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MATTAWAN

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**Magnetometer Survey and Geological Examination  
of the Discovery Hill Grid  
Mattawan P Garnet Property,  
Sudbury Mining District, Ontario, Canada**

for:

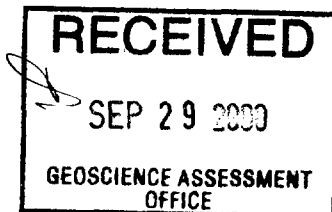
**IMPERIAL METALS CORPORATION**

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by:

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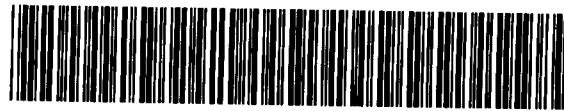
September, 2000



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## 1. INTRODUCTION

In September 2000, the author conducted a geological property examination and total field magnetics survey on the “Discovery Hill Grid” of the *Mattawan P* garnet property, on behalf of **Imperial Metals Corporation**. *Mattawan P* is an industrial minerals “almandine” garnet occurrence located 15 kilometres northwest of Mattawa, Ontario, Canada, on map sheet 31L/7. The baseline of the grid starts at Claim 1212157 Post #3 and extends east, with the lines extending northward at 100 metre spacing.

There are three garnet-bearing rock types on the property, two of which are of interest for industrial grades; garnetiferous eclogite (GREC) and garnetiferous amphibolite gneiss (GRAM). Visually estimated grades on hand samples of 20-35% are present. These visual estimates correlate well with the binocular microscope point-count testing of the coarser grain size fraction (-20 to +42 mesh). Overall garnet grade, including the finer fractions, varies between 14% and 22% (Whiting, 2000). The third garnet bearing rock type is a garnet-feldspar-hornblende gneiss (GFHG), where the garnet grades are usually less than 15%. Non garnet-bearing feldspathic gneiss (FLGN) flanks the prospective zones.

The total field magnetic survey was conducted on the Discovery Hill Grid at 100m x 25m grid spacing using a Scintrex proton magnetometer, with a resolution of 0.1 nT. Natural station variations from multiple readings were in the range of 0 to 10 nT and diurnal variation of 40 nT occurred during the survey. On the grid the variability exceeded 2,000 nT. The highest magnetics response correlated with areas of garnetiferous amphibolite in outcrop and boulders, with a lessor response from the garnetiferous eclogite.

It is hereby concluded that a closer spaced ground magnetics survey can be a useful tool for delineating prospective zones, particularly in areas of cover. This property shows “*considerable promise*” for the development of an economic almandine-rich garnet deposit. Further work, including detailed geological mapping, and mineral separation testing is warranted, in conjunction with an industry market evaluation.

## **2. LOCATION, ACCESS AND INFRASTRUCTURE**

The *Mattawan P* garnet property is located in the Mattawan Township, Sudbury Mining District in northeastern Ontario, Canada. The area is approximately 15 kilometres northwest of the town of Mattawa, which is at the meeting of the Mattawa and Ottawa Rivers. The project area is on N.T.S. map sheet 31L/7 at latitude 46° 23' N and longitude 78° 53' E. (Figure 1.) *Mattawan P* is on the west side of Highway #533, which follows along Harrington Creek.

Access to the property is excellent, with the paved Highway #533 passing within 400 metres of *Mattawan P*, from which there are gravel and dirt forestry haulage roads. There is also current logging being conducted in the *Mattawan P* area, thus expanding the access to the property.

The town of Mattawa, population 2,800, is the location of the nearest railway station for the Canadian Pacific Railway to Ottawa and the port of Montreal. Mattawa is also a potential harbour for barge traffic along the Ottawa River. The Trans-Canada Highway, also known as Highway #17 in this region, leads west from Mattawa 64 kilometres to North Bay, the nearest city, with a population of 58,000. A major power line corridor passes east-west approximately 2 kilometres south of the *Mattawan P* property. Thus, the infrastructure in this area is also considered excellent.

