



42E13SW0059 2.5756 TYROL LAKE

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REPORT ON THE
GEOLOGY
OF
THE COWAN GOLD PROSPECT
PIFHER TOWNSHIP,
THUNDER BAY MINING DIVISION, ONTARIO

BY

LOUISE K. ECCLES,
GREAT WESTERN PETROLEUM CORPORATION

RECEIVED

AUG 16 1983

MINING LANDS SECTION

Louise K. Eccles
Geologist

July 29, 1983
Vancouver, B.C.



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INTRODUCTION

Geological mapping was done on the Cowan Gold Property subsequent to magnetometer and VLF-EM16 surveys and was aided using the same metric grid as the geophysical program.

The mapping was aimed at determining structural associations of the mineralized quartz veins already known on the property and at developing a geologic map for the claim area. It was hoped that new mineralized veins would be discovered during the course of systematic mapping although detailed prospecting is still recommended as future work on the claims.

No geological mapping has been done on the claims surrounding the main mineralized (No.1 and No.2 veins) veins and this program has given tremendous insight on various geological associations seen in the vicinities of the main showings.

Geological mapping was done at a scale of 1:2,500 from May 31 to June 19, 1983. A total of 49 km of line was traversed utilizing a 30 metre by 100 metre grid (station spacings). Detailed mapping in the vicinities of the No.1 and No.2 veins was done on a scale 1:500 and is plotted on Figures 3 and 4, located in the pocket.

LOCATION AND ACCESS

The Cowan gold property, located 16 km. east of Lake Nipigon in the central part of Pifher Township is bounded by latitudes $49^{\circ} 47'$ and $49^{\circ} 48.5'$ and longitudes $87^{\circ} 48.2'$ and $87^{\circ} 50.9'$.

The claims are within 30 km by road from the TransCanada highway, the CN railway and major hydro and natural gas transmission lines. The nearest major population center is Thunder Bay, located about 200 km, by road southwest of the claims.

