REPORT

ON

GEOLOGICAL MAPPING

SOUTHEAST MURPHY PROJECT

MURPHY TOWNSHIP

January 1992

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Summary and Recommendations

The southern part of the property is underlain by an east-west striking, steeply south dipping and south facing sequence of tholeiitic and lesser komatiitic metavolcanics. North of Baseline 0, a very marked and abrupt change in strike occurs; ground magnetic and HLEM survey data indicate that the northwest portion of the claim group, north of Baseline 0, is underlain by northeast striking metavolcanics to the south, and metagreywackes to the north.

A very prominent and pervasive secondary foliation at 65-75°/60-75°south dip was observed in outcrops throughout the southern property area, being particularly pronounced within localized zones of sheared to fissile pillowed mafic volcanics, occurring in correspondence with zones of magnetic low, similarly trending at 70-75°. The most noteable of these zones occur at 1100 to 1200 south between lines 0 and 7E, and at approximately 800 south between L0 and L10E. Two untested IP chargeability anomalies located at L400E, 850S and L0E, 920S occur along the southern margin of the latter mentioned 75° trending zone of low magnetics, and warrant further prospecting and/or drill testing.

A small, previously unknown showing was found in a small outcrop at 20E, 1560S. A 5" wide quartz-carbonate vein with tourmaline-bearing wallrock margins returned anomalous arsenic and boron values from sampling in 1990 and a fairly extensive area surrounding this carbonatized showing was mechanically stripped during the fall of 1991. The stripped area, occurring approximately at 1560S between Lines 0 and 1, exhibits a very high intensity of thin (4 cm. to 12 cm. wide) quartz-iron carbonate veins situated within east-northeasterly trending shears and also commonly occurring as shallowly dipping, northwest striking features. Intense carbonate alteration occurs within 4 cm. to one metre of the vein margins in most cases and is accompanied by up to 5% fine to coarse grained disseminated euhedral pyrite cubes. Fine, fracture filling quartz-carbonate-tourmaline veins occur locally, but are not generally associated with areas of stronger carbonate alteration. Gold assays obtained from this area were uniformly very low; however further exploration to the south of the this zone is recommended to explore a possible east-west striking fault zone that is interpreted to trend roughly along the Murphy-Tisdale Township boundary. Gold mineralization at the Beaumont prospect to the east may occur associated with this structure.

An area of strong carbonate alteration and quartz carbonate veining was delineated between Lines 5 and 7 East at approximately 940 south. Veining and up to 5-7% pyrite mineralization occured in an east-striking sheared zone of carbonaceous flow breccia and in the massive basalts south of the breccia. Gold values from samples here were uniformly low.

In 1990 a 0.5 meter width of pyritized mafic volcanic drill core sampled from what is believed to be Victoria Algoma drill hole VA-24-2 returned a gold value of 100 ppb.

As the hole is thought to be drilled through the major sedimentary-volcanic contact trending across the northwest portion of the property, follow up geophysical work and diamond drilling of this contact zone is certainly warranted.

Introduction

Geological mapping and prospecting on the Southeast Murphy Township Property was completed during the summer of 1991. In addition, a fairly substantial stripping operation was carried out in the vicinity of 1560 South, between Lines 0E and 1E.

The property is located approximately six miles northeast of the city of Timmins in the Porcupine Mining Division (Figure 1). It consists of 27 contiguous claims in the southeast corner of Murphy Township (Figure 2); the claims are numbered as follows:

P1114814 - 1114819
P1114973 - 1114976
P1115238 - 1115240
P1115242
P1115248 - 1115255
P1115291 - 1115294
P1132586

The property was accessed from an all weather road which was accessed from Highway 655.

Mapping was carried out by K.M. Cunnison and in part by Dr. D.R. Pyke, the former being a co-owner of the property. Bruce Raine , also a co-owner, assisted in the survey by tieing in grid lines, re-erecting and relabelling winter cut pickets and through general outcrop stripping and prospecting. A grid sketch of the property is presented in figure 3.

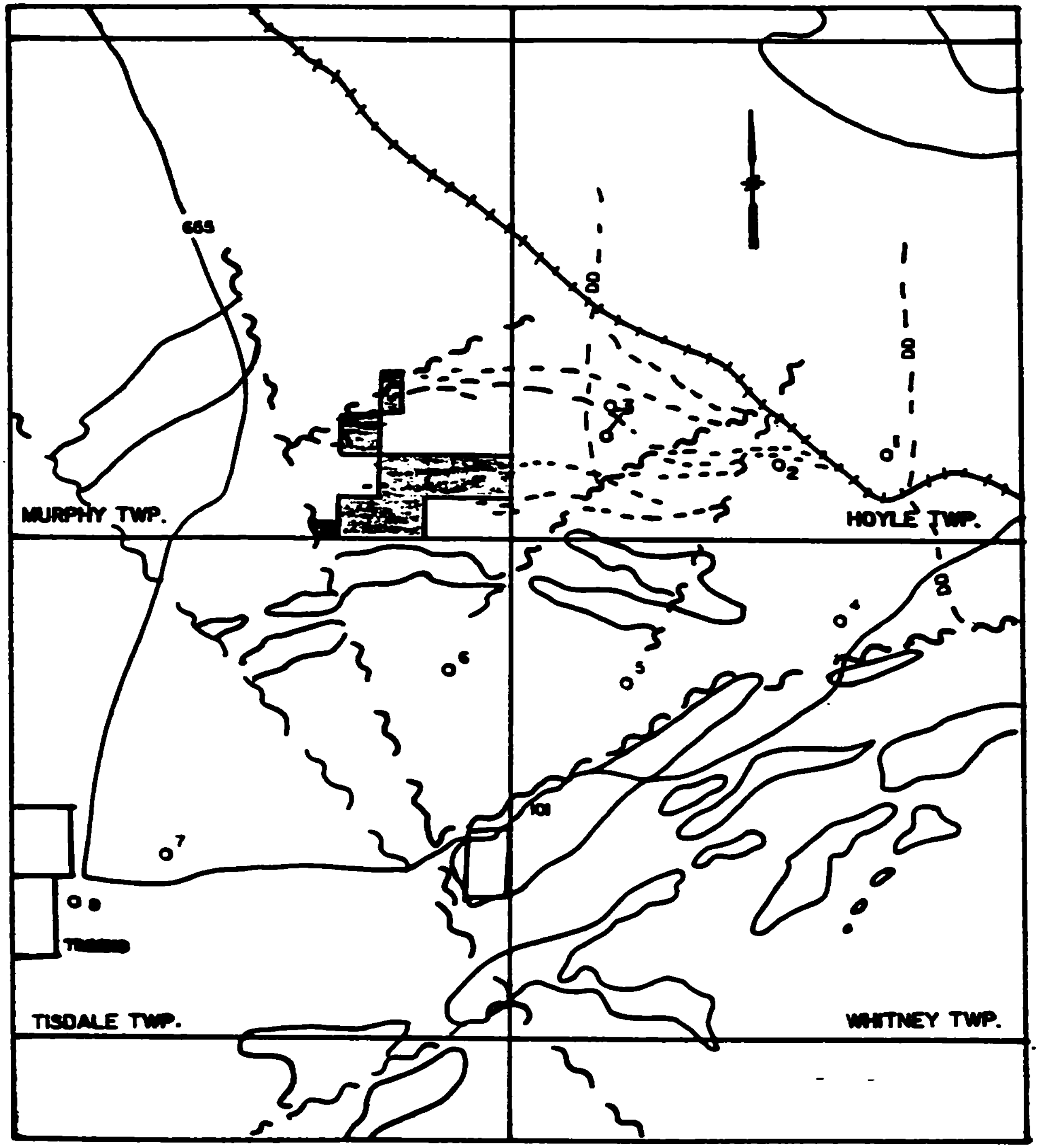


Figure 1: Location Map

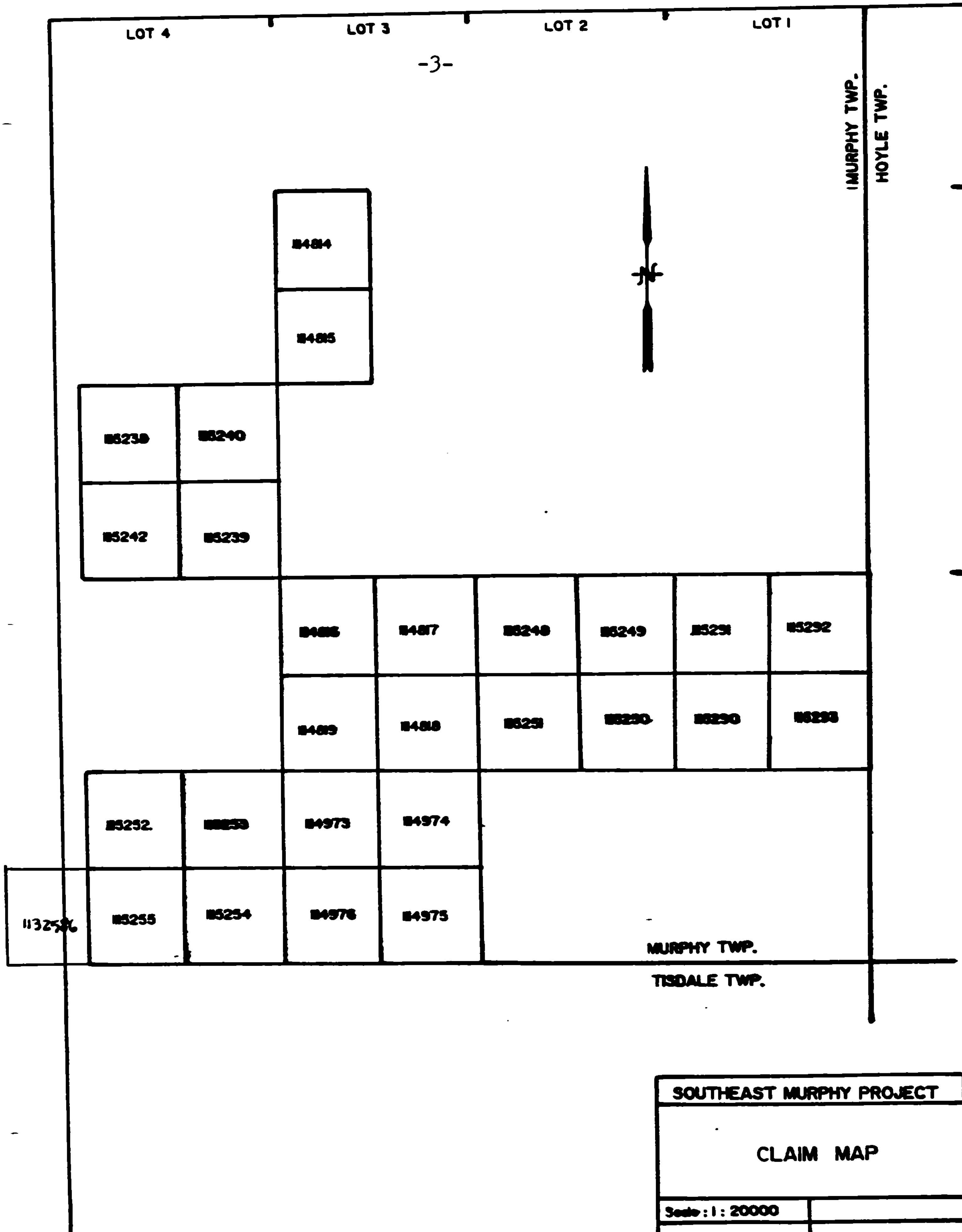


Figure 2: Claim Map

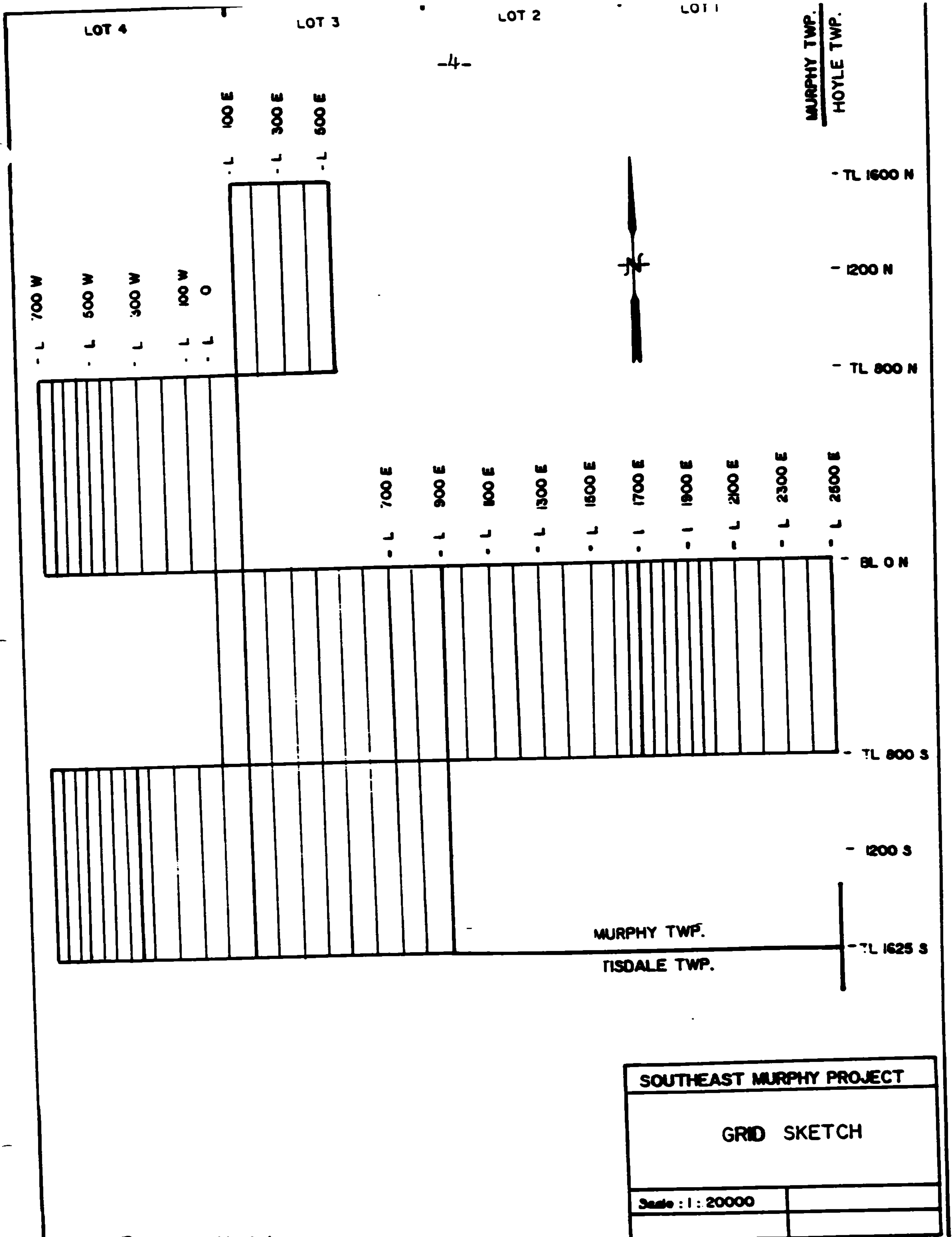


Figure 3 : Grid Sketch

In 1991, a total of 68 gold assays, five arsenic assays, one boron assay and 39 whole rock geochemical samples were analyzed from the property. In 1991, 58 gold assays, 5 arsenic assays and 26 whole rock analyses were obtained (see Table 1 and Appendix A for a summary of 1990 and 1991 sampling)

Previous Work

The four claims in the S½ Concession II, Lot 4 were patented before June 1, 1989 and have no previous work filed on them. Four companies have carried out work on part or all of the rest of the property.

In 1953 Coniaurum Mines Limited held eight claims in the N½ Lots 1 and 2, Concession I. One hole was drilled on what is now claim 1115248 (assessment file T-532).

In 1964, Glencona Exploration Mining Ltd. carried out magnetic and vertical loop electromagnetic surveys (VLEM) over six claims in Concession I, Lot 3. In 1967, they drilled seven holes, to test an east-west striking EM anomaly and coincident magnetic anomaly on claims 1114819 and 1114818. The source of the anomalies was explained by intersections of pyrite-pyrrhotite mineralization (File T-1058).

In 1965 Inco drilled one hole to test an EM anomaly on claim 1114815; it intersected bands of graphite (File T-915).

In 1978, Rosario Resources Canada Ltd. optioned the property from R. Allerston. Over the next three years they carried out an exploration program which included an air-borne magnetic survey, overburden drill holes, ground magnetic, HLEM and induced polarization (I.P.) surveys. Two very good conductors were detected in the EM survey. One of the conductors, which strikes east-west through the N½ Concession I, was the target of the holes drilled by Glencona in 1967; two holes drilled by Rosario in 1978 tested the same horizon. The other good conductor strikes northeast-southwest through claim 1114815; this was the zone tested by Inco in 1967 File T-1928).

During the winter of 1989/1990, a geophysics program was carried out on the current claim group by Timmins Geophysics Ltd, funded by an O.P.A.P. grant awarded to the five property owners. The program consisted of magnetic, very low frequency (VLF) and horizontal loop electromagnetic (HLEM) surveys, the results of which are currently on file. The survey once again defined the two main conductive horizons outlined by Rosario Resources. It was recommended that an I.P. survey be carried out along at least three lines to test several weaker anomalies occurring on the property; these lines included Lines 650 West and 1700 East in Concession I and Line 550 West in Concession II.

Induced Polarization surveys along selected lines were carried out during the summer of 1990 by Timmins Geophysics Ltd., funded by a recent O.P.A.P. grant awarded to Mr. Doug Londry.

An additional contiguous claim adjoining the southwest corner of the property (P1132586) was staked in the spring of 1990. A certain portion ($1,600.00) of the current O.P.A.P. funding for geological mapping of the property was therefore used to carry out linecutting and magnetic, VLF and HLEM surveys over the claim in the summer of 1990.

Topography

The northwestern and western portions of the property are largely covered by black spruce muskeg and localized areas of very wet cedar swamp. A north trending high sandy esker occurs centered on Lines 0 to 2 West, extending north to approximately 600 South.

The south central and southeastern portion of the property south of 400 South are generally dry and forrested with poplar, spruce and alders. A large expanse of wet to dry black spruce, tamarack and alder muskeg extends across the northern portion of the property from Line 0 to Line 24 East. The extreme southern portion of the property has recently been logged over.

Regional Geology

The property is located within an east-west striking, south facing sequence of tholeiitic and lesser komatiitic metavolcanics trending across portions of German, Matheson, Hoyle, Whitney and Murphy Townships (Fig. 1).

As presently understood, the property appears to be underlain by the same volcanic stratigraphy hosting the Bell Creek. Owl Creek and Hoyle Pond gold deposits, situated to the east in Hoyle Township.

A major volcanic-sedimentary contact, trending south-westerly across the northwest corner of the property, delineates metagreywacke sediments to the north and presumed mafic metavolcanic rocks to the south of the contact.

Property Geology

The property area is largely underlain by a sequence of pillowed to massive tholeiitic metabasalts, with lesser volumes of high iron tholeiites and komatiitic volcanics. The stratigraphy generally strikes at 85-90^{o} and dips at 65-80^{o} to the south, although local variations in strike from 75^{o} to 100^{o} occur. Brecciated, amygdaloidal flow tops, pillow shapes and the observed progression from massive to pillowed zones within individual flows consistently indicate a southerly facing direction.

Although no outcrop occurs in the most northwestern six claims. ground magnetics indicate a marked change in the stratigraphic trend to approximately 45^{o}, beginning abruptly to the north of Baseline 0. The northeast trending HLEM conductor occurring on these claims has been intersected in previous drilling, and represents a major contact between tholeiitic mafic metavolcanics to the south and greywacke metasediments to the north.

Magnesium tholeiitic basalts to "standard" tholeiitic basalts (as defined geochemically) comprise approximately 70% of the outcrop examined on the property. Selected geochemical plots of whole rock data are given in Figures 4 to 7a and a complete listing of sample descriptions and locations is presented in Table 1.

Magnesium tholeiitic basalts are commonly pillowed and amygdaloidal with thin pillow selvages. Pillow dimensions are highly variable, pillows ranging in length from less than two feet in some flows to in excess of seven feet in length elsewhere. Pillowed magnesium tholeiites are generally pale to medium green in color and are very fine grained. Outcrops weather to a pale buff color. Occassional zones of well developed hyaloclastite-bearing flow top breccia occur (eg. L8E, 1480S). Flow tops are commonly strongly foliated to locally sheared in contact with overlying massive flows. Massive basalts plotting geochemically as "standard" tholeiites are fine to medium grained, medium green in color and massive to weakly amygdaloidal, with a hacklly. "gritty" weathered surface. Occassional outcrops display a pronounced chlorite spotting on the fresh surface.

Several high iron tholeiite flows/sequences occur intercolated with the magnesium tholeiites on the property. The four major units outlined, varying in width from 40 to 80 metres, occur at approximately 500S, 700S, 1100S and 1400S. The flows? are very massive to locally finely amygdaloidal, fine to medium grained, very dark green on the fresh surface and weather orange brown in colour. One to three percent disseminated leucoxene is common, and in one outcrop, 5% fine disseminated magnetite tetrahedra were observed (L20E, 660S). The most northerly two iron tholeiite units commonly coincide with east-west trending magnetic high zones: however their magnetic signature is commonly lost along strike, particularly when the above units are intersected by cross-cutting shear/fault zones (see structural geology section).

Mapping during 1991 indicated that the massive, high iron unit striking east-west between 600 and 800 South may in fact be an intrusive sill. The margins of this unit are highly chloritized and sheared, and the massive portion immediately south of the north contact is very commonly quartz phyric bearing 1-4%, 1-3 mm. size quartz eyes of unknown origin. The unit becomes quite leucocratic (colour index of less than 30) as one progresses to the south, and presumably towards the top of the unit. Within the southerly 5 to 10 metres, feldspar grains to 3 mm. in size comprise approximately 75% of the rock, giving it a very much paler green colour. Geochemical analyses of samples from the more leucocratic zones characteristically are more aluminous and plot as "standard" tholeiites or in some instances have a calc-alkalic affinity (see Figures 5 and 5A).

This unit is traceable through mapping across the entire property from Line 300 East eastwards; however, it terminates or "pinches out" very abruptly between Lines 2 East and 3 East. Contacts of the unit in this vicinity do not appear to be faulted, and are interpretted as being an intrusive termination of a sill. The massive "standard tholeiite" unit occurring between Lines 600E and 900E at 1200 S pinches out abruptly to the west in a very similar fashion and may also be intrusive in origin. Komatiitic volcanics occurring adjacent to the south margin of this unit are quite intensely serpentinized and commonly display fine, irregular asbestos veinlets. Several intensely sheared bands of komatiite and tholeiite occur as "intercalations". The rock itself is very massive with a coarse hackly weathering. The fresh surface exhibits a very felty. tremolitic texture .