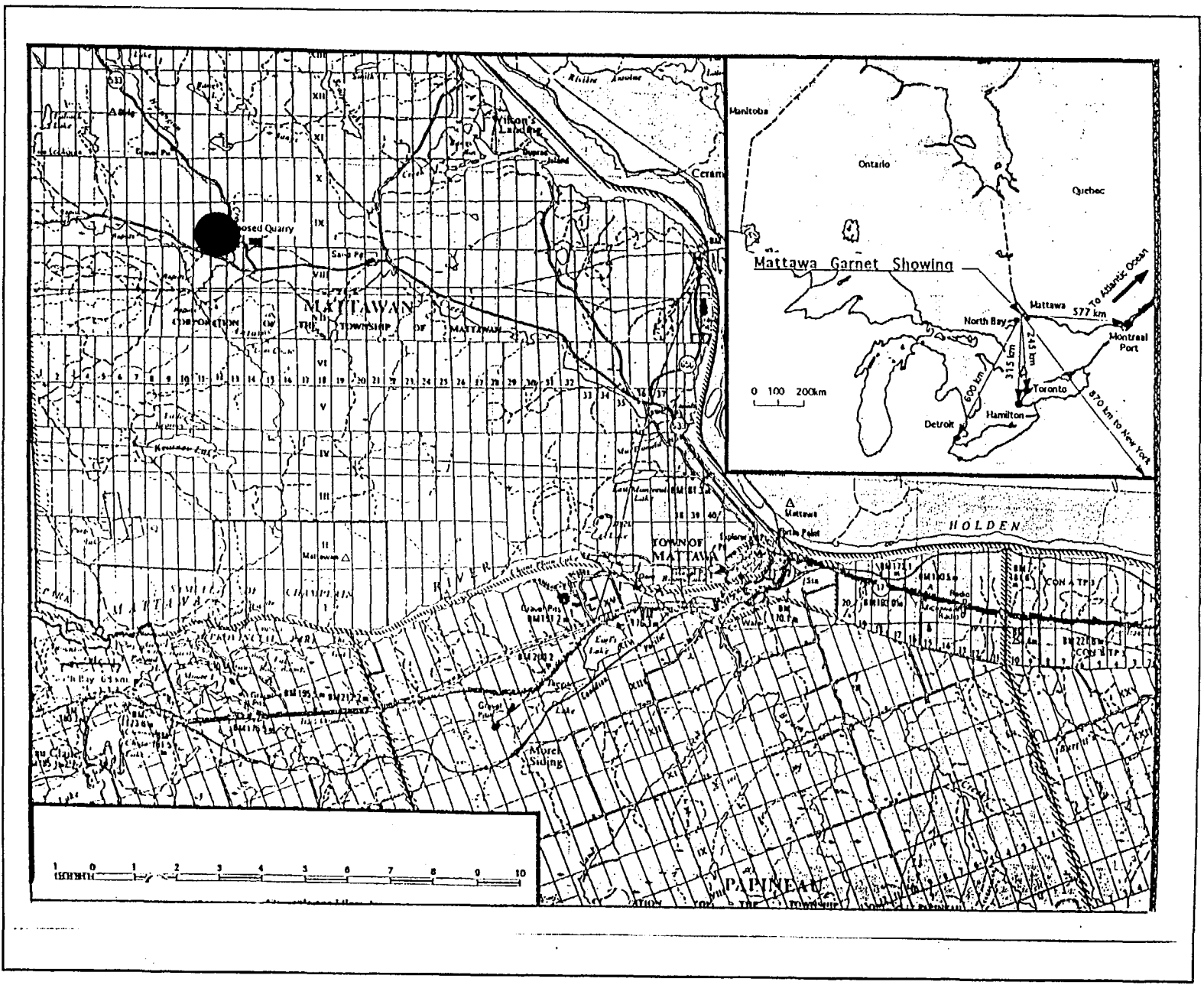


Figure 1. Location Map

### 3. PREVIOUS HISTORY

Government regional geological compilations by Harding (1944) and Lumbers (1976) covered this area for basic bedrock geology and Harrison (1971) for surficial geology. Lumbers described the area as containing feldspathic gneiss, gneissic tonalite, monzonitic to granitic rocks, plus gabbroic anorthosite and related mafic rocks.

In 1986-87, Hudson Bay Exploration and Development Co. Ltd. conducted an exploration program near the claim group, to the northeast of the *Mattawan P* showings. This was designed to target gold and consisted primarily of a VLF-EM survey, percussion overburden drilling to test the basal till samples, and three diamond drill holes (Davies, 1986; 1987). There was one area with anomalous gold, including 3 basal till samples exceeding 50 ppb Au, with a high of 345 ppb Au. Gold in stream sediments along Harrington Creek is likely to have been the initiating factor for this study. There is a possibility that the basal till gold is placer derived. However, Davies (1987) conclusion was as follows: "*The anomaly is too significant to write off without a little further effort.*" It is not known whether additional testing was conducted.

In the report (Davies, 1986), the diamond drilling was located northwest of the old forestry tower site on the adjacent *Mattawan B* property. The drilling intersected significant thicknesses of "*garnetiferous amphibolite gneiss*". The core is reportedly stored at the *Drill Core Library*, Cobalt, Ontario.

The most significant garnet-focused research work has been conducted by geologist Bob Komarechka on the adjacent *Mattawan B* property. Geological mapping, geophysical surveys (VLF and magnetometer), a garnet beneficiation study, petrography of three thin sections, and percussion drilling have been performed (Komarechka, 1999a, 1999b, 1997, 1996, 1995, 1994; Stoness, 1995). The *Tower Lake* property, west of the *Mattawan P* property, was examined by ground magnetometer and VLF-EM geophysical surveys (Laronde, 2000).

The **Ontario Geological Survey**, in conjunction with **Lakefield Research Ltd.**, have

been examining five garnet properties in Ontario for soon to be released reports (Easton, 1999; Grammatikopoulos and MacDonald, 1999). These studies, include detailed laboratory work on selected samples from the *Street, Dana, Papineau, Mattawan B* and *Mattawan P* deposits.

Physical work reports of outcrop scraping have been applied as assessment on the *Mattawan P* property (Shouinard, 1998). Line cutting and prospecting have also been conducted by the claim owners on the *Mattawan P* property. The results of this work has previously been filed for claims assessment.

In 1999, a field examination, sampling and laboratory testing was conducted on the *Mattawan P* property, including point count thin section evaluation, SEM and microprobe analyses. (Whiting, 2000, 1999; Ross, 1999a, 1999b).



## 4. GEOLOGY

### 4.1 REGIONAL GEOLOGY

The *Mattawan P* garnet property is in the Proterozoic Grenville Province of the Canadian Shield. The Grenville Province contacts the Archean Superior Province and Proterozoic Southern Province in a tectonic zone referred to as the Grenville Front. The Grenville Front Tectonic Zone (GFTZ) is a compressional transition zone, up to 30 kilometres across, separating a Central Gneissic Belt of the Grenville Province from the earlier cratons (Easton, 1992). Easton (1999) places the *Street* and *Dana* garnet deposits in the GFTZ and the *Papineau*, *Mattawan B* and *Mattawan P* deposits in the Central Gneissic Belt.

When dividing the Central Gneissic Belt, researchers have applied both lithological and tectonic classifications. These two approaches coincide in some regions, and diverge in other regions. The interpretation of metamorphosed mafic dyke rocks as parautochthonous (related to the earlier North American craton) and allochthonous (distinctly different assemblage from the craton) has led to an interpreted crustal scale boundary called the Allochthon Boundary Thrust (ABT). Ketchum and Davidson (1999) has presented a revised interpretation of the crustal architecture of the Central Gneissic Belt.

A distinctive feature of the parautochthonous portion of the Central Gneissic Belt is the presence of metamorphosed mafic rocks chemically correlatable with the 1240 Ma Sudbury dyke swarms and similar aged mafic and felsic plutonic rocks. Mafic pods in the allochthonous portion are younger, ca. 1170 Ma, metagabbros and retrograde eclogites.

Lumbers (1976) conducted regional mapping in the Mattawan area. The garnetiferous occurrences in anorthosite, mafic gneisses, and eclogites correspond to units of calc-silicate gneiss on Lumbers' map. Fold interference patterns and later offset faulting are likely to be present. These rocks lie south of the ABT, in the same allochthonous panel as the *Papineau* deposit (Easton, 1999).

From a geological model perspective, the eclogitic-hosted garnet occurrences may be considered as deep crustal wedges which have been thrust into their present position during the Grenville Orogeny. Proximity to the ABT, perhaps within 10 to 15 km, could be used as an exploration guideline. The larger gabbroic anorthosite bodies on the mapping of Lumbers (1976) have also been recommended as targets by Easton (1999).

## **4.2. PROPERTY GEOLOGY**

The *Mattawan P* deposit occurs along a northwesterly trending ridge and small hills of high-grade metamorphic mafic units. Reddish-green garnetiferous eclogites and reddish-black garnetiferous amphibolites are present. Depending on the felsic mineral content and amount of metamorphic foliation, the rocks may be called gneisses (eg: garnet-hornblende-plagioclase gneiss). A massive appearing hand sample of rock may be given one name in the field and a different name from a thin section examination. Thus, the garnetiferous amphibolite in the field may be called a garnet-amphibole gneiss in a lab report.

Prospecting over the *Mattawan P* property has located over 100 garnetiferous outcrops in a zone approximately 1,600m x 400m (Whiting, 1999). Within this zone, there are separate members of eclogite and garnetiferous amphibolite that may be mappable as discrete units. Foliation strikes parallel to the ridge and dips steeply north or south, depending on the location. Overburden is shallow and outcrop exposures make up 5-10% of the main part of the property. Three bulk samples and six thin sections were taken on this property for analyses (Whiting, 2000).

