dx.3x.3	Pb Anomal.	Ditto above.
CF 271	"	L30W 90m N of Br Rd7	1dx1xl	Soil samp. 1988, BF	32ppm copper. >100ppm Cu Unsubstantiated.

Test Pit Number	Claim	Location	Dim. (m)	To Test	Findings
CF 323	Cliff78	L8W 125m N of Br Rd7	Outcrop	Soil samp. >100ppm Cu	Lt-med. grn, mod. mag. andesite, calc. & epid. amygdules (some carry odd speck of cp & bn).
CF 326	"	L8W 215m N of Br Rd7	1dx1x1	Coincident Cu, Zn & Mo(18ppm) Anomalies	1988, BF 46ppm Mo. Unexplained. Could this anomaly be due to logging contamination?
CF 343	"	L9W 60m N of Br Rd7	.5dx.5x.5	>200ppm Cu Soil samp.	Drk grn, mod. mag. basalt , hbl. phenocrysts. Unexplained.
CF 513 *	"	L11W 265m N of Br Rd7	.5dx.3x.3	Soil samp. >500ppm Cu	Drk grn, mod. mag. andes. float carrying diss. & seams of py. May be transp. anomaly from Cranberry Showings but what is mag. high due SW indicating?
CF 514	"	L11W 295m N of Br Rd7	.3dx.3x.3	Cu-Zn Anom. >200ppm	Highly fractured, Mn stained andes. Transported anomaly?
CF 517	"	L11+25W 340m N of Br Road 7	.3dx.3x.3	Due W of soil >200 ppm Cu	Angular andesite float, probably close to bedrock. Major assumed fault due east.
CF 539	"	L12W 265m N of BL1230N	.3dx.3x.3	Cu Anomal. >100ppm(some sites >500ppm Cu)	Drk grn, mass., competent, mod. mag. andes. Area probably "salted " by runoff from Rainbow 4 Showings.
CF 541	"	L12W 300m N of BL1230N	.5dx.5x1	Soil samp. >500ppm Cu within above Anomaly	Drk grn, weakly mag. andes. float. 1988, BF 213ppm Cu. Same explanation as above.
CF 542	"	L12W 320m N of BL1230N	.5dx.5x1	Ditto above	Moderately magnetic andesite contains quartz & epidote amygdules. 1988, sandy silt 14ppm Cu. Silt in pit supports above explanations.
P 45	Pick 1	L36W 120m N of Mac-Blo Rd.	1dx.3x.3	Rock type	Area of P 47 (108ppm Cu). Didn't reach bedrock.

CONCLUSIONS

Based on Geology

There is strong evidence that additional zones of skarn mineralization exist on the Pick and Cliff claims, particularly in the immediate vicinity of Test Pits 88-4, 88-5, 88-6 and CF 101.

The areal extent of the limestone on the Cliff claims is much larger than previously mapped. Invariably, where the limestone is marbleized, skarn zones are found nearby.

The porphyritic, flow and dyke, black basalt's relationship to the skarn mineralization has not been determined.

The andesite dykes, on the Cliff claims appear to be genetically related to the skarn mineralization.

The quartz diorite, exposed in Test Pit 88-2, is of great interest since, at the Skidroad Showing, similar quartz diorite has skarn along it's contact with limestone.

Where the hornblende granodiorite has been observed at the Swamp Showing and drill holes, in contact with limestone, skarn occurs. If this skarnification exists all along the inferred, concealed contact which continues northeasterly and southwesterly into the Pick claims, from the Swamp Showing, the tonnage potential could be impressive.

Trenching on the Pick claims failed to reach bedrock and expose an assumed limestone - hornblende granodiorite contact. This was disappointing since another skarn zone, similar to the Swamp Showing, was being sought. At the bottom of Trench P 124, in a major stream bed, small fragments of totally silicified and pyritized rock suggests this stream, now dammed by logging roads,

Based on Geology (contd)

once drained an intrusive - Bonanza volcanic contact to the northeast. Trench P 134, in proximity to an inferred limestone - intrusive contact, may be reflecting bedrock conditions. Trench P 147 supports the belief that there is Bonanza andesite contact, to the immediate east, that has been altered by intrusive activity.

Based on Geochemistry

Geochemical surveys have been successful in locating skarn zones on the Property but in spite of the evaluation efforts of 1988 there are still unexplained anomalies. Some anomalous sites were resampled and in some cases results did not agree with earlier findings.

P 191 - 1050ppm zinc, southeast corner of Pick 5Fr, is probably due to swamp accumulation. It lies due south of an old trench in Bonanza andesite, rich in iron oxide and pyrite. A 1 meter thick lense of limestone, in the trench, may carry minor zinc mineralization.

P 193 - 560ppm zinc, an isolated high, due west of the aforementioned andesite, is not considered significant.

P 239 - 550ppm zinc, northeast corner of Pick 2, though isolated, may be significant due to it's proximity to an inferred intrusive contact.

The remaining samples, weakly anomalous in copper and zinc, in the southeast portion of the Pick claims, are isolated, erratically distributed and not considered significant.

P 255 to P 261 - all greater than 100ppm copper, in the large swamp between Branch Roads 6 and 7, in Pick 1,

P 255 to P 261 (contd)

may be due to " salting " of this portion of the swamp by the highly copper anomalous stream, flowing in from the west. This stream drains copper showings on Utah's ground, west of Pick 1.

Based on Magnetometer Survey

Magnetometer surveys were helpful but did not always indicate zones of skarn mineralization since many rock types are weakly to strongly magnetic and some skarn zones contain very little magnetite. The location of additional outcrops of Quatsino limestone and Bonanza andesite, during 1988, confirmed that inferred geological contacts based on magnetic contours was a valid interpretation for the Pick claims.

The magnetic anomaly, 50 meters wide by 180 meters long, partially defined in 1987 and due south of Little Joe Creek, exceeding 58,000 gammas may be due to a concealed contact metasomatic deposit containing magnetite.

The 56,500 magnetic contour, south of the MacMillan - Bloedel Road in the southeast corner of Pick 1, may define a concealed Quatsino limestone - Bonanza volcanic contact. The totally silicified and pyritized rock fragments in the stream bed, exposed in Trench P 124 suggest the volcanics have been subjected to intrusive activity.

Based on Test Pitting

Test Pits 88-4, 88-5 and 88-6 contained skarn and magnetite float and are probably very close to several concealed skarn zones. The very high copper and zinc (to 2650ppm) anomalies in the vicinity of Test Pit 88-3, no outcrop, are likely down slope indications of these zones.

Test Pit CF 101, in an area of copper, zinc and mercury (> 10,000ppb) anomalies and totally marbleized limestone, may be near the concealed northeastern extension of the West Showing.

Test Pit CF 147, to test a magnetic anomaly exceeding 58,000 gammas only contained weakly to moderately magnetic, pyritic andesite float but because of the strength of the anomaly the southwestern extension of the Rainbow Zone may exist at depth.

RECOMMENDATIONS

The findings of the 1988 program were encouraging and many questions regarding anomalies and geology answered. Some of the showings merit development work, others require more preliminary exploration. The following program is recommended.

