

# Apple Bay Project

– n Vancouver Island, British Columbia

Electra Gold Ltd.

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## **Cement feedstock and kaolin opportunities**

50°37'N, 127°14'W.  
NTS 092L12

January, 2003

**Bryan Slim, MBA PEng**

*MineStart<sup>TM</sup>  
Management Inc.*

*MineStart™  
Management Inc.*

10 January, 2003

Electra Gold Ltd.,  
100, 853 Richards St  
Vancouver  
BC V6B 3B4  
Attn: Mr D. Stelling, President

Dear Mr Stelling,

Apple Bay property, Vancouver Island, BC

It is with much pleasure we forward this report on your cement feedstock, kaolin and metal project on northern Vancouver Island.

The cement manufacturing industry is being very supportive of your project with a first kiln trial at the Tilbury Cement plant in Delta BC which demonstrated satisfactory characteristics of the material and the Lehigh HeidelbergCement group wishes to proceed to a second kiln trial for which they will use the 7 000 t bulk sample now stockpiled in Port Hardy. A second industry effort is in your recently negotiated contract with another cement producer who will be financing an exploration programme for cement feedstock, bulk sample and kiln trial in 2003.

The base for the kaolin project is the area geology with its extensive argillic alteration, occurrence in the geysirite drilling, identification by petrography and spectroscopy and of course the 'chalky' component of the cement feedstock. The metals potential although of a lower priority for now, should not be overlooked.

As such it is our professional opinion that your project at Apple Bay justifies further work to examine for commercial opportunities. Recommendations are made for management support of Lehigh intended to lead to a mine permit; a four-stage, \$C 600 000 program for kaolin intended to lead to a preliminary feasibility stage and a \$C 15 000, detailed evaluation of historical documents on metal exploration in the area. The A.N. Other company has already agreed, with Electra, the details of a program.

We thank you for this opportunity to be of assistance to Electra Gold Ltd and offer our services for the ongoing development.

Yours sincerely  
**MineStart™ Management Inc**

Bryan Slim, BSc, MBA, PEng  
Consulting Mining Engineer

E33/03010.081  
Att

## SUMMARY

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Electra Gold Ltd. has entered into two exclusive agreements under which it has acquired industrial mineral and metal rights to one mining lease and a surrounding block of five contiguous mineral claims lying south-west of the town of Port Hardy on northern Vancouver Island in British Columbia. The total area covered is about 1900 ha.

Based on indications from prior reports in the 1960s of siliceous rocks being tested for cement feedstock, claims were staked in the area in 1999 and followed by mapping and sampling and a 627 m, 24 hole diamond drilling program was completed in the general area of a former pit. Split core samples were analyzed by standard whole rock XRF, at the Tilbury cement plant in Delta B.C. With the results deemed encouraging in describing a cement feedstock, two bulk samples were extracted during 2000 from the area of a former pit; a 5 400 t sample in April 2000 and a further 6 600 t in July 2000. The first sample was barged to the Tilbury cement plant in Delta B.C. for a trial kiln test the results of which were satisfactory and the second kiln trial, using the sample stockpiled in Port Hardy, will be carried out when a current plant operating constraint is dealt with. The Lehigh HeidelbergCement group via their Monteith Bay Resources Ltd sponsored the program.

Further industry sponsored field exploration has been negotiated for 2003 with another cement manufacturer who proposes to finance a three stage, success contingent programme of \$C 116 000 of drilling, bulk sampling and kiln trial for cement feedstock.

Based on your exploration programs to-date a conceptual estimate of the potential of the area drilled ranges from 680 000 to 4.8 Mt of cement feedstock at a 15.7%  $Al_2O_3$  per Lehigh criteria. Such exploration to-date has not been sufficient to define a resource and the outcome of further exploration is uncertain.

The siliceous rock, a rhyolite with advanced argillic alteration giving enhanced kaolin and silica, is sometimes referred to as chalky geyselite. There is also a high siliceous altered rhyolite known as geyselite which has market applications. Increased alteration of the rhyolite can increase the kaolinite content. Kaolin has been found in the field and samples confirmed from petrography and infra-red spectroscopy. This presents an opportunity for kaolin resources which being a bundle of goods have many market applications as industrial fillers and as well as fillers and coaters in the paper industry.