The research for this report, conducted in the first week of September 2000, concentrated on the cut grid over Discovery Hill on the east end of the *Mattawan P* property (Photo 1). Outcrops are few, except along breaks in slope and along skidder tracks. The baseline, much of which is through swamp, does not have any outcrops, but large boulders found along the baseline may be proximal to source.

Feldspathic gneiss (FLGN) lacking in garnets occurs to the north and south, bracketing the garnetiferous units of interest. This gneiss exhibits the best mineralogical banding, with foliation striking east-west and dipping steeply to the south (Photos 2 & 3). The strike can vary as much as 20° over 4 metres, but the trend is consistent on a broad scale. Contacts are sharp (Photo 5).

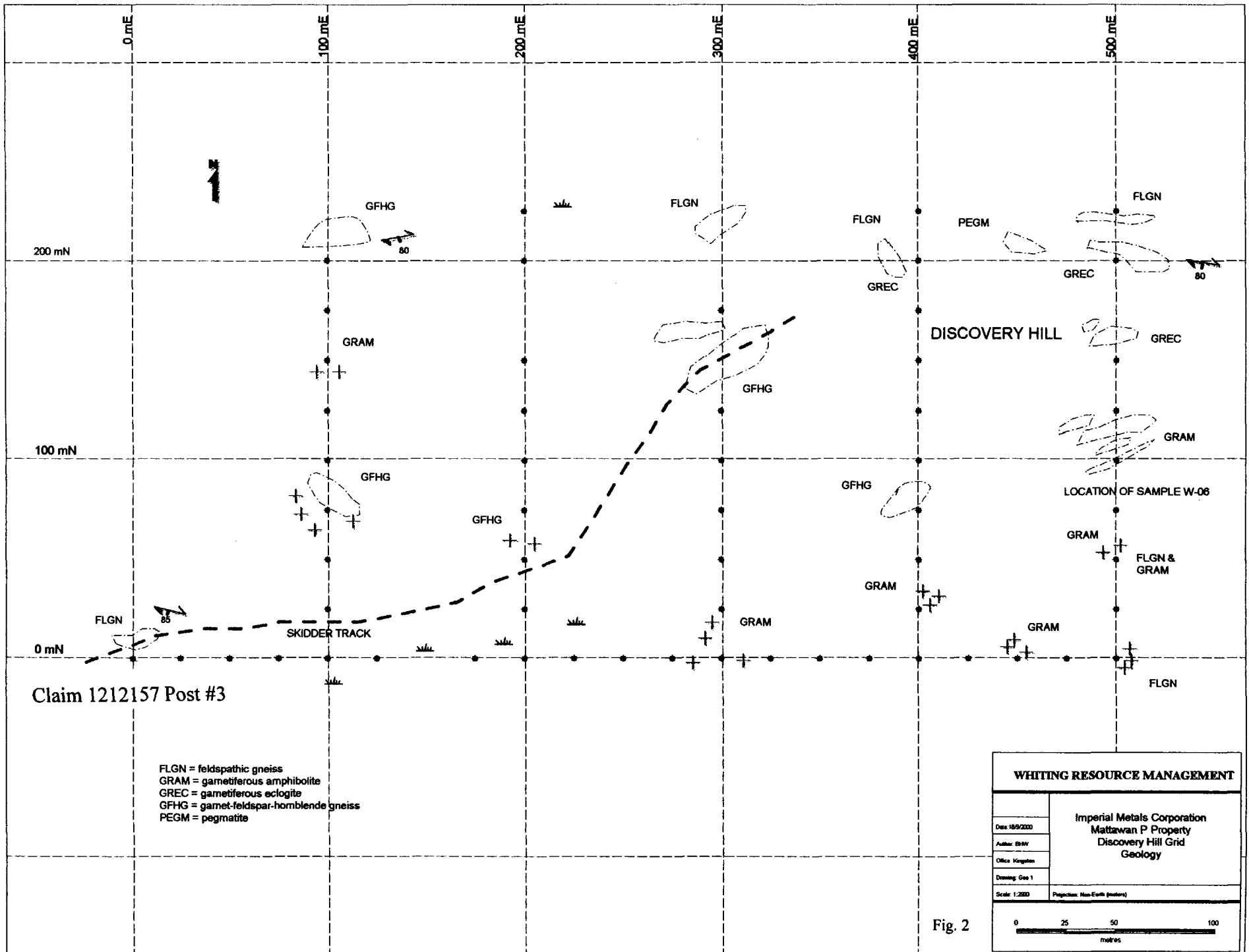


Fig. 2

Garnet-feldspar-hornblende gneiss (GFHG), with lessor quartz, biotite, and ilmenite, occurs through the central and western portions of the Discovery Hill grid. Garnets are often coarse grained, up to 2 cm across as composite porphyroblasts, but the total garnet grade is variable and is usually less than 15%.

High on Discovery Hill along line 500 E are exposures of garnetiferous eclogite (GREC) (Photo 4). Metamorphic petrology professor Dugald Carmichael of Queen's University examined one of the author's hand samples from this area of *Mattawan P* and stated that it was "*an excellent eclogite, with traces of retrograde textures as rims around the garnets*". Visual hand sample garnet grades vary between 20% to 30% as coarse euhedral grains, 1 to 5 mm.

The most significant rock unit, from an economic industrial mineral perspective, is garnetiferous amphibolite (GRAM). The unit is exposed on outcrops along line 500 E and occurs as many large boulders in the southern portions of lines 300 E, 400 E, and 500 E. Garnet grades in hand samples vary between 20% and 50%, averaging around 30%. Grain size is more uniform 1-3 mm as clear euhedral grains. The sample W-06 (Whiting, 1999, 2000; Ross, 1999a, 1999b) came from 500 E - 100 N on the Discovery Hill grid and photos are included in the assessment report (Whiting 2000). Observed hand sample garnet grade was 30%, thin section counts gave a grade of 35%, whereas bulk sample sieving with point counts gave a coarse fraction grade of 28.2% (close to the hand sample estimate) and an all-size fractions total grade of 18.2%.

Minor pegmatite (PEGM) veinlets and pods occur throughout the property, usually as less than 3 cm thick veinlets both cross-cutting and paralleling foliation. The pegmatites are white plagioclase and quartz, with crystals in the 2 to 5 cm range (Photos 2 and 6).

As to the quality of garnets, in a previous study **Lakefield Research Ltd.** analysed a sample from *Mattawan P* which yielded very few inclusions in the garnets, as illustrated by backscatter electron imaging (BSI viewed at Lakefield's laboratory), and had a composition of Almandine exceeding Pyrope and Grossular ( $A_{49-55}P_{26-32}G_{15-20}$ ). This sample is believed to

have come from the first clearing along the logging access road and was called a garnet-amphibole gneiss containing 30% by volume garnets. Recovery results for first and second pass mags were 35% and 94%, with an excellent quality index of 0.5/10 (Grammatikopoulos and MacDonald, 1999). This sample is west of the Discovery Hill grid, but corresponds to the garnetiferous amphibolite (GRAM) unit of this study.