Komatiitic metavolcanic rocks form a relatively minor volume within the stratigraphic package. Komatiitic units are generally thin, rangingfrom less than 10 to 40 metres in width. Generally east-west trending komatiite flows outcrop at the following locations: 540 South from Lines 200 to 1950E; 1100 South from Line 700E to 1000E; 1150 South at Line 9E. and along the south property boundary at 550East, 1625 south. A rather close spatial relationship exists between the occurrence of komatiitic and high iron tholeiitic flows, perhaps reflecting a petrogenetic link between the two lithologies.

The komatiitic unit outcropping at 540 South is quite thin (less than 7 meters wide) and consists largely of pale green tremolite, minor green weakly pleochroic chlorite, quartz, minor sphene, chromite and carbonate. The remaining southerly komatiitic units are, in contrast very dark green, finer grained foliated serpentine-chlorite-lesser tremolite rocks. It is interesting to note that both the high iron tholeiites and komatiitic units occurring south of approximately 800 South have only very weak to non-existent magnetic expression, which may be a function of the depth of overburden and/or generally more intense deformation and hydrothermal alteration.

An intensely sheared and chloritized zone occurs along the northwest corner of the steep north face of the large outcrop located at L900E, 450S. This rock (eg. Sm-90-78) was originally mapped as an intensely chloritized tholeiite;

geochemical analyses, however, indicated that it is of komatiitic affinity. The major HLEM graphitic conductor striking at 85-90° across the property at approximately 400 South has been drilled on several occassions, and minor units of komatiitic material were recognized immediately south of the conductor,

Although the outcrops north of the conductor were only cursorily examined, they appear to consist of massive and lesser pillowed magnesium tholeiitic basalts and minor more iron rich material.

A very unusual ultramafic dike/sill occurs at the north end of the large outcrop occurring between lines 17 East and 1850 East at approximately 400 South. The unit is 18-22 inches in width and strikes at 80°, being slightly discordant to the strike of the enveloping tholeiites at 85°. The rock in hand specimen is very massive to fractured, medium grained with a distinct felty texture. Tremolite-actinolite, serpentine, and minor chlorite and muscovite? are the major mineral constituents. The unit was originally mapped as a komatiite; however, its geochemistry was found to be very unusual and the dike may in fact have a lamprophyric affinity. The occurrence of a 4" wide biotite-chlorite lamprophyre dike observed at 950E, 625 south may support this interpretation.

Geochemistry

Selected geochemical plots (Jensen Cation Plot, AFM Plot, and bivariate plots of Al_2O_3 Vs. TiO_2 and Ti vs. Zr) for the south Murphy whole rock samples are presented in Figures 4 to 7. Each of these plots clearly distinguishes iron rich tholeiitic rocks from the more common tholeiitic basalts and magnesium tholeiites. The high iron rocks are generally relatively enriched in TiO_2, P_2O_5, Zr and iron compared to normal tholeiites;, in addition, they form a distinctive suite with a markedly different geochemical trend for Al_2O_3/TiO_2 ratios.

Komatiitic samples are readily identifiable on all of the four plots, falling clearly within the komatiite fields on both the Jensen Cation plot and the AFM diagram. TiO_2/Al_2O_3 and Ti/Zr ratios also distinguish the komatiites, as do elevated Cr_2O_3 values of 1000 ppm or greater.

The geochemistry of sample Sm-90-46, the tremolite dike, is very unusual. Although it plots in the komatiite field on both the Jenson and AFM diagrams, it is clearly not of komatiitic affinity. P_2O_5 in this sample is high at 0.85 weith percent, compared to average komatiites containing .03 to .07 weight percent of the element. In addition, Sr, Zr and Ba are all highly elevated relative to the komatiitic samples. Elevated values of these elements, in addition to slightly enriched K_2O (0.76 wt %) may suggest that the dike has a lamprophyric affinity.

Structural Geology

Primary foliations measured throughout the property vary from 80^o to 100^o and generally dip to the south at 75 to 85^o. The strike of pillows in less deformed areas is also from 85-95^o.

Jenson Cation Plot (1976)
Southeast Murphy Township Analyses

(Fields as indicated on analysis sheets)

Figure 4

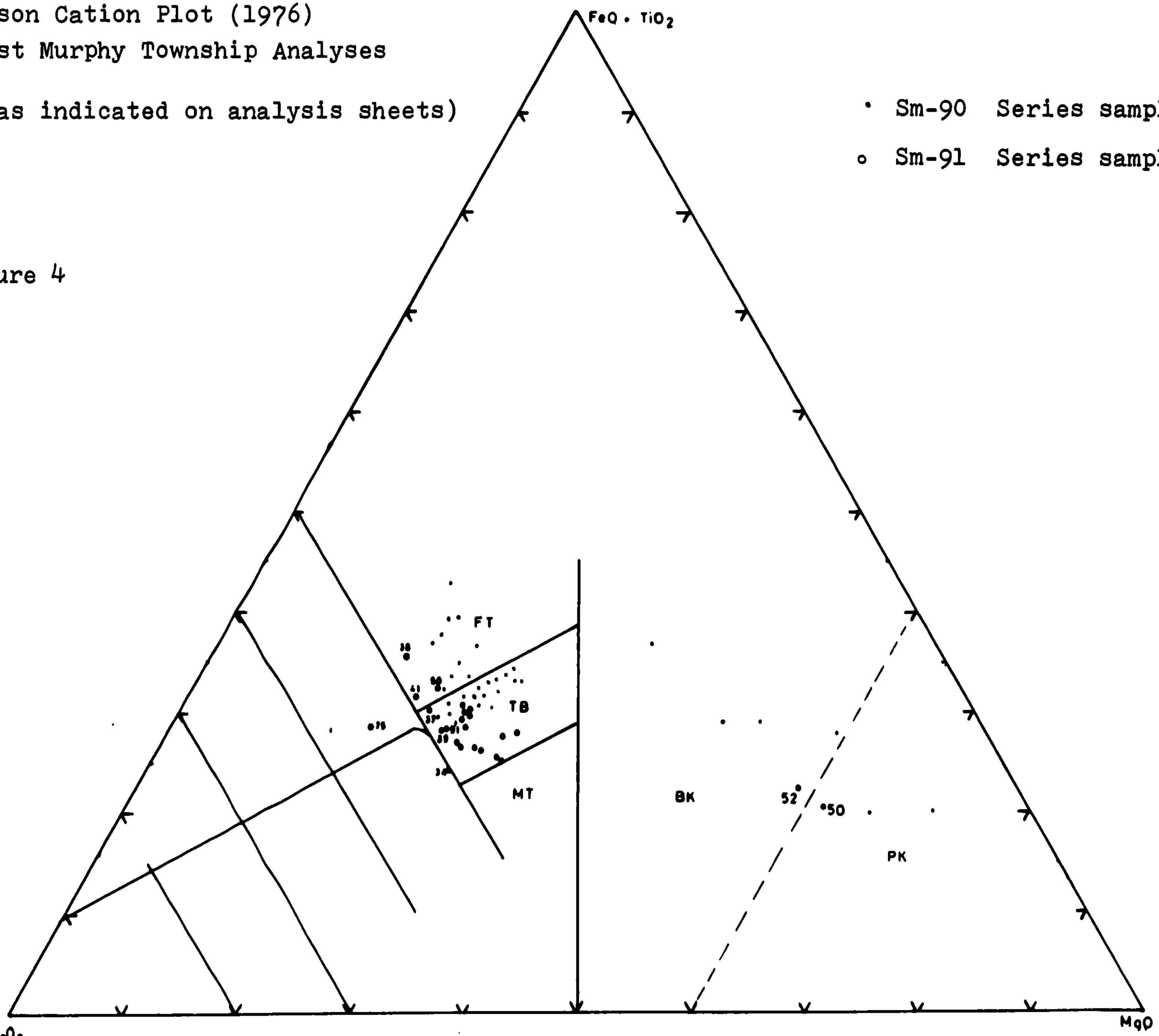
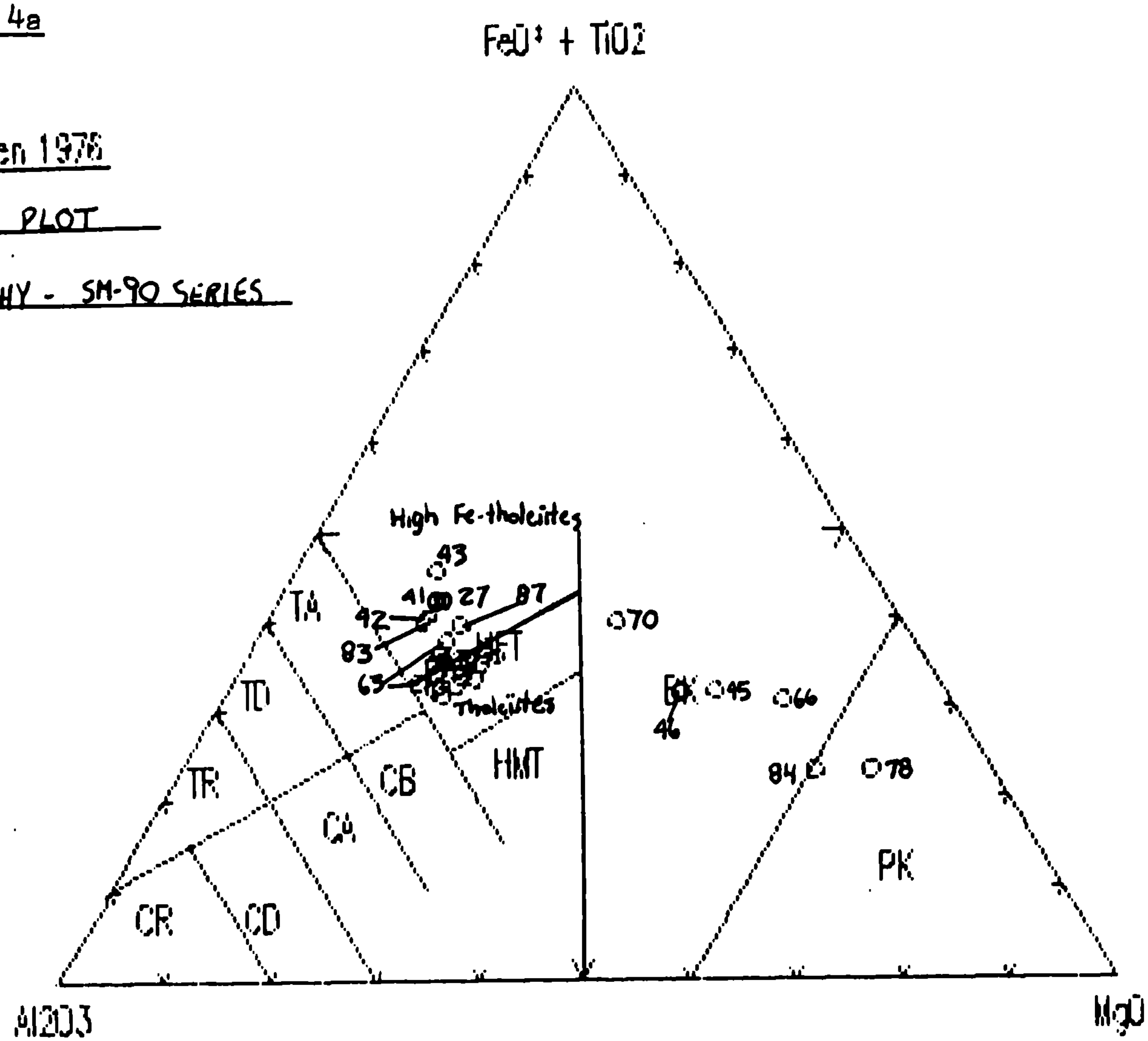


Figure 4a

Jensen 1976

CATION PLOT

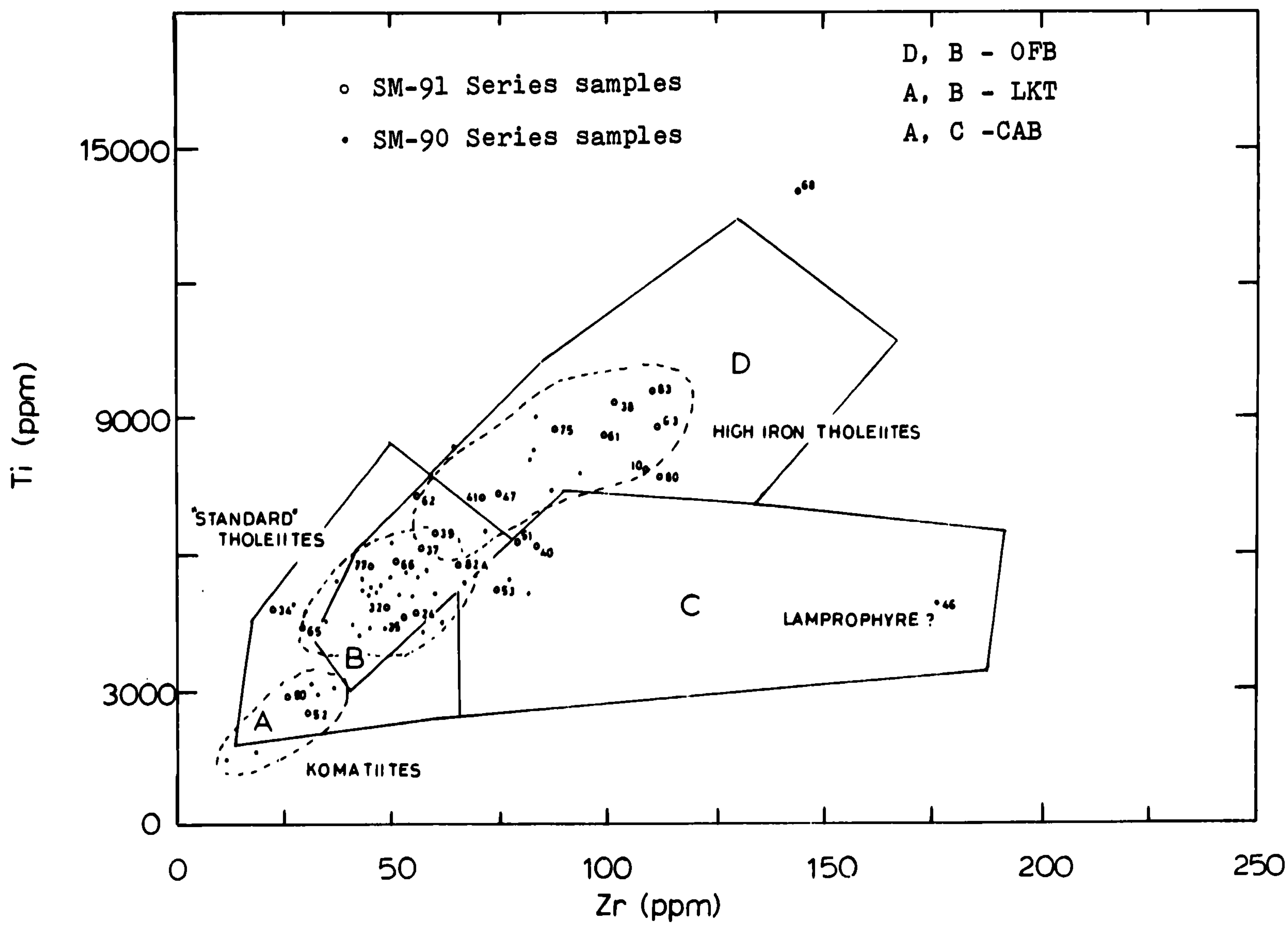
SOUTHEAST MURPHY - SM-90 SERIES



Plot of Zr/Ti - Pearce & Cann (1973)

Southeast Murphy Township Property Project

Figure 5



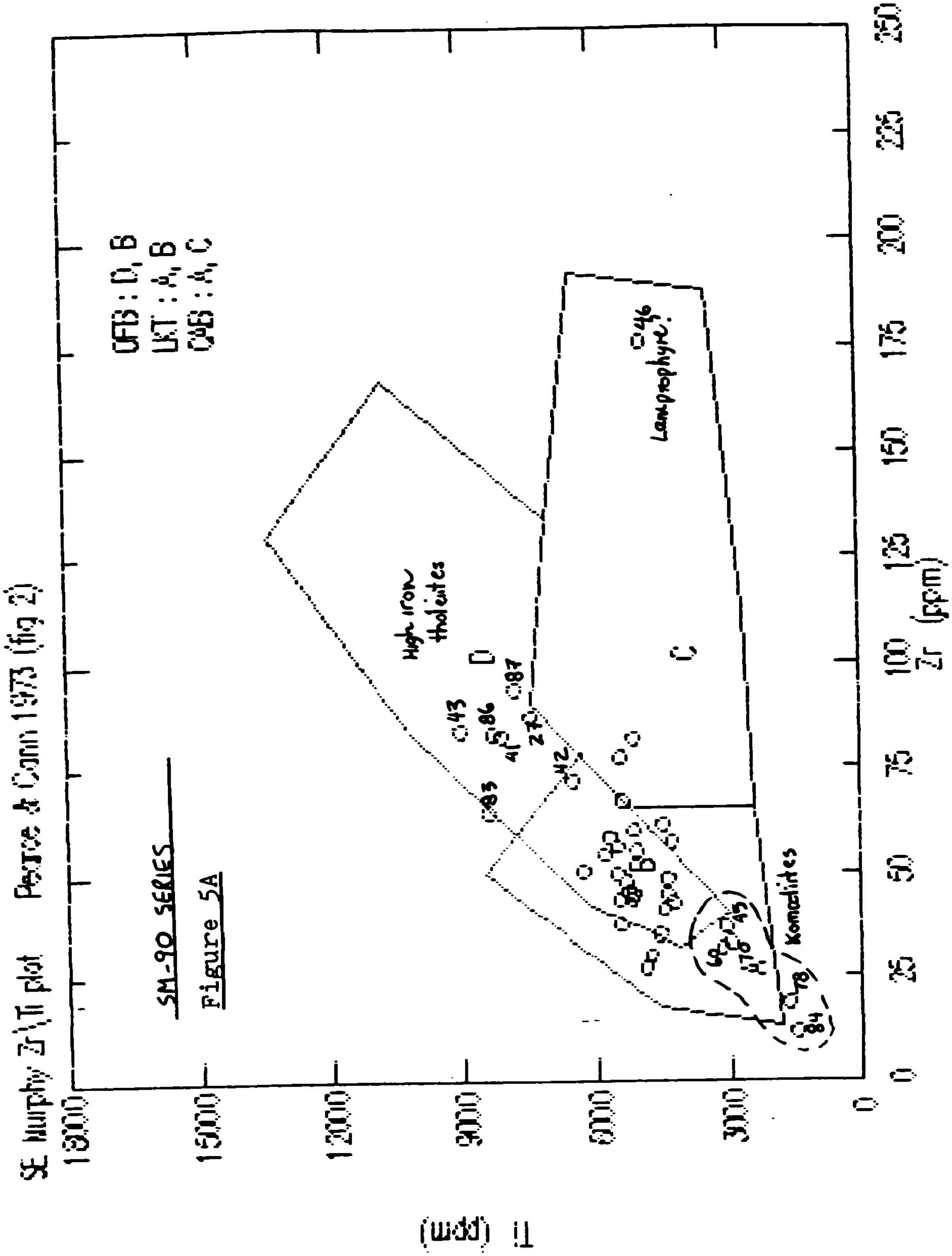
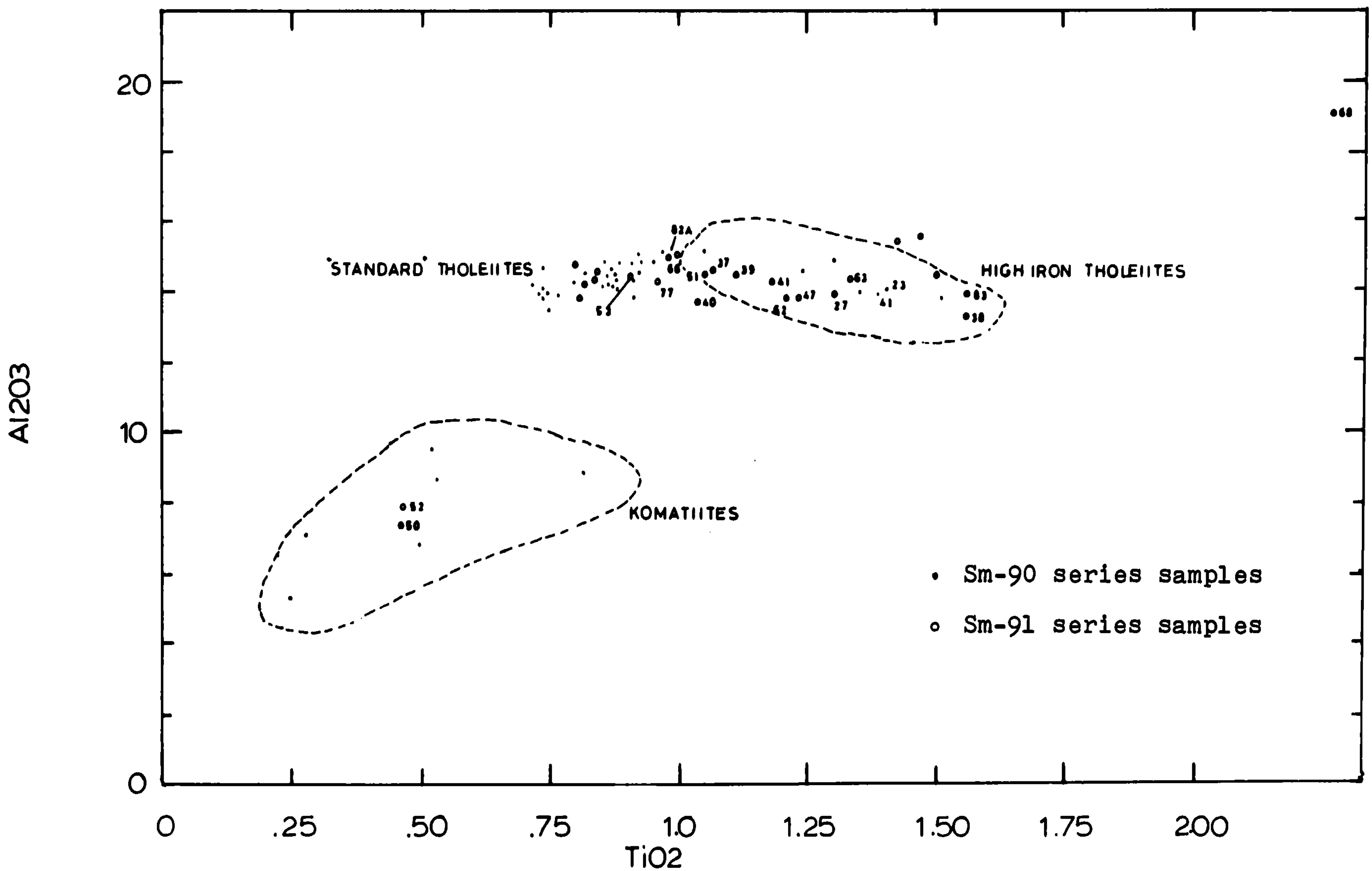