A third mineral opportunity also exists, that of metals. Wide area exploration in the Apple Bay region in the 1960s led to the discovery of the Island Copper deposit 10 km to the east of the current Apple Bay claims. In 25 years the mine yielded 1.4 Mt of copper, 34 t of gold, 363 t of silver, 35 kt of molybdenum and 28 t of rhenium from an open pit where the final depth was 400 m below sea level. A second notable deposit is the Hushamu, lying adjacent to and west of the Apple Bay property, which is reported as a large area of low grade copper-molybdenum of an historically estimated 58 Mt. <sup>1</sup> Between these areas, much of which is covered by the Apple Bay claims, there are many documented cases of exploration findings of gold and copper.

The claims are conveniently sited with regard to access to a town and its infrastructure as well as site access from logging roads and near access to water borne freight. Site investigations show some ARD and metal leaching and elevated receiving water sampling probably originating from borrow pit work for logging roads. Mitigation, if called for, could be based on limestone.

The three opportunities of chalky geyselite, kaolin and metals comprise the core of Electra's management strategy.

Recommendations are made for management support of Lehigh for the next kiln trials and intended to lead to a mine permit; a four-stage \$C 600 000 program for kaolin intended to lead to a preliminary feasibility stage and a \$C 15 000 detailed evaluation of historical exploration in the area. Details of a \$C116 000 program for the other cement company have already been agreed, with Electra.

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<sup>1</sup> this historical estimate of 20 years ago cannot be quantified in terms of present day resource or reserve estimates

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4-2 Local Geology

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# 1 INTRODUCTION

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## 1.1 PREAMBLE

Electra Gold Ltd. –the ‘Issuer’– has entered into two agreements under which it has acquired certain mineral rights to one mining lease and a contiguous block of five mineral claims south-west of the town of Port Hardy on northern Vancouver Island in British Columbia. MineStart Management Inc has been retained to examine the project see Plate 1-1.

## 1.2 THIS STUDY

### 121 TERMS OF REFERENCE

Electra Gold Ltd has retained MineStart to review the project, draw conclusions and make recommendations and prepare a written report to NI 43-101 standard.

### 122 PURPOSE OF THE REPORT

MineStart was advised this report is intended to establish the property as one of merit for submission to the TSX Ventures Exchange to serve to re-activate Electra Gold Ltd.

### 123 SOURCES OF INFORMATION

A major source of information has been the files of Homegold Resources and various historical engineering and geological reports compiled about the project or site. Follow-up has been made with various engineers and geologist authors. We note J Nilsson PEng, Kevin Morin PGeo and Ann Thompson PGeo have agreed to their work and/or reports being referred to as appropriate. In addition we have contacted various BC Government personnel as part of obtaining information on claim list and their current status and maps, and Mines Inspection have been consulted. Other sources of reference have been: Mr Ron Savelieff mine manager of Monteith Bay Resources Ltd., Mr Alan Finlayson lawyer for Electra Gold Ltd, the BC Assessment Reports and the BC Minfile, the Mineral Titles office in Vancouver and the Mineral Titles map web-site, as well as MineStart files and a site visit. Information on the second cement manufacturer’s exploration program was supplied by Electra

Specific references to persons, reports and other information or data are noted as footnotes to superscript text notations.

124 FIELD ACTIVITY OF THE QUALIFIED PERSON

Since this report covers historical field activities, the engineer author's field involvement has been limited to a general site visit plus general enquiries.

1.3 DISCLAIMER

Many aspects of this report are based on prior description or historical reports; reliance has been placed on such information and reports as noted. Data and information provided on the claim list, claim maps and their status are provided for Electra Gold Ltd to their investigation and confirmation.



Apple Bay Project  
Electra Gold Ltd

Location Map

|         |            |          |          |
|---------|------------|----------|----------|
| Base:   | NTS 092L12 | Scale:   | -        |
| Region: | n Van Is   | Rpt Date | Jan 2003 |
| M.D.:   | Nanaimo    | Plate    | 1-1      |

## 2 PROPERTY

### 2.1 PREAMBLE

Section 2 Property identifies the property, describes tenure and the environmental situation as well as the site, access and infrastructure.

### 2.2 MINERAL PROPERTY

The Apple Bay project site, which is in the Nanaimo mining division in British Columbia and lies south-west of the town of Port Hardy on northern Vancouver Island, encompasses 72 units in five claims (Homegold) and one mining lease (Howich) covering in total a nominal 1 900 ha.<sup>2</sup> A cadastral survey was completed as part of the lease assignment. The mineral titles maps, show the claims and lease to form one contiguous parcel.<sup>3</sup> Claim details are listed in Table 2-1 and Plate 2-2 shows the general claim boundaries.<sup>4</sup>

Table 2-1 and Plate 2-1 are provided for Electra Gold Ltd for their due diligence and validation.