The following photo series illustrates various outcrop patterns and rock textures observed during the September 2000 property examination. See (Whiting, 2000) for additional photos, including the W-06 sample site from the Discovery Hill grid, *Mattawan P* property.



Photo 1. Mattawan P -- Claim Post #3 of 1212157 is the zero mark  
Start of the east-west baseline for the Discovery Hill grid.



Photo 2. Mattawan P -- Banded feldspathic gneiss with pegmatite veinlets, 20 N - 0 E.



Photo 3. Mattawan P -- Banded feldspathic gneiss, 225 N - 300 E.





Photo 4. Mattawan P -- Garnetiferous eclogite with minor pegmatite veinlets, 160 N - 500 E.



Photo 5. Mattawan P -- Sharp contact - garnetiferous eclogite with quartz feldspathic gneiss, 200 N - 390 E



Photo 6. Mattawan P -- Plagioclase and quartz pegmatite pods, 210 N - 460 E.

## **6. GEOPHYSICAL SURVEYS**

### **6.1 AEROMAGNETICS**

The ultramafic nature of the units of interest at the *Mattawan P* garnet deposit would be expected to stand out as positive anomalies relative to the more felsic country-rock feldspathic gneisses. This is the case on airborne magnetometer surveys. *AERODAT* survey maps for this region show an eastward opening horseshoe shaped magnetic anomaly on the 'total field', 'vertical gradient', and 'apparent susceptibility' magnetics. The *Mattawan P* deposit is on the south limb of the major anomaly. This *AERODAT* survey was filed for assessment on properties to the north of Mattawan Township (Komarechka, 1997).

## **6.2 GROUND TOTAL FIELD MAGNETICS**

During this study on the *Mattawan P* property, a 1,625 line-metres survey of total field magnetics was conducted on the Discovery Hill Grid at 100m x 25m grid spacing using a Scintrex proton magnetometer, with a resolution of 0.1 nT . Natural station variations from multiple readings were in the range of 0 to 10 nT and diurnal variation of 40 nT occurred during the survey. On the grid the variability exceeded 2,000 nT. Averages of multiple readings and a diurnal correction were calculated for each station (Appendix II).

The equipment used in the survey was as follows:

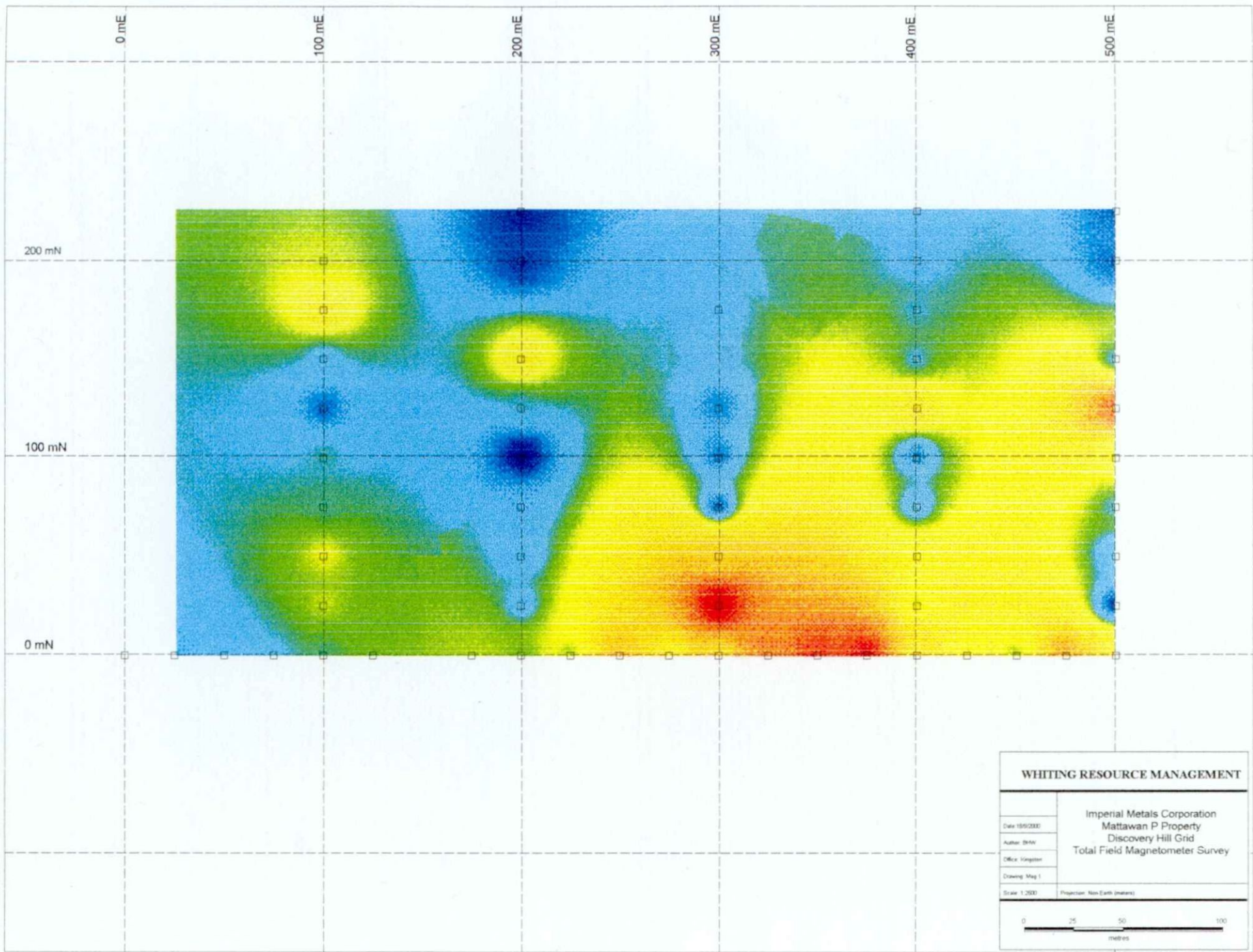
MP-4 Proton Magnetometer Sensor (Model 780038) mounted on a 2 metre staff.

Scintrex IGS-2 System Control Console (Model 781015) Serial #9409547.

Power supply 10 “C” cell alkalyde batteries.

The highest magnetics response correlated with areas of garnetiferous amphibolite in outcrop and boulders, particularly along the southern edge baseline and line 500 E, with a lessor response from the garnetiferous eclogite (Figure 3). The weaker anomalies on lines 100 E and 200 E may align to represent a separate WNW trending zone of interest.

On the east adjacent *Mattawan B* property, a ground geophysical survey was used to help delineate the highly magnetic troctolite from the lessor magnetic amphibolite and eclogite and the non magnetic feldspathic-quartz gneiss (Komarechka, 1995; Davies, 1987).