- 1) The Rainbow, Cranberry and Swamp Showings are ready for development trenching and drilling, to determine true tonnages and grades. One hundred percent core recovery should be the goal through skarn zones and core logging must differentiate between intrusives and flows. The following diamond drill holes are proposed, to initiate the program. Holes 89-1 (bearing 345°, -45°) and 89-2 (345°, -45°) would test the continuity of the skarns between Hole L.J. 3 and the Rainbow 2 Showing. Hole 89-1 should be particularly interesting since it will

RECOMMENDATIONS (contd)

- 1) (contd) test the high grade zone of the Rainbow 2 Trench and the associated large, porphyritic basalt dyke at depth. Holes 89-3 (345°, -60°) and 89-4 (345°, -60°) will test the continuity of the skarns between Hole L.J. 1 and the Rainbow 3 Showing. The depths of Holes 89-1 and 89-2 will depend on findings. Holes 89-3 and 89-4 should be deep enough to penetrate the andesite footwall of the Rainbow 3 skarn. Refer to Figure 2, in the Appendix, and Profiles A-B and C-D, on Geology Map 3.

Closely spaced magnetometer surveys should define the northeastern and southwestern extensions of the magnetic Swamp Showing, prior to drilling.

No drill hole stepouts should exceed 20 to 30 meters.

- 2) The remaining showings require exploratory trenching and drilling to determine if they merit development. The following areas are of high priority.
- a) West Showing, check for northeastern extension and gold values at depth.
 - b) Skidroad Showing, test the extent and shape of the quartz diorite with regard to it's contact with the limestone.
 - c) Quartz diorite in Test Pit 88-2, ditto above.
 - d) Drillsite Showing, test for the intersections of zones A and B beneath the limestone ridge and their eastern and western extensions.
 - e) Branch Road 7 Showing, determine dip and thickness and how it is related to the South Showing skarns.

RECOMMENDATIONS (contd)

2) (contd) f) Expose skarns indicated by Test Pits 88-4, 88-5, 88-6 and CF 101.

g) Another attempt should be made to uncover the Quatsino limestone - intrusive contact on the Pick claims. Dig a series of trenches N45W from the tuff outcrop, at the east end of Road 3 and another series west from the limestone outcrop, west of Road 9, towards the magnetic high on Line 30+50W then due north towards the inferred contact. If the the contact actually lies under swampy ground or MacMillan - Bloedel's Road drilling will be necessary.

3) Geosurveys are warranted to explain the following anomalies.

- a) The coincident As-Ag-Pb anomalies that form the north - south bulge on Line 16W, which Test Pits 88-7 and CF 79 failed to explain.
- b) Coincident EM, magnetic, copper and molybdenum (10ppm) anomalies centered 250 meters northeast of the Cranberry A Showing.
- c) The coincident Cu-Zn-Mo (46ppm) anomalies at Test Pit CF 326; more soil sampling around site.
- d) Magnetic high 50 meters southwest of Test Pit CF 513.
- e) Copper Anomaly 22, east of Line 7W, which widens at the west boundary of the southeast unit of the Cliff 78 claim. This unit has received no geosurveys.

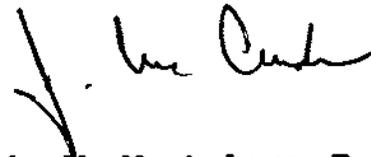
4) More geological mapping should be done in the following areas.

- a) Up the major stream due north of Test Pit CF 251,

RECOMMENDATIONS (contd)

- 4) a) (contd) starting at the large outcrop of hornblende granodiorite. Something of geological significance may have been exposed by this stream.
- b) Around Test Pit CF 343, where porphyritic basalt was uncovered. This porphyry resembles the dyke adjacent to the skarn in Rainbow 2 Trench, only the hornblende phenocrysts at CF 343 are larger and more abundant. Is this porphyry related to the Branch Road 7 skarn?

Respectively submitted by



John M. Mc Andrew, P. Engr.

Prospector - Consulting Geologist

8961 Ursus Crescent

Surrey, B.C.

January 11, 1989

BIBLIOGRAPHY

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CERTIFICATION OF JOHN M. Mc ANDREW

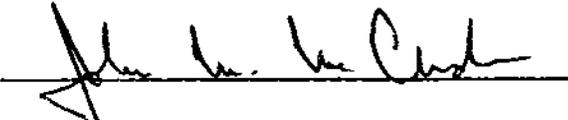
8961 Ursus Crescent, Surrey, B.C. V3V 6L3 Phone 591-6512

1. Registered as a Professional Engineer by the Association of Professional Engineers of British Columbia, Canada.
2. B. Sc. in Geology from the University of Alberta, Edmonton, Alberta; post graduate courses in surveying, McGill University, Montreal, Quebec.
3. Prior to consulting the author spent seventeen years in exploration, property evaluation, mine geology and production with the following companies:
 - Anaconda American Brass Limited - Copper, Molybdenum, Tungsten.
 - Silver Titan Mines - Silver, Lead, Zinc.
 - Columbia Iron Mining Co. - Coal.
 - Newmont Exploration Ltd. - Nickel, Copper.
 - Iron Ore Company of Canada Ltd. - Direct Shipping Iron Ore.
 - N. W. Byrne Company - Gold.
 - Quebec Cartier Mining Co. Ltd. - Concentrating Iron Ore.
 - Elderado Mining and Refining Co. - Uranium.
 - International Nickle Co. - Nickel, Copper.
 - Risby Tungsten Mines Ltd. - Tungsten.

Addendum:

1977, 79, 81, 82 Instructing at British Columbia School for Advanced Prospectors.

Dated this 11 day of January , 1989 , in Surrey , British Columbia



JOHN M. McANDREW, P. Engr.

Prospector - Consulting Geologist

ITEMIZED COST STATEMENT

Cliff and Pick Claims Grouped (# 1434) September 9, 1983

1) Maps, drafting supplies, stationary and xerox -		\$ 167.68
2) Field equipment -		128.62
3) Room and board, 2 men Sept. 15 - Oct 14, 1988 (30 days)		1,371.68
4) Transportation, ferries and vehicle -		214.90
5) Rental of Proton Magnetometer Sept. 14 - 29 (14 days)		210.00
Air freight return of magnetometer		29.50
6) 98 geochemical determinations, for Cu 99, Zn 96, Ag 3, As, Mo, Pb and Au 1 -		458.75
9 rock assays for gold -		110.25
7) Wages, John M. Mc Andrew, Professional Engineer		
September 16 - October 13 (28 days, \$400/day) -		11,200.00
John Struzewski, Assistant, miner and driller		
September 16 - October 13 (28 days, Sept. 21 -		
TR P 134, Sept. 24 - TR P 147, Oct. 5 - TR P 124, \$100/day)		2,800.00
8) Report Preparation, John M. Mc Andrew, P. Engr.		
November 25 - 30	6 days	
December 1 - 14	- <u>14 "</u>	
	20 days at \$ 400/ day -	<u>8,000.00</u>
	TOTAL COSTS	\$ 24,691.38

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CANADAANALYTICAL PROCEDURE REPORTS FOR ASSESSMENT WORKPROCEDURES FOR Mo, Cu, Cd, Pb, Mn, Ni, Ag, Zn, As, F

Samples are processed by Min-En Laboratories Ltd., at 705 W. 15th St., North Vancouver Laboratory employing the following procedures.