SE Murphy Zr/Ti plot
Pearce & Cann 1973 (fig 2)
SM-90 SERIES
Figure 5A
OFB : D, B
LKT : A, B
CAB : A, C
High iron tholeiites
Lamprophyre?
Komatiites
D
C
B
Zr (ppm)
Ti (ppm)
0
25
50
75
100
125
150
175
200
225
250
3000
6000
9000
12000
15000
18000

Figure 6 Plot of Anhydrous TiO2 vs. Anhydrous Al2O3

Southeast Murphy Township Property



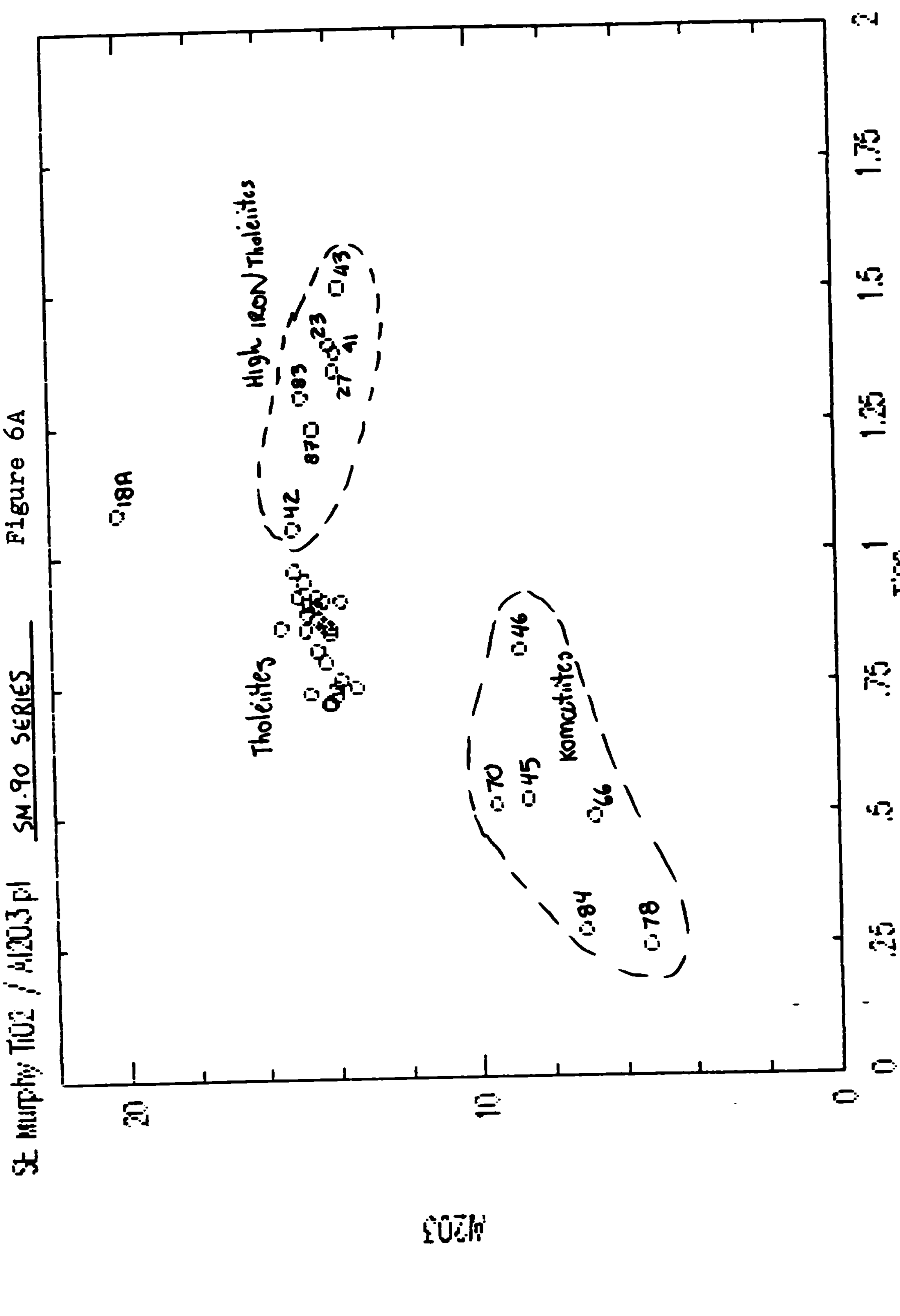
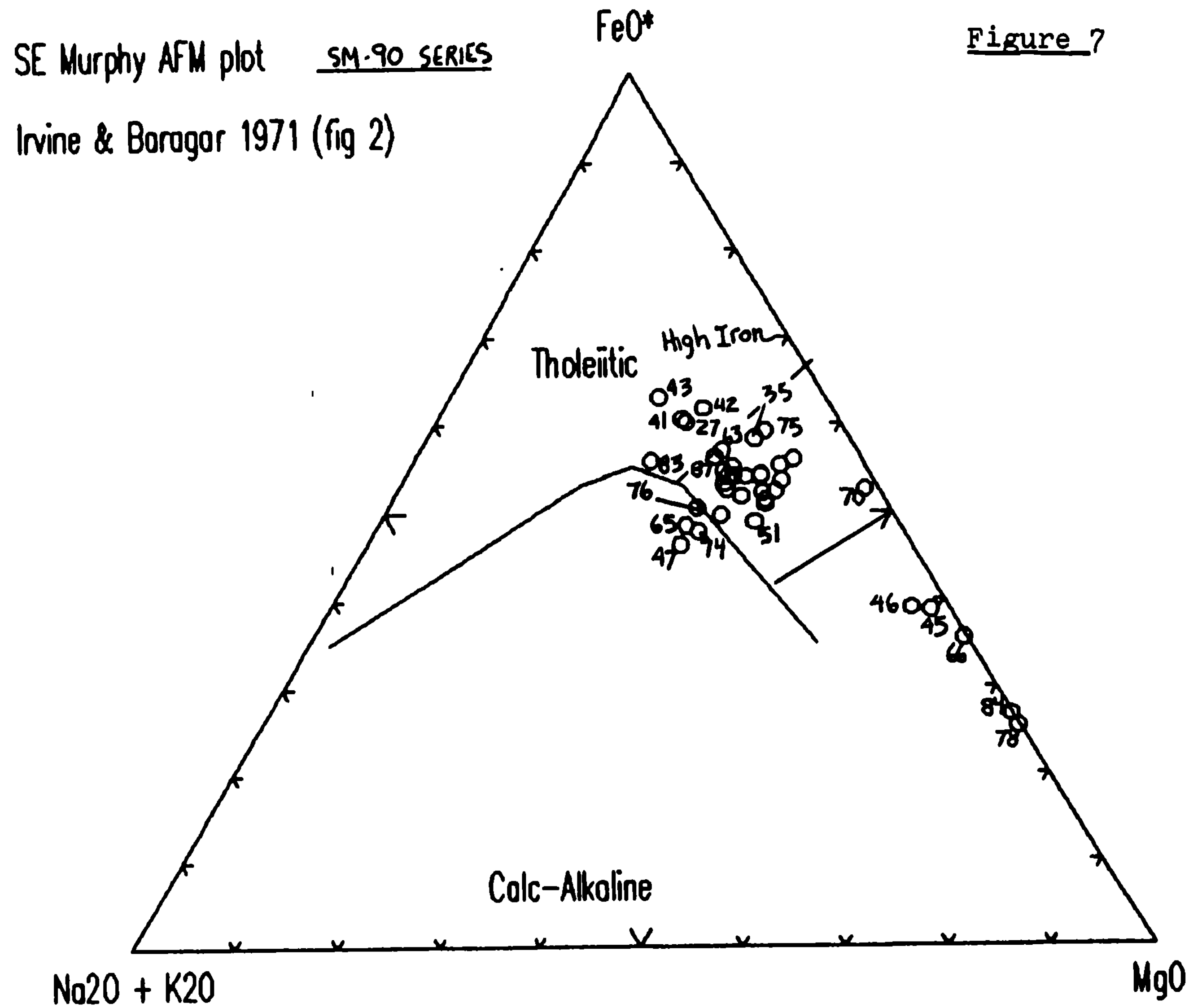

SE Murphy TiO2 / Al2O3 pl
SM.90 SERIES
Figure 6A
High IRON Tholeiites
Tholeiites
Komatiites
18A
42
87
83
27
23
41
43
46
70
45
66
84
78
0
.25
.5
.75
1
1.25
1.5
1.75
2
TiO2
0
10
20
Al2O3

Figure 7


SE Murphy AFM plot
SM-90 SERIES
Irvine & Boragar 1971 (fig 2)
FeO*
Na20 + K20
MgO
Tholeiitic
High Iron
Calc-Alkaline
43
41
42
27
35
75
13
83
67
76
65
47
74
51
70
46
45
66
78

A very prominent secondary foliation occurs throughout the entire property area, and is best developed in the sheared to fissile tops of pillowed flow units. This foliation strikes at 65-75° and dips variably south at 60 to 75°. Folding, warping and displacement of quartz veinlets and earlier foliations along the 65-75° shears and fractures consistently yield a sense of dextral motion on the structures. Quartz veins and veinlets occupy both primary and secondary structures, but are generally much more prevalent within the 65-75° planes, where vein margins commonly display thin, chloritic shear envelopes and occasional quartz crystal elongation.

Cleavage intersection lineations and rodding/ mineral elongation lineations measured on the secondary foliation planes are consistently steeply plunging to the east-southeast.

It is interesting to note that several zones exhibiting extremely low magnetic intensity trend across the property south of Baseline 0, also at approximately 70-75°. The zones are up to 80 meters in width, the most prevalent two of which occur at 1200 South and 800 to 900 South. Pillowed tholeiites outcropping at Line 300 East, 800 to 840 South occur within the latter mentioned zone of low magnetics. Here, the rocks are intensely sheared and moderately carbonatized and sericitized, with a pronounced fissility at 76°/68° S. The 70-75° trending magnetic lows can be observed on magnetic maps to terminate large zones of mag high associated with east-west trending iron tholeiitic units

Two untested I.P. chargeability anomalies, located at Line 400 East, 850 South and Line 0 East, 920 South, occur along the southern margin of this zone of 70^{o} low magnetics and may prove to be interesting drill targets.

A series of fault structures, striking at $40-45^{o}$ occur at rather regularly spaced intervals of 300-350 meters across the property south of Baseline 0, as defined by offsets in both ground magnetic and VLF anomaly trends. The most commonly observed structural expression of these faults is the occurrence of a very tightly spaced, locally intense fracture cleavage or jointing, striking at $40-60^{o}$ and generally dipping shallowly to the southeast at $19-45^{o}$. (eg at Line 8E, 580South). The 45^{o} fractures are commonly occupied by quartz-carbonate veins from 1" to 1 foot in width (eg at L8E, 580S; L 1E, 1400S). The I.P. chargeability anomaly outlined at Line 400E, 850 South appears to be centered directly upon one of these 45^{o} interpretted fault structures.

Alteration and Mineralization

Volcanic rocks underlying the property are, in general weakly carbonatized. Carbonatization and sericitization are more intense (but generally only moderate) within observed sheared pillowed tholeiitic zones. Pyrite generally occurs in trace amounts within most areas and lithologies.

At line 400E, 1500 South, a series of 4-6" wide quartz veins striking at $20 - 35^{o}$ and dipping to the west at $15-25^{o}$ occur within moderately ankeritized massive leuco xene basalt. Wallrock margins to the veins are chloritic, weakly sheared and sericitized and bear 1 - 1.5% coarse pyrite cubes and blebs. Two grab samples of the pyritized wallrock (SM-90-15 and SM-90-16) returned gold values of 34 and 12 ppb gold, respectively.

A small (5' X 4') outcrop of moderately ankeritized massive mafic volcanic was located during mapping in 1990, occuring at approximately 20E, 1560 South. A 8 cm. wide quartz-carbonate-tourmaline vein striking at 55-65°and dipping steeply south was uncovered here. Hand specimens of the sheared, chloritic wallrock to the vein bore 5-10% tourmaline and 1.5-2% disseminated pyrite. Sample Sm-90-49 of the vein and pyritized vein margin contained anomalous arsenic (46 ppm) and boron (5110) both important "indicator" minerals for lode gold deposits in the Timmins Camp.

Airborne geophysical maps indicate that a major east-west trending fault structure may trend roughly along the Murphy-Tisdale Township boundary, truncating the folded magnetic komatiitic flows of the North Tisdale Anticline at a very oblique angle (5-15°). Gold mineralization at the Beaumont prospect immediately to the east may be associated with this structure. The small showing mentioned above occurs approximately 60 metres north of this proposed fault and therefore was of great interest as an exploration target.

In October of 1991 an extensive area surrounding the vein was stripped using a Cat-235 backhoe contracted from Leo Allarie and Sons. Ltd. In addition, five 6-8 meter deep trenches were dug to the north and south to determine how extensive the veining and alteration are in the area. The geology of the trenched area is outlined on Map B. The stripped area exhibits a very high intensityof thin (4 cm to 12 cm) wide quartz-iron carbonate veins situated within 55-65^{o} trending narrow shears. Veins also commonly occupied fractures striking northwest and dipping shallowly to the southeast at 5-15^{o}.

Intense carbonate alteration occurs within 4 cms. to one metre of the vein margins in most instances and is accompanied by up to 5% fine to course grained disseminated euhedral pyrite cubes. Fine, fracture filling quartz-carbonate tourmaline veins occur locally in the vicinity of the originally "discovery vein". Tourmaline is generally restricted to the northeast trending, sheared veins, which also generally carry higher percentages of pyrite (see Table 1 for sample descriptions). Twenty-six samples from the stripped zone were assayed for gold; however, the values were uniformly low. Further exploration to the south of the stripped area is recommended, in closer proximity to the possible fault zone at the south township border

An area of strong carbonate alteration and quartz carbonate veining was delineated between Lines 5 and 7 East at approximately 940 south. Veining and up to 5-7% pyrite mineralization occur in an east-striking sheared zone of carbonaceous flow breccia and in the massive basalts south of the breccia. Gold values from samples here were uniformly low.

The east-west striking electromagnetic conductor at approximately 400 South is exposed in part between Lines 200E and 400E at approximately 500 South. Several trenches were located in this area during mapping. Here the basalts are intensely sheared and sericitized and contain up to 15% very fine grained to "pod-like" 1 cm masses of pyrite and pyrrhotite. This pyrrhotized zone was intersected in hole MH-78-1, drilled 50 meters to the south, and was found to structurally underly sheared graphitic argillite, locally containing 1-6 cm. bands of fine, massive pyrite.

A sixty foot long north-south trench occurs in bedrock at Line 2E, 1325 to 1340 South. Massive tholeiites within the trench are moderately carbonatized and silicified, and bear 2-5% fine disseminated pyrite and cubic pyrite to 1 mm Assay samples SM-90-59 and 60, from the north end of the trench, were the most pyritized samples taken; they returned negligible gold values and As values of 43 and 44 ppm, respectively.

Drill core located in the bush at 375 West, 350 North is believed to be from Victoria Algoma hole VA-24-2, put down in the 1960's, and tentatively located at 525 West, 490 North. Although the core is now very badly jumbled, several short sections of graphitic argillite were observed, indicating that the hole, drilled north, intersected the HLEM conductor occurring at the volcanic-sedimentary contact. A 1.5 foot section of previously split mafic volcanic bearing silicified fractures and 5-15% extremely fine fracture filling pyrite was resampled (SM-90-97) and returned a value of 100 parts per billion gold.

January, 1992

Kimberly M. Cunnison

TABLE 1

SAMPLE LOCATIONS AND DESCRIPTIONS

SM-91 and SM-90 Series Samples

ANALYSIS/METHOD CODE:

WR - whole rock analysis
Au - gold assay
As - arsenic assay
B - boron analysis
TS - thin section cut
HS - hand specimen

SOUTHEAST MURPHY PROJECT

1991 SAMPLE LOCATIONS AND DESCRIPTIONS

SM-91-#	Sample Type	Location	Description
10	WR	125E,410S	basalt, fgr., dark green massive, Fe Tholeiiete?
11	HS	075E,475S	basalt, fgr., lite grey fresh, vesicular, pillowed?
12	HS	150E,482 S	basalt, fine grained, lite grey well foliated
13	HS	450E,485S	basalt, pillowed,vesicular, medium grey
14	Au	305E,500S	basalt, heavily sulphidized, rusty, 10% po
15	Au	200E,510S	sulphidized and sheared basalt
16	HS	185E,565S	basalt, massive, light grey-green
17	Au	250E 810S	quartz vein, white, barren
18	Au	250E, 810S	wallrock to above quartz vein
19	HS	340E,860S	basalt, massive, fine grained, lite grey-green
20	Au	230E,930S	Quartz vein, bull, 5' wide
21	Au	230E,930S	wallrock to above quartz vein, chloritized, 1% py
22	HS	610E,1050S	basalt, massive, buff weathering, lite grey-green
23	HS	610E. 965S	basalt, well foliated, lite grey, fine grained
24	WR	600E, 970S	basalt, massive, Fe tholeiite?
25	HS	240E, 990S	basalt, mass., med-fine grained, lite grey green
26	HS	305E, 918S	basalt, pillowed, vesicular, lite grey-green
27	Au	310E, 890S	quartz vein, assoc. with IP anomaly?
28	Au	370E,880S	quartz vein, barren, white
29	Au	280E,910S	basalt, chloritized, 3% py
30	HS	620E,1010S	massive basalt, med. grained, lite grey-green
31	Au	600E,970S	quartz vein, barren, minor chlorite fractures
32	WR	615E, 915S	basalt, massive, 10 m. above base of flow

SOUTHEAST MURPHY PROJECT

1991 SAMPLE LOCATIONS AND DESCRIPTIONS

SM-91-#	Sample Type	Location	Description
33	HS	590E, 900S	basalt, fine grained, lite gray, folated to fissile, pillo
34	WR	600E, 855S	basalt, pillowed, vesicular, buff weathering, fresh sample
35	WR	600E, 865S	basalt, mass. med. green, orange-buff weathering
36	Au, As	555E, 930S	carb. rock, rusty, minor pyrite
37	WR	600E, 796S	basalt, massive, medium grained, med. green, Fe Thol?
38	WR	660E, 790S	basalt? mafic gabbro? massive, med. grained , dark green
39	WR	700E, 765S	basalt, massive, medium grey, low colour index
40	WR	700E 747S	basalt, massive, Fe tholeiite?
41	WR	700E, 761S	basalt, massive, quartz phyric to 1%, med. green
42	HS	600E, 700S	komatiite, polysutured, orange brown weathering, tremolite.
43	Au	625E 700S	quartz vein, bull white
44	HS	650E, 740S	basalt, pillowed, vesicular, fine grained, foliated
45	HS	600E, 637S	basalt, pillowed , vesicular, strongly foliated, lite gray
46	HS	610E, 582S	basalt, massive, lite grey green, f-med. grained, buff
47	WR	755E, 525S	basalt, massive, med. green, med. buff brown wth., Fe?
48	Au	750E, 540S	quartz vein, black chloritic seams, barren
49	Au	620E, 590S	quartz vein
50	WR	690E, 683S	komatiite, tremolitized,orange brown weathering
51	WR	420E, 820S	basalt, massive, med. green weathering, Fe thol?
52	WR	325E, 780S	komatiite, orange brown wthg, strongly fol. and tremol.
53	WR	272E, 800S	basalt, massive, Fe tholeiite?

SOUTHEAST MURPHY PROJECT

1991 SAMPLE LOCATIONS AND DESCRIPTIONS

SM-91-#	Sample Type	Location	Description
54	Au, As	470E, 930S	flow top breccia in trench, carbon seams
55	Au, As	470E, 930S	flow top? fine py. and v. minor arsenopyrite
56	Au	470E, 930S	carbonatized mass. flow with 5% crse pyrite cubes
57	Au	470E, 930S	carbonatized mass. flow with 5% crse pyrite cubes
58	Au, As	470E, 930S	8" quartz vein, 3-5% pyrite
59	Au, As	470E, 930S	Wallrock to above vein with 4% fine diss. py.
60	HS	008E, 790S	basalt, mass., poss. Fe thol, med green hue to wth. surfac
61	WR	300E, 590S	basalt, massive, med. grey green, fine-med grained
62	WR	800E, 731S	basalt, mass., sill? lite gray green f-m grained
63	WR	800E, 789S	as above, darker green, C.I. less than 30
64	HS	915E, 1620S	basalt, mass. lite to med. grey, med grained
65	WR	840E, 1120S	basalt,komatiite? massive with hackly wth.
66	WR	840E, 1150S	" " " "
67	Au	780E, 1210S	foliated ultramafic with fine py
68	WR	730E, 1210S	basalt?, ultramafic?
69	Au	550E, 925S	carbonatized basalt, minor qtz veinlets, 2% py
70	Au	550E, 925S	carbonatized massive basalt, 10% qtz veins, minor py
71	Au	550E, 945S	" " " " "
72	Au	550E, 945S	carbonatized basalt, 2-3% pyrite and qtz veins
73	Au	550E, 945S	qtz vein & fine diss. py in carbonatized wallrock
74	Au	470E 930S	carbonatized basalt, 5% py fron S. end of trench in bxx.

