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**Calcitic Marble & Amphibolite Marble Comparison Study  
Cheddar Batholith Halo Structure  
property of:  
Frederick T. Archibald  
Claims 3002728 - 3003559  
NTS 31D/16 & 31E/1  
Cardiff (Central Part) Township  
Haliburton County, Southeastern Ontario**

by

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December 31, 2008**

## **Table of Contents**

<b><u>Page</u></b>	<b><u>Title</u></b>
1	Summary
3	Disclaimer
4	Introduction
5	Property Description, Access, and Location
7	Topography & Vegetation
8	History of Area
13	Regional Geology
15	Geological Table of Formations
17	Geological Setting
18	Local Geology
19	Local Geological Mapping Program
20	2005 Property Mapping & Excavation Programs
43	Beneficiation Results / Sample Descriptions & Locations
44	Description of Beneficiation Results
45	Bulk Sampling Results
48	Description of Results
51	Conclusions & Recommendations
53	Certificate of Qualifications
54	Summary of Beneficiation Results
55	Property Expenditures
57	Program Costing Specifications

### **Table of Figure**

Figure 1	Location Map
Figure 2	Regional Geology

**2008 Peterborough-Haliburton County Amphibolite- Syenite Study**  
**Claims 3002728-3003559**

Cardiff Group- District of Haliburton

**Summary**

A total of \$20,569.00 was spent evaluating this property between April and August of 2008. A program of bulk sampling and till sampling was used to test two mica-rich zones; one associated with calcitic marbles and the other amphibolitic marbles. Zones of mica and vermiculite are associated with both of these zones. A third zone of radioactivity parallels the amphibolitic marbles. It has been found that the radioactive zones and the mica rich zones can be coincident with each other but generally not directly related. The program consisted of: backhoe excavation, geological mapping, and sampling / beneficiation studies. The assessment is being placed over the northwest portion of the claim group which has the most economical potential. A main pit was cut into the side of the hill so that the rocks can be better described along with the associations between radioactivity and the mica rich zones. It appears that the mica-bearing zones are truncated to the southeast by syenite intrusives, and appear to pinch out at the west end of the property.

A zone of potassic rich calcitic-monazitic syenitic marble has been traced through the claim group within Monmouth and Cardiff Townships. This unit is associated with the north and northwestern contact area of the Cheddar Batholith which has a core of syenitic rocks. The claim studied consist of three claim groups totalling some eleven units which comprise an area of 220 hectares. The main claim, 3002728, has been approved for lease; pending a property survey.

Associated with the band of potassic -monazite rich micas are radioactive pegmatite-syenite sources with uranium and thorium values. Similar radioactive sources within Cavendish Township (west of Baldwin's Bay on Catchacoma Lake and southeast of Loom-Crystal Lakes in Galway Township are associated with vermiculite occurrences. Immediately north of the property and associated with this band is a documented resource of 429,520 tonnes averaging 0.112% U<sub>3</sub>O<sub>8</sub> and 266,124 tonnes averaging 0.095% U<sub>3</sub>O<sub>8</sub> to the north and southwest respectively (Halo Uranium Mines Limited and Amalgamated Rare Earth #2

occurrences respectively). These have been classified as inferred resources in accordance with CIM Standards of August 20, 2000 (T.Beasley, June 2005).

The purpose of the program was to delineate the mica (vermiculite) and uranium potentials within this sector surrounding the north side of the Cheddar Batholith. It appears that this zone of deformation is intercalated with a zone of amphibolite gneiss along the inner rim and nepheline syenite to syenite to quartz monzonite around the outer rim. The biotite rich corridor varies from 15.0 meters to 120.0 meters in width on average and is cut by a series of amphibolite-syenite-quartz monzonite-pegmatite dykes.

Generally the weathered structure that was sampled becomes competent at depths between 0.5 and 1.0 meters. The rim structure consists of syenitic and calcitic rich gneissic rocks which surround the Cheddar syenite which consists of an alkalic syenitic granite material.

Two uranium occurrences adjacent to the northwest and southwest of the property, The Halo Uranium Mines Limited and the Amalgamated Rare Earth Mining Corporation Occurrences respectively, contain a combined 695,644 tonnes inferred resource calculation averaging 0.11%  $U_3O_8$  (T.Beasley / El Nino Resources Inc. 2005). Associated with the northwest corner of the property is the Bald Mountain Zone which averaged 0.25%  $U_3O_8$  over 2.56 meters width (T.Beasley, 2005).

Assaying for  $ThO_2$  and  $U_3O_8$  using XRF75V analysis technique by SGS was run on the samples and returned the following significant results:

Chip sampling was taken from November 15, 2007 to November 24, 2007 (within a syenitized-monazitic- nephelinitized gneiss with calcitic-feldspathic pyroxenitic contacts) over a width of approximately 15.0 meters. Each chip sample was approximately 1.0 meters width. Values varied from 0.06% to 0.82%  $U_3O_8$  and 0.26% to 13.2%  $ThO_2$  (SGS Report of Assays Jan.12, 2007); with values increasing to the south. As indicated by drillhole collars located in the field, this zone has never been drilled and those areas drilled are parallel extensions located some thirty

meters to the north.

A total of **\$20,569.00** was spent on claim *3002728 (Cardiff Township)* in 2008 for till sampling / bulk sampling / beneficiation. A total of four mica and/or vermiculite bearing zones have been encountered on the property; and this report encompasses the detailed sampling of one of these zones and the relationship with uranium and thorium zones in the area. The mica-vermiculite zones are associated with: syenite-monazite marble structures, amphibolite-gneiss marble structures, and calcitic marbles. Both grades and yields vary between these different types of deposits, and uranium-thorium are likely to be associated with monazite-amphibolites as well as with pegmatite dyke structures which cross these units.

## **Disclaimer-**

This report and the assumptions contained herein are based on work compiled by the author and by others, cited and duly referenced from material available in the public domain files in Tweed and Sudbury, except where verified by the author directly. F.T. Archibald and F.T. Archibald assume any responsibility for the accuracy and integrity of any data prepared for by others subcontractors. It is not the intention of submission of this report for 43-101 issuance and is solely for the purpose of assessment work application. Any direct associations between radioactive zones and mica-vermiculite-bearing zones within this township and adjacent townships are to bring the awareness that there could be possible sources of contamination that should be made aware to the public; and as a professional geoscientist it is my duty and obligation to inform the public. of these situations. Asbestos-bearing vermiculite from W.R. Grace operations in United States has been detrimental to the vermiculite and mica industry, and radioactive sources of vermiculite in Canada would also be detrimental to the vermiculite industry.

**Introduction-**

In the 1920's, nepheline syenite (at Nephton) was discovered on the east side of the Anstruther Batholith in Metheun Township. Although nepheline syenite occurs around the rim of the Anstruther and Cheddar Batholiths, it is of poor quality and has a high iron content which makes it undesirable.

In the early 1950's, several uranium , rare earth element, and vermiculite occurrences were evaluated in the area.

In the early 1970's, Goshawk Resources Inc. and Insulite Development Corp. located and developed a vermiculite deposit (*Cavendish East Zone*) in Cavendish Township which wraps around the west contact of the Anstruther Granite Batholith. The Anstruther Batholith is one of a series of alkalic complexes of which the Cheddar Batholith occurs to the north side of the Anstruther Batholith.

In the 1980's, several zinc showings were outlined in the Solerno Lake area in northern Galway Township by companies such as Teck Corporation and St. Joseph Minerals Corporation (Breakwater).

In the late 1990's, Jeff Parnell Contracting Ltd. obtained permits over a 25.0 hectare area for mining the Gull River limestone. Drill indications limit this deposit to approximately 6.0 meters in depth.

In 2001, Floyd Preston obtained permits to mine syenite traprock in the southwest corner of Cavendish Township. The rock has been mined and crushed for road surfacing material, and more recently has been mined for dimensionstone block.

In 2001, Miller Paving obtained permits to mine granite in Glamorgan Township immediately west of Gooderham.

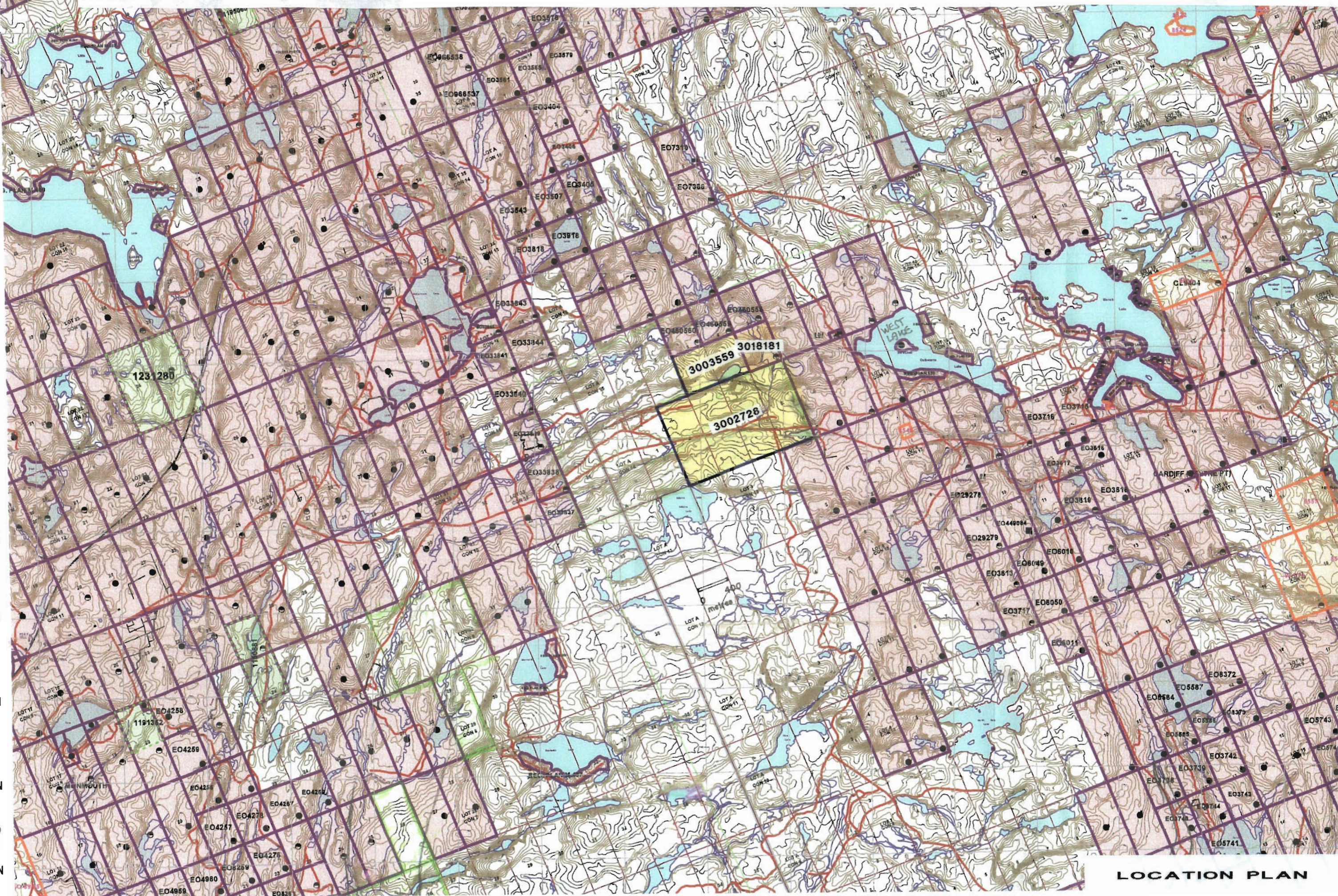
This present program on the property of F.T. Archibald, consisting of channel sampling, bulk sampling, mapping, bulk sampling, geological mapping and beneficiation to evaluate the zones for any and all minerals of any economic importance.

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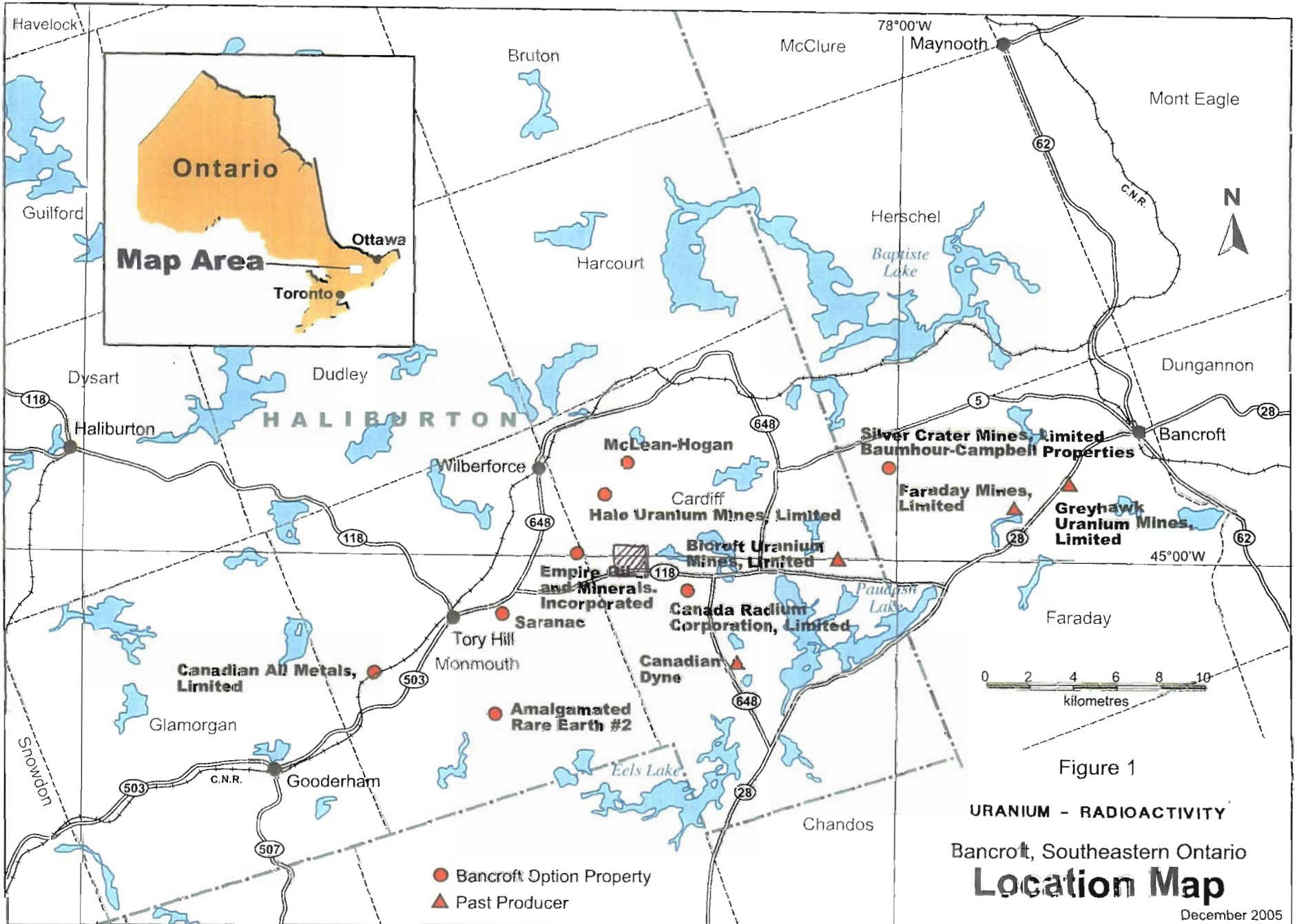
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LOCATION PLAN



### **Property Description-**

The central section of the property is located within Monmouth Township, and along the west side of Cardiff Township. These townships are located in southern Ontario between Bancroft and Peterborough. The property consists of contiguous unpatented mining claims. The property is located approximately one hundred and ninety kilometers northeast of Toronto, or about sixty kilometers northeast of the town of Bobcaygeon. The claims can be accessed by highway west of Bancroft, north from Apsley, or east from Kinmount / Gooderham.

