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**FALCONBRIDGE LIMITED EXPLORATION**



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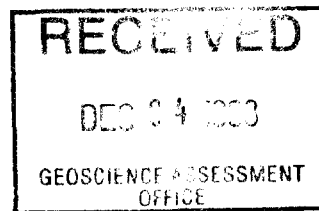
**GEOLOGICAL ASSESSMENT REPORT**

**FOR THE**

**SCHUMACHER PROPERTY**

**MANN TOWNSHIP, ONTARIO**

**NTS 42A/15**



**Katherine A. Smuk  
December 1998**

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## 1.0 INTRODUCTION

The Schumacher Option comprises a land package of two patented half-lots in south-central Mann Township, 50 kilometres northeast of the city of Timmins, and together with the southern part of the Richardson Lease (see Section 4.0 for property details) comprises the Schumacher Property. An exploration program was initiated to evaluate the potential of the Property to host significant base metal (Cu-Zn) mineralization, a possibility based on the presence of felsic volcanic rocks and airborne AEM anomalies, as well as of the flanking Jonsmith base metal showing.

The Schumacher Property was the subject of a detailed compilation, mapping and lithochemical sampling program over 25.4 line kilometres of the Schumacher grid (see Figure 2). The program was conducted over the period June 1 to 25, 1998, by Falconbridge geologists Katherine Smuk and Erin Gillespie, and entailed the following:

June 1-4	field preparation
June 5-14	geological mapping and sampling of the Schumacher grid
June 15-25	mapping compilation and synthesis, and report writing.

A total of 61 rock samples were collected for submission to Swastika Laboratories for whole rock (52 samples) and geochemical assay (9 samples) analysis. The results of this survey are presented in the following report, accompanied by geological and sample location maps, and lithochemical analysis tables and certificates.

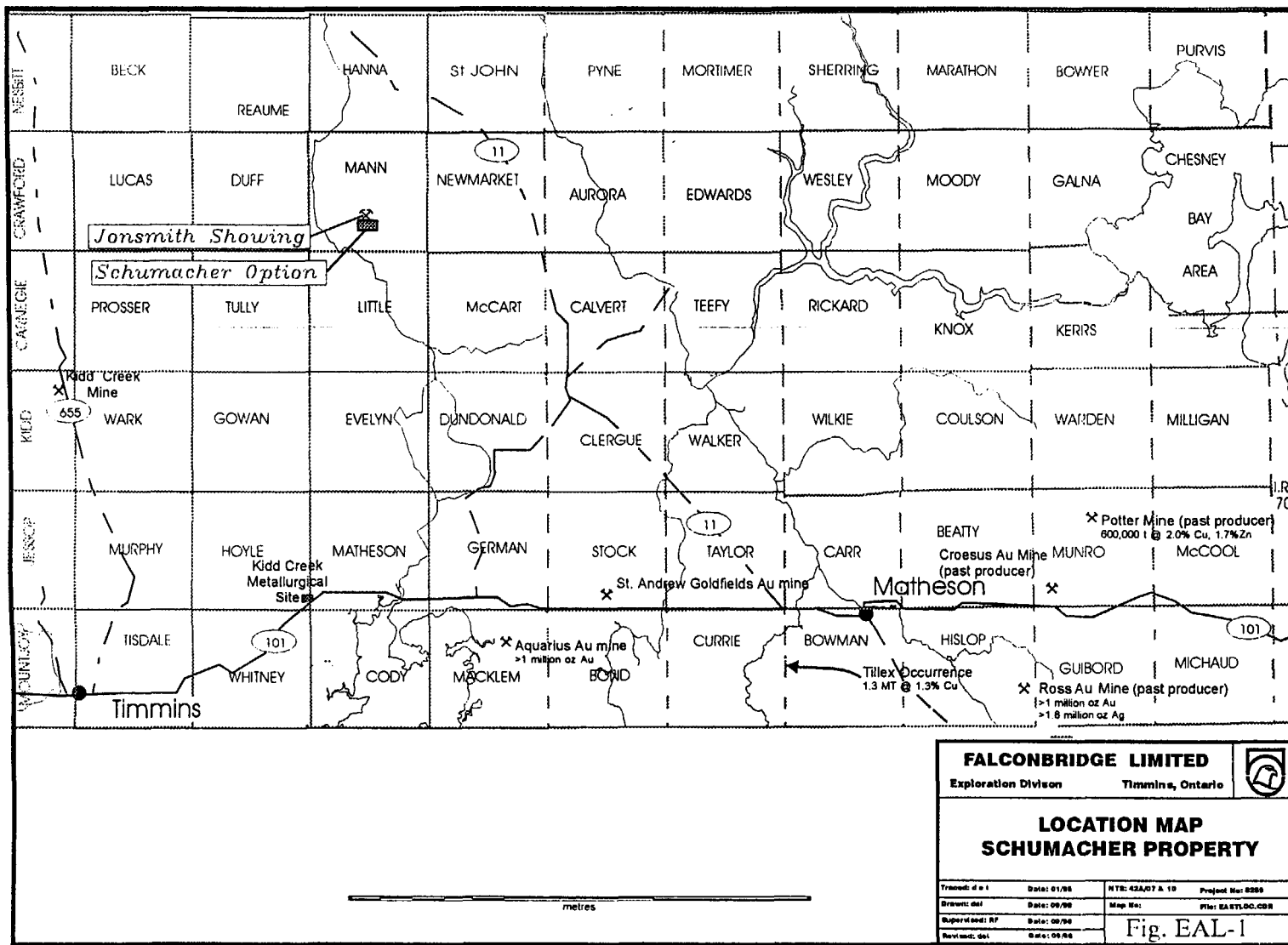
## 2.0 LOCATION AND ACCESS

The Schumacher Property is located in south-central Mann Township, approximately 50 kilometres northeast of Timmins and 30 kilometres north-northeast of the Kidd Creek Mine, in NTS 42A/14/15, and is accessed via Highway 11 north of Tunis (*Figure 1*). The majority of the route to Mann Township and the Schumacher Property is navigable by a 2WD vehicle in dry summer weather, comprising the west Concession Road 4,5 past the Tunis power plant, and two successive south (left-hand) branches. The final trail to the property, which heads west, is wide but best traversed by ATV. On the property, an east-west cut trail connects two survey pins, and marks the lower boundary of the Richardson Option and grid and the upper east boundary of the Schumacher Option.





Figure 1 Mann Township location map.



### 3.0 TOPOGRAPHY, VEGETATION, AND WATER AVAILABILITY

The Schumacher Property occurs in an area of relative high local topographic relief of 25 metres. This relief is expressed to its greatest extent at the west outcrop area, where, at its southern extent, drops off to a level forested terrain in a stepwise fashion at the eastern end, and as a 10 metre-high cliff face at its western end.

Vegetation on the property consists predominantly of conifers (mostly spruce), which are present on both dry and wet ground. Poplar occurs in equal proportion to spruce in a narrow ring proximal to areas of outcrop. Alder is found on most of the Schumacher property, but sponge moss and some cedar is dominant in the south half. A small plantation is found on the southeastern part of the Richardson property, which appears to extend eastward onto adjacent ground.

Swampy ground is encountered in a semi-circle around the west outcrop area, beginning some 200-500 metres away, and is especially wet on the entire south half of the Schumacher property. Two small lakes are located at the bottom centre of the Schumacher grid. As no open water is found proximal to outcrop areas, the opening of some nearby wet ground will have to be considered for future diamond drilling work in this area.

### 4.0 PROPERTY

The Schumacher property comprises two patented half-lots optioned by Falconbridge Ltd. from the Estate of F.W. Schumacher, Ontario. The Schumacher grid also covers part of the southern Richardson Property, leased mining claims optioned from the Richardson Brothers (Olds) Ltd., Alberta (*Figure 2*). The properties covered by the Schumacher grid are detailed below:

PROPERTY	PARCEL/CLAIM NO.	LOCATION	AREA
Schumacher	485 NEC	S½ Lot 6, CON. II	64 hectares
	543 NEC	S½ Lot 7, CON. II	64 hectares
Richardson	P61334	SW N½ Lot 6, CON. II	16 hectares
	P61335	SE N½ Lot 6, CON. II	16 hectares



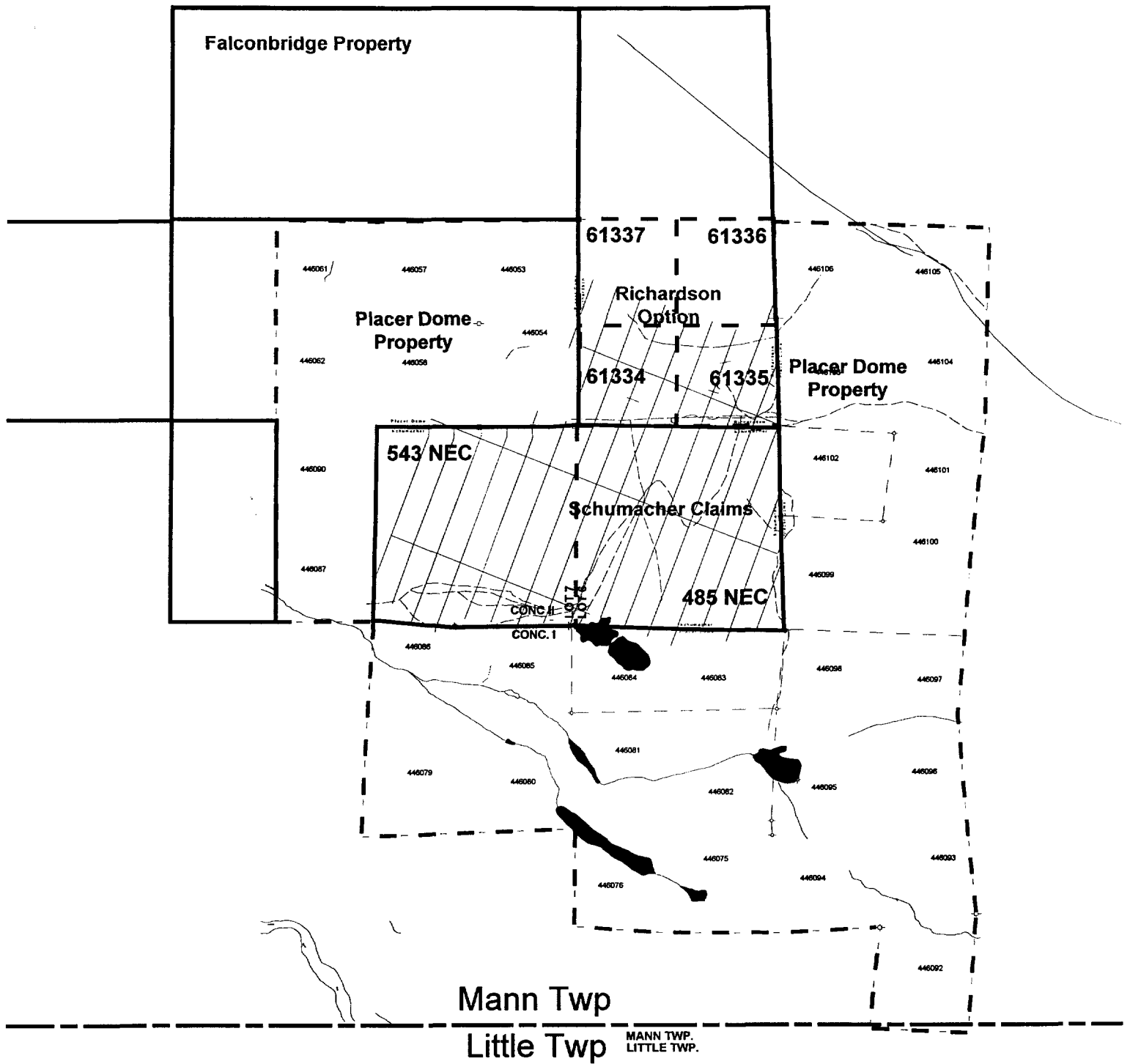


Figure 2 Schumacher Property and claim map.



## 5.0 HISTORY AND PREVIOUS WORK

The following summary of previous work done on the area surrounding the Schumacher Option has been compiled from Smith (1992). No previous exploration work is known on the Schumacher Option.

1935: A deep pit situated in the southwest quarter, north half, Lot 6, Concession II had been squared up for shaft work. A hoist, compressor and boiler still exist on the property. Material at the surface dump at which the shaft site is located was reported to contain massive pyrrhotite and pyrite with minor chalcopyrite.

1945: Cunigold Mines Ltd. explored a sulphide zone in peridotite in the north half, Lot 6, Concession II by trenching and four pack sack drill holes.

1964: Jonsmith Mines Ltd. acquired the Cunigold showing and considerable contiguous ground. They carried out an HLEM survey on northerly lines and drilled eighteen diamond drill holes. Drilling was concentrated in the north half of Lots 7 and 8, Concession II, where massive sulphides and graphite were encountered within felsic volcanics and flows. The most significant intersection contained 1.96% Zn and 0.22% Cu over 11.74m in hole JS-2 at about 100m vertical depth. This is known as the Jonsmith showing.

1964: Patino Mines covered ground to the west of the Jonsmith ground with an EM survey on northerly trending lines.

1965: O'Brian Gold Mines covered part of a group of claims along the south boundary of Mann Township with vertical loop electromagnetic surveys and drilled three diamond drill holes.

1969: Noranda carried out an EM survey south of Pickerel Lake. A number of weak anomalies were defined but none were drilled.

1973: Amax carried out EM surveys on three small claim groups but only drilled one hole.

In the early 70's, International Mogul covered a large block of ground in southeastern Mann Township with vertical loop EM surveys. Anomalies hosted by ultramafic intrusive rocks were drilled, but not those in volcanics.

Inco holds a lease on lot 9 of Concession III covering a copper prospect they located in 1953.





1975-77: Dome Exploration (Canada) Ltd. staked 124 claims in southern Mann Township and 4 claims in Little Township. Northeasterly trending lines were cut at 400 foot intervals. Horizontal loop electromagnetic surveys were carried out over all claims. Turam and magnetometer surveys were done over the initial 55 claims. Areas in the vicinity of conductors were mapped geologically. A total of 2,223m of diamond drilling, in 19 holes, was completed in early 1977. The most significant intersection was in hole 110-6 and included 0.47% Cu and 0.18% Zn over 3.0m.