**7. MINERAL CLAIM STATUS**

Addresses for mineral claim holders for this claim group are as follows:

**Guy Shouinard**

P.O. Box 413

Temagami, Ontario

Canada, P0H 2H0

**Ron Montreuil**

P.O. Box 164

Mattawa, Ontario

Canada, P0H 1V0

tel: 705-744-2559

Figure 4 shows the locations of the mineral claims. These are summarized in Table II. The *Mattawan P* area is jointly held by Guy Shouinard and Ron Montreuil as 50-50 partners. **Imperial Metals Corporation** has an option agreement with one of the claim holders.

Table II - Mining Claims Summary Table

MATTAWA P CLAIM LIST

TITLE NAME	TITLE #	UNITS	RECORD DATE	EXPIRY DATE	REQ'D EXP.	REMARKS
S1/2 LOTS 12, 13 & 14, CON.12	S1230848	3	September 18, 1998	September 18, 2000	1,200.00	
S1/2 L18, C13 & N1/2 & S1/2 L18, C12	S1212159	3	November 21, 1996	November 21, 2000	960.00	
N1/2 & S1/2 LOTS 19, 20, 21 CON.12	S1212158	6	November 21, 1996	November 21, 2000	2,400.00	
N1/2 LOT 17, CON. 12	S1212546	1	November 21, 1996	November 21, 2000	400.00	
S1/2 LOT 17, CON. 13	S1212547	1	November 21, 1996	November 21, 2000	400.00	Total reserve \$482
S1/2 LOT 15 & 16 CON. 13 ET AL	S1212548	4	December 30, 1996	December 30, 2000	1,600.00	
S1/2 LOT 17, CON.12	S1212549	1	April 3, 1997	April 3, 2001	400.00	
S1/2 LOT 15 & 16, CON.12	S1212566	2	April 3, 1997	April 3, 2001	800.00	
LOTS 13 & 14, CON.11	S1212562	4	April 3, 1997	April 3, 2001	825.00	
N1/2 & S1/2 LOTS 11,12 CON. 11	S1212551	4	April 28, 1997	April 28, 2001	1,600.00	
N1/2 LOT 7, CON. 10	S1224152	1	May 15, 1998	May 15, 2001	400.00	
N1/2 LOT 10, CON. 9	S1224153	1	June 29, 1998	June 29, 2002	300.00	Total reserve \$195
N1/2 LOT 9, CON. 4	S1229356	1	October 1, 1998	October 1, 2002	300.00	
S1/2 LOT 10, CON. 9	S1230850	1	October 1, 1998	October 1, 2002	300.00	
N1/2 & S1/2 LOTS 11,12 CON.10	S1212157*	4	April 28, 1997	April 28, 2003	1,570.00	Total reserve \$196
S1/2 LOTS 8, 9, 10, CON. 10	S1230849*	3	May 15, 1998	May 15, 2003	615.00	Total reserve \$195

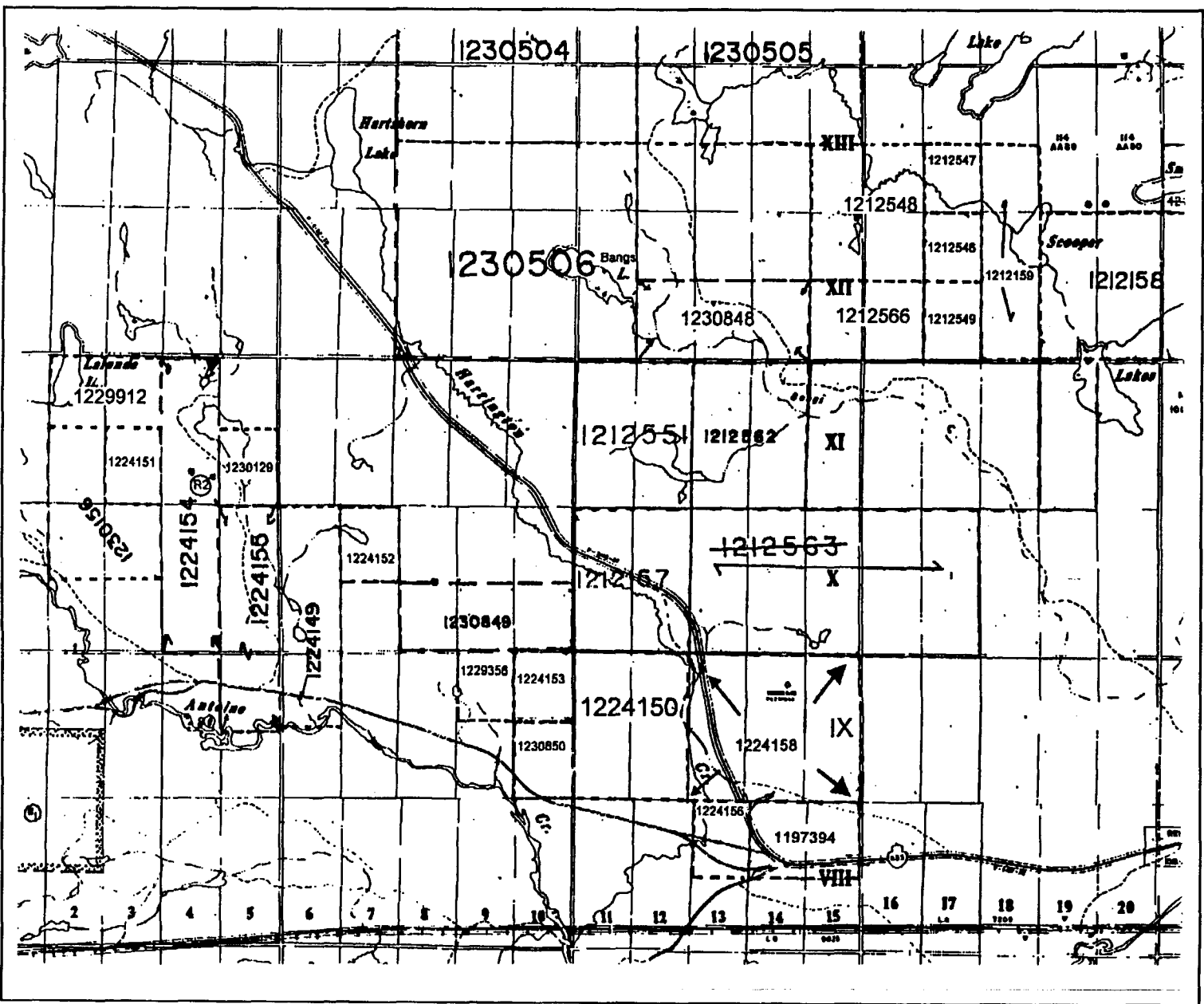


Fig. 4 Mineral Claim Map



## **8. LAND CLAIM ISSUES**

The province of Ontario has been undergoing a public review process called “*Lands for Life*”. This has been a contentious programme of consultation and negotiation between the provincial government, municipalities, environmental organizations, the forestry industry, and aboriginal groups in order to designate lands for specific uses. This process has now been designated Ontario’s “*Living Legacy*” lands.