SOUTHEAST MURPHY PROJECT

1991 SAMPLE LOCATIONS AND DESCRIPTIONS

SM-91-#	Sample Type	Location	Description
75	WR	L13E,600S area	basalt, massive, lite grey, f-m grained
76	HS	L13E,600S area	komatiite, tremolitic rock
77	WR	L13E, 600S area	basalt, mass., med. grain med green wthg, dull
78	Au, Pt, Pd	L13E, 600S area	as above, contains 1-2% fine diss pyrite
79	Au, Pt, Pd	L13E, 600S area	as above, weakly carbonatized, 5% py in cubes
80	WR	L13E, 600S area	basalt, dark green, med grained. Fe thol.?
81	Au	1550E, 700S	carb-chlor. wallrock and quartz veins, minor py
82	HS	1550E, 700S	dark green basalt, Fe thol.
82A	WR	0E, 1520 S	mass. basalt, carbonatized, leucox-bearing
83	WR	L6E, 340S	massive basalt, med grained, mod. fol, dark green
84	HS	L6E, 275S	pillowed basalt, lite green, ves. and foliated
85	HS	L6E, 295S	mass. basalt, lite to med. grey green
86	Au	L3E, 500S	sulphidized vein margin with 5% po and qtz vein
87	Au	L3E, 500S	Sample from trench on sulphidized zone
88	Au	L3E, 500S	" " " " " "
89	HS	*MSA-0E, 1560S	7" quartz vein with 5% fine py at margins - sheare
90	Au	MSA-0E, 1560S	" " " " " "
91	Au	MSA-0E, 1560S	" " " " " "
92	HS	MSA-0E, 1560S	" " " " " "
93	Au	MSA-0E, 1560S	sheared quartz-carb vein, 5% py at margins
94	Au	MSA-0E, 1560S	" " " " " " "
95	HS	MSA-0E, 1560S	" " " " " " "
96	Au	MSA-0E, 1560S	" " " " " " "

* MSA is in main stripped area - refer to Map B for Location of samples

SOUTHEAST MURPHY PROJECT

1991 SAMPLE LOCATIONS AND DESCRIPTIONS

SM-91-#	Sample Type	Location	Description
97	Au	MSA-0E, 1560S	sheared quartz-carb vein, 5% py at margins
98	Au	MSA-0E, 1560S	" " " " " " "
99	Au	MSA-0E, 1560S	vuggy quartz vein with 3% py at margins
100	Au	MSA-0E, 1560S	vuggy folded sygmoidal qtz-carb vein, 2% py
101	Au	MSA-0E, 1560S	sheared, sericitized, chloritized qtz-carb vein
102	HS	MSA-0E, 1560S	" " " " "
103	Au	MSA-0E, 1560S	vuggy qtz-carb vein with 5% crse py cubes
104	Au	MSA-0E, 1560S	rusty, oxidized margin of sheared qtz-carb vein
105	Au	MSA-0E, 1560S	qtz. vein with 4% coarse py at margins
106	Au	MSA-0E, 1560S	narrow qtz. vein, 1% py. in carb. wallrock
107	Au	MSA-0E, 1560S	6" qtz-carb. vein, minor py cubes
108	Au	MSA-0E, 1560S	quartz bleb, trace py, minor chlorite seams
109	Au	MSA-0E, 1560S	12" qtz-carb vein 4% py in wallrock as crse cubes
110	HS	MSA-0E, 1560S	carbonatized basalt, trace fine pyrite
111	Au	MSA-0E, 1560S	flat qtz vein with chloritic fractures
112	Au	MSA-0E, 1560S	barren shallow-plunging qts vein
113	Au	MSA-0E, 1560S	pyritized wallrock- 5 to 7% crse py cubes to qtz ve
114	Au	MSA-0E, 1560S	qtz.-carb vein and pyritized wallrock (4%)
115	Au	MSA-0E, 1560S	4" qtz.-carb vein, 8% py in margins-fine cubes
116	Au	MSA-0E, 1560S	pyritized wallrock to vein
117	Au	MSA-0E, 1560S	3" dark grey qtz vein, minor py
118	Au	MSA-0E, 1560S	carb. rock with 50% fine quartz-tourmaline veinlets

* MSA is in main stripped area - refer to Map B for location of samples.

SOUTHEAST MURPHY PROJECT

SAMPLE LOCATIONS AND DESCRIPTIONS

SM-90-#	Sample Type	Location	Description
1	WR	800 S, 75 E	Massive Basalt, pale green, medium grained
2	HS, TS	113 E, 1452 S	" " "
3	WR	120 E, 1420 S	" " "
4	HS	145 E, 1400 S	" " " , trace pyrite
5	WR, TS	90 E, 1280 S	" " " , chlorite spotted
6	Au	90 E, 1280 S	Quartz-carbonate vein. Trace hematite + pyrite
7	HS	90 E, 1280 S	Massive basalt, medium green, chlorite spots
8	HS	135 E, 1165 S	Pillowed basalt, pale green, fine grained
9	Au	155 E, 1160 S	Massive white quartz vein; trace pyrite
10	Au	270 E, 1535 S	Green carbonate boulders
11	Au	270 E, 1535 S	" " "
12	Au	100 E, 450 S	Massive basalt, weakly sheared, trace pyrite
13	Au	370 E, 830 S	Sheared pillow basalt; carbonatized, trace pyrite
14	Au	180 E, 1063 S	Bull quartz vein; trace chalcopyrite
15	Au, As	437 E, 1500 S	Quartz-carbonate vein 1.5% pyrite
16	Au	437 E, 1500 S	Chloritic wallrock to SM-90-15 vein sample
17	Au	437 E, 1500 S	Quartz-carbonate vein; 0.5% pyrite
18	Au	437 E, 1500 S	Quartz-carbonate vein; trace to 1% pyrite
18A	WR, TS	437 E, 1500 S	Leucoxene bearing mafic volcanic; carbonatized
19	WR, Au	420 E, 1500 S	Dark green massive leucoxene basalt
20	WR, Au, TS	432 E, 1480 S	Pillowed tholeiite, pale green
21	WR	475 E, 1125 S	" " " "

SOUTHEAST MURPHY PROJECT

SAMPLE LOCATIONS AND DESCRIPTIONS

SM-90-#	Sample Type	Location	Description
23	WR, Au, TS	2200 E, 670 S	Dark green leucoxene basalt; 5% magnetite
24	Au	900 E, 750 S	Quartz-carbonate vein; trace pyrite
25	WR	900 E, 620 S	Pale green foliated basalt
26	HS	745 E, 590 S	Pillow basalt, pale green, sheared
27	WR, Au, TS	775 E, 540 S	Massive basalt, medium green
28	WR	1000 E, 480 S	Pale green vesicular basalt, foliated
29	HS	990 E, 500 S	Massive basalt, pale green
34	HS	2170 E, 550 S	Massive basalt, medium grey-green
35	WR	2275 E, 420 S	Pillowed basalt, pale green, foliated
36	Au	2175 E, 525 S	Sheared quartz calcite vein
37	Au	1825 E, 680 S	Sheared chloritic, black basalt, 2% pyrite
38	Au	1800 E, 683 S	" " " "
39	Au	1870 E, 390 S	Medium grey, fine grained basalt
40	Au	1850 E, 455 S	" " "
41	Au	1800 E, 510 S	Massive basalt, dark green, medium grained
42	Au	1725 E, 690 S	Sheared pillow basalt
43	WR, Au	1720 E, 670 S	Black chloritic basalt, 2% magnetite
44	WR	1700 E, 600 S	Foliated pillow basalt, pale green
45	WR, TS Au	1700 E, 537 S	Tremolitic Komatiite, massive, medium green
46	WR, TS, Au	1800 E, 413 S	Ultramafic dike, dark green, actinolitic; lamprophyric?
47	WR	1725 E, 412 S	Vesicular pillow basalt, pale green, strongly foliated
48	WR, TS, Au	12 E, 1555 S	Massive leucoxene basalt; moderately carbonatized
49	Au, As, B, TS	20 E, 1560 S	Tourmaline-bearing chloritic vein wall
[illegible]	Au, As	[illegible]	Rusty quartz carbonate vein; Minor pyrite

SOUTHEAST MURPHY PROJECT

SAMPLE LOCATIONS AND DESCRIPTIONS

SM-90-#	Sample Type	Location	Description
51	WR	30 E, 890 S	Massive basalt, medium green, chlorite spotted
52	Au	175 E, 1527 S	Sheared, chloritic pillow basalt, 3% pyrite
53	Au	180 E, 1520 S	" " " " "
54	T.S, H.S.	200 E, 1520 S	Massive leucoxene basalt, dark green
55	Au	275 E, 1375 S	Rusty chloritic vein wallrock, 3% pyrite
56	Au	275 E 1377 S	" " " " " "
57	H.S	275 E 1378 S	Bleached, fractured basalt in wallrock margin
58	Au	250 E 1325 S	Carbonatized weakly silicified basalt from main trench, 2% pyrite
59	As, Au	250 E, 1320 S	" " " " " " ", 4-5% pyrite
60	As, Au	250 E, 1320 S	" " " " " " ", 4-5% pyrite
61	Au	250 E, 1326 S	" " " " " " ", 2% pyrite
62	Au	250 E, 1328 S	Sheared, carbonatized basalt, 4% pyrite
63	WR, Au	250 E, 1340 S	" " " " "
64	Au	260 E, 1320 S	sheared, carbonatized tholeiite; minor pyrite
65	WR, Au	602 E, 1600 S	medium green massive basalt, med. grained; chlorite spotted
66	WR, TS, Au	600 E, 1620 S	Dark green, chloritic ultramafic
67	HS, TS	575 E, 1625 S	Medium green Komatiite with chlorite spots. Chloritic
68	Au	58 E, 1600 S	Vuggy quartz vein in narrow shear. Trace py.
69	WR	770 E, 1180 S	Pillowed tholeiite, pale green, foliated
70	WR, TS, Au	727 E, 1155 S	Komatiite, dark green, felty texture, foliated
71	HS	392 E, 982 S	Massive leucoxene basalt; medium-dark green, med. grained
72	Au	405 E, 980 S	Slickensided quartz vein. Chloritic margins; trace py.
73	WR, [illegible] TS	[illegible]	[illegible]

SOUTHEAST MURPHY PROJECT

SAMPLE LOCATIONS AND DESCRIPTIONS

SM-90-#	Sample Type	Location	Description
74	WR	785 E, 1510 S	Mass. basalt, med-dark green, leucoxene-bearing
75	WR	805 E, 1480 S	Sheared pillowed basalt, pale green
76	WR Au	995 E, 435 S	Pillowed, amygdal basalt, carbonatized, strongly foliated
77	Au	980 E, 450 S	Sheared, chloritic volcanic, fine grained, rusty, trace py.
78	WR, TS, Au	960 E, 448 S	Black, sheared, chloritic rock. Trace py. and talc veinlets
79	Au	960 E, 446 S	" " " " 0.5% pyrite and carbonate veinlets
80	Au	965 E, 448 S	" " " "
81	Au	1027 E, 450 S	Sheared, carbonatized basalt; Medium grey green. Minor pyrite.
82	WR, TS	850 E, 870 S	Mass. basalt, dark green, chloritic, leucoxene-bearing
83	WR, TS, Au	900 E, 1032 S	" " " " "
84	WR, Au	925 E, 1170 S	Black chlorite-serpentine rock with asbestos stringers
85	HS,	900 E, 1180 S	Massive dark green basalt; leucoxene-bearing
86	Au	100 W, 1340 S	Sheared basalt, rusty weathering; moderately carbonatized
87	WR	100 W, 1350 S	Mass. basalt, dark green; leucoxene-bearing
88	Au	200 W, 1400 S	Massive, white quartz-calcite vein. Trace pyrite
89	Au	200 W, 1400 S	Fractured white quartz vein. Minor pyrite and sericite
90	Au	200 W, 1406 S	Sericitized mafic schist; 15% carbonate stringers. Minor pyrite
91	WR, Au	202 W, 1406 S	Massive basalt, medium green, fine grained
92	HS	198 W, 1402 S	Pillowed basalt, pale green grey, mod. foliated
93	Au	650 W, 1400 S	Pink quartz-calcite vein
94	Au	650 W, 1415 S	1' pink quartz-calcite vein
95	WR	625 W, 1410 S	Massive mafic; medium green, leucoxene-bearing
96	WR	DDH VA-24-2 [illegible]	Amygdaloidal Basalt, pale green, [illegible] fracture[illegible]

SOUTHEAST MURPHY PROJECT

SAMPLE LOCATIONS AND DESCRIPTIONS

SM-90-#	Sample Type	Location	Description
97	Au	DDH-VA-24-2	1.5'- rusty, pyritic, graphitic argillite
98	Au	"	3.0'- rusty mafic volcanic. 20% fine fracture filling pyrite
99	Au	"	2.5'- Mafic volcanic, weakly sheared; 3% fracture filling pyrite
100	Au	"	1.2'- rusty mafic volcanic; 50% quartz vein pieces
101	Au	"	2.5'- moderately silicified volcanic, 2% fine diss. pyrite
102	Au	"	2.0'- sheared sediment? 1% pyrite
103	Au	"	2.0'- misc. quartz vein samples; 0.5% pyrite. Vein margins sheared.

APPENDIX A

GEOCHEMICAL RESULTS

SM-91 and SM-90 Series Samples

XRAL

SAMPLE \ %	SIO2	AL2O3	CAO	MGO	NA2O	K2O	FE2O3	MNO	TIO2	P2O5	CR2O3	LOI	SUM
SM-10-91	52.0	14.1	6.82	6.18	1.43	2.10	13.6	.18	1.33	.12	<.01	2.39	100.3
SM-24-91	52.1	13.7	7.10	7.37	3.25	1.24	11.2	.17	.799	.06	<.01	2.39	99.4
SM-32-91	47.5	14.5	11.0	8.01	1.35	.06	13.7	.19	.828	.06	<.01	3.16	100.4
SM-34-91	51.0	14.4	10.2	6.32	2.27	.03	10.5	.24	.823	.08	<.01	4.08	100.0
SM-35-91	46.9	13.2	10.2	6.09	1.65	.05	12.1	.19	.786	.07	<.01	9.23	100.5
SM-37-91	52.9	14.3	9.22	5.62	2.52	.16	11.9	.21	1.04	.10	<.01	2.23	100.2
SM-38-91	53.1	13.6	6.87	3.95	3.01	.26	14.2	.21	1.56	.14	<.01	3.08	100.0
SM-39-91	51.7	14.1	9.48	6.12	1.92	.24	12.8	.18	1.09	.09	.01	2.54	100.3
SM-40-91	54.8	13.5	7.57	5.91	3.47	.16	10.9	.18	1.03	.09	.02	2.93	100.6
SM-41-91	52.6	14.2	10.1	5.16	1.79	.05	12.6	.20	1.17	.10	.02	2.70	100.7
SM-47-91	52.5	13.7	6.94	6.16	2.73	.74	13.2	.19	1.23	.10	<.01	2.62	100.2
SM-50-91	45.5	6.84	8.46	19.5	.11	<.01	12.3	.23	.433	.04	.38	4.54	98.3
SM-51-91	52.3	14.0	8.26	5.73	3.15	.31	12.1	.18	1.04	.10	.02	2.54	99.8
SM-52-91	44.8	7.47	9.48	18.2	.16	.02	13.0	.26	.464	.04	.40	4.85	99.2
SM-53-91	51.6	14.0	9.71	6.73	1.43	.80	11.6	.18	.884	.08	.02	2.77	99.8
SM-61-91	46.3	15.4	9.13	6.85	2.08	.96	14.7	.22	1.43	.14	.02	2.85	100.1
SM-62-91	51.8	13.6	9.05	6.09	1.96	.13	12.9	.16	1.16	.10	.01	2.77	99.8
SM-63-91	51.2	15.0	6.64	4.89	4.40	.21	13.5	.18	1.40	.11	<.01	2.62	100.2
SM-65-91	51.0	13.9	9.31	7.69	2.73	.77	11.8	.17	.816	.07	<.01	2.23	100.5
SM-66-91	50.7	14.6	8.10	7.10	2.07	.91	12.0	.19	.958	.08	<.01	3.31	100.1
SM-68-91	40.6	18.1	6.07	7.90	2.40	.44	16.0	.21	2.17	.10	.03	4.62	98.7
SM-75-91	53.0	13.9	10.5	3.63	2.62	.34	9.99	.24	1.38	.12	<.01	4.39	100.2
SM-77-91	48.9	13.0	8.13	5.73	2.56	1.12	10.7	.17	.869	.08	.02	9.31	100.7
SM-80-91	52.3	13.4	7.32	5.06	3.08	1.03	13.3	.17	1.26	.12	<.01	3.00	100.1
SM-82A-91	41.8	12.8	8.12	7.54	1.23	.24	12.8	.18	.834	.07	.01	14.8	100.5
SM-83-91	55.5	13.3	5.75	4.86	2.98	.08	12.9	.16	1.52	.11	<.01	3.00	100.2

SAMPLE \ PPM	RB	SR	Y	ZR	NB	BA
SM-10-91	41	154	32	110	30	393
SM-24-91	20	54	21	56	<10	214
SM-32-91	<10	135	<10	52	34	53
SM-34-91	<10	68	16	20	24	77
SM-35-91	25	112	11	53	10	95
SM-37-91	<10	72	23	57	18	87
SM-38-91	17	76	43	104	34	146
SM-39-91	<10	90	27	60	20	112
SM-40-91	12	32	17	79	17	107
SM-41-91	15	181	21	70	21	91
SM-47-91	32	76	31	73	13	205
SM-50-91	<10	<10	12	32	12	70
SM-51-91	24	64	13	80	23	118
SM-52-91	12	<10	<10	24	22	79
SM-53-91	32	83	18	74	<10	150
SM-61-91	33	79	29	101	32	172
SM-62-91	13	123	12	57	<10	97
SM-63-91	<10	26	24	109	15	136
SM-65-91	41	56	<10	31	<10	241
SM-66-91	26	90	13	55	10	237
SM-68-91	25	99	57	142	<10	192
SM-75-91	17	134	45	88	16	201
SM-77-91	52	182	27	45	<10	549
SM-80-91	37	188	21	112	18	183
SM-82A-91	<10	82	19	67	<10	110
SM-83-91	18	53	29	110	21	103

XRAL

SAMPLE	AU PPB	AS PPM	PD PPB	PT PPB
SM-14-91	2	--	--	--
SM-15-91	2	--	--	--
SM-17-91	1	--	--	--
SM-18-91	5	--	--	--
SM-20-91	3	--	--	--
SM-21-91	<1	--	--	--
SM-27-91	1	--	--	--
SM-28-91	<1	--	--	--
SM-29-91	<1	--	--	--
SM-31-91	<1	--	--	--
SM-36-91	12	25.9	--	--
SM-43-91	<1	--	--	--
SM-48-91	4	--	--	--
SM-49-91	3	--	--	--
SM-54-91	4	47.1	--	--
SM-55-91	1	32.9	--	--
SM-56-91	<1	--	--	--
SM-57-91	<1	--	--	--
SM-58-91	2	58.8	--	--
SM-59-91	3	68.2	--	--
SM-67-91	2	--	--	--
SM-69-91	3	--	--	--
SM-70-91	3	--	--	--
SM-71-91	<1	--	--	--
SM-72-91	6	--	--	--
SM-73-91	3	--	--	--
SM-74-91	3	--	--	--
SM-78-91	<1	--	4	10
SM-79-91	<1	--	4	10
SM-81-91	2	--	--	--
SM-86-91	3	--	--	--
SM-87-91	2	--	--	--
SM-88-91	2	--	--	--
SM-90-91	1	--	--	--
SM-91-91	1	--	--	--
SM-93-91	2	--	--	--
SM-94-91	1	--	--	--
SM-96-91	1	--	--	--
SM-97-91	<1	--	--	--
SM-98-91	<1	--	--	--
SM-99-91	<1	--	--	--
SM-100-91	1	--	--	--
SM-101-91	1	--	--	--
SM-103-91	<1	--	--	--
SM-104-91	2	--	--	--
SM-105-91	<1	--	--	--
SM-106-91	1	--	--	--
SM-107-91	1	--	--	--
SM-108-91	<1	--	--	--
SM-109-91	11	--	--	--

X-RAY ASSAY LABORATORIES 1885 Leslie Street Don Mills Ontario M3B 3J4 (416)445-5755 Fax (416)445-4152 Tlx 06-986947

SAMPLE	AU PPB	AS PPM	PD PPB	PT PPB
SM-111-91	<1	--	--	--
SM-112-91	1	--	--	--
SM-113-91	<1	--	--	--
SM-114-91	<1	--	--	--
SM-115-91	<1	--	--	--
SM-116-91	1	--	--	--
SM-117-91	<1	--	--	--
SM-118-91	4	--	--	--

X-RAY ASSAY LABORATORIES 28-NOV-91
JENSEN CATION PLOT WITH GRUNSKY MODIFICATION GRAPH 1
D.R.PYKE(REF.11274)

SAMPLE	SYMBOL	CODE	AL2O3	MGO	FE2O3+MNO+TIO2
SM-10-91	1	BT	44.65	24.75	30.60
SM-24-91	2	BT	44.43	30.26	25.27
SM-32-91	3	BT	42.59	29.76	27.65
SM-34-91	4	BT	48.33	26.83	24.84
SM-35-91	5	BT	45.10	26.32	28.58
SM-37-91	6	BT	47.95	23.83	28.21
SM-38-91	7	FT	47.21	17.34	35.45
SM-39-91	8	BT	45.72	25.10	29.18
SM-40-91	9	BT	47.01	26.02	26.97
SM-41-91	10	BT	47.37	22.00	30.12
SM-47-91	11	BT	44.42	25.26	30.32
SM-50-91	12	UK	17.19	61.97	20.84
SM-51-91	13	BT	47.03	24.35	28.62
SM-52-91	14	BK	19.02	58.61	22.37
SM-53-91	15	BT	45.74	27.80	26.46
SM-61-91	16	BT	44.61	25.10	30.29
SM-62-91	17	BT	44.75	25.34	29.91
SM-63-91	18	FT	48.66	20.06	31.28
SM-65-91	19	BT	43.71	30.58	25.71
SM-66-91	20	BT	45.64	28.07	26.29
SM-68-91	21	BT	45.43	25.08	29.49
SM-75-91	22	AT	53.62	17.71	28.67
SM-77-91	23	BT	46.84	26.11	27.05
SM-80-91	24	FT	45.86	21.90	32.23
SM-82A-91	25	BT	41.07	30.59	28.34

CODE REFERENCE - JENSEN CATION PLOT

UK - ULTRAMAFIC KOMATIITE BK - BASALTIC KOMATIITE
FT - IRON RICH BASALT HT - HIGH MAGNESIUM BASALT
AT - THOLEIITIC ANDESITE DT - THOLEIITIC DACITE
RT - THOLEIITIC RHYOLITE BT - THOLEIITIC BASALT
AC - CALC-ALKALINE ANDESITE BC - CALC-ALKALINE BASALT
RC - CALC-ALKALINE RHYOLITE DC - CALC-ALKALINE DACITE
** - NOT DEFINED

L. S. JENSEN (1976): A NEW CATION PLOT FOR CLASSIFYING SUBALKALIC VOLCANIC ROCKS. ONTARIO DIVISION OF MINES, MISC. PAPER 66.

E. C. GRUNSKY (1981): NO. 16 AN ALGORITHM FOR THE CLASSIFICATION OF SUBALKALIC VOLCANIC ROCKS USING THE JENSEN CATION PLOT. SUMMARY OF FIELD WORK. ONTARIO DIV. OF MINES, MISC. PAPER 100.

X-RAY ASSAY LABORATORIES 23-NOV-91

JENSEN CATION PLOT WITH GRUNSKY MODIFICATION GRAPH 2

D.R.PYKE(REF.11274)

SAMPLE	SYMBOL	CODE	AL2O3	MGO	FE2O3+MNO+TIO2
SM-83-91	1	FT	46.23	21.37	32.40

CODE REFERENCE - JENSEN CATION PLOT

UK - ULTRAMAFIC KOMATIITE   BK - BASALTIC KOMATIITE
FT - IRON RICH BASALT   MB - HIGH MAGNESIUM BASALT
AT - THOLEIITIC ANDESITE   DT - THOLEIITIC DACITE
RT - THOLEIITIC RHYOLITE   BT - THOLEIITIC BASALT
AC - CALC-ALKALINE ANDESITE   BC - CALC-ALKALINE BASALT
RC - CALC-ALKALINE RHYOLITE   DC - CALC-ALKALINE DACITE
** - NOT DEFINED

L. S. JENSEN (1976): A NEW CATION PLOT FOR CLASSIFYING SUBALKALIC VOLCANIC ROCKS. ONTARIO DIVISION OF MINES, MISC. PAPER 66.

E. C. GRUNSKY (1981): NO. 16 AN ALGORITHM FOR THE CLASSIFICATION OF SUBALKALIC VOLCANIC ROCKS USING THE JENSEN CATION PLOT. SUMMARY OF FIELD WORK. ONTARIO DIV. OF MINES, MISC. PAPER 100.