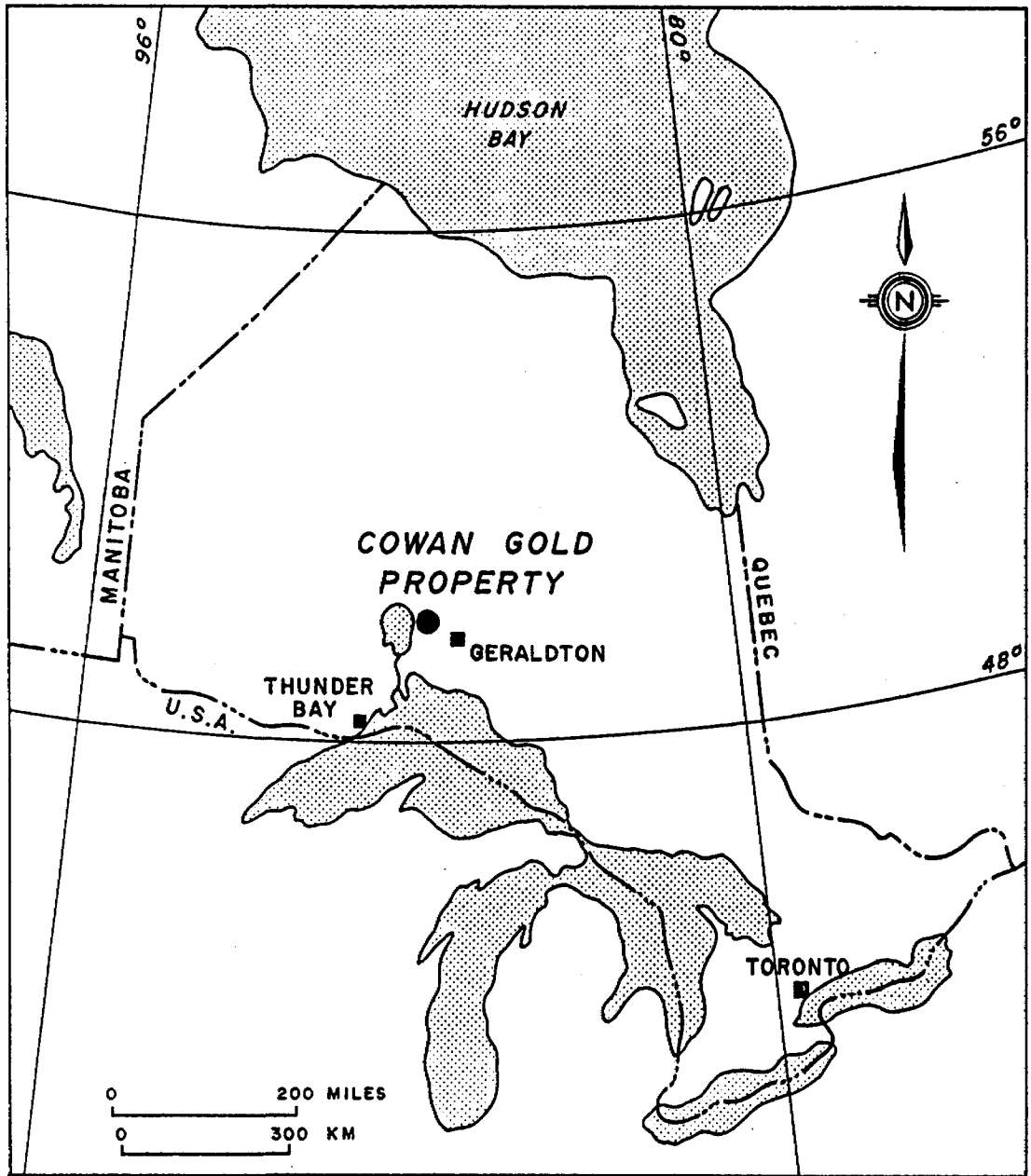


FIGURE 1 - LOCATION - COWAN GOLD PROPERTY

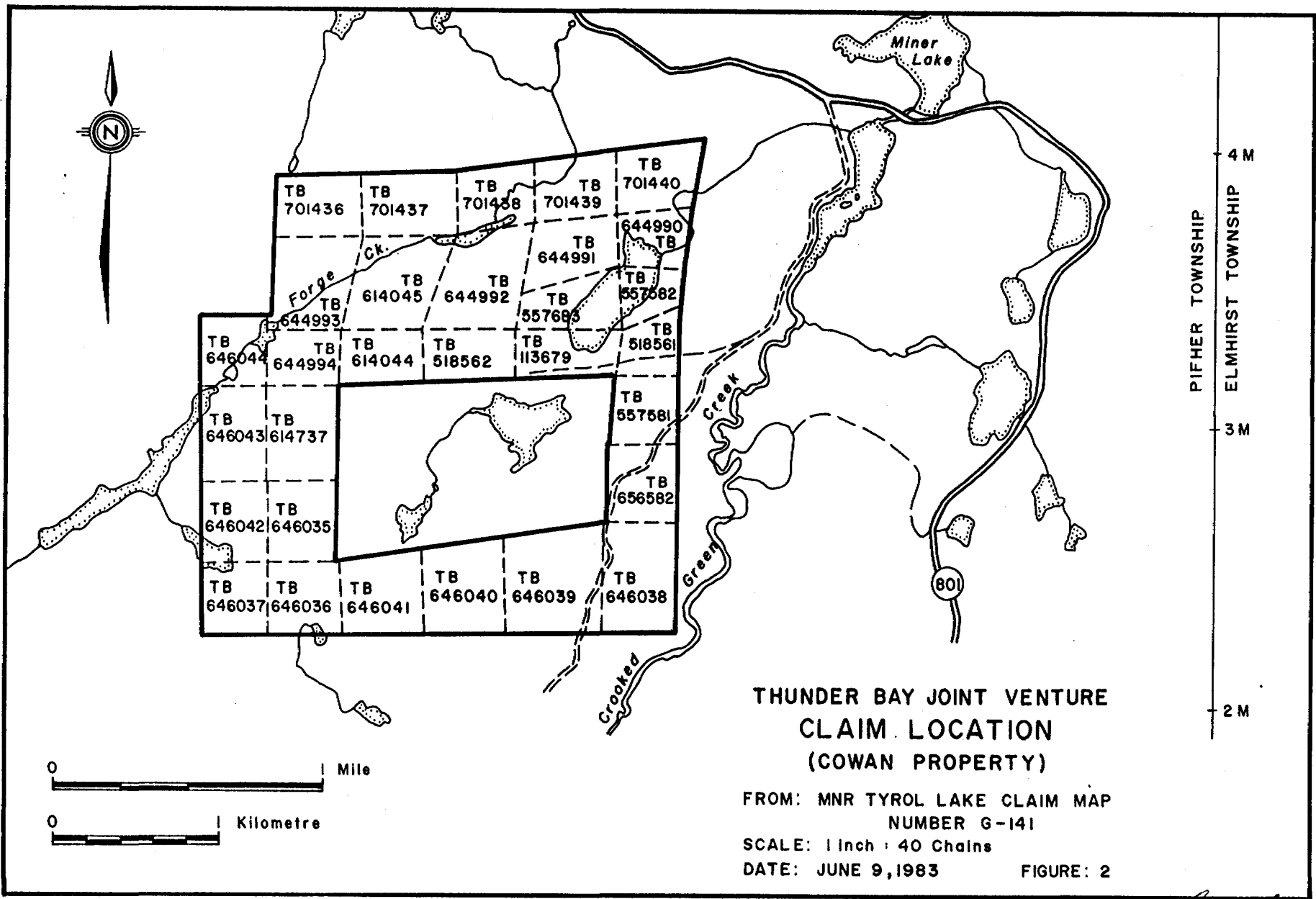
L. Lucas

To access the claims by road, one travels east from Thunder Bay, along highway 11. About 20 km. east of the town of Beardmore, highway 801 is to be followed northward for 22 km, crossing the bridge over Crooked Green Creek. Less than a kilometre past (north of) the Crooked Green Creek bridge, a dirt road leads to the south and on to the property. All roads can be utilized by two-wheel drive vehicles from mid-May through November, however during winter months secondary roads are not graded and travel is limited depending on the snow conditions. Refer to Figure 1.

CLAIMS

Geological mapping was performed on all the mineral claims listed below and patented mining claim TB 113679.

<u>CLAIMS NOS.</u>	<u>NO. OF CLAIMS</u>	<u>EXPIRY DATE (before filing geo- physical work)</u>	<u>OWNER AND ADDRESS</u>
TB 518561- 562	2	June 11, 1983	Northern Concentrators 4350 Coppin Rd. Thunder Bay, Ontario P7C 4V9
TB 557581- 583	3	Oct. 22, 1983	"
TB 614044- 045	2	Aug. 17, 1983	"
TB 614737	1	Aug. 31, 1983	"
TB 644990- 994	5	Dec. 15, 1983 (under extension)	"
TB 646035- 044	10	May 28, 1983	"
TB 656582	1	Sept. 13, 1983	"
TB 701436- 440	5	March 2, 1984	M.F. Cowan 5196 Sonora Dr. North Vancouver, B.C. V7R 3V6



**THUNDER BAY JOINT VENTURE
CLAIM LOCATION
(COWAN PROPERTY)**

FROM: MNR TYROL LAKE CLAIM MAP
NUMBER G-141
SCALE: 1 inch = 40 Chains
DATE: JUNE 9, 1983 FIGURE: 2

L. Kelly

The recorded owners of the 29 contiguous claims (shown on Figure 2) are listed above. The property is under option to the Thunder Bay Joint Venture (TBJV) which consists of a 50-50 interest between Great Western Petroleum Corporation (#718-744 West Hastings Street, Vancouver, B.C., V6C 1A5) and Anglo Canadian Mining Corporation (#713-744 West Hastings Street, Vancouver, B.C., V6C 1A5). Great Western is currently managing the Joint Venture and is performing the work requirements on the claims.

HISTORY

A greenstone belt of Archean aged volcanic and sedimentary rocks between Beardmore and Geraldton has produced approximately 4 million ounces of gold from 18 mines in the area between 1934 and 1970. "The Beardmore-Geraldton gold camp rates among the top five gold camps in the Canadian Shield..." (Mason and McConnell, 1983).

The Cowan gold prospect, located near the northern boundary of the Beardmore-Geraldton volcanic greenstone belt was first discovered in 1946. Since that time, although records of work are sketchy and incomplete, the property has undergone development work in the form of diamond drilling, trenching and stripping, principally in the vicinity of the No.1 vein. (Refer to Figure 5A).

In 1966, Crooked Green Creek Mines Ltd. located a small head frame and shallow (35 feet or 12 metres deep) shaft on the No.1 vein and a mill and mining camp on the property. No figures are available concerning the amount of ore processed or how long the operation lasted.

In 1972, Algoma Development Co. undertook a small open-cut mining and milling operation on the No.1 vein. In 1981 the company, renamed Northern Concentrators Ltd., constructed

a 25 ton per day mill at Thunder Bay. Mine production from the No.1 vein between 1980 and 1982 is reported to be 915 tons.

Since the beginning of May, 1983 exploration work has been undertaken on all the claims comprising the Cowan gold prospect. (Refer to Figure 2). To date a metric grid, magnetometer, and VLF-EM16 surveys and geological mapping have been completed. Diamond drilling is currently underway on the No.1 and No.2 veins and should be completed in July.

REGIONAL GEOLOGY

The Beardmore-Geraldton area is underlain by Archean meta-volcanic and metasedimentary rocks of the eastern Wabigoon volcanic belt, a linear subdivision of the Superior structural province of the Canadian Shield, (Goodwin, 1970). A thick, homogeneous sequence of Quetico belt metasedimentary rocks is in contact with the south boundary of the Wabigoon belt and both belts are flanked on the north and south by later granitic rocks. Refer to Inset 1 - Figure 5A.