Fortunately, the *Mattawan P* garnet deposit falls in an area NOT covered by the “*Living Legacy*” designation. The area is crown land considered suitable for multiple use, including mining and quarrying.

While this area is crown land and mining friendly, it falls in a region of political influence of the Mattawa Band of the Algonquin people. The Algonquins would most likely be interested in jobs and training programs with any future mining/quarrying producer.

Potential archaeological sites are also significant in today’s exploration planning. No signs of ancient habitation (eg: petroglyphs, rock circles, cave dwellings) were observed on the properties during the examination. The nearest known sites are over 25 kilometres to the southwest, in Champlain Park along the Mattawa River (Tyyskä and Burns, 1987).

## **9. ENVIRONMENTAL ISSUES**

Environmental issues are not a significant topic for the *Mattawan P* deposit. There is no sulphide mineralization seen in the samples taken, and in all other areas observed the sulphide content was trace to zero. The Lakefield Research Ltd. study made a similar observation as follows: "*Generally, the garnet samples are devoid of sulphides although scarce pyrite is present.*" (Grammatikopoulos and MacDonald, 1999). This means that Acid Mine Drainage (AMD) will not be a problem to address for the *Mattawan P* deposit.

Sports fishing and tourism are important local industries in this part of Ontario. Specific care would have to be exercised around the Harrington and Antoine Creeks. There is a 400 foot surface rights reservation around all lakes and rivers.

It is likely that the facilities for a future garnet quarrying operation could be constructed behind hills in such a manner that they would be mostly out of sight from tourists travelling along Highway #533.

## 10. CONCLUSIONS AND RECOMMENDATIONS

Observations from the property examination in 1999 and this geophysical survey and geological examination are “*very encouraging*”. In particular, the garnetiferous amphibolite and eclogite units are the most promising to yield industrial grade garnets. Grades in the 20% to 35% almandine-rich garnet were expected from visual estimates and correspond well with the point-count testing of the coarse fraction -20 to +42 mesh.

The grade and quality of garnets are within the ranges of commercially produced deposits elsewhere in the world. Access and infrastructure are also excellent.

It is concluded from this study that a close spaced grid for a ground magnetics survey will be a useful tool for delineating prospective zones of garnetiferous amphibolite, particularly in areas of cover. This property shows “*considerable promise*” for the development of an economic almandine-rich garnet deposit. Further work, including geophysics, detailed geological mapping, and mineral separation testing is warranted, in conjunction with an industry market evaluation.

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- Plan, OP94-302, 8 p. plus 3 maps (in Assessment report TR005 and TR006).
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Appendix I

**STATEMENT OF QUALIFICATIONS**

## CERTIFICATE OF QUALIFICATION

I, **Bernard Henry Whiting**, of Kingston, Ontario, Canada, do hereby certify that:

1. I am a consulting geologist with principal address at 62 Quebec Street, Kingston, Ontario, Canada, K7K 1T7.
2. I am a registered "**Professional Geoscientist**" of the Province of British Columbia; certificate number 19851. I am a Fellow of the Geological Association of Canada and a member of the Society of Economic Geologists, Association of Exploration Geochemists, Association of Geoscientists of Ontario, and Canadian Institute of Mining, Metallurgy and Petroleum.
3. I hold a Bachelor of Science (1979) and a Master of Science (1989) in geological sciences from the University of British Columbia. I am a Lecturer in the Department of Geological Sciences and Geological Engineering, Queen's University. I have 20 years experience as an exploration and mine geologist for Rio Tinto Canadian Exploration Ltd., Cassiar Asbestos Corp., Brinco Mining Ltd., and Lynx Geosystems Inc.. I have consulted for junior and senior resource companies and have geological experience in 16 countries on 5 continents. I have also taught university courses in ore reserve estimation, exploration geochemistry, and computer applications in geology.
4. I am the author of the report titled "**Magnetometer Survey and Geological Examination of the Discovery Hill Grid, Mattawan P Garnet Property, Sudbury Mining District, Ontario, Canada**", which is based on a property examination and testing conducted in September 2000.
5. I have no direct or indirect interest in the Mattawan P property, nor do I expect to receive any interest in this property.
6. Permission is hereby granted for the use of this report for any legal purpose normal to the business of Imperial Metals Corporation.

DATED at Kingston, Ontario, Canada this 19<sup>th</sup> day of September, 2000.



**B.H. (Ben) Whiting, M.Sc., P.Geo.**

Appendix II

**DISCOVERY HILL GRID  
TOTAL FIELD MAGNETOMETER SURVEY RESULTS**



Mattawan P Garnet Project  
 Discovery Hill Grid - Magnetometer Survey

Northing	Easting	Reading 1	Reading 2	Time	Avg	Corr factor	Value nT
Base	Station	56631.5	56634.7	11:09:00 AM	56633.1	0.00	56633.1
Base	Station	56672.3	56674.4	7:05:30 PM	56673.4	40.30	56633.1
0	0	56573.7	56574.5	11:14:25 AM	56574.1	0.46	56573.6
0	25	56595.1	56605.5	11:17:20 AM	56600.3	0.68	56599.6
0	50	56623.7	56629.7	11:20:48 AM	56626.7	0.98	56625.7
0	75	56669.5	56670.2	11:25:07 AM	56669.9	1.35	56668.5
0	100	56670.7	56712.9	11:26:49 AM	56691.8	1.49	56690.3
0	125	56713.0	56715.8	11:29:10 AM	56714.4	1.68	56712.7
0	150						
0	175	56751.9	56750.6	11:32:48 AM	56751.3	1.99	56749.3
0	200						
0	225	56751.7	56743.2	11:38:50 AM	56747.5	2.49	56745.0
0	250	57269.8	57269.9	11:42:02 AM	57269.9	2.76	57267.1
0	275	56869.6	56861.1	11:46:08 AM	56865.4	3.11	56862.2
0	300	57034.4	57032.4	11:50:45 AM	57033.4	3.49	57029.9
0	325	57632.9	57636.9	11:54:45 AM	57634.9	3.83	57631.1
0	350	58009.5	58011.1	11:56:30 AM	58010.3	3.98	58006.3
0	375	58259.4	58258.7	11:58:50 AM	58259.1	4.17	58254.9
0	400	56978.9	56978.3	12:02:00 PM	56978.6	4.44	56974.2
0	425	56776.4	56779.7	12:04:30 PM	56778.1	4.65	56773.4
0	450	56746.5	56746.9	12:07:00 PM	56746.7	4.85	56741.9
0	475	57387.3	57385.7	12:10:30 PM	57386.5	5.15	57381.4
0	500	56972.4	56977.9	12:14:15 PM	56975.2	5.46	56969.7