1996-97: Four holes (MAN24-01 to -04) were drilled by Falconbridge Ltd. on the Richardson Property, totalling 704 metres, which targeted a large TEM anomaly identified during a previous ground geophysical survey. Drilling intersected heterolithic tuffs and lapilli tuffs, graphitic argillites and lesser gabbros and ultramafic rocks, with the best assay returning 0.22% Cu over 0.25 metres from mafic volcanic rock.

## **6.0 EXPLORATION PROGRAM**

### **6.1 GEOLOGY**

#### **6.1.1 REGIONAL GEOLOGY**

The Schumacher Property forms part of the Mann Belt, a package of dominantly mafic to ultramafic tholeiitic rocks. The immediate Schumacher Property area is underlain by a suite of calc-alkaline felsic to intermediate fragmental volcanic and lesser sedimentary rocks, which hosts the Jonsmith showing (*Figure 3*).

The project area lies within the Abitibi subprovince of the Superior Province. This region is underlain by the Stoughton-Roquemaure, Duff-Coulson-Rand and the favourable Kidd-Munro assemblages (Jackson and Fyon, 1991). The Kidd-Munro assemblage is host to the Kidd Creek mine (132 million tonnes, 2.75% Cu and 6.55% Zn).

The Stoughton-Roquemaure assemblage immediately underlies the bulk of the Mann Belt. It is identified by a distinctive high magnetic intensity geophysical signature. The assemblage is characterized by ultramafic (peridotitic and dunitic) rocks and basaltic komatiites, and Mg-rich, Fe-rich, and lesser Al-rich tholeiitic basalts. Lesser felsic volcanic rocks and clastic sediments occur intercalated with the volcanic rocks. Syn-volcanic sills and dykes and later felsic plutons intrude the rock package (Jackson and Fyon, 1991; Jensen and Langford, 1985).



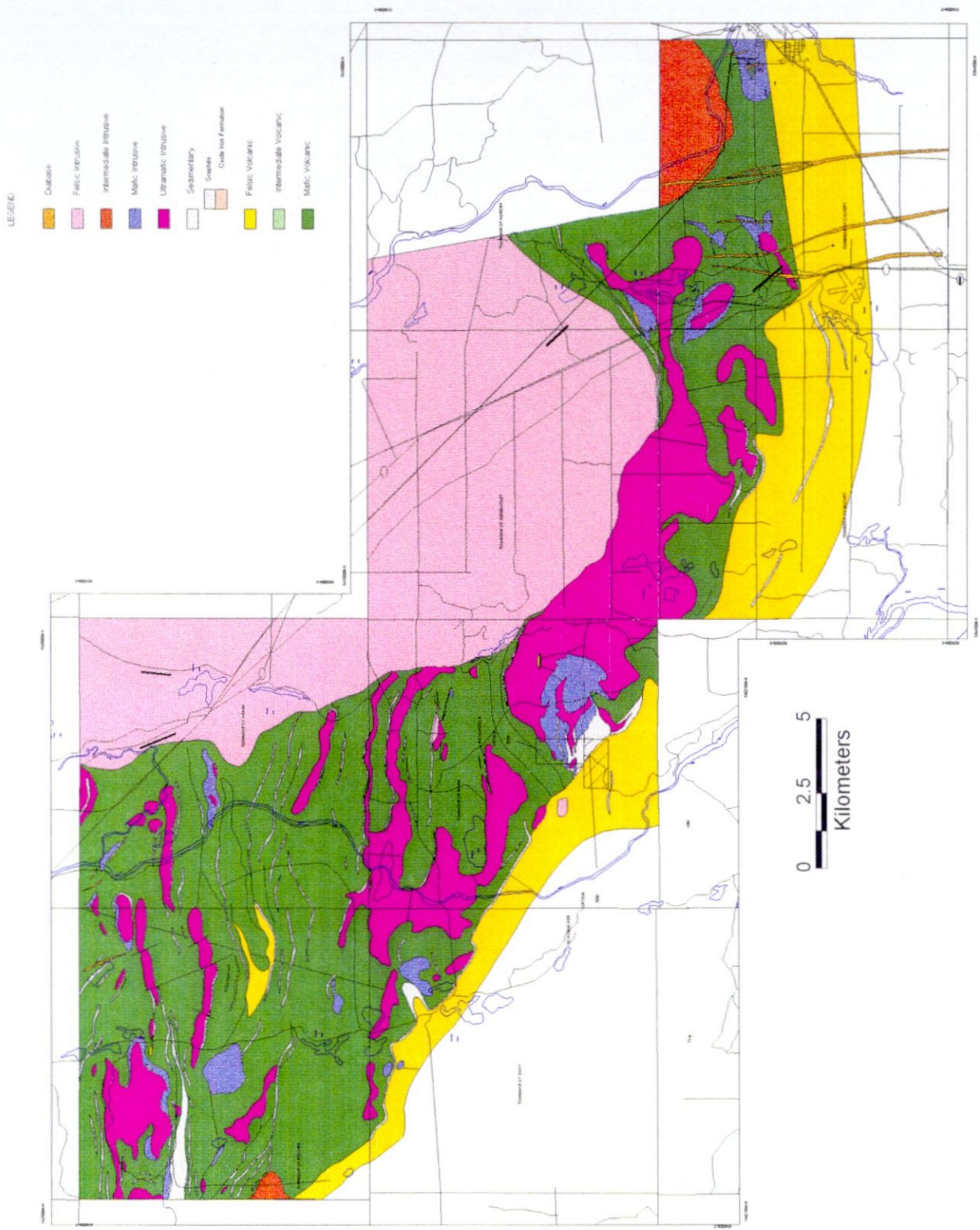


Figure 3 Regional geological map.

The Stoughton-Roquemaure assemblage is flanked to the south by the steeply dipping, south-facing felsic metavolcanic rocks, lesser hornblende-porphyritic dacitic flows and interflow chemical metasediments of the Duff-Coulson-Rand assemblage. The Bradburn-Coulson shear zone defines the contact between the two assemblages. The Jonsmith showing occurs to the immediate north of the shear zone and is currently believed to be affiliated with the Stoughton-Roquemaure package of rocks.

### **6.1.2 PROPERTY GEOLOGY**

A 1:2500 scale geological map (Back Pocket 1) was developed from observations of surface outcrop together with interpretation and correlation of geochemical surface sampling, extrapolated to surface from historic drill log description in areas with no outcrop, and inferred for areas with neither outcrop nor drilling data.

The Schumacher Project area comprises two general areas of outcrop, the west and the east outcrop areas. A general large-scale stratigraphy may be defined for this area, and includes: a lower succession of felsic pyroclastic rocks, overlain by a thick unit of intermediate tuffs, which may or may not be one continuous unit north of the gabbro and peridotite bodies found in the centre of the volcanic package. The younging direction is believed to be to the north-northeast.

The following lithological units are described in approximate stratigraphic order from youngest to oldest.

#### **Ultramafic Intrusive / Volcanic**

This unit occurs on surface as a wide body of fine- to medium-grained greenish black, variably strongly magnetic peridotite. Its composition was approximated from hand sample and confirmed by geochemical analysis. Magnetite appears to be evenly distributed within this unit, and is rarely visible on fresh surface. The ultramafic body weathers to a distinctive dark brown-grey colour, and displays well-developed polysuturing and smooth, rounded outcrops.

Although the surface distribution of the peridotite is suggestive of an intrusion, drill sections correlated to surface outcrop reveal that the unit appears to be approximately stratigraphically conformable with the Schumacher sequence. The peridotite may represent, in part, a subvolcanic sill, but clear pillow textures on surface as well as its fine-grained texture suggest some “extrusive” component. Chill margins were not definitively observed in the field due to the fine-grained nature of the unit as a whole, but are reported from drill core (Petch, 1997).



## **Mafic Intrusive**

A sill-like body of gabbro to diorite approximately flanks the central peridotite unit, and is easily recognized on fresh surface by its distinctive, flaky, salt and pepper texture. Feldspar, which makes up approximately 50% of the rock, is very white and relatively unaltered. Fresh, large, elongated amphiboles, which comprise the remainder of the rock in hand sample, locally form a coarse, needle-textured appearance reminiscent of a basket-weave. As a whole the unit is gabbroic-textured and medium-grained. Outcrops tend to weather rounded and medium-grey, variably preserving a salt and pepper look. Geochemical analysis of this lithology suggests that it is variable between true gabbro and true diorite with respect to its silica content. Although it has been suggested that this unit may represent a differentiated phase of the ultramafic body, it likely does not represent flanking spillover magma from ultramafic channels as envisaged in other ultramafic localities, due to its frequent separation from the peridotite body by more felsic volcanic lithologies. This observation does not, however, preclude any relatedness between them.

## **Intermediate Intrusive**

This unit is represented by numerous cross-cutting dykes of predominantly andesitic composition. The dykes are strongly porphyritic, with feldspar and mafic (probably amphibole) phenocrysts set in a finer-grained medium grey matrix. The dykes weather to a pinkish grey colour, and are distinctive in that the mafic phenocrysts weather high, imparting a knobby texture to the surface.

Two main types of dykes, both feldspar-mafic-phyric, are easily distinguishable on the basis of the morphology of their mafic phenocrysts: the phenocrysts of one type are large ( $\leq 1$  cm), circular, quite flat, and have recessive centres, and those of the second type are smaller ( $< 5$  mm), irregular, less numerous than the first type, and weather very high. The dykes crosscut all other lithologies on the Schumacher Property.

## **Intermediate Volcanic**

This unit has been subdivided in geochemical interpretation as the “North Tuff” and the “South Tuff”, which are very similar in appearance and as such have been grouped as one large unit. The North Tuff occurs immediately north of the peridotite and gabbro bodies, while the South Tuff is a narrow band of rocks occurring on the Schumacher Property immediately below the peridotite and gabbro bodies. This unit is a rough, grey-green-weathering unit comprising mostly lapilli tuff. Indistinct lapilli are faintly visible on weathered surface and lend the fresh surface a dark grey-green mottled or swirled appearance.



Scattered throughout this unit are local sections of coarser fragmental and of ash tuff. Lithogeochemical data confirms the more mafic nature of this unit with respect to the felsic volcanic rocks. Along the trail at the top of the Schumacher Option a small pit occurs in this unit, which is locally mineralized with up to 20% disseminated pyrrhotite and trace blebs of chalcopyrite. Chloritization is strong within this unit.

## **Felsic Volcanic**

### ***Cherty Fragmental***

The Cherty Fragmental unit occurs only in the west outcrop area, and is characterized by a concoidal, cherty fracture, and a rubbly, chipped, bright white weathered surface. This unit is an even light to medium grey on fresh surface, where its fragmental nature is indeterminate. Upon close inspection of the weathered surface angular to subrounded fragments are locally discernable, especially towards the western end of the outcrop. At the eastern end the unit looks essentially massive.

This unit is significant as it appears to host the Jonsmith showing as well as a series of long, strong HLEM conductors and two prospectors' pits. The mineral potential of this unit is indicated by the common occurrence of rusty blowouts across the east part of the unit. This phenomenon appears to die out towards its western end (coincident with the easier recognition of its fragmental nature towards the west, perhaps reflecting a lesser degree of silicification?). These rust stains are caused by concentrations of disseminated pyrrhotite up to 25% within the cherty rhyolite. Crosscutting (?) this unit at approximately 55° is a finer-grained, possibly feeder dyke with sharp contacts with the surrounding rhyolite. Interestingly, this dyke is quite rusty and mildly mineralized with disseminated pyrrhotite and trace chalcopyrite, and could prove to be the source of the mineralization in the surrounding rhyolite. Discontinuous pods (< 1 metre-long) of black argillic sediment are found in this unit, particularly in the eastern part of the outcrop up to approximately 50 metres north of a mapped argillite bed. These sediment pockets/fragments are weakly mineralized with pyrite and may display a rusty weathered surface.

### ***Argillite***

A 2 metre-thick argillite unit occurs between two felsic fragmental volcanic units, which likely indicates a break in volcanic activity. Pods of argillite are also found in the surrounding units, but may be defined as a reasonably continuous bed in this metre-scale area. The sediment is black or dark grey both on fresh and weathered surface, locally displays a graphitic sheen, is well bedded at an average of 130°/40° NNE, and is moderately mineralized with bedded and pods of pyrite.



### ***Quartz-Feldspar-Phyric Fragmental / Breccia***

This unit is characterized by quartz and feldspar phenocrysts, which are weakly developed in the western part of the outcrop area but are plentiful in the east. In the west this unit is a medium-grey colour, and weathers to a light grey. Feldspar phenocrysts are faint and wispy, and quartz occurs as scattered, tiny, glassy blue spots that are difficult to see. The fragmental nature of the unit in this location is identified by small variations in colour on fresh surface, with rare visible fragments. The surface weathering texture is rubbly and suggestive of weathering fragments.

Further east, feldspar becomes especially noticeable as it comprises up to 30% of the rock as large (5 mm) euhedral white to buff crystals. Quartz phenocrysts appear to become slightly more plentiful in the east, but are still very small. The feldspars locally aggregate to form an apparent banding or bedding oriented at approximately 140°/40° NNE. This phenomenon may be due to crystal settling in a hot environment before lithification.

In the far eastern part of the east outcrop area this unit achieves a strongly brecciated character. Quartz- and feldspar-phyric angular fragments up to 5 cm long weather to a white colour, in strong contrast to the matrix, also appearing to be at least feldspar-phyric, which is dark grey to black. As variably graphitic pods of black argillite are also found in this lower felsic unit, it is suggested that there may be some sediment component to the matrix of this unit. These sediment pods are rust-stained although no sulphide mineralization has been observed. In places the characteristic white fragments in black matrix was reversed, and angular black fragments were found, closely packed with a small proportion of white-weathering matrix. This is a very local phenomenon that is tentatively interpreted to represent a brecciated area of argillite podding. This unit is likely correlative with Smith's (1992) "carbonaceous tuff" unit.