After drying the samples at 95°C soil and stream sediment samples are screened by 80 mesh sieve to obtain the minus 80 mesh fraction for analysis. The rock samples are crushed by a jaw crusher and pulverized by ceramic plated pulverizer.

1.0 gram of the samples are digested for 6 hours with HNO₃ and HClO₄ mixture.

After cooling samples are diluted to standard volume. The solutions are analyzed by Atomic Absorption Spectrophotometers.

Copper, Lead, Zinc, Silver, Cadmium, Cobalt, Nickel and Manganese are analysed using the CH₂H₂-Air flame combination but the Molybdenum determination is carried out by C₂H₂-N₂O gas mixture directly or indirectly (depending on the sensitivity and detection limit required) on these sample solutions.

For Arsenic analysis a suitable aliquote is taken from the above 1 gram sample solution and the test is carried out by Gutzeit method using Ag CS₂N (C₂H₅)₂ as a reagent. The detection limit obtained is 1.2 ppm.

Fluorine analysis is carried out on a 200 milligram sample. After fusion and suitable dilutions the fluoride ion concentration in rocks or soil samples are measured quantitatively by using fluorine specific ion electrode. Detection limit of this test is 10 ppm F.

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CANADA V7M 1T2GEOCHEMICAL ANALYSIS PROCEDURE FOR
Pb, Zn and Ag:

Samples are dried at 95°C. Soils and stream sediments are screened by 80 mesh sieve to obtain the minus 80 mesh fraction for analysis.

All rock samples are crushed by jaw crusher and pulverized by ceramic plated pulverizer.

1. 1.000 gram sample is weighed into 25x200 test tube.
2. Add 2 ml of HNO₃ and let it set for 15 minutes and then add 5 ml of HClO₄.
3. Place test tubes on sandbath for 6 hours and elevate temperature to 200°C.
4. Take the test tubes off cool and dilute to 25 ml.
5. Read samples on Atomic Absorption Spectrophotometer.
6. Background correction can be carried out on Pb and Silver if it is requested.
7. Standards are digested along with each set of samples and calibrations checked.

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GOLD GEOCHEMICAL ANALYSIS BY MIN-EN LABORATORIES LTD.

Geochemical samples for Gold processed by Min-En Laboratories Ltd., at 705 W. 15th St., North Vancouver Laboratory employing the following procedures.

After drying the samples at 95°C soil and stream sediment samples are screened by 80 mesh sieve to obtain the minus 80 mesh fraction for analysis. The rock samples are crushed and pulverized by ceramic plated pulverizer.

A suitable sample weight 5.0 or 10.0 grams are pretreated with HNO_3 and HClO_4 mixture.

After pretreatments the samples are digested with Acqua Regia solution, and after digestion the samples are taken up with 25% HCl to suitable volume.

Further oxidation and treatment of at least 75% of the original sample solutions are made suitable for extraction of gold with Methyl Iso-Butyl Ketone.

With a set of suitable standard solution gold is analysed by Atomic Absorption instruments. The obtained detection limit is 0.005 ppm (5ppb).

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BLOOM TEST

November, 1980.

EXCHANGEABLE HEAVY METALS IN SEDIMENTS

COLD AMMONIUM CITRATE TEST

Preparation of Field Solutions:

Stock Dithizone Solution (0.01%): with graduate measure 100 ml of Toluene into 8-oz. polyethylene screw-topped bottle, and mark bottle at this level with china marking pencil for future reference; shake in contents of one vial of dithizone; shake, wrap bottle in aluminum foil to keep out light, and allow to stand for at least 1 hour before using.

Field Dithizone Solution (0.001%): add one part of stock dithizone solution and nine parts of toluene to polyethylene wash bottle, shake to mix, wrap with aluminum foil to keep out light. These liquids may be measured in the field with one of the marked culture tubes; a supply of toluene may be carried in the field in a 32-oz. polyethylene screw-topped bottle.

Field Buffer Solution: with graduated cylinder, measure one part of 5X Buffer and four parts of metal-free water into 32-oz. polyethylene screw-topped bottle; shake to mix as needed; transfer portions of this reserve supply to polyethylene wash bottle for field use.

PROCEDURE:

1. Measure out one scoopful of sample, (approx 0.25 gm) leveled with spatula or pen-knife, and tap into marked culture tube.
2. Add Field Buffer Solution to 3 ml mark.
3. Add 1 ml of Field Dithizone Solution, bringing level to 4 ml mark.
4. Insert a polyethylene stopper from one of the vials into the end of the culture tube, and shake briskly fifty times (15 seconds).

5. Allow Dithizone Solution to collect at surface of liquid and observe color. If green, record 0; if blue green, record $\frac{1}{2}$; if blue, record 1; if purple or red, proceed with Step 6.
6. Add 1 ml more of Field Dithizone Solution, bringing level to 5 ml mark, and shake briskly 20 times (five seconds). If color is blue, record 2; if purple or red, repeat the shake-out adding Dithizone Solution in increments of 2, 4, 4 and 4 until blue end-point is reached; record total volume of Dithizone Solution needed to reach blue end-point; if the blue end-point is over-shot, the recorded value may be interpolated.

NOTES:

1. Although this procedure does not differentiate between zinc, lead or copper, it is considerably more sensitive to zinc than to the other metals. Thus in general, a high heavy-metal value indicates a high zinc content.
2. For a 0.25 gm sample in this test, one ml of dithizone at the blue end-point is roughly equivalent to 1 part per million of exchangeable heavy metals expressed as zinc, this factor will vary with the texture of the sample and the timing of the shake-out.
3. It is important to standardize the timing of the shake-out in the procedure, as increasing the time of the sequence will give higher values.
4. Serious contamination in the course of the procedure is possible by inadvertent contact with the fingers or contaminated objects; all high values should be checked by repeating the entire procedure.
5. Dithizone solution decomposes in light to a yellow solution; this effect may be minimized by keeping all dithizone solutions in the dark, either under cover or in bottles wrapped in aluminum foil.

EQUIPMENT:

- 4 250 ml. Squeeze bottles & caps (REAGENTS)
- 1 graduated cylinder 100ml.
- 1 Deeminac
- 1 wash bottle 250 ml.
- 10 -20x150 mm culture tubes & stoppers
- 2 aluminum scoops
- 1 test tube brush
- aluminum foil

REAGENTS:

- 2x500 ml Toluene ^{500ml} (AMBER GLASS BOTTLE)
- 1x200 ml 5X Buffer
- 3x10 mg Dithizone



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TELEX: VIA U.S.A. 7601067 • FAX (604) 980-9621

TIMMINS OFFICE:
33 EAST IROQUOIS ROAD
P.O. BOX 867
TIMMINS, ONTARIO CANADA P4N 7G7
TELEPHONE: (705) 264-9996

Analytical Report

Company: JOHN M. MCANDREW
Project: CLIFF PICK
Attention: J. M. MCANDREW

File: 8-1981
Date: NOV. 7/88
Type: SOIL GEOCHEM

Date Samples Received : NOV. 7/88
Samples Submitted by : J. M. MCANDREW

Report on 98 SOILS Geochem Samples
.....
..... Assay Samples
.....