The north part of the claim group can be accessed by dirt road some twelve kilometers east of Gooderham and then some four kilometers east along Hadlington Road or five kilometers west of the Dymo Road. The property is west of Bancroft or east of Tory Hill.

These claims are located in the Southeastern Ontario Mining District within the Haliburton District of Southern Ontario. Ministry of Natural Resources for this area, including Aggregate Mining permits, is under the Minden and Bancroft jurisdiction.

The original claims consist of two contiguous groups. This group was expanded to increase a strike length of a marble-syenite unit for some 2400 meters. The work was done on claims 3002728 and 3003559. Claim 3018181 is contiguous with the claims that the work was applied, and no work was done on this claim.

The claim group evaluated is listed as follows:

<u>Township</u>	<u>Claim Number</u>	<u># Units( 20hecares each)</u>	<u>Annual Work</u>	<u>Due Date</u>
Cardiff-Monmouth	3002728	8	3200	Mar.17 ,2112
Cardiff (Central)	3003559	2	800	Mar.27,2009
Cardiff (Central)	3018181	1	400	Mar.27,2009

The length of the operating season is twelve months of the year with peak seasons being in early Spring and Fall. Timbering is presently going on in the area and timber roads are kept open by both snowmobiling and timbering. The main highway between Kinmount and Bancroft cuts through the central portion of these claims.

Power is available in close proximity to the property along the central section. Local manpower is available as is heavy machinery. Parts and fabrications are available in Bancroft which is some twenty five kilometers to the east and Peterborough which is some fifty kilometres to the southeast.

The main claim group was recorded in 2004 and is in good standing until March 17, 2112. There is sufficient work banked on this claim to keep the claim in good standing for many more years. This assessment work being applied will keep all of the claims in good standing for at least another five years or until March 27, 2014.

## **Topography & Vegetation-**

The vegetation ranges from dense bush to wide open areas of mature to semi-mature birch, maple, white pine, spruce and cedar. In several of the areas, specifically on neighbouring patented lots, the coniferous trees have been logged off within the past few years. Birch and maple hardwoods are found on the higher ridge areas and within extensive sand and gravel deposits. Coniferous trees tend to occupy the lower swampy areas of the property. Approximately thirty to forty percent of the property is at lower elevation and covered by varying thicknesses of overburden.

Around Adams Lake in the south section of the claims are mature white pine and red pine up to 0.5 to 1.0 meter circumference.

The terrain is generally rolling to flat with overburden thickness varying from a few centimetres to tens of metres. Overburden depth was generally greatest in swamp-covered fault areas and erosional gouges left by glaciation. The effect of glaciation is a series of whaleback ridges which are highly scoured and scarped along their northern faces. The geological units of greater resistance tend to be higher and less weathered, hence being outcrops. A total of five to ten percent of the claims are outcropped, and less than forty percent of the property has bedrock exposure. In most cases the bedrock is less than a few metres in depth below the overburden cover.

### **History of Area-**

Nepheline syenite was discovered at Nephton in the late 1920's, and is presently being mined by Unimin for its refractory qualities in the glass industry.

From 1929 to 1936, underground operations for uranium were conducted on the Ontario Radium Corporation Limited property at Wilberforce to the northwest. A 122 metre shaft was sunk in 1932 at Cheddar and opened up on three levels. A 100 ton mill was completed between 1940 and 1942.

From 1932 to 1936, a 122 metre shaft with three levels and 552 metres of lateral work was done on a zone of feldspar pegmatite in Concession 13-Lots 7 to 11, Cardiff Township (Canada Uranium Occurrence). From 1954 to 1970, some 13,844 metres totalling one hundred drillholes was used to outline this zone. The highest values outlined were 0.116%  $U_3O_8$  over 0.3 metres width and 122 metres length,

From 1947 to 1951, Fission Mine Limited and Cardiff Uranium Mines Limited performed underground development at the Richardson property in Wilberforce. At the same time Lead Uranium Mines Limited and Rare Earth Mining Corporation of Canada performed underground development in Monmouth Township.

Uranium mineralization was discovered in Galway and Cavendish Townships in 1950. An adit was sunk at the west end of Crystal Lake in search of uranium, and now it is being used as a bat sanctuary.

From 1952 to 1954, Blue Rock Cerium Mines Limited (Stratmat Limited) drilled fourteen holes on the Amalgamated Rare Earth #2 Occurrence in Concession 5 and 6- Lots 16 to 21, totalling some 15,566 metres of drilling. A 134 metre shaft was sunk with three levels and a total of 749 metres of underground drifting and crosscutting. The ore shoots are granitic pegmatites up to 6.0 metres wide and 60 metres in length which have intruded into metagabbro units. A total of 266,124 tonnes averaging 0.095%  $U_3O_8$  exists above the 183 metre level. (D.C.McKechnie). Other intersections of similar grades over 1.28 to 7.93 metres widths were encountered below the 183 metre level to the 305 metre level.

In 1953 and 1954, Bicroft Uranium Mines Limited became the first producing uranium mine in the area northeast of Eels Lake (Cardiff Township). In 1956, Canadian Dyno Mines Limited sank a shaft to 304 metres and erected a 1,000 ton mill.

In 1954, Faraday Mines Limited sunk a shaft in Faraday Township to 263 metres and started production in 1957.

From 1954 to 1956, Saranac Uranium Mines Limited traced a zone over 457 metres in length and widths averaging 0.30 to 2.4 metres in width. A total of 369 metres in ten holes was drilled. An average of 15% to 20% zirconium oxide was outlined with values as high as 0.298%  $U_3O_8$  and 2.10%  $ThO_2$  (Concession 10-Lot 24, Monmouth Township).

From 1954 to 1977, The Empire B Occurrence in Concession 11 and 12- Lots 33 to 35 within Monmouth Township was drilled by Empire Oil and Minerals Inc. and Canuc Mines Limited for 6,910 metres in 43 drillholes. Uranothorite and uraninite within syenitic and granite gneiss and marbles averaged 0.08%  $U_3O_8$ .

From 1954 to 1977, Silver Crater Mines Limited (Kerr Addison Mines Limited and Brascan Resources Limited) trenched and performed 4,710 metres of diamond drilling within some forty drillholes; over Concession 14-16 & Lots 27 to 33 in Faraday Township. The uranorthite is hosted in calcite-pyroxene rich granitic pegmatite pods which are 52 metres in length and 1.8 metres to 5.5 metres in width.

In 1955, Halo Uranium Mines Limited performed sixteen surface trenches and 57 diamond drillholes for 4,898 metres outlined uranorthite within syenitic pegmatite within pyroxenite gneisses and marbles in Concession 16-Lot 5 of Cardiff Township (Pyroxenite and Bald Mountain Zones). Imperial Oil Limited explored these zones in 1973.

In 1955, Canadian All Metals Exploration Limited property in Concession 9- Lots 5 to 9, Monmouth Township were drilled (surface and underground with 42 drillholes totalling 1,698 metres. A total of 345 metres of underground drifting and crosscutting was performed. In 1977, Imperial Oil Limited drilled ten more drillholes totalling 602 metres. Silicate-pyroxenite rich granitic marbles host this occurrence which averages

0.184%  $U_3O_8$  over 1.24 metres in width. The 1977 drilling returned values of 0.33%  $U_3O_8$  over 0.3 metres and 0.083%  $U_3O_8$  over 2.43 metres respectively.

In 1955 to 1973, Saranac Uranium Mines Limited and Imperial Oil Limited drilled 2,417 metres in 36 drillholes in Concession 9-Lots 23 and 24 of Monmouth Township. The uranothorite zone is within a 2.1 metre wide pegmatitic granite with pyroxenite and hornblende with narrow widths of up to 0.05%  $U_3O_8$ .

In 1955 and 1956, Greyhawk Uranium Mines Limited sunk a shaft to 110 metres within Faraday Township and carried lateral work on three levels.

In 1955 and 1956, Cavendish Uranium and Mining Company sank a shaft to 88 feet and established lateral workings at 21 metres within Cavendish Township (along the west side of Highway #507).

In 1955 and 1956, Halo Uranium Mines Limited sunk a shaft to 23 metres in Concession 18- Lots 4 and 5 (Cardiff Township) and performed 9,690 metres of surface drilling and 3,783 metres of underground drilling totalling eighty-nine drillholes. Uraninite within brecciated pyroxenite rich syenitic pegmatite host rock was the source of the exploration (Northwest and Lake Zones).

In 1955 and 1956, Rare Earth Mining Corporation of Canada sank a shaft to 192 metres and established lateral development along five levels. Blue Rock Cerium Mines Limited sunk a shaft the same years to 134 metres and carried out exploration on three levels. The same year Halo Uranium Mines Limited carried out exploration within two adits in Cardiff Township.

From 1967 to 1975, Canuc Mines Limited performed thirteen drillholes totalling some 2,022 metres on the Empire A Occurrence within Concessions 15 and 16 - Lots 1 and 2 of Cardiff Township. Uranithorite up to 0.08%  $U_3O_8$  occurs within granite pegmatite within hornblende gneiss host rock.

In 1968, Art Bain and Garnet McCartney calculated some 429,520 tonnes averaging 0.112%  $U_3O_8$  to a depth of 157 metres within

Concession 18-Lots 4 and 5 of Cardiff Township. The zones averaged 1.8 metres to 21.3 metres wide; averaging 7.0 metres average width.

In 1973, Imperial Oil Limited drilled at least six holes and a series of deep trenches within the eastern section of the property (Claim 3002728) within pyroxenite rich pegmatites. Surrounding rocks consist of mica rich monzonitic to gneissic-pyroxenitic marbles. This zone traverses in a northwesterly direction and has been sampled both for uranium, thorium, and mica content by the 2006 exploration program.

In 1975, Canadian Nickel Company Limited trenched (eleven trenches) and diamond drilled 1,194 meters totalling 71 drillholes within the McLean-Hogan Occurrence in Concession 19- Lots 8 to 10 in Cardiff Township. Uranorthite within granite pegmatite and pyroxenite country rock indicated values up to 0.54%  $U_3O_8$ .

From 1975 to 1977, Bright (Ontario Geological Survey) mapped the surrounding areas.

In the mid 1970's (1975-1977), another program of renewed vermiculite exploration occurred in Cavendish Township by Goshawk Mines Ltd. and Insulite Development Corporation. This work was abandoned as it was located in close proximity to cottages on Catchacoma Lake.

In the 1980's and up until 1996, Teck Corporation /Breakwater Resources Ltd. / St.Joe Gold Explorations explored for zinc in the northern sections of Cavendish and Galway Townships in the vicinities of Salmon Lake and Solerno Lake respectively. This was curtailed due to the close proximity to the cottagers on Solerno Lake.

The Ontario Department of Mines had previously mapped the southeast section of Galway Township in 1988 . Previously, the area was known for iron, silver, and uranium exploration only . The only active mining presently is for limestone and syenite traprock for landscaping purposes and road surfacing respectively.

Between 1992 and 1995, another vermiculite deposit (West Zone) with inferred resources was discovered to the west of the first vermiculite discovery. This project is being put into production by Regis Resources

Inc., and production is estimated for the latter part of 2003.

In 1996, F.T. Archibald discovered the “West Zone” Vermiculite Deposit in Cavendish Township; formerly named the C.W. Archibald Vermiculite Occurrence by MNDM. This property was optioned to Regis Resources Inc. in 1997 at which time A.C. A. Howe International substantiated and confirmed F.T. Archibald’s resource calculations as being satisfactory but conservative (underestimated).

In 1997, Jeff Parnell applied for a limestone permit in the southeast corner of Galway Township and has been mining for over the past four years.

In 2001, Floyd Preston applied for a syenite traprock permit in the southwest corner of Cavendish Township. Material was stockpiled to the Fall of 2003, and both road aggregate and dimensionstone block has been shipped since the Fall of 2003 in small quantities.

In 2001, Miller paving started a granite quarry for traprock use in Glamorgan Township; immediately west of Gooderham.

In 2003, Regis Resources Inc. and their marketing arm, Vermiculite Canada, went into production on the *C.W. Archibald Vermiculite Occurrence “West Zone”*, and are presently still in production under license with an MNR Aggregate Quarry Permit. The author was instrumental in discovering a majority of the vermiculite occurrences in Cavendish and Galway Townships.

## **Regional Geology-**

The area covered by the claims is underlain by carbonate-rich metasediments of marble and diopside (Grenville Province of the Precambrian Shield), carbonated biotite-schists (metasediments), amphibole-rich metasediments, intrusive amphibolite schist, syenite / syenite-gneiss intrusions, pegmatite intrusions, quartz monzonite, and crystalline limestones. These rocks are of mid Proterozoic age (1280-1300 Ma). The metasediments are formed from metamorphosed limestone. Bands of altered biotite or amphibolite rich rock can be observed in areas of intense deformation and shearing.

The structural geology of the Grenville Province is Complex and is dominated by large-scale regional fold structures that have been folded and re-folded by tectonism, high-grade metamorphism, and intrusive activity.

A period of major orogenic deformation occurred pre 1300 Ma when the volcanic and sedimentary rocks were deposited on the basement rocks. Felsic Intrusions dating 1240 to 1270 Ma indicates a mid Proterozoic orogenic period as most of the orogenic period occurred between 1220 to 1160 Ma period. During the Grenville Orogeny, rock units around the Cheddar Batholith and Anstruther Batholith were metamorphosed and deformed into flow-folds situated around the rim of these felsic-alkali batholiths.

The area was glaciated during the Pleistocene. In areas where geological trend is in a north-south direction the rocks have been scoured cleanly and little to no glacial till has been deposited. In areas where the geological trends are east-west, there is some glacial till deposited at the bases of hills and at the edge of valleys where there are catch-basins. In some cases there is 1.0 to 3.0 metres of glacial till which is deposited intermittently (generally within the east-west valleys).

It is believed that the source area for the biotite is from the biotite rich

syenite (nepheline syenite) and syenite-breccia units which lie around the alkalic granite and syenite complexes.