### **6.1.3 ALTERATION**

All felsic units on the Schumacher Property are silicified, evident from the white weathering, extreme hardness and often cherty fracture of the outcrops. Varying degrees of bleaching were seen in the field, and it was unclear whether this was due to silicification or sericitization. Lithochemical analyses confirm silicification of most lithologies, as they extend to much higher SiO<sub>2</sub> values than should be expected for calc-alkaline rhyolites. In the same way, chloritization is recognized by the often strong addition of MgO. Sericitization is not very strong in the area, as Na<sub>2</sub>O rarely achieves values below 1 wt.%.



In general, intermediate tuffs display strong chlorite alteration, all felsic lithologies are silicified and moderately chloritized, and sericitization is weak but tentatively recognized.

#### **6.1.4 STRUCTURAL GEOLOGY**

Apart from scattered bedding orientations measured from ash tuff or sediment horizons, all mapped units are, in general, quite massive. The exception to this is the North Intermediate Tuff, which displays some brittle cleavage mostly randomly oriented but with a faint preference to the north-northeast.

### **6.2 GEOCHEMISTRY**

The igneous lithologies on the Schumacher Property can be divided into two affinities: a tholeiitic mafic to ultramafic series and a calc-alkaline intermediate to felsic series. Two problems exist in the geochemical data set, both of which may be circumvented. Firstly, it is evident from the clustering in trace element plots that the elements Y and Zr are imprecise, although they are probably reasonably accurate. In this calc-alkaline primitive felsic series, analyses tend to cluster at fairly low Zr (<150 ppm) and very low Y values (<20 ppm), which do not lend themselves as useful tools of discriminating between felsic lithologies. Rather, major element plots are, in general, more useful for this suite.

The second caveat is in the interpretation of TiO<sub>2</sub> as a measure of fractionation, as within the felsic lithologies TiO<sub>2</sub> reaches a consistent maximum of approximately 0.5 wt.%, their rhyolitic character being confirmed by the presence of quartz eyes in the rocks. This value is quite high for a tholeiitic felsic series but not unusual for calc-alkaline suites throughout the Abitibi (although the possibility of contamination from non-rhyolitic fragments in every case is possible). As a result, it is difficult to interpret geochemical data with the aim to identify and discriminate between felsic lithologies.

Significant degrees of silicification and chloritization have been identified on the Schumacher Property, occurring predominantly within intermediate tuffs. The reader is referred to the tables of lithogeochemical analyses contained in the Appendix, as well as to the Sample Location Map in Back Pocket 2.



## **6.3 GEOPHYSICS**

### **6.3.1 LINECUTTING**

A total of 25.4 kilometres were cut to form the Schumacher grid. The linecutting program was completed just prior to the geological survey. Ground HLEM and magnetic surveys were conducted prior to the geological survey, and are presented in a separate field report.

## **8.0 CONCLUSIONS AND RECOMMENDATIONS**

The following represents a small set of tentative conclusions and recommendations based on observations during field mapping and lithogeochemical interpretation.

1. Whole rock geochemistry and mapping have identified a large area of calc-alkaline felsic fragmental rocks along the southern edges of the west outcrop area.
2. The felsic lithologies in the west outcrop area, especially in association with graphitic argillite, are strongly gossanous and mineralized with pyrrhotite, pyrite, and minor chalcopyrite.
3. Strike directions are reasonably consistent throughout the property, and assuming that there is no major structure in the centre of the Schumacher Property causing the paucity of outcrop in the centre and the east outcrop area, these potentially mineralized felsic horizons should extend to the east (and to the south?) across the Schumacher Property.
3. All intermediate to felsic lithologies are silicified and chloritized to some degree.
4. It is likely that the felsic rock sequence as a whole has experienced a moderate degree of hydrothermal alteration.
5. The potential that clearly exists around the Jonsmith showing should extend some distance to the east.

The most prospective area remains the Jonsmith showing, particularly in the area east of previous holes where no outcrop exists, which should be tested by a diamond drilling program. Alternately, the shallow depth of this mineralized trend may warrant a program of stripping and/or trenching at a more modest cost than drilling. Existing holes may be extended if it is determined from drill sections that conductors in the same area were not adequately tested.





## REFERENCES

- Jackson, S.L., and Fyon, J.A., 1991. The Western Abitibi Subprovince in Ontario. *Geology of Ontario*, Ontario Geological Survey, Special Volume 4, Part 1, p. 404-484.
- Jensen, L.S., and Langford, F.F., 1985. Geology and petrogenesis of the Archean Abitibi Belt in the Kirkland Lake area, Ontario. Ontario Geological Survey Miscellaneous Paper 123, 130 p.
- Petch, C.A., 1998. Mann Belt Projects, 1997 Exploration Report, NTS 42A/14 and 42A/15, Mann, Duff and Calvert Townships, PN 8269 & 8278. Falconbridge Internal Report, partly submitted for Assessment.
- Smith, W.K., 1992. Placer Dome Inc. Report on Geological Survey, Mann Township, Project 110, Porcupine Mining Division, Ontario, NTS 42A/15. Placer Dome Internal Report.




## STATEMENT OF QUALIFICATIONS

I, Katherine Smuk, do certify that:

1. I am a Canadian citizen and a permanent resident of Toronto, Ontario.
2. I am a graduate of the University of Toronto, with a B.Sc. (Honours) in Geology, 1994.
3. I am currently enrolled in an M.Sc. program at McGill University.
4. I am currently employed as an Associate Field Geologist, on a contractual basis, by Falconbridge Limited Exploration, Timmins, Ontario.
5. I have been practicing my profession in Canada since 1994.
6. I personally conducted the bulk of the work presented in this report.
7. I have no direct interest in the Schumacher Property.

Dated November 24, 1998, in Timmins, Ontario.

  
K. Smuk



**APPENDIX**  
**Geochemical Data**



ICP-MS Whole Rock Analyses  
SCHUMACHER GRID

SAMPLE	UTM x	UTM y	SiO2 (wt.%)	Al2O3 (wt.%)	CaO (wt.%)	MgO (wt.%)	Na2O (wt.%)	K2O (wt.%)	Fe2O3 (wt.%)	TiO2 (wt.%)	P2O5 (wt.%)	MnO (wt.%)	Cr2O3 (wt.%)	S (wt.%)	LOI (wt.%)	SUM (%)	Y (ppm)	Zr (ppm)	Cu (ppm)	Zn (ppm)	Ni (ppm)
AU01021	499426	5407270	55.33	15.25	7.94	7.12	3.07	1.99	8.28	0.57	0.27	0.14	0.04	0.2	1.49	100.00	15	100	5	60	135
AU01022	499409	5407233	70.24	16.36	1.63	0.61	3.38	5.45	1.56	0.53	0.14	0.02	0.09	0.39	1.11	100.00	15	140	5	5	200
AU01023	499403	5407231	51.54	10.56	10.89	13.69	1.25	0.70	10.36	0.57	0.14	0.18	0.12	0.14	2.08	100.00	10	40	40	85	395
AU01024	499397	5407283	76.98	9.31	4.90	2.48	2.31	0.44	3.00	0.29	1.10	0.08	0.11	0.01	0.32	100.00	10	90	5	20	285
AU01025	499429	5407288	46.57	6.08	4.55	31.88	0.21	0.22	9.77	0.24	0.04	0.16	0.28	0.1	8.09	100.00	5	10	5	20	1200
AU01026	499425	5407259	70.50	15.73	0.76	0.55	0.44	10.24	1.01	0.56	0.13	0.02	0.07	0.15	4.48	100.00	10	130	15	5	205
AU01027	499440	5407340	61.96	16.58	3.99	3.91	7.39	0.79	4.56	0.44	0.23	0.11	0.02	0.05	0.84	100.00	10	120	225	35	85
AU01028	499489	5407462	71.65	15.86	0.49	3.60	0.11	4.08	3.55	0.46	0.11	0.03	0.05	0.01	3.32	100.00	10	120	5	5	150
AU01029	499494	5407467	66.08	20.29	4.27	1.44	5.29	1.14	1.35	0.04	0.03	0.02	0.05	0.01	1.23	100.00	4	120	5	5	110
AU01030	499492	5407474	55.37	14.82	7.90	5.60	4.22	0.65	10.26	0.93	0.10	0.13	0.02	0.01	1.63	100.00	20	70	5	15	55
AU01031	499365	5407117	91.06	4.67	0.28	0.12	0.97	0.51	1.94	0.13	0.03	0.02	0.28	0.04	4.83	100.00	5	40	5	65	575
AU01032	499365	5407115	79.19	11.99	1.80	0.25	3.76	0.56	2.04	0.21	0.05	0.02	0.13	0.4	0.71	100.00	5	90	5	35	330
AU01033	499366	5407119	71.27	17.04	3.03	1.07	3.72	1.69	1.63	0.38	0.05	0.03	0.08	0.68	2.46	100.00	5	100	60	360	190
AU01034	499401	5407145	76.88	13.52	2.64	0.17	4.15	0.98	1.21	0.26	0.06	0.03	0.09	0.18	0.42	100.00	5	100	5	5	210
AU01035	499392	5407194	70.03	16.23	3.61	0.77	4.38	1.24	3.10	0.38	0.08	0.06	0.11	1.14	1.45	100.00	5	110	90	535	290
AU01036	499472	5407682	47.84	7.81	10.94	7.64	1.28	0.40	22.78	0.82	0.10	0.39	0.00	0.01	0.01	100.00	40	70	5	85	70
AU01037	499451	5407656	55.10	14.20	9.25	4.46	2.95	0.43	12.20	1.09	0.10	0.20	0.02	0.01	1.16	100.00	20	70	5	50	70
AU01038	499439	5407577	54.82	13.91	8.63	5.13	2.40	0.90	13.13	0.97	0.09	0.21	0.02	0.05	1.1	100.00	20	70	65	60	70
AU01039	499402	5407531	55.23	14.53	9.23	5.33	2.17	0.67	11.66	0.90	0.08	0.18	0.02	0.01	1.29	100.00	15	50	5	55	90
AU01040	499357	5407426	49.40	8.06	9.89	20.32	0.81	0.29	10.46	0.30	0.04	0.16	0.26	0.87	3.82	100.00	5	20	115	80	1680
AU01042	498937	5407197	57.63	16.39	7.14	6.02	3.51	1.67	6.74	0.51	0.26	0.10	0.03	0.04	1.43	100.00	10	100	5	75	155
AU01051	499354	5407303	58.30	16.43	9.07	4.38	3.65	0.94	6.30	0.63	0.11	0.11	0.07	1.01	2.11	100.00	15	100	110	25	345
AU01052	499353	5407294	71.53	12.25	4.47	1.71	1.89	4.68	2.78	0.42	0.08	0.09	0.09	0.32	1.38	100.00	10	90	60	15	220
AU01053	499353	5407281	51.62	10.93	10.93	13.48	1.20	1.00	9.85	0.57	0.15	0.17	0.10	1	3.06	100.00	10	40	90	80	390
AU01059	499295	5407218	73.44	15.20	3.35	0.50	4.15	1.05	1.78	0.33	0.08	0.06	0.07	0.14	0.73	100.00	5	120	5	20	155
AU01060	499273	5407230	61.58	16.74	5.36	3.61	4.38	1.52	6.02	0.44	0.21	0.09	0.03	0.57	1.64	100.00	10	110	75	60	115
AU01061	499275	5407183	74.48	14.96	2.55	0.42	4.05	0.96	2.04	0.32	0.08	0.07	0.07	0.19	1.66	100.00	5	110	5	20	165
AU01062	499493	5407097	76.82	13.62	2.53	0.30	3.53	1.25	1.41	0.31	0.06	0.04	0.11	0.15	1.41	100.00	5	100	5	5	270
AU01063	499462	5407102	83.03	9.39	1.77	0.26	2.21	1.04	1.82	0.23	0.08	0.03	0.13	0.64	0.69	100.00	10	90	5	125	275
AU01064	499432	5407121	78.36	11.96	2.48	0.51	3.04	1.21	1.97	0.24	0.07	0.04	0.12	0.65	1.29	100.00	5	90	35	605	305
AU01065	499439	5407124	88.97	5.67	0.82	0.17	0.91	1.21	1.88	0.16	0.05	0.02	0.13	0.53	1.37	100.00	5	50	50	290	325
AU01066	499503	5407112	59.31	23.20	6.44	1.58	3.41	2.36	2.79	0.69	0.06	0.05	0.10	0.75	2.69	100.00	5	40	45	5	210
AU01067	499499	5407142	67.89	16.55	2.53	1.10	3.67	2.10	5.32	0.54	0.20	0.03	0.07	2.86	3.29	100.00	15	100	15	25	160
AU01068	499467	5407170	72.90	13.76	3.14	0.70	3.60	1.26	4.12	0.27	0.06	0.10	0.09	0.27	0.88	100.00	5	120	5	60	200
AU01069	499475	5407176	52.02	9.50	10.86	15.66	0.79	0.65	9.48	0.53	0.12	0.24	0.15	0.29	3.28	100.00	10	30	5	50	405
AU01071	499490	5407189	67.60	15.38	6.38	3.45	2.86	1.06	2.70	0.34	0.08	0.06	0.08	0.96	2.62	100.00	15	150	155	1220	230
AU01072	499544	5407216	67.26	18.41	3.70	0.77	5.43	1.70	1.88	0.61	0.14	0.03	0.07	0.87	1.16	100.00	15	130	25	5	135
AU01073	499498	5407252	53.30	15.03	8.09	7.66	2.01	2.37	10.54	0.70	0.07	0.19	0.04	0.01	1.8	100.00	15	40	5	55	150
AU01074	499540	5407220	69.49	15.26	4.29	1.08	1.01	4.56	3.48	0.59	0.16	0.03	0.06	1.44	3.85	100.00	15	140	225	210	250
AU01075	499515	5407264	57.12	17.04	6.42	5.43	4.00	2.55	6.39	0.83	0.06	0.14	0.02	0.01	1.48	100.00	15	40	5	50	195
AU01076	499517	5407264	46.96	4.78	2.69	35.09	0.11	0.09	9.55	0.17	0.04	0.13	0.38	0.11	10.17	100.00	5	10	5	5	1200
AU01077	499888	5407269	45.72	6.09	7.67	29.14	0.42	0.08	10.26	0.23	0.04	0.17	0.17	0.12	5.09	100.00	5	10	5	20	1495
AU01078	499831	5407262	51.17	12.85	16.37	7.83	1.09	1.51	8.16	0.55	0.04	0.24	0.19	0.07	1.59	100.00	15	30	5	10	695
AU01079	500119	5407892	53.10	14.25	8.46	7.05	1.81	0.89	13.23	0.87	0.08	0.23	0.02	0.01	1.97	100.00	15	50	5	60	90
AU01082	499529	5407131	89.49	4.16	0.53	0.22	0.71	0.48	4.07	0.11	0.04	0.03	0.15	0.09	5.92	100.00	4	30	60	85	345
AU01083	499531	5407134	78.87	12.26	1.69	0.52	2.72	1.66	1.73	0.31	0.06	0.05	0.13	0.2	2.7	100.00	5	90	95	55	290
AU01084	500020	5407441	41.47	4.07	19.39	23.69	0.01	0.02	10.76	0.14	0.06	0.17	0.23	0.24	10.73	100.00	5	10	400	430	895
AU01085	500026	5407342	52.92	14.68	9.43	9.36	2.74	0.87	9.02	0.56	0.22	0.15	0.04	0.11	1.94	100.00	10	60	70	60	175
AU01086	500024	5407342	52.85	14.75	9.39	9.39	2.74	0.87	9.04	0.56	0.22	0.15	0.04	0.02	2.08	100.00	10	60	140	50	175
AU01087	500087	5407345	48.61	5.19	17.92	17.35	0.11	0.06	9.90	0.20	0.05	0.29	0.30	0.11	2.77	100.00	5	10	110	5	1095
AU01088	499419	5407257	52.25	17.32	8.73	9.45	2.39	2.44	6.24	0.73	0.25	0.17	0.04	1.71	4.37	100.00	10	80	180	80	105
AU01089	499330	5407209	57.18	14.72	7.70	6.07	3.57	1.77	7.90	0.64	0.29	0.09	0.06	2.71	3.14	100.00	10	100	160	45	90