Copies sent to:

- 1. JOHN M. MCANDREW, SURREY, B.C.
- 2.
- 3.

Samples: Sieved to mesh-80..... Ground to mesh

exposed samples stored:X..... discarded:

rejects stored: discarded:X.....

Methods of analysis:

- CU ZN AS MO PB-MULTI ACID A.A.
- AS-VAPOR GENERATION A.A.
- AU-WET GEOCHEM

Remarks



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TELEX: VIA U.S.A. 7601067 • FAX (604) 980-9621

TIMMINS OFFICE:
33 EAST IROQUOIS ROAD
P.O. BOX 887
TIMMINS, ONTARIO CANADA P4N 7G7
TELEPHONE: (705) 264-9996

Certificate of GEOCHEM

Company: JOHN M. McANDREW
Project: CLIFF PICK
Attention: J.M. McANDREW

File: 8-1981/P1
Date: NOV 3/88
Type: SOIL GEOCHEM

We hereby certify the following results for samples submitted.

Sample Number	CU PPM	ZN PPM
P 180	21	49
P 181	42	57
P 182	19	129
P 183	18	19
P 184	26	25

P 185	23	22
P 186	8	14
P 187	26	48
P 188	25	121
P 189	38	84

P 190	49	142
P 191	19	1050
P 192	12	39
P 193	83	560
P 194	46	76

P 195	87	142
P 196	42	95
P 197	47	88
P 198	45	72
P 199	34	56

P 200	37	62
P 201	38	37
P 202	25	24
P 203	51	28
P 204	64	64

P 205	48	122
P 206	122	117
P 207	38	58
P 208	33	121
P 209	21	59

Certified by

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TELEX: VIA U.S.A. 7601067 • FAX (604) 980-9621

TIMMINS OFFICE:
33 EAST IROQUOIS ROAD
P.O. BOX 867
TIMMINS, ONTARIO CANADA P4N 7G7
TELEPHONE: (705) 264-9996

Certificate of Geochem

Company: JOHN M. McANDREW
Project: CLIFF PICK
Attention: J. M. McANDREW

File: 8-1981/P2
Date: NOV 5/88
Type: SOIL GEOCHEM

We hereby certify the following results for samples submitted.

Sample Number	CU PPM	ZN PPM
P 210	249	196
P 211	21	47
P 212	28	28
P 213	26	37
P 214	27	115

P 215	29	49
P 216	20	52
P 217	24	43
P 218	35	114
P 219	48	79

P 220	28	23
P 221	57	24
P 222	64	46
P 223	61	32
P 224	32	14

P 225	49	35
P 226	104	98
P 227	41	22
P 228	28	17
P 229	13	11

P 230	49	21
P 231	78	56
P 232	77	74
P 233	43	22
P 234	34	24

P 235	61	35
P 236	84	36
P 237	46	33
P 238	24	18
P 239	68	550

Certified by _____

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TIMMINS OFFICE:
33 EAST IROQUOIS ROAD
P.O. BOX 867
TIMMINS, ONTARIO CANADA P4N 7G7
TELEPHONE: (705) 264-9996

Certificate of Geochem

Company: JOHN M. McANDREW
Project: CLIFF PICK
Attention: J. M. McANDREW

File: B-1981/P3
Date: NOV 7/88
Type: SOIL GEOCHEM

We hereby certify the following results for samples submitted.

Sample Number	CU PPM	ZN PPM	AG PPM	AS PPM	MO PPM	PB PPM
P 240	64	34				
P 241	53	31				
P 242	54	43				
P 243	44	22				
P 244	53	24				

P 245	61	32				
P 246	28	20				
P 247	29	24				
P 248	57	57				
P 249	69	56				

P 250	28	16				
P 251	41	19				
P 252	14	13				
P 253	12	11				
P 254	89	23				

P 255	22	13				
P 256	111	42				
P 257	104	46				
P 258	139	21				
P 259	102	63				

P 260	117	41				
P 261	139	62				
P 147	124	248				
P 154	88	427				
TP 88 7	73	46	0.9	20		

TP OF 324					46	
TP OF 541	213					
TP OF 542	14					
TP OF 185			1.1			21
TP OF 271	32					

Performed by

MINERAL ENVIRONMENTS LTD.



Certificate of Geochem

Company: JOHN M. McANDREW
Project: CLIFF PICK
Attention: J.M. McANDREW

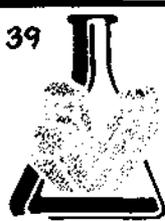
File: 8-1981/P4
Date: NOV 5/88
Type: SOIL GEOCHEM

We hereby certify the following results for samples submitted.

Sample Number	CU PPM	ZN PPM	AU-WET PPB
TP 88 9	39	43	
TP 88 10	81	32	
TP 88 11	13	11	
TRP 124 1M	85	610	
TRP 124 2M	79	129	5

TP 88 12	53	56	
1+37.5N	96	174	
1+25N	42	91	

Certified by _____



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CHEMISTS • ASSAYERS • ANALYSTS • GEOCHEMISTS

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TELEPHONE (604) 980-5814 OR (604) 988-4524
TELEX: VIA U.S.A. 7601067 • FAX (604) 980-9621

TIMMINS OFFICE:
33 EAST IROQUOIS ROAD
P.O. BOX 867
TIMMINS, ONTARIO CANADA P4N 7G7
TELEPHONE: (705) 264-9996

Analytical Report

Company: JOHN M. MCANDREW
Project: CLIFF PICK
Attention: J. M. MCANDREW

File: 8-1981
Date: NOV 9/88
Type: SOIL GEOCHEM

Date Samples Received : NOV. 7/88
Samples Submitted by : J. M. MCANDREW

Report on 98 SOILS Geochem Samples
..... 9 ROCKS Assay Samples

Copies sent to:
1. JOHN M. MCANDREW, SURREY, B.C.
2.
3.

Samples: Sieved to mesh-80..... Ground to mesh

Separated samples stored:X..... discarded:

rejects stored: discarded:X.....

Methods of analysis:

- CU ZN AS MO PB-MULTI ACID A.A.
- AS-VAPOR GENERATION A.A.
- AU-WET GEOCHEM
- AU-FIRE ASSAY

Remarks



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P.O. BOX 867
TIMMINS, ONTARIO CANADA P4N 7G7
TELEPHONE: (705) 264-9996

Certificate of ASSAY

Company: JOHN M. McANDREW
Project: CLIFF PICK
Attention: JOHN M. McANDREW

File: 8-1981/P1
Date: NOV 7/88
Type: ROCK ASSAY

We hereby certify the following results for samples submitted.

