Report on Detailed Geological Mapping and Sampling of the Pakeagama Lake Rare Metals Property of Houston Lake Mining Inc.

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1.0 Introduction

The Pakeagama Lake Rare Metals Property is located in the Red Lake Mining District of Ontario. The 256 hectare (632 acre) property is under option to Houston Lake Mining Inc. and covers all known outcroppings of the Pakeagama Lake pegmatite.

The Pakeagama Lake pegmatite is a recent discovery of the Ontario Geological Survey and has been identified as a large complex type, petalite sub-type pegmatite. The pegmatite was found to be of large size (minimum 260 metres and a width of 30 to 70 metres) and strongly zoned. A large geochemical database of 1648 electron microprobe analyses, 50 bulk chemical analyses, 21 analyses of potassium feldspar and X-ray diffraction work has carried out on 30 samples by the Ontario Geological Survey prior to this report (F. Breaks, A. Tindle, and S. Smith, 1999b). The geochemical analyses depicted a highly evolved, complex-type, petalite subtype pegmatite with highly anomalous to economically significant values of tantalum, cesium, rubidium and lithium (F. Breaks, A. Tindle, and S. Smith, 1999a).

This report is a result of two separate field visits by the author to the Pakeagama Lake property of Houston Lake Mining Inc. The purpose of the property visits was to follow up recommendations of the Qualifying Report (Siriunas, 1999), to provide field verification of the potential for economic rare metal mineralization, and to evaluate the terrain in terms of effectiveness of proposed exploration methodology. The first visit on June 24, 1999 involved orientation, subsequent detailed geological mapping of a large exposure of pegmatite and documentation of sample collection methodology of the Ontario Geological Survey. The second visit on August 7, 1999 saw the completion of detailed mapping of the pegmatite and collecting representative hand sample specimens of the pegmatite zonation. The locations of 24 samples collected by the Ontario Geological Survey during the visit were documented and splits of the samples were submitted by Houston Lake Mining Inc. for analysis at Chemex Labs of Mississauga, Ontario. Channel sampling focused on two prospective zones while several other features were grab sampled. The results of sampling are presented in this report (Appendix 1) and discussed in light of their geological setting and economic attributes. Total expenditures of $18,041.46 are documented in Appendix 4.

The author is deeply indebted to Dr. Fred Breaks of the Ontario Geological Survey ("OGS") and Dr. Andy Tindle of Open University of the United Kingdom for guidance and assistance in the orientation and completion of this work. The author's current level of understanding of the Pakeagama Lake pegmatite is largely based on the solid foundation laid by the OGS work. The excellence of the OGS documentation of the pegmatite is such that the author finds the present report merely serves to verify the previous OGS findings.

Figure 1. General Location Map of the Pakeagama Lake Property.

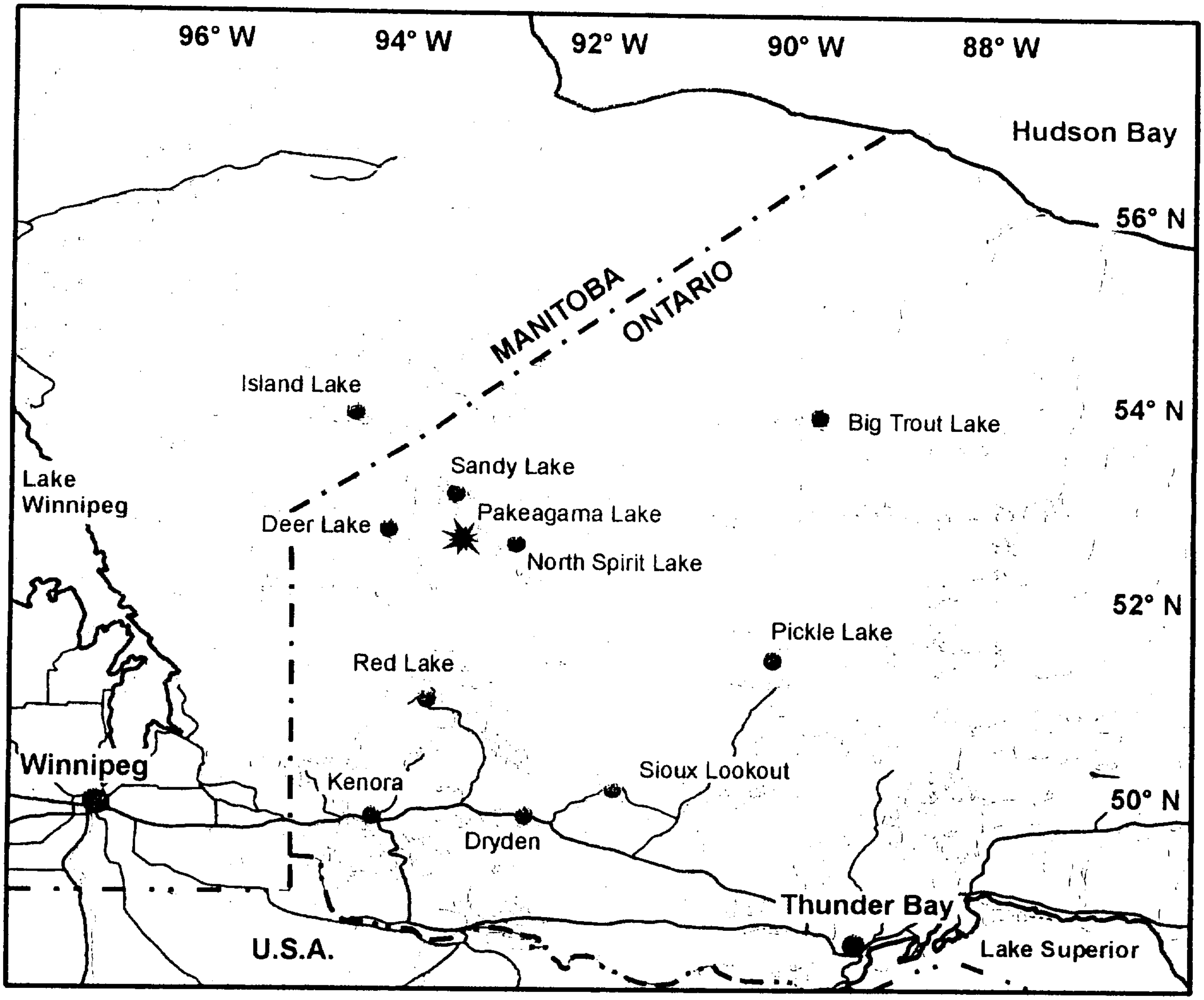


FIGURE 1: Location of the Pakeagama Lake area in northwestern Ontario. Base map Lambert Equal-Area ©1999 Government of Canada with permission from Natural Resources Canada.
Approximate scale at centre of map: 2° Longitude = 132 km, 2° Latitude = 219 km.

2.0 Property Description and Climate

2.1 Property Location, Description and Access

The Pakeagama Lake area is located approximately 170 km. north of Red Lake, Ontario. The property lies within NTS 53C/11 at 52°36'N Latitude and 93°23'N Longitude. The magnetic declination was approximately 1° East in 1990. The general location is presented in Figure 1.

The 256 hectare (632 acre) property comprises one sixteen unit unpatented mining claim block numbered 1231441. This claim is located in the Pakeagama Lake Area of the Red Lake Mining District of northwestern Ontario. The claim was recorded on July 30, 1998 in the name of Mr. John Gregory Brady. The property was optioned to Houston Lake Mining Inc. who is required to issue 200,000 common shares, make cash payments totaling $150,000 and expend $63,000 in exploration over the three year term to earn its 100% working interest subject to a 2.5% net smelter royalty (Houston Lake Mining Inc., 1999a). The property is surrounded by claims which are recorded in the name of Emerald Fields Resource Corporation of Kenora, Ontario (see Figure 2).

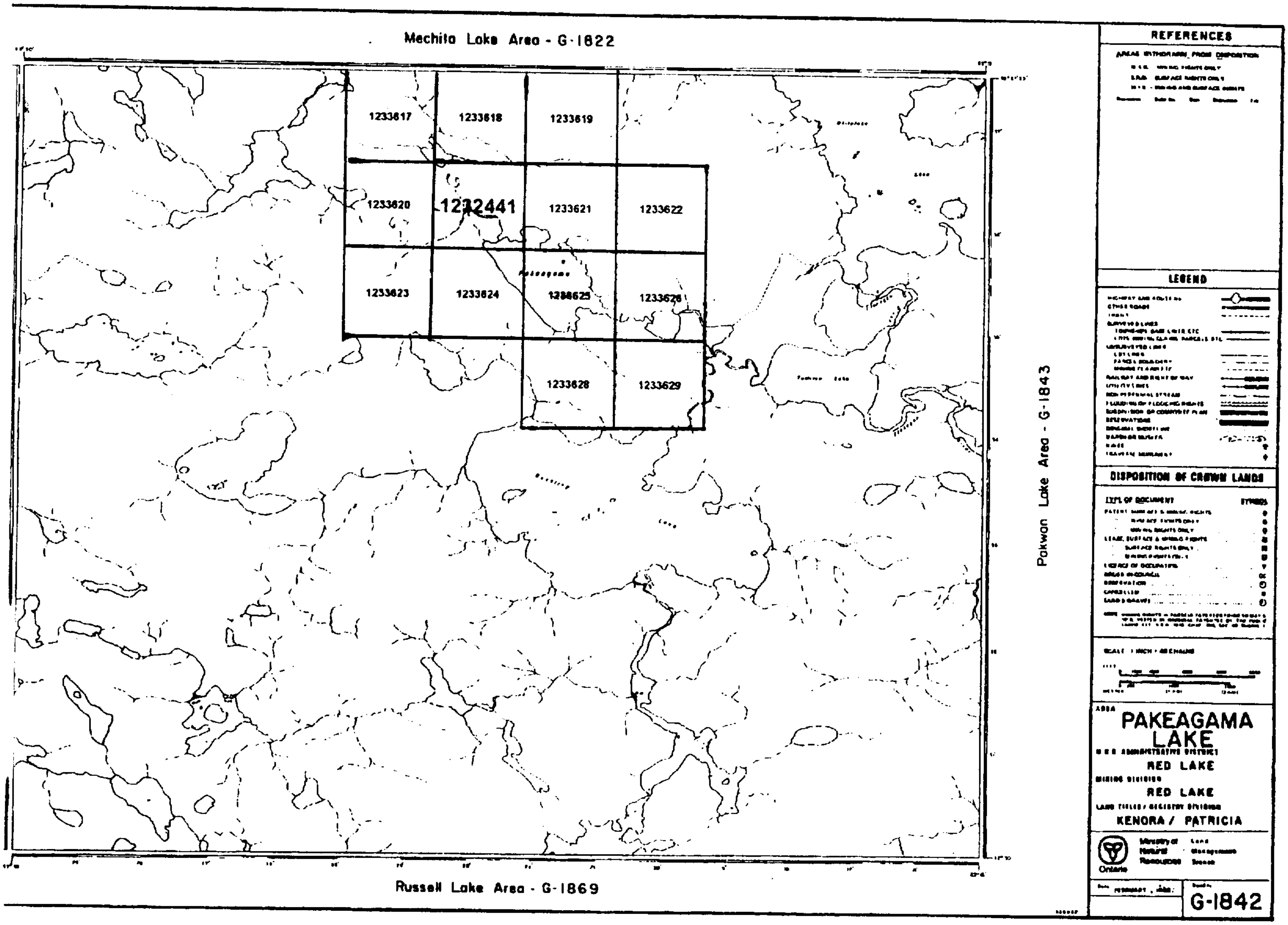
The Pakeagama Lake area is located in a relatively remote area of northwestern Ontario distant from all-weather road access. However, a winter road connecting Red Lake to the northern aboriginal communities of Deer Lake and North Spirit Lake passes within ten km. of the property. Pakeagama Lake is large enough to accommodate float-equipped aircraft from Red Lake, the nearest charter base. Bearskin Airways does provide scheduled air service to the First Nations communities of Deer Lake (39 km WNW), North Spirit Lake (27 km. ESE) and Sandy Lake (45 km. NNW).

2.1 Climate and Local Resources

The Pakeagama Lake area lies at the northern boundary of the Lac Seul Upland ecoregion and the southern boundary of the Hayes River Upland ecoregion of the Boreal Shield. The region is classified as having a subhumid mid-boreal ecoclimate (Ecological Stratification Working Group, 1998). The Pakeagama Lake area lies between four data stations which are located at Island Lake (Manitoba), Red Lake (Ontario), Pickle Lake (Ontario), and Big Trout Lake (Ontario) for which extensive climatic records are available from Environment Canada. The average mean annual temperature is -0.9°C. The average daily temperature in summer is from 8.9°C to 19.2°C while in winter the average range is from -20.3°C to -11.6°C. Average yearly precipitation for the area is 655 mm.

The dominant vegetation is coniferous forest. The area has seen a forest fire approximately 15 years ago and deadfall inhibits easy foot travel. Higher elevations are covered by stands of jack pine up to 20 feet high while swampy areas are dominated by black spruce. Upland areas are covered with discontinuous deposits acid, sandy tills while thin lacustrine clay deposits may cap the tills in low-lying areas. Wildlife includes wolf, lynx, moose, black bear, red squirrel, snowshoe hare, beaver, mink, fisher, marten, and ermine. The area lies north of the Government of Ontario's "Lands for Life" and "Living Legacy" programs of conservation and wilderness preservation.

Figure 2 Claim Map of the Pakeagama Lake Property



3.0 Previous Work

The geology of the region was first covered by a reconnaissance mapping survey by A. P. Low of the Geological Survey of Canada in 1886. Geological surveys were undertaken by the Ontario Department of Mines with G. V. Douglas in 1925 and M. E. Hurst in 1928.

Most of the exploration activity in the region centered on the Favourable and Setting Net Lakes area located 25 to 40 km to the northwest of the property. Prospecting by K. C. Murray in 1927 identified gold-bearing mineralization in the Favourable Lake area. The gold property was developed as the Berens River Mine and produced 4,451 kg Au, 160,926 kg Ag, 2,770 t Pb and 815,147 kg Zn from 508,665 t of ore between 1939 and 1948 (Stone, 1998). Subsequent exploration by Golsil Mines Limited, Zahavy Mines Limited, Getty Mines Limited and Noramco Mines Ltd. was carried out until the early 1990's.

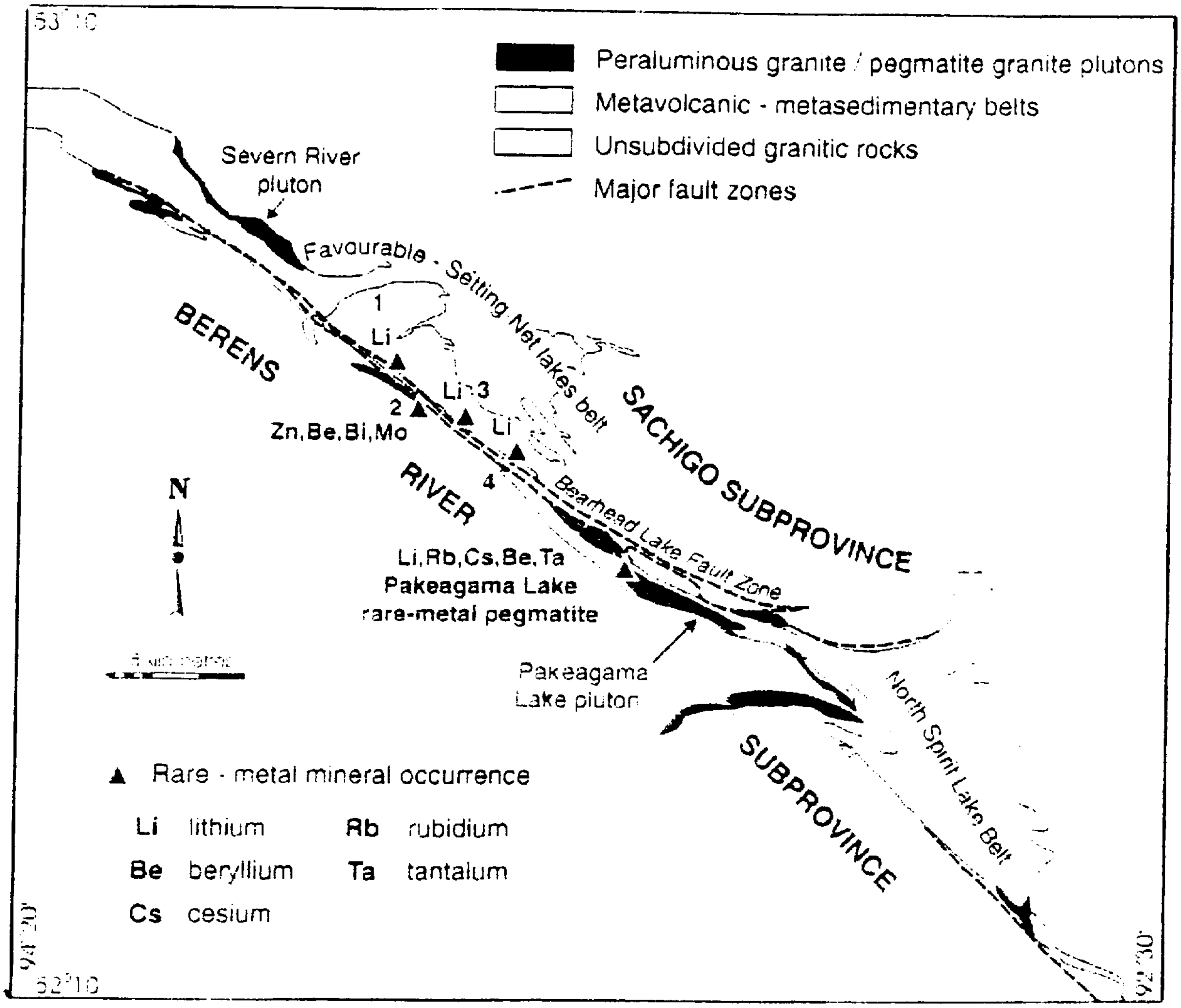
A gold showing known as the Wynne is present on the eastern shore of Pakeagama Lake. However, no records of any previous assessment work have been filed from the vicinity of Pakeagama Lake.

The property area was covered by an airborne reconnaissance gamma-ray spectrometer survey in 1977 as part of a regional coverage program (OGS-GSC, 1979). The survey was flown at a 400-ft elevation with a 5-km line spacing with a 2.2 km station interval. No significant radiometric anomalies were detected in the immediate vicinity of Pakeagama Lake.

Geological mapping of portions of the region was carried out by Ayres (1970, 1972a). He noted spodumene in a pegmatite dike and holmquistite within granitic rocks near Setting Net Lake (25 km WNW of Pakeagama Lake). A grab sample from the pegmatite dike returned 0.52% Li (Ayres, 1972b). Recent mapping of the region was carried out by D. Stone of the Ontario Geological Survey in 1990 (Stone et al, 1993, Stone, 1998). Tourmaline-rich samples taken from the vicinity of Pakeagama Lake returned anomalous Li, Cs, Ta and Be during this work.

Detailed follow-up work was carried out by Breaks et al (1999a) in the vicinity of Pakeagama Lake. Five rare metal mineral occurrences were detected over a 35 km segment of the Bear Head Fault Zone (see Figure 3). However, the Pakeagama Lake pegmatite occurrence became the predominant focus of this detailed work and will be discussed further in this report.

Figure 3. Rare Metal Occurrences in the Vicinity of the Pakeagama Lake Property.



4.0 Regional Geology

The property area straddles the boundary between the Berens River and Sachigo Subprovinces of the Archean-age Superior Province of the Canadian Shield. These subprovinces comprise a series of relatively isolated volcano-sedimentary ("greenstone") belts surrounded by extensive granitic and gneissic suites of rock.

The Favourable Lake greenstone belt lies to the north of Pakeagama Lake and North Spirit Lake greenstone belt lies to the south of the property (see Figure 3). These belts are connected through the Pakeagama Lake area by a major fault (Bear Head Fault) which forms the boundary between subprovinces. Five main assemblages of volcanic and sedimentary rocks are identified in each belt. These assemblages are, in part, correlated across the two belts.

The Bear Head Fault is the dominant structural feature in the region and has been traced for over 140 km from NW-SE. The fault is composed of several hundred metre thick zone of mylonite. The presence of cataclasites, tension gashes infilled by vuggy quartz-epidote-adularia and potassic alteration indicate that brittle deformation has been superimposed on the mylonites. A dextral transcurrent dislocation the Bear Head Fault has been interpreted from microstructures. The regional gneissocity trends NW-SE and generally are steeply dipping inward towards the core of the volcano-sedimentary assemblage in the vicinity of Pakeagama Lake.