Normalized Volatile-free

ICP-MS Whole Rock Analyses  
SCHUMACHER GRID

SAMPLE	Cr (ppm)	Co (ppm)	V (ppm)	Be (ppm)	Sc (ppm)	Nb (ppm)
AU01021	375	30	140	5	20	<10
AU01022	840	20	75	5	5	<10
AU01023	1155	50	155	5	35	<10
AU01024	1055	20	65	5	5	<10
AU01025	2595	65	90	5	15	<10
AU01026	675	25	70	5	10	10
AU01027	220	20	95	5	10	<10
AU01028	520	15	60	5	5	<10
AU01029	490	10	25	5	<5	<10
AU01030	150	40	245	5	35	<10
AU01031	2670	20	95	5	<5	<10
AU01032	1320	20	60	5	5	<10
AU01033	735	15	60	5	5	<10
AU01034	865	15	45	5	5	<10
AU01035	1110	20	70	5	5	<10
AU01036	35	55	395	5	30	<10
AU01037	175	40	285	5	40	<10
AU01038	170	45	275	5	40	<10
AU01039	205	40	255	5	40	<10
AU01040	2465	95	125	5	25	<10
AU01042	290	25	120	5	15	<10
AU01051	660	40	145	5	25	<10
AU01052	920	20	75	5	5	10
AU01053	985	45	150	5	30	<10
AU01059	650	15	55	5	5	<10
AU01060	305	20	100	5	10	<10
AU01061	700	20	50	5	5	<10
AU01062	1110	10	60	5	5	10
AU01063	1235	25	60	5	5	<10
AU01064	1220	15	60	5	5	<10
AU01065	1270	35	55	5	5	<10
AU01066	985	30	245	5	50	<10
AU01067	660	25	85	5	10	<10
AU01068	865	15	60	5	5	<10
AU01069	1420	40	155	5	40	<10
AU01071	810	15	60	5	5	<10
AU01072	640	20	90	5	10	<10
AU01073	365	40	230	5	40	<10
AU01074	595	45	95	5	15	10
AU01075	245	30	250	5	40	<10
AU01076	3430	65	70	5	10	<10
AU01077	1560	65	90	5	15	<10
AU01078	1900	55	170	5	25	<10
AU01079	240	40	270	5	40	<10
AU01082	1395	25	65	5	5	<10
AU01083	1220	15	80	5	5	<10
AU01084	2020	70	60	5	10	<10
AU01085	415	40	165	5	30	<10
AU01086	410	35	170	5	30	<10
AU01087	2945	85	85	5	15	<10
AU01088	390	30	180	5	35	10
AU01089	590	35	155	5	30	10

Normalized Volatile-free

FALCONBRIDGE LTD EXPLORATION

Attention: R. Foy

Project: 8290 Expl

Sample: Rock

Swastik laboratories

1 Cameron Ave., Swastika, Ontario

PHONE (705) 642-3244 FAX (705) 642-3300

Report No : 8W1597

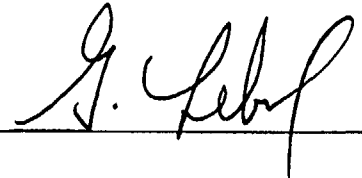
Date : Jun-25-98

ICP Whole Rock Assay

Fusion Analysis

Sample Number	SiO2 %	Al2O3 %	Fe2O3 %	CaO %	MgO %	Na2O %	K2O %	TiO2 %	MnO %	P2O5 %	Cr ppm	Zr ppm	Y ppm	Cu ppm	Zn ppm	Ni ppm	Co ppm	Nb ppm	V ppm	Sc ppm	Be ppm	LOI %	S %	Total %
AU01021	54.17	14.93	8.11	7.77	6.97	3.01	1.95	0.56	0.14	0.26	375	100	15	5	60	135	30	<10	140	20	5	1.49	0.20	99.47
AU01022	69.30	16.14	1.54	1.61	0.60	3.33	5.38	0.52	0.02	0.14	840	140	15	5	<5	200	20	<10	75	5	5	1.11	0.39	99.83
AU01023	50.36	10.32	10.12	10.64	13.38	1.22	0.68	0.56	0.18	0.14	1155	40	10	40	85	395	50	<10	155	35	5	2.08	0.14	99.87
AU01024	76.45	9.25	2.98	4.87	2.46	2.29	0.44	0.29	0.08	0.10	1055	90	10	<5	20	285	20	<10	65	5	<5	0.32	0.01	99.69
AU01025	42.67	5.57	8.95	4.17	29.21	0.19	0.20	0.22	0.15	0.04	2595	10	5	<5	20	1200	65	<10	90	15	<5	8.09	0.10	99.85
AU01026	66.99	14.95	0.96	0.72	0.52	0.42	9.73	0.53	0.02	0.12	675	130	10	15	<5	205	25	10	70	10	5	4.48	0.15	99.55
AU01027	61.27	16.40	4.51	3.95	3.87	7.31	0.78	0.44	0.11	0.23	220	120	10	225	35	85	20	<10	95	10	5	0.84	0.05	99.79
AU01028	69.02	15.28	3.42	0.47	3.47	0.11	3.93	0.44	0.03	0.11	520	120	10	<5	<5	150	15	<10	60	5	5	3.32	<0.01	99.70
AU01029	65.05	19.97	1.33	4.20	1.42	5.21	1.12	0.04	0.02	0.03	490	120	<5	<5	<5	110	10	<10	25	<5	<5	1.23	<0.01	99.70
AU01030	54.15	14.49	10.03	7.73	5.48	4.13	0.64	0.91	0.13	0.10	150	70	20	<5	15	55	40	<10	245	35	5	1.63	0.01	99.48
AU01031	86.52	4.44	1.84	0.27	0.11	0.92	0.48	0.12	0.02	0.03	2670	40	5	<5	65	575	20	<10	95	<5	<5	4.83	0.04	99.92
AU01032	78.38	11.87	2.02	1.78	0.25	3.72	0.55	0.21	0.02	0.05	1320	90	5	<5	35	330	20	<10	60	5	<5	0.71	0.40	99.76
AU01033	69.08	16.52	1.58	2.94	1.04	3.61	1.64	0.37	0.03	0.05	735	100	5	60	360	190	15	<10	60	5	5	2.46	0.68	99.46
AU01034	76.29	13.42	1.20	2.62	0.17	4.12	0.97	0.26	0.03	0.06	865	100	5	<5	<5	210	15	<10	45	5	<5	0.42	0.18	99.70
AU01035	68.80	15.94	3.05	3.55	0.76	4.30	1.22	0.37	0.06	0.08	1110	110	5	90	535	290	20	<10	70	5	5	1.45	1.14	99.80
AU01036	47.80	7.80	22.76	10.93	7.63	1.28	0.40	0.82	0.39	0.10	35	70	40	<5	85	70	55	<10	395	30	5	<0.01	<0.01	99.77
AU01037	54.39	14.02	12.04	9.13	4.40	2.91	0.42	1.08	0.20	0.10	175	70	20	<5	50	70	40	<10	285	40	5	1.16	0.01	99.93
AU01038	53.70	13.68	12.91	8.48	5.04	2.36	0.88	0.95	0.21	0.09	170	70	20	65	60	70	45	<10	275	40	5	1.10	0.05	99.48
AU01039	54.20	14.26	11.44	9.06	5.23	2.13	0.66	0.88	0.18	0.08	205	50	15	<5	55	90	40	<10	255	40	5	1.29	0.01	99.49
AU01040	47.40	7.73	10.04	9.49	19.50	0.78	0.28	0.29	0.15	0.04	2465	20	5	115	80	1660	95	<10	125	25	<5	3.62	0.87	99.77
AU01042	56.61	16.10	6.62	7.01	5.91	3.45	1.64	0.50	0.10	0.26	290	100	10	<5	75	155	25	<10	120	15	5	1.43	0.04	99.72
AU01043	76.05	11.89	1.68	0.17	0.39	1.17	7.33	0.33	0.02	0.02	955	290	90	<5	<5	230	10	20	50	5	5	0.40	0.01	99.61
AU01051	56.78	16.00	6.14	8.83	4.27	3.55	0.92	0.61	0.11	0.11	660	100	15	110	25	345	40	<10	145	25	5	2.11	1.01	99.58
AU01052	70.39	12.06	2.74	4.40	1.68	1.86	4.61	0.41	0.09	0.08	920	90	10	60	15	220	20	10	75	5	5	1.38	0.32	99.83
AU01053	49.76	10.54	9.49	10.54	12.99	1.16	0.96	0.55	0.16	0.14	985	40	10	90	80	390	45	<10	150	30	5	3.06	1.00	99.53

Sample is fused with Lithium Metaborate or Sodium Peroxide and dissolved with either HNO3 or HCl respectively.

Signed: 

SWASTIKA LABORATORIES ID: RU064Z0000 NUV Z4 98 12.20 200001 F: 110

Swastika Laboratories ID: 7056423300 NOV 24 '98 12:24 No.001 P.02

### Swastika Laboratories

1 Cameron Ave., Swastika, Ontario

PHONE (705) 642-3244 FAX (705) 642-3300

Report No : 8W1597

Date : Jun-25-98

## FALCONBRIDGE LTD EXPLORATION

Attention: R. Foy

Project: 8290 Expl

Sample: Rock

### ICP Whole Rock Assay

#### Fusion Analysis

Sample Number	SiO <sub>2</sub> %	Al <sub>2</sub> O <sub>3</sub> %	Fe <sub>2</sub> O <sub>3</sub> %	CaO %	MgO %	Na <sub>2</sub> O %	K <sub>2</sub> O %	TiO <sub>2</sub> %	MnO %	P <sub>2</sub> O <sub>5</sub> %	Cr ppm	Zr ppm	Y ppm	Cu ppm	Zn ppm	Ni ppm	Co ppm	Nb ppm	V ppm	Sc ppm	Be ppm	LOI %	S %	Total %
AU01059	72.78	15.06	1.76	3.32	0.50	4.11	1.04	0.33	0.06	0.08	650	120	5	<5	20	155	15	<10	55	5	5	0.73	0.14	99.87
AU01060	60.17	16.36	5.89	5.24	3.53	4.28	1.49	0.43	0.09	0.21	305	110	10	75	60	115	20	<10	100	10	5	1.64	0.57	99.39
AU01061	72.99	14.66	2.00	2.50	0.41	3.97	0.94	0.31	0.07	0.08	700	110	5	5	20	165	20	<10	50	5	5	1.66	0.19	99.70
AU01062	75.63	13.41	1.39	2.49	0.30	3.48	1.23	0.31	0.04	0.06	1110	100	5	5	<5	270	10	10	60	5	5	1.41	0.15	99.90
AU01063	82.03	9.28	1.80	1.75	0.26	2.18	1.03	0.23	0.03	0.08	1235	90	10	<5	125	275	25	<10	60	5	<5	0.69	0.64	99.55
AU01064	76.92	11.74	1.93	2.43	0.50	2.98	1.19	0.24	0.04	0.07	1220	90	5	35	605	305	15	<10	60	5	<5	1.29	0.65	99.57
AU01065	87.42	5.57	1.85	0.81	0.17	0.89	1.19	0.16	0.02	0.05	1270	50	5	50	290	325	35	<10	55	5	<5	1.37	0.53	99.69
AU01066	57.51	22.50	2.71	6.24	1.53	3.31	2.29	0.67	0.05	0.06	985	40	5	45	<5	210	30	<10	245	50	5	2.69	0.75	99.72
AU01067	65.43	15.95	5.13	2.44	1.06	3.54	2.02	0.52	0.03	0.19	660	100	15	15	25	160	25	<10	85	10	5	3.29	2.86	99.70
AU01068	71.95	13.58	4.07	3.10	0.69	3.55	1.24	0.27	0.10	0.06	865	120	5	<5	60	200	15	<10	60	5	5	0.88	0.27	99.64
AU01069	50.21	9.17	9.15	10.48	15.12	0.76	0.63	0.51	0.23	0.12	1420	30	10	<5	50	405	40	<10	155	40	5	3.28	0.29	99.87
AU01071	65.42	14.88	2.61	6.17	3.34	2.77	1.03	0.33	0.06	0.08	810	150	15	155	1220	230	15	<10	60	5	5	2.62	0.96	99.58
AU01072	66.16	18.11	1.85	3.64	0.76	5.34	1.67	0.60	0.03	0.14	640	130	15	25	<5	135	20	<10	90	10	5	1.16	0.87	99.58
AU01073	52.08	14.69	10.30	7.90	7.48	1.96	2.32	0.68	0.19	0.07	365	40	15	<5	55	150	40	<10	230	40	5	1.80	0.01	99.57
AU01074	66.37	14.57	3.32	4.10	1.03	0.96	4.36	0.56	0.03	0.15	595	140	15	225	210	250	45	10	95	15	5	3.85	1.44	99.45
AU01075	55.99	16.70	6.26	6.29	5.32	3.92	2.50	0.81	0.14	0.06	245	40	15	<5	50	195	30	<10	250	40	5	1.48	0.01	99.55
AU01076	41.93	4.27	8.53	2.40	31.33	0.10	0.08	0.15	0.12	0.04	3430	10	5	<5	5	1200	65	<10	70	10	<5	10.17	0.11	99.59
AU01077	43.22	5.76	9.70	7.25	27.55	0.40	0.08	0.22	0.16	0.04	1560	10	5	<5	20	1495	65	<10	90	15	<5	5.09	0.12	99.79
AU01078	50.23	12.61	8.01	16.07	7.69	1.07	1.48	0.54	0.24	0.04	1900	30	15	<5	10	695	55	<10	170	25	5	1.59	0.07	99.85
AU01079	51.97	13.95	12.95	8.28	6.90	1.77	0.87	0.85	0.23	0.08	240	50	15	<5	60	90	40	<10	270	40	5	1.97	0.01	99.90
AU01082	84.05	3.91	3.82	0.50	0.21	0.67	0.45	0.10	0.03	0.04	1395	30	<5	60	85	345	25	<10	65	5	<5	5.92	0.09	99.89
AU01083	76.27	11.86	1.67	1.63	0.50	2.63	1.61	0.30	0.05	0.06	1220	90	5	95	55	290	15	<10	80	5	5	2.70	0.20	99.48
AU01084	36.74	3.61	9.53	17.18	20.99	<0.01	0.02	0.12	0.15	0.05	2020	10	5	400	430	895	70	<10	60	10	<5	10.73	0.24	99.50
AU01085	51.68	14.34	8.81	9.21	9.14	2.68	0.85	0.55	0.15	0.21	415	60	10	70	60	175	40	<10	165	30	5	1.94	0.11	99.66
AU01086	51.56	14.39	8.82	9.16	9.16	2.67	0.85	0.55	0.15	0.21	410	60	10	140	50	175	35	<10	170	30	5	2.08	0.02	99.71
AU01087	47.17	5.04	9.61	17.39	16.84	0.11	0.06	0.19	0.28	0.05	2945	10	5	110	<5	1095	85	<10	85	15	<5	2.77	0.11	99.92