Sample Number	AU G/TONNE	AU OZ/TON
P 147 A	.03	0.001
TR 88 B	.02	0.001
QUARRY Br Rd 7	.10	0.003
SKID 1	.12	0.004
SKID 2	.03	0.001

DRILLSITE 1	.03	0.001
DRILLSITE 2	.01	0.001
DRILLSITE 3	.01	0.001
C 159	.02	0.001

Certified by _____



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TIMMINS OFFICE:
33 EAST IROQUOIS ROAD
P.O. BOX 867
TIMMINS, ONTARIO CANADA P4N 7G7
TELEPHONE: (705) 264-9996

Certificate of GEOCHEM

Company: JOHN M. McANDREW
Project: CLIFF PICK
Attention: JOHN M. McANDREW

File: 8-1981/P1
Date: NOV 7/88
Type: ROCK, GEOCHEM

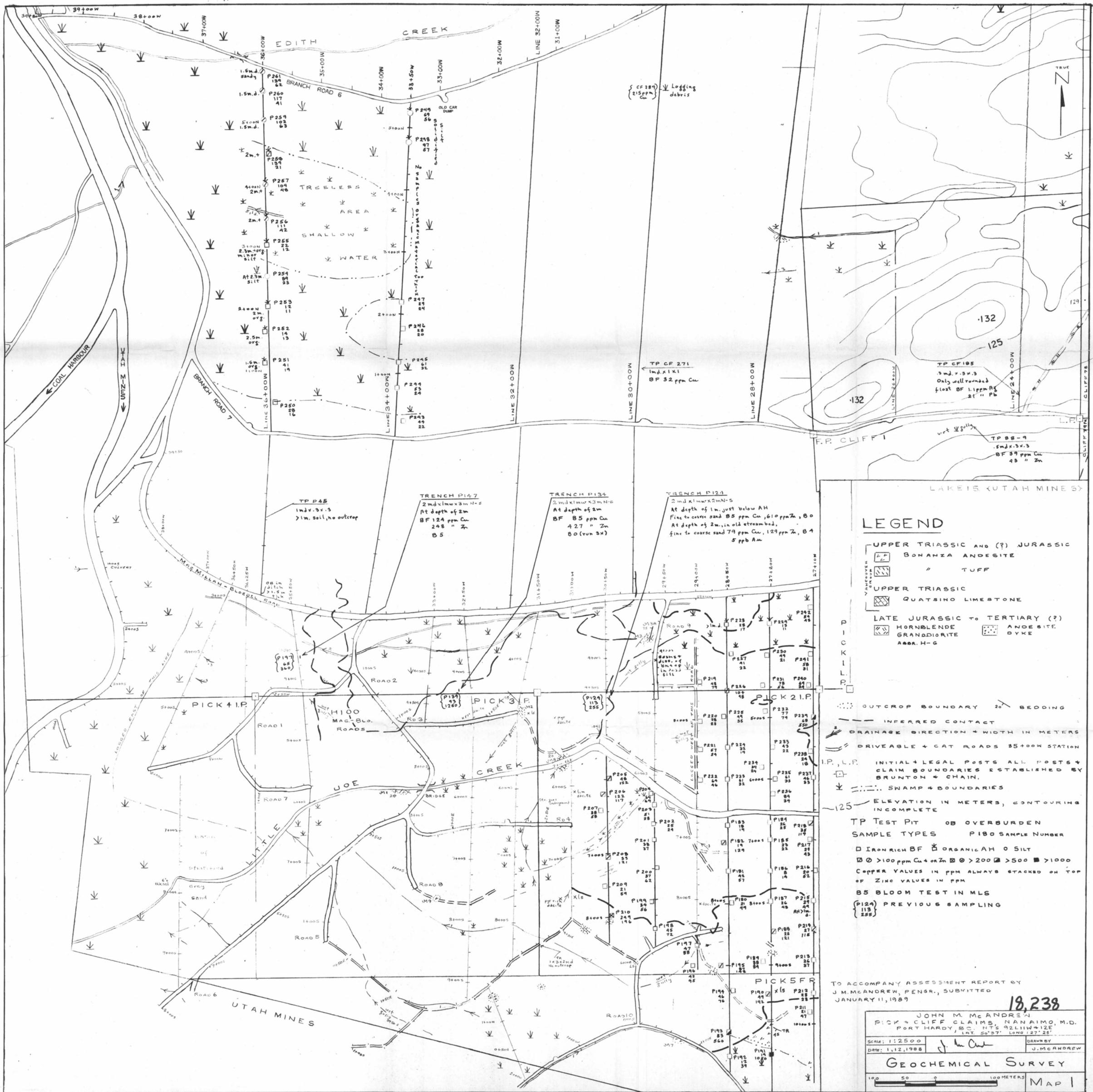
We hereby certify the following results for samples submitted.

Sample Number	CU PPM	ZN PPM	AG PPM
P 147 A	159	26	
SKID 1	218	125	4.3
SKID 3			3.6
LF 189	10600	460	53.0

Certified by

MIN EN LABORATORIES LTD.

APPENDIX



LEGEND

- UPPER TRIASSIC AND (?) JURASSIC
 - BONANZA ANDESITE
 - " TUFF
- UPPER TRIASSIC
 - QUATSINO LIMESTONE
- LATE JURASSIC TO TERTIARY (?)
 - HORNBLENDE ANDESITE
 - GRANDIORITE
 - DIYKE
 - ANDES. H-G

- OUTCROP BOUNDARY 20' BEDDING
- INFERRED CONTACT
- DRAINAGE DIRECTION + WIDTH IN METERS
- DRIVEABLE + CAT ROADS 35+00W STATION
- I.P., L.P. INITIAL + LEGAL POSTS ALL POSTS + CLAIM BOUNDARIES ESTABLISHED BY BRUNTON + CHAIN.
- SWAMP + BOUNDARIES
- ELEVATION IN METERS, CONTOURING INCOMPLETE