The potassic rich biotite-bearing zones are situated generally in contact with gneissic shears or amphibolite shears. Phlogopite, tremolite, and biotite hydrothermally alter to chlorite. In most cases it appears that talc and serpentinite are negligible.

Geological mapping has located several parallel bands of biotite-bearing marble which diverge and converge around intrusive syenite-granite-gabbro-pyroxenite units. The biotite generally weathers to chlorite or the iron rich facies. It is thought that some of the zones are actually the same but are divided by dyke systems of syenite granite, quartz monzonite, and pegmatite. Generally, the zones are continuous except where block-faulted by northeasterly trending faults. Several of these faults have been mapped either by topographical controls or geological inconsistencies between the close-spaced trenches. The major faults in the area are northeasterly trending; in particular the one hundred meter wide fault which splays around the west contact of the Anstruther Batholith and the Cheddar Batholith.

## Geological Table of Formations

**Phanerozoic-** Cenozoic- peat, marl , sand and gravel (glaciofluvial)  
 Paleozoic- Ordovician (middle) (458-478 Ma)  
 -Bobcaygeon Formation Limestone  
 -Gull River Formation Limestone  
 (trilobite and gastropod interfaces)  
 -Shadow Lake Formation Limestone

**Precambrian-** Proterozoic-

1160-1220Ma	Carbonatite Suite-Pegmatite Carbonatite Granite Syenite Diorite-Gabbro
1240-1270Ma	Alaskite Suite- Felsic Intrusive (gneisses) Diorite Suite- Felsic Intrusive (granodiorite gneiss) Mafic Intrusive (gabbro gneiss) Trondhjemite Suite- Medium Intrusive (monzonite gneiss) Medium Intrusive (granite gneiss) Medium Intrusive (granodiorite gneiss) Mafic Intrusive (diorite gneiss) Nepheline Suite- Alkalic Syenite Intrusive (potassic syenite gneiss) Nepheline Syenite Intrusive Mafic Alkalic Intrusive (nepheline gabbro) Anorthosite Suite- Mafic Intrusive (gabbro gneiss) Calcareous Metasedimentary Suite- Calcitic Marble (gneissic to massive) Dolomitic Marble (gneissic to massive) Amphibolitic mudstone-greywacke Calcitic-siliceous mudstone- greywacke Siliceous Metasedimentary Suite- gneissic greywacke gneissic arkose Metavolcanic Rocks-Andesite-Dacite Suite- Felsic Metavolcanics (gneissic) Rusty-graphitic-pyritic-pyrrhotitic Tonalite Gneiss Basement Rock Suite

**Local Geology-**

This area is surrounded by amphibolite and biotite gneisses; which surround the Anstruther granite batholith. Intercalated with the granite, syenite, and pegmatite intrusive units are limestone and marble (altered limestone ) units. Within Monmouth and Cardiff Townships are two main marble complexes which are intercalated with syenite gneiss and amphibolite gneiss complexes

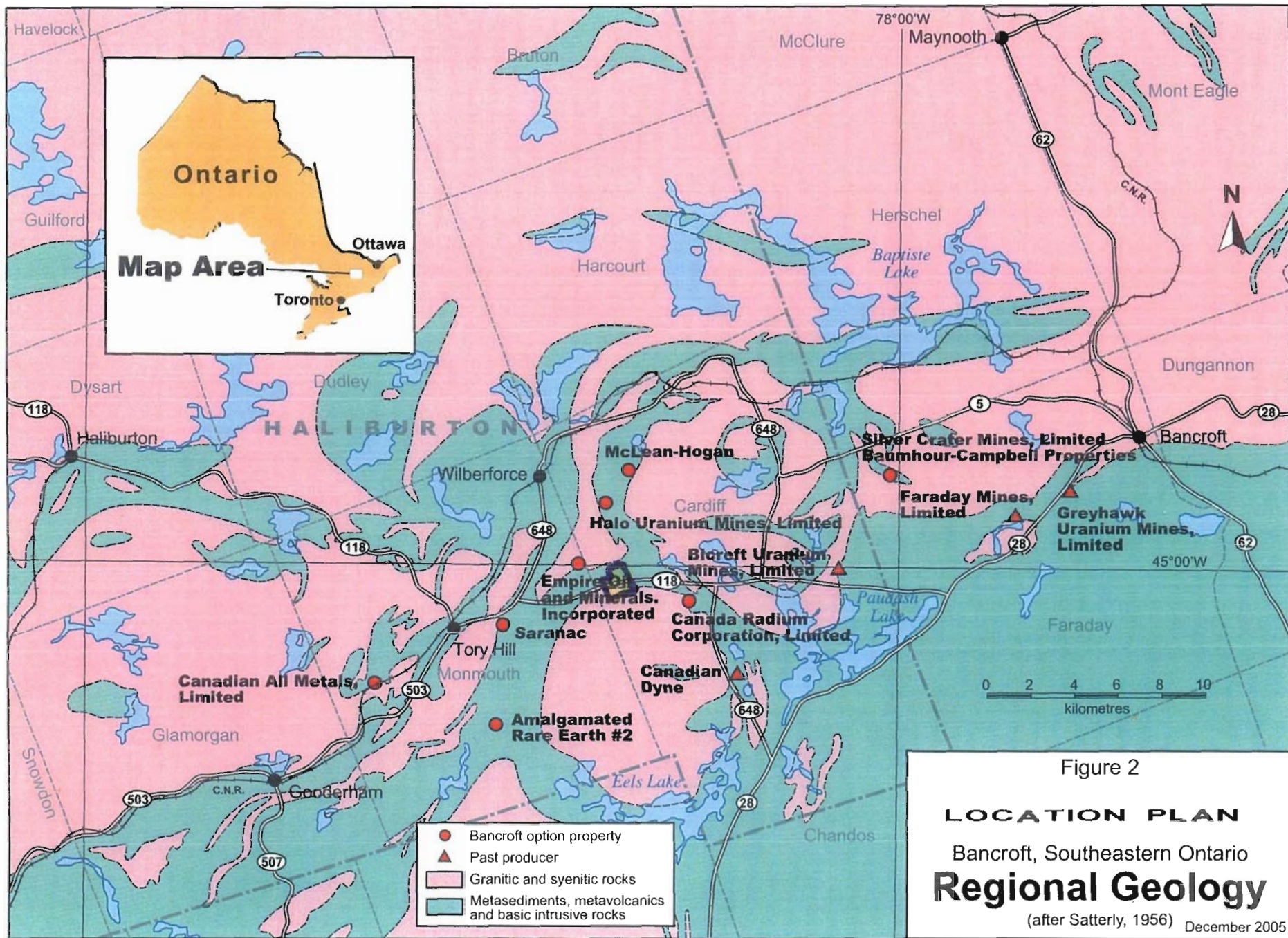
. Generally the crystalline marbles and the biotite-rich marble units vary between sixty and eight hundred metres in width, and have been traced for over ten to fifteen kilometres in length. In some areas they appear to pinch out but in fact are faulted and displaced. Several amphibolite dykes and quartz monzonite dykes cut all of the other units.

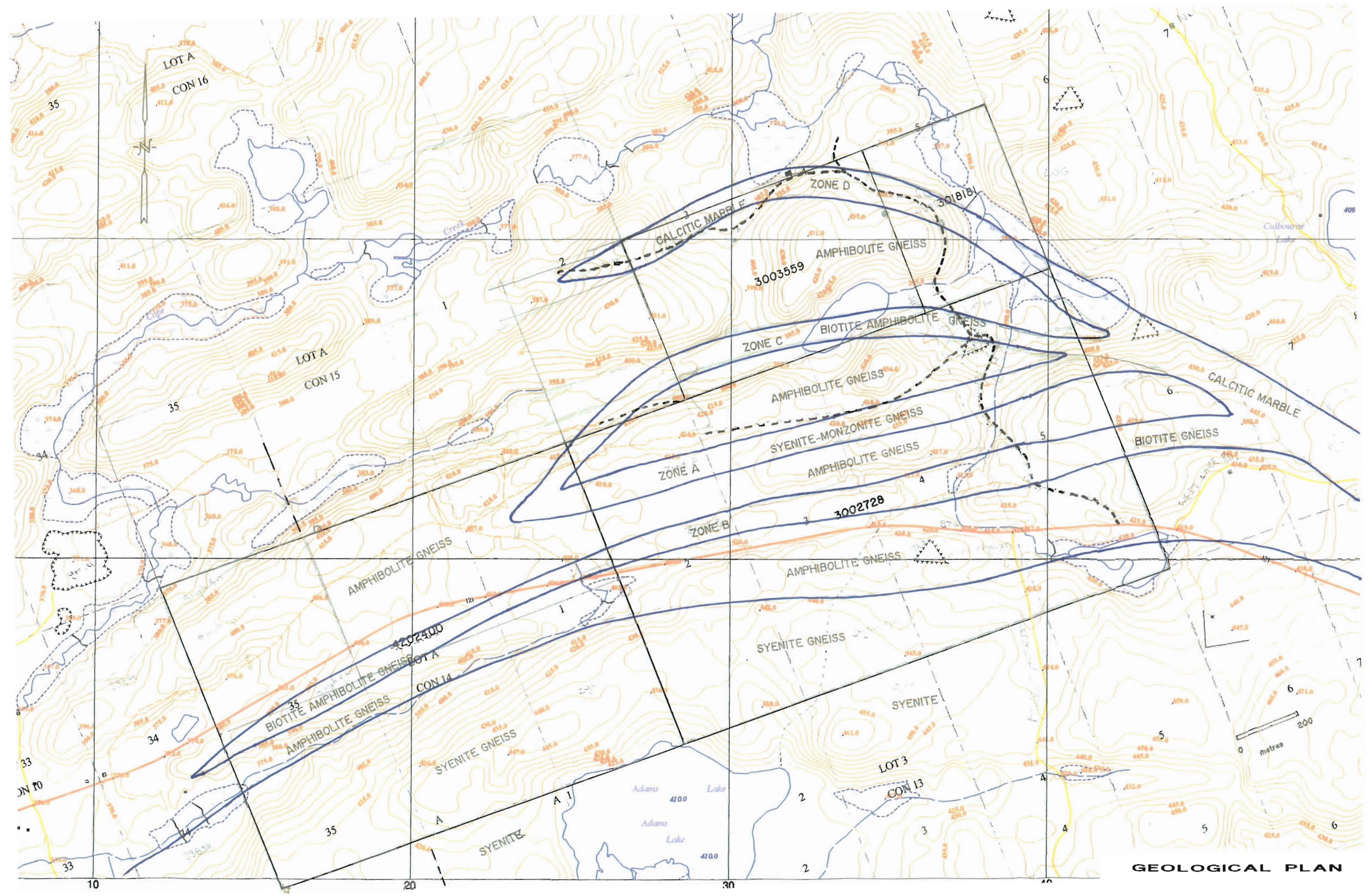
### **Geological Setting-**

The geology of the host rocks for radioactive deposits in the area surrounding the Cheddar Batholith, the Anstruther Batholith, and the Volturno Batholith is described by D.F. Hewitt of the Ontario Department of Mines (1956). The host rocks are comprised of Grenville metasediments consisting of marbles (calc-alkaline and dolomitic), paragneiss, and amphibolites, and of intrusive granites and syenites with their gabbro, pyroxenite, and amphibolite intercalations. Dykes of granite and syenite rich pegmatites intrude the other units.

The radioactive rich zones are associated with granitic and syenitic bodies which have intruded as fissure-veins and within pegmatite (granitic and syenitic) dykes. The radioactive zones occur within pyroxene rich granites and syenites (ie-Bicroft Mine) , as pyroxene rich granites and pegmatites (ie- Faraday Mine, Dyno Mine, Halo Occurrence, Greyhawk Occurrence), as quartz-granite pegmatites (Bicroft Mine, Greyhawk Occurrence, Halo Occurrence), as metasomatic marbles and pyroxenites, calcite-flourite-apatite hydrothermal veins (ie- Fission Occurrence, Silver Crater Occurrence, Cardiff Uranium Occurrence)

Uraninite ( $U_3O_8$ ) and thorianite ( $ThO_2$ ) are the radioactive minerals which occur as black cubes-rhombs with submetallic to vitreous lustre. Uranophane is the bright yellow stained radioactive mineral. Other radioactive minerals found are: pyrochlore, betafite, fergusonite, euxenite, allanite, and zircon.





GEOLOGICAL PLAN

**Local Geology-**

The biotite- rich gneissic syenite to gneissic amphibolite units are associated with both the felsic-alkali rich Anstruther Batholith and the Cheddar granite / granodiorite Pluton. The Anstruther Batholith Intrusive , a gneissic- oblong structure of fifteen to eighteen kilometers in diameter, is mainly trochilite to granodioritic in composition. The Cheddar Batholith Intrusive, a gneissic- oblong structure some three to five kilometres in diameter, is peralkalic alaskite to syenite in composition.

Generally there are two deformation belts which converge in the central sections and split where the Cheddar Batholith-Anstruther Batholith and the Burleigh-Anstruther Batholiths meet. These zones dip 45 degrees northwesterly to vertical (mainly steeply dipping northwesterly).

It appears that the highest amounts of biotite is associated with steeply dipping or crenulated-banded syenitic-nephelinitic marbles. Where there is a shallow dip, the marbles appear to be mainly crystalline and only superficially weathered. The marble units along the west edges of the Cheddar - Anstruther Batholiths are steeply dipping (southeasterly and northwesterly).

The syenite complexes on the property are void of potassic rich biotite mineralization but is enveloped within a potassic rich biotite-amphibolite outer core. There are several potassic rich shears in associated with quartz monzonite units which lie at the contact between syenitic marble and amphibolitic marble. The biotite-amphibolite areas are generally associated with major fault zones.

The program consisted of initial till sampling with augurs to confirm the rock types followed by mechanical backhoe excavation and manual trenching across a zone encountered by the till sampling program.

## **2008 Property Mapping-Backhoe Program Specifics-**

One area of biotite rich syenite to nepheline syenite rich marble between amphibolitic gneiss in the north and the Cheddar syenite Batholith in the south was tested by preliminary backhoe excavation and followup geological mapping and trenching. The marble unit is divided into two units which in turn is cut by a crystalline syenite marble unit. Some of the most significant zones are associated with monzonitic-syenitized marble. These units wrap around the north side of the Cheddar Syenite-Granite Batholith and are truncated by syenites on the east boundary of the claims.