Sample is fused with Lithium Metaborate or Sodium Peroxide and dissolved with either HNO<sub>3</sub> or HCl respectively.

Signed: 

**FALCONBRIDGE LTD EXPLORATION**

Attention: R. Foy

Project: 8290 Expl

Sample: Rock

**Swastika Laboratories**

1 Cameron Ave., Swastika, Ontario

PHONE (705) 642-3244 FAX (705) 642-3300

Report No : 8W1922

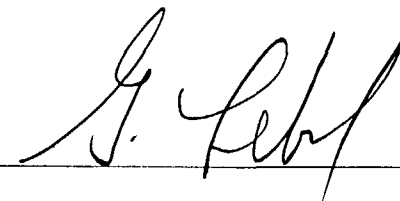
Date : Jul-17-98

**ICP Whole Rock Assay**

## Fusion Analysis

Sample Number	SiO <sub>2</sub> %	Al <sub>2</sub> O <sub>3</sub> %	Fe <sub>2</sub> O <sub>3</sub> %	CaO %	MgO %	Na <sub>2</sub> O %	K <sub>2</sub> O %	TiO <sub>2</sub> %	MnO %	P <sub>2</sub> O <sub>5</sub> %	Cr ppm	Zr ppm	Y ppm	Cu ppm	Zn ppm	Ni ppm	Co ppm	Nb ppm	V ppm	Sc ppm	Be ppm	LOI %	S %	Total %
AU01088	49.73	16.48	5.94	8.31	8.99	2.27	2.32	0.69	0.16	0.24	390	80	10	180	80	105	30	10	180	35	5	4.37	1.71	99.60
AU01089	54.98	14.15	7.60	7.40	5.84	3.43	1.70	0.62	0.09	0.28	590	100	10	160	45	90	35	10	155	30	5	3.14	2.71	99.35

Sample is fused with Lithium Metaborate or Sodium Peroxide  
and dissolved with either HNO<sub>3</sub> or HCl respectively.







Established 1928

# Swastika Laboratories

A Division of Assayers Corporation Ltd.

Assaying - Consulting - Representation

## Geochemical Analysis Certificate

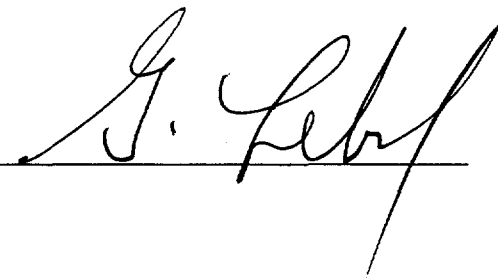
8W-1596-RG1

Company: **FALCONBRIDGE LTD EXPLORATION**  
Project: 8920 Expl  
Attn: R. Foy

Date: JUN-18-98

We hereby certify the following Geochemical Analysis of 11 Rock samples submitted JUN-12-98 by K. Smuk.

Sample Number	Au PPB	Cu PPM	Zn PPM	Pb PPM	Ag PPM	Ni PPM
AU01201	161	34	52	4	0.1	145
AU01202	24	753	78	1	0.1	2640
AU01203	3	6	28	1	0.1	49
AU01204	38	101	49	1	0.1	1400
[REDACTED]						
AU01103	7	454	46	1	0.2	1510
AU01104	10	292	37	1	0.2	208
AU01105	10	73	14	1	0.1	281
[REDACTED]						

Certified by 



Established 1928

# Swastika Laboratories

A Division of TSL/Assayers Inc.

Assaying - Consulting - Representation

## Geochemical Analysis Certificate

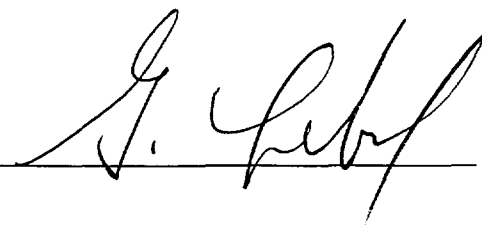
8W-1933-RG1

Company: **FALCONBRIDGE LTD EXPLORATION**  
Project: 8290 Expl  
Attn: R. Foy

Date: AUG-06-98

We hereby certify the following Geochemical Analysis of 3 Rock samples submitted JUL-10-98 by .

Sample Number	Au PPB	Ag PPM	As PPM	Co PPM	Cu PPM	Ni PPM	Pb PPM	Zn PPM	S %
AU01114	21	0.2	<5	147	725	2060	1	82	5.15
AU01115	3	0.1	<5	33	138	86	2	18	2.67

Certified by 

## STATEMENT OF EXPENSES





Personal information collected on this form is obtained under the authority of subsection 6 (1) of the Assessment Work Regulation 6/96. Under section 8 of the Mining Act, this information is a public record. This information will be used to review the assessment work and correspond with the mining land holder. Questions about this collection should be directed to a Provincial Mining Recorder, Ministry of Northern Development and Mines, 3rd Floor, 933 Ramsey Lake Road, Sudbury, Ontario, P3E 6B5.

Table with 4 columns: Work Type, Units of work, Cost Per Unit of work, Total Cost. Rows include Geological Mapping and Sampling, Geochemical Analysis, Associated Costs, Geologist: Survey planning, supervision, Transportation Costs, Food and Lodging Costs, and Total Value of Assessment Work.

Calculations of Filing Discounts:

- 1. Work filed within two years of performance is claimed at 100% of the above Total Value of Assessment Work.
2. If work is filed after two years and up to five years after performance, it can only be claimed at 50% of the Total Value of Assessment Work.

TOTAL VALUE OF ASSESSMENT WORK x 0.50 = Total \$ value of worked claimed.

Note:

- Work older than 5 years is not eligible for credit.
- A recorded holder may be required to verify expenditures claimed in this statement of costs within 45 days of a request for verification and/or correction/clarification.

Certification verifying costs:

I, Robert Foy, do hereby certify, that the amounts shown are as accurate as may reasonably be determined and the costs were incurred while conducting assessment work on the lands indicated on the accompanying Declaration of Work form as Agent (Project Geologist, Falconbridge Limited) I am authorized to make this certification.

Signature Date August 25, 1998



42A15SW2007 2.19072 MANN

900

of subsection 65(2) and 66(3) of the Mining Act. Under section 8 of the Mining Act, the assessment work and correspond with the mining land holder. Questions about of Northern Development and Mines, 3rd Floor, 933 Ramsey Lake Road, Sudbury,

2.19072

- Instructions: - For work performed on Crown Lands before recording a claim, use form 0240.  
 - Please type or print in ink.

**1. Recorded holder(s) (Attach a list if necessary)**

Name	FALCONBRIDGE LIMITED	Client Number	130679
Address	Suite 1200 - 95 Wellington Street West	Telephone Number	(416) 956-5700
	Toronto, Ontario, M5H 2V4	Fax Number	(416) 956-5757
Name		Client Number	
Address		Telephone Number	
		Fax Number	

**2. Type of work performed: Check (✓) and report on only ONE of the following groups for this declaration.**

Geotechnical: prospecting, surveys, assays and work under section 18 (regs)



Physical: drilling stripping, trenching and associated assays



Rehabilitation

Work Type	Geological Mapping and Lithochemical Sampling	Office Use
Dates Work Performed	From 01 06 1998 To 25 06 1998	Commodity
Global Positioning System Data (if available)	Township/Area Mann Twp.	Total \$ Value of Work Claimed \$ 20,095
	M or G-Plan Number G - 3537	NTS Reference
		Mining Division Porcupine
		Resident Geologist District Timmins

- Please remember to: - obtain a work permit from the Ministry of Natural Resources as required;  
 - provide proper notice to surface rights holders before starting work;  
 - complete and attach a Statement of Costs, form 0212;  
 - provide a map showing contiguous mining lands that are linked for assigning work;  
 - include two copies of your technical report.

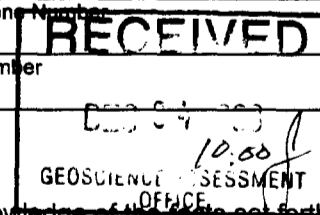
**3. Person or companies who prepared the technical report (Attach a list if necessary)**

Name	Robert Foy	Telephone Number	(705) 267 - 1188 ext. 243
Address	PO Box 1140, Timmins, Ontario, P4N 7H9	Fax Number	(705) 267 - 6080
Name		Telephone Number	
Address		Fax Number	
Name		Telephone Number	
Address		Fax Number	

**4. Certification by Recorded Holder or Agent**

I, Robert Foy (Print Name), do hereby certify that I have personal knowledge of the facts set forth in this Declaration of Assessment Work having caused the work to be performed or witnessed the same during or after its completion and, to the best of my knowledge, the annexed report is true.

Signature of Recorded Holder or Agent		Date	November 27, 1998
Agent's Address	PO Box 1140, Timmins, Ontario, P4N 7H9	Telephone Number	(705) 267 - 1188 ext. 243
		Fax Number	(705) 267 - 6080



5. **Work to be recorded and distributed.** Work can only be assigned to claims that are contiguous (adjoining) to the mining land where work was performed, at the time work was performed. A map showing the contiguous link must accompany this form.

W9860-00885

Mining Claim Number. Or if work was done on other eligible mining land, show in this column the location number indicated on the claim map.	Number of Claim Units. For other mining land, list hectares.	Value of work performed on this claim or other mining land.	Value of work applied to this claim.	Value of work assigned to other mining claims.	Bank. Value of work to be distributed at a future date
6000276 543 NEC	64 ha	\$8000		\$8000	\$0
6300275 485 NEC	64 ha	\$8095		\$8095	\$0
3 6000276 61334	16 ha	\$2000		\$2000	\$0
6000276 61335	16 ha	\$2000		\$2000	\$0
5 1190189	16		\$3405		
6 1201901	16		\$6400		
7 1200947	9		\$3600		
8 1200948	2		\$800		
9 1200918	2		\$800		
10 1200915	16		\$5090		
11					
12					
13					
14					
15					
16					
17					
18					
<b>Column Totals</b>	<b>16</b>	<b>\$20,095</b>	<b>\$20,095</b>	<b>\$20,095</b>	<b>\$0</b>

I, Robert Foy, do hereby certify that the above work credits are eligible under subsection 7 (1) of the Assessment Work Regulation 6/96 for assignment to contiguous claims or for application to the claim where the work was done.

Signature of Recorded Holder or Agent Authorized in Writing

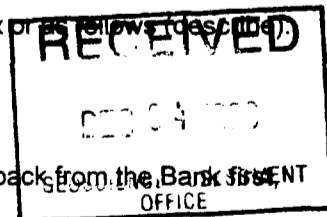
*Robert Foy*

Date November 27, 1998

6. **Instruction for cutting back credits that are not approved.**

Some of the credits claimed in this declaration may be cut back. Please check (✓) in the boxes below to show how you wish to prioritize the deletion of credits:

- 1. Credits are to be cut back from the Bank first, followed by option 2 or 3 or 4 as indicated.
- 2. Credits are to be cut back starting with the claims listed last, working backwards; or
- 3. Credits are to be cut back equally over all claims listed in this declaration; or
- 4. Credits are to be cut back as prioritized on the attached appendix or as follows (describe):



Note: If you have not indicated how your credits are to be deleted, credits will be cut back from the Bank first, followed by option number 2 if necessary.