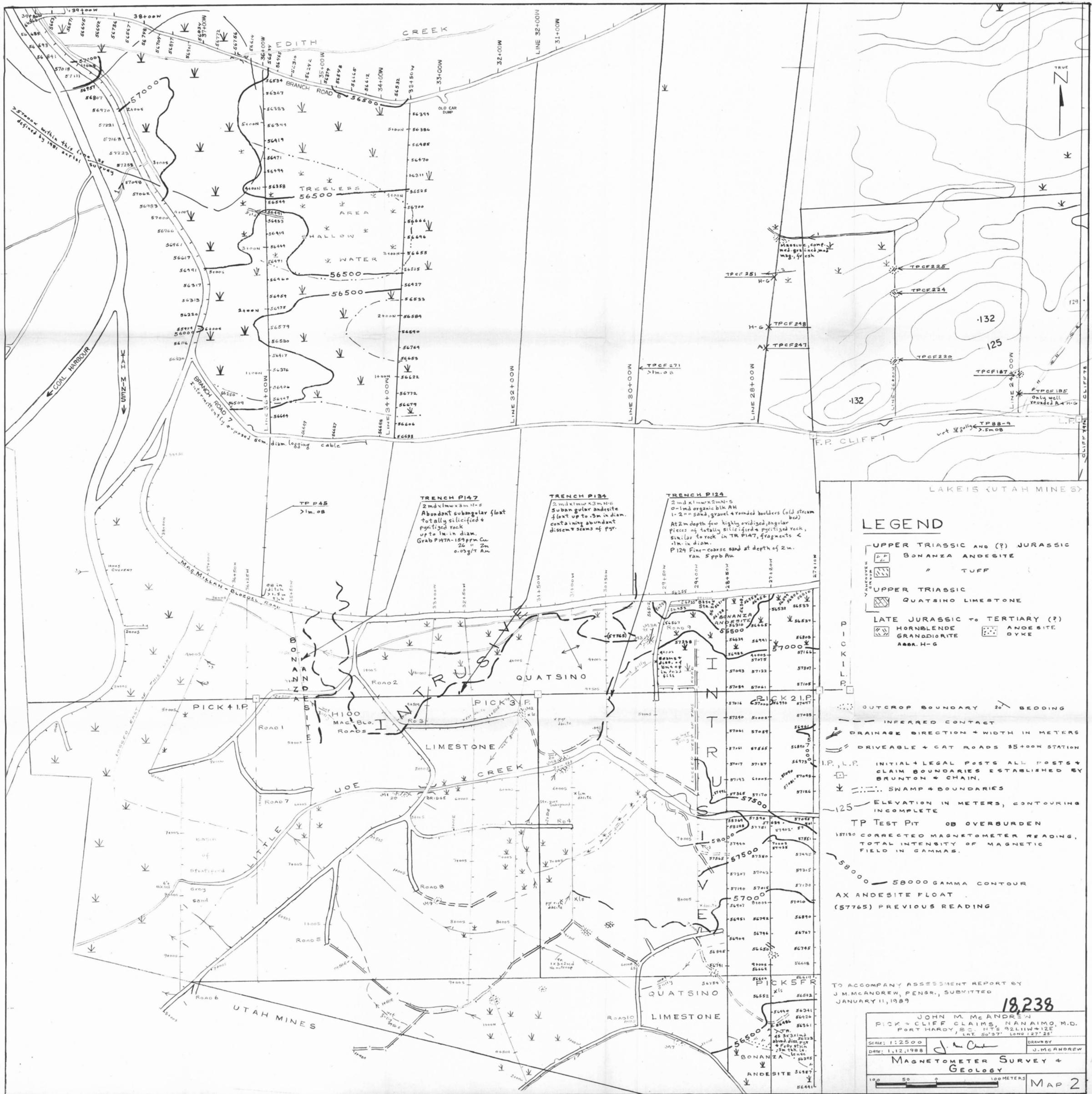
TP TEST PIT OB OVERBURDEN
 SAMPLE TYPES P180 SAMPLE NUMBER
 D IRON RICH BF O ORGANIC AH O SILT
 @ >100 ppm Cu + or Zn @ >200 @ >500 @ >1000
 COPPER VALUES IN PPM ALWAYS STACKED ON TOP OF ZINC VALUES IN PPM
 B5 BLOOM TEST IN MLS
 {P124} PREVIOUS SAMPLING
 {P134} {P135} {P136}

TO ACCOMPANY ASSESSMENT REPORT BY J.M. McANDREW, P. ENG'R., SUBMITTED JANUARY 11, 1989

18,238

JOHN M. McANDREW
 PICK + CLIFF CLAIMS, NANAIMO, B.C.
 PORT HARDY, B.C. NTS 92L1W+12E
 LAT. 50°37' LONG. 127°25'

SCALE: 1:2500	DATE: 1, 12, 1988	DRAWN BY: J. McAndrew	DRAWN BY: J. McAndrew
GEOCHEMICAL SURVEY			
100 50 0 50 100 METERS			MAP 1



TRENCH P147
 2 m dia x 1 m x 1 m
 Abundant subangular float
 of totally silicified &
 pyritized rock
 up to 1 m in diam.
 Grab P147A-159 ppm Cu
 26 " Zn
 0.05 g/t Au

TRENCH P134
 2 m dia x 1 m x 1 m
 Subangular andesite
 float up to .3 m in diam.
 containing abundant
 disseminated seams of pyrite

TRENCH P124
 2 m dia x 1 m x 1 m
 0-1 m organic blk AH
 1-2 m sand, gravel & rounded boulders (old stream bed)
 At 2 m depth few highly oxidized, angular
 pieces of totally silicified & pyritized rock,
 similar to rock in TR P147, fragments <
 .1 m in diam.
 P124 Fine-grained sand at depth of 2 m.
 ran 5 ppb Au

LEGEND

- UPPER TRIASSIC AND (?) JURASSIC BONANZA ANDESITE
- UPPER TRIASSIC TUFF
- UPPER TRIASSIC QUATSINO LIMESTONE
- LATE JURASSIC TO TERTIARY (?) HORNBLENDE ANDESITE
- GRANDIORITE DYKE
- ABBR. H-G
- OUTCROP BOUNDARY 20' BEDDING
- INFERRED CONTACT
- DRAINAGE DIRECTION + WIDTH IN METERS
- DRIVEABLE + CAT ROADS 35+00M STATION
- I.P., L.P. INITIAL + LEGAL POSTS ALL POSTS + CLAIM BOUNDARIES ESTABLISHED BY BRUNTON + CHAIN.
- SWAMP + BOUNDARIES
- ELEVATION IN METERS, CONTOURING INCOMPLETE
- TP TEST PIT O.B. OVERBURDEN
- 157100 CORRECTED MAGNETOMETER READING, TOTAL INTENSITY OF MAGNETIC FIELD IN GAMMAS.
- 5800 58000 GAMMA CONTOUR
- AX ANDESITE FLOAT (57765) PREVIOUS READING