Felsic and mafic dykes and sills intruded the Wabigoon belt which in turn was folded about east-west axes. Youngest rocks in the area are late PreCambrian diabase dykes and extensive diabase sheets near Beardmore and Lake Nipigon.

The layered rocks of the Wabigoon Subprovince consist of broad bands of metasediments (Conglomerates, greywackes, arkose and slates) of Timiskaming Age interfingered with basic to acidic metavolcanics of Keewatin age.

Numerous gold deposits occur in the metavolcanic and metasedimentary rocks of the Wabigoon Subprovince, which is often referred to as the Beardmore-Geraldton greenstone belt. The most significant gold deposits found to date are structurally controlled, located in quartz veins, breccia and shear zones

close to the southern boundary of the Wabigoon belt, specifically, in the Geraldton area where metawackes, iron formation and dacitic rocks are at least spatially related to felsic and mafic intrusions.

PROPERTY GEOLOGY

The Cowan gold prospect lies near the northern boundary of the Beardmore-Geraldton greenstone belt and is underlain by andesitic to basaltic flows interfingering with rhyolitic to dacitic tuffs and flows. (Refer to Inset 1 - Figure 5A). Large bodies of feldspar porphyry outcrop mostly in the northeastern part of the claim block and are believed to be feeder stocks or dykes for the more acidic flow rocks found on the claims.

Generally, the west half of the claim block is underlain by basic to intermediate lavas. Minor, narrow bands of rhyolitic tuff are seen in this area but are usually closely associated with dykes of feldspar porphyry. The topography in the west half of the claim block is typically higher in relief and steeper than in the eastern areas underlain by rhyolitic rocks. This is probably due to the weathering effects of the more basic rocks. Refer to PLATE 1.

Massive rhyolite outcrops in the south central part of the claim block. Typically this rock forms low, hummocky topography with bedrock exposures forming elongate ridges rising only small elevations above swamp level. Refer to PLATE 2.

Where attitudes were obtainable from outcrops of banded, tuffaceous rocks, bedding is seen to be generally striking west-northwesterly with dips moderately to steeply northward. Local variations of this do occur however as the whole area has undergone a large amount of deformation. It is believed that many of the rhyolitic rocks are older than the more basic varieties (or at least the acidic event(s) preceded the basic event(s) as unconformable contacts were observed where clasts of rhyolite

were contained in andesitic bodies of rock or andesitic pillows were injected into layers of rhyolitic tuff. See PLATE 4.

Abundant blue-grey and white quartz veins occur in all rock types and range in size from a few millimetres to several metres. The large veins can often be traced a few tens of metres. Refer to PLATE 3.

Descriptions of specific rock types found on the property are listed below, from youngest to oldest.

UNIT 5 - Diabase Dykes

The youngest rocks observed on the property are diabase dykes which intrude all other units. Only two dykes were observed on the claim group, in the south central part of the grid area. (Refer to Figure 5B). These dykes range between .6 and 3 metres wide.

Typically these dykes are continuous over a long distance. The largest dyke observed on the Cowan property was traced the width of the grid, for over 500 metres. Both dykes trend north-northeasterly.

Diabase has a distinct rusty weathering 'rind', due to oxidizing of a large amount of finely disseminated magnetite in the rock. The rock is medium grained and black on the fresh surface. These rocks are the most magnetic on the property and are probably responsible for two isolated magnetic highs in the southwest quadrant of the grid. Refer to geophysical report, July 1983.

UNIT 4 - Mafic Intrusive

Mafic intrusive rocks have a gabbroic composition with mafic phenocrysts (pyroxene (?)) that are very coarse grained, (up to .5 cm in diameter). The rocks outcrop as small elongate

bodies and are always closely associated with the fine to medium grained andesitic rock. It is thought that the mafic intrusives may represent feeder stocks or dykes for the more mafic volcanic rocks which outcrop on the property.

Several bodies of mafic intrusive outcrop in the west half of the property and are easily recognized by the pitted weathering surface caused by the erosion of the coarse grained, mafic phenocrysts. The finer grained matrix, composed mostly of feldspar is more resistant than the phenocrysts.

UNIT 3 - Andesite/Basalt

Andesitic to basaltic rocks observed on this property are fine to medium grained, dark green and massive with no distinct banding except that caused by minor foliation.

Andesitic rocks in contact with rhyolitic rocks, post date the acid event. Clasts of rhyolite are contained in the andesitic bodies of rock at contact boundaries between the two units and andesitic pillows are seen injected into rhyolitic tuffs (PLATE 4). Subvolcanic dykes of andesite are seen cross-cutting bedding in the rhyolitic tuffs, but these are believed to be feeders to the flows which dominate the andesitic outcrop area.

Coarser grained varieties of andesite are thought to be either the intrusive equivalent to the finer grained flow rocks or the center of flows which have had more time to cool, allowing for coarser texture.

The andesitic unit weathers a medium to dark grey colour and outcrops mostly in the west half of the map area. (Figures 5A and 5B). The topography in the west half of the claim block is typically higher, steeper and more rugged than areas to the east underlain by dominantly rhyolitic rocks.

Occasionally the rock contains disseminated pyrrhotite and/or minor chalcopyrite, however rock samples analyzed by geochemical methods have failed to give anomalous precious metal values.

White and blue-grey quartz veins cross cut these rocks but, to date, have shown no significant amount of mineralization unless, as in the areas of the No.1 and No.2 veins, andesitic rocks are spatially related to rhyolites and feldspar porphyries.

UNIT 3 - P - Pillow Lava

Interlayered with the massive, andesitic flow rock are several thick bands of pillowed lavas of andesitic to basaltic composition which trend in an east/west direction. Typically these lavas are distinctly finer grained and unfoliated compared to the more abundant andesitic rocks.

Pillows, averaging 1/3 metre long and 10 cm wide have been stretched so that they are elongated in an east/west direction. These rocks are dark green and weather with black to brown rims on fractures and around some pillows.

Pillow lavas are most commonly observed in the southwestern portion of the mapped area along prominent, east/west trending ridges. In one locality, in the southwest area of the grid, pillows are seen injected into tuffaceous rhyolitic rocks - See PLATE 4.

UNIT 2 - Feldspar Porphyry

This rock is seen to have both extrusive and intrusive characteristics depending on where it is located on the property. Commonly, it is closely associated with the rhyolitic unit (described below) and may represent the intrusive equivalent of the acid volcanics.

Generally, the rock can be described as a 'crowded' porphyry with abundant, well defined white feldspars set in a dark grey fine grained groundmass. A small proportion of the phenocrysts are hornblende and occasionally quartz eyes. The hornblende phenocrysts are smaller than the feldspars and are often partially or completely altered to chlorite.

Commonly the weathered surface of the rock gives the only indication the rock is porphyritic as the bleached white feldspars stand out well against the grey groundmass. On a fresh broken surface the rock can be easily mistaken for massive rhyolite.