Mapping of the trenches, placed in a north-south direction and at right angles to the regional east-west geological trend crossing the claim group are described as follows:

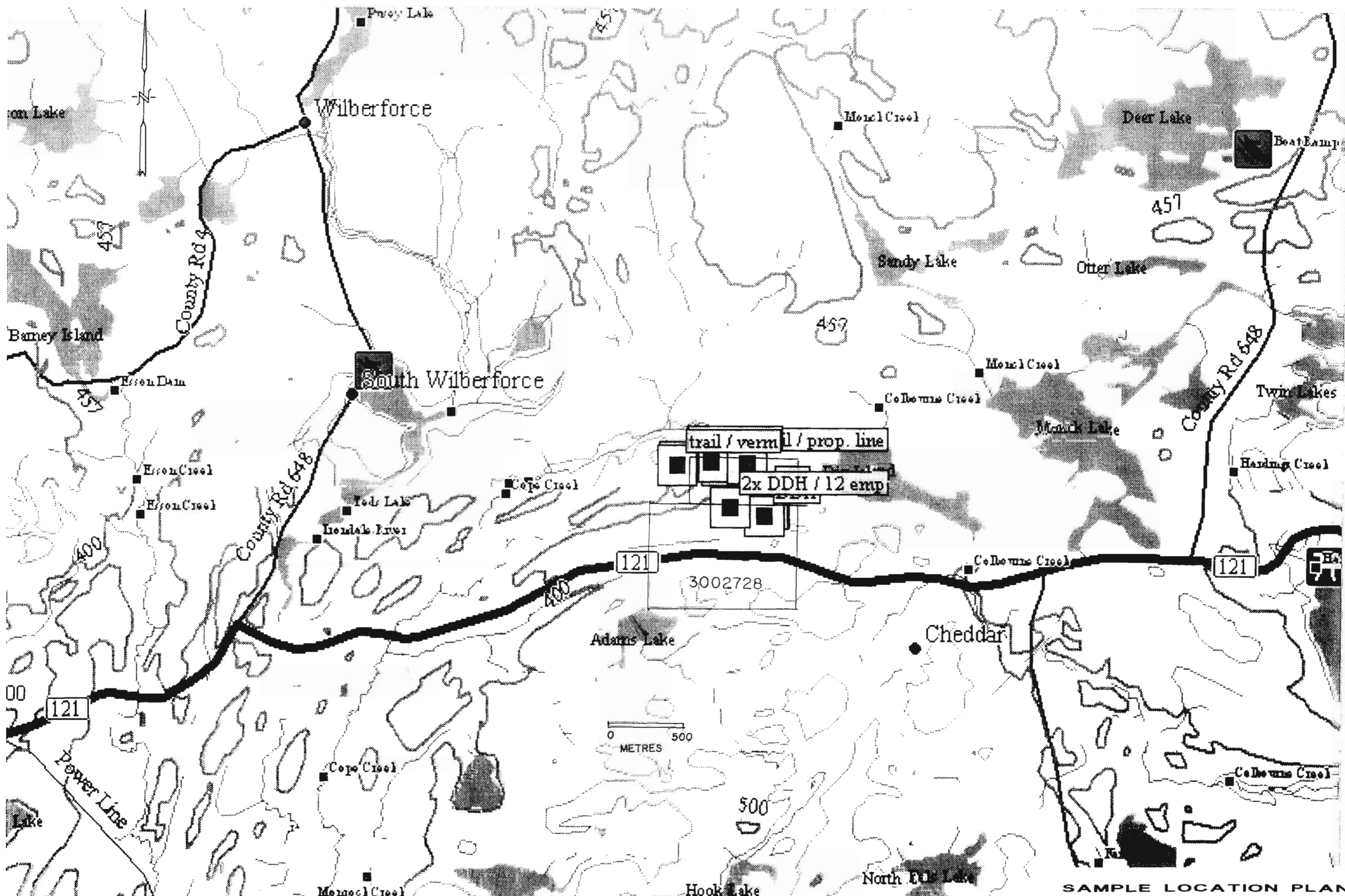
South Section of trenches progressed from crystalline amphibolite-syenite marbles to the south which graded into gneissic syenites to the south and into syenite intrusives within the core of the Cheddar Batholith.

North Section of trenches progressed from coarse amphibolitic-monzonitic-syenitic marbles to the north progressing into crystalline amphibolitic marbles to amphibolitic gneiss to amphibolite to the north.

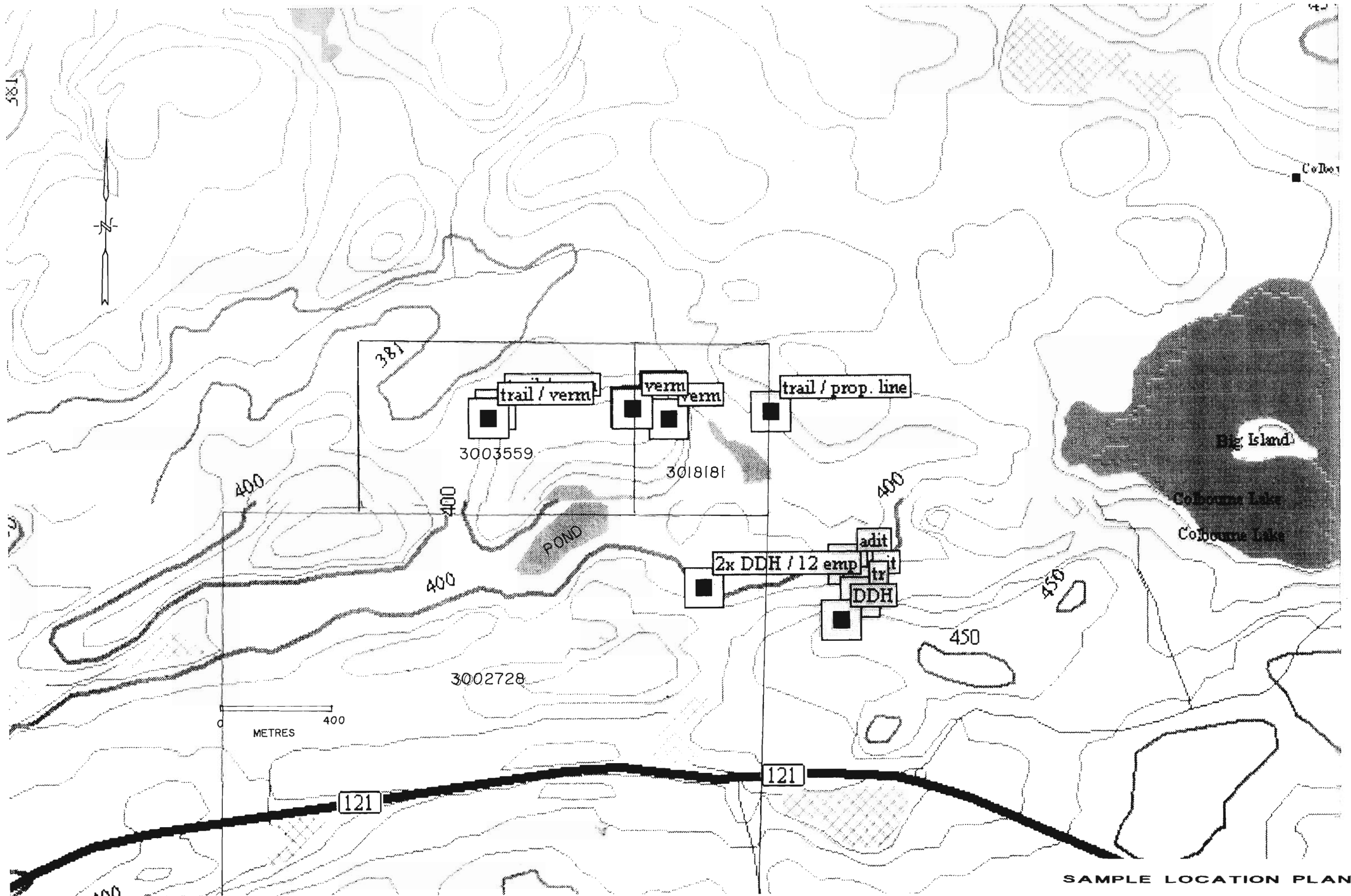
Within the main core of amphibolitic-syenitic marble are areas of dolomitic to calcitic marbles and areas of syenite to nepheline syenite. Throughout are coarse grained monzonitic-amphibolitic gneiss units with coarser biotite mica.

The vermiculite and mica bearing areas are generally surficial but can be found to a few meters in depth in zones where the gneissic fabric increases.

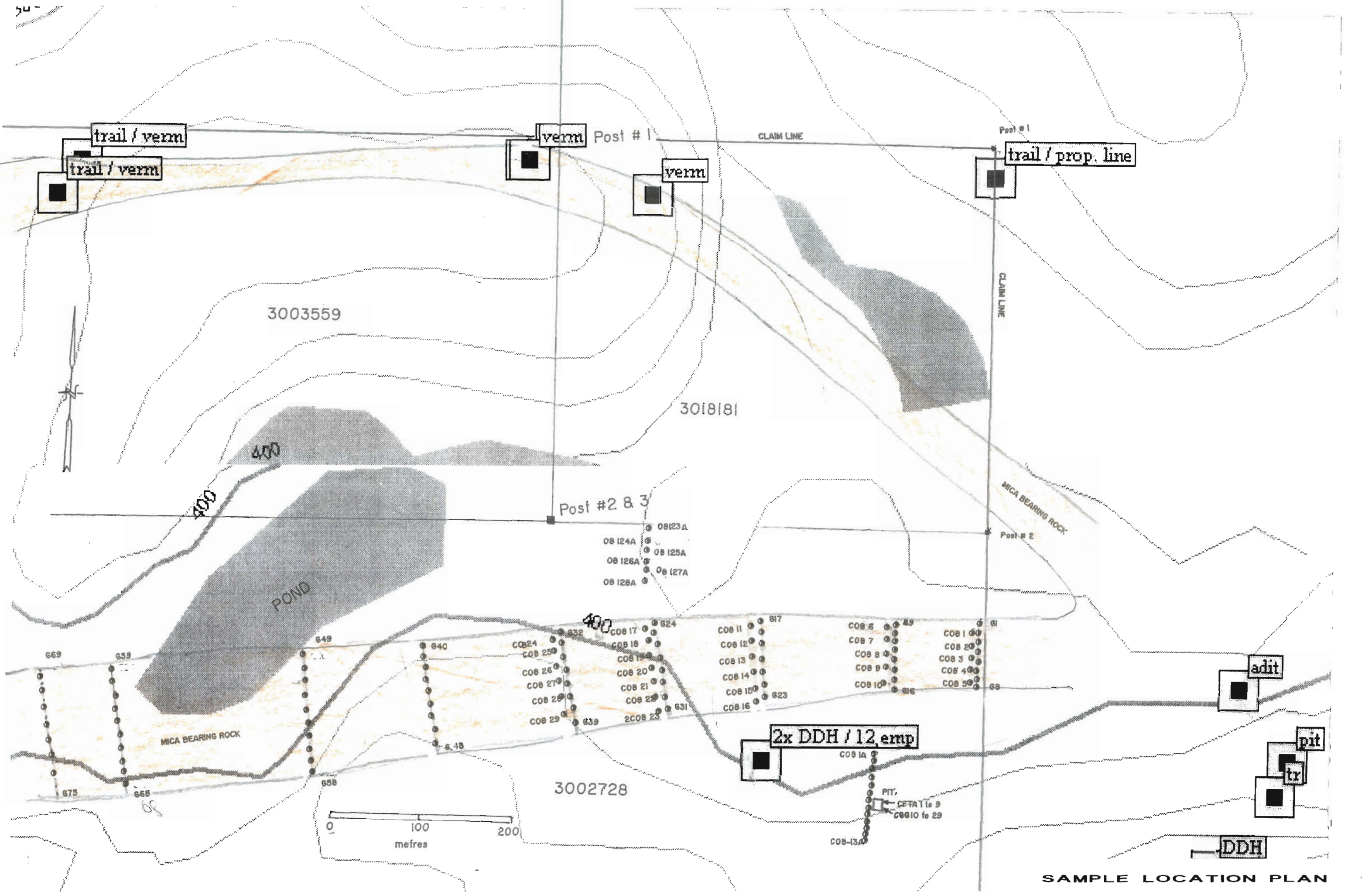
The main mica-bearing unit is located along the edge of a hill beside a large swamp / low ground which is some 400 metres across. It is believed that there is mica-rich calcitic marble underlying the swamp, but the fact that many these occurrences lie within an unoxidizing environment and that the micas have not had the weathering processes to become exfoliating or vermiculite micas.



SAMPLE LOCATION PLAN



SAMPLE LOCATION PLAN



SAMPLE LOCATION PLAN

**Till Sample Descriptions - Claim 3002728 et al**

<u>Sample #</u>	<u>Depth (m)</u>	<u>Description of Soil Concentrate</u>
G1 Fence 1	1.2	amphibolitic syenite gneiss
G2	1.3	amphibolitic syenite gneiss
G3	1.0	amphibolitic syenite gneiss
G4	0.8	amphibolitic syenite gneiss
G5	0.7	amphibolitic syenite gneiss
G6	0.8	amphibolitic syenite
G7 Fence 2	0.5	amphibolitic syenite gneiss
G8	0.4	amphibolitic syenite gneiss
G9	0.9	amphibolitic gneissic marble
G10	0.8	crystalline marble calc-alk
G11	0.7	crystalline marble calc-alk
G12	0.7	crystalline marble calc-alk
G13	1.1	gneissic amphibolitic marble
G14	1.5	amphibolitic gneiss
G15	1.2	syenite-amphibolite gneiss
G16	1.0	syenite-amphibolite gneiss
G17	0.7	amphibolitic-crystalline marble
G18	0.5	amphibolitic crystalline marble
G19	0.5	amphibolitic crystalline marble
G20	1.2	amphibolitic monzonitic marble
G21	1.6	amphibolitic monzonitic marble
G22	1.5	amphibolitic monzonitic marble
G23	1.0	amphibolitic monzonitic marble
G24	0.7	crystalline monzonitic marble
G25	0.9	amphibolitic marble
G26	0.9	amphibolitic marble
G27	1.3	amphibolitic gneiss
G28	1.5	amphibolitic gneiss
G29	1.6	amphibolitic gneiss
G30	1.6	amphibolitic gneiss
G31	1.4	amphibolitic gneiss
G32	1.3	amphibolitic gneiss
G33	1.2	amphibolitic gneiss
G34 Fence 3	0.9	amphibolitic marble
G35	1.0	amphibolitic marble
G36	0.7	crystalline marble
G37	0.8	crystalline marble
G38	1.1	amphibolitic marble
G39	2.2	amphibolitic marble
G40	2.3	amphibolitic marble

G41	Fence 4	2.8	amphibolite gneiss syenite
G42		1.5	amphibolite gneiss marble
G43		1.0	amphibolite gneiss marble
G44		0.5	gneissic crystalline marble
G45		0.9	syenite-amphibolite gneiss
G46		1.1	syenite-amphibolite gneiss
G47		1.2	syenite-amphibolite gneiss
G48		0.7	syenite-amphibolite gneiss
G49		0.5	syenite-amphibolite gneiss
G50		0.6	syenite-amphibolite gneiss
G51		0.9	syenite-amphibolite gneiss
G52		1.2	gneissic amphibolite marble
G53		1.3	gneissic amphibolite marble
G54		1.4	gneissic amphibolite marble
G55		1.2	gneissic amphibolite marble
G56		0.5	gneissic amphibolite marble
G57	Fence 5	1.0	syenite-amphibolite gneiss
G58		1.9	syenite-amphibolite gneiss
G59		2.8	syenite-amphibolite gneiss
G60		1.2	gneissic amphibolite marble
G61		1.8	gneissic amphibolite marble
G62		1.9	gneissic amphibolite marble
G63		2.1	gneissic amphibolite marble
G64		0.8	syenitic-amphibolite gneiss
G65		0.9	syenitic- amphibolite gneiss
G66		0.7	amphibolite gneiss
G67		0.6	amphibolite gneiss
G68		1.0	amphibolite gneiss
G69		0.9	amphibolite gneiss
G70		0.9	amphibolite gneiss
G71		0.8	amphibolite gneiss
G72		0.7	amphibolite gneiss
G73		0.9	amphibolite gneiss
G74		1.1	amphibolite gneiss
G75		1.9	amphibolite gneiss