The assemblages of the Favourable Lake and North Spirit Lake areas are predominantly in greenschist facies of metamorphism. However, a transition to amphibolite facies in the greenstone belts occurs as the Bear Head Fault Zone is approached. Amphibolite facies is the predominant metamorphic grade in the Pakeagama Lake vicinity.

The Bear Head Fault Zone is the locus for a peraluminous suite of granitic plutons. Five major plutons of two-mica granites (fertile granites) are documented over the 140 kilometer strike length of the fault. Fertile granites are interpreted to be the source rocks for rare metal mineralization.

5.0 Property Geology

5.1 General Property Geology

The property is underlain by the northwestern extension of the North Spirit Lake greenstone belt. The greenstone belt is approximately 2 km. wide in the vicinity of the property and composed of gneissic to pillowed mafic volcanics and conglomerates with minor iron formation (Stone et al, 1993). The greenstone rocks are bounded to the north by biotitic tonalites and granites of the Whiteloon Lake Batholith and to the south by gneissic granodiorites and granites of the Bearhead Lake Batholith.

The volcano-sedimentary assemblages have been intruded by the Pakeagama Lake pluton, an elongate mass of peraluminous garnet-muscovite-biotite granite. The pluton is approximately 2 km. wide and 15 km. long and is juxtaposed between the metasedimentary rocks to the north and the mafic metavolcanics to the south. The pluton expresses a weak to moderate foliation and lineation and is medium to coarse-grained. A transition from dominantly biotitic to increasingly muscovitic granite occurs from southeast to northwest along the length of the pluton.

The property can be divided into three main lithological domains. The northeast third of the claim block is dominantly of metasedimentary origin and composed of pelitic sediments, iron formation and conglomerate. The southwest third is comprised dominantly of mafic volcanics. The Pakeagama Lake pluton dominates the southeastern third and appears to pinch out in the central northwestern third of the property.

A zoned pegmatite body occurs near the margins of the Pakeagama Lake pluton in the south central portion of the property. The pegmatite is the focus of the current study and the only portion of the property that has been mapped in detail. The pegmatite will be described in the follo. Muscovite and tourmaline-bearing pegmatites and aplites may occur up to 1 km. from the main pegmatite mass (F. Breaks, A. Tindle, and S. Smith, 1999a).

5.2.0 Geological Mapping Program

5.2.1 Introduction

Work presented in this report has focused on an extensive outcrop/group of outcrops located in the south central portion of the property. Here, the Pakeagama Lake pegmatite and the host granite are well exposed on a low hill. The pegmatite can traced for some 260 metres along strike and has a width which varies from 30 to 70 metres over the exposed length.

A 1,450 metre chain and compass grid was set up with a base line striking 125°. The grid has a line-spacing of 50 metres and station spacing of 25 metres which acted as control for the mapping and sampling program. The mapping was carried out on the June 24, 1999 visit to the property and completed on August 7, 1999. Spatial relationships of the lithological units were noted in the field. Where possible, representative hand samples were taken and later described to further document the salient features of the mapped units.

The currently known dimensions of the Pakeagama Lake pegmatite are largely contained within the confines of the Pakeagama Lake granitic pluton. However, a banded iron formation forms an apparent northern boundary to the pegmatite. Five prominent pegmatite zones have been depicted during the course of geological mapping which confirms earlier Ontario Geological Survey work (F. Breaks, A. Tindle, and S. Smith, 1999a). From northeast to southwest and perpendicular to the strike of the pegmatite the zones include a Stacked Aplite Zone, a Kfeldspar-Petalite Zone, an intermediate Potassic Pegmatite Zone, a Spodumene-Quartz Core Zone and a Wall Zone.

5.2.2.0 Map Units

5.2.2.1 Banded Iron Formation (Map Unit 1)

Banded iron formation (BIF) forms the northern contact with the pegmatite. The BIF is greater than 20 metres wide. Several large xenoliths of BIF (up to 80 metres long and 15 metres wide) are included within the main pegmatite mass and occur close to the northern contact.

The BIF is composed of dominantly oxide facies (55-60%), silicate facies (30-35%) and minor sulphide facies (less than 10%). Layering trends 105° east and dips are 80-85° to the south paralleling the local contact with the pegmatite.

5.2.2.2 Pakeagama Lake Granite (Map Unit 2)

Pakeagama Lake granitic pluton is 15 km long by 2 to 3 km wide and composed of a peraluminous, biotite-muscovite granite. The pluton changes from dominantly biotite-bearing in the southeast to a biotite-muscovite granite in the northwestern portions of the intrusion (Stone et al, 1993).

On the property the granites of the Pakeagama Lake pluton are found to be weakly to moderately foliated, medium to coarse grained and granoblastic in texture. Accessory garnet (trace to 1%) is indicative of amphibolite grade metamorphism. The foliation is expressed by the interstitial alignment of muscovite and biotite (5-8% of the host rock) and fine grained aggregates of magnetite/oxide (3-5%). Muscovite is not reported in the southeastern portion of the Pakeagama Lake pluton (Stone et al, 1993). Lineations are highly variable in plunge and generally have an azimuth which is generally confined to a

NW-SE direction in conformity with the Bear Head Fault Zone and lithological layering of the regional trend of the surrounding volcano-sedimentary assemblages. The foliation planes of the granite are apparently S-folded as parallel dikes related to the Pakeagama Lake pegmatite occasionally display S-shaped folds yet appear to have an igneous rather than a granoblastic texture.

5.2.2.3 Holmquistite-Bearing Granite (Map Unit 2a)

The holmquistite granite occurs in two locations. The first location is confined to the vicinity of the southwestern contact with the pegmatite and extends up to 60 cm into the host granite. The second locality is a wide area of granite exposed to the southwest of the pegmatite. The holmquistite granite commences 7 to 30 metres perpendicular to the pegmatite/granite contact and extends for approximately 120 metres from the contact to the mapped outcrop limits.

Proximal to the Pakeagama Lake pegmatite overgrowths of holmquistite, a lithian amphibole, are present in the Pakeagama Lake granite (see Appendix 3, Hand Sample GA99-4a, 4b). Holmquistite forms whispy and elongate to acicular crystals (2-5%), are 5mm to 2 cm in long dimension which are strongly discordant to the foliation and granoblastic texture of the granite in the vicinity of the contact. Holmquistite is weakly discordant to the foliation of the granite and overgrow the granoblastic texture in the second location.

5.2.2.4 Pakeagama Lake Pegmatite (Map Unit 3)

5.2.2.4.1 General Description

The Pakeagama Lake pegmatite occurs at the extreme northwestern end of and is generally contained within the Pakeagama Lake granitic pluton. The pegmatite is exposed on a small hill in the south-central portion of the property.

The Pakeagama Lake pegmatite is the second largest complex-type petalite sub type pegmatite dike in Ontario (F. Breaks, A. Tindle, and S. Smith, 1999a). The relatively fresh-appearing pegmatite dike has irregular steeply dipping contacts with the weakly foliated garnet-muscovite-biotite granite host rock. A 130° strike is inferred from the coincidence of the exposed 260 metre strike length, the weak foliation in the host granite and the general trend of the Bear Head Fault. The pegmatite is open along strike in both directions.

The width has been previously reported as 10 to 30 metres (F. Breaks, A. Tindle, and S. Smith, 1999a). However, detailed mapping indicates that a width of 30 to 70 metres may be more appropriate. Hand stripping of previously interpreted contact areas have identified a number of large (greater than 10 metre) inclusions of granite which are totally surrounded by pegmatite. The dike is 30 metres wide at its southeastern-most extremity and tapers to a 50 metre width at the northeastern-most edge of the large outcrop.

Five major internal pegmatite zones have been depicted during the course of geological mapping. The zones are differentiated on the basis of composition and texture. The zones are not symmetrically arrayed about the core zone, may be discontinuous and often interfinger. The overall zonal symmetry may partially be obscured by the numerous roof pendants contained within the pegmatite body. Minor replacement veins occur with irregular orientations in the host pegmatite.

Aplite and pegmatite dikes are abundant in the surrounding granite and are prominent in the holmquistite granite to the southwest of the pegmatite. Aplite dikes are noted on the shore of Pakeagama Lake 300 metres along strike to the southwest of the main pegmatite body.

5.2.2.4.2 Stacked Aplite Zone (Map Unit 3a)

The Stacked Aplite Zone occurs along the extreme northern portion of the mapped pegmatite. The zone is 13 to 25 metres wide and has sharp contacts with the surrounding banded iron formation, Kfeldspar-Petalite Zone, and inclusions of iron formation and granite. The presumed contact area is marked by a sharp increase in the number of large inclusions of iron formation. Dike material persists to the northernmost extreme of the exposure and may continue further to the north.

The Stacked Aplite Zone is composed of a coarsely laminated to medium bedded layering (2 cm to 50 cm thick) of whitish-beige aplite (50%) alternating with spodumene-quartz rich layers (50%). The regularity of the layering is occasionally interrupted by spodumene-rich aggregates up to 20 cm in diameter. Oxide minerals form up to 1% of the rock.

5.2.2.4.3 Kfeldspar-Spodumene-Quartz Zone (Map Unit 3b)

The Kfeldspar-Spodumene-Quartz Zone (KSQZ) is predominant in the northern exposed area of the pegmatite and lies to the south of the Stacked Aplite Zone. KSQZ appears to form the contact zone with granite along the northeastern contact. Here, it is complexly intercalated with roof pendants of granite and apophyses of granitic country rock. This zone may reach 30 metres in width.

The KSQZ is characterized by abundant elongate tan-coloured spodumene-quartz intergrowths (SQUI) up to nearly 6 metres by 1.5 metres in size which comprise 35 to 50% of the host rock. The SQUI is interpreted as megacrystic pseudomorphs after petalite. Blue-grey, blocky megacrysts of K-feldspar form the bulk of this zone and are found up to 1 metre in size. K-feldspar appears to have been the amongst the first minerals to crystallize as the megacrysts may be overgrown by SQUI. Minor deep greenish tourmaline (elbaite?) and quartz dominate the interstices. Oxides are present in trace amounts in the matrix.

5.2.2.4.4 Potassic Pegmatite Zone (Map Unit 3c)

The Potassic Pegmatite Zone is an important constituent of the central portions of the pegmatite body. The zone forms an intermediate zone up to 15 metres in width and over 100 metres long between the Spodumene-Quartz Core Zone and the Kfeldspar-Spodumene-Quartz Zone to the north and the Wall Zone to the south.

The Potassic Pegmatite Zone is characterized by a marked predominance of k-feldspar over spodumene + quartz and is distinguished from the Kfeldspar-Spodumene-Quartz Zone on this basis. Bluish-grey, equant k-feldspar crystals may reach over 1 metre in size and comprise 75-90% of the rock. Spodumene + quartz intergrowths ,10-20% of the rock, form up to 1 metre-sized subhedral pseudomorphs after petalite. Quartz and greenish elbaite are minor constituents and confined to the matrix between the megacrysts.

5.2.2.4.5 Spodumene-Quartz Core Zone (Map Unit 3d)

The Spodumene-Quartz Core Zone occurs at the extreme southeastern end of the large exposure of pegmatite where it has contacts with the Wall Zone to the southwest and the Potassic Pegmatite Zone to the northwest. The northeastern contact is not exposed. The Spodumene-Quartz Core Zone is up to 15 metres wide and has an exposed strike length of approximately 20 metres. The zone is open along strike to the southeast.

The Spodumene-Quartz Core Zone is composed of mainly spodumene, 55-60%, and quartz, 35-40% which have an interlocking texture (see Appendix 3, Hand Sample GA99-3a, 3b). The quartz component forms lamellar fabric (exsolved?) to bleb-like inclusions in spodumene. The spodumene-quartz intergrowths (SQUI) are interpreted as pseudomorphic after petalite. Subhedral blocky to slightly prismatic pseudomorphs after petalite may reach a half meter by 1 metre in size. Spodumene is tan-coloured on a weathered surface and whitish on a fresh surface which may indicate a low iron content. The interstices between pseudomorphs are infilled by quartz aggregates (5%) with minor euhedral, whitish beige and recessive-weathering montebrasite (up to 1%), euhedral fine-grained, dark green elbaite (trace to 1%), and mauve lithian mica (trace to 1%), and trace blackish to orange weathering oxide minerals. Rare blocky k-feldspar crystals also occur in the core zone. Irregular, whispy to anastomizing quartz + albite veinlets (up to 6 mm thick) crosscut the spodumene-quartz intergrowths.

Analysis of 5 channel samples spanning 4.8 metres of the Spodumene-Quartz Core Zone are reported to contain a range of 4.33 to 4.79% Li_2O. This lithium composition fits the interpretation of spodumene + quartz pseudomorphic after petalite (F. Breaks, A. Tindle, and S. Smith, 1999a).

5.2.2.4.6 Wall Zone (Map Unit 3e)

The Wall Zone is found only in the southeastern portions of the exposed pegmatite. The zone is generally interposed between the Pakeagama Lake granite host rock and either the Spodumene-Quartz Core Zone or the Potassic Pegmatite Zone along the southwestern contact of the pegmatite. A second section of Wall Zone is poorly exposed near the northeastern contacts and appears to be enveloped entirely by the Potassic Pegmatite Zone. The Wall Zone has sharp contacts with the granite and core zone yet grades into the Potassic Pegmatite Zone. The southeastern Wall Zone is exposed over 40 metres along strike which is open to the southeast and attains a width of 13 metres which remains open to the southwest.

The Wall Zone is composed of 70 to 80% whitish to greyish quartz crystals up and aggregates up to 10 cm. in size, 5 to 10% blocky k-feldspar may attain 25 cm. in diameter, 5 to locally 10% deep blue, recessive-weathering and elongate fluorapatite crystals to 4 cm. in length, 3to 5% patches of a mauve lithian mica, 2-3% whitish beige subhedral montebrasite which forms aggregates and individual crystals that may reach 3 cm. in diameter, up to 1% transparent white to pink euhedral beryl crystals up to 3 cm in length, 1% deep green elongate (elbaite?) tourmaline crystals up to 3mm. in length, and 1 to 1.5% dark grey to black oxide fine-grained minerals that are occasionally orange weathering (see Appendix 3, Hand Sample GA99-1, and 2a, 2b). Rare whitish amblygonite forms large subhedral crystals up to 5 cm in size.

With increasing k-feldspar content the Wall Zone grades into the potassic Pegmatite Zone. A bulk sample of the Wall Zone returned economically interesting values of 0.05% Ta2O5, 1% Rb20, 1% Li20 and 1% F, and an extremely low K/Rb ratio of 4.5 and an Nb/Ta ratio of 0.144 which approaches the ratio of the Tanco pegmatite (F.W. Breaks, A.G. Tindle, and S.R. Smith, 1999b).

5.2.2.4.7 Replacement Veins

Replacement veins are infrequently exposed in the Spodumene-Quartz Core Zone and the Wall Zone as pods and irregular veins. The veins extend from interstices between large pegmatitic crystals replacing earlier-formed crystals along crystal boundaries and crystal cleavages. The replacement veins generally have a roughly perpendicular orientation to the NW-SE trend of the pegmatite. The largest pod measures up to 1 metre in length and has a width of about 35 cm.

The replacement veins are composed of dominantly of quartz (80-85%) and lithian mica (15-20%). Occasionally orange weathering, black oxide minerals attain 1 to 2% of the replacement vein.

5.2.2.4.8 Aplite (Map Unit 3f) and Pegmatite (Map Unit 3g) Dikes

Unmetamorphosed aplite and pegmatite dikes are found up to at least 300 metres away from the main mass of pegmatite. Proximal to the main exposure a number of dikes have several orientations both parallel and at angle to 125° trend of the Pakeagama Lake pegmatite. Parallel dikes occasionally inhabit S-folded foliation planes to the south of the pegmatite but appear to have an igneous rather than the granoblastic texture of the gneissic granite host.

Aplites are generally less than 5 cm. thick and composed of albite-muscovite margins with dark green (elbaite?) tourmaline crystals up 1 cm in long dimension inhabit the cores. Dikes may swell in thickness along strike and contain larger quartz-rich masses. Dark brown lithiophilite crystals and pods of white spodumene occasionally occur in some aplites. Most aplite dikes trend 125° and have steep dips though strike attitudes of 70° with moderate dips are noted. A 12 cm. thick aplite dike trends 265°/54°over 300 metres from the main pegmatite exposure on the shore of Pakeagama Lake. A 2.5 Kg. grab sample from the aplite assayed 0.07% Ta_2O_5.

Sparse dikes of potassic pegmatite generally have a 70-80° strike and are steeply dipping. Potassic pegmatites are composed of K-feldspar, dark green elbaite (?), quartz, albite, and sericite. Approximately 120 metres south of pegmatite mass, a potassic pegmatite dike trends roughly 75-80° for over 8 metres. The dike infills an extensional fracture and has irregular contacts with Pakeagama Lake granite. Where the potassic pegmatite expands to its greatest width of 40 cm., the core is dominated by large euhedral cesium pollucite crystals (up to 7 cm. in diameter). This is only the fourth occurrence of the cesium-bearing ore mineral pollucite in Ontario (F.W. Breaks, A.G. Tindle, and S.R. Smith, 1999a).

6.0 Economic Geology

6.1 Granitic Pegmatites

Granitic pegmatites are those pegmatites derived from granitic intrusions. They may be divided into classes, types and families on a combination of criteria. The criteria include minor elements present and the relative concentrations of minor elements (i.e. tantalum to niobium), geological setting and metamorphic grade (see Table 1). The rare element class of granitic pegmatites is the only grouping that has significant economic potential. Further discussion will focus on this class.

Table 1 The Four Classes of Granitic Pegmatite (modified after Cerny, 1991a).

Class	**Family**	**Typical Minor Elements**	**Metamorphic Environment**	**Relation to Granites**	**Structural Features**	**Examples**
Abyssal	-	U, Th, Zr, Nb, Ti, Y, REE, Mo poor (to mod.) mineralization	upper amph. to low- to high P granulite facies, 4-9 Kb,700-800°C	none anatectic leucosome	conform-able to x-cutting veins	Rae & Hearne, Sask., Siberia Baltic
Muscovite	-	Li, Be, Y, REE, Ti, U, Th, Nb>Ta, poor mineralization, micas & ceramic minerals	high-P, Barrovian amph. Facies (kyanite-sillimanite) 5-8 Kb, 650-580°C	none (anatectic bodies) to marginal and exterior	conform-able to x-cutting	White Sea, USSR Appalachian Province, Rajahstan, India
Rare-element	LCT	Li, Rb, Cs, Be, Ga, Sn, Hf, Nb, Ta, B, P, F, poor to abundant min; ceramic minerals	low-P, Abukuma amph. (to upper greenschist)facies; (andalusite-sillimanite) 2-4 Kb, 650-500°C	(interior to marginal to) exterior	Quasi-conformable to x-cutting	Yellowknife field, NWT Black Hills, SD Cat Lake., Manitoba
	NYF	Be, Y, REE, Ti, U, Th, Zr, Nb>Ta, F; poor to abundant min., gemstock	variable	interior to marginal	interior pods, conformable to x-cutting bodies	Llano, Texas S. Platte Distr., Colorado W. Kievy, Kola USSR
Mariolitic	NYF	Be, Y, REE, Ti, U, Th, Zr, Nb>Ta, F; poor min., gemstock	shallow to sub-volcanic, 1-2 Kb	interior to marginal	interior pods and x-cutting dikes	Pikes Peak, Colorado, Idaho Korosten pluton, Russia

6.2 Rare-Element Pegmatites

6.2.1 Classification

Table 2 Classification of Pegmatites of the Rare-Element Class (modified after Cerny, 1991a).