TO ACCOMPANY ASSESSMENT REPORT BY
 J. M. McANDREW, PENS.R., SUBMITTED
 JANUARY 11, 1989

18,238

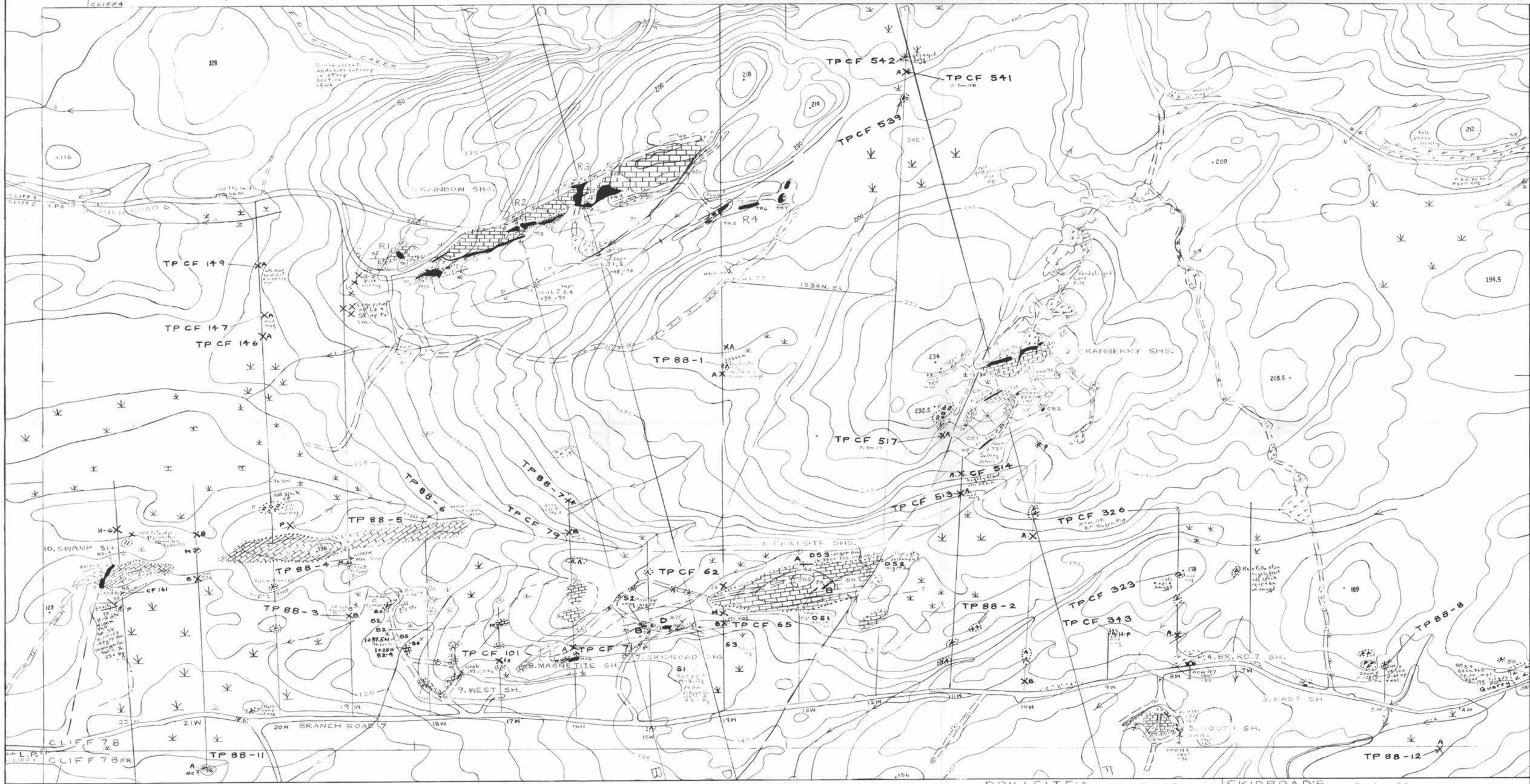
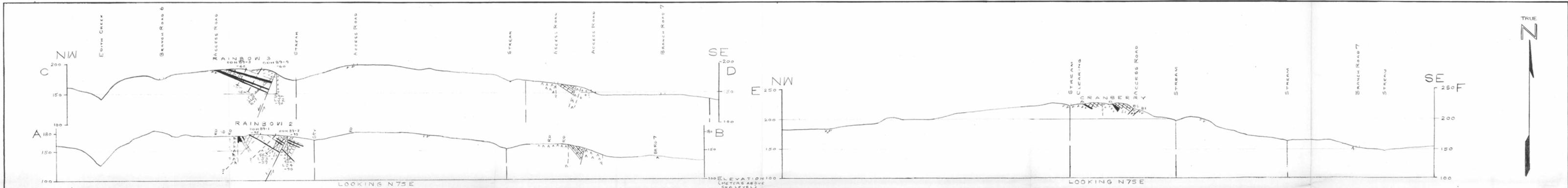
JOHN M. McANDREW
 PICK + CLIFF CLAIMS NANAIMO, B.C.
 PORT HARDY, B.C. T1'S Q2L11W-12'E
 1/4 SEC. 50'S 7' LONG 127' 25"

SCALE: 1:2500
 DATE: 1, 12, 1988

MAGNETOMETER SURVEY + GEOLOGY

100 50 0 100 METERS

MAP 2



LEGEND

LATE JURASSIC TO TERTIARY (?) INTRUSIVES

- HORNBLLENDE QUARTZ ANDESITE HORNBLLENDE PORPHYRY
- GRANDIORITE DIORITE
- SKARN MINERALIZATION - CHALCOPYRITE, BORNITE, SPHALERITE, GALENA, MAGNETITE, SILVER, GOLD AND MOLYBDENITE

UPPER TRIASSIC AND LOWER JURASSIC ROCKS

- TUFF
- QUARTZING LIMESTONE
- ANDESITE
- BASALT
- FELDSPAR PHENOCRYSTS
- AMYGDALOIDAL
- FELDSPAR PHENOCRYSTS IN BLACK APHRITIC MATRIX; FLOW OR INTRUSIVE?

OUTCROP BOUNDARY 60° BEDDING

FAULT --- INFERRED CONTACT

DRAINAGE DIRECTION + WIDTH IN METERS

DRIVEABLE + CAT ROADS 7+30N STATION

I.P., L.P. INITIAL + LEGAL POSTS, ALL POSTS + CLAIM BOUNDARIES ESTABLISHED BY BRUNTON + CHAIN.

SWAMP + BOUNDARY X FLOAT

MAGNETOMETER READING, TOTAL INTENSITY OF MAGNETIC FIELD IN GAMMAS.

0.03% T GRAMS PER TONNE OF GOLD

X FLOAT

-190 ELEVATION IN METERS

TP Test Pit 1988 9W GRID LINE 9+00W

M33 MAGNETITE mag MAGNETIC OB OVERBURDEN
 B2 BLOOM TEST RESULT IN MLS } GEOCHEMICAL HIGH (SOIL) YELLOWKNIFE BEAR
 2650 ppm
 2%

A ANDESITE B BASALT H-G HORNBLLENDE GRANODIORITE
 M MARBLE P PORPHYRY H-P HORNBLLENDE PORPHYRY
 h PHENOCRYSTS

TO ACCOMPANY ASSESSMENT REPORT BY J.M. McANDREW, PENS.R., SUBMITTED JANUARY 11, 1989

TP 88-10 Water table at depth of 1.2m

DRILLSITE A CHIP D53

SKIDROAD B 24/11/82

E GRABS DSI + D52

D 51/5 S1 + S3

LAKES RUBY 16 (UTAH MINES)

18,238

JOHN M. McANDREW
 CLIFF CLAIMS, NANAIMO, B.C.
 PORT HARDY B.C., NTS 92L11W+12E
 LAT. 50° 37' LONG. 127° 22'