One large body of feldspar porphyry outcrops on the property, specifically in the eastern-most area just north of the baseline (Refer to Figure 5A). This particular body of rock is thought to be a stock of feldspar porphyry. Long linear bodies of this unit traverse across some of the north central claim areas and these are thought to be dykes coming off the main intrusive mass, mentioned above.

Occasionally the rhyolitic rocks have small feldspar phenocrysts and these may represent the extrusive equivalent of the more obvious crowded feldspar porphyry.

Outcrop areas of feldspar porphyry are commonly cut by blue grey quartz veins ranging from 1 cm to 1 metre wide.

UNIT 1 - Rhyolite

Acid volcanic rocks, outcropping on the property can be broken down into two general subdivisions, each with rocks varying in composition from rhyolites to dacites. For the purpose of this work the writer has not distinguished dacites from rhyolites or any intermediate rock types but has distinguished the tuffaceous varieties from the more massive flow rocks.

1A - Massive Rhyolite - This rock is fine grained, medium to dark grey and very hard and siliceous. It outcrops in abundance in the south central and southeast areas of the grid (Refer to Figure 5B).

The rock typically weathers light grey but darker varieties can sometimes be mistaken for andesite if the lighting is not right when mapping. No foliation or flow structures were observed in this rock. Typically the rock outcrops in low, hum-

mocky terraine as elongate ridges surrounded by swamp. Refer to PLATE 2.

1B - Rhyolitic Tuff - Distinct banding is usually apparent on the weathered surfaces of tuffaceous varieties of rhyolite. Individual bands alternate between cherty and fine grained porphyritic (crystal tuffs?) textures with colour variations from light grey to green-grey. The rock commonly weathers white to light green-grey depending on the compositions of the various layers (The most siliceous layers weather white). The dominant trend of the banding (bedding) is striking west-northwesterly with moderate to steep dips to the north east.

The rock is very hard and siliceous and commonly contains white and/or blue grey quartz veins subparalleling the bedding.

The No.2 vein is closely associated with this unit, subparalleling the bedding. Refer to detailed geology for No.2 vein area - Figure 4.

1C - Rhyolitic Lithic Tuff - This rock, composed of elongated fragments of feldspar porphyry and tuffaceous varieties of rhyolite, set in a fine grained or porphyritic rhyolitic ground-mass outcrops in the north-eastern and southern-most (central) sectors of the claim group. Fragments are elongated in the same general direction as bedding attitudes observed during mapping and are distinct on the weathered outcrop surface.

MINERALIZATION

At least 2 quartz veins, mineralized with visible gold, chalcopyrite and pyrrhotite have been identified and explored on the Cowan property. These veins, referred to as No.1 and No.2 veins, averaging .2 to .3 metres wide, can be traced over lengths of 90 metres for the No.1 structure and 50 metres for the No.2 structure. Refer to PLATES 5 and 6 and Figures 3 and 4.

Both veins appear to occupy fault structures and are closely associated with feldspar porphyry dykes and rhyolitic volcanics. Mineralization in the veins is erratic and patchy and occurs as massive blebs of sulfides often associated with visible grains of gold. Hanging-and-foot-wall rocks bordering the veins have disseminated pyrrhotite and chalcopyrite mineralization and carry anomalous amounts of gold up to several metres away from the vein.

During the course of mapping several new mineralized veins were identified on the property which carry anomalous gold and/or copper values. These veins have not yet been properly sampled however, values for gold range up to .79 oz per ton from one grab sample taken from a vein located on L2+00W @ 6+60N. Refer to Figure 5A.

Several occurrences of wide (up to 1.5 metres) white quartz veins with disseminated chalcopyrite and pyrite occur on the property, specifically on L2W at 4+50N, 4+20N and 2+70N and just west of L2E at about 11+00N (PLATE 3). To date, no anomalous gold values have been found associated with these veins, however more thorough sampling is warranted due to the erratic nature of the mineralization in the veins.

An interesting area with abundant, wide (up to 4 metres) blue grey quartz veins which can be traced for over 50 metres, is located in the central part of the southwest quadrant of the grid. (Figure 5B). To date, no precious metal mineralization has been found associated with these veins, however, more thorough sampling and trenching is warranted, once again, due to the erratic nature of mineralization of these veins.

CONCLUSIONS AND RECOMMENDATIONS

Quartz veins on the Cowan property, known to be mineralized with visible gold, chalcopyrite and pyrrhotite, give erratic values for gold when sampled at selected intervals. The erratic nature of the mineralization in the known veins, poses problems

when surface sampling new veins in the area which are seemingly unmineralized (See PLATE 7). There are numerous quartz veins on the Cowan property which should be further explored. Those mentioned under the heading 'Mineralization' should be the first areas explored by blasting, trenching and backhoeing followed by diamond drilling.

Several of the veins found have old hand trenches dating back at least 40 years (judging by the amount of overgrowth). Further detailed prospecting should be undertaken, starting by radiating out from known vein areas and continuing over the entire property, between the grid lines.

Although the exact relationship has still not been discovered, the mineralized quartz veins are always spatially related to feldspar porphyry dykes. This should be kept in mind while prospecting and exploring new vein systems.

In conclusion, then, the known mineralized veins (the No.1 and No.2 veins) are open at both ends and at depth and this, combined with the number of new veins discovered while mapping, continues to make the property a promising target for future exploration and development.

Many of the mineable ore bodies, discovered in the Beardmore-Geraldton belt were found by accident during exploration of surface showings which ended up being insignificant.

A final quotation taken from p.558 of CIMM, 1940, Transactions Vol. XLIII, Entitled "Gold Mining in the Little LongLac and Sturgeon River Areas" by A.S. Bayne, states, referring to the Sturgeon River Mine vein, which averages 7" wide, that, "The greatest problem is the extreme inconsistency of the ore. Sampling gives highly erratic results, and diamond drilling is of little value except to study structure; but it is usually the case that, when free gold is visible, the section in which it occurs makes ore." The Quebec Sturgeon Mine is located about

5 km. southeast of the Cowan prospect. PLATE 7 shows the discovery vein (No.3 vein) for the Quebec Sturgeon Mines.

APPENDIX A
-PHOTOGRAPHS



PLATE 4 - Andesitic to basaltic 'pillow',
injected into rhyolitic tuffs. Structure
seen in southwest quadrant of grid. Note
distinct banding in tuffs.



PLATE 1 - View looking S.E. from near the north claim line (west end of claims). Forge Creek in foreground. Note the rugged topography, typical of the western half of the claim block.



PLATE 2 - South central area of claim block. Typical hummocky terrain of rhyolitic bed-rock exposures.



PLATE 3 - Wide white quartz vein in feldspar porphyry located just south of Forge Creek near L2+00E, @ 11+00N. Minor chalcopyrite and pyrite mineralization on surface (note rust patches) makes this vein an interesting exploration target in future.



PLATE 5 - View of head frame and No.1 vein trench area from the south west end of trench looking northeasterly. Note rusty rock in foreground includes narrow mineralized Quartz veins and mineralized wall rock.