Mattawan P Garnet Project  
Discovery Hill Grid - Magnetometer Survey

Northing	Easting	Reading 1	Reading 2	Time	Avg	Corr factor	Value nT
25	500	56500.8	56502.2	12:30:40 PM	56501.5	6.83	56494.7
50	500	56622.2	56622.3	12:35:00 PM	56622.3	7.20	56615.1
75	500	56700.6	56669.9	12:39:20 PM	56685.3	7.56	56677.7
100	500	56783.5	56774.5	12:45:40 PM	56779.0	8.09	56770.9
125	500	57698.3	57695.9	12:51:35 PM	57697.1	8.59	57688.5
150	500	56680.5	56683.1	12:55:30 PM	56681.8	8.91	56672.9
175	500						
200	500	56532.5	56531.3	1:04:25 PM	56531.9	9.66	56522.2
225	500	56525.6	56527.1	1:10:45 PM	56526.4	10.19	56516.2

Mattawan P Garnet Project  
Discovery Hill Grid - Magnetometer Survey

Northing	Easting	Reading 1	Reading 2	Time	Avg	Corr factor	Value nT
0	400	57005.2	57005.0	1:58:15 PM	57005.1	14.17	56990.9
25	400	56772.0	56772.3	1:54:10 PM	56772.2	13.82	56758.3
50	400	56848.4	56848.1	1:51:20 PM	56848.3	13.59	56834.7
75	400	56620.1	56620.2	1:47:40 PM	56620.2	13.28	56606.9
100	400	56572.9	56573.2	1:44:30 PM	56573.1	13.01	56560.0
125	400	56983.3	56983.9	1:41:00 PM	56983.6	12.72	56970.9
150	400	56681.8	56684.3	1:36:40 PM	56683.1	12.36	56670.7
175	400	56689.1	56688.2	1:34:30 PM	56688.7	12.18	56676.5
200	400	56662.5	56662.1	1:31:40 PM	56662.3	11.94	56650.4
225	400	56665.4	56667.9	1:28:00 PM	56666.7	11.63	56655.0

Mattawan P Garnet Project  
Discovery Hill Grid - Magnetometer Survey

Northing	Easting	Reading 1	Reading 2	Time	Avg	Corr factor	Value nT
0	300	57041.5	57042.0	2:06:15 PM	57041.8	14.84	57026.9
25	300	58658.6	58657.0	2:10:40 PM	58657.8	15.20	58642.6
50	300	57153.2	57154.0	2:13:30 PM	57153.6	15.44	57138.2
75	300	56540.4	56540.2	2:17:17 PM	56540.3	15.76	56524.5
100	300	56566.3	56565.9	2:20:00 PM	56566.1	15.99	56550.1
125	300	56572.0	56572.4	2:26:00 PM	56572.2	16.49	56555.7
150	300						
175	300	56665.0	56664.8	2:40:45 PM	56664.9	17.72	56647.2

Mattawan P Garnet Project  
Discovery Hill Grid - Magnetometer Survey

Northing	Easting	Reading 1	Reading 2	Time	Avg	Corr factor	Value nT
0	200	56745.0	56745.1	3:46:15 PM	56745.1	23.20	56721.9
25	200	56665.6	56665.6	3:51:20 PM	56665.6	23.63	56642.0
50	200	56635.0	56635.2	3:58:20 PM	56635.1	24.22	56610.9
75	200	56633.2	56633.3	4:01:45 PM	56633.3	24.50	56608.8
100	200	56421.8	56422.5	4:07:45 PM	56422.2	25.00	56397.2
125	200	56701.4	56701.3	4:11:50 PM	56701.4	25.34	56676.0
150	200	56926.8	56929.2	4:14:35 PM	56928.0	25.58	56902.4
175	200						
200	200	56493.3	56493.8	4:17:00 PM	56493.6	25.78	56467.8
225	200	56456.7	56456.8	4:23:00 PM	56456.8	26.28	56430.5

Mattawan P Garnet Project  
Discovery Hill Grid - Magnetometer Survey

Northing	Easting	Reading 1	Reading 2	Time	Avg	Corr factor	Value nT
0	100	56729.7	56725.5	6:04:30 PM	56727.6	34.77	56692.8
25	100	56794.6	56792.5	6:07:00 PM	56793.6	34.99	56758.6
50	100	56812.3	56812.5	6:09:20 PM	56812.4	35.18	56777.2
75	100	56723.5	56725.8	6:14:45 PM	56724.7	35.63	56689.0
100	100	56718.0	56718.7	6:19:30 PM	56718.4	36.03	56682.3
125	100	56568.8	56565.0	6:24:50 PM	56566.9	36.48	56530.4
150	100	56689.5	56692.1	6:29:45 PM	56690.8	36.89	56653.9
175	100	56963.1	56960.9	6:33:30 PM	56962.0	37.20	56924.8
200	100	56801.5	56798.9	6:36:20 PM	56800.2	37.44	56762.8
225	100	56706.7	56706.9	6:45:50 PM	56706.8	38.23	56668.6



Ontario

Ministry of Northern Development and Mines

Declaration of Assessment Work Performed on Mining Land

Mining Act, Subsection 65(2) and 66(3), R.S.O. 1990

Transaction Number (office use)

W0070.00185

Assessment Files Research Imaging



31L07NW2011 2.20593 MATTAWAN 900

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

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

2.20593

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

Table with 2 columns: Name, Address, Client Number, Telephone Number, Fax Number. Contains two entries for SHOUINARD GUILLAUME CHARLES and MONTREUIL RONALD ARMAND.

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

Form with sections for Geotechnical, Physical, and Rehabilitation work types. Includes fields for Work Type (GEO TECHNICAL), Dates Work Performed, and Mining Division (Sudbury).

- 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.

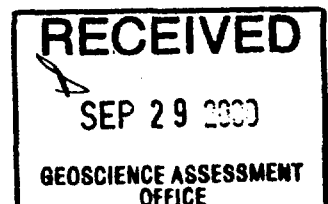
3. Person or companies who prepared the technical report (Attach a list if necessary)

Table with 2 columns: Name, Address, Telephone Number, Fax Number. Contains one entry for B.H. (BEN) WHITING.

4. Certification by Recorded Holder or Agent

I, RAD PESALJ, 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: Rad. Pesalj. Date: [blank]. Agent's Address: 5425 13A AVE. DELTA, B.C. V4H 3V5. Telephone Number: (604) 488-2663. Fax Number: (604) 687-4030.



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.

W0070.00185

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
eg TB 7827	16 ha	\$26,825	N/A	\$24,000	\$2,825
eg 1234567	12	0	\$24,000	0	0
eg 1234568	2	\$ 8,892	\$ 4,000	0	\$4,892
1 S1212157	4	\$ 3,313	N/A		\$ 488
2 S1212551	4	0		\$ 1,600	0
3 S1212562	4	0		\$ 825	0
4 S1224152	1	0		\$ 400	0
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
Column Totals	13	\$ 3,313	N/A	\$ 2,825	\$ 488

I, RAD PESALJ (Print Full Name), 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: Rad. Pesalj Date: September 28, 2000

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):

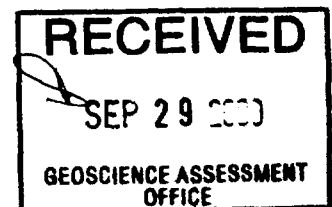
2.20593

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)		

0241 (03/97)





Personal information collected on this form is obtained under the authority of subsection 6 (1) of the Assessment Work Regulation 6/98. 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 0B5.