SAMPLE \ %	SIO2	AL2O3	CAO	MGO	NA2O	K2O	FE2O3	MNO	TIO2	P2O5	CR2O3	LOI	SUM
SN-90-1	49.7	14.3	10.4	6.75	1.86	0.62	12.0	0.19	0.83	0.06	0.02	3.70	100.5
SN-90-3	51.0	13.5	12.1	6.82	1.10	0.12	11.3	0.19	0.71	0.05	0.01	3.39	100.3
SN-90-5	53.2	13.1	10.2	7.19	1.46	0.29	11.4	0.17	0.73	0.05	<0.01	2.62	100.4
SN-90-18A	36.9	17.6	6.30	7.71	2.71	0.88	14.2	0.17	0.95	0.09	<0.01	12.7	100.2
SN-90-19	47.5	12.9	9.61	6.45	1.91	0.07	11.1	0.20	0.72	0.05	<0.01	9.70	100.2
SN-90-20	52.5	13.7	9.56	6.73	2.04	0.12	10.8	0.27	0.69	0.05	0.02	3.93	100.4
SN-90-21	53.2	13.6	10.3	5.65	2.50	0.09	10.1	0.28	0.83	0.07	<0.01	3.16	99.8
SN-90-22	53.4	13.8	10.7	6.62	1.98	0.12	10.2	0.20	0.70	0.05	0.02	2.77	100.6
SN-90-23	54.0	13.2	6.44	3.65	3.37	0.13	13.7	0.20	1.39	0.10	<0.01	3.85	100.1
SN-90-25	52.4	14.2	9.66	6.11	2.99	0.11	10.1	0.24	0.71	0.05	0.02	3.39	100.0
SN-90-27	52.4	13.5	7.50	5.10	2.57	0.53	13.7	0.20	1.31	0.10	<0.01	3.70	100.6
SN-90-28	51.2	14.5	9.58	5.73	2.25	0.33	11.1	0.27	0.93	0.07	0.02	4.31	100.3
SN-90-35	51.2	14.0	11.2	5.77	1.25	0.39	11.5	0.29	0.89	0.06	0.02	3.39	100.0
SN-90-41	52.4	13.5	8.42	4.89	2.78	0.29	13.5	0.17	1.35	0.09	<0.01	3.16	100.6
SN-90-42	46.4	13.2	10.9	4.54	1.96	0.25	12.1	0.39	1.13	0.09	<0.01	9.31	100.3
SN-90-43	52.2	13.3	6.52	4.45	3.08	0.40	15.0	0.20	1.46	0.11	<0.01	3.39	100.1
SN-90-44	53.7	13.6	10.1	5.42	2.12	0.11	10.4	0.23	0.82	0.07	0.02	3.62	100.2
SN-90-45	45.5	8.16	8.93	17.6	0.17	0.37	12.8	0.23	0.50	0.03	0.29	5.70	100.3
SN-90-46	43.3	8.23	13.7	14.4	0.15	0.76	10.9	0.27	0.76	0.85	0.09	7.00	100.6
SN-90-47	49.7	14.2	9.53	5.90	2.46	1.83	9.72	0.30	0.87	0.07	0.02	5.39	100.2
SN-90-48	44.5	12.5	7.49	7.48	1.63	0.40	11.6	0.16	0.76	0.05	0.02	13.9	100.5
SN-90-51	50.8	14.1	8.41	7.58	1.18	1.68	11.1	0.13	0.87	0.06	0.02	3.93	99.9
SN-90-63	45.8	12.4	8.93	5.21	1.19	1.08	11.0	0.22	0.79	0.05	<0.01	13.8	100.5
SN-90-65	53.3	14.7	7.36	5.97	3.72	0.36	10.5	0.18	1.02	0.07	<0.01	3.08	100.3
SN-90-66	37.6	6.02	10.9	20.6	0.07	0.05	12.7	0.21	0.44	0.04	0.42	10.5	99.6
SN-90-69	48.2	13.5	11.1	5.76	2.12	0.42	10.8	0.24	0.84	0.07	0.02	7.08	100.2
SN-90-70	41.5	8.63	14.6	10.9	0.08	0.28	13.8	0.33	0.47	0.04	0.38	9.23	100.3
SN-90-73	50.9	13.3	9.11	7.56	1.59	0.14	12.7	0.18	0.88	0.06	0.02	3.77	100.2
SN-90-74	49.7	14.0	6.58	7.75	1.46	3.37	12.8	0.22	0.79	0.05	<0.01	3.16	100.0
SN-90-75	47.1	12.7	14.2	5.23	1.12	0.12	10.4	0.24	0.70	0.05	<0.01	8.70	100.6
SN-90-76	57.7	14.2	4.75	5.24	3.13	0.09	9.58	0.17	0.91	0.07	0.02	4.31	100.2
SN-90-78	44.7	4.69	2.19	26.8	0.04	0.04	10.2	0.11	0.22	0.02	0.69	9.85	99.6
SN-90-82	51.5	13.6	10.3	7.02	1.87	0.31	12.0	0.18	0.73	0.06	0.01	2.62	100.2
SN-90-83	50.7	12.9	7.35	4.32	3.49	0.30	11.3	0.22	1.29	0.07	<0.01	8.23	100.2
SN-90-84	46.0	6.67	7.19	23.9	0.05	0.04	9.79	0.19	0.26	0.01	0.31	6.00	100.4
SN-90-87	49.4	13.8	5.76	6.26	2.43	0.59	13.2	0.19	1.21	0.09	0.01	7.23	100.3
SN-90-91	52.4	13.8	9.97	5.95	2.32	0.15	11.0	0.26	0.84	0.07	<0.01	3.16	100.0
SN-90-95	51.8	14.3	8.49	6.95	1.92	0.87	11.6	0.18	0.86	0.07	0.03	3.47	100.6
SN-90-96	49.4	14.2	9.15	6.28	1.96	0.06	9.55	0.20	0.79	0.06	<0.01	7.93	99.6

SAMPLE \ PPM	RB	SR	Y	ZR	NB	BA
SH-90-1	21	145	22	58	19	183
SH-90-3	16	124	<10	47	19	44
SH-90-5	<10	144	<10	40	29	103
SH-90-18A	17	43	20	63	10	125
SH-90-19	11	69	10	27	19	70
SH-90-20	<10	33	13	41	<10	59
SH-90-21	13	67	18	79	17	53
SH-90-22	<10	141	27	56	12	62
SH-90-23	12	97	32	86	12	75
SH-90-25	<10	90	13	43	<10	58
SH-90-27	14	71	45	80	10	102
SH-90-28	19	74	26	52	<10	125
SH-90-35	16	139	22	48	28	324
SH-90-41	21	163	38	81	<10	99
SH-90-42	14	32	38	79	21	95
SH-90-43	24	56	33	81	18	98
SH-90-44	<10	68	21	53	<10	60
SH-90-45	25	<10	<10	30	<10	133
SH-90-46	18	324	11	164	21	881
SH-90-47	60	91	<10	53	17	1420
SH-90-48	21	41	<10	39	<10	109
SH-90-51	39	124	11	74	12	192
SH-90-63	29	69	<10	32	<10	90
SH-90-65	14	104	24	49	<10	237
SH-90-66	<10	43	17	29	<10	46
SH-90-69	<10	92	21	62	<10	151
SH-90-70	15	47	<10	33	<10	34
SH-90-73	20	97	13	42	25	66
SH-90-74	69	88	22	26	11	540
SH-90-75	10	40	<10	32	<10	24
SH-90-76	<10	97	22	56	<10	70
SH-90-78	<10	<10	<10	<10	26	<10
SH-90-82	10	113	14	60	14	119
SH-90-83	27	61	28	59	17	140
SH-90-84	13	<10	<10	17	17	19
SH-90-87	<10	91	22	87	15	562
SH-90-91	13	107	27	42	18	85
SH-90-95	20	80	22	46	<10	215
SH-90-96	19	25	24	41	16	54

SAMPLE	AU PPB	AU-1AT PPB	BE PPM	B PPM	SC PPM	TI PPM	V PPM	CR PPM	CO PPM
SM-90-1	--	--	--	--	--	--	--	--	--
SM-90-3	--	--	--	--	--	--	--	--	--
SM-90-5	--	--	--	--	--	--	--	--	--
SM-90-6	--	<1	--	--	--	--	--	--	--
SM-90-9	--	<1	--	--	--	--	--	--	--
SM-90-10	--	<1	--	--	--	--	--	--	--
SM-90-11	--	<1	--	--	--	--	--	--	--
SM-90-12	--	2	--	--	--	--	--	--	--
SM-90-13	--	<1	--	--	--	--	--	--	--
SM-90-14	--	<1	--	--	--	--	--	--	--
SM-90-15	--	34	--	--	--	--	--	--	--
SM-90-16	--	12	--	--	--	--	--	--	--
SM-90-17	--	1	--	--	--	--	--	--	--
SM-90-18	--	<1	--	--	--	--	--	--	--
SM-90-18A	--	--	--	--	--	--	--	--	--
SM-90-19	--	2	--	--	--	--	--	--	--
SM-90-20	--	<1	--	--	--	--	--	--	--
SM-90-21	--	--	--	--	--	--	--	--	--
SM-90-22	--	--	--	--	--	--	--	--	--
SM-90-23	--	3	--	--	--	--	--	--	--
SM-90-24	--	4	--	--	--	--	--	--	--
SM-90-25	--	--	--	--	--	--	--	--	--
SM-90-27	--	1	--	--	--	--	--	--	--
SM-90-28	--	--	--	--	--	--	--	--	--
SM-90-35	--	--	--	--	--	--	--	--	--
SM-90-36	--	3	--	--	--	--	--	--	--
SM-90-37	--	8	--	--	--	--	--	--	--
SM-90-38	--	7	--	--	--	--	--	--	--
SM-90-39	--	<1	--	--	--	--	--	--	--
SM-90-40	--	<1	--	--	--	--	--	--	--
SM-90-41	--	3	--	--	--	--	--	--	--
SM-90-42	--	--	--	--	--	--	--	--	--
SM-90-42A	--	<1	--	--	--	--	--	--	--
SM-90-43	--	<1	--	--	--	--	--	--	--
SM-90-44	--	--	--	--	--	--	--	--	--
SM-90-45	--	<1	--	--	--	--	--	--	--
SM-90-46	--	<1	--	--	--	--	--	--	--
SM-90-47	--	--	--	--	--	--	--	--	--
SM-90-48	--	<1	--	--	--	--	--	--	--
SM-90-49	--	<1	--	5110	--	--	--	--	--
SM-90-50	--	<1	--	--	--	--	--	--	--
SM-90-51	--	--	--	--	--	--	--	--	--
SM-90-52	--	1	--	--	--	--	--	--	--
SM-90-53	--	<1	--	--	--	--	--	--	--
SM-90-55	--	3	--	--	--	--	--	--	--
SM-90-56	--	3	--	--	--	--	--	--	--
SM-90-58	--	1	--	--	--	--	--	--	--
SM-90-59	--	<1	--	--	--	--	--	--	--
SM-90-60	--	1	--	--	--	--	--	--	--
SM-90-61	--	4	--	--	--	--	--	--	--

AU-1AT PPB - ASSAY PERFORMED ON 30 GRAM ALIQUOT

SAMPLE	AU PPB	AU-1AT PPB	BE PPM	B PPM	SC PPM	TI PPM	V PPM	CR PPM	CO PPM
SN-90-62	--	1	--	--	--	--	--	--	--
SN-90-63	--	3	--	--	--	--	--	--	--
SN-90-64	--	4	--	--	--	--	--	--	--
SN-90-65	--	4	--	--	--	--	--	--	--
SN-90-66	--	2	--	--	--	--	--	--	--
SN-90-68	--	<1	--	--	--	--	--	--	--
SN-90-69	--	--	--	--	--	--	--	--	--
SN-90-70	--	3	--	--	--	--	--	--	--
SN-90-72	--	<1	--	--	--	--	--	--	--
SN-90-73	--	<1	--	--	--	--	--	--	--
SN-90-74	--	--	--	--	--	--	--	--	--
SN-90-75	--	--	--	--	--	--	--	--	--
SN-90-76	--	<1	--	--	--	--	--	--	--
SN-90-77	--	<1	--	--	--	--	--	--	--
SN-90-78	--	2	--	--	--	--	--	--	--
SN-90-79	--	10	--	--	--	--	--	--	--
SN-90-80	--	1	--	--	--	--	--	--	--
SN-90-81	--	<1	--	--	--	--	--	--	--
SN-90-82	--	--	--	--	--	--	--	--	--
SN-90-83	--	<1	--	--	--	--	--	--	--
SN-90-84	--	1	--	--	--	--	--	--	--
SN-90-86	--	<1	--	--	--	--	--	--	--
SN-90-87	--	--	--	--	--	--	--	--	--
SN-90-88	--	<1	--	--	--	--	--	--	--
SN-90-89	--	<1	--	--	--	--	--	--	--
SN-90-90	--	<1	--	--	--	--	--	--	--
SN-90-91	--	<1	--	--	--	--	--	--	--
SN-90-93	--	<1	--	--	--	--	--	--	--
SN-90-94	--	<1	--	--	--	--	--	--	--
SN-90-95	--	--	--	--	--	--	--	--	--
SN-90-96	--	--	--	--	--	--	--	--	--
SN-90-97	--	100	--	--	--	--	--	--	--
SN-90-98	--	84	--	--	--	--	--	--	--
SN-90-99	--	43	--	--	--	--	--	--	--
SN-90-100	--	2	--	--	--	--	--	--	--
SN-90-101	--	<1	--	--	--	--	--	--	--
SN-90-102	--	3	--	--	--	--	--	--	--
SN-90-103	--	12	--	--	--	--	--	--	--
					--	--	--	--	--

AU-1AT PPB - ASSAY PERFORMED ON 30 GRAM ALIQUOT

SAMPLE	AS PPM	AS PPM	SE PPM	BR PPM	MO PPM	AG PPM	CD PPM	SB PPM	CS PPM
SM-90-1	--	--	--	--	--	--	--	--	--
SM-90-3	--	--	--	--	--	--	--	--	--
SM-90-5	--	--	--	--	--	--	--	--	--
SM-90-6	--	--	--	--	--	--	--	--	--
SM-90-9	--	--	--	--	--	--	--	--	--
SM-90-10	--	--	--	--	--	--	--	--	--
SM-90-11	--	--	--	--	--	--	--	--	--
SM-90-12	--	--	--	--	--	--	--	--	--
SM-90-13	--	--	--	--	--	--	--	--	--
SM-90-14	--	--	--	--	--	--	--	--	--
SM-90-15	17	--	--	--	--	--	--	--	--
SM-90-16	--	--	--	--	--	--	--	--	--
SM-90-17	--	--	--	--	--	--	--	--	--
SM-90-18	--	--	--	--	--	--	--	--	--
SM-90-18A	--	--	--	--	--	--	--	--	--
SM-90-19	--	--	--	--	--	--	--	--	--
SM-90-20	--	--	--	--	--	--	--	--	--
SM-90-21	--	--	--	--	--	--	--	--	--
SM-90-22	--	--	--	--	--	--	--	--	--
SM-90-23	--	--	--	--	--	--	--	--	--
SM-90-24	--	--	--	--	--	--	--	--	--
SM-90-25	--	--	--	--	--	--	--	--	--
SM-90-27	--	--	--	--	--	--	--	--	--
SM-90-28	--	--	--	--	--	--	--	--	--
SM-90-35	--	--	--	--	--	--	--	--	--
SM-90-36	--	--	--	--	--	--	--	--	--
SM-90-37	--	--	--	--	--	--	--	--	--
SM-90-38	--	--	--	--	--	--	--	--	--
SM-90-39	--	--	--	--	--	--	--	--	--
SM-90-40	--	--	--	--	--	--	--	--	--
SM-90-41	--	--	--	--	--	--	--	--	--
SM-90-42	--	--	--	--	--	--	--	--	--
SM-90-42A	--	--	--	--	--	--	--	--	--
SM-90-43	--	--	--	--	--	--	--	--	--
SM-90-44	--	--	--	--	--	--	--	--	--
SM-90-45	--	--	--	--	--	--	--	--	--
SM-90-46	--	--	--	--	--	--	--	--	--
SM-90-47	--	--	--	--	--	--	--	--	--
SM-90-48	--	--	--	--	--	--	--	--	--
SM-90-49	46	--	--	--	--	--	--	--	--
SM-90-50	3	--	--	--	--	--	--	--	--
SM-90-51	--	--	--	--	--	--	--	--	--
SM-90-52	--	--	--	--	--	--	--	--	--
SM-90-53	--	--	--	--	--	--	--	--	--
SM-90-55	--	--	--	--	--	--	--	--	--
SM-90-56	--	--	--	--	--	--	--	--	--
SM-90-58	--	--	--	--	--	--	--	--	--
SM-90-59	43	--	--	--	--	--	--	--	--
SM-90-60	44	--	--	--	--	--	--	--	--
SM-90-61	--	--	--	--	--	--	--	--	--

Geological Report
McCart Township Property
N1/2, Lot 6, Concession 5
McCart Township
Porcupine Mining Division, Ontario

January, 1992

Dale R. Pyke

CONTENTS

Geological Report

McCart Township Property

Introduction

The property , located approximately 35 miles northeast of the City of Timmins (Figure 1) and 8 miles west of Iroquois Falls, consists of the following four claims in the north half of Lot 6, Concession 5, McCart Township:

P1131548	SW1/4	N1/2	Lot 6, Concession 5
P1131549	NW1/4	S1/2	Lot 6, Concession 5
P1131550	NE1/4	S1/2	Lot 6, Concession 5
P1131551	SE1/4	N1/2	Lot 6, Concession 5

Mr. Bruce Raine is the recorded holder of the claims.

The claims are readily accessible. An all weather road extends west from Highway 11 along the north boundary of Concession 4, from which a bush road/trail in Lot 5 extends north to the claim group.

Previous Work

The geology of McCart Township has been compiled by Satterly (1953) at a scale of 1 inch to 1/4 mile.

In 1950, Arrow Timber Co. conducted a magnetic and geological survey over the claim group. The exploration was oriented towards finding commercial asbestos within the ultramafic intrusive rocks. Seven diamond drill holes were sunk within the ultramafic rocks in the southwest part of the current property to test for asbestos fibre. The holes largely intersected serpentinzed dunite; only minor asbestos was encountered.

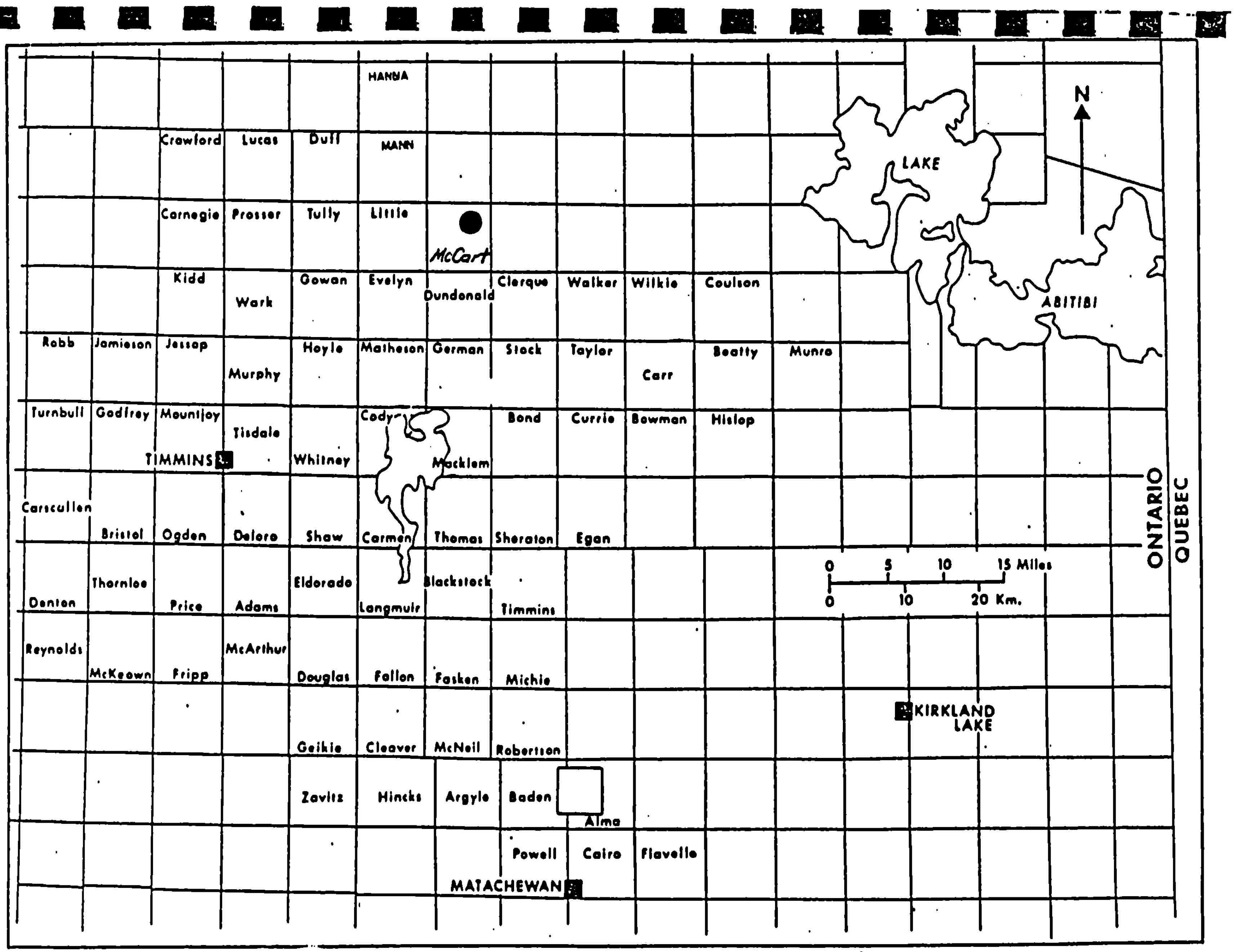


Figure 1 - Location map McCart Township Property

In 1988, a combined airborne electromagnetic and magnetic survey was flown by Geoterrex Limited for the Ontario Geological Survey (OGS, 1988), which covered much of the area immediately north and east of Timmins, inclusive of McCart Township.

Present Survey

The present survey was conducted by D. R. Pyke over a period of five days in October 1991. North-south picket lines at 100 meter intervals and an airphoto blow-up at an approximate scale of 1:5000 provided mapping control. Because of the extensive outcrop on the property a great deal more time could be spent documenting many of the primary volcanic features.

Regional Geology

The property is located near the southeast end of a large gabbroic-ultramafic complex that extends approximately 15 miles to the northwest (Pyke el, 1973). The complex appears to be largely sill-like in nature, having been emplaced within relatively flat lying komatiitic and tholeiitic lavas. To date, exploration work within the region has largely been confined to the northwest portion of the complex where some interesting, yet sub-economic nickel-copper values and anomalous platinum and palladium values are reported from diamond drilling (Shklanka, 1969). Here, at the Zevely Prospect in Mann Township, nickel-copper assays are reported from a 72 foot wide zone occurring at an intrusive peridotite-volcanic contact. Locally, up to five foot sections contained 15% sulphides (pyrrhotite and chalcopyrite) that assayed as high as 6.6% copper and 5.5% nickel with locally anomalous platinum values (0.05 ounces/ ton). The general area of the current property in McCart Township is considered to have good potential for Ni-Cu-Pt-Pd mineralizaton, even though the few samples assayed in the course of the present survey have not been encouraging.