**For Office Use Only**

Received Stamp	Deemed Approved Date	Date Notification Sent
	Date Approved	Total Value of Credit Approved
Approved for Recording by Mining Recorder (Signature)		



W986.00585

Personal information collected on this form is obtained under the authority of subsection 6 (1) of the Assessment Work Regulation 6/96. Under section 8 of the Mining Act, this information is a public record. This information will be used to review the assessment work and correspond with the mining land holder. Questions about this collection should be directed to a Provincial Mining Recorder, Ministry of Northern Development and Mines, 3rd Floor, 933 Ramsey Lake Road, Sudbury, Ontario, P3E 6B5.

2.19072

Work Type	Units of work Depending on the type of work, list the number of hours/day worked, metres of drilling, kilometres of grid line, number of samples, etc.	Cost Per Unit of work	Total Cost
Geological Mapping and Sampling 2 Geologists * 25 Days	50 Man Days	\$250/day	\$12500
Geochemical Analysis	61 Samples	\$20/each	\$1220
<b>Associated Costs (e.g. supplies, mobilization and demobilization).</b>			
Geologist: Survey planning, supervision (8 days)		\$250/day	\$2000
<b>Transportation Costs</b>			
Truck Rental + Gas: 25 Days		\$75/day	\$1875
<b>Food and Lodging Costs</b>			
Field Expenses, Hotel, Meals, etc: 25 days		\$100/day	\$2500
<b>Total Value of Assessment Work</b>			<b>\$20,095</b>

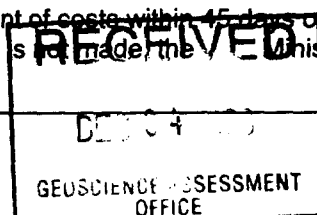
Calculations of Filing Discounts:

1. Work filed within two years of performance is claimed at 100% of the above Total Value of Assessment Work.
2. If work is filed after two years and up to five years after performance, it can only be claimed at 50% of the Total Value of Assessment Work. If this situation applies to your claims, use the calculation below:

TOTAL VALUE OF ASSESSMENT WORK x 0.50 = Total \$ value of worked claimed.

Note:

- Work older than 5 years is not eligible for credit.
- A recorded holder may be required to verify expenditures claimed in this statement of costs within 45 days of a request for verification and/or correction/clarification. If verification and/or correction/clarification is not made, the Minister may reject all or part of the assessment work submitted.



Certification verifying costs:

I, Robert Foy do hereby certify, that the amounts shown are as accurate as may reasonably be determined and the costs were incurred while conducting assessment work on the lands indicated on the accompanying

(please print full name)

Declaration of Work form as Agent (Project Geologist, Falconbridge Limited) I am authorized to make this certification.

(recorded holder, agent, or state company position with signing authority)

Signature <u>R. Foy</u>	Date November 27, 1998
-------------------------	---------------------------

Geoscience Assessment Office  
933 Ramsey Lake Road  
6th Floor  
Sudbury, Ontario  
P3E 6B5

Telephone: (888) 415-9846

Fax: (877) 670-1555

May 19, 1999

FALCONBRIDGE LIMITED  
SUITE 1200, 95 WELLINGTON STREET WEST  
TORONTO, ONTARIO  
M5J-2V4

Visit our website at:  
[www.gov.on.ca/MNDM/MINES/LANDS/mlsmnpge.htm](http://www.gov.on.ca/MNDM/MINES/LANDS/mlsmnpge.htm)

Dear Sir or Madam:

**Submission Number:** 2.19072

**Status**

**Subject: Transaction Number(s):** W9860.00885 Approval After Notice

---

We have reviewed your Assessment Work submission with the above noted Transaction Number(s). The attached summary page(s) indicate the results of the review. WE RECOMMEND YOU READ THIS SUMMARY FOR THE DETAILS PERTAINING TO YOUR ASSESSMENT WORK.

If the status for a transaction is a 45 Day Notice, the summary will outline the reasons for the notice, and any steps you can take to remedy deficiencies. The 90-day deemed approval provision, subsection 6(7) of the Assessment Work Regulation, will no longer be in effect for assessment work which has received a 45 Day Notice. Allowable changes to your credit distribution can be made by contacting the Geoscience Assessment Office within this 45 Day period, otherwise assessment credit will be cut back and distributed as outlined in Section #6 of the Declaration of Assessment work form.

Please note any revisions must be submitted in DUPLICATE to the Geoscience Assessment Office, by the response date on the summary.

If you have any questions regarding this correspondence, please contact Bruce Gates by e-mail at [bruce.gates@ndm.gov.on.ca](mailto:bruce.gates@ndm.gov.on.ca) or by telephone at (705) 670-5856.

Yours sincerely,



ORIGINAL SIGNED BY  
Blair Kite  
Supervisor, Geoscience Assessment Office  
Mining Lands Section



# Work Report Assessment Results

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**Submission Number:** 2.19072

**Date Correspondence Sent:** May 19, 1999

**Assessor:** Bruce Gates

---

<b>Transaction Number</b>	<b>First Claim Number</b>	<b>Township(s) / Area(s)</b>	<b>Status</b>	<b>Approval Date</b>
W9860.00885	543 NEC	MANN	Approval After Notice	April 17, 1999

**Section:**

12 Geological GEOL

We have reviewed this submission and the revised costs submitted by R. Foy have been accepted.

The assessment credit is being reduced by \$1,875. The TOTAL VALUE of assessment credit that will be allowed, based on the information provided in this submission, is \$18,220.

**Correspondence to:**

Resident Geologist  
South Porcupine, ON

**Recorded Holder(s) and/or Agent(s):**

Robert Foy  
TIMMINS, ONTARIO, CANADA

Assessment Files Library  
Sudbury, ON

FALCONBRIDGE LIMITED  
TORONTO, ONTARIO

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# Distribution of Assessment Work Credit

The following credit distribution reflects the value of assessment work performed on the mining land(s).

**Date:** May 19, 1999

**Submission Number:** 2.19072

---

**Transaction Number:** W9860.00885

<u>Claim Number</u>	<u>Value Of Work Performed</u>
6000274	3,627.00
6000275	7,340.00
6000276	7,253.00
<b>Total: \$</b>	<b>18,220.00</b>

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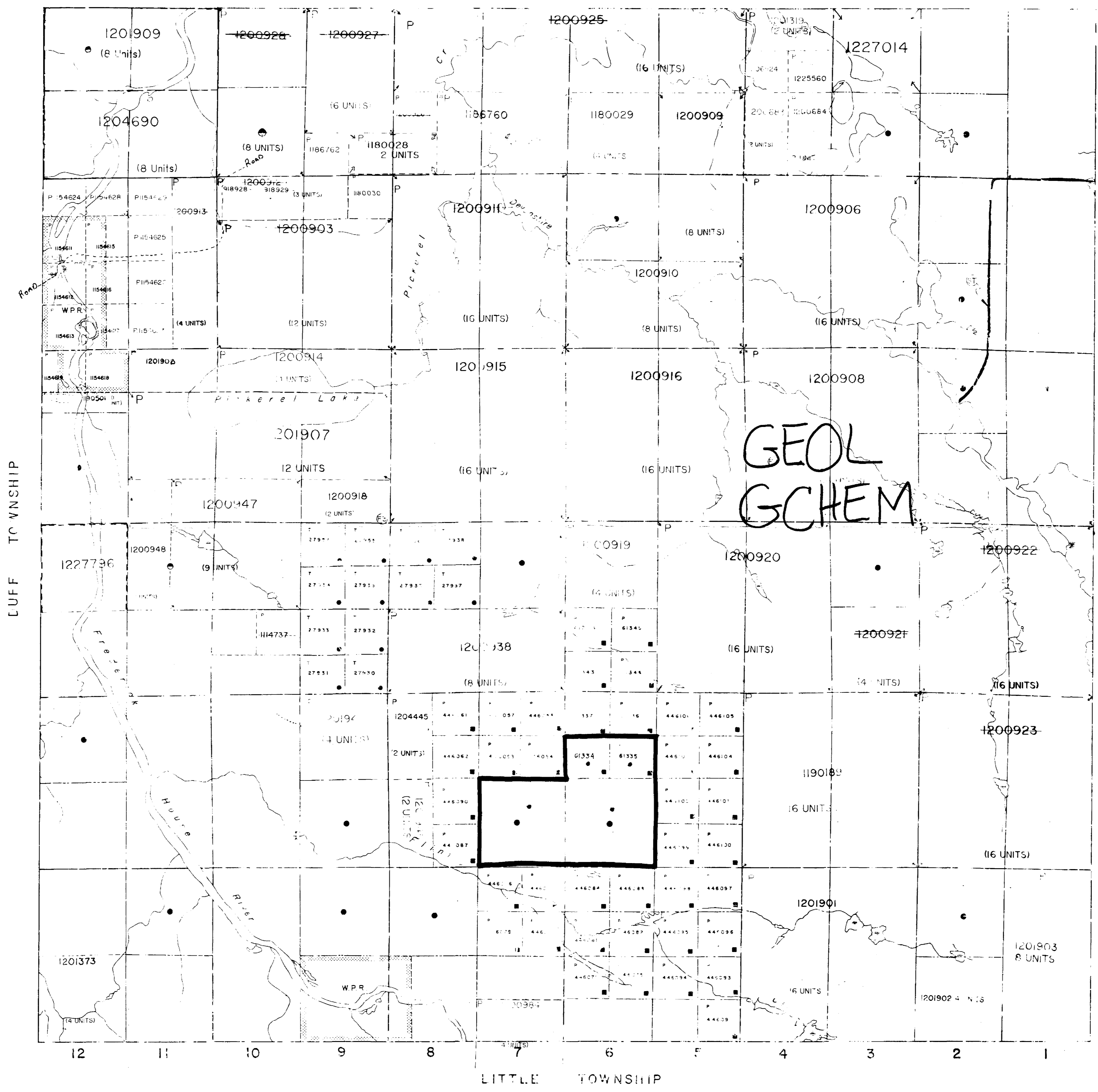
AREAS WITHIN FROM DISPOSITION  
 M.R.O. MINING RIGHTS ONLY  
 S.R.O. SURFACE RIGHTS ONLY  
 M.S. MINING AND SURFACE RIGHTS  
 Order No. Date Position File

W.P.R. WATER POWER RESERVE

W.D. 87.87

SURFACE AND MINING RIGHTS RE-OPENED TO PROSPECTING, STAKING, LEASE, SALE OR LEASE UNDER SECTION 36 OF THE MINING ACT R.S.O. 1980 EFFECTIVE 30-SEP-95 AT 7AM E.S.T. ORDER NO. O.P. 4/90 NR DATED 30-AUG-22.

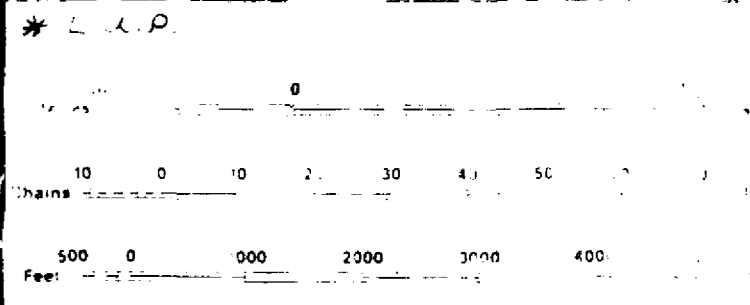
NOTE: P1125837 PLOTTED IN ERROR, S/B P114737.



HIGHWAY  
 TRAIL  
 RAILROAD  
 UTILITY LINES  
 FLOODING OF FLOODING AREAS  
 SUBDIVISION OF CONVEYANCE  
 RESERVATIONS  
 ORIGINAL SHORELINE  
 MARSH OR MUSKOG  
 MINES  
 REVERSE MONUMENT

DISPOSITION OF CLAIMS

TYPE OF DOCUMENT  
 PATENT, SURFACE & MINING RIGHTS  
 SURFACE RIGHTS ONLY  
 MINING RIGHTS ONLY  
 LEASE, SURFACE & MINING RIGHTS  
 SURFACE RIGHTS ONLY  
 MINING RIGHTS ONLY  
 LICENCE OF OCCUPATION  
 ORDER IN COUNCIL  
 RESERVATION  
 CANCELLED  
 SAND & GRAVEL  
 LAND USE PERMIT  
 NOTE: MINING RIGHTS IN PARCELS PATENTED PRIOR TO 1913, VESTED IN ORIGINAL PATENTEE BY THE LANDS ACT R.S.O. 1970, CHAP. 380, SEC. 41.01



SHOWMOBILITY TRAIL (LAND USE PERMIT)  
 NOT TO BE USED FOR

THE INFORMATION THAT APPEARS ON THIS MAP HAS BEEN COMPILED FROM VARIOUS SOURCES, AND ACCURACY IS NOT GUARANTEED.

MAY 27 1999  
 THOSE WISHING TO STAKE MINING CLAIMS SHOULD CONSULT WITH THE MINING RECORDER, MINES, FOR ADDITIONAL INFORMATION AND STATUS OF THE LANDS SHOWN HEREON.