PEGMATITE TYPE (feldspar + mica content)	**Pegmatite sub-type, geochem. Signature**	**Typical minerals**	**Economic potential**	**Typical Examples**
RARE-EARTH Kf>plag to ab; bi>mosc	*allanite-monazite* (L)REE, U, Th (P, Be, Nb>Ta)	allanite monazite	(REE)	Upper Tura River, Ural Mtns. West Portland, Quebec Kobe, Japan
	gadolinite Y, (H)REE, Be, Nb>Ta F(U, Th, Ti, Zr)	gadolinite fergusonite euxenite (topaz) (beryl)	Y, REE, U (Be,Nb-Ta)	Shatford Lake group, Manitoba Ytterby, Sweden Evje-Iveland field, Norway Barringer Hill, Texas Pyoronmaa, Finland
BERYL Kf>ab; musc>bi	*beryl-columbite* Be, Nb> < Ta (Sn, B)	beryl columbite-tantalite	Be (Nb-Ta)	Meyers Ranch, Colorado Greer Lake group, Manitoba Donkerhoek, Namibia Ural Mountains, USSR
	beryl-columbite -phosphate Be, Nb<>Ta, P (Li, F, Sn, B)	beryl-columbite-tantalite triplite triphylite		Hagendorf-Sud, Germany Dan Patch, South Dakota Connecticut localities Crystal Mtn. Field, Colorado
COMPLEX Kf<>ab; musc<>lep	*spodumene* Li, Rb, Cs, Be, Ta<>Nb (Sn, P, F, B)	spodumene beryl tantalite (amblygonite) (lepidolite) (pollucite)	Li, Rb, Cs, Be, Ta (Sn, Ga, Hf)	Harding, New Mexico Hugo, South Dakota Mongolian Altai #3 Etta, South Dakota White Picacho, Arizona Manono, Zaire
	petalite Li, Rb, Cs, Be, Ta>Nb (Sn, Ga, P, F,B)	petalite beryl tantalite (amblygonite) (lepidolite)		Tanco, Manitoba Bikita, Zimbabwe Varutrask, Sweden Luolamaki, Hirvikallio, Finland Londonderry, Australia
	lepidolite F, Li, Rb, Cs, Be Ta>Nb (Sn, P, B)	lepidolite topaz beryl microlite (pollucite)	Li, Rb, Cs, Ta, Be (Sn, Ga)	Brown Derby, Colorado Pidlite, New Mexico Himalaya District, California Khukh-Del-Ula, Mongolia Wodgina, Australia
	amblygonite P, F, Li, Rb, Cs, Be, Ta>Nb (Sn, B)	amblygonite beryl tantalite (lepidolite) (pollucite)	Li, Rb, Cs, Ta, Be (Sn, Ga)	Viitaniemi, Finland Malakialini, Madagascar Peerless, South Dakota Finnis River, Australia
ALBITE-SPODUMENE ab>Kf; musc	Li (Sn, Be, Ta<>Nb, B)	spodumene (cassiterite) (beryl) (tantalite)	Li, Sn (Be, Ta)	Kings Mountain, North Carolina Preissac-Lacorne, Quebec Peg Claims, Maine Volta Grande, Brazil
ALBITE ab>Kf; ms, lep	Ta<>Nb, Be (Li, Sn, B)	tantalite beryl (cassiterite)	Ta (Sn)	Hengshan, China USSR Tin Dyke, Manitoba

Rare element pegmatites are subdivided from a paragenetic-geochemical viewpoint (see Table 2) using different criteria: bulk chemistry, geochemical signature of accessory minerals, internal structure, P-T conditions of crystallization. The sequence from rare-earth to complex type is based on bulk plus trace composition. The sub-types of complex type are defined by P-T conditions and in part by chemical potentials of subordinate anions. This subdivision of rare-element pegmatite class provides orientation among and within diverse pegmatites on a broad to local regional scale.

Table 3 presents a breakdown of rare-element pegmatites into three families (LCT, NYF and mixed) to emphasize petrochemical differences among the families. Pegmatite families are characterized by their bulk composition, typical assemblages of trace elements, and types of granites associated with them.

Table 3. The Three Petrogenetic Families of Rare-Element Pegmatites (modified after Cerny, 1991a).

Family	**Pegmatite Types**	**Geochem. Signature**	**Pegmatite Bulk Composition**	**Associated Granites**	**Granite Bulk Comp.**	**Source Lithologies**	**Examples**
LCT	Beryl Composite (albite-spodumene, albite)	Li, Rb Cs,Be,Sn, Ga Ta>Nb(B, P,F)	peraluminous	(synorogenic to) late orogenic (to anorogenic) largely heterogenous	peraluminous, S,I or mixed S+I types	undepleted upper to middle crust supracrustals and gneisses	Bikita Field, Zimbabwe Uto-Mysingen, Sweden
NYF*	Rare-Earth	Nb>Ta, Ti Y, Sc, REE, Zr, U, Th, F	subaluminous to metaluminous (to subalkaline)	syn-, late, post- to) mainly anorogenic ;homogenous	(peraluminous to) subaluminous to metaluminous; A & I types	depleted middle to lower crustal granulites, or undepl. juvenile pods	Shatford Lake,Man Bancroft-Renfrew. ON Lentz, Sweden
Mixed	X-bred LCT and NYF	mixed	metaluminous to moderately peraluminous	postorogenic to anorogenic moderately heterogenous	subalumi-nous to sl. Peralumi-nous, mixed geochem. signature	mixed protoliths or assimilation of supracrustals by NYF granites	Tordal, Norway Kimito, Finland Evje-Iveland, Norway

Notes

* This family includes miarolitic pegmatites

** Definitions: Peraluminous A/CNK>1 (Al_2O_3>CaO+Na_2O+K_2O), SubaluminousA/CNK=1, Metaluminous A/CNK<1
Peralkaline A/NK<1 (Al_2O_3<Na_2O+K_2O), Subalkaline A/NK=1

6.2.2 Regional Setting

Economic concentrations of rare metals in granitic pegmatites are restricted to the rare element class of pegmatites (Cerny, 1989b). Rare metals deposits are found only in the most fractionated pegmatites emanating from fertile granites (granites with high alkali, silica and aluminum content and low iron, magnesium and calcium).

Fertile granites and their pegmatite products tend to occur in the roots of orogenic belts formed by the collision of plate margins where erosion has revealed rocks formed at a depth of about 6 km. under conditions of high heat flow (lower amphibolite facies, Abukuma-type series of metamorphism). The fertile granites tend to be confined within linear belts of metasedimentary and metavolcanic rocks along faults, boundaries between major rock units, and other structural zones of weakness.

6.2.3 Local Scale

The crystallization of fertile granites yields a fractionated residual magma which is enriched in lithium, rubidium, cesium, thallium, tantalum, hafnium, gallium, germanium, boron, fluorine and phosphorus relative to that contained in the fertile granite. This fractionated residual magma is expelled out from the fertile granite source into the surrounding metasedimentary and metavolcanic rocks where it cools and consolidates to form a group of pegmatite bodies.

The pegmatite group derived from the fertile granite parent shows a progressive fractionation trend and chemical changes with distance from the fertile granite source. The most fractionated batches of pegmatite are the most mobile (enriched in boron, water, fluorine, phosphorus, lithium, rubidium, cesium, tantalum and beryllium) and tend to migrate the furthest from the fertile granite parent. The most fractionated of these pegmatites are the complex type pegmatites which includes the spodumene, petalite, lepidolite, and amblygonite subtypes.

Individual pegmatites are generally small and range from several metres long and 1 metre thick to economically interesting bodies hundreds of metres long and ten's of metres thick.

6.2.4 Internal Structure

The internal structure of pegmatites varies from homogenous to zoned. Zonation acts to concentrate rare metals into specific areas within the pegmatite. Zoned pegmatites may have up to nine different units with variable textures and mineral modes (Cerny, 1991b, Cerny et al, 1996). The most evolved zonation patterns are encountered in highly fractionated intrusions with complex rare metal mineralization (i.e. Varutrask, Hugo, Bikita and Tanco).

Distribution of zones is influenced by the shape, attitude and unit lithologies of individual intrusions. Most prominent bulges in complex pegmatites usually have the most evolved internal structure (up to nine zones) whereas constrictions may have few zones.

Most of the ore minerals of lithium, rubidium and cesium are found in the primary, intermediate and central zones. Early generations of beryllium and tantalum may also occur there but tend to concentrate in later units.

6.2.5 Mineral Indicators of Rare Metal Mineralization

A number of minerals in granitic pegmatites only occur in highly evolved pegmatites. Other minerals occur at several stages of pegmatite evolution but their properties (i.e. colour) are variable reflecting the degree of fractionation of the pegmatite (Cerny, 1989b).

Columbite-tantalite is dominant or exclusive niobium-tantalum (Nb>Ta) mineral of moderately fractionated pegmatites. It is only in complex pegmatites where the association of tantalum (Ta>Nb) minerals becomes conspicuously diversified.

Tourmaline is black in barren pegmatites, grading into blue and green in tin-, niobium- and tantalum-bearing albitized pegmatites, and the green, pink and colourless elbaite tourmalines indicate increased lithium, rubidium, and cesium potentials of complex pegmatites.

Beryl is greenish, yellow or brownish in colour in simple pegmatites, becoming pale-coloured to white with increasing fractionation, and white to pink with rare metals mineralization.

Green spodumene is typical of albite-spodumene pegmatites, white spodumene is characteristic of complex pegmatites, white spodumene + quartz after petalite are most typical of the rare element pegmatites. Blue apatite is indicative of at least Be, Nb-Ta mineralization and increase in intensity of blue colour with extent of rare-element mineralization.

Muscovite is usually brownish to dirty-green in poorly mineralized pegmatites. Yellowish-green to silvery muscovite is typical of beryl, niobium-tantalum bearing and complex pegmatites. The numbers of mica generations and their compositional diversity increase with progressive fractionation.

6.2.6 Geochemical Trends

A number of geochemical ratios are used to quantitatively show progressive fractionation: potassium/rubidium (K/Rb) in K-feldspar and (K/Rb), potassium/cesium (K/Cs) or magnesium/lithium (Mg/Li) in muscovite (Cerny, 1989b, G. Morteani and R. Gaupp, 1989). The K/Rb ratio in K-feldspar is a dependable and easily obtainable ratio which reflects the relative level of rubidium concentration (and consequently an indicator of potential rare metal mineralization) in fractionated pegmatites. In barren pegmatites the K/Rb ratio may be as high as 500 falling with increasing fractionation to near 10 in the most highly evolved complex pegmatites.

A comparison of K/Rb versus Cs in K-feldspar monitors two key rare metal elements. A plot of K/Rb versus Cs is an effective tool in characterizing the minimal threshold for potential economic mineralization.

6.2.7 Ore Deposits

Table 4. Production Reserves of Some Pegmatite Deposits
(Modified after Cerny, 1991a)

Deposit	**Production/Reserves**	**Comments**
Tanco, Manitoba	2.1 Mt, 0.216% Ta_2O_5 7.3 Mt, 2.76% Li_2O 0.3 Mt, 23.3% Cs_20 0.4 Mt, 0.20% BeO 0.5 Mt, 2.50% Rb_20	Pre-production reserves
Tin-spodumene belt, North Carolina	26 Mt, 1.5% Li_20 30.5 Mt, 1.5% Li_20	Reserves, Foote Min. Co. Reserves, Lithium Corp.
Bikita, Zimbabwe	10.8 Mt, 3.0% Li_20	Reserves
Kamativi, Zimbabwe	100 Mt, 0.114% Sn 100 Mt, 0.603% Li_20	Reserves
Greenbushes, Australia	28 Mt, 0.114% Sn 28 Mt, 0.043% Ta_20_5 28 Mt, 0.031% Nb_20_5 33.5 Mt, 2.55% Li_20	Proven and probable Reserves

Significant pegmatites possess reserves of 1 Mt to 100 Mt (Cerny, 1991a). Typical grades vary from 0.6% to 3.0% Li_2O (averaging 1.25% Li_2O), from 0.03% to 0.20% Ta_20_5 and from 0.04% to 0.20% BeO. Cesium grades of 23.3% and rubidium grades of 2.50%

are reported from small zones within the Tanco deposit, Manitoba. Reserves grading 0.11% Sn are reported from other select tin-rich deposits (Siriunas, 1999). The reserves of some rare metal pegmatite deposits are given in Table 4.

6.3 Pakeagama Lake Pegmatite Results

6.3.1 Present Work

6.3.1.1 Introduction

The collection of twenty-four samples was concluded by the Ontario Geological Survey ("OGS") during the author's June 24, 1999 visit on to the Pakeagama Lake property (see Appendix 1). Sample locations and sample descriptions were documented (see Appendix 2). Channel samples were chipped from between two channel saw cuts spaced 4 cm apart. Material between the saw cuts was chiseled out at a systematic depth to yield consistent and representative samples from the zones involved. Sample intervals were chained and believed to be accurate within 1 cm given the breakage of the rock involved. Grab samples contained at least 2.5 Kg of rock material. Little bias in grab sampling was possible because of the extremely fine grain size of the oxide portion of the samples.

Splits of these samples were obtained by the author as part of a prior agreement between OGS and Houston Lake Mining Inc. The samples were submitted for analysis by the author to Chemex Labs of Mississauga, Ontario. The samples were analyzed by the ICP method with an ICP-MS scan. Numerous values are reported which exceeded the limits of the ICP-MS methodology. The samples were then analyzed by ICP-MS in a meta-borate fusion with dissolution. The meta-borate fusion method was the more complete dissolution method and will therefore be reported herein where both types of analyses were undertaken. Assay values have been converted to gravimetric oxide equivalents where appropriate (Levinson, 1980, p. 891).

The twenty-four samples returned an average value of 280 g/t (0.028 percent) tantalum oxide, 4642 g/t rubidium oxide, 817 g/t cesium oxide, 366.4 g/t beryllium oxide, and 124 g/t tin. Eight continuous 1-metre channel samples (99-15 to 99-22) focussed on the Stacked Aplite Zone, eleven continuous 1-metre channel samples (99-24 to 99-34) and two 0.20 metre channel samples (99-37 to 99-38) targeted the Wall Zone, two 2.5 Kg grab samples tested aplite dikes (99-35 to 99-36) and one 2.5 Kg grab sample evaluated a replacement vein (99-23).

6.3.1.2 Stacked Aplite Assays

The Stacked Aplite Zone occurs along the extreme northern portion of the mapped pegmatite and the zone is 13 to 25 metres wide. A similarly described zone of stacked aplites forms tantalum ore at the Tanco mine in Manitoba (Cerny et al, 1996). The eight metres of channel samples have a weighted average of 132 g/t tantalum oxide, 0.23% rubidium oxide, 0.02% cesium oxide, 172 g/t beryllium oxide, 118 g/t tin, 91 g/t niobium oxide, 1.77% lithium oxide, 13.6 g/t thallium, 4.6 g/t germanium, and 4.7 g/t antimony over 8 metres (see Table 5).

Table 5. Stacked Aplite Zone Assay Results

Interval (Sample #)	Ta_20_5 (g/t)	Rb_20 (g/t)	Cs_20 (g/t)	Be0 (g/t)	Sn (g/t)	Nb_20_5 (g/t)	Li_20 (%)	Tl (g/t)	Ge (g/t)	Sb (g/t)
0-1 metres (99-15)	102	933	47	73	22	54	2.80	5.5	3.8	5.1
1-2 metres (99-16)	158	2656	154	229	52	100	1.21	15.0	4.5	3.8
2-3 metres (99-17)	114	1902	136	209	106	92	2.00	10.5	4.5	3.2
3-4 metres (99-18)	118	2077	156	150	25	94	1.98	12.5	4.3	3.7
4-5 metres (99-19)	145	3782	232	168	162	96	1.08	23.5	4.9	6.4
5-6 metres (99-20)	167	1789	153	174	311	102	1.46	11.5	5.0	5.6
6-7 metres (99-21)	94	2525	191	162	163	79	2.82	15.0	4.2	4.1
7-8 metres (99-22)	160	2663	250	207	106	109	0.77	15.0	5.5	5.5
Weighted Average	132	2286	165	172	118	91	1.77	13.6	4.6	4.7

6.3.1.3 Wall Zone Assays

Table 6. Wall Zone Assay Results

Interval (Sample #)	Ta_20_5 (g/t)	Rb_20 (g/t)	Cs_20 (g/t)	Be0 (g/t)	Sn (g/t)	Nb_20_5 (g/t)	Li_20 (%)	Tl (g/t)	Ge (g/t)	Sb (g/t)
0-1 metres (99-24)	358	4853	1021	2032	84	179	0.95	24.5	tr.	6.0
1-2 metres (99-25)	355	5323	904	493	90	173	1.03	25.5	tr.	6.0
2-3 metres (99-26)	394	5367	862	386	101	196	1.08	25.0	tr.	5.0
3-4 metres (99-27)	460	6307	966	237	130	227	1.27	29.0	8.0	5.0
4-5 metres (99-28)	314	6722	1129	699	136	142	1.29	30.5	tr.	4.0
5-6 metres (99-29)	335	5695	997	264	106	156	1.25	27.5	7.6	3.3
6-7 metres (99-30)	289	5705	1020	225	113	134	1.16	27.5	7.4	3.8
7-8 metres (99-31)	103	7017	732	124	48	40	0.47	47.5	7.4	9.9
8-9 metres (99-32)	80	5782	647	351	65	30	1.42	42.0	tr.	10.0
9-10 m. (99-33)	254	5880	1193	963	195	94	1.16	24.0	tr.	22.0
10-11 m. (99-34)	190	6088	1171	810	121	86	2.00	30.5	tr.	11.0
11.0 m	285	5885	967	600	108	132	1.15	30.3	3.3	4.7
Incl. 7.0 m	358	5710	986	619	109	130	1.19	27.1	2.8	7.8
0.2m (99-37)	446	0.82	2083	328	404	114	2.04	37.5	tr.	16.1
0.2m (99-38)	525	0.88	2184	100	350	130	2.20	47.0	11.0	9.3

The Wall Zone is at least 13 metres wide and has a strike length of 40 metres which is open in both directions. A 2 Kg bulk sample previously taken by OGS from this zone returned economically significant results of 380 g/t (0.038 percent) tantalum oxide, 1 percent rubidium oxide, and 1.93 percent lithium oxide. Eleven continuous one-metre channel samples tested the Wall Zone and returned 285 g/t tantalum oxide, 0.59%

rubidium oxide, 0.10% cesium oxide, 600 g/t beryllium oxide, 108 g/t tin, 132 g/t niobium oxide, 1.15% lithium oxide, 30.3 g/t thallium, 3.3 g/t germanium, and 4.7 g/t antimony (see Table 6).

6.3.1.4 Replacement Vein and Aplite Assay Results

Previous OGS sampling returned 0.07% (700 g/t) tantalum oxide from an aplite located some 300 metres southeast of the main pegmatite exposure on the shore of Pakeagama Lake. Other samples focussed on the replacement vein and aplite dykes. These values indicate that late stage mineralizing events connected with the Pakeagama Lake pegmatite intrusion carry economically significant rare metals values.

Table 7. Replacement Vein and Aplite Assay Results

Grab Sample Medium	**Ta_20_5 (g/t)**	**Rb_20 (g/t)**	**Cs_20 (g/t)**	**Be0 (g/t)**	**Sn (g/t)**	**Nb_20_5 (g/t)**	**Li_20 (%)**	**Tl (g/t)**	**Ge (g/t)**	**Sb (g/t)**
Repl. Vein (99-23)	620	10285	2989	54	165	213	2.67	57.5	11.2	2.4
2m. Aplite (99-35)	357	131	118	270	20	103	0.05	1.0	8.4	7.0
1m. Aplite (99-36)	576	665	271	86	22	61	0.03	5.0	10.1	7.2

6.3.2 Ontario Geological Survey Results

6.3.2.1 Introduction

Subsequent to the property visits and receipt of assay results from Chemex Labs several new articles have been published on the Pakeagama Lake pegmatite (F. Breaks, A. Tindle, and S. Smith, 1999b)and or are in press (Tindle, et al, 2000). OGS has also received results from duplicate samples sent for analysis at GeoLabs of Sudbury (see Table 8). A summary of findings of these works is presented in this section.

6.3.2.2 Oxide Mineral Identification

Oxide minerals could not identified in the field due to the combination of rarity of mineral species, mineral diversity and fine grain size. However, 1648 electron microprobe analyses, 50 bulk chemical analyses, 21 analyses of potassium feldspar and X-ray diffraction work were conducted by the OGS and Open University in the United Kingdom (F. Breaks, A. Tindle, and S. Smith, 1999b).

Nine tantalum-bearing oxide minerals have been thus far identified in the Pakeagama Lake pegmatite and related aplites and potassic pegmatites. They include: ferrotapiolite, ferrocolumbite, ferrotantalite, manganocolumbite, manganotantalite, wodginite, microlite, stibiotantalite, and cassiterite. These oxides have been divided into four groups based on their respective unique ranges of Mn/Mn+Fe atomic ratios.

Group 1 corresponds to narrow, 30 cm. thick aplite dikes found 1 km south of the Pakeagama Lake pegmatite. Ferrocolumbite is the only oxide identified and this group is not considered a viable target for tantalum exploration.

Group 2 mainly includes manganocolumbite and manganotantalite with subordinate ferrotantalite and ferrotapiolite. This group occurs in two pegmatite and aplite dikes located proximal to the pegmatite.

Group 3 comprises manganocolumbite and manganotantalite which are restricted to the Stacked Aplite Zone of the Pakeagama Lake pegmatite. Tantalum oxide levels are economically significant in these minerals.