PLATE 6 - View of the No.2 vein looking westward.



PLATE 7 - No.3 vein of Quebec Sturgeon Mine.
- main source of ore for the mine.

REFERENCES

Bayne, A.S.; - Gold Mining in the Little LongLac and Sturgeon River Areas, Canadian Institute of Mining and Metallurgy, 1940 - Transactions Vol. XLIII, p. 512 - 573.

Mason, J.K. and McConnell, C.D. ; -

Gold Mineralization in the Beardmore-Geraldton Area; O.G.S. Miscellaneous Paper 110, The Geology of Gold in Ontario, 1983.

QUALIFICATIONS

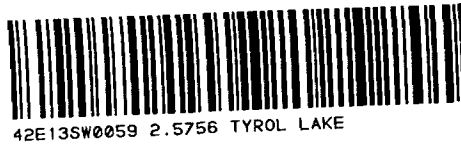
I, Louise K. Eccles, of Vancouver, British Columbia, do hereby certify that:

1. I am a practising geologist under the employ of Great Western Petroleum Corporation, with head office located at #718-744 West Hastings Street, Vancouver, B.C., V6C 1A5.
2. I was graduated from the University of British Columbia with B.Sc. degree, in 1976 and have practised my profession as an exploration geologist, continuously since that time.
3. I am a fellow of the Geological Association of Canada and a member in good standing of the Canadian Institute of Mining and Metallurgy.
4. I personally conducted the geological mapping on the Cowan Gold prospect, described in this report, between May 29 and June 19, 1983.

Vancouver, B.C.
July 29, 1983



Louise K. Eccles



900

1984 03 22

Our File: 2.5756

Mrs. Audrey Hayes
Mining Recorder
Ministry of Natural Resources
P.O. Box 5000
Thunder Bay, Ontario
P7C 5G6

Dear Madam:

RE: **Geological Survey on Mining Claims
TB 518561 et al in the Township of Pifher**

The Geological Survey assessment work credits as listed with my Notice of Intent dated February 17, 1984 have been approved as of the above date.

Please inform the recorded holder of these mining claims and so indicate on your records.

Yours sincerely,

S.E. Yundt
Director
Land Management Branch

Whitney Block, Room 6643
Queen's Park
Toronto, Ontario
M7A 1W3
Phone: 416/965-6918

M.E. Anderson:sc

cc: Northern Concentrators
P.O. Box 326
Thunder Bay, Ontario
P7Y 4V9

cc: Mr. G.H. Ferguson
Mining & Lands Commissioner
Toronto, Ontario

cc: Louise Eccles
Great Western Petroleum Corp
#718 - 744 W. Hastings
Vancouver, B.C.
V6C 1A5

cc: Resident Geologist
Thunder Bay, Ontario

Recorded Holder **Northern Concentrators**

Township or Area **Tyrol Lake**

Type of survey and number of Assessment days credit per claim	Mining Claims Assessed
Geophysical Electromagnetic _____ days Magnetometer _____ days Radiometric _____ days Induced polarization _____ days Other _____ days Section 77 (19) See "Mining Claims Assessed" column Geological <u>20</u> days Geochemical _____ days Man days <input type="checkbox"/> Airborne <input type="checkbox"/> Special provision <input checked="" type="checkbox"/> Ground <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> Credits have been reduced because of partial coverage of claims. <input type="checkbox"/> Credits have been reduced because of corrections to work dates and figures of applicant.	TB 518561-62 557581 614044-45 614737 644991 to 94 incl. 646035 646037 to 44 incl. 656582 701436 to 40 incl.

Special credits under section 77 (16) for the following mining claims

<u>15 days Geological</u> 557583 644990 646036	<u>10 days Geological</u> TB -557582
---	---

No credits have been allowed for the following mining claims

not sufficiently covered by the survey Insufficient technical data filed

The Mining Recorder may reduce the above credits if necessary in order that the total number of approved assessment days recorded on each claim does not exceed the maximum allowed as follows: Geophysical — 80; Geological — 40; Geochemical — 40; Section 77 (19) — 60:



Ministry of
Natural
Resources

March 8/84

Our File: 2.5756

1984 02 17

Mining Recorder
Ministry of Natural Resources
P.O. Box 5000
Thunder Bay, Ontario
P7C 5G6

Dear Madam:

Enclosed are two copies of a Notice of Intent with statements listing a reduced rate of assessment work credits to be allowed for a technical survey. Please forward one copy to the recorded holder of the claims and retain the other. In approximately fifteen days from the above date, a final letter of approval of these credits will be sent to you. On receipt of the approval letter, you may then change the work entries on the claim record sheets.

For further information, if required, please contact Mr. F.W. Matthews at 416/965-1380.

Yours very truly,


J. R. Morton
Acting Director
Land Management Branch

Whitney Block, Room 6643
Queen's Park
Toronto, Ontario
M7A 1W3
Phone: 416/965-1380

ME M.E. Anderson:dg

Encls:

cc: Northern Concentrators
P.O. Box 326
Thunder Bay, Ontario
P7V 4V9

cc: Louise Eccles
c/o Great Western Petroleum Corporation
#718 -744 W. Hastings
Vancouver, B.C.
V6C 1A5

cc: Mr. G. H. Ferguson, Q.C.
Mining & Lands Commissioner
Toronto, Ontario



Ministry of
Natural
Resources

Notice of Intent
for Technical Reports

1984 02 17
2.5756

An examination of your survey report indicates that the requirements of The Ontario Mining Act have not been fully met to warrant maximum assessment work credits. This notice is merely a warning that you will not be allowed the number of assessment work days credits that you expected and also that in approximately 15 days from the above date, the mining recorder will be authorized to change the entries on his record sheets to agree with the enclosed statement. Please note that until such time as the recorder actually changes the entry on the record sheet, the status of the claim remains unchanged.

If you are of the opinion that these changes by the mining recorder will jeopardize your claims, you may during the next fifteen days apply to the Mining and Lands Commissioner for an extension of time. Abstracts should be sent with your application.

If the reduced rate of credits does not jeopardize the status of the claims then you need not seek relief from the Mining and Lands Commissioner and this Notice of Intent may be disregarded.

If your survey was submitted and assessed under the "Special Provision-Performance and Coverage" method and you are of the opinion that a re-appraisal under the "Man-days" method would result in the approval of a greater number of days credit per claim, you may, within the said fifteen day period, submit assessment work breakdowns listing the employees names, addresses and the dates and hours they worked. The new work breakdowns should be submitted direct to the Land Management Branch, Toronto. The report will be re-assessed and a new statement of credits based on actual days worked will be issued.



Report of Work
(Geophysical, Geological,
Geochemical and Expenditures)

Land Management

Instructions: - Please type or print.
- If number of mining claims traversed exceeds space on this form, attach a list.
Note: - Only days credits calculated in the "Expenditures" section may be entered in the "Expend. Days Cr." columns.
- Do not use shaded areas below.