Property Geology

The map as presented is at best preliminary, as both the quality and extent of bedrock exposure is unique for the north Timmins area and certainly warrants a more detailed examination, particulary as regards the primary volcanic features.

Two main rock types dominate the property:- 1) ultramafic intrusive rocks consisting largely of serpentinized dunite-peridotite and, 2) tholeiitic volcanics, some of which appear to have a basaltic komatiite affinty.

The ultramafic rocks occur as an envelope surrounding the volcanics, with which they are interpreted to be partially fault bounded. They appear to be largely of dunitic/peridotitic parentage, now altered to serpentine, and are commonly massive, orange brown to orange grey weathering and dark blue-black or locally medium green on fresh surfaces. Irregular fracturing and local development of asbestos fibre is common. One of the highest outcrop areas in the general region is centered on the ultramafics in the southwest corner of the claim group where local relief would be in the order of 50-60 meters or more.

The tholeiitic volcanics form a large expanse of outcrop (Photo 1) across the central portion of the claim group. The flows dip shallow to the north, 20 to 30 degrees, and generally consist of a massive base with an overlying pillowed portion, commonly capped by a pillow breccia and/or a hyaloclastitic flow top. Individual flows, or portions of flows, commonly form a steep south facing scarp and a shallow north dipping dip slope (Photo 2), imparting a step-like quality to much of the outcrop area. Flows vary in thickness from approximately 10 to 20 meters. The tholeiites are typically massive, fine to- medium grained, medium grey green weathering and dark green grey fresh. Some of the outcrops in the most southern exposures display the characteristic polygonal jointing or polysuturing structure on the weathered surface which is typically diagnostic of komatiitic flows. However, chemically (see below) the flows have a normal tholeiitic composition. In thin section the tholeiites are largely composed of approximately equal proportions of pale green actinolitic hornblende and weakly to strongly saussuritized sodic plagioclase. Minor accessories include opaque minerals, leucoxene, chlorite, epidote and traces of quartz, biotite and rarely apatite. Grain size averages 0.6-1.0 mm; one massive flow was observed to contain 10-15 percent actinolitic laths 5 to10 mm in length.

A peculiar variolitic-type structure is common to many of the flows, occurring in both the pillowed and massive portions but generally best developed in the former. They consist of ball-like structures (Photos 3 and 4) varying from 0.5 to 30 cm and commomly averaging 2-3cm. The structures protrude from the outcrop and can be very densely packed or form isolated 'balls' or strings of 'balls'. Mineralogically, the 'balls' are more leucocratic than the surrounding matrix, with a typical color index of 35 as compared to 55 for the matrix. The 'balls' may occur randomly throughout a pillow or be preferentially concentrated at the rim or the central portion. In the massive part of a flow the 'balls' tend to occur near the top, at or near the transition to the overlying pillowed portion of the flow. In thin section the 'balls' are in sharp contact with the matrix and are seen to consist typically of actinolitic hornblende commonly forming elongate laths up to 3-4 mm, set a a matrix of plagioclase which is commonly twinned and shows only minor alteration to epidote/saussurite, etc. Traces of leucoxene, quartz and opaque minerals are also present. In contrast, the matrix consists of actinolitized pyroxene, much of which shows a skeletal habit (a sheaf-of-wheat type texture) and is set within a matrix of dull brown saussuritized plagioclase, some of which in the pillowed portions is extremely fine, non-pleochroic, and appears in part to represent devitrified glass. As a preliminary interpretation, it would appear that the 'balls' formed first, representing initial crystallization centres within the magma, perhaps in part before extrusion. On extrusion, rapid crystallization of the magma (matrix) led to the formation of skeletal pyroxenes locally set in a somewhat glassy matrix.

Minor orange brown weathering, polysutured ultramafic komatiite, now altered largely to tremolite, outcrops in the northeast part of the claim group near L12E-500N.

The volcanic rocks trend E-W, dip gently north at approximately 20 degrees and are right side up. Structurally the property is interpreted to be on the north limb of an east plunging overturned anticline, the axial trace of which trends through the claims immediately to the south. (Assessment Files). Foliation is generally weak and tends to be parallel to flow contacts. Two fracture cleavages, striking NW and NE respectively, are locally prominent, being especially strongly developed in flow top and pillow breccias. Shearing occurs at least locally along the ultramafic-volcanic contact but it is not currently known if these are major zones of dislocation. It is suspected that the ultramafics form part of a single sill-like body that is repeated by faulting, however, more detailed mapping will be necessary to confirm this or not.

Geochemistry

Six samples from the volcanic rocks were submitted to X-Ray Assay Laboratories for whole rock chemical analyses. The results, listed in Table 1, confirm the petrographic observations that there is little variation in the composition. On a Cation Plot (Fe_2O_3+TiO_2+MnO - Al_2O_3-MgO; Jensen, 1976), all the samples lie within the field of magnesium tholeiite (Figure 2). Of interest is a polysutured pillow basalt (P3-91), mapped as basaltic komatiite which lies well within the field of

Table 1: Whole rock chemical analyses, McCort Township property

SAMPLE \ %	SIO2	AL2O3	CAO	MGO	NA2O	K2O	FE2O3	MNO	TIO2	P2O5	CR2O3	LOI	SUM
P-1-91	54.0	12.5	12.5	6.64	1.04	.20	11.4	.19	.679	.07	.03	1.08	100.4
P-3-91	52.9	12.9	11.0	7.47	1.32	.35	11.8	.20	.707	.07	.05	1.85	100.7
P-5-91	52.6	13.3	10.5	7.20	2.57	.20	12.2	.17	.712	.07	.05	1.00	100.6
P-12-91	51.7	13.4	9.06	7.63	2.97	.23	12.3	.20	.752	.08	.03	1.70	100.1
P-20-91	52.6	12.6	10.3	7.55	1.51	.86	11.8	.21	.703	.07	.05	1.70	100.0
P-22-91	51.4	12.0	11.1	9.44	1.31	.22	12.3	.20	.619	.07	.11	1.54	100.3

SAMPLE \ PPM	RB	SR	Y	ZR	NB	BA
P-1-91	15	128	27	55	12	76
P-3-91	<10	103	12	55	23	144
P-5-91	<10	103	25	66	15	77
P-12-91	<10	89	12	65	15	142
P-20-91	19	68	27	53	<10	281
P-22-91	16	118	<10	42	18	80

Table 2: Assays, McCort Township property

SAMPLE	AU PPB	AS PPM	PD PPB	PT PPB
P-2-91	4	--	12	<10
P-4-91	<1	--	6	10
P-7-91	2	--	6	<10
P-9-91	<1	--	5	<10
P-25-91	1	--	--	--
P-27-91	2	--	--	--

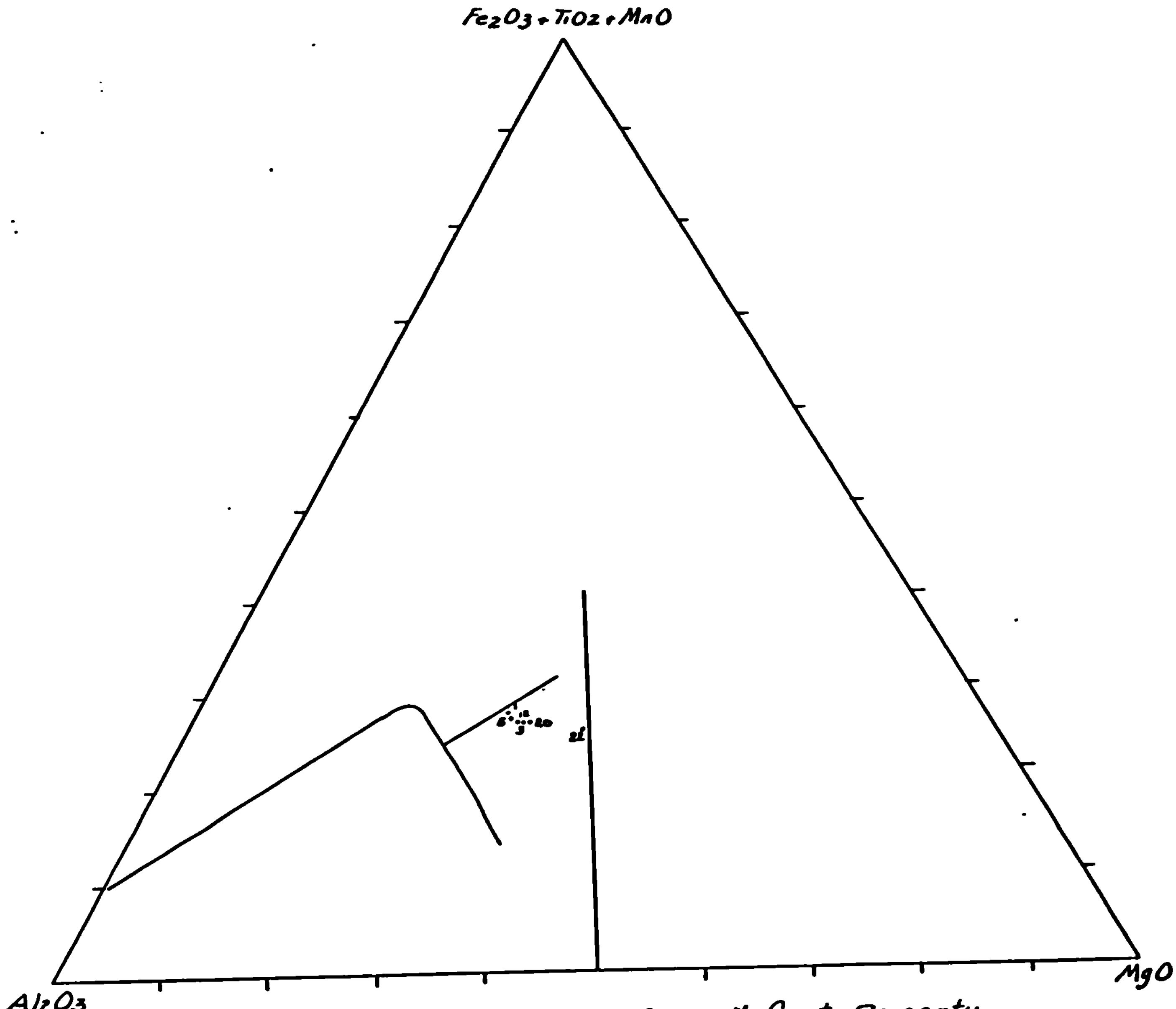


Figure 2: Cation Plot of Samples from McCart Property

(Samples P1, P3, P5, P12, P20, P22)

Mg-tholeiite. As polysuturing is such a diagnostic structure of komatiitic rocks, this suggests that some of the more southerly flows on the property are of komatiitic affinity.

Mineralization

Only traces of mineralization were observed on the property, yet time constraints were such that only a cursory examination was possible. Minor disseminated pyrrhotite-pyrite occurs along a sheared and rusty weathered contact between the ultramafics and volcanics near L5E-L6E in the southwest corner of the property. Samples, assayed for Au-Pt-Pd, returned no anomalous values (Table 2). In the volcanics a number of bull white quartz veins, varying in width from a few cm to a meter, trend E-W and are notably barren of mineralization; assays for gold were negligible.

Results and Recommendations

The property is underlain by relatively flat lying Mg-tholeiitic basalts and ultramafic sill(s), interpreted to be on the north limb of an overturned anticline. Only minor pyrrhotite- pyrite mineralization was observed on the claims, but detailed prospecting, particularly along and near the contact zone of the ultramafics with the volcanics for potential Ni-Cu and/or Pt-Pd mineralization is recommended. The prospecting would necessarily be extended into contiguous claims to the south, which are also held by the co-owners, and are known to host minor nickel mineralization along the sheared ultramafic-volcanic contact extending southwest near L7E.

W. R. Pyke

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Jensen, L. S.

1976: A New Cation Plot for Classifying Subalkalic Volcanic Rocks; Ontario Division Mines, Miscell. Paper 66, 22p.

Ontario Geological Survey

1988: Airborne Electromagnetic and Magnetic Survey, Timmins Area, McCart Township, Map 81058, scale 1:20,000.

Pyke, D. R., Ayres, L. D. and Innes, D. G.

1973: Timmins-Kirkland Lake Sheet; Ontario Division of Mines, Geological Compilation Series, Map2205, scale 1"= 4 miles

Shklanka, R.

1969: Copper, Nickel, Lead and Zinc Deposits of Ontario; Ontario Dept. Mines, MRC 12, 394p.

Satterly, J.

1953: McCart Township; Ontario Department Mines, Preliminary Map P16, scale 1" = 1/4 miles.

Photo 1 - Typical outcrop area on the claim group

Photo 2 - Dip slope outcrop ridge in pillowed Mg-tholeiite

Photo 3 - Ball-like structure in pillowed Mg-tholeiite

Photo 4 - Ball-like structure in pillowed Mg-tholeiite

Report on

ELECTROMAGNETIC (VLF)

and

MAGNETOMETER SURVEYS,

McCART TOWNSHIP PROPERTY

McCART TOWNSHIP

PORCUPINE MINING DIVISION, ONTARIO

January, 1992

Kimberly M. Cunnison

Kimberly M. Cunnison

CONTEN

Maps Included

INTRODUCTION

The property is located approximately 35 miles northeast of the City of Timmins in the Porcupine Mining Division (Figure 1). It consists of two groups of four contiguous claims located in Lot 4, Concession 6 and Lot 6, Concession 5, in McCart Township (Figures 2 and 3). The claim numbers and locations are as follows:

South Claim Group

P-1131544	SW$\frac{1}{4}$	N$\frac{1}{2}$	Lot 6, Concession 5
P-1131545	SE$\frac{1}{4}$	N$\frac{1}{2}$	Lot 6, Concession 5
P-1131546	NE$\frac{1}{4}$	N$\frac{1}{2}$	Lot 6, Concession 5
P-1131547	NW$\frac{1}{4}$	N$\frac{1}{2}$	Lot 6, Concession 5

North Claim Group

P-1131548	SW$\frac{1}{4}$	N$\frac{1}{2}$	Lot 4, Concession 6
P-1131549	NW$\frac{1}{4}$	S$\frac{1}{2}$	Lot 4, Concession 6
P-1131550	NE$\frac{1}{4}$	S$\frac{1}{2}$	Lot 4, Concession 6
P-1131551	SE$\frac{1}{4}$	N$\frac{1}{2}$	Lot 4, Concession 6

Mr. Bruce Raine is the recorded holder of all of the claims.

Both claim groups are readily accessible . An all weather road extends west from Highway 11 along the north boundary of Concession 4, from which a bush road in Lot 5 extends north to both claim groups.

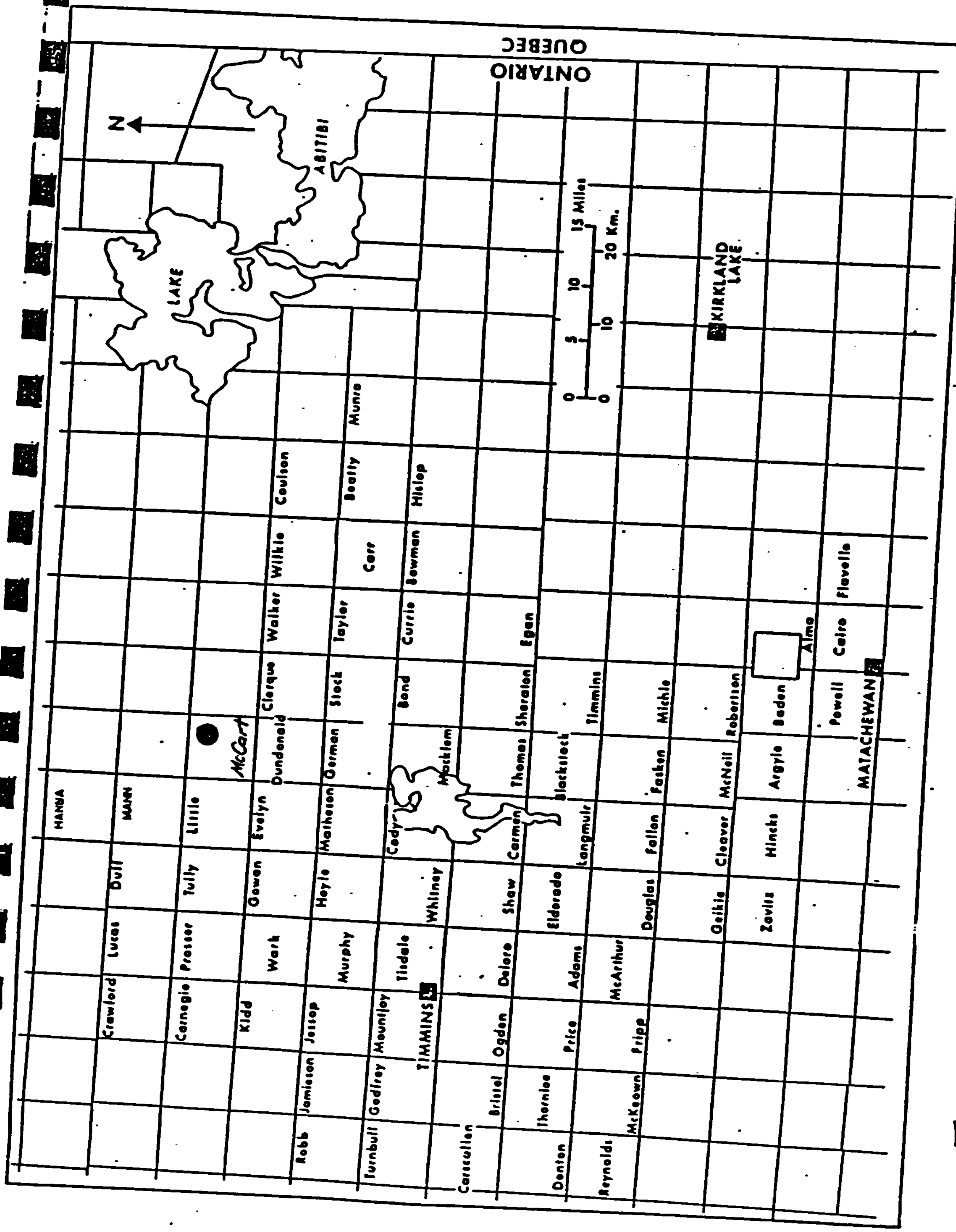


Figure 1: Location Map - McCart Township Property

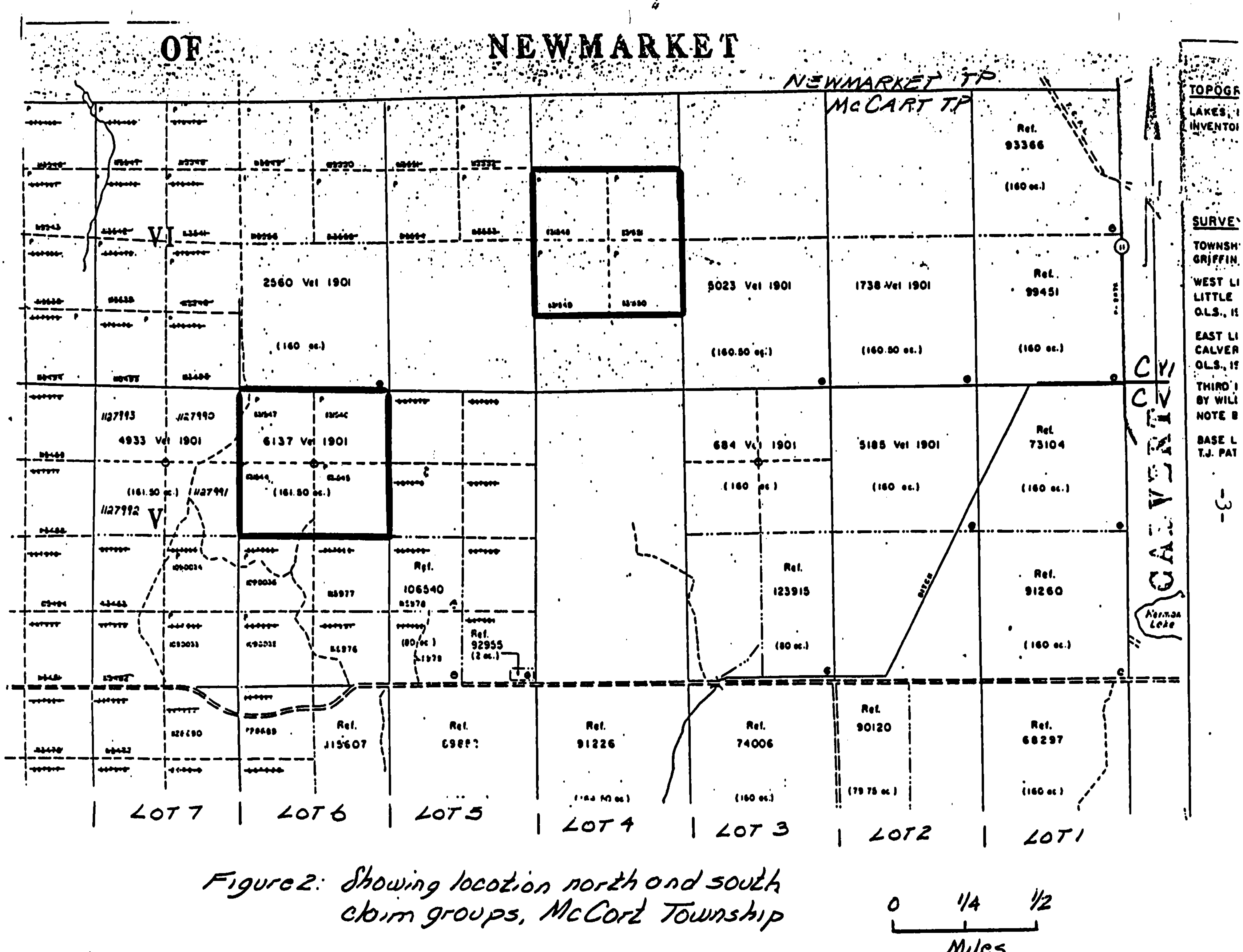


Figure 2: Showing location north and south claim groups, McCart Township

PREVIOUS WORK

The geology of McCart Township has been compiled by Satterly (1953) at a scale of 1 inch to $\frac{1}{4}$ mile.

South Claim Group

In 1950, Arrow Timber Co. conducted a magnetic and geological survey over the claim group. The exploration was oriented towards finding commercial asbestos fibre within the ultramafic intrusive rocks. Two diamond drill holes were sunk within the peridotite in the southwest part of the current property.