Group 4 consists of highly evolved, manganese-rich compositions and occur mainly in the southeastern portions of the pegmatite. Wodginite, the chief ore mineral at the Tanco mine in Manitoba, is found in the Wall Zone.

"The detailed documentation of a variety of tantalum-rich minerals coupled with the presence of pollucite renders the Pakeagama Lake pegmatite and adjoining area one of the best exploration targets for tantalum and cesium in northwestern Ontario" (F. Breaks, A. Tindle, and S. Smith, 1999b, p.26-6).

6.3.2.3 New Assay Data

The new results of channel sampling from the Wall Zone returned 344 g/t tantalum oxide, 0.90 percent rubidium oxide, 1776 g/t cesium oxide, 68.9 g/t tin, 131.9 g/t niobium oxide, 1.34 percent lithium oxide, 25.9 g/t thallium, and 42.2 g/t gallium over 11 metres. Germanium and beryllium results are pending (Houston Lake, 2000b).

Table 8. GeoLabs Assays from OGS Split Samples

Interval or Sample Medium	**Ta_20_5 (g/t)**	**Rb_20 (%)**	**Cs_20 (g/t)**	**Sn (g/t)**	**Nb_20_5 (g/t)**	**Li_20 (%)**	**Tl (g/t)**	**Ga (g/t)**	**Ta/Nb Ratio**
Wall Zone:									
11.0 m	344	0.90	1776	68.9	131.9	1.34	25.9	42.2	3.06
Incl. 7.0 m	379	0.93	1983	66.0	161.9	1.38	24.0	41.1	2.74
Northwest Zone:									
8.0 m	72	0.28	220	44.9	90.0	1.82	17.6	36.4	0.93
Repl. Vein	1126	1.88	241	132.1	331.8	2.97	76.8	101.2	3.97
2m. Aplite	437	0.01	127	1.5	123.0	0.05	1.5	42.7	4.16
1m. Aplite	642	0.09	408	6.5	64.1	0.03	6.5	44.9	11.74
Wall Zone (0.2m)	409	1.13	2534	55.3	122.8	2.33	55.3	72.8	3.90
Wall Zone (0.2m)	403	1.17	2625	60.0	114.5	2.47	60.0	76.9	4.12
Average of 24 Samples	307	0.69	1135	62.9	122.0	1.55	26.1	45.6	2.95

Duplicate samples were submitted by the Ontario Geological Survey ("OGS", a provincial government agency) to their government-owned laboratory, Geoscience

Laboratories ("GeoLabs") of Sudbury, Ontario. Methodologies employed were different from that used at Chemex Labs of Mississauga, Ontario as high rare metal values may exceed the capabilities of the ICP-MS analytical methodology usually employed for rare metals. The analytical methods utilized by GeoLabs included custom ICP-MS with special high threshold rare metal standards, IR Spectroscopy, and X-RAY Fluorescence.

7.0 Conclusions

1. The regional geological sequence of events involves early volcano-sedimentary deposition, and intrusion of the Pakeagama Lake pluton. All of these rocks were affected by Bear Head Fault. The latest geological event is the injection of fresh appearing pegmatite and associated satellite aplite and pegmatite dykes which both adhere to and crosscut regional foliation.

2. The Pakeagama Lake pegmatite is a rare-element class, complex-type, petalite subtype granitic pegmatite. The pegmatite lies in a classical regional setting along a regional structure at contact between two subprovinces with the intrusion of the the Pakeagama Lake pegmatite into amphibolite grade metasedimentary and metavolcanic assemblages, and the close association of a possible fertile granite parent rock, the Pakeagama Lake pluton.

3. The Pakeagama Lake pegmatite is at least 260 metres in strike length and is open along strike in both directions. The core zone occurs at the southeastern limits of exposure strongly indicating that the strike length continues further to the southeast. The presence of tantalum-bearing aplites related to the pegmatite on the shore of Pakeagama Lake extends the rare metals mineralizing system and possibly the pegmatite another 300 metres to the southeast.

4. The width is 30 to 70 m though the dimensions are not truly known. Numerous granitic roof pendants and complex injection patterns of pegmatite into the granitic country rock with make the true width extent uncertain along the northern and northeastern boundary. However, the banded iron formation is not far displaced due to approximate structural consistency of xenoliths with regional trend.

5. The holmquistite anomaly which flanks the Pakeagama Lake pegmatite is most likely a buried rare metal pegmatite. The holmquistite anomaly appears to diverge from a 7 metre separation in the central contact area to approximately 30 metres at the southeastern extremity of exposure. The exposed pegmatite dike also attains its greatest zonal symmetry in the southeast. This suggests that there may be two distinct rare metal pegmatite apophyses, one exposed at surface and the other at shallow depths blind extend to the southeast rather than one larger pegmatite.

6. The presence of numerous roof pendants indicate that the current level of erosion is exposing the top of the intrusion. The lack of symmetrical zonation may be in part due to the numerous roof pendants.

7. The Pakeagama Lake pegmatite may possibly be an endomorphic intrusion possibly related to Pakeagama Lake pluton. However, the pegmatite is also relatively unmetamorphosed relative to gneissic fabric of Pakeagama Lake granitic pluton. The pegmatite also appears to be evolving to the southeast in opposition to the

northwestern differentiation trend of biotite to muscovite-biotite of Pakeagama Lake granitic pluton.

8. Diverse mineral speciation of tantalum and highly evolved tantalum to niobium ratios in the tantalum-bearing minerals, mineral indicators such as deep blue fluorapatite, deep green elbaites, high lithium concentrations in the Core Zone, the presence of pollucite, high rubidium content in feldspars, the K/Rb versus Cs plots, the large size of the Pakeagama Lake pegmatite indicate a high potential for economic zones of rare metals.

9. The Pakeagama Lake channel sample results of the Wall Zone compare favourably to Sons of Gwalia Limited's Wodgina mine which is located in Western Australia. The Wodgina mine is a world-class tantalum producer with reserves containing 35 million tonnes averaging 402 g/t tantalum oxide.

8.0 Recommendations

1. The author agrees with the proposed $500,000 budget proposed in the Siriunas report:

    a) The entire property should be covered by a grid with geological mapping to extend known dimensions of pegmatite and to locate other parallel pegmatite dikes.

    b) Geophysical surveys should involve high resolution magnetics. The iron formation (BIF) contacting pegmatite may be traced out by magnetics. While little contrast is expected between host granite and pegmatite, cassiterite is mildly magnetic and could possibly be discerned. Gravity surveys may contrast between mafic volcanics or BIF and the pegmatite/granite, and higher density spodumene-rich core zone may be detected.

    c) Mechanized stripping is necessary to further understand and document the pegmatite zones and to expand the dike dimensions along strike and width. Close attention should be placed on crosscutting features that may control replacement vein orientation.

    d) Channel sampling would be necessary to systematically sample the relatively smooth outcrop. Bulk sampling is recommended to accommodate large crystal sizes portrayed in the pegmatite.

    e) XRF analytical methodology is recommended to yield more accurate rare metal values.

2. A detailed investigation of the broad cesium-lithium holmquistite anomaly through lithogeochemistry would possibly identify target areas to provide a focus for the investigation of the interpreted buried pegmatite.

3. Replacement veins are highly evolved and contain a high concentration of rare metals. The veins appear to inhabit cross-cutting features within the pegmatite. This cross-cutting orientation should be considered in future exploration.

4. XRF analysis of samples is recommended to more accurately portray rare metal values.

9.0 References and Selected Bibliography

Ayres, L.D., 1970. Setting Net Lake area, District of Kenora (Patricia Portion): Ontario Dept. Mines, P. 538 (revised), Scale 1:15,840.

Ayres, L.D., 1972a. Northwind Lake area, District of Kenora (Patricia Portion): Ontario Dept. Mines, P. 756, Scale 1:15,840.

Ayres, L.D., 1972b. Setting Net and Northwind Lakes areas, District of Kenora (Patricia Portion): Ontario Dept. Mines, MP. 53, pp. 6-13.

Breaks, F.W., Tindle, A.G., and Smith, S.R., 1999a. Rare-metal mineralization associated with the Berens River - Sachigo Subprovincial boundary, northwestern Ontario: Discovery of a new zone of complex-type, petalite subtype pegmatite and implications for future exploration: Ontario Geol. Surv., MP 169, pp. 168-182.

Breaks, F.W., Tindle, A.G., and Smith, S.R., 1999b. Continued Field and Laboratory Investigation of Highly Evolved, Complex-Type, Petalite Subtype Rare-Element Mineralization in the Berens River-Sachigo Subprovince Boundary Zone: in Summary of Field Work and Other Activities, 1999 Ontario Geol. Surv., Open File Report 6000, pp. 26.1-26.12.

Cerny, P., 1989a. Characteristics of pegmatite deposits of tantalum, pp. 195-233 in Moller, P., Cerny, P., and Saupe, F. (eds.), Lanthanides, tantalum and niobium, Society for Geology Applied to Mineral Deposits, Spec. Pub. 7, Springer-Verlag.

Cerny, P., 1989b. Exploration strategy and methods for pegmatite deposits of tantalum, pp. 274-302 in Moller, P., Cerny, P., and Saupe, F. (eds.), Lanthanides, tantalum and niobium, Society for Geology Applied to Mineral Deposits, Spec. Pub. 7, Springer-Verlag.

Cerny, P., 1991a. Rare-element granitic pegmatites, Part I: Anatomy and internal evolution of pegmatite deposits, pp. 29-48, in Sheahan, P.A. and Cherry, M.E., (eds.) Ore Deposit Models, Vol. II, Geoscience Canada.

Cerny, P., 1991b. Rare-element granitic pegmatites, Part II: Regional to global environments and petrogenesis, pp. 49-62, in Sheahan, P.A. and Cherry, M.E., (eds.) Ore Deposit Models, Vol. II, Geoscience Canada.

Cerny, P., Ercit, T.S., and Vanstone, P.T., 1996. Petrology and Mineralization of the Tanco rare-element pegmatite, southeastern Manitoba, Geol. Assoc. Can.-Min. Assoc. Can., Joint Ann. Mtg., Field Trip Guidebook A3, 63p.

Cerny, P., and Meintzer, R.E., 1988. Fertile granites in the Archean and Proterozoic fields of rare-element pegmatites: crustal environment, geochemistry and petrogenic relationships; pp. 170-207, in Taylor, R.P., and Strong, D.F. (eds.), Recent Advances in the geology of granitic-related mineral deposits, CIM Spec. Vol. 39, 445p.

Cerny, P., Trueman, D.L., Zielhke, C.V., Goad, B.E., and Paul, B.J., 1981. The Cat Lake-Winnipeg River and Weksuko Lake pegmatite fields, Manitoba, Man. Dept. Energy and Mines, Econ. Geol. Report ER80-1.

Cooper, D.G., 1964. The geology of the Bikita pegmatites, in Geology of Some Ore Deposits in Southern Africa, Vol. 2, p. 441-462.

Corfu, F., and Stone, D., 1998. Age, structure and orogenic significance of the Berens River composite batholiths, western Superior Province, Can. Jour. Earth Sci., v.35, pp. 1089-1109.

Ecological Stratification Working Group, 1998. A national ecological framework for Canada: Agriculture and Agri-Food Canada, Research Branch, Centre for Land and Biological Resources Research and Environment Canada, State of Environment Directorate, Ecozone Branch, Ottawa/Hull.

Emerald Fields Resource Corporation: Unpublished company information circular, 5p.

Houston Lake Mining Inc., 1999a. Houston Lake Options New Rare Metals Discovery, Company Press Release, March 29, 1999.

Houston Lake Mining Inc., 1999b. Channel Samples Confirm Pakeagama Lake Potential, Company Press Release, November 29, 1999.

Houston Lake Mining Inc., 2000. Exploration Update on the Pakeagama Lake and Tib Lake Projects, Company Press Release, January 18, 2000.

Houston Lake Mining Inc., 2000. Check Assays Confirm Economically Significant Results on Pakeagama Lake Rare Metals Property, Company Press Release, May 31, 2000.

Levinson, A. A., 1980. Introduction to Exploration Geochemistry, 2nd Ed., Applied Publishing Ltd., Wilmette, Illinois, 924 p.

Morteani, G., and Gaupp, R., 1989. Geochemical Evaluation of the Tantalum Potential of Pegmatites, pp.303-310, in Moller, P., Cerny, P., and Saupe, F. (eds.), Lanthanides, tantalum and niobium, Society for Geology Applied to Mineral Deposits, Spec. Pub. 7, Springer-Verlag.

Pollard, P.J., 1989. Geochemistry of Granites Associated with Tantalum and Niobium Mineralization, pp. 145-168, in Moller, P., Cerny, P., and Saupe, F. (eds.), Lanthanides, tantalum and niobium, Society for Geology Applied to Mineral Deposits, Spec. Pub. 7, Springer-Verlag.

Siriunas, J.M., 1999. Report on the Pakeagama Lake Rare-Element Pegmatite in the Berens River Area of Northwestern Ontario, Houston Lake Mining Inc. Unpublished company report.

Smith, S.R., Tindle, A.G., Kelley, S.P., and Breaks, F.W., 1999. Laser 40Ar/39Ar thermochronology of Archean rare-element pegmatites; Separation Lake belt and Berens River-Sachigo subprovince boundary zone: in Summary of Field Work and Other Activities, 1999 Ontario Geol. Surv., Open File Report 6000, pp. 29.1-29.12.

Sons of Gwalia Limited, 1998. 1997 Annual Report, Unpublished company report.

Sons of Gwalia Limited, 1999. 1998 Annual Report, Unpublished company report.

Stilling, A., Cerny, P. And Vanstone, P.T., 1999. Bulk composition of the Tanco rare-element pegmatite, southeastern Manitoba and its petrological significance, p. 112, in Geol. Assoc. Can., Joint Ann. Mtg., Abstr. Vol. 24.

Stone, D., 1998. Precambrian geology of the Berens River area, northwest Ontario, Ont. Geol. Surv., OFR 5963, 116p.

Stone, D., Fogal, R., and Fitzsimon, S., 1993. Precambrian geology, Whiteloon Lake, Ont. Geol. Surv. Map P.3224, Scale 1:50,000.

Tindle, A.G., 1999. N. W. Ontario Rare-Element Pegmatites, Microprobe Report 1999, Pakeagama Lake, Preliminary unpublished report.

Tindle, A.G., Breaks, F. W., and Selway, J. B., 2000. Compositional Evolution of Tourmaline in Petalite-Subtype Pegmatites from the Pakeagama Lake and Separation Lake Areas of N. W. Ontario, Canada (under editorial review for the Canadian Mineralogist).

10.0 Certificate of Qualifications

I, E. Grayme Anthony, of 816 - 1601 Paris Street, Sudbury, Ontario, Canada do hereby certify that:

1) I hold a Bachelor of Science degree in Geology (Specialization) from Concordia University in Montreal, Quebec (1983) and a Masters in Business Administration from the University of Western Ontario in London, Ontario (1986).

2) I am registered as a Professional Geoscientist in the Province of British Columbia and am qualified for the practice of professional geology. I am also a Fellow of the Geological Association of Canada. Both qualifications are in good standing.

3) I have practiced my profession for 17 years as a geologist and consultant since graduation.

4) I have based my comments contained in this report on my knowledge of geology, geochemistry and mineral deposits, on various referenced reports, and on two visits to the Pakeagama Lake property.

5) I do not hold an interest in the property. However, I do hold an interest in Houston Lake Mining Inc. in the form of common shares and stock options.

Dated July 24, 2000 in the City of Sudbury, Ontario..

(Earl) Grayme Anthony, *B.Sc. Geol., P. Geo., F.G.A.C., M. B. A.*

E. G. ANTHONY

E.G. ANTHONY
F 6674
FELLOW

Appendix 1 Assays

Chemex Labs Ltd.

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2892 WHITE ST.
VAL CARON, ON
P3N 1B2

Project: PAKIAGAMA LAKE
Comments: ATTN: GRAYNE ANTHONY

QC Page #: 1-A
Tot QC Pg: 1
Date: 18-NOV-1999
Invoice #: I9932868
P.O. #: QHJ

** ADDITIONAL DATA

QC DATA OF CERTIFICATE A9932868

STD/DUP/BLANK DESCRIPTION	QC TYPE	PAGE NO.	Al % (ICP)	Sb ppm (ICP)	Ba ppm (ICP)	Be ppm (ICP)	Bi ppm (ICP)	Cd ppm (ICP)	Ca % (ICP)	Ce ppm (ICP)	Cs ppm (ICP)	Cr ppm (ICP)	Co ppm (ICP)	Cu ppm (ICP)	Ga ppm (ICP)	Ge ppm (ICP)
G96-MT	Stdl	1	-----	7.6	-----	1.45	1.64	0.98	-----	37.2	5.85	-----	17.6	-----	15.1	1.3
CHEMEX MEAN	---	---	-----	7.8	-----	1.35	1.86	1.20	-----	44.5	4.98	-----	18.8	-----	16.8	1.5
G96-TOT	Stdl	1	7.92	-----	1120	-----	-----	-----	2.06	-----	-----	95	-----	195	-----	-----
CHEMEX MEAN	---	---	7.60	-----	1135	-----	-----	-----	2.13	-----	-----	98	-----	177	-----	-----
99-15	Dup	1-01	8.37	5.1	10	25.6	10.65	0.22	0.08	0.30	35.7	194	0.8	9	26.4	3.6
	Orig	1-01	7.21	5.1	30	26.3	11.10	0.18	0.07	0.70	36.4	198	0.8	10	26.1	3.8

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Project: PAKIAGAMA LAKE
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QC Page #: 1-B
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G96-MT	Stdl	1	-----	21.0	135.0	50.8	-----	-----	8.6	24.0	7.6	-----	-----	86.6	5.05	-----
CHEMEX MEAN	---	---	-----	23.0	130.0	28.8	-----	-----	9.0	26.0	7.9	-----	-----	81.9	5.93	-----
G96-TOT	Stdl	1	4.72	-----	-----	-----	1.08	1055	-----	-----	-----	620	1.85	-----	-----	1.11
CHEMEX MEAN	---	---	4.60	-----	-----	-----	1.00	1025	-----	-----	-----	624	1.82	-----	-----	1.00
99-15	Dup	1-01	0.35	< 0.5	2.5	>500	0.02	390	0.8	16.0	37.8	500	0.64	>500	0.10	2.22
	Orig	1-01	0.35	< 0.5	2.5	>500	0.01	390	0.8	15.4	39.0	470	0.61	>500	0.05	2.12

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STD/DUP/BLANK DESCRIPTION	QC TYPE	PAGE NO.	Sr ppm (ICP)	Ta ppm (ICP)	Te ppm (ICP)	Tl ppm (ICP)	Th ppm (ICP)	Ti % (ICP)	W ppm (ICP)	U ppm (ICP)	V ppm (ICP)	Y ppm (ICP)	Zn ppm (ICP)			
G96-MT	Stdl	1	253	2.55	0.40	0.88	7.0	-----	9.3	9.0	-----	14.7	-----			
CHEMEX MEAN	---	---	236	0.20	0.40	0.78	8.7	-----	10.9	10.6	-----	16.7	-----			
G96-TOT	Stdl	1	-----	-----	-----	-----	-----	0.35	-----	-----	166	-----	186			
CHEMEX MEAN	---	---	-----	-----	-----	-----	-----	0.34	-----	-----	160	-----	185			
99-15	Dup	1-01	6.2	63.4	0.05	4.76	2.2	< 0.01	1.3	3.8	< 1	0.2	32			
	Orig	1-01	6.4	60.6	0.10	4.70	2.2	< 0.01	1.2	3.0	< 1	0.2	34			

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(QHJ) - HOUSTON LAKE MINING INC.

Project: PAKIAGAMA LAKE
P.O. # :

Samples submitted to our lab in Mississauga, ON.
This report was printed on 23-DEC-1999.