Table 2-1: Apple Bay project, claim and lease details<sup>5</sup>

| Claim                 | tenure | units | area               | issue date  | work rcd to | expiry     |
|-----------------------|--------|-------|--------------------|-------------|-------------|------------|
| Homegold claims       |        |       |                    |             |             |            |
| Apple Bay One         | 371773 | 16    |                    | 16 Sep 1999 | 16 Sep 2005 |            |
| Apple Bay Two         | 377240 | 20    |                    | 17 May 2002 | 16 Sep 2006 |            |
| Apple Bay Three       | 371777 | 8     |                    | 16 Sep 1999 | 16 Sep 2005 |            |
| Apple Bay Four        | 374744 | 16    |                    | 11 Mar 2000 | 16 Sep 2005 |            |
| Apple Bay Five        | 373854 | 12    |                    | 5 Dec 1999  | 16 Sep 2005 |            |
| Howich mining lease   |        |       |                    |             |             |            |
| Mining Lease lot 2323 | 379922 |       | 99.79              | 7 Feb 2001  | 7 Feb 2003  | 7 Feb 2031 |
|                       |        | 72    | = nominal 1 800 ha |             |             |            |

<sup>2</sup> as four post claims under the modified grid system

<sup>3</sup> 092 L12W and 092 L12 E; search on 26 September 2002

<sup>4</sup> we are advised the rectangular claim on Apple Bay Two immediately to the north-east of the mining lease does not exist, confirmation should be supplied from Mineral Title via an amended claim map 092 L12E

<sup>5</sup> per tenure search, web site 26 Sep 2002

## 2.3 TENURE

### 231 MINERAL TITLE

#### .1 Owners

The Homegold claims, comprising the five claims Apple Bay One – Five, are recorded in the name of Johan Thom Shearer holding FMC124452 which expires 4 March 2003.<sup>6</sup> The Howich mining lease, lot 2323, is recorded as owned 100% by a Robert Wayne Howich holding FMC 112371 which expires 24 June 2003.<sup>7, 8</sup>

Claim assessments and/or lease taxes are recorded as being valid according to the dates shown in Table 2-1.<sup>9</sup>

#### .2 Issuer

Electra Gold Ltd. (the "Issuer") has entered into two exclusive agreements under which it has acquired certain mineral rights to the Howich mining lease and the Homegold claims – Table 2-1– in consideration for treasury common shares of Electra, cash payments and royalties and a work commitment.

We are not aware of any back in rights, payments or other agreement and encumbrance to which the property is subject.

### 232 MINERAL RIGHTS<sup>10</sup>

#### .1 Howich mining lease

Electra Gold is granted, in two separate agreements, the exclusive rights to 100 per cent of the minerals as:

- per the first agreement: Industrial minerals(all minerals except precious metals, base metals and diamonds); and
- per the second agreement: all precious metals, base metals and diamonds

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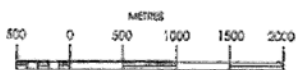
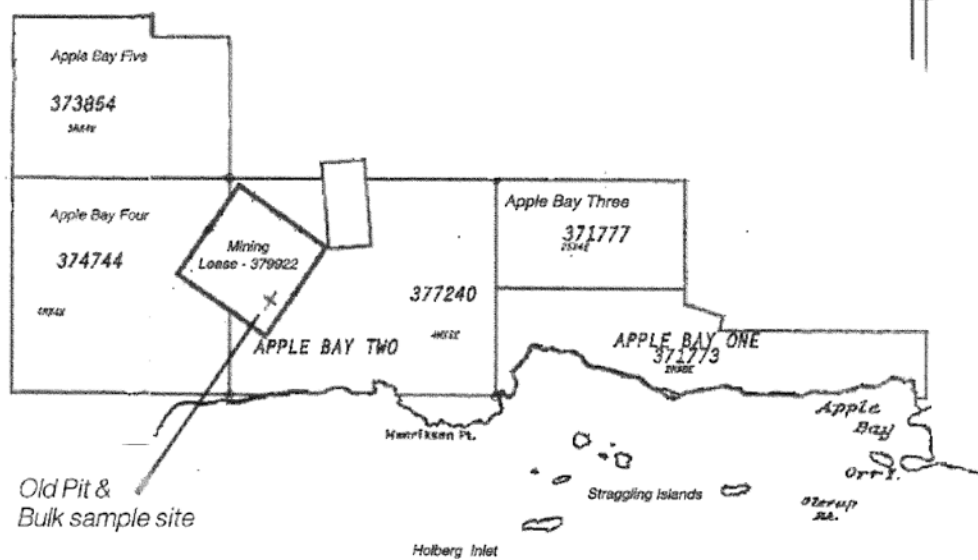
<sup>6</sup> adjunct search to claims tenure search