**Cardiff Township Till Sampling & Trenching Program**  
**TRENCH - Claim 3002728 et al**  
**April-June, 2008**

<u>Sample #</u>	<u>Sample Interval</u> (metres)	<u>Sample Width</u> (metres)	<u>Sample Depth</u> metres(organic)	<u>Rock Type</u> Description
08-1	25.0N-29.0N	4.0	1.50 (0.80)	cryst.amphib.marble
08-2	46.0N-50.0N	4.0	1.0 (0.20)	cryst.mica.amph.marb
08-3	113.0N-123.0N	10.0	2.50(0.50)	amph.gneiss marble
08-4	123.0N-133.0N	10.0	2.50(2.2)	amph.gneiss marble
08-5	133.0N-143.0N	10.0	2.50(2.2)	amph.gneiss marble
08-6	230.0N-234.0N	4.0	1.50(0.5)	amph.gneiss marble
08-7	234.0N-238.0N	4.0	3.0(0.20)	amph.gneiss marble
08-8	258.0N-263.0N	5.0	2.50(0.80)	amph.gneiss marble
08-9	279.0N-282.0N	3.0	2.0(0.70)	amph.gneiss marble
08-10	303.0N-307.0N	4.0	2.50(0.20)	coarse.amph.marble
08-11	307.0N-312.0N	5.0	2.0(1.0)	coarse.amph.marble
08-12	312.0N-316.0N	4.0	1.20(0.80)	coarse amph.marble
08-13	316.0N-320.0N	4.0	2.0(1.70)	cryst.amph.marble with mica rich marble

**Summary of Vermiculite Bulk Sampling Statistics 2008****Screen Sizes and Bag Yields**

Claim 3002728 et al

Sample #	+4mesh Grade 1	+8mesh Grade 1+2	-8+20mesh Grade 3	-20+45mesh Grade 3+4	-45+60mesh Grade 4	-60mesh Grade 5	%Tot
C08-1	---	---	10.0	24.5*	12.0	---	17.3
C08-2	---	---	9.5	13.0*	14.0*	---	12.2
C08-3	---	---	6.0	9.0	14.0*	---	9.7
C08-4	---	---	5.0	18.0*	16.0*	---	13.0
C08-5	---	---	7.5	23.5	14.0	---	15.0
C08-6	---	3.5	10.0*	11.0*	9.0	---	10.0
C08-7	---	---	6.5	13.0*	13.0*	---	10.8
C08-8	---	-----	12.0	22.0*	12.0*	---	15.3
C08-9	---	---	8.0	21.0*	12.0*	---	13.7
C08-10	---	---	7.5	19.5*	16.0*	---	14.3
C08-11	---	---	4.5	11.5*	8.0	---	8.0
C08-12	---	---	12.0*	22.5*	14.0*	---	16.2
C08-13	---	---	5.0	21.5*	15.0*	---	13.8
C08-14	---	0.5	7.5	21.5*	14.0*	---	14.7
C08-15	---	2.0	6.0	21.0*	12.0*	---	13.0
C08-16	---	---	20.0*	27.5*	15.0*	---	20.8
C08-17	---	1.5	13.0*	11.5*	6.0	---	20.8
C08-18	---	0.5	12.5*	23.0*	15.0*	---	16.8
C08-19	---	0.5	6.0	16.0*	13.0*	---	11.7
C08-20	---	---	6.5	20.0*	14.0*	---	13.5
C08-21	---	---	11.5*	21.5*	14.0*	---	15.7
C08-22	---	---	10.0*	21.0*	18.0*	---	16.3
C08-23	---	---	10.0*	23.0*	24.0*	---	19.0
C08-24	---	1.5	8.5	14.5*	14.0*	---	12.3
C08-25	-----	-----	-----	-----	-----	-----	N/A
C08-26	-----	-----	-----	-----	-----	-----	N/A
C08-27	---	---	5.0	12.5*	12.0*	---	9.8
C08-28	---	---	3.0	8.0	8.0	---	6.3
C08-29	---	---	3.5	13.0*	10.0*	---	8.8

Average % of exfoliating mica----- **13.7%**  
 \* (visually significant)

**Cardiff Township Till Sampling & Trenching Program  
(Cheddar Zone North Extention)  
April-June 2008- Claim 3002728 et al Cardiff Twsp.**

<b>Sample #</b>	<b>Wt.Init. (grams)</b>	<b>Dry Wt. (grams)</b>	<b>Tot.Waste (grams)</b>	<b>Tot.Mica (grams)</b>	<b>Moist. (%)</b>	<b>%Mica</b>
C08-1A ----		1080.0	980.0	60.0	3.70	5.77
C08-3A ----		1010.0	860.0	90.0	6.93	9.47
C08-5A ----		1020.0	910.0	40.0	6.86	4.16
C08-6A ----		1000.0	910.0	50.0	4.0	5.21
C08-7A ----		1020.0	890.0	80.0	4.90	8.76
C08-8A ----		970.0	580.0	60.0	34.0	35.94
C08-9A ----		980.0	700.0	70.0	21.40	22.45
C08-10A-----		1010.0	830.0	110.0	6.93	11.70
C08-11A-----		1000.0	800.0	80.0	12.0	14.77
C08-12A-----		1000.0	800.0	80.0	12.0	9.09
C08-13A-----		1020.0	830.0	50.0	13.72	5.68
<b>Average Total (exfoliating Mica)-</b>						<b>10.50%</b>

**Till Sampling Program, Cardiff Township 2008**  
**North Cheddar Batholith**  
**Claim 3002728 et al; Cardiff Twsp.**

<u>Sample #</u>	<u>Sample Description</u>
C08-1	golden-bge.4-5 grade, pink calc-alk. syenite marble
C08-2	beige grade 3-5, calc-alk. marble
C08-3	med.beige grade 2-4**, pink calc-alc. syenitic marble
C08-4	med.beige grade 3-4, pink calc-alk.syenitic marble
C08-5	med.beige,grade 3-5, calc.-alk. marble
C08-6	med.grey-beige grade 3-5 pink calc-alk.syenitic marble
C08-7	med.grey-beige,grade 2-4**, feldspathic calc-alk syen.marble
C08-8	cream,grade 2-4***, amphib-neph.syenite calc-alk.marble
C08-9	cream-beige,grade 2-4**, pink calc-alk syenitic marble
C08--10	light beige grade 2-4**, calc-alk.feldspathic syen. marble
C08--11	cream grade 2-4**, pink calc-alk. syenitic marble
C08-12	cream grade 2-4, pink calc-alk syenitic marble
C08-13	cream grade 3-5, pink calc-alk. syenitic marble

\*\* (visually significant)

26  
Bulk Pit  
Beneficiation / Sampling  
C-FTA Series (CARDIFF FTA-North)  
Claim 3002728 et al  
June, 2008

Sample #	Interval Sampled (meters)	Channel Width (m)	Depth (m)	% Mica
CFTA-1	3m X 4m	Block 1- upper	0-1.5	17.3
CFTA-2	3m X 4m	Block 8 -upper	0-2.0	12.2
CFTA-3	3m X 4m	Block 8- lower	2.0-4.0	9.7
CFTA-4	3m X 4m	Block 1 -lower	1.5-3.0	13.0
CFTA-5	3m X 4m*	Block 3-upper	0-2.5	15.0
CFTA-6	3m X 4m	Block 10- upper	0-2.5	10.0
CFTA-7	3m X 4m	Block 10- lower	2.5-5.0	10.8
CFTA-8	3m X 4m*	Block 3- lower	2.5-3.0	15.3
CFTA-9	3m X 4m*	Block 2- upper	0-2.0	13.7
CGG-10	3m X 4m*	Block 2- lower	2.0-4.5	14.3
CGG-11	3m X 4m	Block 4- upper	0-2.5	8.0
CGG-12	3m X 4m*	Block 4- lower	2.5-5.0	16.2
CGG-13	3m X 4m*	Block 5- upper	0-2.5	13.8
CGG-14	3m X 4m*	Block 5- lower	2.5-5.0	14.7
CGG-15	3m X 4m*	Block 12- upper	0-2.0	13.0
CGG-16	3m X 4m*	Block 12- lower	2.0-4.0	20.8
CGG-17	3m X 4m*	Block 9	0-4.0	20.8
CGG-18	3m X 4m*	Block 11	0-4.5	16.8
CGG-19	3m X 4m	Block 7- upper	0-2.0	11.7
CGG-20	3m X 4m*	Block 7- lower	2.0-4.0	13.5
CGG-21	3m X 4m*	Block 14- upper	0-2.0	15.7
CGG-22	3m X 4m*	Block 14- loweR	2.0-4.0	16.3
CGG-23	3m X 4m*	Block 6	0-4.0	19.0
CGG-24	3m X 4m	Block 13	0-4.0	12.3
CGG-27	3m X 4m	Block 15		9.8
CGG-28	3m X 4m	Block 16		6.3
CGG-29	3m X 4m	Block 17		8.8

Total Average Percentage----- **16.9 %**

**Bulk Pit /Specimens**  
**Beneficiation / Sampling**  
**Cardiff FTA Till Sampling**  
**Claim 3002728 et al**

Sample #	Interval Sampled (meters)	Channel Width (m)	Description	% Mica
08-123A		100m	NW south side-10m	6.0
08-124A		100m	NW north side 10m	11.3
08-126A		100m	NW Mid 10M	10.4
08-125A		600m	NW north side-20m	6.2
08-127A		600m	NW mid-20m	8.8
08-128A		600m	NW south side-20m *	7.2
Total Average Exfoliating Mica Content-----				<b>8.3%</b>

**Beneficiation Results-****Sample # CB08-01-** 3431 gm total (medium yield)

<u>Size Fractions</u>	<u>+4</u>	<u>-4+8</u>	<u>-8+20</u>	<u>-20+45</u>	<u>-45+60</u>	<u>-60</u>
Fraction Wts.(g)	332	307	1302	846	222	422
weight run(g)	-----	200	200	200	200	---
after exfoliation(g)	---	192	197	192	183	---
waste (g)	---	192	195	166	132	---
exfol.mica (g)	---	sign	2	26	51	---
moisture %	---	4	1.5	4	8.5	---
weight %	9.6	8.9	38	24.6	6.4	12.2
exfol.mica%	---	+0	1	13	25.5	---

**Sample # CB08-02-** 3352 gm total (medium yield)

<u>Size Fractions</u>	<u>+4</u>	<u>-4+8</u>	<u>-8+20</u>	<u>-20+45</u>	<u>-45+60</u>	<u>-60</u>
Fraction Wts.(g)	-----	228	857	1270	365	632
weight run(g)	-----	-----	200	200	200	---
after exfoliation(g)	---	192	191	181	181	---
waste (g)	---	192	174	96	91	---
exfol.mica (g)	---	sign	16	85	90	---
moisture %	---	4.0	4.5	9.5	9.5	---
weight %	---	6.8	25.5	37.8	10.8	18.8
exfol.mica%	---	---	8.0	42.5	45.0	---

**Sample # CB08-03-** 3174 gm total (high yield)

<u>Size Fractions</u>	<u>+4</u>	<u>-4+8</u>	<u>-8+20</u>	<u>-20+45</u>	<u>-45+60</u>	<u>-60</u>
Fraction Wts.(g)	-----	201	538	1325	638	1029
weight run(g)	-----	-----	200	200	200	---
after exfoliation(g)	---	---	190	179	182	---
waste (g)	---	---	163	103	115	---
exfol.mica (g)	---	---	27	76	67	---
moisture %	---	---	5.0	10.5	9.0	---
weight %	-----	-----	14.9	36.8	17.7	28.6
exfol.mica%	---	---	13.5	38	25.5	---

**Beneficiation Results-**Sample # **CBB08-05-** 3866gm total (high yield)

<u>Size Fractions</u>	<u>+4</u>	<u>-4+8</u>	<u>-8+20</u>	<u>-20+45</u>	<u>-45+60</u>	<u>-60</u>
Fraction Wts.(g)	272	226	857	1270	365	632
weight run(g)	-----	200	200	200	200	---
after exfoliation(g)	---	191	189	186	188	---
waste (g)	---	177	145	120	129	---
exfol.mica (g)	---	13.0	44	66	59	---
moisture %	---	4.5	5.5	7.0	6.0	---
weight %	7.0	5.8	23.1	37.5	10.0	16.3
exfol.mica%	---	6.5	22.0	33.0	29.5	---

Sample # **CB08-06-** 3731 gm total (high yield)

<u>Size Fractions</u>	<u>+4</u>	<u>-4+8</u>	<u>-8+20</u>	<u>-20+45</u>	<u>-45+60</u>	<u>-60</u>
Fraction Wts.(g)	-----	264	480	861	386	---
weight run(g)	-----	-----	200	200	200	---
after exfoliation(g)	---	---	186	187	191	---
waste (g)	---	---	115	90	138	---
exfol.mica (g)	---	---	70	97	53	---
moisture %	---	---	7.0	6.5	4.5	---
weight %	-----	-----	---	---	---	---
exfol.mica%	---	---	35.0	48.5	26.5	---

Sample # **CB08-34-** 2942 gm total (high yield)

<u>Size Fractions</u>	<u>+4</u>	<u>-4+8</u>	<u>-8+20</u>	<u>-20+45</u>	<u>-45+60</u>	<u>-60</u>
Fraction Wts.(g)	-----	454	957	795	270	466
weight run(g)	-----	200	200	200	200	---
after exfoliation(g)	---	176	176	171	168	---
waste (g)	---	176	161	122	114	---
exfol.mica (g)	---	Tr	15	49	54	---
moisture %	---	12	12	14.5	18	---
weight %	-----	15.4	32.5	27.0	9.1	15.8
exfol.mica%	-----	Tr	7.5	24.5	27.0	---

**Beneficiation Results-****Sample # CB08-07-** 2640 gm total (poor yield)

<u>Size Fractions</u>	<u>+4</u>	<u>-4+8</u>	<u>-8+20</u>	<u>-20+45</u>	<u>-45+60</u>	<u>-60</u>
Fraction Wts.(g)	-----	-----	1274	1004	176	186
weight run(g)	-----	-----	200	200	100	---
after exfoliation(g)	---	---	193	169	88	---
waste (g)	---	---	171	157	73	---
exfol.mica (g)	---	---	22.0	12.0	15.0	---
moisture %	---	---	3.5	15.5	11.0	---
weight %	---	---	48.2	38.0	6.6	7.0
exfol.mica%	---	---	11.0	6.0	15.0	---