SAMPLE PREPARATION

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
299	24	Pulp; prepped on other workorder

ANALYTICAL PROCEDURES

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
9301	24	Al %: ICP + ICP-MS package	ICP	0.01	25.0
9341	24	Sb ppm: ICP + ICP-MS package	ICP-MS	0.1	1000
9302	24	Ba ppm: ICP + ICP-MS package	ICP	10	10000
9303	24	Be ppm: ICP + ICP-MS package	ICP-MS/ICP	0.05	1000
9304	24	Bi ppm: ICP + ICP-MS package	ICP-MS/ICP	0.01	10000
9305	24	Cd ppm: ICP + ICP-MS package	ICP-MS/ICP	0.02	500
9306	24	Ca %: ICP + ICP-MS package	ICP	0.01	25.0
9307	24	Ce ppm: ICP + ICP-MS package	ICP-MS	0.01	500
9308	24	Cs ppm: ICP + ICP-MS package	ICP-MS	0.05	500
9309	24	Cr ppm: ICP + ICP-MS package	ICP	1	10000
9310	24	Co ppm: ICP + ICP-MS package	ICP-MS/ICP	0.2	10000
9311	24	Cu ppm: ICP + ICP-MS package	ICP	1	10000
9312	24	Ga ppm: ICP + ICP-MS package	ICP-MS	0.1	500
9313	24	Ge ppm: ICP + ICP-MS package	ICP-MS	0.1	500
9315	24	Fe %: ICP + ICP-MS package	ICP	0.01	25.0
9316	24	La ppm: ICP + ICP-MS package	ICP-MS	0.5	500
9317	24	Pb ppm: ICP + ICP-MS package	ICP-MS/ICP	0.5	10000
9318	24	Li ppm: ICP + ICP-MS package	ICP-MS	0.2	500
9319	24	Mg %: ICP + ICP-MS package	ICP	0.01	15.00
9320	24	Mn ppm: ICP + ICP-MS package	ICP	5	10000
9321	24	Mo ppm: ICP + ICP-MS package	ICP	0.2	10000
9322	24	Ni ppm: ICP + ICP-MS package	ICP-MS/ICP	0.2	10000
9323	24	Nb ppm: ICP + ICP-MS package	ICP-MS	0.2	500
9324	24	P ppm: ICP + ICP-MS package	ICP	10	10000
9325	24	K %: ICP + ICP-MS package	ICP	0.01	10.00
9326	24	Rb ppm: ICP + ICP-MS package	ICP-MS	0.2	500
9327	24	Ag ppm: ICP + ICP-MS package	ICP-MS/ICP	0.05	100.0
9328	24	Na %: ICP + ICP-MS package	ICP	0.01	10.00
9329	24	Sr ppm: ICP + ICP-MS package	ICP-MS/ICP	0.2	10000
9330	24	Ta ppm: ICP + ICP-MS package	ICP-MS	0.05	100.0
9331	24	Te ppm: ICP + ICP-MS package	ICP-MS	0.05	500
9332	24	Tl ppm: ICP + ICP-MS package	ICP-MS	0.02	500
9333	24	Th ppm: ICP + ICP-MS package	ICP-MS	0.2	500
9334	24	Ti %: ICP + ICP-MS package	ICP	0.01	10.00
9335	24	W ppm: ICP + ICP-MS package	ICP-MS/ICP	0.1	10000
9336	24	U ppm: ICP + ICP-MS package	ICP-MS	0.2	500
9337	24	V ppm: ICP + ICP-MS package	ICP	1	10000
9338	24	Y ppm: ICP + ICP-MS package	ICP-MS	0.1	500
9339	24	Zn ppm: ICP + ICP-MS package	ICP	2	10000

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99-15	299	--	7.21	5.1	30	26.3	11.10	0.18	0.07	0.70	36.4	198	0.8	10	26.1	3.8
99-16	299	--	7.86	3.8	10	82.5	5.57	< 0.02	0.12	0.19	103.5	193	0.8	8	29.7	4.5
99-17	299	--	7.68	3.2	10	75.4	5.35	0.16	0.15	0.19	120.0	160	1.0	16	36.9	4.5
99-18	299	--	8.35	3.7	< 10	54.1	3.25	0.18	0.16	0.23	120.5	166	0.8	13	27.5	4.3
99-19	299	--	7.38	6.4	10	60.4	9.79	0.10	0.15	0.50	223	178	1.2	25	34.5	4.9
99-20	299	--	7.55	5.6	10	62.8	1.56	0.04	0.12	0.61	122.5	176	1.4	13	33.3	5.0
99-21	299	--	7.72	4.1	10	58.5	1.29	< 0.02	0.11	0.25	190.5	208	0.6	12	28.9	4.2
99-22	299	--	7.77	5.5	< 10	74.7	2.12	0.14	0.14	0.18	237	154	0.8	12	38.9	5.5
99-23	299	--	8.50	2.4	10	19.40	0.03	< 0.02	0.01	0.06	>500	153	0.2	9	88.9	11.2
99-24	299	--	6.44	6.0	< 10	732	< 2.00	5.50	1.65	46.5	940	197	< 1.0	22	55.0	< 1.0
99-25	299	--	5.25	6.0	10	177.5	< 2.00	6.50	1.73	48.0	860	150	< 1.0	10	52.0	< 1.0
99-26	299	--	5.43	5.0	10	139.0	< 2.00	1.50	0.39	12.50	850	193	< 1.0	13	54.0	< 1.0
99-27	299	--	6.64	5.0	10	85.4	0.18	1.40	0.54	13.15	>500	168	0.6	10	53.0	8.0
99-28	299	--	5.94	4.0	< 10	252	< 2.00	2.00	0.50	13.50	1000	189	< 1.0	8	65.0	< 1.0
99-29	299	--	4.43	3.3	< 10	95.0	0.30	3.10	1.06	22.3	>500	236	0.8	5	45.6	7.6
99-30	299	--	3.93	3.8	< 10	81.0	0.23	2.12	0.70	13.45	>500	247	1.0	9	41.4	7.4
99-31	299	--	5.35	9.9	50	44.7	0.56	0.36	0.18	2.83	>500	238	0.6	4	24.5	7.4
99-32	299	--	7.88	10.0	50	126.5	< 2.00	< 0.50	0.08	0.40	650	188	< 1.0	4	33.0	< 1.0
99-33	299	--	7.37	22.0	10	347	< 2.00	7.00	1.98	45.5	1200	172	< 1.0	3	64.0	< 1.0
99-34	299	--	7.30	11.0	10	292	< 2.00	0.50	0.26	7.00	1100	214	< 1.0	5	60.0	< 1.0
99-35	299	--	8.70	16.1	< 10	97.3	7.26	0.42	0.19	0.23	78.3	161	0.2	5	38.6	8.4
99-36	299	--	9.20	9.3	40	30.9	1.65	4.14	0.33	3.00	285	87	0.4	15	44.1	10.1
99-37	299	--	8.57	7.0	20	118.0	< 2.00	< 0.50	0.07	1.00	2200	150	< 1.0	5	84.0	< 1.0
99-38	299	--	8.61	7.2	20	36.1	0.06	< 0.02	0.14	3.99	>500	121	0.4	6	70.1	11.0

CERTIFICATION:______________________

** FOR MINERALIZED ELEMENTS ON ORIGINAL DATA.

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99-15	299	--	0.35	< 0.5	2.5	>500	0.01	390	0.8	15.4	39.0	470	0.61	>500	0.05	2.12
99-16	299	--	0.33	< 0.5	3.5	>500	0.01	360	0.6	13.0	69.4	670	1.09	>500	0.15	2.71
99-17	299	--	0.33	< 0.5	4.0	>500	0.01	500	1.0	17.4	67.2	940	1.54	>500	0.15	3.67
99-18	299	--	0.31	< 0.5	4.0	>500	0.01	400	1.0	12.0	65.4	840	1.31	>500	0.15	2.95
99-19	299	--	0.41	< 0.5	6.5	>500	0.01	525	0.6	8.8	64.6	1060	2.14	>500	0.25	3.00
99-20	299	--	0.37	< 0.5	4.0	>500	0.01	450	1.0	8.8	60.2	780	1.25	>500	0.20	2.87
99-21	299	--	0.34	< 0.5	4.0	>500	0.01	565	0.8	9.8	58.6	740	1.47	>500	0.05	1.40
99-22	299	--	0.33	< 0.5	5.0	>500	0.01	540	0.8	17.2	79.0	990	1.45	>500	0.20	4.06
99-23	299	--	0.24	< 0.5	2.0	>500	< 0.01	2250	0.4	2.4	143.5	2810	4.83	>500	< 0.05	0.31
99-24	299	--	0.33	20.0	6.0	4400	0.01	3310	3.0	28.0	122.0	9100	1.79	4800	< 0.20	2.59
99-25	299	--	0.35	20.0	8.0	4800	0.01	3680	2.0	10.0	110.0	9750	1.95	>5000	< 0.20	1.96
99-26	299	--	0.32	5.0	4.0	>5000	0.01	1995	1.0	12.0	142.0	2630	1.86	>5000	< 0.20	2.01
99-27	299	--	0.30	6.0	4.0	>500	0.02	2310	2.6	7.8	153.5	3810	2.15	>500	0.05	2.21
99-28	299	--	0.31	5.0	6.0	>5000	0.01	2340	1.0	10.0	100.0	3190	2.30	>5000	< 0.20	1.84
99-29	299	--	0.29	9.5	4.0	>500	< 0.01	2620	4.2	5.8	104.5	6130	2.06	>500	< 0.05	1.31
99-30	299	--	0.32	5.5	3.0	>500	0.01	2250	4.4	7.6	82.8	4670	1.83	>500	< 0.05	0.62
99-31	299	--	0.25	1.5	12.5	>500	0.01	690	3.2	5.2	26.4	1430	3.13	>500	< 0.05	0.85
99-32	299	--	0.19	< 5.0	10.0	>5000	0.01	340	< 1.0	7.0	24.0	960	3.79	>5000	< 0.20	1.87
99-33	299	--	0.31	20.0	10.0	>5000	0.01	3950	< 1.0	5.0	76.0	>10000	2.25	>5000	< 0.20	2.76
99-34	299	--	0.32	< 5.0	6.0	>5000	0.01	1735	< 1.0	7.0	66.0	1940	2.31	>5000	< 0.20	1.08
99-35	299	--	0.24	< 0.5	4.0	243	0.01	290	0.6	4.2	76.4	1250	0.19	111.0	0.20	6.82
99-36	299	--	0.17	2.0	12.5	151.0	0.01	245	1.8	5.0	40.0	1380	1.71	>500	0.15	6.26
99-37	299	--	0.24	< 5.0	6.0	>5000	0.02	1690	< 1.0	5.0	84.0	3580	4.08	>5000	< 0.20	1.05
99-38	299	--	0.22	5.5	4.0	>500	0.06	1810	0.6	4.6	90.4	4390	4.12	>500	< 0.05	0.88

CERTIFICATION:________________________

** FOR MINERALIZED ELEMENTS ON ORIGINAL DATA.

Chemex Labs Ltd.
Analytical Chemists * Geochemists * Registered Assayers
5175 Timberlea Blvd., Mississauga
Ontario, Canada L4W 2S3
PHONE: 905-624-2806 FAX: 905-624-6163

To: HOUSTON LAKE MINING INC.
2892 WHITE ST.
VAL CARON, ON
P3N 1B2

Project : PAKIAGAMA LAKE
Comments: ATTN: GRAYNE ANTHONY

Page Number :1-C
Total Pages :1
Certificate Date: 18-NOV-1999
Invoice No. : I9932868
P.O. Number :
Account :QHJ

** ADDITIONAL DATA

CERTIFICATE OF ANALYSIS A9932868

SAMPLE	PREP CODE		Sr ppm (ICP)	Ta ppm (ICP)	Te ppm (ICP)	Tl ppm (ICP)	Th ppm (ICP)	Ti % (ICP)	W ppm (ICP)	U ppm (ICP)	V ppm (ICP)	Y ppm (ICP)	Zn ppm (ICP)			
99-15	299	--	6.4	60.6	0.10	4.70	2.2	< 0.01	1.2	3.0	< 1	0.2	34			
99-16	299	--	9.2	67.5	< 0.05	9.72	5.2	< 0.01	1.9	6.4	< 1	0.1	68			
99-17	299	--	10.6	84.5	0.05	12.70	4.0	< 0.01	2.2	6.2	1	0.1	88			
99-18	299	--	11.2	66.3	< 0.05	12.15	4.4	< 0.01	1.6	4.8	< 1	0.2	60			
99-19	299	--	12.6	85.1	< 0.05	21.9	3.6	< 0.01	2.0	4.6	< 1	0.2	82			
99-20	299	--	9.2	76.9	< 0.05	11.80	3.6	< 0.01	2.3	3.0	1	0.2	76			
99-21	299	--	7.8	61.4	< 0.05	14.85	3.8	< 0.01	2.0	5.2	1	0.1	74			
99-22	299	--	23.2	91.0	< 0.05	14.70	6.2	< 0.01	2.2	5.6	< 1	0.1	96			
99-23	299	--	1.2	>100.0	< 0.05	65.5	< 0.2	< 0.01	8.0	0.2	< 1	< 0.1	66			
99-24	299	--	74.0	>100.0	< 0.50	24.5	10.0	< 0.01	8.0	4.0	1	38.0	70			
99-25	299	--	78.0	>100.0	< 0.50	18.50	12.0	< 0.01	10.0	4.0	1	35.0	80			
99-26	299	--	60.0	>100.0	< 0.50	22.0	10.0	< 0.01	8.0	2.0	1	7.0	70			
99-27	299	--	8.8	>100.0	< 0.05	23.0	7.6	< 0.01	8.6	4.0	1	9.9	70			
99-28	299	--	75.0	>100.0	< 0.50	31.5	6.0	< 0.01	10.0	2.0	1	9.0	72			
99-29	299	--	12.2	>100.0	< 0.05	25.5	2.8	< 0.01	7.2	2.6	2	13.7	56			
99-30	299	--	7.4	>100.0	< 0.05	27.0	3.6	< 0.01	7.7	2.2	2	9.0	60			
99-31	299	--	8.4	59.1	< 0.05	44.0	0.6	< 0.01	3.9	1.4	1	2.1	32			
99-32	299	--	63.0	>100.0	< 0.50	42.5	< 2.0	< 0.01	2.0	< 2.0	1	< 1.0	20			
99-33	299	--	88.0	>100.0	< 0.50	18.00	10.0	< 0.01	8.0	6.0	1	36.0	82			
99-34	299	--	71.0	>100.0	< 0.50	27.0	4.0	< 0.01	8.0	2.0	2	4.0	68			
99-35	299	--	8.4	>100.0	< 0.05	0.82	3.0	< 0.01	1.0	2.4	1	0.2	44			
99-36	299	--	39.6	>100.0	< 0.05	5.20	0.8	< 0.01	1.6	2.6	1	2.4	8			
99-37	299	--	255	>100.0	< 0.50	45.0	< 2.0	< 0.01	8.0	4.0	< 1	< 1.0	56			
99-38	299	--	350	>100.0	< 0.05	51.9	0.2	< 0.01	7.4	3.6	< 1	0.2	56			

CERTIFICATION:

** FOR MINERALIZED ELEMENTS ON ORIGINAL DATA.

Chemex Labs Ltd.
Analytical Chemists * Geochemists * Registered Assayers
212 Brooksbank Ave., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221

To: HOUSTON LAKE MINING INC. *

2892 WHITE ST.
VAL CARON, ON
P3N 1B2

INVOICE NUMBER I9935530

BILLING INFORMATION

Date:	15-DEC-1999
Project:	PAKIAGAMA LAKE
P.O. No.:	
Account:	QHJ
Comments:	AAJ155QHJ.99R
Billing:	For analysis performed on Certificate A9935530
Terms:	Payment due on receipt of invoice 1.25% per month (15% per annum) charged on overdue accounts

Please Remit Payments to:

CHEMEX LABS LTD.
212 Brooksbank Ave.,
North Vancouver, B.C.
Canada V7J 2C1

# OF SAMPLES	ANALYSED FOR CODE - DESCRIPTION	UNIT PRICE	SAMPLE PRICE	AMOUNT
14	212 - Overlimit pulp, to be found	0.00		
	244 - Pulp; prev. prepared at Chemex	0.00		
	356 - Li %	13.75	13.75	192.50

Total Cost $	192.50
Client Discount (30%) $	-57.75
Net Cost $	134.75
(Reg# R100938885) GST $	9.43
TOTAL PAYABLE (CDN) $	**144.18**

Chemex Labs Ltd.
Analytical Chemists * Geochemists * Registered Assayers
5175 Timberlea Blvd., Mississauga
Ontario, Canada L4W 2S3
PHONE: 905-624-2806 FAX: 905-624-6163

To: HOUSTON LAKE MINING INC.
2892 WHITE ST.
VAL CARON, ON
P3N 1B2

A9935530

Comments: ATTN: GRAYNE ANTHONY

CERTIFICATE A9935530

(QHJ) - HOUSTON LAKE MINING INC.
Project: PAKIAGAMA LAKE
P.O. # :

Samples submitted to our lab in Mississauga, ON.
This report was printed on 15-DEC-1999.

SAMPLE PREPARATION

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
212	14	Overlimit pulp, to be found
244	14	Pulp; prev. prepared at Chemex

ANALYTICAL PROCEDURES

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
356	14	Li %: HClO4-HNO3-HF digestion	AAS	0.01	100.0

Chemex Labs Ltd.
Analytical Chemists * Geochemists * Registered Assayers
5175 Timberlea Blvd., Mississauga
Ontario, Canada L4W 2S3
PHONE: 905-624-2806 FAX: 905-624-6163

To: HOUSTON LAKE MINING INC.

2892 WHITE ST.
VAL CARON, ON
P3N 1B2

Project : PAKIAGAMA LAKE
Comments: ATTN: GRAYNE ANTHONY

Page Number : 1
Total Pages : 1
Certificate Date: 15-DEC-1999
Invoice No. : I9935530
P.O. Number :
Account : QHJ

CERTIFICATE OF ANALYSIS A9935530

SAMPLE	PREP CODE		Li %
99-15	212	244	1.30
99-16	212	244	0.56
99-17	212	244	0.93
99-18	212	244	0.92
99-19	212	244	0.50
99-20	212	244	0.68
99-21	212	244	1.31
99-22	212	244	0.36
99-23	212	244	1.24
99-27	212	244	0.59
99-29	212	244	0.58
99-30	212	244	0.54
99-31	212	244	0.22
99-38	212	244	1.02

CERTIFICATION:

Chemex Labs Ltd.
Analytical Chemists * Geochemists * Registered Assayers
212 Brooksbank Ave., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221

To: HOUSTON LAKE MINING INC. *

2892 WHITE ST.
VAL CARON, ON
P3N 1B2

INVOICE NUMBER I9935525

BILLING INFORMATION

Date:	23-DEC-1999
Project:	PAKIAGAMA LAKE
P.O. No.:	
Account:	QHJ
Comments:	AAJ155QHJ.99R
Billing:	For analysis performed on Certificate A9935525
Terms:	Payment due on receipt of invoice 1.25% per month (15% per annum) charged on overdue accounts

Please Remit Payments to:

CHEMEX LABS LTD.
212 Brooksbank Ave.,
North Vancouver, B.C.
Canada V7J 2C1

# OF SAMPLES	ANALYSED FOR CODE - DESCRIPTION	UNIT PRICE	SAMPLE PRICE	AMOUNT
6	212 - Overlimit pulp, to be found	0.00		
	244 - Pulp; prev. prepared at Chemex	0.00		
	356 - Li %	13.75	13.75	82.50

Total Cost $	82.50
Client Discount (35%) $	-28.88
Net Cost $	53.62
(Reg# R100938885) GST $	3.75
TOTAL PAYABLE (CDN) $	**57.37**

Chemex Labs Ltd.
Analytical Chemists * Geochemists * Registered Assayers
5175 Timberlea Blvd., Mississauga
Ontario, Canada L4W 2S3
PHONE: 905-624-2806 FAX: 905-624-6163

To: HOUSTON LAKE MINING INC.
2892 WHITE ST.
VAL CARON, ON
P3N 1B2

Comments: ATTN: GRAYNE ANTHONY

CERTIFICATE A9935525

(QHJ) - HOUSTON LAKE MINING INC.

Project: PAKIAGAMA LAKE
P.O. # :

Samples submitted to our lab in Mississauga, ON.
This report was printed on 20-DEC-1999.

SAMPLE PREPARATION

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
212	6	Overlimit pulp, to be found
244	6	Pulp; prev. prepared at Chemex

ANALYTICAL PROCEDURES

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
356	6	Li %: HClO4-HNO3-HF digestion	AAS	0.01	100.0

Chemex Labs Ltd.
Analytical Chemists * Geochemists * Registered Assayers
5175 Timberlea Blvd., Mississauga
Ontario, Canada L4W 2S3
PHONE: 905-624-2806 FAX: 905-624-6163

To: HOUSTON LAKE MINING INC.