<sup>7</sup> adjunct search to lease tenure search

<sup>8</sup> the mining lease covers what was the former mineral claims: Jody 1, Jody 2 , Apple Bay 6, Apple Bay 7, Apple Bay 8, Apple Bay 9, Apple Bay 10 and Apple Bay 11

<sup>9</sup> per tenure search 26 Sep 2002

<sup>10</sup> full detail are given in the relevant agreements



Apple Bay Project  
Electra Gold Ltd

Claim Map

|         |            |          |           |
|---------|------------|----------|-----------|
| Base:   | Min Titles | Scale:   | scale bar |
| Region: | n Van Is   | Rpt Date | Jan 2003  |
| M.D:    | Nanaimo    | Plate    | 2-1       |

.2 Homegold claims

Electra Gold is granted the exclusive rights to all minerals

233 CONSIDERATION<sup>11</sup>

.1 Treasury Shares

Electra is to issue an aggregate of 3 000 000 treasury common-shares of which 1 500 000 are to Homegold and 1 500 000 are to Howich

.2 Work Requirements

Electra must incur the following investigation costs:

- at least \$100 000.00 within one year of the Exchange's approval of the specific agreement
- at least \$ 300 000.00 within five years of approval of the specific agreement

.3 Royalties

The issuer will pay the following royalties:

to Howich

- \$ 0.60/t industrial mineral produced from the Howich mining lease,
- \$ 0.50/t industrial mineral produced from the Homegold claims,
- 3% gross overriding royalty for diamonds produced, and
- 3% net smelter return for all precious and base metal production

and to Homegold

- \$ 0.40/t industrial mineral produced from the Howich mining lease
- \$ 0.50/t industrial mineral produced from the Homegold claims

The issuer has the right at any time to purchase one-half of the Homegold Royalty, by paying to Homegold the sum of \$500 000 and another one-half of the Homegold Royalty for the further sum of \$500 000.

## 2.4 ENVIRONMENTAL LIABILITIES

A preliminary site assessment found elevated levels of iron and aluminium and acidic pH in the area of the pit commonly referred to as PEM100. However, these cannot be attributed to the pit operations in the absence of detailed sampling and analysis. There has been considerable logging activities in the area in the past with the associated land disturbance and road building, the latter incorporating material from the pit.

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<sup>11</sup> full details are given in the relevant agreements

These elevation metal levels and low pH are already found in nearby creeks. . . .The aqueous sulphate concentrations being less than 20 mg/L indicate there is no widespread ARD. . . in the area and. . . the acidic conditions are probably enhanced by additional processes like organic acid<sup>12</sup>

These are considered to be controllable.<sup>13</sup> A lined pond or other applications of limestone could be one method of control. Further work and studies focused on kinetic cells are ongoing.<sup>14</sup>

Separately in Port Hardy at Jenson Cove there is a small, 7 000 t temporary stockpile of chalky geysersite awaiting shipment to Delta BC.<sup>15</sup> At the time of our site visit we noted a toe barrier of limestone.<sup>16</sup>

Given the need for the cement feedstock at the Delta cement plant to be less than 0.2% sulphur, measured as SO<sub>3</sub>, this will preclude the mining of pyritic material known, from drilling, to exist in certain parts. Operations will be controlled to exclude and avoid disturbance of these areas.

A reclamation bond for bulk sampling and some road work is still held by the BC Ministry pending reclamation although it is noted that since these sites will be needed in the future, there is no point in reclamation for now.

## 2.5 PERMITS

The company and property will be subject to the mine permit regulations of British Columbia. A permit has been issued for bulk sampling and drilling.<sup>17</sup> Homegold, in anticipation of acquiring a production permit, has commissioned environmental studies.

## 2.6 SITUATION AND ACCESS

### 261 SITUATION

The property, which is about 350 air km north-west of Vancouver, is on northern Vancouver Island and lies south-west of the town of Port Hardy on the north side of Holberg inlet at latitude 50°37'N and longitude 127°14'W. The map reference, at 1:50 000 scale, is NTS 092L12 Quatsino and for 1:250 000 is 092L Alert Bay – Plate 2-2. The claims are in the Nanaimo mining division.