SCALE: 1:2500
 DATE: 10, 12, 88

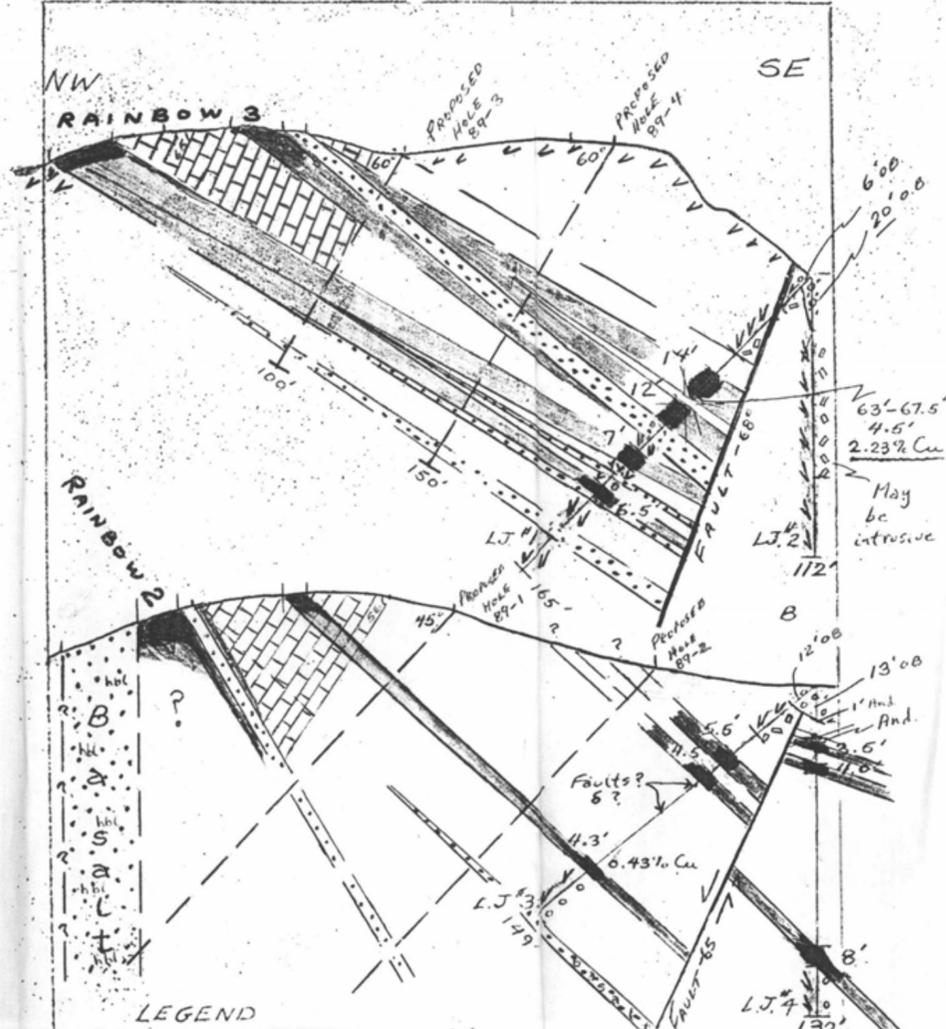
DRAWN BY:
 J. McANDREW

GEOLOGY

100 50 0 50 100 METERS

DRAWING NUMBER
MAP 3

Figure 2

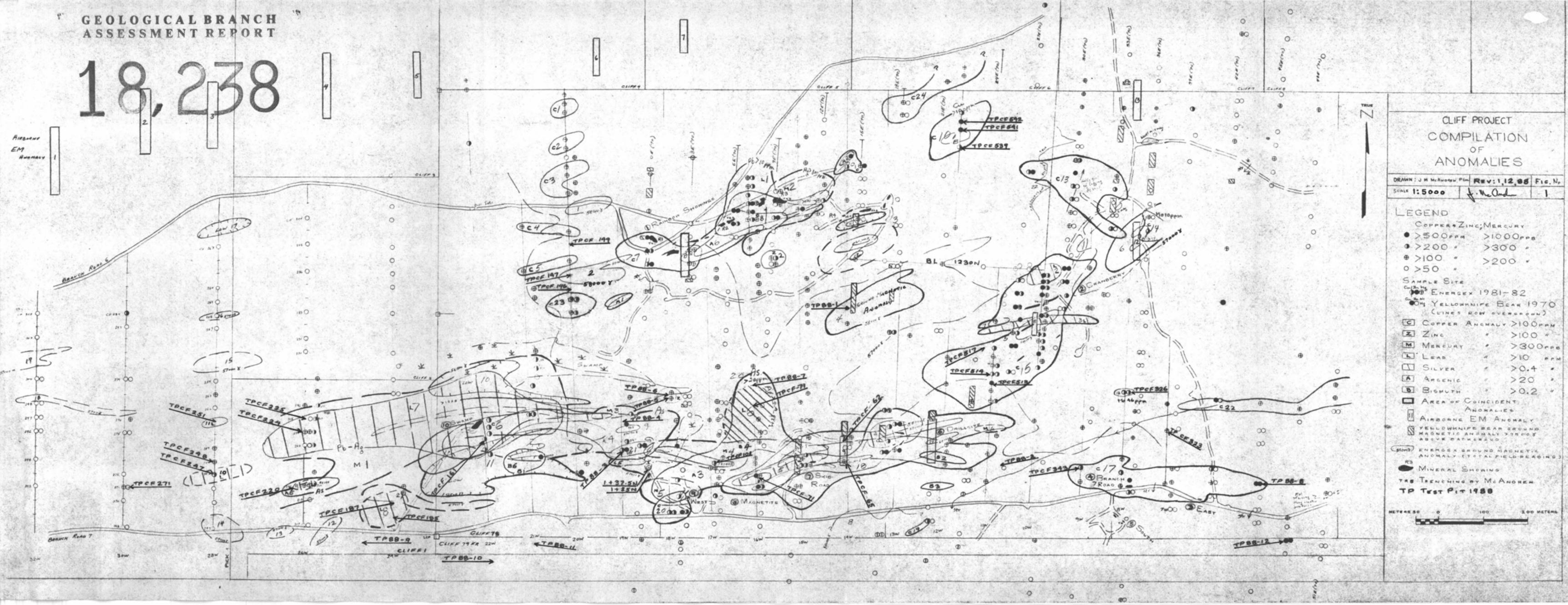


- LEGEND**
- Skarn
 - Limestone
 - ▨ Andesite
 - ▤ Dyke
 - ⊙ Porphyritic
 - ⊙ Amygdaloidal

Vertical Sections
 Little Joe Showings = McAndrew's Rainbow Showings
 Scale 1" = 50'
 Nov 12, 1963 A.W. Poole's Drill Hole Geology
 Looking N 75 E

GEOLOGICAL BRANCH
 ASSESSMENT REPORT

18,238



CLIFF PROJECT
 COMPILATION
 OF
 ANOMALIES

DRAWN: J. H. McAndrew, Plan REV: 12, 66 FIG. No. 1
 SCALE: 1:5000 J. H. McAndrew

- LEGEND**
- COPPER, ZINC, MERCURY
- >500ppm >1000ppm
 - >200 " >300 "
 - >100 " >200 "
 - >50 "
- SAMPLE SITE
- ENEREX 1981-82
 - YELLOWKNIFE BEAR 1970 (LINES NOW OVERGROWN)
- ANOMALIES
- COPPER ANOMALY >100ppm
 - ZINC >100 "
 - MERCURY >300ppm
 - LEAD >10 ppm
 - SILVER >0.4 "
 - ARSENIC >20 "
 - BISMUTH >0.2 "
- AREA OF COINCIDENT ANOMALIES
- ▨ AIRBORNE EM ANOMALY
 - ▨ YELLOWKNIFE BEAR GROUND MAGNETIC ANOMALY 1970 (LINES NOW OVERGROWN)
 - ▨ ENEREX GROUND MAGNETIC ANOMALY (CYCLOTRON FIELD READINGS)
- MINERAL SHOWING
- ⊙ TRS TRENCHING BY McANDREW
 - ⊙ TP TEST PIT 1958