2892 WHITE ST.
VAL CARON, ON
P3N 1B2

Project : PAKIAGAMA LAKE
Comments: ATTN: GRAYNE ANTHONY

Page Number : 1
Total Pages : 1
Certificate Date: 20-DEC-1999
Invoice No. : I9935525
P.O. Number :
Account : QHJ

CERTIFICATE OF ANALYSIS A9935525

SAMPLE	PREP CODE		Li %
99-26	212	244	0.50
99-28	212	244	0.60
99-32	212	244	0.66
99-33	212	244	0.54
99-34	212	244	0.93
99-37	212	244	0.95

CERTIFICATION:

Chemex Labs Ltd.
Analytical Chemists * Geochemists * Registered Assayers
5175 Timberlea Blvd., Mississauga
Ontario, Canada L4W 2S3
PHONE: 905-624-2806 FAX: 905-624-6163

To: HOUSTON LAKE MINING INC.

2892 WHITE ST.
VAL CARON, ON
P3N 1B2

Project: PAKIAGAMA LAKE
Comments: ATTN: GRAYNE ANTHONY

Page Number : 1-A
Total Pages : 1
Certificate Date: 23-NOV-99
Invoice No. : I9932869
P.O. Number :
Account : QHJ

CERTIFICATE OF ANALYSIS A9932869

SAMPLE	PREP CODE		Ba ppm	Ce ppm	Cs ppm	Co ppm	Cu ppm	Dy ppm	Er ppm	Eu ppm	Gd ppm	Ga ppm	Hf ppm	Ho ppm	La ppm	Pb ppm	Lu ppm	Nd ppm	Ni ppm	Nb ppm	Pr ppm
99-15	299	297	13.5	0.5	44.2	0.5	10	< 0.1	< 0.1	< 0.1	< 0.1	30	3	< 0.1	0.5	< 5	< 0.1	< 0.5	15	38	< 0.1
99-16	299	297	9.0	< 0.5	145.5	0.5	5	< 0.1	< 0.1	< 0.1	< 0.1	42	4	< 0.1	< 0.5	< 5	< 0.1	< 0.5	10	70	< 0.1
99-17	299	297	9.0	< 0.5	128.0	0.5	15	< 0.1	< 0.1	< 0.1	< 0.1	35	3	< 0.1	< 0.5	< 5	< 0.1	< 0.5	15	64	< 0.1
99-18	299	297	8.5	< 0.5	147.0	0.5	10	< 0.1	< 0.1	< 0.1	< 0.1	33	4	< 0.1	< 0.5	< 5	< 0.1	< 0.5	10	66	< 0.1
99-19	299	297	13.5	0.5	219	1.0	25	< 0.1	< 0.1	< 0.1	< 0.1	41	4	< 0.1	1.0	5	< 0.1	< 0.5	5	67	< 0.1
99-20	299	297	11.0	0.5	144.0	1.5	10	< 0.1	< 0.1	< 0.1	0.1	39	4	< 0.1	0.5	< 5	< 0.1	< 0.5	5	71	< 0.1
99-21	299	297	9.0	< 0.5	180.5	< 0.5	10	< 0.1	< 0.1	< 0.1	< 0.1	32	1	< 0.1	< 0.5	< 5	< 0.1	< 0.5	5	55	< 0.1
99-22	299	297	7.5	< 0.5	236	0.5	10	< 0.1	< 0.1	< 0.1	< 0.1	47	4	< 0.1	< 0.5	5	< 0.1	< 0.5	15	76	< 0.1
99-23	299	297	14.5	< 0.5	2820	< 0.5	5	< 0.1	< 0.1	< 0.1	< 0.1	103	< 1	< 0.1	< 0.5	< 5	< 0.1	< 0.5	< 5	149	< 0.1
99-24	299	297	11.0	49.0	963	1.5	20	6.3	4.7	0.9	6.3	54	3	1.3	21.0	5	0.6	24.5	25	125	6.8
99-25	299	297	23.0	48.5	853	0.5	10	3.6	4.4	0.9	6.0	50	5	1.3	21.0	5	0.6	22.5	10	121	6.0
99-26	299	297	10.5	12.5	813	0.5	10	1.1	0.7	0.1	1.3	54	3	0.1	5.5	< 5	< 0.1	5.5	10	137	1.4
99-27	299	297	9.5	15.0	911	< 0.5	10	1.7	1.4	0.2	2.0	62	3	0.3	6.5	< 5	< 0.1	7.0	5	159	2.0
99-28	299	297	12.5	13.0	1065	0.5	5	1.4	1.2	0.2	1.7	64	3	0.3	6.0	5	< 0.1	6.5	10	99	1.5
99-29	299	297	9.0	27.0	941	0.5	5	3.2	2.4	0.4	3.8	53	1	0.7	11.5	< 5	0.3	13.5	5	109	3.4
99-30	299	297	9.5	15.5	962	0.[illegible]	5	1.8	1.4	0.1	2.1	49	< 1	0.3	6.5	< 5	0.1	8.0	5	94	2.0
99-31	299	297	59.5	3.0	691	0.5	< 5	0.3	0.1	< 0.1	0.3	29	< 1	< 0.1	1.5	10	< 0.1	1.5	5	28	0.3
99-32	299	297	51.0	< 0.5	610	0.5	< 5	< 0.1	< 0.1	< 0.1	< 0.1	32	< 1	< 0.1	< 0.5	10	< 0.1	< 0.5	5	21	< 0.1
99-33	299	297	10.5	48.0	1125	< 0.5	< 5	3.8	4.6	1.0	6.3	60	3	1.3	20.5	10	0.5	23.5	5	66	5.9
99-34	299	297	63.5	7.5	1105	0.5	5	0.5	0.4	< 0.1	0.8	57	1	< 0.1	4.0	5	< 0.1	3.5	5	60	0.9
99-35	299	297	29.5	0.5	111.0	< 0.5	5	< 0.1	< 0.1	< 0.1	< 0.1	45	3	< 0.1	0.5	< 5	< 0.1	< 0.5	< 5	72	< 0.1
99-36	299	297	59.0	7.0	256	< 0.5	15	0.2	0.1	< 0.1	0.7	48	4	< 0.1	4.0	10	< 0.1	3.5	5	43	0.8
99-37	299	297	30.0	2.5	1965	< 0.5	5	< 0.1	< 0.1	< 0.1	< 0.1	77	2	< 0.1	3.5	5	< 0.1	0.5	5	80	0.1
99-38	299	297	29.5	5.0	2060	< 0.5	5	< 0.1	< 0.1	< 0.1	< 0.1	81	3	< 0.1	6.5	< 5	< 0.1	1.0	< 5	91	0.3

CERTIFICATION:________________________

Chemex Labs Ltd.
Analytical Chemists * Geochemists * Registered Assayers
5175 Timberlea Blvd., Mississauga
Ontario, Canada L4W 2S3
PHONE: 905-624-2806 FAX: 905-624-6163

To: HOUSTON LAKE MINING INC.

2892 WHITE ST.
VAL CARON, ON
P3N 1B2

Project : PAKIAGAMA LAKE
Comments: ATTN: GRAYNE ANTHONY

Page Number : 1-B
Total Pages : 1
Certificate Date: 23-NOV-99
Invoice No. : I9932869
P.O. Number :
Account : QHJ

CERTIFICATE OF ANALYSIS A9932869

SAMPLE	PREP CODE		Rb ppm	Sm ppm	Ag ppm	Sr ppm	Ta ppm	Tb ppm	Tl ppm	Th ppm	Tm ppm	Sn ppm	W ppm	U ppm	V ppm	Yb ppm	Y ppm	Zn ppm	Zr ppm
99-15	299	297	854	< 0.1	< 1	11.7	83.5	< 0.1	5.5	3	< 0.1	22	3	5.5	< 5	< 0.1	0.5	30	21.5
99-16	299	297	2430	< 0.1	< 1	15.7	129.0	< 0.1	15.0	6	< 0.1	52	4	11.0	< 5	< 0.1	< 0.5	65	18.0
99-17	299	297	1740	< 0.1	< 1	12.9	93.5	< 0.1	10.5	7	< 0.1	106	3	10.5	< 5	< 0.1	< 0.5	85	15.0
99-18	299	297	1900	< 0.1	< 1	13.4	96.5	< 0.1	12.5	5	< 0.1	25	3	7.0	< 5	< 0.1	< 0.5	60	19.5
99-19	299	297	3460	< 0.1	< 1	20.5	118.5	< 0.1	23.5	5	< 0.1	162	4	7.0	< 5	< 0.1	< 0.5	80	20.5
99-20	299	297	1955	< 0.1	< 1	15.8	137.0	< 0.1	11.5	5	< 0.1	311	4	5.0	< 5	< 0.1	< 0.5	75	18.5
99-21	299	297	2310	< 0.1	< 1	10.1	77.0	< 0.1	15.0	5	< 0.1	163	4	5.0	< 5	< 0.1	< 0.5	70	8.0
99-22	299	297	2400	< 0.1	< 1	28.3	131.0	< 0.1	15.0	9	< 0.1	106	4	8.5	< 5	< 0.1	< 0.5	95	15.0
99-23	299	297	9410	< 0.1	< 1	4.0	508	< 0.1	57.5	< 1	< 0.1	165	11	< 0.5	< 5	< 0.1	< 0.5	65	2.0
99-24	299	297	4440	5.9	< 1	24.2	293	1.0	24.5	10	0.6	84	11	7.5	< 5	4.4	37.0	70	16.0
99-25	299	297	4870	5.7	< 1	24.5	291	0.9	25.5	17	0.5	90	13	7.5	< 5	3.8	34.5	80	30.5
99-26	299	297	4910	1.2	< 1	12.1	323	0.1	25.0	13	< 0.1	101	12	4.0	< 5	0.7	7.5	70	19.5
99-27	299	297	3770	1.7	< 1	14.9	377	0.1	29.0	9	< 0.1	130	13	6.0	< 5	1.0	11.0	70	12.0
99-28	299	297	6150	1.3	< 1	12.6	257	0.1	30.5	8	< 0.1	136	13	4.5	< 5	1.0	10.5	70	12.5
99-29	299	297	3210	3.4	< 1	17.4	274	0.5	27.5	3	0.3	106	11	3.5	< 5	2.2	21.0	55	7.5
99-30	299	297	3220	2.1	< 1	12.6	237	0.1	27.5	4	0.1	113	10	3.0	< 5	1.2	12.5	60	5.5
99-31	299	297	6420	0.1	< 1	11.9	84.0	< 0.1	47.5	< 1	< 0.1	48	6	1.5	< 5	< 0.1	2.5	30	3.0
99-32	299	297	3290	< 0.1	< 1	8.2	65.5	< 0.1	42.0	< 1	< 0.1	65	5	1.0	< 5	< 0.1	< 0.5	20	3.0
99-33	299	297	3380	5.3	< 1	20.5	208	1.0	24.0	15	0.6	195	12	10.0	< 5	4.1	36.5	80	17.0
99-34	299	297	3570	0.7	< 1	8.8	155.5	< 0.1	30.5	5	< 0.1	121	12	3.5	< 5	0.4	4.5	65	6.5
99-35	299	297	120.0	< 0.1	< 1	13.2	292	< 0.1	1.0	4	< 0.1	20	2	3.5	< 5	< 0.1	< 0.5	45	12.5
99-36	299	297	608	0.3	< 1	56.2	472	< 0.1	5.0	< 1	< 0.1	22	3	3.5	< 5	0.1	3.0	10	18.5
99-37	299	297	7490	< 0.1	< 1	138.0	365	< 0.1	37.5	< 1	< 0.1	404	10	6.0	< 5	< 0.1	< 0.5	55	6.5
99-38	299	297	8030	< 0.1	< 1	231	430	< 0.1	47.0	< 1	< 0.1	350	12	5.0	< 5	< 0.1	< 0.5	55	5.5

CERTIFICATION:________________________

Chemex Labs Ltd.
Analytical Chemists * Geochemists * Registered Assayers
5175 Timberlea Blvd., Mississauga
Ontario, Canada L4W 2S3
PHONE: 905-624-2806 FAX: 905-624-6163

To: HOUSTON LAKE MINING INC.

2892 WHITE ST.
VAL CARON, ON
P3N 1B2

Project: PAKIAGAMA LAKE
Comments: ATTN: GRAYNE ANTHONY

Page Number : 1-A
Total Pages : 1
Certificate Date: 23-NOV-99
Invoice No. : I9932869
P.O. Number :
Account : QHJ

CERTIFICATE OF ANALYSIS A9932869

SAMPLE	PREP CODE		Ba ppm	Ce ppm	Cs ppm	Co ppm	Cu ppm	Dy ppm	Er ppm	Eu ppm	Gd ppm	Ga ppm	Hf ppm	Ho ppm	La ppm	Pb ppm	Lu ppm	Nd ppm	Ni ppm	Nb ppm	Pr ppm
99-15	299	297	13.5	0.5	44.2	0.5	10	< 0.1	< 0.1	< 0.1	< 0.1	30	3	< 0.1	0.5	< 5	< 0.1	< 0.5	15	38	< 0.1
99-16	299	297	9.0	< 0.5	145.5	0.5	5	< 0.1	< 0.1	< 0.1	< 0.1	42	4	< 0.1	< 0.5	< 5	< 0.1	< 0.5	10	70	< 0.1
99-17	299	297	9.0	< 0.5	128.0	0.5	15	< 0.1	< 0.1	< 0.1	< 0.1	35	3	< 0.1	< 0.5	< 5	< 0.1	< 0.5	15	64	< 0.1
99-18	299	297	8.5	< 0.5	147.0	0.5	10	< 0.1	< 0.1	< 0.1	< 0.1	33	4	< 0.1	< 0.5	< 5	< 0.1	< 0.5	10	66	< 0.1
99-19	299	297	13.5	0.5	219	1.0	25	< 0.1	< 0.1	< 0.1	< 0.1	41	4	< 0.1	1.0	5	< 0.1	< 0.5	5	67	< 0.1
99-20	299	297	11.0	0.5	144.0	1.5	10	< 0.1	< 0.1	< 0.1	0.1	39	4	< 0.1	0.5	< 5	< 0.1	< 0.5	5	71	< 0.1
99-21	299	297	9.0	< 0.5	180.5	< 0.5	10	< 0.1	< 0.1	< 0.1	< 0.1	32	1	< 0.1	< 0.5	< 5	< 0.1	< 0.5	5	55	< 0.1
99-22	299	297	7.5	< 0.5	236	0.5	10	< 0.1	< 0.1	< 0.1	< 0.1	47	4	< 0.1	< 0.5	5	< 0.1	< 0.5	15	76	< 0.1
99-23	299	297	14.5	< 0.5	2820	< 0.5	5	< 0.1	< 0.1	< 0.1	< 0.1	103	< 1	< 0.1	< 0.5	< 5	< 0.1	< 0.5	< 5	149	< 0.1
99-24	299	297	11.0	49.0	963	1.5	20	6.3	4.7	0.9	6.3	54	3	1.3	21.0	5	0.6	24.5	25	125	6.8
99-25	299	297	23.0	48.5	853	0.5	10	5.6	4.4	0.9	6.0	50	5	1.3	21.0	5	0.6	22.5	10	121	6.0
99-26	299	297	10.5	12.5	813	0.5	10	1.1	0.7	0.1	1.3	54	3	0.1	5.5	< 5	< 0.1	5.5	10	137	1.4
99-27	299	297	9.5	15.0	911	< 0.5	10	1.7	1.4	0.2	2.0	62	3	0.3	6.5	< 5	< 0.1	7.0	5	159	2.0
99-28	299	297	12.5	13.0	1065	0.5	5	1.4	1.2	0.2	1.7	64	3	0.3	6.0	5	< 0.1	6.5	10	99	1.5
99-29	299	297	9.0	27.0	941	0.5	5	3.2	2.4	0.4	3.8	53	1	0.7	11.5	< 5	0.3	13.5	5	109	3.4
99-30	299	297	9.5	15.5	962	0.5	5	1.8	1.4	0.1	2.1	49	< 1	0.3	6.5	< 5	0.1	8.0	5	94	2.0
99-31	299	297	59.5	3.0	691	< 0.5	< 5	0.3	0.1	< 0.1	0.3	29	< 1	< 0.1	1.5	10	< 0.1	1.5	5	28	0.3
99-32	299	297	51.0	< 0.5	610	0.5	< 5	< 0.1	< 0.1	< 0.1	< 0.1	32	< 1	< 0.1	< 0.5	10	< 0.1	< 0.5	5	21	< 0.1
99-33	299	297	10.5	48.0	1125	< 0.5	< 5	5.8	4.6	1.0	6.3	60	3	1.3	20.5	10	0.5	23.5	5	66	5.9
99-34	299	297	63.5	7.5	1105	0.5	5	0.5	0.4	< 0.1	0.8	57	1	< 0.1	4.0	5	< 0.1	3.5	5	60	0.9
99-35	299	297	29.5	0.5	111.0	< 0.5	5	< 0.1	< 0.1	< 0.1	< 0.1	45	3	< 0.1	0.5	< 5	< 0.1	< 0.5	< 5	72	< 0.1
99-36	299	297	59.0	7.0	256	< 0.5	15	0.2	0.1	< 0.1	0.7	48	4	< 0.1	4.0	10	< 0.1	3.5	5	43	0.8
99-37	299	297	30.0	2.5	1965	< 0.5	5	< 0.1	< 0.1	< 0.1	< 0.1	77	2	< 0.1	3.5	5	< 0.1	0.5	5	80	0.1
99-38	299	297	29.5	5.0	2060	< 0.5	5	< 0.1	< 0.1	< 0.1	< 0.1	81	3	< 0.1	6.5	< 5	< 0.1	1.0	< 5	91	0.3

CERTIFICATION:________________

Appendix 2 Assayed Sample Descriptions

Sample No.	Location	Description
99-15	0-1 m. NW pegmatite	Channel sample, Stacked Aplite Zone, 40% Aplite, 60% Spodumene-Quartz layers, tr. oxides
99-16	1-2 m. NW pegmatite	Channel sample, Stacked Aplite Zone, 45% Aplite, 55% Spodumene-Quartz layers, tr. oxides
99-17	2-3 m. NW pegmatite	Channel sample, Stacked Aplite Zone, 60% Aplite, 40% Spodumene-Quartz layers, tr. oxides
99-18	3-4 m. NW pegmatite	Channel sample, Stacked Aplite Zone, 50% Aplite, 50% Spodumene-Quartz layers, tr. oxides
99-19	4-5 m. NW pegmatite	Channel sample, Stacked Aplite Zone, 50% Aplite, 50% Spodumene-Quartz layers, tr. oxides
99-20	5-6 m. NW pegmatite	Channel sample, Stacked Aplite Zone, 50% Aplite, 50% Spodumene-Quartz layers, tr. oxides
99-21	6-7 m. NW pegmatite	Channel sample, Stacked Aplite Zone, 35% Aplite, 65% Spodumene-Quartz layers, tr. oxides
99-22	7-8 m. NW pegmatite	Channel sample, Stacked Aplite Zone, 65% Aplite, 35% Spodumene-Quartz layers, tr. oxides
99-23	Core Zone	Replacement Vein, f.g - m.g., lithian mica + quartz, minor montebrasite, oxides 1-2 percent
99-24	0-1 m. NE Wall Zone	Channel sample: Fluorapatite-lithian mica-quartz pegmatite, 5-10% aplitic pods, minor beryl, 1% oxides
99-25	1-2 m. NE Wall Zone	Channel sample: Fluorapatite-lithian mica-quartz pegmatite, minor beryl, 1-1.5% oxides
99-26	2-3 m. NE Wall Zone	Channel sample: Fluorapatite-lithian mica-quartz pegmatite, 5-10% aplitic pods, minor beryl, 1-2% oxides

Sample No.	Location	Description
99-29	5-6 m. NE Wall Zone	Channel sample: Fluorapatite-lithian mica-quartz pegmatite, 5% aplitic pods, 5% SQUI, 1% oxides
99-30	6-7 m. NE Wall Zone	Channel sample: Fluorapatite-lithian mica-quartz pegmatite, minor beryl, 1% oxides
99-31	7-8 m. NE Wall Zone	Channel sample: Fluorapatite-lithian mica-quartz pegmatite, 15% k-feldspar, 10% SQUI, tr.-1% oxides
99-32	8-9 m. NE Wall Zone	Channel sample: Fluorapatite-elbaite-lithian mica-quartz pegmatite , minor beryl, tr-1% oxides
99-33	9-10 m. NE Wall Zone	Channel sample: Fluorapatite-lithian mica-quartz pegmatite, 10-15% aplitic pods, beryl present, tr.-1% oxides
99-34	10-11 m. NE Wall Zone	Channel sample: Fluorapatite-lithian mica-quartz pegmatite, 10% SQUI, beryl present, tr.-1% oxides
99-35	N. k-feldspar-SQUI Zone	Elbaite-apatite aplite, 2 m. thick, tr. oxides
99-36	Shore of Pakeagama Lake	Elbaite-fluorapatite aplite, 1 m. thick, 1% oxides
99-37	SE Wall Zone	0.2m Channel sample: Foliated lithian mica-quartz-beryl-montebrasite pegmatite, 1-2% oxides
99-38	SE Wall Zone	0.2m Channel sample: Beryl-montebrasite-lithian mica-quartz, 1-2% oxides

Appendix 3 Hand Sample Descriptions

Hand Sample GA99-1 Wall Zone, 1.5 metres from Southeast Contact

The rock is a granitic pegmatite with an inequigranular and porphyritic fresh-appearing igneous texture. The porphyritic component makes up approximately 50 to 55% of the rock and is matrix supported. The porphyritic component is composed of: 35% pinkish to whitish, glomerophyric, medium- to pegmatitic-sized, subhedral to euhedral, equant to occasionally prismatic crystals of k-feldspar that vary from 5 mm to 3 cm; 10-15% glassy to grey, lens-shaped megacrysts of quartz that may reach 5 cm in long dimension; and 1% recessive weathering, whitish-beige, euhedral equant crystals of montebrasite that may reach 1.5 cm in diameter.