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<sup>12</sup> Morin, Kevin A. and Hutt, Nora M.; 'ML/ARD Assessment of the PEM 100 Quarry, Apple Bay project. Minesite Drainage Assessment group for Homegold Resources Ltd' (9 Aug 2001)

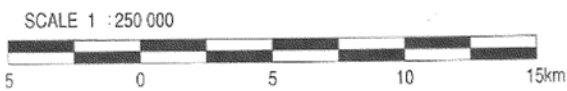
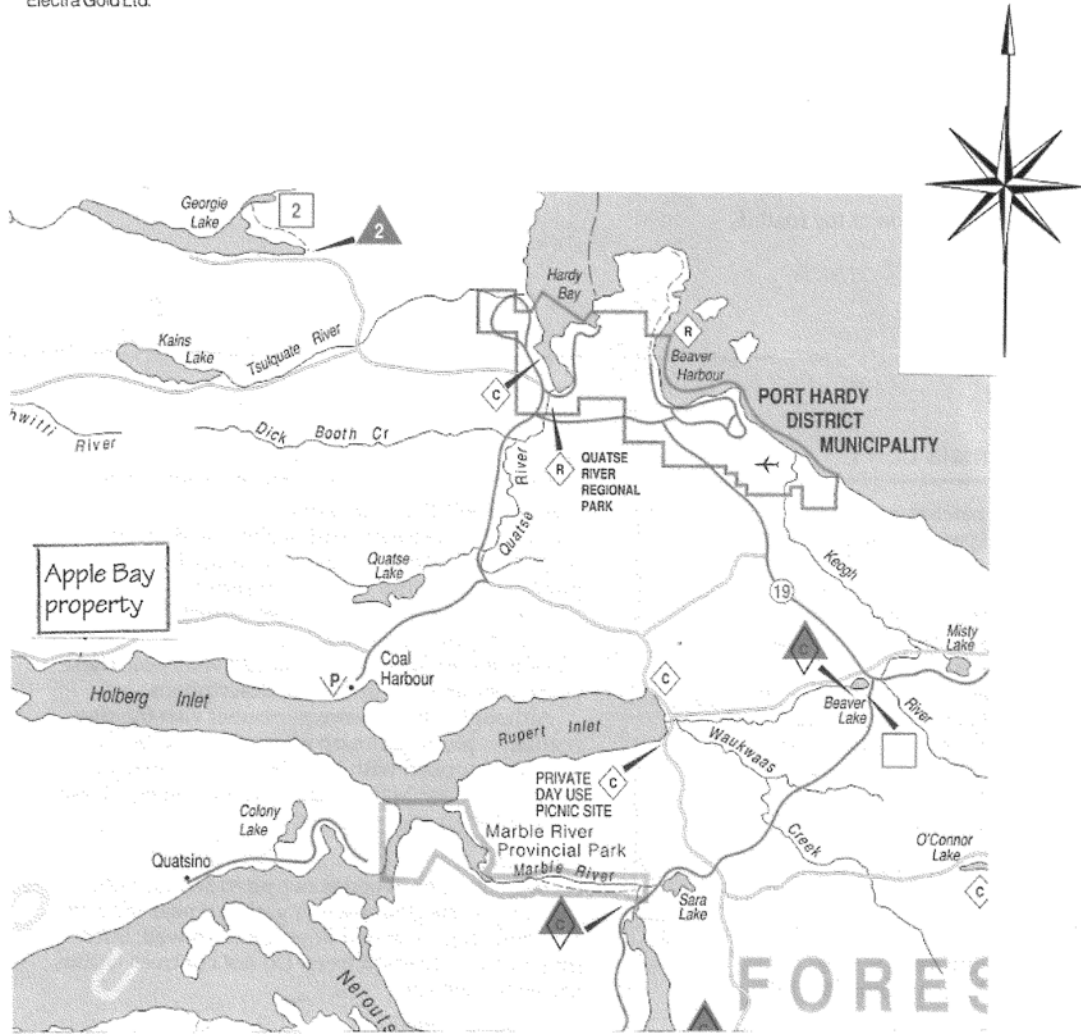
<sup>13</sup> pers comm, Mines Inspectorate, District Manager 27 Sep 2002

<sup>14</sup> pers comm J. Shearer

<sup>15</sup> for trial two of the cement plant tests

<sup>16</sup> the stockpile is owned by Tilbury Cement

<sup>17</sup> pers comm, District Manager 27 Sep 2002



Apple Bay Project  
Electra Gold Ltd

Access Map

|         |            |          |           |
|---------|------------|----------|-----------|
| Base:   | Forest map | Scale:   | scale bar |
| Region: | n Van Is   | Rpt Date | Jan 2003  |
| M.D.:   | Nanaimo    | Plate    | 2-2       |

## 262 ACCESS

Access to the claims is by travelling south for 16 km from Port Hardy along the paved road to Coal Harbour. From Coal Harbour travel west for 12 km along the Wanokana mainline logging road to the Pemberton mainline logging road. Specific access to the pit is from the turn off onto the P 100 branch road.<sup>18</sup>

During the year 2000 bulk sampling program a road use agreement was negotiated with Western Forest Products Ltd. the holder of Tree Farm License 6, for a cost based on volumes. This agreement will probably need to be renegotiated for costs based on tonnage hauled.