20,200.00

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
GEOPHYSICAL SURVEY, MAPPING	2 KM; 5.5 DAYS	\$ 1,100/KM.	2,200.00
Associated Costs (e.g. supplies, mobilization and demobilization).		\$ 42.19/km.	84.38
Transportation Costs		\$ 316.83/km.	633.65
Food and Lodging Costs		\$ 197.78/km.	395.56
Total Value of Assessment Work			\$ 3,313.59

**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, RAD PESALJ, 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 I am authorized to make this certification.  
(recorded holder, agent, or state company position with signing authority)

Signature <i>Rad. Pesalj</i>	Date Sep. 28, 2000
---------------------------------	-----------------------

**RECEIVED**  
 SEP 29 2000  
 GEOSCIENCE ASSESSMENT OFFICE

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

Telephone: (888) 415-9845  
Fax: (877) 670-1555

October 20, 2000

GUILLAUME CHARLES SHOUINARD  
P.O. BOX 331  
MATTAWA, ON  
P0H-1V0

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:** 2.20593

**Status**

**Subject: Transaction Number(s):** W0070.00185 Approval

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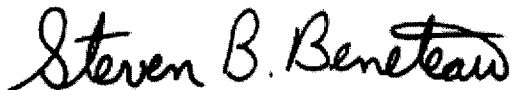
We have reviewed your Assessment Work submission with the above noted Transaction Number(s). The attached summary page(s) indicate the results of the review. **WE RECOMMEND YOU READ THIS SUMMARY FOR THE DETAILS PERTAINING TO YOUR ASSESSMENT WORK.**

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 LUCILLE JEROME by e-mail at [lucille.jerome@ndm.gov.on.ca](mailto:lucille.jerome@ndm.gov.on.ca) or by telephone at (705) 670-5858.

Yours sincerely,



ORIGINAL SIGNED BY  
Steve B. Beneteau  
Acting Supervisor, Geoscience Assessment Office  
Mining Lands Section

# Work Report Assessment Results

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**Submission Number:** 2.20593

**Date Correspondence Sent:** October 20, 2000

**Assessor:** LUCILLE JEROME

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<b>Transaction Number</b>	<b>First Claim Number</b>	<b>Township(s) / Area(s)</b>	<b>Status</b>	<b>Approval Date</b>
W0070.00185	1312157	MATTAWAN	Approval	October 19, 2000

**Section:**

14 Geophysical MAG

12 Geological GEOL

At the discretion of the Ministry, the assessment work performed on the mining lands noted in this work report may be subject to inspection and/or investigation at any time.

**Correspondence to:**

Resident Geologist  
Sudbury, ON

Assessment Files Library  
Sudbury, ON

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

Rad Pesalj  
VANCOUVER, BC, CAN

GUILLAUME CHARLES SHOINARD  
MATTAWA, ON

RONALD ARMAND MONTREUIL  
MATTAWA, ONTARIO

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REFERENCES

AREAS WITHDRAWN FROM DISPOSITION

M.R.O. - MINING RIGHTS ONLY  
 S.R.O. - SURFACE RIGHTS ONLY  
 M.+S. - MINING AND SURFACE RIGHTS

Description	Order No.	Date	Disposition	File
SEC 34/80	W-2/82	15/4/82	M.R.S.	87978
CROWN RESERVE			S.R.O.	181867
WITHDRAWAL	W-8-23/88	08/08/88	M.R.S.	181850
SEC 35 W.LL-P148/89		ONT MAY 14/89	M&S	
SEC 35 W.LL-P131/89		ONT MAY 14/89	M&S	
200 METERS FROM THE WATER'S EDGE.				
SEC 35 W.LL-P123/89		ONT MAY 15/89	M&S	

MINING CLAIMS STAKED IN THIS TOWNSHIP ARE SUBJECT TO SEC 34 OF THE MINING ACT, R.S.O. 1970.

300-6512 (L.A. 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40)  
 See Calvin Township Land File for Plan of Res. Park

JUNE 1ST OPENING  
 ONTARIO GAZETTE VOLS. 12-18  
 MARCH 31, 1890 AND VOL. 12-18 MAY 5, 1890  
 ST. LOT 27, CONC. V. MRO



REFERENCES

THE INFORMATION THAT APPEARS ON THIS MAP HAS BEEN COMPILED FROM VARIOUS SOURCES, AND ACCURACY IS NOT GUARANTEED. THOSE WISHING TO STAKE MINING CLAIMS SHOULD CONSULT WITH THE MINING RECORDER, MINISTRY OF NORTHERN DEVELOPMENT AND MINES, FOR ADDITIONAL INFORMATION ON THE STATUS OF THE LANDS SHOWN HEREON.

LEGEND

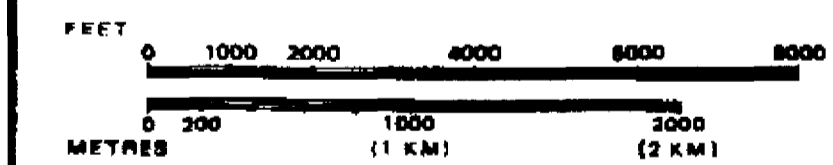
HIGHWAY AND ROUTE No.	
OTHER ROADS	
TRAILS	
SURVEYED LINES	
TOWNSHIPS, BASE LINES, ETC.	
LOTS, MINING CLAIMS, PARCELS, ETC.	
UNSURVEYED LINES	
LOT LINES	
PARCEL BOUNDARY	
MINING CLAIMS ETC.	
RAILWAY AND RIGHT OF WAY	
UTILITY LINES	
NON-PERENNIAL STREAM	
FLOODING OR FLOODING RIGHTS	
SUBDIVISION OR COMPOSITE PLAN	
RESERVATIONS	
ORIGINAL SHORELINE	
MARSH OR MUSKIEG	
MINES	
TRAVERSE MONUMENT	

DISPOSITION OF CROWN LANDS

TYPE OF DOCUMENT	SYMBOL
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 PERMITS FOR COMMERCIAL TOURISM, OUTPOST CAMPS	

NOTE: MINING RIGHTS IN PARCELS PATENTED PRIOR TO MAY 8, 1913, VESTED IN ORIGINAL PATENTEE BY THE PUBLIC LANDS ACT, R.S.O. 1970, CHAP. 330, SEC. 43, SUBSEC. 1.

SCALE: 1 INCH = 40 CHAINS



ACRES	HECTARES
40	16

TOWNSHIP

**MATTAWAN**

M.N.R. ADMINISTRATIVE DISTRICT

**NORTH BAY**

MINING DIVISION

**SUDBURY**

LAND TITLES / REGISTRY DIVISION

**NIPISSING**



Ministry of Natural Resources  
 Land Management Branch

Date: OCTOBER 1984

Number

**G-1633**