The groundmass is composed of: 35-40% fine-grained, anhedral to subhedral, whitish to medium grey quartz; 2-5% fine-grained patches to disseminated brownish weathering mica which tends to reach higher concentrations proximal to quartz megacrysts, 2% deep green suhedral prisms of tourmaline (elbaite?) attain 5 mm in length in the matrix with quartz; 1-2% whitish-beige anhedral to subhedral aggregates of montebrasite; 1% deep blue, recessive weathering, elongate crystals of fluorapatite reach 1 cm in length and are associated with feldspar; and 1-2% extremely fine-grained oxides are disseminated in the quartz-rich groundmass and tend to be more concentrated along the peripheries of quartz megacrysts.

Hand Sample GA99-2a, 2b. Wall Zone, Northeast Side of Core Zone.

The rock is a granitic pegmatite with an inequigranular and porphyritic fresh-appearing igneous texture. The porphyritic component makes up approximately 55% of the rock and is largely matrix supported. The porphyritic component is composed of: 50-55% glassy to grey, lens-shaped megacrysts of quartz that may reach 10 cm in long dimension and is gradational to the groundmass; and 3-5% vitreous to glassy, relatively weathering resistant, transparent white crystals of beryl that may reach 2 cm in diameter. The beryl crystals appear rounded and embayed suggesting beryl was not in equilibrium with the melt.

The medium-grained groundmass is composed of: 25-30% fine- to medium-grained, anhedral to subhedral, whitish to medium grey quartz; 5% fine-grained patches to disseminated brownish weathering mica, 5% deep green euhedral prisms of tourmaline (elbaite?) attain 5 mm in length; 1-2% deep blue-green, recessive weathering, elongate crystals of fluorapatite reach 2.5 cm in length; 10% extremely fine-grained k-feldspar-sericite and 3-5% fine-grained oxides are disseminated in the quartz-rich groundmass.

Hand Sample GA99-3a, 3b. Core Zone in Vicinity of OGS Channel Sampling.

On an outcrop scale the Core Zone is composed of blocky to slightly prismatic spodumene-quartz intergrowths pseudomorphic after petalite which may reach a half meter by 1 metre in size. The crystals are too large to view in hand specimen.

In hand specimen the rock is a spodumene-quartz pegmatite. The texture is granular and interlocking within the spodumene-quartz intergrowths. The spodumene-quartz intergrowths are crosscut by irregularly anastomizing and whispy quartz-albite veinlets up to 6mm thick which lend an almost augen-like texture to the rock. However, extremely rough boundaries between the veinlets and spodumene-quartz intergrowths in combination with the high-angled turns and irregular overall pattern of the veinlets preclude any significant rotation. The rock is composed of 55-60% fine-grained, granular, whitish grey spodumene, and 30-35% fine-grained, greyish quartz which have an interlocking texture. Approximately 10% of the rock is comprised of medium grey quartz-albite veinlets. The veinlets are composed of 5-6% extremely fine-grained quartz, 3-4% extremely fine-grained albite, 1-2%brownish mica, and trace fine-grained oxide minerals.

Hand Sample GA99-4a, 4b. Holmquistite Granite, Centre of Holmquistite Anomaly.

The rock is a garnet-biotite-muscovite foliated granite/granite gneiss with holmquistite overgrowths. The texture is generally weakly to moderately foliated, medium-grained and granoblastic in texture. The rock is composed of 50% slightly pinkish white to white anhedral k-feldspar, 10-15% whitish grey subhedral plagioclase, 15-20% anhedral grey quartz and 3-5% muscovite, 3-5% biotite, 3-5% fine-grained aggregates of magnetite and trace to 1% garnet. The accessory garnet is indicative of amphibolite grade metamorphism. The foliation is expressed by the interstitial alignment of muscovite and biotite, fine grained aggregates of magnetite and garnet.

The metamorphic texture is overprinted by growths of holmquistite which are weakly to strongly discordant to the trend of the foliation. Dark grey holmquistite forms whispy and elongate to acicular crystals (2-5%), are 5mm to 2 cm in long dimension and compose 5% of the rock. The holmquistite crystals commonly extend into the felsic component of the granite gneiss from the more mafic knots defining the foliation. Lithium metasomatism is the most likely source for the overprinting.

Hand Sample GA99-5a, 5b. Albite- Quartz-Sericite Aplite.

The rock is an albite-quartz-sericite aplite. The hand sample displays a medium brown weathered surface and is greyish-white on a fresh surface. The 12 cm. thick aplite dike trends 265°/54°and occurs 300 metres from the main pegmatite exposure on the shore of Pakeagama Lake. The aplite has an allotriomorphic granular texture and displays a subtle internal layering parallel to the contacts. The rock is composed of 55-60% fine-grained whitish albite, 30-35% fine-grained greyish quartz, and 5-10% sericite-muscovite, 1-1.5% blackish grey fine-grained oxide minerals, and trace deep green elbaite. Layering is indicated by parallel and thinly laminated whitish albite-rich layers and concentrations of oxide minerals along planes that mimic the orientation of the contacts. These planes may be coated with sericite that appear slickenslided.

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)
W0030.00063
Assessment Files Research Imaging

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

53C11SW2001 2.20468 PAKEAGAMA LAKE 900

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

2.20468

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

Name: John Brady
Client Number: 111562
Address: 1227 Holland Rd.
Sudbury, ONT. P3A 3R1
Telephone Number: 705-525 4129
Fax Number: 705-525-1828
Name:
Client Number:
Address:
Telephone Number:
Fax Number:

RECORDED
JUL 26 2000

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: Geo. Tech.
ASSAYS.

Dates Work Performed From 20 (Day) 06 (Month) 99 (Year) To 26 (Day) 07 (Month) 00 (Year)

Global Positioning System Data (if available)

Township/Area: PAKEAGAMA LAKE.

M or G-Plan Number:

Office Use

Commodity:
Total $ Value of Work Claimed: 21,642
NTS Reference:
Mining Division: Red Lake
Resident Geologist District: Red Lake

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: E Graham Anthony
Telephone Number: DAY 705-897-7622
Address: 816-1601 PARIS St. SUDBURY, ON P3E 5N3
Fax Number: 705-897-7618
Name:
Telephone Number:
Address:
Fax Number:
Name:
Telephone Number:
Address:
Fax Number:

RECEIVED
12:05pm
JUL 26 2000
GEOSCIENCE ASSESSMENT OFFICE

4. Certification by Recorded Holder or Agent

I, John Bradey (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: J Brady
Date: July 26/00
Agent's Address:
Telephone Number: 705-525-4129
Fax Number:

0241 (03/97)

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.

W.0020.00063

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	1232441	16	~~18,041.46~~	~~18,041.46~~	-0-	
2			21,642.51	21,642.51		
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15			21,642.51	21,642.51		
	Column Totals	16	~~18,041.46~~	~~18041.46~~		

2. 20468

I, John Brady. (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	Date July 26/00

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)	

0241 (03/97)

**Ministry of
Northern Development
and Mines**

**Ministère du
Développement du Nord
et des Mines**

Ontario

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

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

Visit our website at:
www.gov.on.ca/MNDM/MINES/LANDS/mlsmnpge.htm

November 22, 2000

HOUSTON LAKE MINING INC.
2892 WHITE STREET
VAL CARON, ONTARIO
P3N-1B2

Submission Number: 2.20468

Dear Sir or Madam:

Subject: Transaction Number(s): W0020.00063 **Status** 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 or by telephone at (705) 670-5856.

Yours sincerely,

Lucille Jerome

ORIGINAL SIGNED BY
Lucille Jerome
Acting Supervisor, Geoscience Assessment Office
Mining Lands Section

Correspondence ID: 15443
Copy for: Assessment Library

Work Report Assessment Results

Submission Number: 2.20468

Date Correspondence Sent: November 22, 2000 **Assessor:** BRUCE GATES

Transaction Number	First Claim Number	Township(s) / Area(s)	Status	Approval Date
W0020.00063	1232441	PAKEAGAMA LAKE	Approval After Notice	November 18, 2000

Section:
17 Assays ASSAY
12 Geological GEOL

The 45 days outlined in the Notice dated October 4, 2000 have passed.

Of the additional costs reported September 14 the costs of analysis has been removed as no results were provided ($2,517).

Wages while travelling to the property are not an eligible expense. Geological services have been pro-rated to 10/16 days = $2,500. This is a reduction of $1,500.

Assessment work credit has been approved as outlined on the attached Distribution of Assessment Work Credit sheet.

The assessment credit is being reduced by $8,881.00 The TOTAL VALUE of assessment credit that will be allowed, based on the information provided in this submission, is $12,761.00.

Correspondence to:
Resident Geologist
Red Lake, ON

Assessment Files Library
Sudbury, ON

Recorded Holder(s) and/or Agent(s):
HOUSTON LAKE MINING INC.
VAL CARON, ONTARIO

Correspondence ID: 15443

Distribution of Assessment Work Credit

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

Date: November 22, 2000

Submission Number: 2.20468

Transaction Number: W0020.00063

Claim Number	Value Of Work Performed
1232441	12,761.00
Total: $	12,761.00

Correspondence ID: 15443

HLM
HOUSTON LAKE
MINING INC.

2892 White Street,
Val Caron, Ontario
Canada P3N 1B2

MNDM
Assessment Office

September 14, 2000.

Please find listed below supplemental expenditures to that filed on July 26, 2000 on the Pakeagama Lake property:

Truck Rental	$447.76
Cartography	636.65
Assay Analysis	2516.64
Totals	**$3,601.05**

Yours truly,
HOUSTON LAKE MINING INC.

E. Grayme Anthony

E. G. ANTHONY

E.G. ANTHONY
F 6674
FELLOW

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SEP 14 2000
GEOSCIENCE ASSESSMENT OFFICE

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Revised Copy.
W.0020.00063

Appendix 4 Assessment Expenditures

Date	Description of Expenses	Cost
06-03-99	Initial Geological Report	$4,868.50
06-24-99	Air Transportation	1,076.42
06-29-99	Travel Expenses	676.22
06-29-99	Truck Rental	448.80
08-07-99	Air Transportation	2,906.12
08-10-99	Travel Expenses	674.74
08-31-99	Geological Services	$4,000.00
11-02-99	Sample Bags	8.63
12-22-99	Assays	1,222.32 50
02-16-00	Assays	925.10 39
07-24-00	Geological Report	1,234.61
	Totals This Filing	**$18,041.46**

2.20468

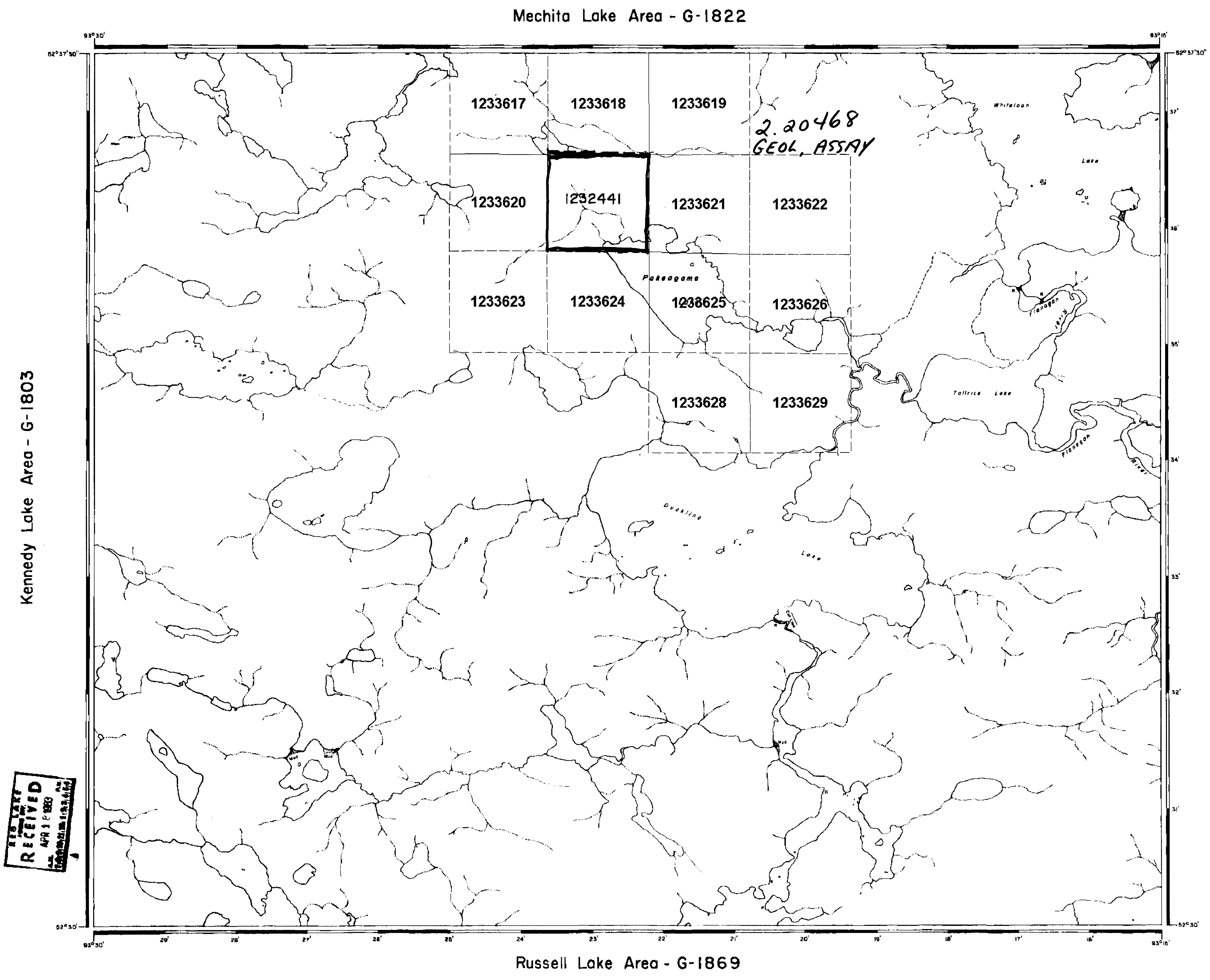
John Brady for G Anthony
Houston area Mowes

Expenses To File: Truck Rental - August
Photocopying - Report
Cartography

- see attached

ATT. Jo Anne Leval
here is my signature
Please, ensure that all the costs are
applied to the claims and none
put in the bank
Thank you
John Brady

** TOTAL PAGE.02 **



2.20468
GEOL, ASSAY

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

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 MUSKEG	
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	OC
RESERVATION	Ⓡ
CANCELLED	●
SAND & GRAVEL	Ⓢ

NOTE: MINING RIGHTS IN PARCELS PATENTED PRIOR TO MAY 6, 1913, VESTED IN ORIGINAL PATENTEE BY THE PUBLIC LANDS ACT, R.S.O. 1970, CHAP. 380, SEC. 63, SUBSEC 1

SCALE: 1 INCH = 40 CHAINS

FEET 0 1000 2000 4000 6000 8000
0 200 1000 (1 KM) 2000 (2 KM) METRES

AREA
PAKEAGAMA LAKE

M.N.R. ADMINISTRATIVE DISTRICT
RED LAKE

MINING DIVISION
RED LAKE

LAND TITLES / REGISTRY DIVISION
KENORA / PATRICIA

Ontario
Ministry of Natural Resources
Land Management Branch

Date FEBRUARY , 19[illegible]

Number
G-1842

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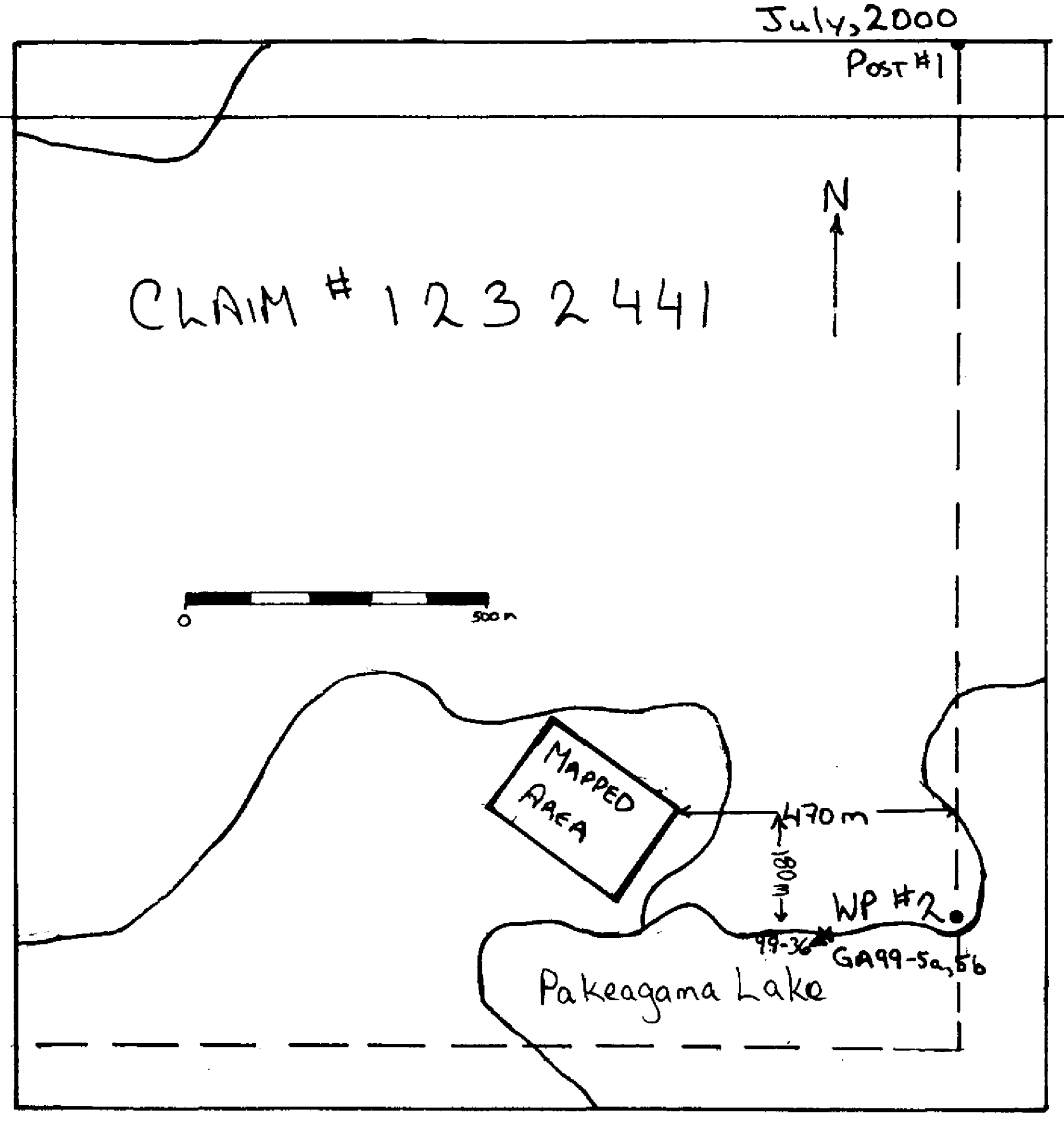
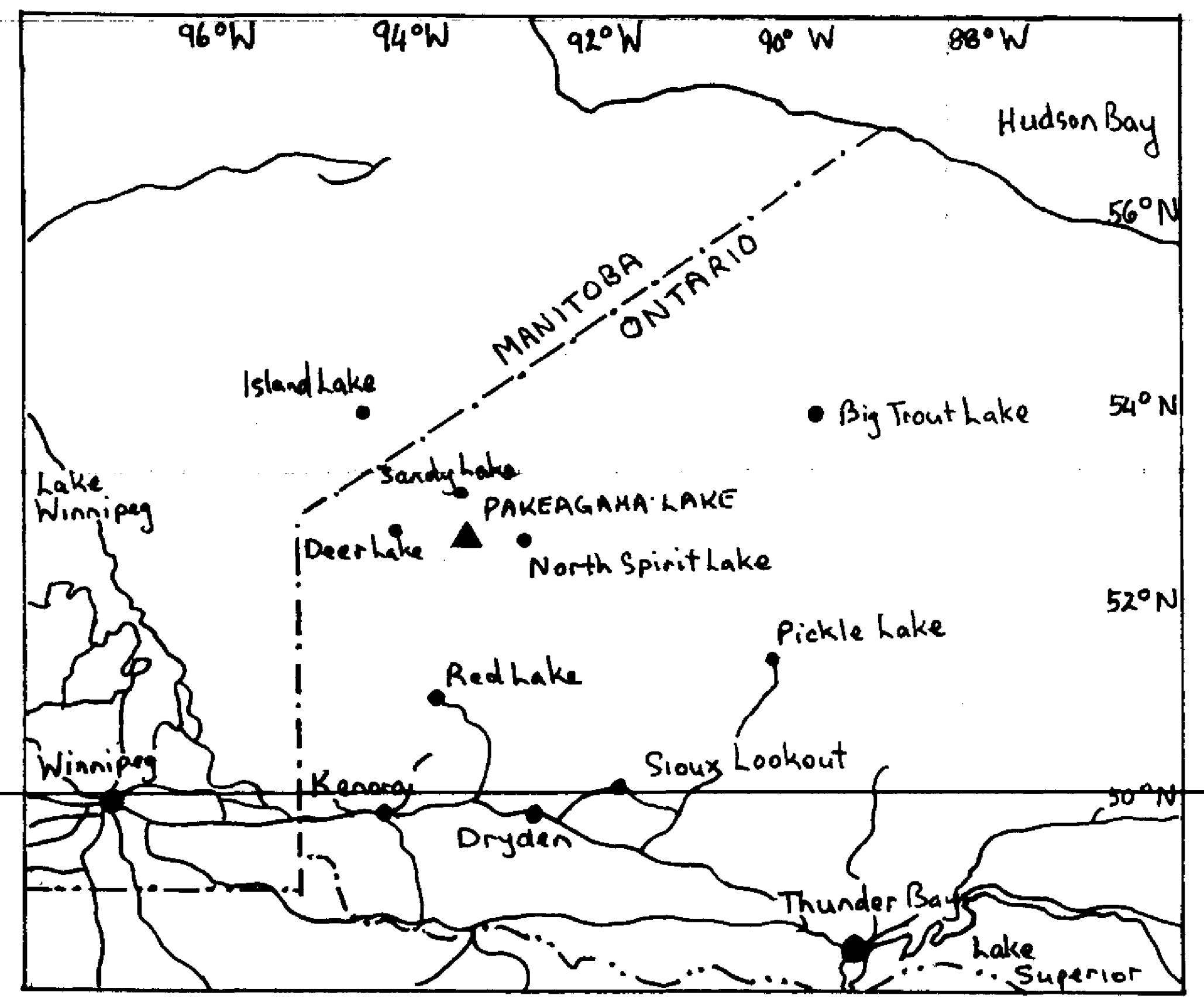
DETAILED GEOLOGY AND SAMPLE LOCATION MAP OF THE PAKEAGAMA LAKE PEGMATITE, PAKEAGAMA LAKE PROPERTY, HOUSTON LAKE MINING INC., RED LAKE MINING DISTRICT, N.W. ONTARIO.