## 2.7 PHYSIOGRAPHY

The property lies on rolling terrain with elevations ranging between sea level and 210 m. The main pit reported to have been used for road material, is at an elevation of approximately 115 m ASL and the area gradually rises to the west into the Pemberton Hills.

Most of the claims are covered by second growth although there has been selective thinning and some 1988 logging carried out. Western red cedar seemed to be the most common tree seen. In the 1920's minor logging was carried out from the shoreline for a distance up to 1.5 km inland.

The 46 year average for mean monthly precipitation varied from 56 mm in July to 267 mm in November for an annual mean of 1871 mm. Snow cover is generally light and varying from 10 to 20 mm from November to January. Temperature ranged from average 3° in January to 14°C in July with daily extremes of -14° in January to 33°C in May. The annual mean was 8.1°C.<sup>19</sup>

## 2.8 INFRASTRUCTURE AND LOCAL RESOURCES

Although some of the streams on the property are probably ephemeral there should be sufficient water for exploration. Given the Island Copper mine was in operation for 25 years about 10 km to the east of the property, it is reasonable to assume the infrastructure exists or can be provided for a mining operation at Apple Bay.

Port Hardy is a community with a population of just over 5,000 and the North Island's primary service centre. The port serves as the terminal for the Port Hardy - Prince Rupert ferry and the new Discovery Passage ferry service to Bella Coola, and the airport can handle jets. The town provides typical goods and services at the retail level.

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<sup>18</sup> the pit commonly referred to as PEM100 quarry. Technically it is a pit and not a quarry, the later being specific to the production of dimension stone – *L. quadrare* to square

<sup>19</sup> recorded for 1944 -90 at Port Hardy A

## 3 PROPERTY HISTORY

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### 3.1 PREAMBLE

Section 3 Property History provides a description of the work history of Apple Bay claims, the mining lease and some of the surrounding area. Much of the exploration noted could almost be described as regional as it covered large claim holdings and the generality of description makes it difficult to pin point the actual areas. This has limited the understanding of prior activity on the subject claims and mining lease holdings. However, the notes are given here to provide direction to and in support of Electra's management strategy – Section 5.

It has not been possible to compile a map showing the sites for the work.<sup>20</sup> When 'bulk' samples were extracted for testing for cement feedstock results will usually been retained at the plant and not be expected to be in the public domain.

### 3.2 DISCOVERY

Although a date of discovery is not known for the geyserte, by 1960s Lafarge Cement Company held the H&W 1-8 claims for the silica potential –about where the Apple Bay One claim is now.<sup>21</sup> A deep-water dock is reported to have stood adjacent to a small 'quarry' cut in a shoreline bluff of highly silicified rock–H&W 8–and 5 000 tonnes of sample shipments were made in 1968.<sup>22</sup>

### 3.3 PRIOR EXPLORATION

331 1950s to 60s

Exploration in the mid 1960s to mid 1970s was for base metal by Utah Construction along the eastern and northern parts of Quatsino Sound, including the area northwest of Apple Bay. This led to the discovery of the Island Copper deposit in 1966. The early exploration work relied very heavily upon soil geochemical surveys which led to the discovery of the Hushamu mineralized zone 8 km northwest of the old pit on the Apple Bay property. The surveys covered Genstar's H&W claims and Lafarge site.<sup>23</sup> Young followed up this work with a program of nine very shallow x-ray drill holes (EC-40 to EC-48) which he reported as being closely grouped on the Genstar claims H&W 1 and 3 –now covered by Apple Bay One.<sup>24</sup>

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<sup>20</sup> The relevant assessment reports were often found to be vague or included maps too small to show the specifics

<sup>21</sup> Blender, D.; 'Geological, geophysical ad geochemical report of the H & W claims, north side of Holberg Sound' BC Assessment Reports 8151 (1980)

<sup>22</sup> Nilsson John; 'PEM100 Apple Bay project, preliminary resource estimate' (19 Sep 2002)

<sup>23</sup> Young, M; 'Expo Group' Assessment report 2190, as cited Nilsson John ; op cit