**Sample # CB08-08-** 3457 gm total (high yield)

<u>Size Fractions</u>	<u>+4</u>	<u>-4+8</u>	<u>-8+20</u>	<u>-20+45</u>	<u>-45+60</u>	<u>-60</u>
Fraction Wts.(g)	441	728	863	717	260	448
weight run(g)	200	200	200	200	200	---
after exfoliation(g)	184	184	177	167	162	---
waste (g)	139	149	134	94	89	---
exfol.mica (g)	45.0	35.0	43.0	73.0	73.0	---
moisture %	8.0	8.0	11.5	16.5	19.0	---
weight %	12.7	21.0	24.9	20.7	7.5	12.5
exfol.mica%	22.5	17.5	21.5	36.5	36.5	---

**Sample # CB08-09-** 3431 gm total (high yield)

<u>Size Fractions</u>	<u>+4</u>	<u>-4+8</u>	<u>-8+20</u>	<u>-20+45</u>	<u>-45+60</u>	<u>-60</u>
Fraction Wts.(g)	-----	-----	566	1282	602	914
weight run(g)	-----	-----	200	200	200	---
after exfoliation(g)	---	---	182	169	162	---
waste (g)	---	---	143	106	123	---
exfol.mica (g)	---	---	39	63	39	---
moisture %	---	---	9.0	15.5	19.0	---
weight %	-----	-----	16.8	38.2	17.9	27.2
exfol.mica%	---	---	19.5	35.1	19.5	---

**Beneficiation Results-****Sample # CB08-10-** 3461 gm total (high yield)

<u>Size Fractions</u>	<u>+4</u>	<u>-4+8</u>	<u>-8+20</u>	<u>-20+45</u>	<u>-45+60</u>	<u>-60</u>
Fraction Wts.(g)	355	643	888	803	295	477
weight run(g)	200	200	200	200	200	---
after exfoliation(g)	184	180	183	173	172	---
waste (g)	150	154	139	95	96	---
exfol.mica (g)	34	26	44	78	76	---
moisture %	8.0	10.0	8.5	13.5	14.0	---
weight %	10.2	18.5	25.6	23.2	8.5	---
exfol.mica%	17.0	13.0	22.0	39.0	38.0	---

**Sample # CB08-11-** 3759 gm total (high yield)

<u>Size Fractions</u>	<u>+4</u>	<u>-4+8</u>	<u>-8+20</u>	<u>-20+45</u>	<u>-45+60</u>	<u>-60</u>
Fraction Wts.(g)	323	413	809	1080	407	727
weight run(g)	200	200	200	200	200	---
after exfoliation(g)	181	180	176	166	161	---
waste (g)	170	163	132	73	71	---
exfol.mica (g)	11.0	17.0	44.0	93.0	90.0	---
moisture %	9.5	10.0	12.0	17.0	19.5	---
weight %	8.5	11.0	21.5	28.7	10.8	19.3
exfol.mica%	5.5	8.5	22.0	46.5	45.0	---

**Sample # CB08-12-** 3302 gm total (high yield)

<u>Size Fractions</u>	<u>+4</u>	<u>-4+8</u>	<u>-8+20</u>	<u>-20+45</u>	<u>-45+60</u>	<u>-60</u>
Fraction Wts.(g)	399	547	773	765	285	593
weight run(g)	200	200	200	200	200	---
after exfoliation(g)	130	177	174	162	156	---
waste (g)	120	153	136	84	74	---
exfol.mica (g)	10	24	38	78	82	---
moisture %	35	11.5	13	19	22	---
weight %	12	16.5	23.4	23.1	8.6	17.9
exfol.mica%	5.0	12.0	19.0	39.0	41.0	---

**Beneficiation Results-****Sample # CB08-13-** 3201 gm total (high yield)

<u>Size Fractions</u>	<u>+4</u>	<u>-4+8</u>	<u>-8+20</u>	<u>-20+45</u>	<u>-45+60</u>	<u>-60</u>
Fraction Wts.(g)	259	503	773	762	260	644
weight run(g)	100	200	200	200	200	---
after exfoliation(g)	92	179	175	167	155	---
waste (g)	81	155	138	98	102	---
exfol.mica (g)	11	24	37	69	53	---
moisture %	8	10.5	12.5	16.5	22.5	---
weight %	8.1	15.7	24.1	23.8	8.1	20.1
exfol.mica%	11.0	12.0	18.5	34.5	26.5	---

**Sample # CB08-14-** 2487 gm total (medium yield)

<u>Size Fractions</u>	<u>+4</u>	<u>-4+8</u>	<u>-8+20</u>	<u>-20+45</u>	<u>-45+60</u>	<u>-60</u>
Fraction Wts.(g)	-----	349	589	900	245	404
weight run(g)	-----	200	200	200	200	---
after exfoliation(g)	---	---	---	166	163	---
waste (g)	---	---	---	85	106	---
exfol.mica (g)	---	---	---	81	57	---
moisture %	---	---	---	17	18.5	---
weight %	---	14.0	23.7	36.2	9.8	16.2
exfol.mica%	---	---	---	40.5	28.5	---

**Sample # CB08-15-** 1861 gm total (medium yield)

<u>Size Fractions</u>	<u>+4</u>	<u>-4+8</u>	<u>-8+20</u>	<u>-20+45</u>	<u>-45+60</u>	<u>-60</u>
Fraction Wts.(g)	-----	400	686	682	250	445
weight run(g)	-----	200	200	200	200	---
after exfoliation(g)	---	---	---	165	150	---
waste (g)	---	---	---	117	65	---
exfol.mica (g)	---	---	---	48	85	---
moisture %	---	---	---	17.5	25.0	---
weight %	-----	16.2	27.8	27.7	10.1	18.0
exfol.mica%	---	---	---	24.0	42.5	---

**Beneficiation Results-****Sample # CB08-16-** 2463 gm total (medium yield)

<u>Size Fractions</u>	<u>+4</u>	<u>-4+8</u>	<u>-8+20</u>	<u>-20+45</u>	<u>-45+60</u>	<u>-60</u>
Fraction Wts.(g)	-----	400	686	682	250	445
weight run(g)	-----	200	200	200	200	---
after exfoliation(g)	---	---	---	165	150	---
waste (g)	---	---	---	117	65	---
exfol.mica (g)	---	---	---	48	85	---
moisture %	---	---	---	17.5	25	---
weight %	---	16.2	27.8	27.7	10.1	18.0
exfol.mica%	---	---	---	24.0	42.5	---

**Sample # CB08-17-** 2358 gm total (high yield)

<u>Size Fractions</u>	<u>+4</u>	<u>-4+8</u>	<u>-8+20</u>	<u>-20+45</u>	<u>-45+60</u>	<u>-60</u>
Fraction Wts.(g)	-----	165	852	816	230	295
weight run(g)	-----	100	200	200	200	---
after exfoliation(g)	---	---	---	167	162	---
waste (g)	---	---	91	74	99	---
exfol.mica (g)	---	---	---	93	63	---
moisture %	---	---	---	16.5	19	---
weight %	---	7.0	36.1	34.6	9.7	12.5
exfol.mica%	---	---	---	46.5	31.5	---

**Sample # CB08-18-** 1023 gm total (high yield)

<u>Size Fractions</u>	<u>+4</u>	<u>-4+8</u>	<u>-8+20</u>	<u>-20+45</u>	<u>-45+60</u>	<u>-60</u>
Fraction Wts.(g)	-----	125	384	313	91	110
weight run(g)	-----	100	200	200	50	---
after exfoliation(g)	---	96	182	177	37	---
waste (g)	---	72	78	66	22	---
exfol.mica (g)	---	24	104	111	15	---
moisture %	---	4.0	9.0	11.5	26.0	---
weight %	-----	12.2	37.5	30.6	8.8	10.7
exfol.mica%	---	24.0	50.2	55.5	30.0	---

**Beneficiation Results-**Sample # **CB08-19-** 2363 gm total (low-moderate yield)

<u>Size Fractions</u>	<u>+4</u>	<u>-4+8</u>	<u>-8+20</u>	<u>-20+45</u>	<u>-45+60</u>	<u>-60</u>
Fraction Wts.(g)	----	343	550	634	322	514
weight run(g)	-----	200	200	200	200	---
after exfoliation(g)	---	186	186	172	159	---
waste (g)	---	186	175	152	136	---
exfol.mica (g)	---	0	7.0	20	23	---
moisture %	---	7	7	14	20.5	---
weight %	---	14.5	23.3	26.3	13.6	21.7
exfol.mica%	---	+0	3.5	10.0	11.5	---

Sample # **CB08-20-** 2657 gm total (low-moderate yield)

<u>Size Fractions</u>	<u>+4</u>	<u>-4+8</u>	<u>-8+20</u>	<u>-20+45</u>	<u>-45+60</u>	<u>-60</u>
Fraction Wts.(g)	434	337	826	596	194	270
weight run(g)	-----	200	200	200	100	---
after exfoliation(g)	---	191	191	172	77	---
waste (g)	---	191	187	137	56	---
exfol.mica (g)	---	0	4.0	35.0	21.0	---
moisture %	---	4.5	4.5	14.0	11.5	---
weight %	16.3	12.7	31.0	22.4	7.3	10.1
exfol.mica%	---	0	2.0	17.5	10.5	---

Sample # **CB08-21-** 484 gm total (low-moderate yield)

<u>Size Fractions</u>	<u>+4</u>	<u>-4+8</u>	<u>-8+20</u>	<u>-20+45</u>	<u>-45+60</u>	<u>-60</u>
Fraction Wts.(g)	66	----	138	184	41	55
weight run(g)	-----	-----	100	100	41	---
after exfoliation(g)	---	-----	95	91	33	---
waste (g)	---	-----	75	64	28	---
exfol.mica (g)	---	---	20	27	5	---
moisture %	---	-----	5	9	19.5	---
weight %	13.6	-----	28.5	38.0	8.4	11.3
exfol.mica%	---	-----	20.0	27.0	12.1	---

**Beneficiation Results-****Sample # CB08-22-** 3784 gm total (low-moderate)

<u>Size Fractions</u>	<u>+4</u>	<u>-4+8</u>	<u>-8+20</u>	<u>-20+45</u>	<u>-45+60</u>	<u>-60</u>
Fraction Wts.(g)	70	2701609		1115	233	487
weight run(g)	-----	200	200	200	200	---
after exfoliation(g)	---	187	196	186	168	---
waste (g)	---	168	187	160	132	---
exfol.mica (g)	---	19.0	9.0	26.0	36.0	---
moisture %	---	6.5	2.0	7.0	16.0	---
weight %	18.4	7.1	42.5	29.4	6.1	12.8
exfol.mica%	---	9.5	4.5	13.0	18.0	---

**Sample # CB08-23-** 3503 gm total (low yield)

<u>Size Fractions</u>	<u>+4</u>	<u>-4+8</u>	<u>-8+20</u>	<u>-20+45</u>	<u>-45+60</u>	<u>-60</u>
Fraction Wts.(g)	-----	1751	688	1044	216	380
weight run(g)	-----	100	200	200	200	---
after exfoliation(g)	---	99	198	189	181	---
waste (g)	---	96	198	180	168	---
exfol.mica (g)	---	0	0	9.0	13.0	---
moisture %	---	1.0	1.0	5.5	9.5	---
weight %	---	4.9	48.1	29.8	6.1	10.8
exfol.mica%	---	0	0	4.5	6.5	---

**Sample # CB08-24-** 3184 gm total (low yield)

<u>Size Fractions</u>	<u>+4</u>	<u>-4+8</u>	<u>-8+20</u>	<u>-20+45</u>	<u>-45+60</u>	<u>-60</u>
Fraction Wts.(g)	121	76	1253	989	234	511
weight run(g)	-----	50	200	200	200	---
after exfoliation(g)	---	47	198	187	176	---
waste (g)	---	47	198	173	149	---
exfol.mica (g)	---	0	0	14	27	---
moisture %	---	6.0	1.0	6.5	12.0	---
weight %	3.8	2.3	39.3	31.0	7.3	16.0
exfol.mica%	---	---	13.5	38	25.5	---

**Beneficiation Results-****Sample # CB08-25-** 3348 gm total (low yield)

<u>Size Fractions</u>	<u>+4</u>	<u>-4+8</u>	<u>-8+20</u>	<u>-20+45</u>	<u>-45+60</u>	<u>-60</u>
Fraction Wts.(g)	97	414	1856	682	122	177
weight run(g)	-----	200	200	200	200	---
after exfoliation(g)	---	197	198	186	81	---
waste (g)	---	197	193	172	71	---
exfol.mica (g)	---	0	5.0	14.0	10.0	---
moisture %	---	1.5	1.0	7.0	19.0	---
weight %	28.9	8.9	38	24.6	6.4	5,2
exfol.mica%	---	0	2.5	14.0	10.0	---

**Sample # CB08-26-** 3034 gm total (low yield)

<u>Size Fractions</u>	<u>+4</u>	<u>-4+8</u>	<u>-8+20</u>	<u>-20+45</u>	<u>-45+60</u>	<u>-60</u>
Fraction Wts.(g)	-----	361	1849	610	90	124
weight run(g)	-----	200	200	200	50	---
after exfoliation(g)	---	195	198	196	44	---
waste (g)	---	195	198	175	40	---
exfol.mica (g)	---	0	0	21.0	4.0	---
moisture %	---	2.5	1.0	2.0	12.0	---
weight %	-----	11.9	60.90	20.1	2.9	4.0
exfol.mica%	---	0	0	10.5	8.0	---

**Sample # CB08-27-** 2193 gm total (low yield)

<u>Size Fractions</u>	<u>+4</u>	<u>-4+8</u>	<u>-8+20</u>	<u>-20+45</u>	<u>-45+60</u>	<u>-60</u>
Fraction Wts.(g)	130	2791084		484	91	125
weight run(g)	-----	200	200	200	50	---
after exfoliation(g)	---	193	198	192	46	---
waste (g)	---	191	198	175	41	---
exfol.mica (g)	---	2.0	0	17.0	5.0	---
moisture %	---	3.5	1.0	4.0	18.0	---
weight %	5.9	12.7	49.4	22.0	4.1	5.6
exfoliated mica%	---	1.0	0	8.5	10.0	---

**Beneficiation Results-****Sample # CB08-28-** 4352 gm total (low yield)

<u>Size Fractions</u>	<u>+4</u>	<u>-4+8</u>	<u>-8+20</u>	<u>-20+45</u>	<u>-45+60</u>	<u>-60</u>
Fraction Wts.(g)	445	502	1648	1077	273	407
weight run(g)	200	200	200	200	200	---
after exfoliation(g)	178	182	179	174	156	---
waste (g)	178	178	174	141	110	---
exfol.mica (g)	Tr	4.0	5.0	33.0	46.0	---
moisture %	11	9	10.5	13	22	---
weight %	10.2	11.5	37.8	24.7	6.2	9.3
exfol.mica%	Tr	2.0	2.5	16.5	23.0	---