RECEIVED Sept 24 86  
 TOWNSHIP  
**MANN**  
 M.N.R. ADMINISTRATIVE DISTRICT  
**COCHRANE**  
 MINING DIVISION  
**PORCUPINE**  
 AND TITLES / REGISTRY DIVISION  
**COCHRANE**

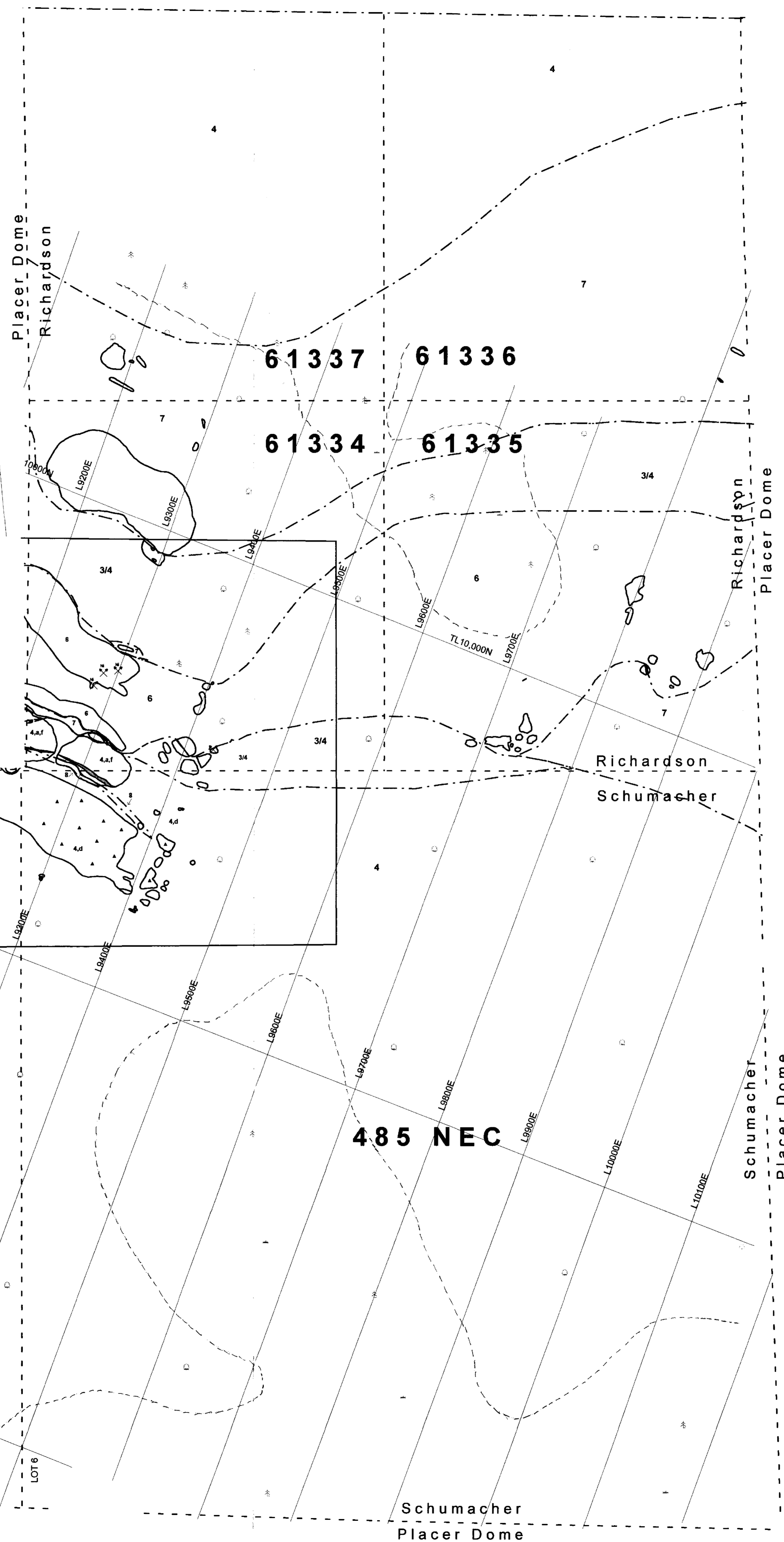
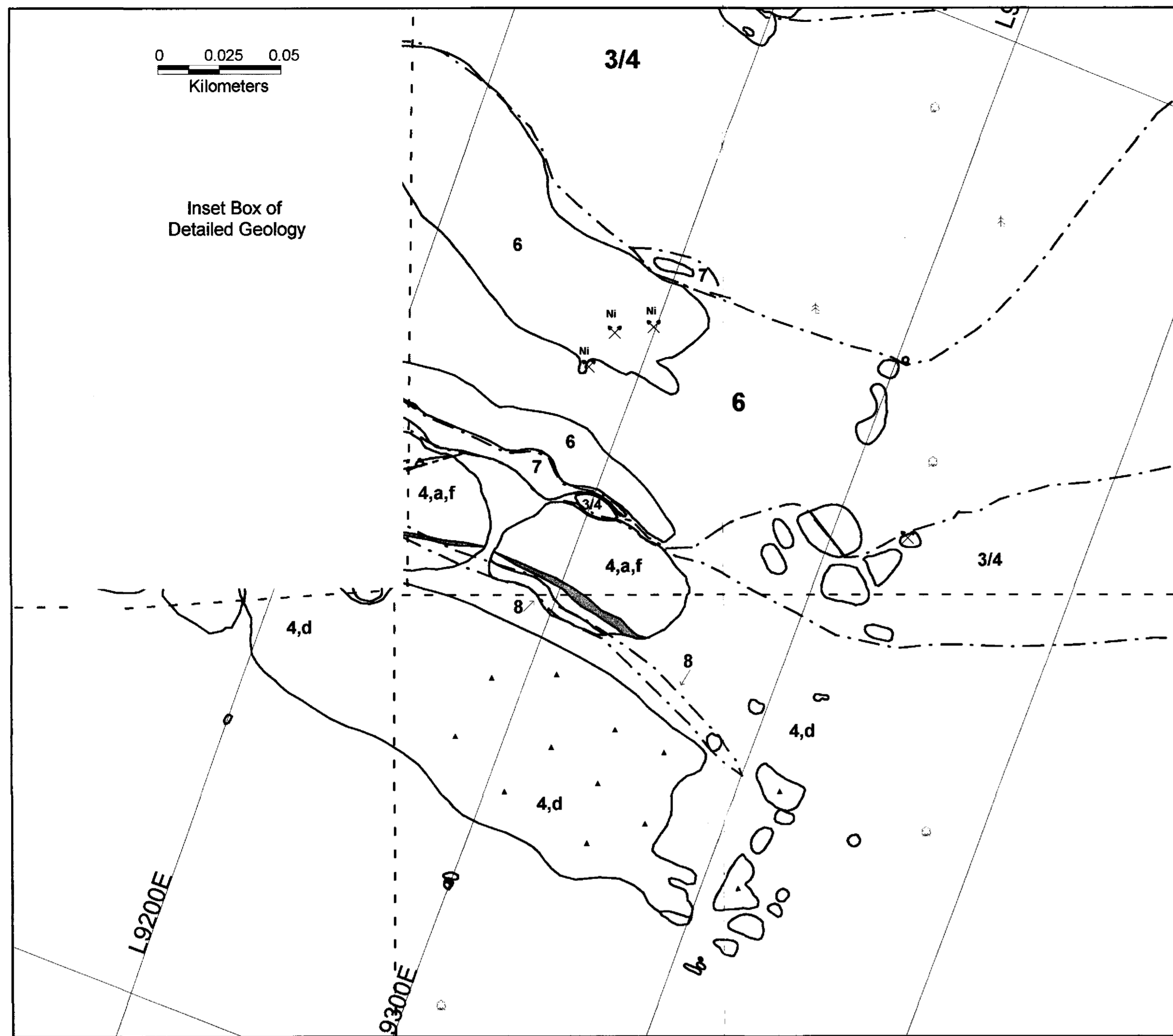
Ministry of Natural Resources  
 Ministry of Northern Development and Mines  
 Ontario

SEPTEMBER 1996  
 G-3537

G-3537

MANN

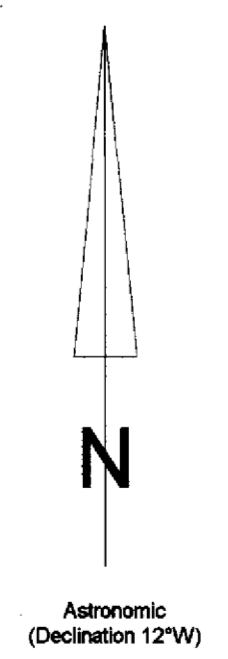
G-3537



8	Intermediate Intrusive feldspar-mafic-phyric dykes
7	Mafic Intrusive gabbro to diorite, locally needle-textured
6	Ultramafic Intrusive/Volcanic locally pillowed peridotite
[Pattern]	Graphitic Argillite
4	Felsic Volcanic
4,a,f	cherty fragmental
4,d	quartz-feldspar-phyric fragmental/breccia
3/4	Intermediate/Felsic Volcanic
▲	Breccia

NB: Solid outlines indicate outcrop areas

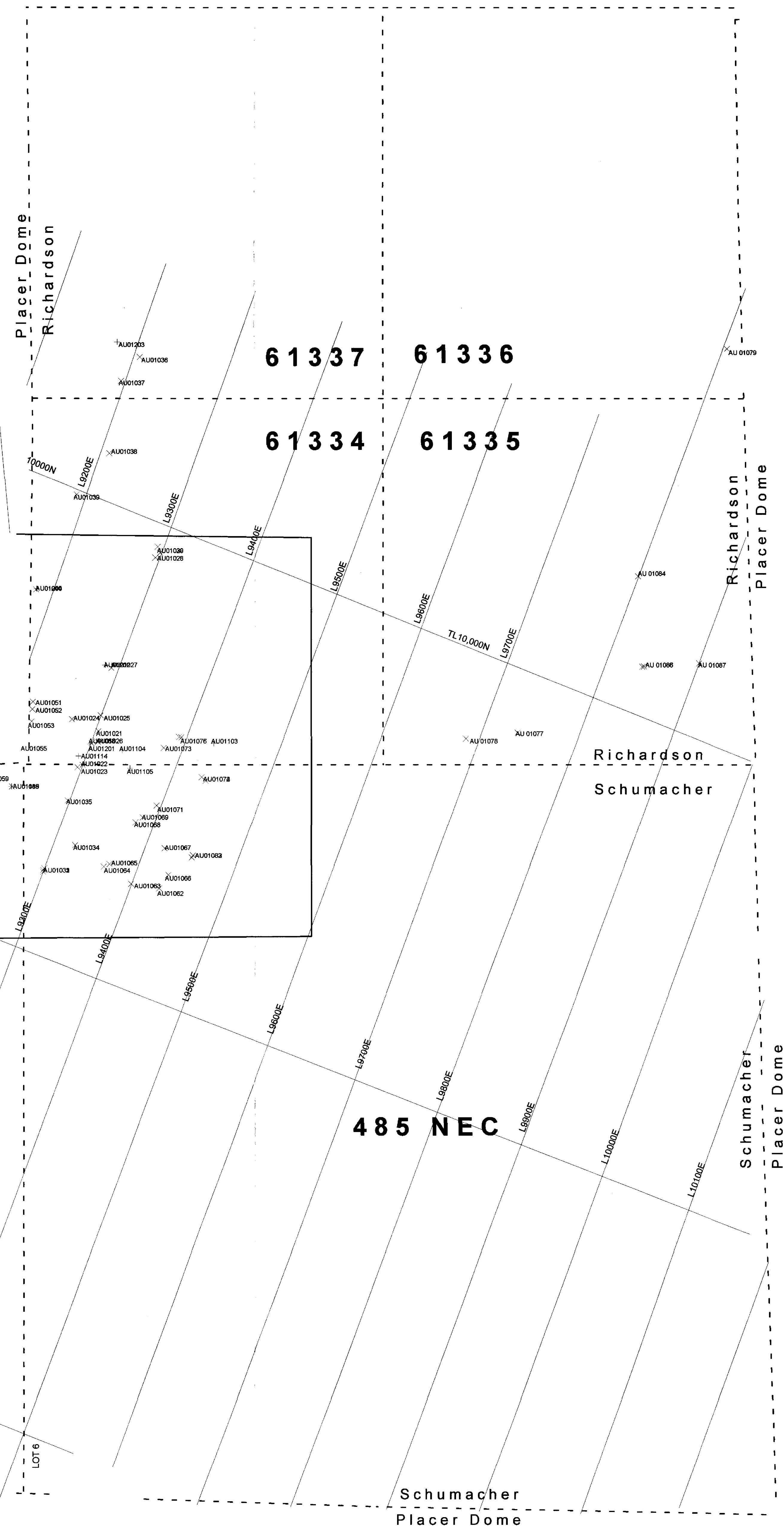
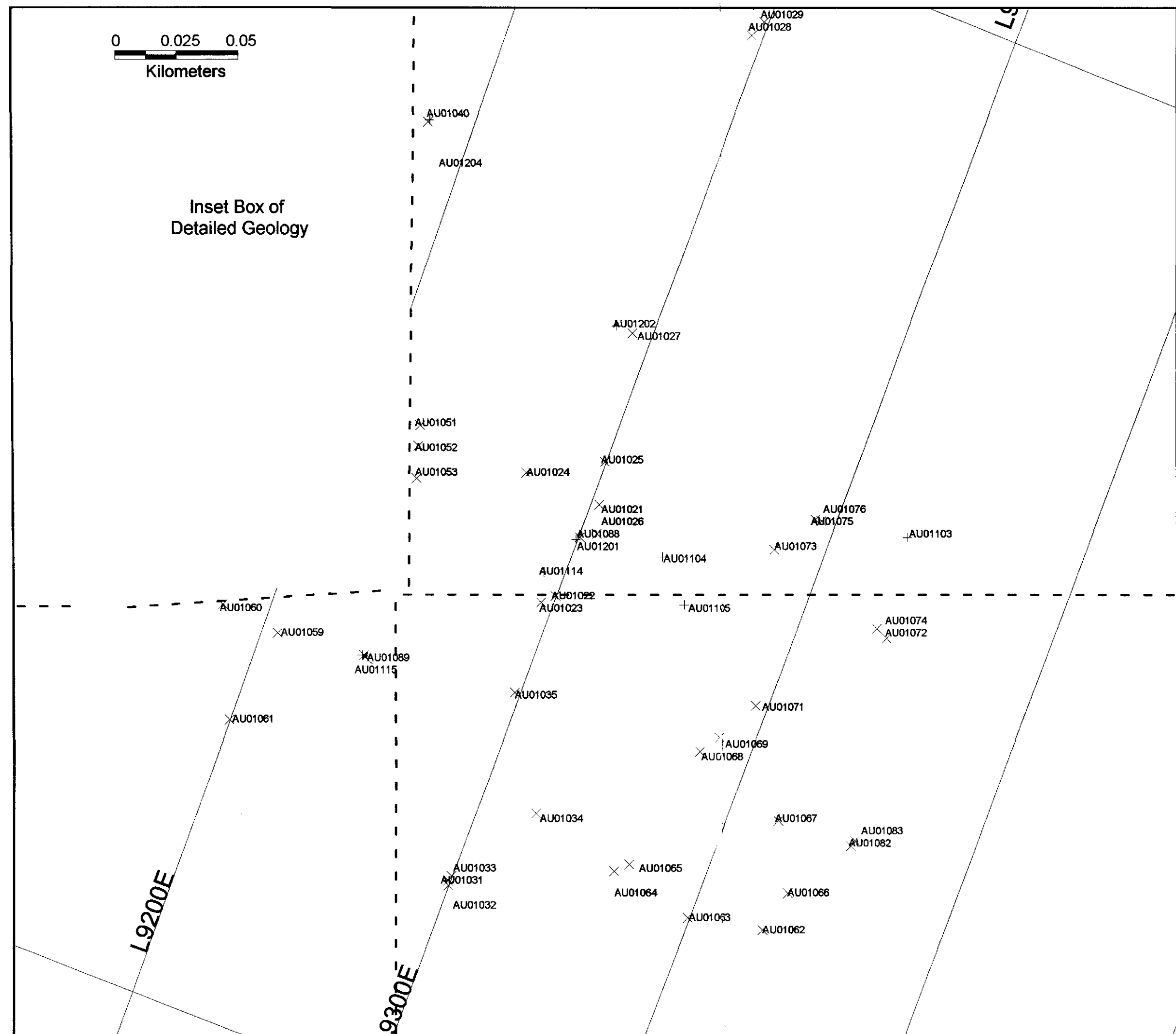
✕	Trench or Pit
—	Vegetation Boundary
○	Deciduous Forest
⊙	Coniferous Forest
⊖	Swampy Ground