<sup>24</sup> Nilsson John ; op cit

332 1970s

In 1971 G. A. Clouthier carried out a detailed exploration program on the southeastern portion of Utah's Expo group which covered what is now the present Apple Bay Claims. The program consisted of geological mapping at a scale of 1"=200' and ground magnetometer and induced polarization surveys. This work was carried out along lines 400' apart with stations marked at intervals of 200'. Utah's boundaries were contiguous with those of the Lafarge claims immediately adjacent to the inlet.<sup>25</sup> The IP survey delineated several areas relatively rich in sulphides and/or clay including one on Apple Bay Three about half a mile north of the northern boundary with the Apple Bay One claim.<sup>26</sup> Two drill holes with a total of 1050 ft were put down. Core consisted of clay-silica-pyrite-altered volcanics throughout. Traces of molybdenum were found near the base of one hole.<sup>27</sup> Utah carried out no further work of significance in the Wanokana area.

Clouthier's mapping included the 'quarry' area previously worked by Lafarge and another area of alteration to the west, centred on a small east-west trending hill and extending down to the shore. The alteration was characterized as siliceous.<sup>28</sup> The outcrop in the inter-tidal zone was characterized by clay alteration and sulphide mineralization. Assays showed the presence of copper 0.41% and 0.001% molybdenum.<sup>29</sup> This zone is presently covered by Apple Bay One Claim –formerly H&W 1 and 2.<sup>30</sup>

To the north of the claims, in the eastern part of the Pemberton Hills, Utah's early soil geochemical work revealed an anomalous zone of 4 000 ft with co-incident values in copper, molybdenum and zinc.<sup>31</sup>

Fragmental rhyolitic rocks underlie two areas along the southern part of the block. These areas may be continuous with one another but lack of outcrop precludes certainty at this time. During the period 1906-1907 about 1500 tons of limonite bog iron was mined from the surface here and shipped to an iron works in the Seattle area.<sup>32</sup> The limonite was apparently derived by leaching of pyrite in the bedrock up slope from the swampy areas where deposition occurred. The western rhyolitic area has yielded two soil samples having copper values of 738 and 246 ppm. These values are the highest and fifth highest respectively of the more than 3300 soil copper values obtained by Utah over the southeastern quarter of the large claim group north of Holberg Inlet. A mercury value in excess of 700 ppb a reconnaissance sample tends to confirm the presence of hydrothermal activity in the area.

Starting in the 1970s, Western Forest Products are reported to have excavated, on an intermittent basis, about 225 000 t from the PEM 100 site for road construction.<sup>33</sup> The same company opened a geyserite

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<sup>25</sup> Clouthier, G.; 'Expo Group.' Assessment report. '3402 (1971) as cited

<sup>26</sup> Nilsson John, op cit

<sup>27</sup> idem

<sup>28</sup> idem

<sup>29</sup> idem

<sup>30</sup> The H&W claims have been seen in different positions in different reports – the apparent discrepancy is beyond the scope of this study.

<sup>31</sup> Ascencios A.; 'Expo Group' Assessment Report 4754 (1973) as cited Nilsson, J. op cit

<sup>32</sup> Minfile 092L 087

<sup>33</sup> the size of the PEM100 pit as seen 30 Sep 2002 does not appear to be that large.

'quarry' 0.5 km west of Wanokana Creek Bridge and are reported to have extracted a similar quantity of material for road building.<sup>34</sup>

In 1979 Inland Cement acquired eight claims along the north shore of Holberg Inlet covering the ground formerly held by Lafarge and carried out an investigation program. The main thrust of the work was the sampling of the siliceous rock to test for purity and determine rock grinding properties.<sup>35</sup> Assay reports included 23% Al<sub>2</sub>O<sub>3</sub> and 63% SiO<sub>2</sub> over a 29 ft width from drill core sampling.<sup>36</sup>

333 1980s

In 1982, following the acquisition of ground west and north of the Genstar claim by Western Pocasset Resources. Ltd, B.D. Pearson made an inspection of outcrops exposed by the construction of logging roads. He noted that the main haulage road cut across the northwestern margin of the western alteration zone.<sup>37</sup> Outcrop samples were of breccia fragments containing secondary clay, silica, pyrophyllite and as much as 30% pyrite. Furthermore mercury values ran as high as 1,500 ppm, an indication of the hydrothermal nature of the rock alteration.

Pearson, who had been involved in the logging of the drill core during the delineation of the Island Copper deposit, recognized that the rock here was identical to that which formed a barren capping over the western half of the Island Copper deposit. The implications were:

- the hill could form a barren capping over a concealed body of copper mineralization
- the capping was probably relatively thin for copper mineralization outcropped along the southern margin at the shoreline.