**Sample # CB08-29-** 3044 gm total (low yield)

<u>Size Fractions</u>	<u>+4</u>	<u>-4+8</u>	<u>-8+20</u>	<u>-20+45</u>	<u>-45+60</u>	<u>-60</u>
Fraction Wts.(g)	538	606	760	611	184	345
weight run(g)	200	200	200	200	100	---
after exfoliation(g)	171	171	178	167	82	---
waste (g)	168	165	165	144	72	---
exfol.mica (g)	3.0	6.0	13.0	23.0	10.0	---
moisture %	14.5	14.5	11.0	16.5	18.0	---
weight %	17.6	19.9	24.9	20.0	6.0	11.3
exfol.mica%	1.5	3.0	6.5	11.5	10.0	---

**Sample # CB08-30-** 2526 gm total (low yield)

<u>Size Fractions</u>	<u>+4</u>	<u>-4+8</u>	<u>-8+20</u>	<u>-20+45</u>	<u>-45+60</u>	<u>-60</u>
Fraction Wts.(g)	----	405	918	626	212	365
weight run(g)	-----	200	200	200	200	---
after exfoliation(g)	---	183	182	170	166	---
waste (g)	---	179	170	130	92	---
exfol.mica (g)	---	4.0	12.0	40.0	74.0	---
moisture %	---	8.5	9.0	15.0	17.0	---
weight %	---	16.0	36.3	24.8	8.3	14.4
exfoliated mica%	---	2.0	6.0	20.0	37.0	---

**Beneficiation Results-**

**Sample # CB08-31-** 2786 gm total (low-moderate yield)

<u>Size Fractions</u>	<u>+4</u>	<u>-4+8</u>	<u>-8+20</u>	<u>-20+45</u>	<u>-45+60</u>	<u>-60</u>
Fraction Wts.(g)	----	440	1180	613	214	339
weight run(g)	-----	200	200	200	200	---
after exfoliation(g)	----	178	177	168	158	---
waste (g)	----	169	163	129	115	---
exfol.mica (g)	----	9.0	14.0	39.0	43.0	---
moisture %	----	11.0	11.5	16.0	22.0	---
weight %	----	15.8	42.3	22.0	7.6	12.1
exfol.mica%	----	4.5	7.0	19.5	21.5	---

**Sample # CB08-32-** 2964 gm total (low yield)

<u>Size Fractions</u>	<u>+4</u>	<u>-4+8</u>	<u>-8+20</u>	<u>-20+45</u>	<u>-45+60</u>	<u>-60</u>
Fraction Wts.(g)	----	622	889	688	318	447
weight run(g)	-----	200	200	200	200	---
after exfoliation(g)	----	168	175	175	164	---
waste (g)	----	168	173	151	142	---
exfol.mica (g)	----	Tr	2.0	24.0	24.0	---
moisture %	----	16.0	12.5	12.5	18.0	---
weight %	----	21.0	30.0	23.2	10.7	15.0
exfol.mica%	----	Tr	1.0	17.0	17.0	----

**Sample # CB08-33-** 3587 gm total (low -moderate yield)

<u>Size Fractions</u>	<u>+4</u>	<u>-4+8</u>	<u>-8+20</u>	<u>-20+45</u>	<u>-45+60</u>	<u>-60</u>
Fraction Wts.(g)	----	454	957	795	270	466
weight run(g)	-----	200	200	200	200	---
after exfoliation(g)	----	176	176	171	168	---
waste (g)	----	176	161	122	114	---
exfol.mica (g)	----	Tr	15.0	49.0	54.0	---
moisture %	----	12	12	14.5	18	---
weight %	----	15.4	32.5	27.0	9.1	15.8
exfoliated mica%	----	Tr	7.5	24.5	27.0	---

**Beneficiation Results-****Sample # CB08-36-** 3311 gm total (low yield)

<u>Size Fractions</u>	<u>+4</u>	<u>-4+8</u>	<u>-8+20</u>	<u>-20+45</u>	<u>-45+60</u>	<u>-60</u>
Fraction Wts.(g)	-----	524	779	488	309	1211
weight run(g)	-----	200	200	200	200	---
after exfoliation(g)	---	170	170	173	166	---
waste (g)	---	168	156	152	141	---
exfol.mica (g)	---	2.0	14.0	21.0	25.0	---
moisture %	---	15.0	15.0	13.5	17.0	---
weight %	---	15.8	23.5	14.7	9.3	36.5
exfol.mica%	---	1.0	7.0	10.5	12.5	---

**Sample # CB08-37-** 2234 gm total (low yield)

<u>Size Fractions</u>	<u>+4</u>	<u>-4+8</u>	<u>-8+20</u>	<u>-20+45</u>	<u>-45+60</u>	<u>-60</u>
Fraction Wts.(g)	----	596	600	407	160	471
weight run(g)	----	200	200	200	200	---
after exfoliation(g)	----	178	175	166	76	---
waste (g)	---	173	166	138	65	---
exfol.mica (g)	---	5.0	9.0	28	11	---
moisture %	---	11	12.5	17	24	---
weight %	---	26.6	26.8	18.2	7.1	21
exfol.mica%	---	2.5	4.5	14.0	5.5	---

**Sample # CB08-38-** 3606 gm total (low yield)

<u>Size Fractions</u>	<u>+4</u>	<u>-4+8</u>	<u>-8+20</u>	<u>-20+45</u>	<u>-45+60</u>	<u>-60</u>
Fraction Wts.(g)	-----	383	838	864	449	1072
weight run(g)	-----	200	200	200	200	---
after exfoliation(g)	---	175	166	170	151	---
waste (g)	---	169	159	138	121	---
exfol.mica (g)	---	6.0	7.0	32	30	---
moisture %	---	12.5	17	15	29.5	---
weight %	---	10.6	23.2	23.9	12.4	29.7
exfoliated mica%	---	3.0	3.5	16.0	15.0	---

**Beneficiation Results-****Sample # CB08-39-** 2902gm total (low yield)

<u>Size Fractions</u>	<u>+4</u>	<u>-4+8</u>	<u>-8+20</u>	<u>-20+45</u>	<u>-45+60</u>	<u>-60</u>
Fraction Wts.(g)	----	441	698	623	318	822
weight run(g)	-----	200	200	200	200	---
after exfoliation(g)	----	184	187	187	181	---
waste (g)	----	184	183	184	178	---
exfol.mica (g)	----	Tr	4.0	3.0	3.0	---
moisture %	----	8.0	6.5	6.5	9.5	---
weight %	----	15.2	24.0	21.4	10.9	28.3
exfol.mica%	----	Tr	2.0	1.5	1.5	----

**Sample # CB08-40-** 3332 gm total (low yield)

<u>Size Fractions</u>	<u>+4</u>	<u>-4+8</u>	<u>-8+20</u>	<u>-20+45</u>	<u>-45+60</u>	<u>-60</u>
Fraction Wts.(g)	----	324	796	815	371	1026
weight run(g)	-----	200	200	200	100	---
after exfoliation(g)	----	189	186	178	177	---
exfol.mica (g)	----	1.0	5.0	8.0	8.0	---
moisture %	----	5.0	4.5	7.0	7.5	---
weight %	----	9.7	23.9	24.4	11.1	30.8
exfol.mica%	----	0.5	2.4	4.0	4.0	----

**Sample # CB08-41-** 3586 gm total (low yield)

<u>Size Fractions</u>	<u>+4</u>	<u>-4+8</u>	<u>-8+20</u>	<u>-20+45</u>	<u>-45+60</u>	<u>-60</u>
Fraction Wts.(g)	-----	----	814	885	485	1547
weight run(g)	-----	-----	200	200	200	----
after exfoliation(g)	----	----	175	163	162	----
waste (g)	----	----	172	151	120	---
exfol.mica (g)	----	----	3.0	12.0	42.0	---
moisture %	----	----	12.5	18.5	19.0	---
weight %	----	----	21.8	23.7	12.9	41.4
exfoliated mica%	----	----	1.5	6.0	22.0	---

**Beneficiation Results-****Sample # CB08-42-** 3731 gm total (low yield)

<u>Size Fractions</u>	<u>+4</u>	<u>-4+8</u>	<u>-8+20</u>	<u>-20+45</u>	<u>-45+60</u>	<u>-60</u>
Fraction Wts.(g)	-----	-----	814	885	485	1547
weight run(g)	-----	-----	200	200	200	---
after exfoliation(g)	---	---	175	163	162	---
waste (g)	---	---	172	151	120	---
exfol.mica (g)	---	---	3.0	12.0	42.0	---
moisture %	---	---	12.5	18.5	19.0	---
weight %	---	---	21.8	23.7	12.9	41.4
exfol.mica%	---	---	1.5	6.0	22.0	---

**Sample # CB08-43-** 3438 gm total (low yield)

<u>Size Fractions</u>	<u>+4</u>	<u>-4+8</u>	<u>-8+20</u>	<u>-20+45</u>	<u>-45+60</u>	<u>-60</u>
Fraction Wts.(g)	-----	246	781	911	464	1036
weight run(g)	-----	200	200	200	200	---
after exfoliation(g)	---	183	180	170	164	---
waste (g)	---	183	178	151	112	---
exfol.mica (g)	---	Tr	2.0	19.0	52.0	---
moisture %	---	8.5	10	15	18	---
weight %	---	71.1	22.7	26.4	13.4	30.1
exfol.mica%	---	Tr	1.0	9.5	26.0	---

**Sample # CB08-44-** 2421 gm total (low yield)

<u>Size Fractions</u>	<u>+4</u>	<u>-4+8</u>	<u>-8+20</u>	<u>-20+45</u>	<u>-45+60</u>	<u>-60</u>
Fraction Wts.(g)	-----	480	679	528	172	562
weight run(g)	-----	200	200	200	200	---
after exfoliation(g)	---	175	176	172	84	---
waste (g)	---	173	171	151	73	---
exfol.mica (g)	---	2.0	5.0	21.0	11.0	---
moisture %	---	12.5	12.0	14.0	16.0	---
weight %	---	19.8	28.0	21.8	7.1	23.2
exfoliated mica%	---	1.0	2.5	10.5	5.5	---

**Beneficiation Results-**Sample # **CB08-45-** 2871 gm total (low yield)

<u>Size Fractions</u>	<u>+4</u>	<u>-4+8</u>	<u>-8+20</u>	<u>-20+45</u>	<u>-45+60</u>	<u>-60</u>
Fraction Wts.(g)	----	442	815	593	222	799
weight run(g)	-----	200	200	200	200	----
after exfoliation(g)	---	177	175	178	173	---
waste (g)	---	175	168	155	156	---
exfol.mica (g)	---	2.0	7.0	23.0	17.0	---
moisture %	---	11.5	12.5	11.0	13.5	---
weight %	---	15.4	28.3	20.6	7.7	27.8
exfol.mica%	---	1.0	3.5	11.5	8.5	---

Sample # **CB08-46-** 3044 gm total (low yield)

<u>Size Fractions</u>	<u>+4</u>	<u>-4+8</u>	<u>-8+20</u>	<u>-20+45</u>	<u>-45+60</u>	<u>-60</u>
Fraction Wts.(g)	538	606	760	611	184	345
weight run(g)	200	200	200	200	100	---
after exfoliation(g)	171	171	178	167	82	---
waste (g)	168	165	165	144	72	---
exfol.mica (g)	3.0	6.0	13.0	23.0	10.0	---
moisture %	14.5	14.5	11.0	16.5	18.0	---
weight %	17.6	19.9	24.9	20.0	6.0	11.3
exfol.mica%	1.5	3.0	6.5	11.5	10.0	---

Sample # **CB08-47-** 2964 gm total (moderate-high yield)

<u>Size Fractions</u>	<u>+4</u>	<u>-4+8</u>	<u>-8+20</u>	<u>-20+45</u>	<u>-45+60</u>	<u>-60</u>
Fraction Wts.(g)	----	378	709	782	336	759
weight run(g)	-----	200	200	200	200	---
after exfoliation(g)	---	177	170	155	157	---
waste (g)	---	177	133	68	42	---
exfol.mica (g)	---	Tr	37	87	115	---
moisture %	---	11.5	15	22.5	21.5	---
weight %	---	12.7	23.9	26.3	11.3	25.6
exfoliated mica%	---	Tr	18.5	43.5	57.5	---

**Beneficiation Results-****Sample # CB08-48-** 3322gm total (low yield)

<u>Size Fractions</u>	<u>+4</u>	<u>-4+8</u>	<u>-8+20</u>	<u>-20+45</u>	<u>-45+60</u>	<u>-60</u>
Fraction Wts.(g)	-----	329	844	975	373	801
weight run(g)	-----	200	200	200	200	-----
after exfoliation(g)	-----	173	162	156	143	-----
waste (g)	-----	173	125	72	62	-----
exfol.mica (g)	-----	Tr	37	84	81	-----
moisture %	-----	13.5	19.0	22.0	28.5	-----
weight %	-----	9.9	25.4	29.3	11.2	24.1
exfol.mica%	-----	Tr	18.5	42.0	40.5	-----

**Sample # CB08-49-** 3044 gm total (low yield)

<u>Size Fractions</u>	<u>+4</u>	<u>-4+8</u>	<u>-8+20</u>	<u>-20+45</u>	<u>-45+60</u>	<u>-60</u>
Fraction Wts.(g)	401	837	696	242	474	-----
weight run(g)	-----	200	200	200	200	-----
after exfoliation(g)	-----	171	173	180	172	-----
waste (g)	-----	151	130	91	77	-----
exfol.mica (g)	-----	20	43	89	95	-----
moisture %	-----	14.5	13.5	10	14	-----
weight %	-----	15.1	31.5	26.2	9.1	17.8
exfol.mica%	-----	10	21.5	44.5	47.5	-----

**Sample # CB08-50-** 2526 gm total (low yield)

<u>Size Fractions</u>	<u>+4</u>	<u>-4+8</u>	<u>-8+20</u>	<u>-20+45</u>	<u>-45+60</u>	<u>-60</u>
Fraction Wts.(g)	-----	405	918	626	212	365
weight run(g)	-----	200	200	200	200	-----
after exfoliation(g)	-----	183	182	170	166	-----
waste (g)	-----	179	170	130	92	-----
exfol.mica (g)	-----	4.0	12.0	40.0	74.0	-----
moisture %	-----	8.5	9.0	15.0	17.0	-----
weight %	-----	16.0	36.3	24.8	8.3	14.4
exfoliated mica%	-----	2.0	6.0	20.0	37.0	-----

**Description of Beneficiation Results-**

The till samples were taken with spacings some 25 meters apart over the areas of mapped micaceous rich marbles to confirm the rock types and associated mica contents. From this one trench was placed across an area of highly micaceous gneissic marble.

The samples were downsized and the aluminosilicate mica minerals were separated after drying by air separation techniques to determine the percentile of the micas. All of the micas are biotite origin from both calcitic carbonate and dolomitic syenite rock types, These can be divided into amphibolitic and marble-type rocks. The biotite shows a variation from unaltered to chloritic alteration and varies from sample to sample and lense to lense. Sizing and grade characteristics was used after James Hindman of Dillon, Montana whereby grade 2 is + 2.0 millimeters diameter, grade 3 is 1.0 to 2.0 millimeters diameter, grade 4 is 0.5 to 1.0 millimeter diameter, and grade 5 is anything less than 0.5 millimeter diameter.