The Mining Act

201 File 518561
2.5756

Sept. 9th

Type of Survey(s) **GEOLOGICAL** Township or Area **Tyrol Lake Area G14**

Claim Holder(s) **NORTHERN CONCENTRATORS ; M.F. COWAN** Prospector's Licence No. **T1146 E 29698**

Address **NORTHERN CONCENTRATORS ; M.F. COWAN**
4850 COPPIN RD, THUNDER BAY, ONTARIO ; 5196 S. NOVA DR. NORTH VANCOUVER, B.C. V7R 3V6

Survey Company **GREAT WESTERN PETROLEUM CORPORATION** Date of Survey (from & to) **31 Day 05 Mo. 83 Yr. 19 Day 06 Mo. 83 Yr.** Total Miles of line Cut **19 KM**

Name and Address of Author (of Geo-Technical report) **L.K. ECCLES - #718-744 W. HASTINGS ST., VANCOUVER, B.C. V6C 1A5**

Credits Requested per Each Claim in Columns at right

Special Provisions	Geophysical	Days per Claim
For first survey: Enter 40 days. (This includes line cutting)	- Electromagnetic	
	- Magnetometer	
	- Radiometric	
	- Other	
For each additional survey: using the same grid: Enter 20 days (for each)	Geological	20
	Geochemical	

Man Days	Geophysical	Days per Claim
Complete reverse side and enter total(s) here	- Electromagnetic	
	- Magnetometer	
	- Radiometric	
	- Other	
	Geological	
	Geochemical	

Airborne Credits	Geophysical	Days per Claim
Note: Special provisions credits do not apply to Airborne Surveys.	- Electromagnetic	
	- Magnetometer	
	- Radiometric	
	- Other	
	Geological	
	Geochemical	

Mining Claims Traversed (List in numerical sequence)

Prefix	Mining Claim Number	Expend. Days Cr.	Prefix	Mining Claim Number	Expend. Days Cr.
TB	646035		TB	518561	
	646036			518562	
	646037			656582	
	646038			64044	
	646039			614045	
	646040			701436	
	646041			701437	
	646042			701438	
	646043			701439	
	646044			701440	
	614737				
	644990				
	644991				
	644992				
	644993				
	644994				
	557581				
	557582				
	557583				

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JUL 15 1983
MINING LANDS SECTION

*See
Revised
work
attached*

Total number of mining claims covered by this report of work. **29**

Expenditures (excludes power stripping)

Type of Work Performed

Performed on Claim(s)

Calculation of Expenditure Days Credits

Total Expenditures \$ ÷ 15 = Total Days Credits

Instructions
Total Days Credits may be apportioned at the claim holder's choice. Enter number of days credits per claim selected in columns at right.

For Office Use Only

Total Days Cr. Recorded **580** Date Recorded **July 11/83** Mining Recorder **Audrey M. Hayes**

Date Approved as Recorded **July 11/83** Branch Director **[Signature]**

Date **July 11/83** Recorded Holder or Agent (Signature) **[Signature]**

Certification Verifying Report of Work

I hereby certify that I have a personal and intimate knowledge of the facts set forth in the Report of Work annexed hereto, having performed the work or witnessed same during and/or after its completion and the annexed report is true.

Name and Postal Address of Person Certifying **LOUISE ECCLES, c/o GREAT WESTERN PETROLEUM CORPORATION, #718-744 W. HASTINGS ST. VANCOUVER, B.C. V6C 1A5**

Date Certified **July 11/83** Certified by (Signature) **[Signature]**

December 12, 1983

2.5756

Northern Concentrators
P.O. Box 326
Thunder Bay, Ontario
P7V 4V9

Dear Sirs:

RE: Geological Survey submitted on Mining Claims
TB 518561 et al in the Township of Pifher

Enclosed are the plans, in duplicate, for the above-mentioned survey. Please have the author of the Report designate geological outcrops by colour and return the plans to this office.

For further information, please contact Mr. F.W. Matthews at (416)965-1380.

Yours very truly,

E.F. Anderson
Director
Land Management Branch

Whitney Block, Room 6643
Queen's Park
Toronto, Ontario
M7A 1W3
Phone: (416)965-1380

M. Anderson:mc

Encl.

cc: Mining Recorder
Thunder Bay, Ontario



Sept. 12th

File
2.5756

Mining Lands Comments

*maps not coloured - should have been - rpt.
good.*

To: Geophysics

Comments

Approved

Wish to see again with corrections

Date

Signature

To: Geology - Expenditures

Mr Kustra

Comments

Approved

Wish to see again with corrections

Date

Oct 24/83

Signature

Kustra

To: Geochemistry

Comments
LO

Approved

Wish to see again with corrections

Date

Signature

To: Mining Lands Section, Room 6462, Whitney Block.

(Tel: 5-1380)

1983 08 19

2.5756

Mrs. Audrey Hayes
Mining Recorder
Ministry of Natural Resources
P.O. Box 5000
Thunder Bay, Ontario
P7C 5G6

Dear Madam:

We have received reports and maps for a Geological Survey submitted under Special Provisions (credit for Performance and Coverage) on Mining Claims TB 518561 et al in the Township of Pifher.

This material will be examined and assessed and a statement of assessment work credits will be issued.

We do not have a copy of the report of work which is normally filed with you prior to the submission of this technical data. Please forward a copy as soon as possible.

Yours very truly,

E.F. Anderson
Director
Land Management Branch

Whitney Block, Room 6450
Queen's Park
Toronto, Ontario
M7A 1W3
Phone: (416)965-1380

A. Barr:mc

cc: Northern Concentrators Limited
P.O. Box 326
Thunder Bay, Ontario
P7V 4V9

cc: Cowan Michael Forest
5196 Sonora Drive
North Vancouver, B.C.
V7R 3V6

*Copy of report
sent to Mrs. Hayes
Sept 11, 1983*

GEOPHYSICAL TECHNICAL DATA

GROUND SURVEYS – If more than one survey, specify data for each type of survey

Number of Stations 49 Km Number of Readings 1644
Station interval 30 metre Line spacing 100 metre
Profile scale _____
Contour interval _____

MAGNETIC

Instrument _____
Accuracy – Scale constant _____
Diurnal correction method _____
Base Station check-in interval (hours) _____
Base Station location and value _____

ELECTROMAGNETIC

Instrument _____
Coil configuration _____
Coil separation _____
Accuracy _____
Method: Fixed transmitter Shoot back In line Parallel line
Frequency _____
(specify V.L.F. station)
Parameters measured _____

GRAVITY

Instrument _____
Scale constant _____
Corrections made _____

Base station value and location _____

Elevation accuracy _____

**INDUCED POLARIZATION
RESISTIVITY**

Instrument _____
Method Time Domain Frequency Domain
Parameters – On time _____ Frequency _____
– Off time _____ Range _____
– Delay time _____
– Integration time _____
Power _____
Electrode array _____
Electrode spacing _____
Type of electrode _____

SELF POTENTIAL

Instrument _____ Range _____

Survey Method _____

Corrections made _____

RADIOMETRIC

Instrument _____

Values measured _____

Energy windows (levels) _____

Height of instrument _____ Background Count _____

Size of detector _____

Overburden _____

(type, depth – include outcrop map)

OTHERS (SEISMIC, DRILL WELL LOGGING ETC.)