North Claim Group

In 1950. Dominion Gulf Company conducted magnetic and geological surveys over a large part of the south half of Newmarket Township and a portion of north McCart Township, including the North Claim Group area (File 63.235). From geophysical data, a major shear zone up to 400 feet wide was interpreted to extend northeasterly across the central portion of the property, occurring roughly along the presumed contact between pillowed volcanic flows to the south and intrusive gabbro-peridotite to the north. A cross-fault trending North 40 degrees West was also interpreted from geophysics, occurring in the northeast portion of the claim group (Figure 3.). The recently released airborne survey of the Timmins area (O.G.S, 1988) indicates that there are at least two untested airborne conductors occurring in close proximity to the cross-fault.

In 1980, W.G.Wahl Ltd. conducted a magnetic and VLF-EM survey on a group of 23 claims straddling the Newmarket-McCart Township boundary. Part of the survey covered claims P1131548 and P1131551 (File 2.3570).

PRESENT SURVEY

The present surveys were conducted by K. M. Cunnison between September 4 and October 30, 1991. North-south picket lines at 100 meter intervals were utilized for control on the survey. Readings were taken at 20 meter intervals for the electromagnetic survey and 10 meter intervals for the magnetometer survey.

The VLF- EM coverage was conducted with a Phoenix VLF-2 receiver tuned to NAA transmitting at 24.0 Khz from Cutler, Maine. The VLF-2 receiver measures the in-phase component of the secondary vertical field to an accuracy of about 2% of the primary field. The data collected are presented in profile at a scale of 1 : 2500 (Maps 1 and 3). The location of the axis of conductors, as shown, was obtained from Frazer filtering the data.

The magnetometer readings were taken with a Barringer Proton magnetometer. This instument is a proton precession magnetometer which measures the earth's total magnetic field to an accuracy of 1.0 gamma. Diurnal variations were monitored every 200 seconds with a Scintrex MP-3 base stationmagnetometer.

Property Geology

Outcrop on the property is confined to the South Claim Group, where excellent exposures of relatively flat lying flows of tholeiite and basaltic komatiite are intruded by sills of ultramafic peridotite-dunite.

The ultramafic intrusive rocks occur as an envelope surrounding the volcanics, with which they are interpreted to be partially fault bounded. They appear to be largely of dunitic/peridotitic parentage, now altered to serpentine, and are commonly massive, orange brown to orange grey weathering and dark blue-black on fresh surfaces. Irregular fracturing and local development of asbestos fibre is common.

The tholeiitic - basaltic komatiite volcanics form a large expanse of outcrop across the central portion of the claim group. The flows dip shallowly to the north at 20-30 degrees and generally consist of a massive base with overlying pillowed to pillow brecciated zones.

The volcanic rocks trend east-west, dip gently north and are right side up. Structurally the property is interpreted to be on the north limb of an east plunging overturned anticline, the axial trace of which trends through the claims immediately to the south. Foliation is generally weak and tends to be parallel to flow contacts. Shearing occurs at least locally along the ultramafic intrusive-volcanic contact but it is not currently known if these are major zones of dislocation. It is suspected that the ultramafics form part of a single sill-like body that is repeated by faulting.

Only traces of mineralization were observed on the property. Minor disseminated pyrrhotite-pyrite occurs along a sheared and rusty weathered contact between the ultramafic intrusives and the volcanics near Line 5E and 6E in the southwest corner of the property.

The north Claim Group is devoid of outcrop, but regional airborne magnetic data (OGS, 1988) suggest that ultramafic-mafic intrusions dominate this portion of the property.

Geophysical Results

There does not appear to be any definite bedrock VLF conductors on the properties. The axis of a strong to moderatly strong conductor trending east to northeast in the north part of the South Claim Group (Map 1) is largely coincident with a steep slope, demarking the north limit of a large area of extensive outcrop. In part, this also represents a mafic volcanic-ultramafic intrusive contact and may in part reflect shearing along the interface. As nickel values are known to occur along this contact zone elsewhere in the area (Figure 3), detailed prospecting is recommended along and near the base of the peridotite.

Only one weak anomaly was detected in the North Claim Group even though strong Airborne INPUT conductors are reported in the east half of the property (OGS, 1988). The generally flat VLF response is interpreted to indicate a thick mantle of glacial overburden, probably in excess of 40-50 metres thick.

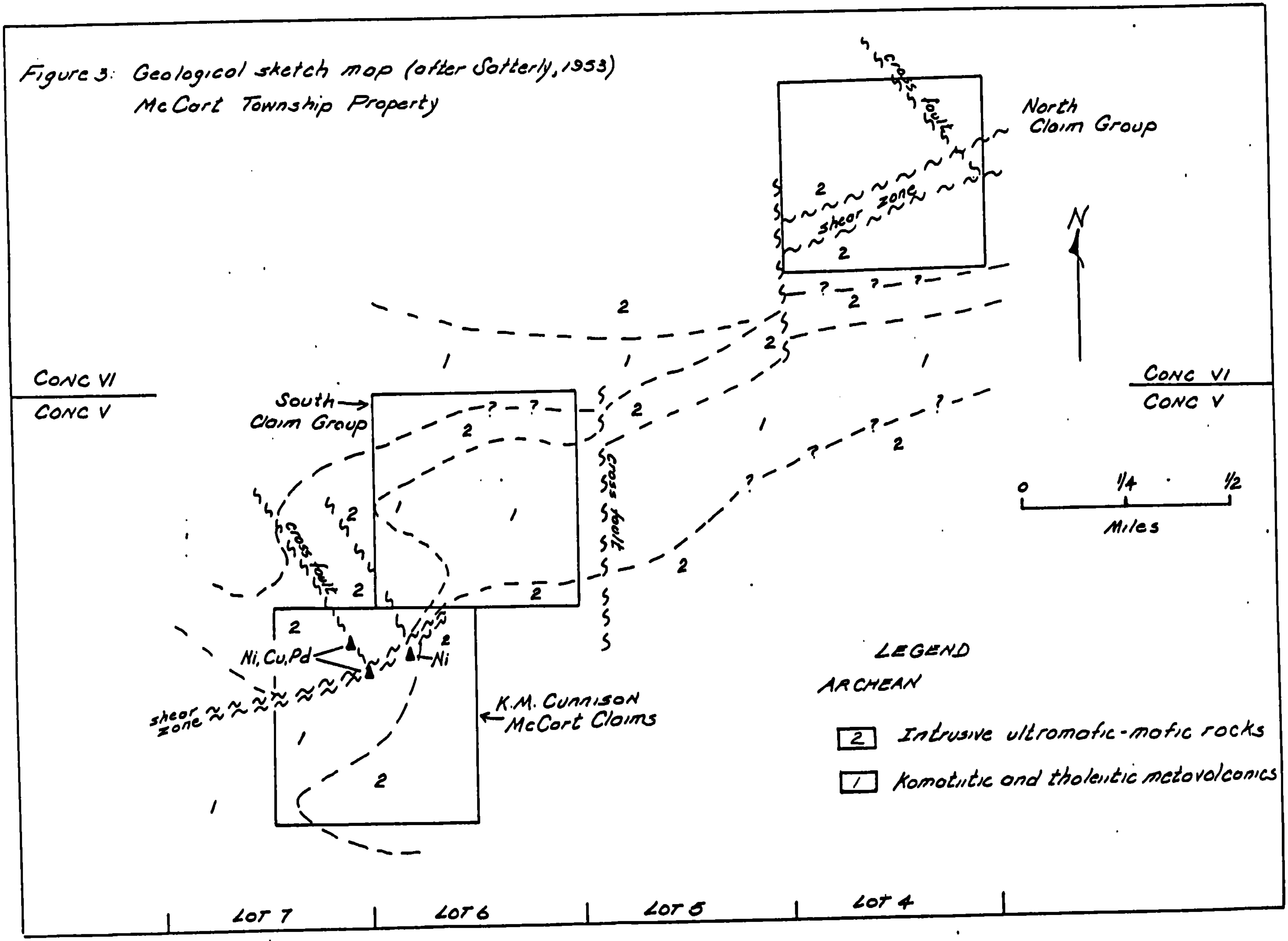


Figure 3: Geological sketch map (after Satterly, 1953)
McCort Township Property

Results of the magnetic survey are displayed on Maps 2 and 4, for the South and North Claim Groups, respectively. East to northeast trending zones of magnetic high in the northern and southern portions of the South Claim Group serve to outline the distribution of ultramafic intrsive rocks underlying the property. The centrally located northeast trending tholeiitic to basaltic komatiitic flows have markedly lower magnetic intensities.

An unusual feature in the magnetics of the South Claim Group is the occurrence of a magnetically low "embayment" in the northern intrusive-volcanic contact, situated in the northeastern portion of the property. This embayment may result from intense hydrous alteration and breakdown of magnetite occurring along a possible northeast trending fault structure.

A major northeast trending break in the magnetics on the North Claim Group (Map 4) may indicate the presence of a 100 meter wide fault or shear zone, as suggested by geophysical work by Dominion gulf in 1950. This zone occurs roughly along the presumed contact between pillowed volcanic flows or minor intrusives to the south, which trend northeasterly, and a major gabbro-peridotite body to the north. A northwest trending cross-fault may also occur in the northeast portion of the property.

Reccomendations for Further Work

Both properties are considered favorable areas for nickel sulphide and possibly platinum palladium mineralization, and warrant further work. On the South Claim Group, detailed prospecting, particularly along and near the contact zone of the ultramafic intrusives with the volcanics is recommended A Max- Min survey of the property is also recommended to further investigate the VLF conductor outline

On the North Claim Group, Max-Min and more detailed magnetic surveys should be run to further delineate features of the northeast trending break indicated in this survey, particularly in the region of the northwest cross-fault.

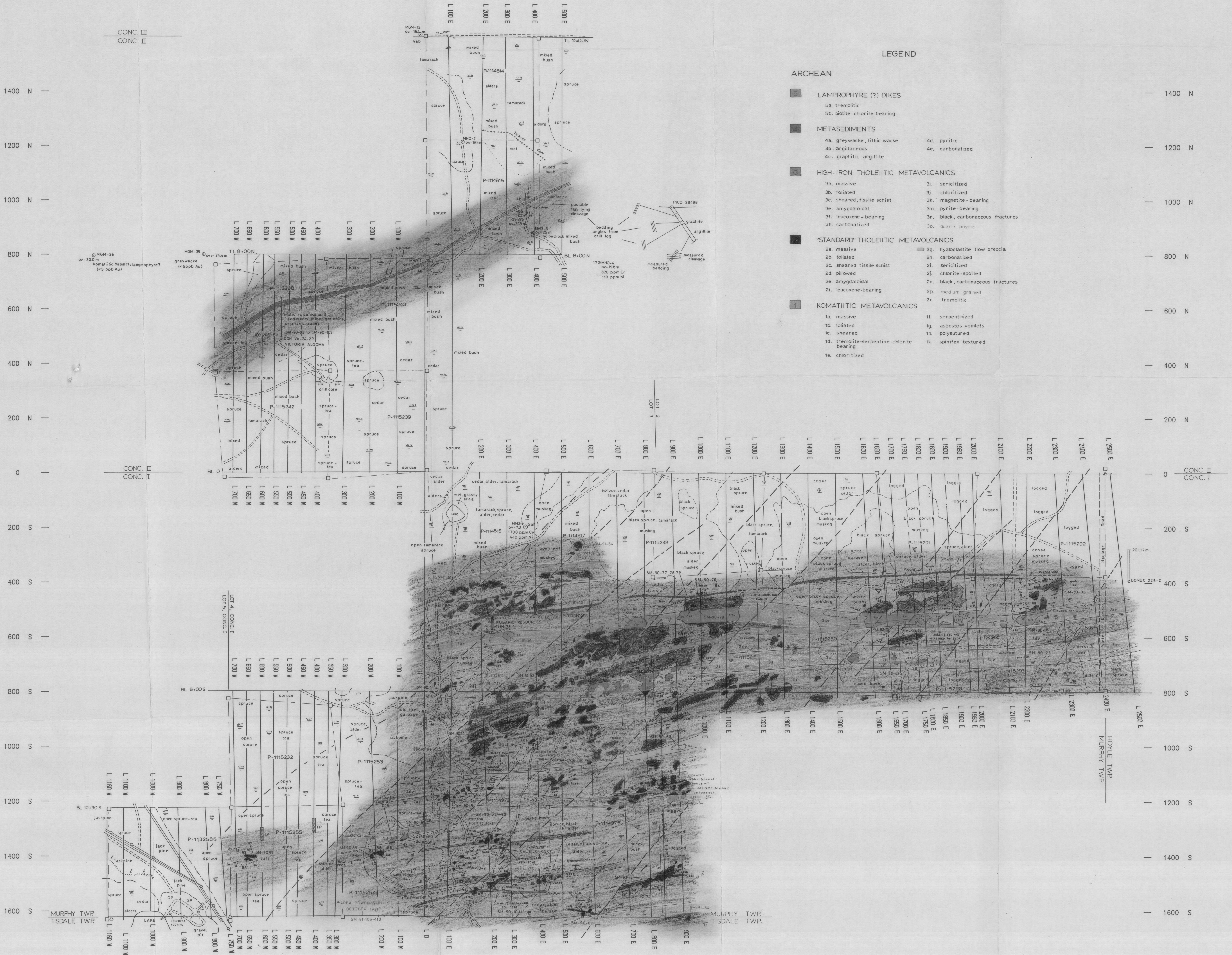
REFERENCES

Ontario Geological Survey (OGS)

1988: Airborne Electromagnetic Survey and Total Intensity Survey, Timmins Area, McCart Township. Map 81058. Scale 1:20,000

Satterly, J.

1953: McCart Township. Preliminary Map P.16. Scale 1 inch to ¼ mile.



LEGEND

ARCHEAN

5 LAMPROPHYRE (?) DIKES
- 5a. tremolitic
- 5b. biotite-chlorite bearing

4 METASEDIMENTS
- 4a. greywacke, lithic wacke
- 4b. argillaceous
- 4c. graphitic argillite
- 4d. pyritic
- 4e. carbonatized

3 HIGH-IRON THOLEIITIC METAVOLCANICS
- 3a. massive
- 3b. foliated
- 3c. sheared, fissile schist
- 3e. amygdaloidal
- 3f. leucoxene-bearing
- 3h. carbonatized
- 3i. sericitized
- 3j. chloritized
- 3k. magnetite-bearing
- 3m. pyrite-bearing
- 3n. black, carbonaceous fractures
- 3p. quartz phyric

2 "STANDARD" THOLEIITIC METAVOLCANICS
- 2a. massive
- 2b. foliated
- 2c. sheared fissile schist
- 2d. pillowed
- 2e. amygdaloidal
- 2f. leucoxene-bearing
- 2g. hyaloclastite flow breccia
- 2h. carbonatized
- 2i. sericitized
- 2j. chlorite-spotted
- 2n. black, carbonaceous fractures
- 2p. medium grained
- 2r tremolitic

1 KOMATIITIC METAVOLCANICS
- 1a. massive
- 1b. foliated
- 1c. sheared
- 1d. tremolite-serpentine-chlorite bearing
- 1e. chloritized
- 1f. serpentinized
- 1g. asbestos veinlets
- 1h. polysutured
- 1k. spinifex textured

SYMBOLS

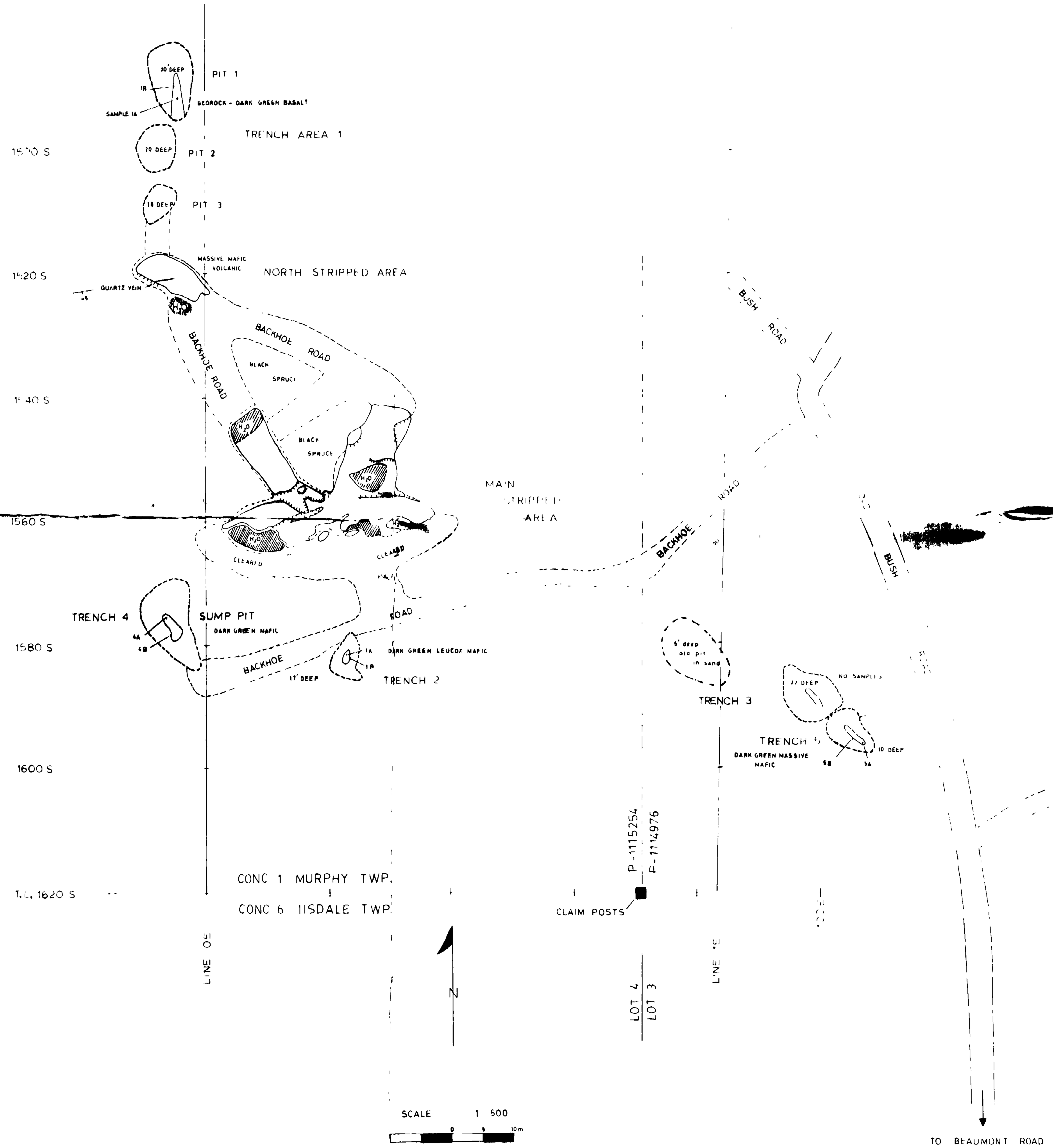
• SM-90-72 ; 73	Sample location
	Outcrop with cliff
3a / 2de	Geological contact
60	Strike and dip of foliation
65	Strike and dip of vein (q.v.) / contact (c)
70	Strike and dip of fracture cleavage, ⇄ offset direction
60	Strike and dip of shearing
65	Strike and dip of jointing
70	Strike and dip of flow contact with top direction (arrow)
	Direction of pillow elongation and top direction from packing
c 60	Cleavage (S1) - cleavage (S2) intersection lineation
m 65	Mineral lineation / rodding
p 70	Plunge of pillows
SZ	Shear zone
QV	Quartz vein
	Fault interpreted from geophysics
I.P.	HLEM conductor, I.P. chargeability anomaly
□, □A	Claim post located, assumed
△	Survey post, pin
	Diamond drill hole
⊙MHO-	Overburden drill hole
	All weather road
	Bush road
GP	Gravel pit
	Pipeline
	Topographic boundary
	Edge of higher ground, with slope
	Grassy clearing
	Swamp, wet ground
	Beaver dam
	Pit or trench

SOUTHEAST MURPHY PROJECT
GEOLOGY
MURPHY TOWNSHIP
MAP A

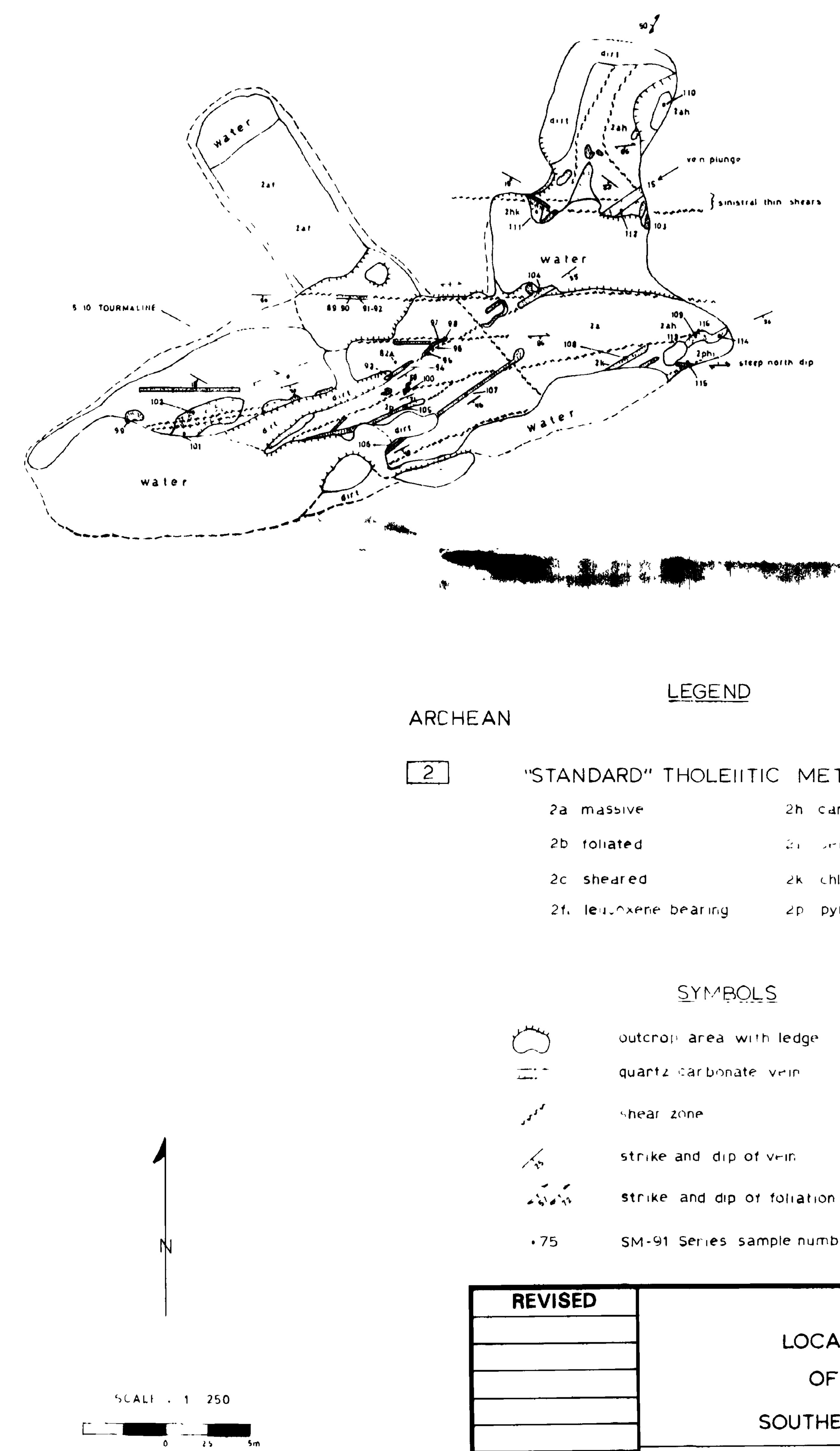
SCALE : 1: 5000	DATE : JANUARY 1991
FILE : MUR.GEO	SURVEY BY : K. CUNNISON, D. PYKE