The beneficiation was done by Keith Vatcher of Triple A Resources Inc. Mr. Vatcher worked with Mr. Hindman to set up the Regis Resources Inc. vermiculite plant in Cavendish Township, and has been working as an independent contractor for F.T. Archibald Consulting Ltd. for the past six years or so.

After sorting the crystallized sand grains are microscopically determined as to their origin description. For the most part the rocks are divided into altered calcitic syenite (including nepheline syenites) and calcitic amphibolite rock units. Both of these units have been cut by younger amphibolites, amphibolite gneisses, quartz monzonites, and pegmatites.

**Bulk Sampling Results-**

The surficial sampling indicated weathered biotite of silver-grey colour and the backhoe trenching indicated unweathered biotite of generally golden to black colour. The grade of mica averaged the same in both and in all cases the micas are generally less than 1.0 mm in size. The host rocks in this area are amphibolitic altered syenites and amphibolitic metasediments.

The backhoe excavation program indicated an increase in biotite content along the unweathered rock surface which is below the weathered layers. Biotite averages are from 5.0% to 9.0% modal composition of the rock on average. There are concentrated accumulations against the basal layer at the bottom of the weathered layer which is generally 0.25 to 1.2 meters below surface. The micas are generally finer than 1.0 mm. diameter size. The micas are generally golden to black colour and are of biotite variety.

**Samples 3002728 Cardiff Township**  
**U<sub>3</sub>O<sub>8</sub> & ThO<sub>2</sub>**

<u>Sample #</u>	<u>GPS Coordinate-17T</u>	<u>Description</u>	<u>U<sub>3</sub>O<sub>8</sub> %</u>	<u>ThO<sub>2</sub> %</u>
17240		calcite/amphib	-0.01	-0.01
17241		syenit.monz.	0.15	tr
17242		black-gry qtz.	-0.01	0.01
17243		syenit.monz.	-0.01	tr
33466	0703447-4954823	syenit.monz	0.82	13.2
33467		syenit.monz	0.67	11.9
33468		syenit.monz.	0.08	0.54
33469		syenit.monz.	0.06	0.26
33470		syenit.monz.	-0.01	0.03

(Samples analyzed at SGS Labs, N.Mazola and samples rendered hazardous & highly radioactive )

**Sampling Claim 3002728**  
**Cardiff Township Group**

<b><u>Sample #</u></b>	<b><u>GPS Coordinate-17T</u></b>	<b><u>CPS Radioactivity</u></b>
33466	0723721-4986622	+10,000
33467	0723735-4986622	+10,000
33468	0723741-4986619	3,500
33469	-----	2,500
33470 Pit	0723654-4986625	4,500
DDH X 2 Pit	0724253-4986440	2,500
Big Pit	0723948-4986565	80-150
Trench X 15m	0723629-4986616	120
Trench X 5m	0723589-4986593	120

## **Description of Results-**

### **A) Mica Beneficiation Results-**

Beneficiation tests of the bulk sample pit were done between June and October of 2008 in order to find average mica values for different screen sizes / flake sizes; in particular the vermiculite content of the micas and differentiation between the different types of vermiculite sources found on this property.

The values within the pit average 8.0 to 20.8 percent mica content with some coarser mica of +20 mesh size occurring within all of the samples and +8 mesh size within 24.1 percent of the samples.

The zone was traced to the northwest and although values were lower at between 5.0 percent to 12.0 percent mica content, approximately half the samples exhibited mica grades over +18 mesh and 16.7% of the samples over +8 mesh size. A total of thirty-five samples were used in these determinations.

Generally the northwest extension of this zone averages approximately 7.70% mica content which is between -20 mesh to +60 mesh size with exception of the south contact which is coarser at -8 mesh size to +60 mesh size. The zone is approximately 15.0 meters wide some 200 meters northwest of the main pit.

A parallel zone to the northeast, some 30.0 meters wide, averages 8.20% mica content and averages between -20 mesh and +60 mesh size with exception along the south contact where it is coarser and averages between -4 mesh and +60 mesh size (averaging approximately 4.2% mica content within the coarser grades / sizes).

### **B) Radioactivity Results-**

A trend of radioactivity within monzonitic syenite was traced through the eastern portion of the property for a distance of at least 2,200 meters. Along the eastern boundary of the property two diamond drillhole casings of the era 1963 were observed drilling at -45 degrees and at different azimuths through a radioactive trench which showed 2500

cps (counts per second) readings. These drill holes have not been recorded in the assessment files in Tweed.

One particular trench has shown significant values in thorium ( $\text{ThO}_2$ ) and uranium ( $\text{U}_3\text{O}_8$ ), over a n interval of approximately 15.0 meters width. Five chip-samples were taken across this zone which returned anomalous values in uranium and thorium.

Uranium values average between 0.06% and 0.82% with the higher values on the north contact. The northerly two samples were off scale on the scintillometer at +10,000 cps (counts per second).

Thorium values averaged between 0.03% and 13.2% with the higher values corresponding to the north contact.

Ten thousand cps (counts per second) is equivalent to 1.0% ,and 20 pound material is also equivalent to 1.0%.

The present price of uranium ( $\text{U}_3\text{O}_8$ ) is approximately \$72.00 per pound (Northern Miner, December, 2006). Canada produces approximately 404,040 tonnes of  $\text{U}_3\text{O}_8$  per year (Natural Resources Canada, 2005). The values over the 15.0 meter intersected width average between \$86.40 to \$1180.80 US per pound ( \$190.48 to \$2603.17 per kilogram) at the present uranium price. The average value is estimated at \$512.64 per pound ( \$1130.16 per kilogram). With the closure of the Rio Algom and Dennison operations in Elliot Lake, the closure of Cluff Lake, and the temporary shut-down of Cigar Lake operations, the price of uranium continues to rise. Usage of uranium in nuclear warheads and nuclear reactors has also increased the demand for uranium.

The 2005 price for thorium oxide ( $\text{ThO}_2$ ) was between \$82.50 and \$107.25 per kilogram (equivalent to \$37.42 to \$48.65 per pound) (US Geological Survey Minerals Yearbook, 2005). The values over the 15.0 meter intersection width average over \$109.13 per ton (and as high as \$62,420.16 US per ton). United States averages 18,000 to 23,000 kilograms for export per year of monzanite compounds and thorium. Brazil, India, and Malaysia produce between 6500 and 7410 tonnes of monzanite per year. Monazite, the source for thorium oxide, is a bi-product and or associated with titanium , yttrium, lanthanum, cerium, and

zirconium rich minerals; and is used in: high temperature ceramics, catalysts, and welding electrodes.

## Conclusions & Recommendations-

One area which extends around the contact areas of the north section of the Cheddar Batholith was trenched and mapped by this program to determine modal makeup and characteristics of the rocks surrounding the alkalic batholith structures. Studies have been performed on the amphibolitic and syenitic calcitic to dolomitic marbles within these sectors.

The Cheddar Batholith is a rounded syenitic alkalic complex of approximately one third the size of the Anstruther Batholith and located at the north contact area of the Anstruther Batholith. Both are coarse-grained structures. A well-defined fault, approximately one hundred meters in width, cuts the west section of both batholith structures.

Generally there is a corridor of gneissic-biotitic monazitic-syenite occurs around the contacts of the Anstruther Batholith and the Cheddar Batholith. The inner ring, on the contact with the primary batholith inlier structure, are amphibolite and amphibolite gneiss units which are generally biotite and calcitic rich. Further away from the core the units appear to be calcitic rich and syenitic rich structures which grade into syenites and quartz monzonites.

Mica, consisting of mainly altered biotite, averages up to **8.3% to 16.7%** exfoliating mica content within these units; although some lenses of finer mica with up to  $\pm 55\%$  mica content has been observed. Two parallel zones have been traced for a distance of approximately 2000 meters strike length across the eastern and northern portion of the property. With particular interest is along the southern contacts where coarser mica between -4 mesh and +18 mesh has been observed in quantities totalling 24.0% exfoliating mica content and +4 mesh size has been observed in quantities totalling 22.5% exfoliating mica content. Further sampling is recommended to extend these zones, averaging up to 30.0 meters (plus) width each in consideration of finding rich-mica pods; in particular the coarser mica concentrations.

Viability of a mica deposit is estimated in amounts

exceeding 10% in total makeup. Although coarser varieties of mica were encountered, much of the mica is associated with the monazitic-amphibolitic type rather than the more desirable calcitic type origin. There is a greater possibility of finding fibrous minerals (ie- tremolite and crysotile) within the amphibolitic type rocks which are prevalent around the south, west, and north side of the Cheddar Batholith; but most of all the monazitic related micas are associated with radioactivity which is an undesirable. It is recommended that detailed sampling in future programs test for the association, if any, between radioactivity and mica content. It has been determined that some of the coarser vermiculite is directly associated with zones of radioactivity (ie- Crystal Lake and Loom Lake in Galway Township, west of Baldwin Bay / Catchacoma Lake in Cavendish Township, northwestern Anstruther Township).

The mica, in particular within the monzonitic marbles, tends to be larger (grade #3-4) and of lighter colour which is specifically what the construction and agricultural markets are looking for.

Within the mica rich monzonitic syenite, the rock is generally weathered down to 0.5 to 5.0 meters in depth. At deeper depths the rock becomes competent and crystalline below 4.5 to 5.0 meters in depth. There is a slight increase in mica values at the surface of the of the competent rock which is at the base of the unweathered material.

The mica / vermiculite units have been traced for some 2000 meters before they pinch out at the southeast portion of the claim group and at the northwest portion of the claim group. There are two distinct mica-bearing units; the southern is comprised of monzonitic-syenitized marble and the northern with calcitic marble. A band of radioactive syenites parallel to the south of the southern band.

December 31, 2008  
Concord, Ontario.



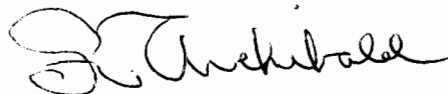
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F.T. Archibald, B.Sc.Geologist, P.Geo.

**Certificate of Qualifications**

1. I am an independent consulting mineral exploration geologist, and have been engaged in the geological profession continuously since graduation in 1977.
2. I have particular experience in exploring for diamonds, gold, base metals, and other precious and industrial minerals. I have been a management consultant directly involved in the discovery and development of several gold and vermiculite deposits.
3. I am a graduate of Carleton University (B.Sc. 1977) in Geology
4. I am a registered P.Geo.
5. I have practised as P.Geo. under Professional Engineers and Geoscientists of Newfoundland (Class A).
6. I am a registered P.Geo. under APGO
7. I am qualified for writing reports under the National Instrument 43-101.
8. I have been registered as Associate Member of the Vermiculite Association since 2000 until and including 2006 . Due to conflicts of interest within this organization my membership was let lapse.
9. My knowledge of the Monmouth-Cardiff Township area has been carried on as an independent consultant for several clients since 1977.
10. My most recent visit to the property was in September of 2008
11. This report is addressed to the Assessment Office of the Ministry of Northern Development & Mines and is provided for exclusive use by the owner of the claim herein.
12. I have been given no stock and only consulting fees as consideration and act solely as an agent to develop the mineral potential of the area.

December 31, 2008  
Concord, Ontario



F.T. Archibald, B.Sc. Geologist, B.Sc.P.Geo.

**Summary of Beneficiation & Analyses**  
**Claim 3002728 et al**

**A) Qualifications-**

F.T. Archibald has been beneficiating mica since 1978 to present, and F.T. Archibald has been beneficiating mica since 1980 to present. In 1997, a bulk sample resource calculation was on beneficiation of mica in the Cavendish Township area of Southeastern Ontario and results were confirmed as reliable and consistent and that the tests performed by F.T. Archibald and F.T. Archibald Consulting Ltd. conformed to Industry standards according to prefeasibility studies done by Dino Titano, P.Eng. and Peter George, P.Geo. of A.C.A.Howe International (April, 1997).

**B) Sampling Technique-**

The samples were taken over widths of 4.0 to 5.0 meters across the horizontal face of a vertical-trenched wall. The sample channel, some 10.0 cm. wide by 5.0 cm. depth, were carved out of the face along the total 4.0 to 5.0 distance and placed on a plastic sheet at the bottom of the trench. The sample is then mixed and "coned" followed by halving and quartering the "cone" until a representative sample is taken. The sample is collected in large freezer bags; one of which is used for the beneficiation study and the other stored for future use.

**C) Beneficiation Analysis-**

Each sample is placed into aluminum pans for drying so that the moisture content is generally at between 8.0 to 15.0 percent. As the mica is generally finer than the #7 mesh sieve(+2.80 mm opening) it is dry screened and the finer fraction minus 2.80 mm is taken for beneficiation. In some cases where the mica is visually finer, it is re-screened through the #10 mesh sieve (+2.00 mm opening) and the finer fraction beneficiated.

Material oversize is generally not used in the analyses and tends to be mica-free. The undersize is heated with a propane torch whereby the lighter micaceous material is blown onto a skirt while the heavier gangue mineral stays within the pan. Once dry, the mica is blow-separated from the calcium-carbonate to dolomitic sand material. This process take approximately 2.0 to 3.0 hours per sample. The material, when decanted from the apron-skirt, is poured off and the fine dust material added back to the gangue material. This dust material usually accounts for less than 5.0% of the total material. Checks are done on mica loss by using water-flotation, and then added back into the original process as a second middling.

Weight of gangue fraction is compared to weight of mica fraction to determine the percentage by weight of mica content. By comparing the dry weights to the initial weights the moisture contents can be determined.

Loss factor is generally +-2.5% of the total weight; usually as fine dust.

**2008 Expenditures- Cardiff/Monmouth & Galway Projects****Claim 3002728 et al**

April 1, 2008	Sampling & Beneficiation, Triple A Resources #113232	\$5775.00
May 1, 2008	Sampling & Beneficiation, Triple A Resources #113233	\$5775.00
August 1, 2008	Beneficiation, Triple A Resources #113238	\$5775.00
Aug. 1, 2008	Toromont- parts for project	\$ 483.12
Aug. 8, 2008	Toromont- parts for project	\$ 153.67
	field expenses for Keith Vatcher	\$ 143.78
	report preparation & maps- 3 days @ \$475/day	\$1425.00
	mob and demob to project. 1680 km X 0.35/km	\$ 588.00
	ATV rental @ \$75 per day (6 days)-- sample transport etc	\$ 450.00
	Bulk Pit (Cat excavator EL320 & Cat Skidster model 229)-----	N/ A
	Total Expenditures (including GST)-----	<b>\$20,568.57</b>

**Till Sampling & Beneficiation Studies**  
**Field Activities Log**  
**April to October, 2008**

<b><u>Date</u></b>	<b><u>Description</u></b>
April 1-30---	\$5500 per month based on \$250 per eight hour day
May 1-31---	\$5500 per month based on \$250 per eight hour day
August 1-31--	\$5500 per month based on \$250 per eight hour day