Type of survey _____

Instrument _____

Accuracy _____

Parameters measured _____

Additional information (for understanding results) _____

AIRBORNE SURVEYS

Type of survey(s) _____

Instrument(s) _____

(specify for each type of survey)

Accuracy _____

(specify for each type of survey)

Aircraft used _____

Sensor altitude _____

Navigation and flight path recovery method _____

Aircraft altitude _____ Line Spacing _____

Miles flown over total area _____ Over claims only _____

GEOCHEMICAL SURVEY - PROCEDURE RECORD

Numbers of claims from which samples taken _____

Total Number of Samples 34
Type of Sample ROCK
(Nature of Material)
Average Sample Weight 5 lb.
Method of Collection GRAB SAMPLE

Soil Horizon Sampled _____
Horizon Development _____
Sample Depth _____
Terrain _____

Drainage Development _____
Estimated Range of Overburden Thickness _____

SAMPLE PREPARATION
(Includes drying, screening, crushing, ashing)

Mesh size of fraction used for analysis _____

General _____

ANALYTICAL METHODS

Values expressed in: per cent
p. p. m.
p. p. b.

Cu, Pb, Zn, Ni, Co, Ag, Mo, As, -(circle)
Others Au

Field Analysis (_____ tests)
Extraction Method _____
Analytical Method _____
Reagents Used _____

Field Laboratory Analysis
No. (_____ tests)
Extraction Method _____
Analytical Method _____
Reagents Used _____

Commercial Laboratory (Au, Ag, Cu tests)
Name of Laboratory MIN-EN LABS
Extraction Method for gold Methyl Iso-
Butyl KETONE
Analytical Method ATOMIC ABSORPTION SPECTRO-
Reagents Used HNO₃, HCl PHOTOMETRES

General ATOMIC ABSORPTION
or FIRE ASSAY

* SOME SAMPLES WERE ASSAYED IF THEY WERE KNOWN TO COME FROM MINERALIZED AREAS.



Ministry of
Natural
Resources

Your file:

August 11, 1983

Our file:

MEMORANDUM TO:

Mr. E.F. Anderson
Director, Land Management Branch
Whitney Block, Room 6450
Queen's Park
TORONTO, Ontario
M7A 1W3

SUBJECT: Assessment work report

Enclosed please find 2 copies of assessment work report submitted by Northern Concentrators Ltd. for mining claims TB518561 et al - as attached.

Audrey M. Hayes

Audrey M. Hayes (Mrs.)
Mining Recorder
Thunder Bay Mining Division
Ontario Government Building
435 James Street
P.O. Box 5000
Thunder Bay, Ontario
P7C 5G6

Telephone: (807) 475-1311

:cg

Encl.

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AUG 16 1983
MINING LANDS SECTION

NOTES

400' surface rights reservation along the shores of all lakes and rivers.

SAND and GRAVEL

Gravel Pit 155607

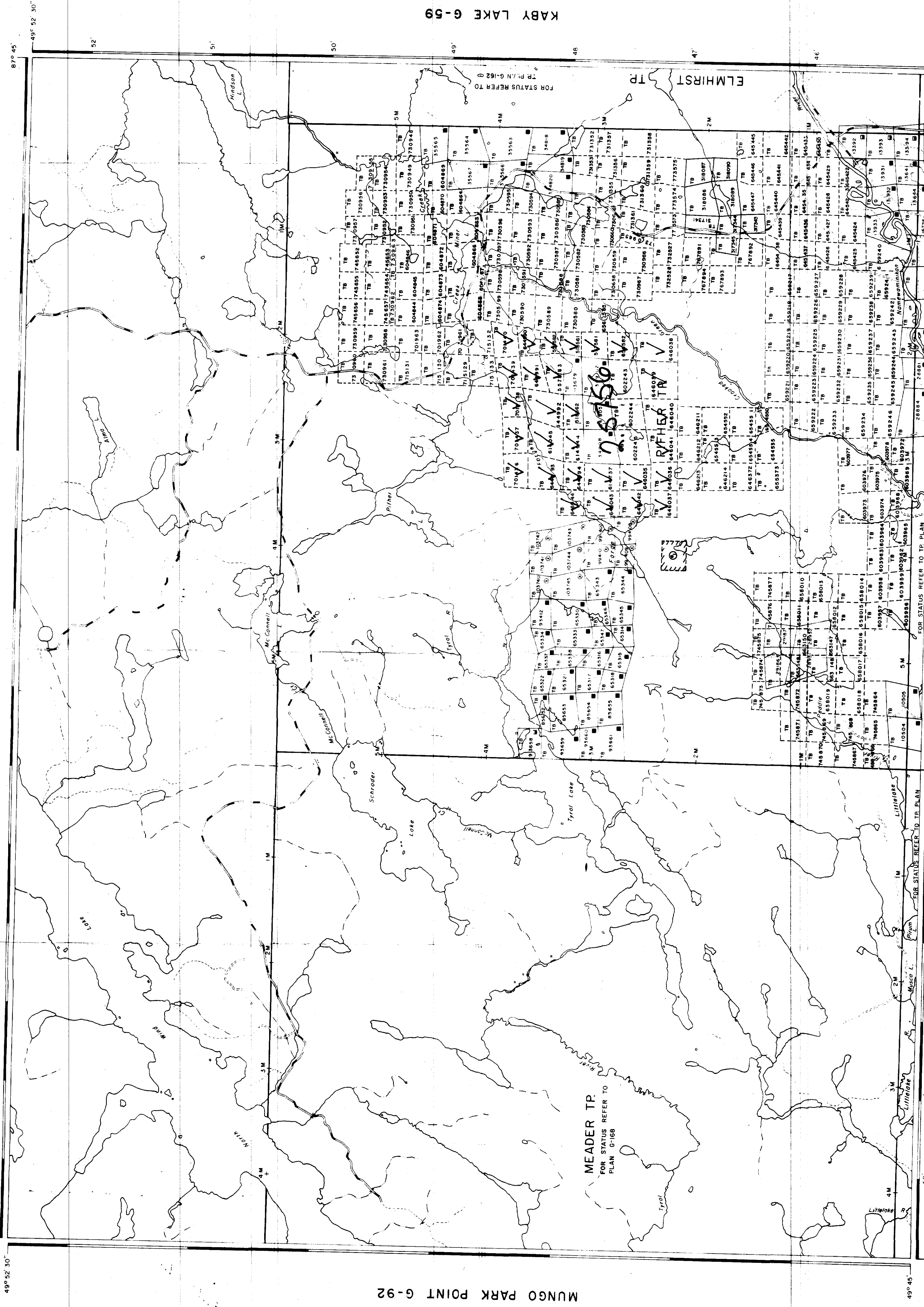
J.S.N.