Kimberly M. Cunnison

LOCATION OF STRIPPED AREAS AND TRENCHES



GEOLOGY OF THE MAIN STRIPPED AREA



LEGEND

ARCHEAN

[2] "STANDARD" THOLEIITIC METAVOLCANICS

2a massive	2h carbonatized
2b foliated	2i sericitized
2c sheared	2k chloritized
2f leucoxene bearing	2p pyritized

SYMBOLS

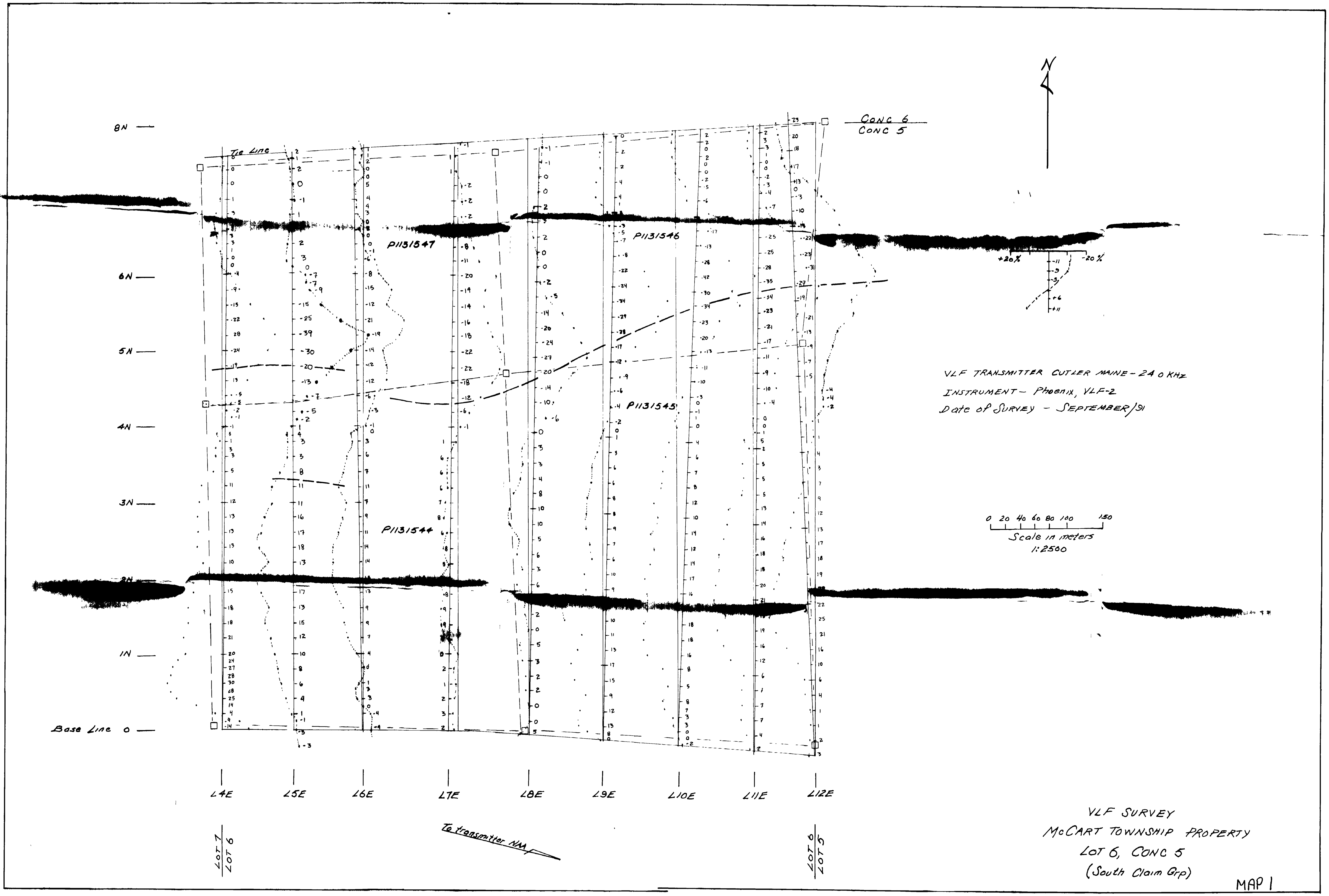
- outcrop area with ledge
- quartz carbonate vein
- shear zone
- strike and dip of vein
- strike and dip of foliation / shearing
- •75 SM-91 Series sample number

REVISED	MAP B LOCATION AND GEOLOGY OF BACKHOED AREA SOUTHEAST MURPHY PROJECT	
	PROJECT	
P.L. NO.	SURVEYED BY: K CUNNISON	DATE: DECEMBER 1991
N.T.S.	DRAWN BY: K CUNNISON	SCALE:
DWG.NO.		
FIG.NO.	OFFICE.	

42A10SW0046 OP91-485 MURPHY

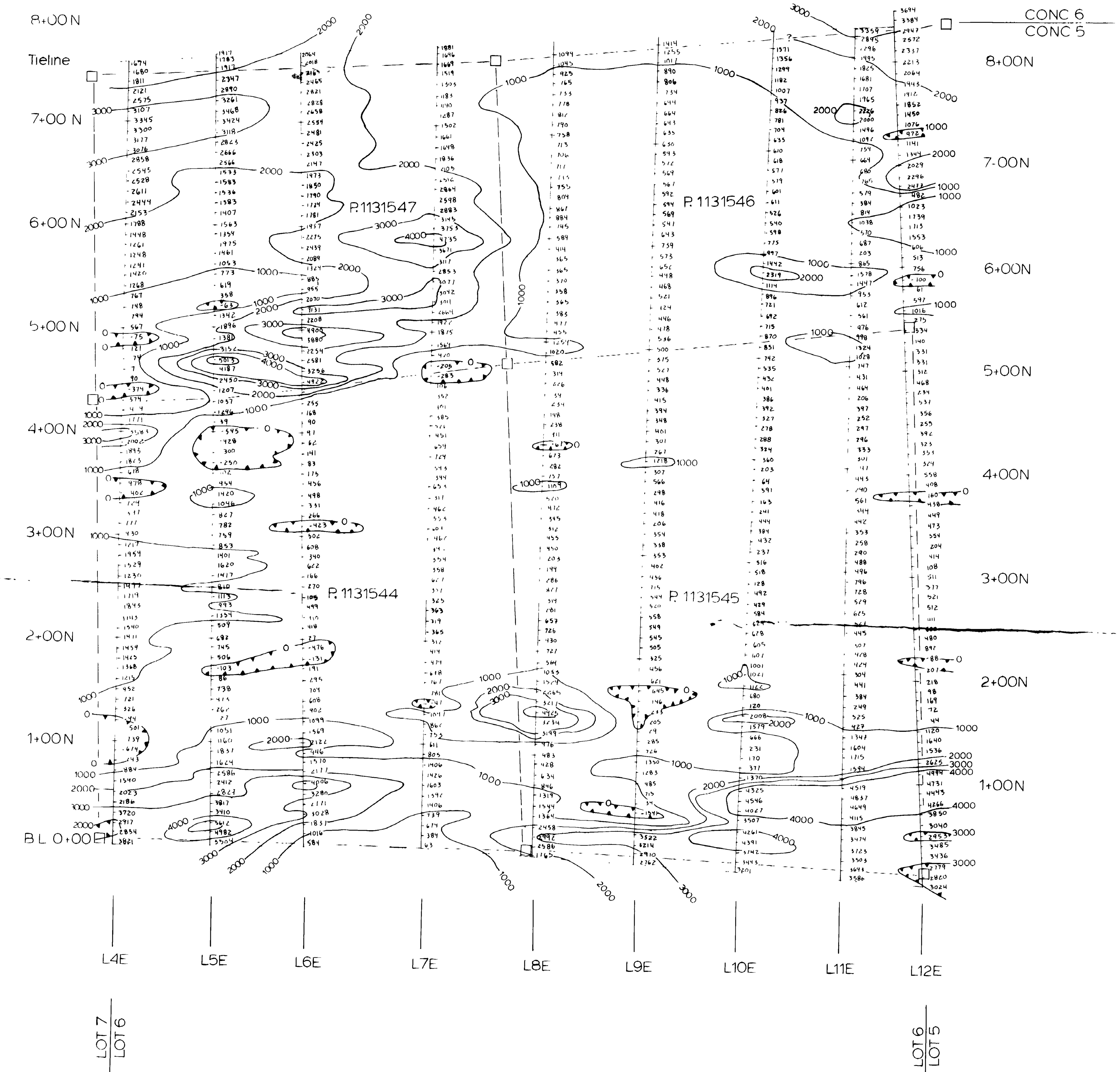
210

Kimberly M. Cunnison



42A15SW0045 OP91-465 MURPHY

220



SURVEY TYPE : TOTAL FIELD PROTON PRECESSION

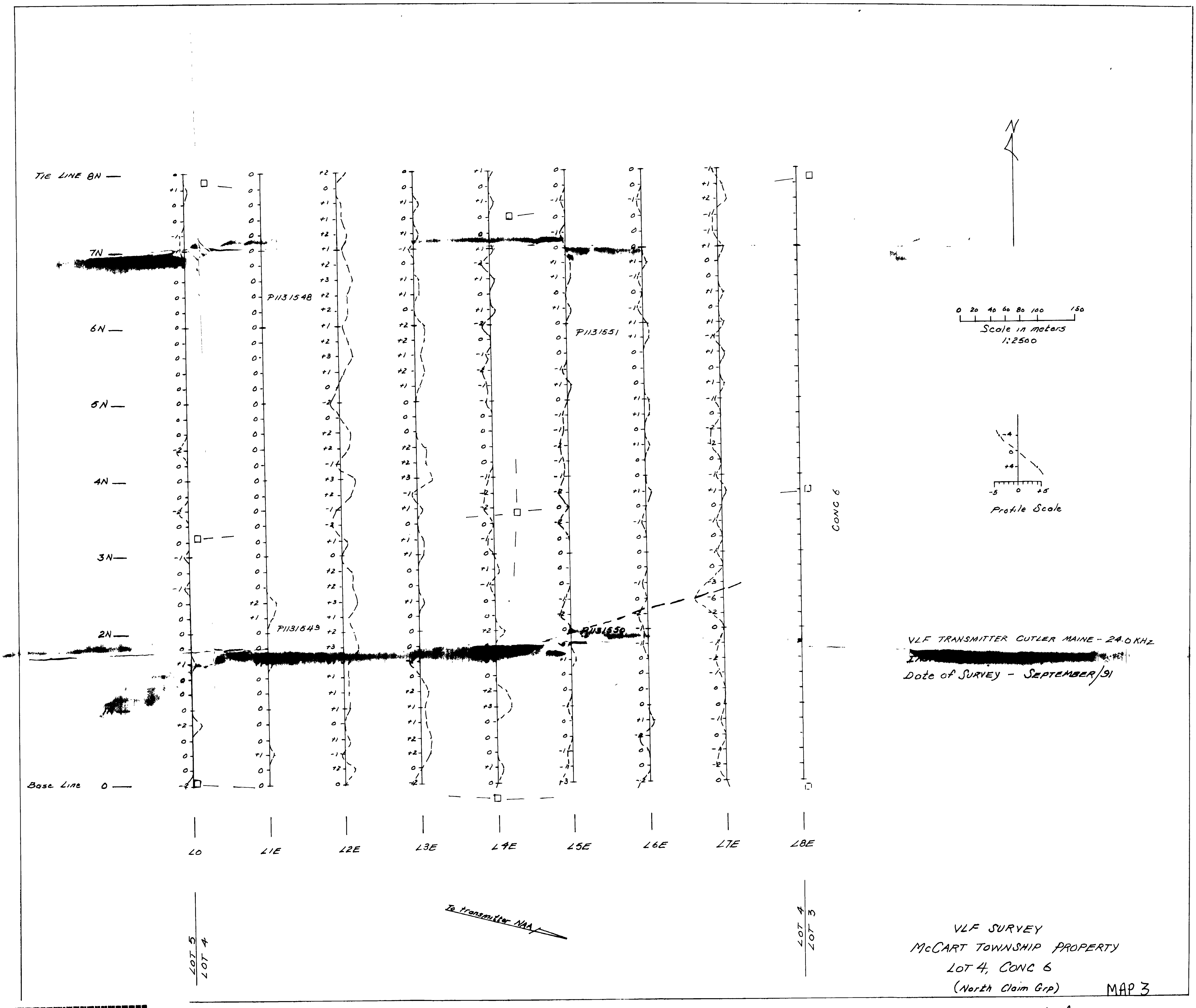
CONTOUR INTERVAL : 1000 gammas

DATUM LEVEL 57,000 gammas

☐ Claim post

REVISED	
	MAGNETIC SURVEY McCART TOWNSHIP PROPERTY SOUTH CLAIM GROUP
	PROJECT McCART
P.L. NO.	SURVEYED BY: KMC · DATE: JAN. 1992
N.T.S.	DRAWN BY: KMC · SCALE: 1 : 2500
DWG.NO.	
FIG. NO.	OFFICE. MAP 2

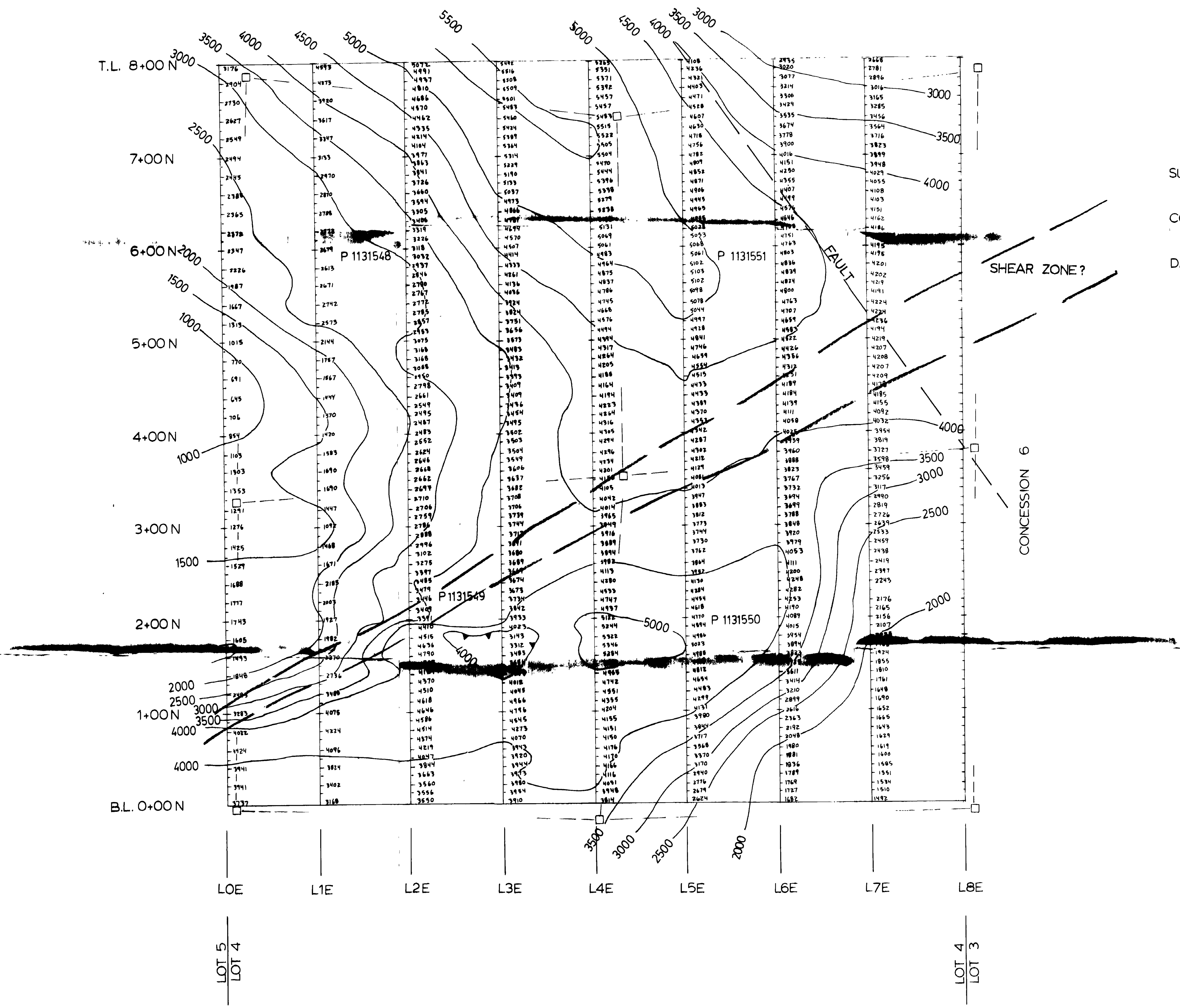
230



Kimberly M. Cameron

42A15SW0045 OP91-495 MURPHY

240



SURVEY TYPE : TOTAL FIELD PROTON PRECESSION

CONTOUR INTERVAL : 500 gammas

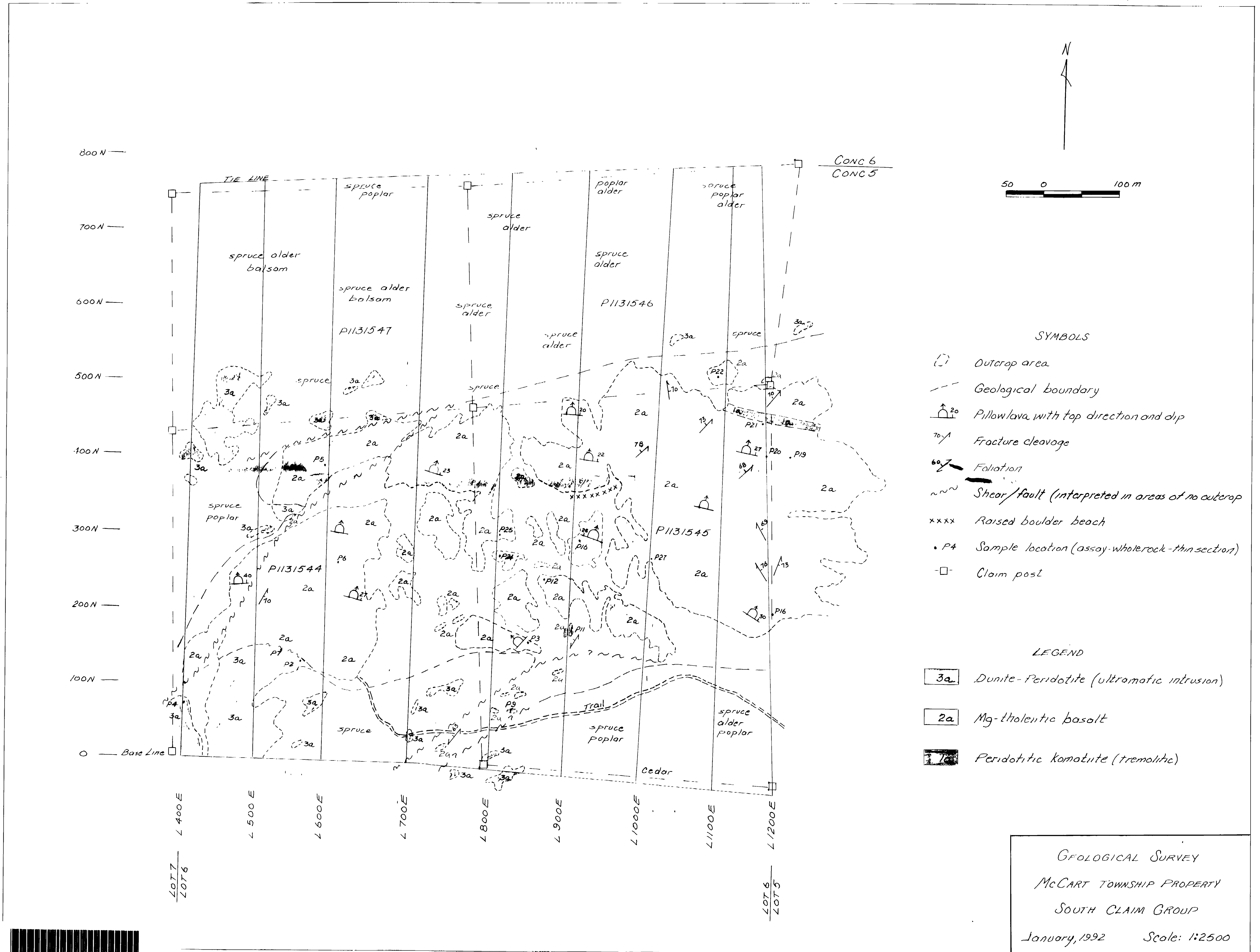
DATUM LEVEL : 57,000 gammas

REVISED	
	MAGNETIC SURVEY
	McCART TOWNSHIP PROPERTY
	NORTH CLAIM GROUP
	PROJECT. McCART
P.L. NO.	SURVEYED BY: KMC DATE: JAN. 1992
N.T.S.	DRAWN BY: KMC SCALE: 1 : 2500
DWG.NO.	
FIG.NO.	OFFICE. MAP 4

Kimberly M. Cimmer

42A16SW0049 OP91-498 MURPHY

250


N
50 0 100 m
CONC 6
CONC 5
TIE LINE
800 N
700 N
600 N
500 N
400 N
300 N
200 N
100 N
0 Base Line
L 400 E
L 500 E
L 600 E
L 700 E
L 800 E
L 900 E
L 1000 E
L 1100 E
L 1200 E
LOT 7
LOT 6
LOT 6
LOT 5
P1131547
P1131546
P1131544
P1131545
spruce alder balsam
spruce poplar
spruce alder
poplar alder
spruce poplar alder
spruce
cedar
Trail
SYMBOLS
Outcrop area
Geological boundary
Pillowlava with top direction and dip
Fracture cleavage
Foliation
Shear/fault (interpreted in areas of no outcrop
Raised boulder beach
Sample location (assay-wholerock-thin section)
Claim post
LEGEND
3a Dunite-Peridotite (ultramafic intrusion)
2a Mg-tholeiitic basalt
Peridotitic komatiite (tremolitic)
GEOLOGICAL SURVEY
McCART TOWNSHIP PROPERTY
SOUTH CLAIM GROUP
January, 1992
Scale: 1:2500

260