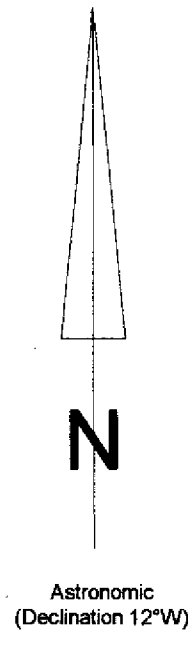
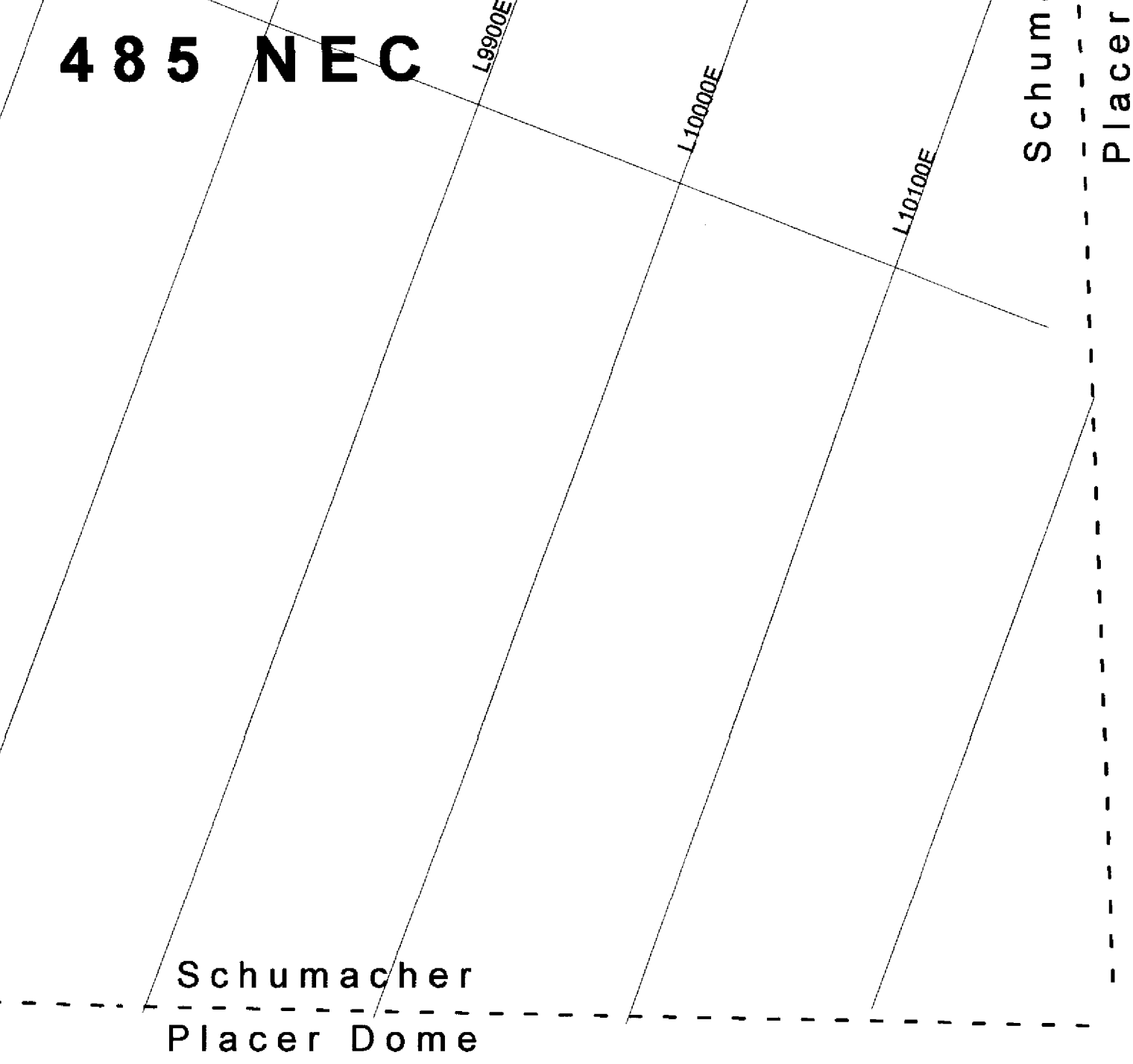
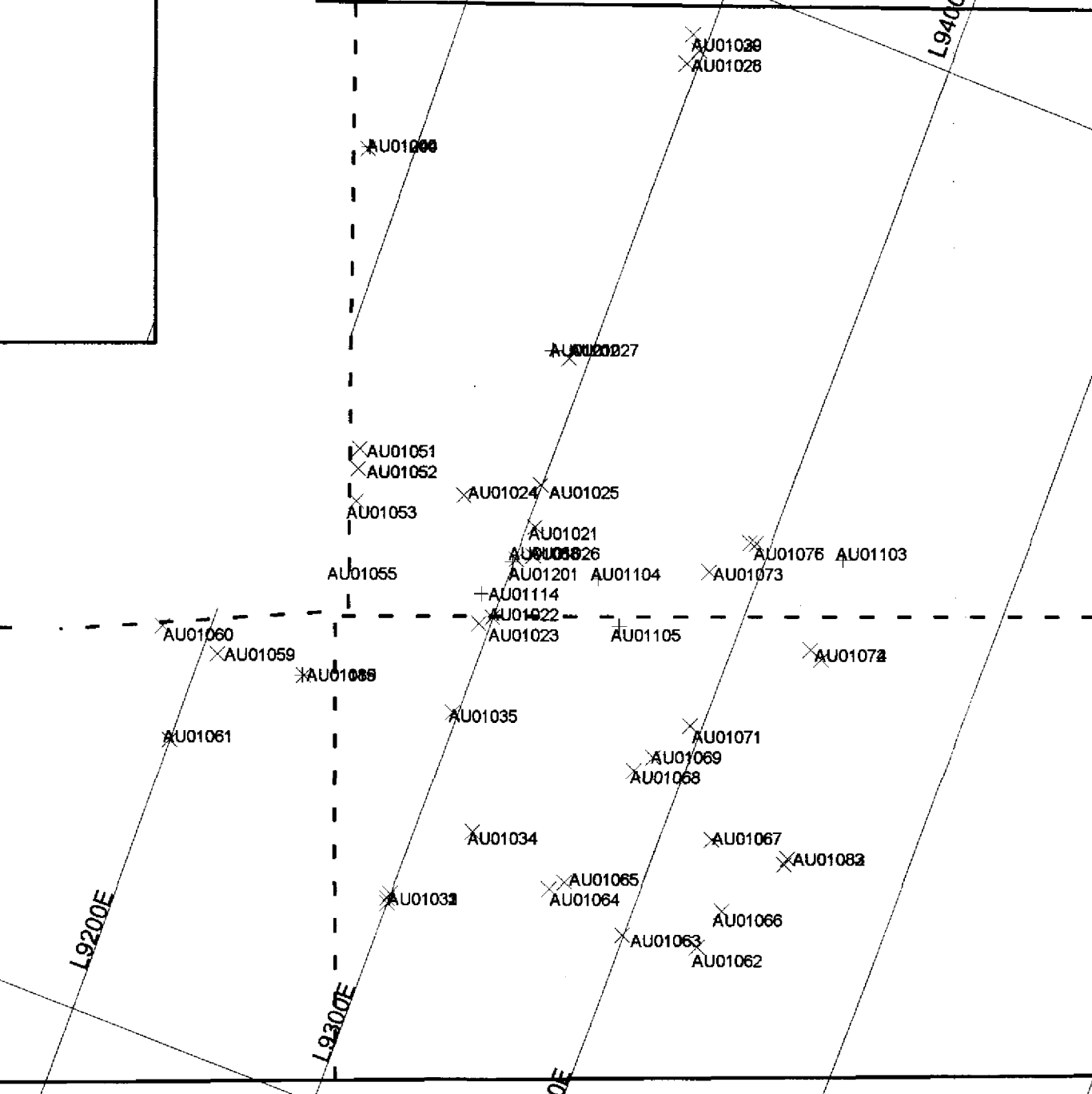
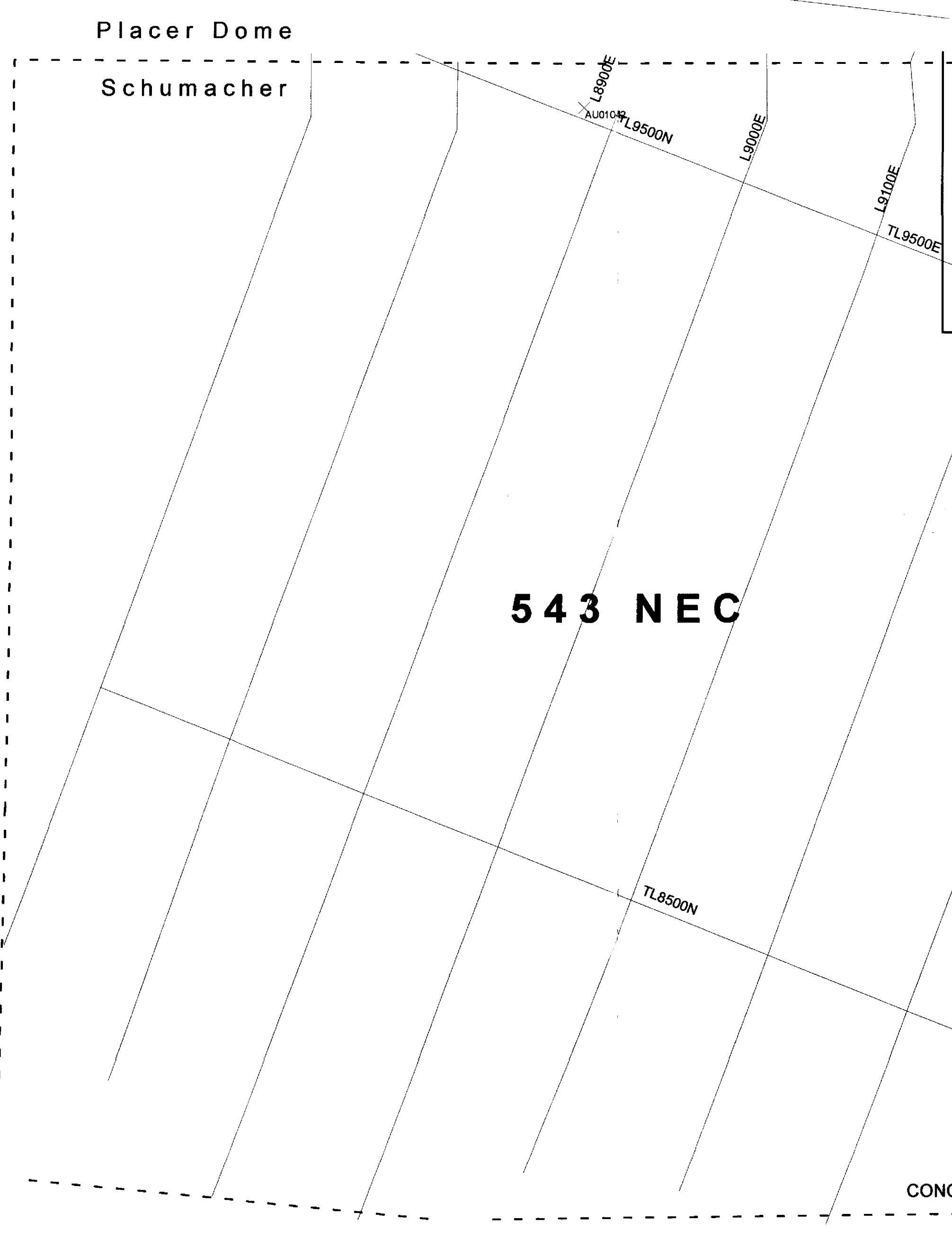
FALCONBRIDGE LIMITED		
Exploration Division	Timmins ONTARIO	
<b>Schumacher Grid</b>		
<b>GEOLOGY</b>		
<b>Mann Twp.</b>		
Mapped June, 1998		
TRACED: K.C.	DATE: 11/98	PROJECT: 6290
DRAWN: K.S.	DATE: 11/98	MAP No.:
SUPERVISED: R. Foy	DATE: 11/98	SCALE: 1:2500 (metres)
REVISED:	DATE:	0 100

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DEC 04 1998  
GEOLOGICAL SURVEY OF CANADA

820612



×	Whole Rock Sample Location
+	Assay Sample Location



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Exploration Division	Timmins ONTARIO	
<b>Schumacher Grid</b>		
<b>SAMPLES</b>		
Mann Twp.		
Mapped June, 1998		
TRACED: <i>[Signature]</i>	DATE: JUN 98	NTS
DRAWN: <i>[Signature]</i>	DATE: 11/98	MAP No: FILE
SUPERVISED BY: <i>[Signature]</i>	DATE: 11/98	SCALE 1:2500 (metres)
REVISED: DATE:		0 100 200

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