200

45-1000000-2-20256-TYROL LAKE



MARTIN LAKE G-79



MUNGO PARK POINT G-92

MEADER TP.
FOR STATUS REFER TO
PLAN G-168

SANDRA TP. G-167

IRWIN TP. G-164

KABY LAKE G-59

ELMHIRST TP.

LEGEND

- HIGHWAY AND RIGHT OF WAY
- OTHER RIGHTS
- SURVEYED LINES
- TOWNSHIP, RANGE, LOT, ETC.
- LOTS, MINING CLAIMS, PARCELS, ETC.
- UNSURVEYED LINES
- LOT LINES
- PARCEL BOUNDARY
- MINING CLAIMS ETC.
- RAILWAY AND RIGHT OF WAY
- UTILITY LINES
- NON-PHANTOM STREAM
- FLOODING OR FLOODING RIGHTS
- ORIGINAL SHORELINE
- MARSH OR BUSHES
- MINES

DISPOSITION OF CROWN LANDS

SYMBOL

- PATENT
- PATENT - REMAINS & MINING RIGHTS
- REMAINS TO APPLICANT
- OTHER RIGHTS ONLY
- LEASE
- OTHER RIGHTS ONLY
- MINING RIGHTS ONLY
- LICENSE OF OCCUPATION
- CROWN LAND - A.C.
- UNDEVELOPED
- RECREATION
- CANALIZATION
- SAND & GRAVEL

SCALE: 1" = 40 CHAINS

AREA

TYROL LAKE

M.N.R. ADMINISTRATIVE DISTRICT
NIPIGON

MINING DIVISION
THUNDER BAY

LAND TITLES / REGISTRY DIVISION
THUNDER BAY

DATE OF ISSUE
NOV 2 1983

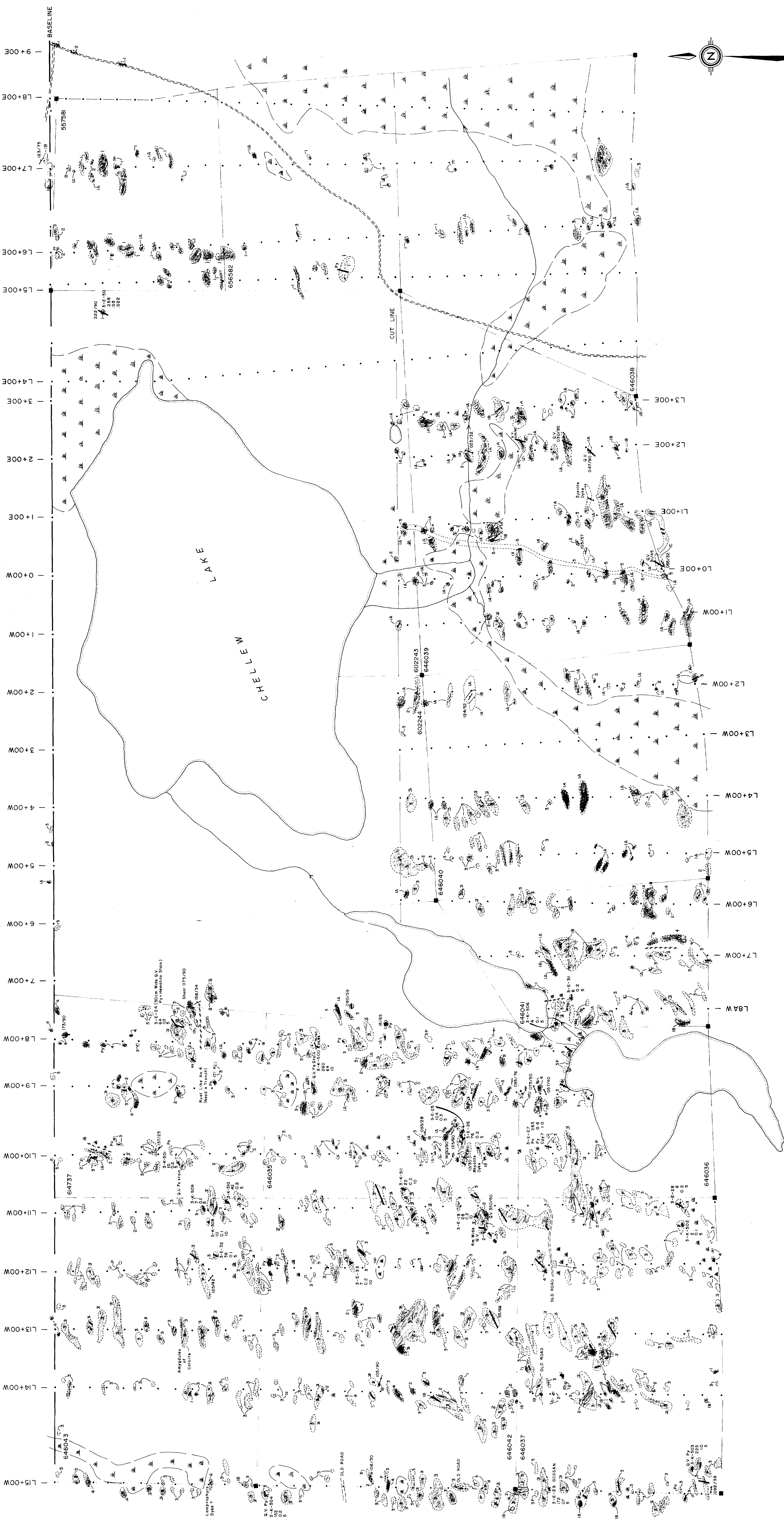
Ministry of Natural Resources
1000-010

Ontario
Land Management Branch

Ontario
Date: APRIL 1981

497874

G-141



THUNDER BAY JOINT VENTURE
 COWAN GOLD PROSPECT
 THUNDER BAY MINING DIVISION, ONTARIO
GEOLOGY
 SOUTH HALF
 DATE: MAY 9-28, 1983
 DRAWN BY: J.Serwin
 FIGURE: 5B

SCALE: 1:2,500
 0 50 100 150 200 METERS

LEGEND

6	Overburden - glacial till	2	Felspar porphyry	09/28	Bedding attitudes	●	Station on surveyed line	▲	Geochemical sample
5	Dabase dyke	1	Rhyolite, dacite A - Massive B - Litic tufts	—	Fault or shear	■	Claim post (located)	●	Assay sample
4	Mafic intrusive - gabbro	—	Vein	—	Outcrop boundary	■	Claim number	●	265 - Copper % .02 - Silver OZT .001 - Gold OZT
3	Andesite, basalt - P - Pillow lava	—	Foliation	—	Geological contact	—	Claim line	—	
—		—	Joints + fractures	—	Swamp	—			
—		—	Pyrite	—	Creek	—			
—		—	Chalcopyrite	—	Lake	—			
—		—	Pyrrhotite	—	Road	—			