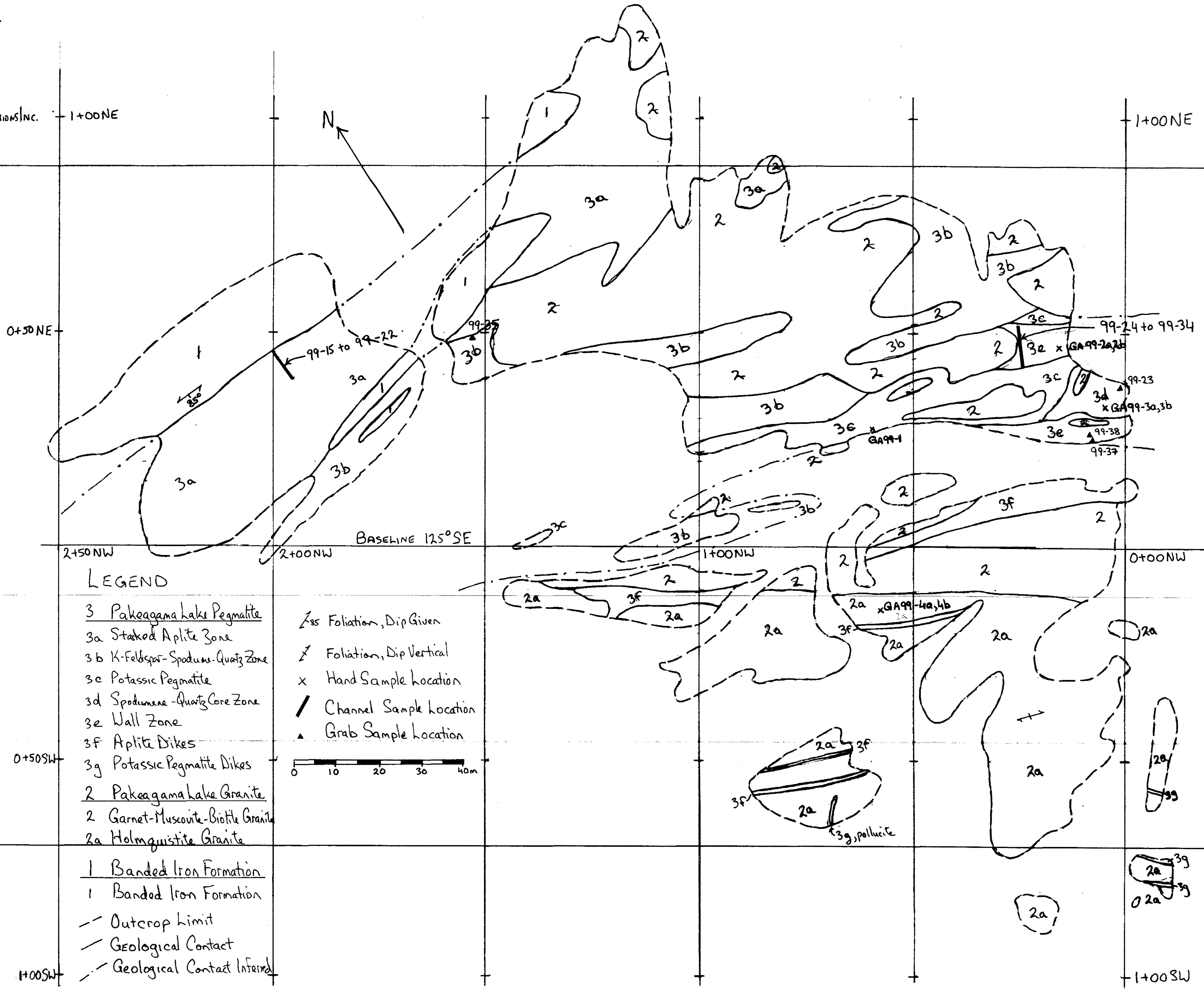
by E.G. ANTHONY
TIMBERWOLF EXPLORATIONS INC.
July, 2000



DETAILED MAPPING LOCATION WITHIN CLAIM #1232441.



LOCATION MAP OF THE PAKEAGAMA LAKE AREA, N.W. ONTARIO.
Lambert Equal-Area Projection 2° longitude = 132 km, 2° latitude = 219 km.



2.20468

DETAILED GEOLOGY AND SAMPLE LOCATION MAP OF THE PAKEAGAMA LAKE PEGMATITE, PAKEAGAMA LAKE PROPERTY, HOUSTON LAKE MINING INC., RED LAKE MINING DISTRICT, N.W. ONTARIO

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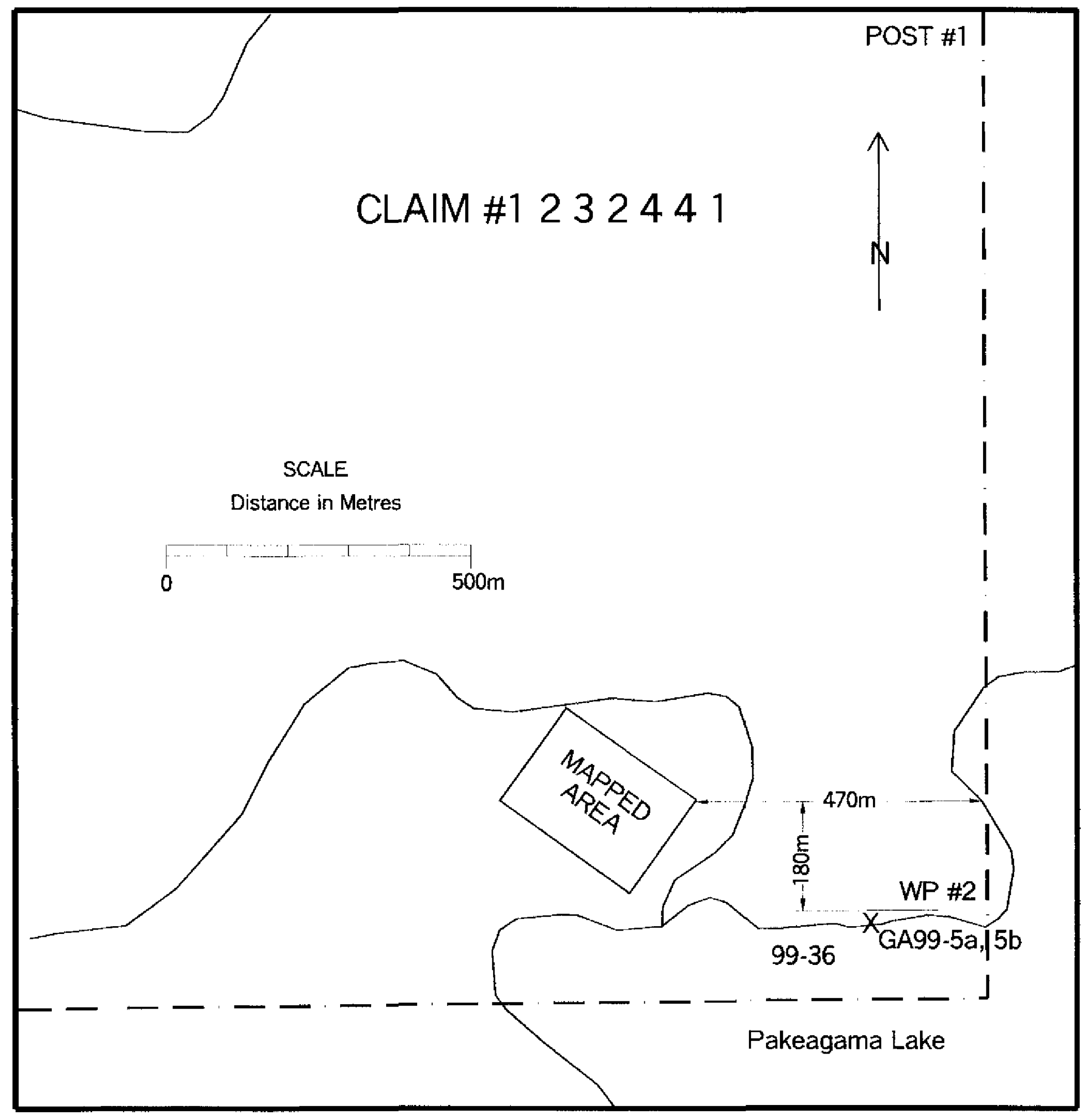
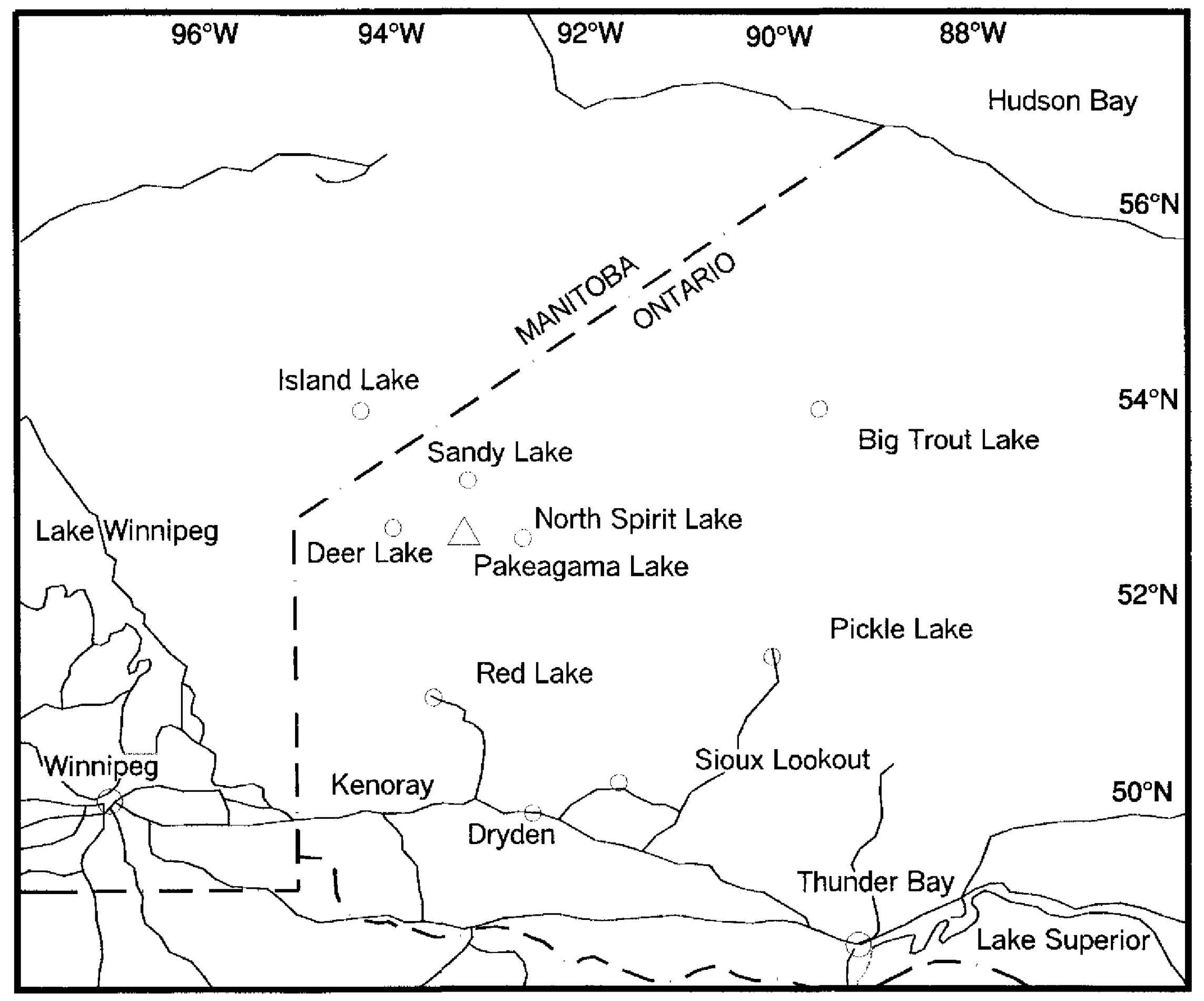
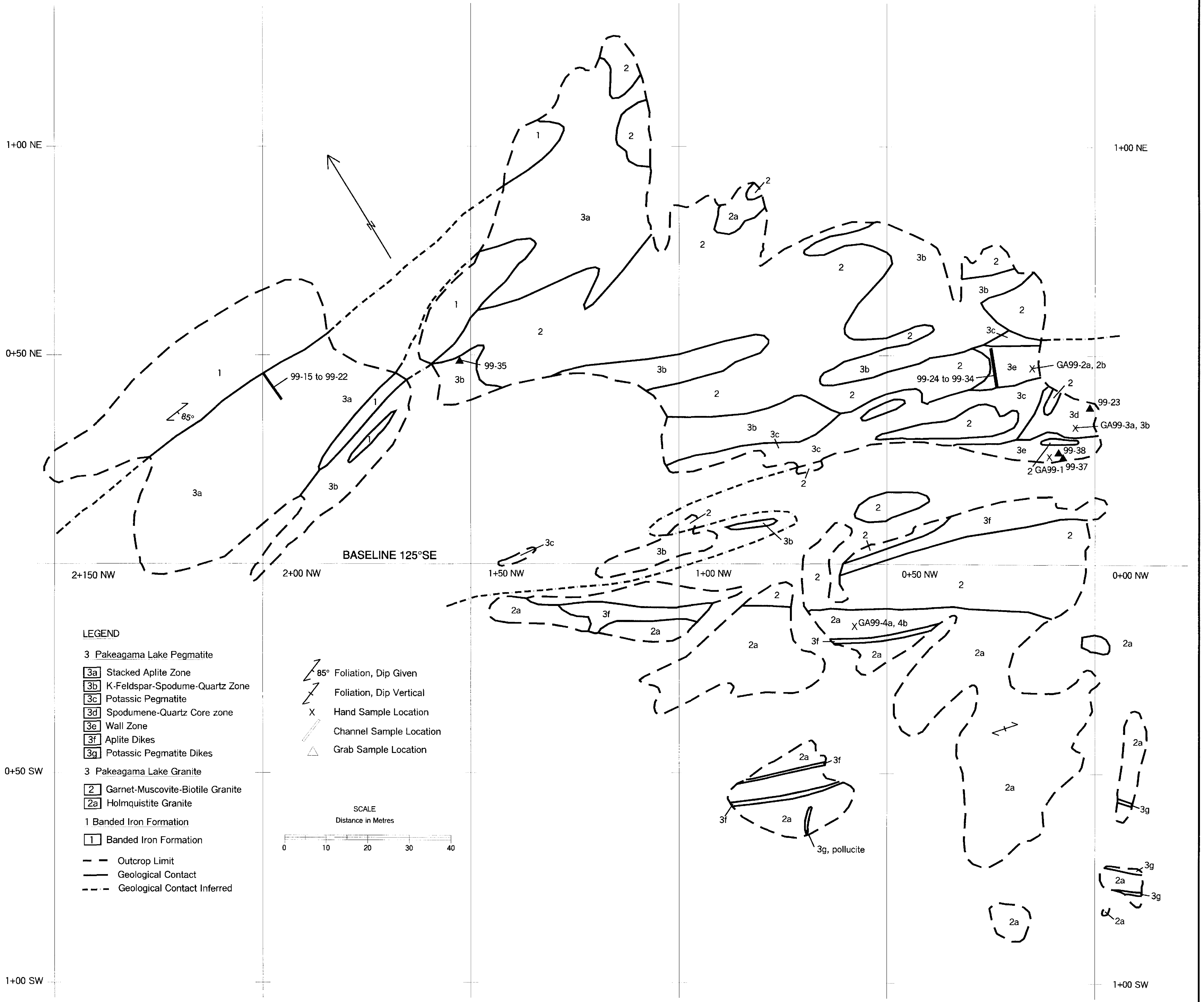


DETAILED MAPPING LOCATION WITHIN CLAIM # 1232441.



LOCATION MAP OF PAKEAGAMA LAKE AREA, NW. ONTARIO
Lambert Equal-Area Projection 2°longitude=132km,
2°Latitude=219km.



LEGEND

3 Pakeagama Lake Pegmatite

- 3a Stacked Aplite Zone
- 3b K-Feldspar-Spodume-Quartz Zone
- 3c Potassic Pegmatite
- 3d Spodumene-Quartz Core zone
- 3e Wall Zone
- 3f Aplite Dikes
- 3g Potassic Pegmatite Dikes

3 Pakeagama Lake Granite

- 2 Garnet-Muscovite-Biotile Granite
- 2a Holmquistite Granite

1 Banded Iron Formation

- 1 Banded Iron Formation

- — — Outcrop Limit
- —— Geological Contact
- – – · – Geological Contact Inferred

85° Foliation, Dip Given
Foliation, Dip Vertical
X Hand Sample Location
Channel Sample Location
△ Grab Sample Location

SCALE
Distance in Metres
0 10 20 30 40

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SEP 14 2000
GEOSCIENCE ASSESSMENT OFFICE

53C11SW2001 2.20468 PAKEAGAMA LAKE 220