As a consequence to this work, Western Pocasset Resources cored eight diamond drill-holes, mainly to the north of pit.<sup>38</sup>

334 1990s

Following the recognition of the silica potential, kaolin possibility and for follow-up of the metallic exploration findings, Jo Shearer of Homegold Resources Ltd. staked some claims – Table 2-1. The first two phases of an exploration programme was then implemented and focussed on identifying Chalky Geyselite – an altered rhyolite. This covered mapping and sampling; the former to a scale of 1 in 5 000.

The Lehigh HeidelbergCement group, via their Monteith Bay Resources Ltd sponsored the exploration and, based on the initial findings, continued their sponsorship for 627 m of diamond drilling completed in November and December 1999 and a further 120 m in March 2000 over a total of 24 holes.<sup>39</sup> Split core

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<sup>34</sup> Nilsson John, op cit

<sup>35</sup> Blender, D.; op cit

<sup>36</sup> Idem

<sup>37</sup> Pearson D.B.; as cited Nilsson, J. op cit

<sup>38</sup> The core, which is in poor condition. is reported to be stored 0.5 km north of the PEM 100 site– Nilsson John, op cit

<sup>39</sup> the core is presently stored undercover, on pallets, at 6625 Hardy Bay road in Port Hardy.

samples were analyzed, by standard whole rock XRF, at Lehigh Heidelberg Cement group's Tilbury cement plant in Delta B.C. With the results deemed encouraging in describing cement feedstock, bulk sampling was planned.

Two bulk samples were mined from the pit site; a 5 400 t sample in April 2000 and a further 6 600 t in July 2000. The first sample was trucked to Port Hardy and then barged to the Tilbury cement plant in Delta B.C. for a trial kiln test. Additional description of the program is given in Section 5.

Phase III was drilling directed towards site investigation of a proposed product load-out site. Eight holes were drilled in the high-silica area during July 2001. The Phase IV program was directed towards definition of the high silica geysersite area to the east of the chalky geysersite zone on the mining lease. Another drill program was undertaken in January 2002 when four holes were drilled as part of the Phase V in-fill drill program intended to provide more chalky geysersite information.

Contemporary with exploration work was the cadastral survey of a block of claims for conversion to a mining lease.<sup>40</sup> The survey was extended to measuring the position of the drill hole collars.

### 3.6 PRODUCTION

Some limited extraction of apparently chalky geysersite is reported as having been carried out on several sites on the property. The bulk of the extraction was taken for road building with two cases recorded for test shipment for cement feedstock-this probably amounted to less than 10 000 t and considered to be a bulk sampling exercise

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<sup>40</sup> this covered in Section 2.3

## 4 GEOLOGY

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### 4.1 INTRODUCTION

Section 4 Geology summarizes the regional and property geology, for which we acknowledge a report by John Nilsson.<sup>41</sup>

### 4.2 REGIONAL GEOLOGY

The basement complex upon which the rocks of northern Vancouver Island were laid down is probably of Middle to Upper Paleozoic age. At the time of deposition the landmass which now makes up Vancouver Island lay in the equatorial regions of the Pacific Ocean and consisted of felsic to basic volcanics deposited in a submarine environment. The copper-zinc-gold-silver ore bodies at Western Mines's Buttle Lake operations were developed within this sequence. The geology is shown in the Plate 4-1, Regional Geology.

In Upper Triassic time (about 200 million years ago) these basement rocks were covered by a series of pillow lavas and flows largely of basaltic composition. The total thickness extruded probably exceed 2 400 m. These rocks are known today as the Karmutsen Formation. Following this period of basaltic volcanism, the Quatsino Limestone carbonate rocks accumulated to thickness of about 300 m although a much thinner section appears north of Holberg Inlet. Of importance, from a base metal exploration economic standpoint, is the correlation between the Karmutsen - Quatsino section of Vancouver Island and the Nikolai Greenstone - Chitistone Limestone section of southeastern Alaska, both of which are part of the same Central Pacific terrane. The Nikolai, like the Karmutsen, is considerably enriched in copper as compared with the average basalt. The Chitistone Limestone was host to the very high-grade Kennecott Copper deposit, which was apparently derived by re-concentration of the much lower-grade copper disseminated through large volumes of Nikolai rock.

Above the Quatsino Formation there is an elastic section which appears to be of slightly different age and of varying composition in different parts of northern Vancouver Island. Depending on age, composition and location, it is known as the Parson Bay or Harbledown Formation. The Parson Bay is somewhat calcareous and of upper-most Triassic age while the Harbledown is more argillic and of lower-most Jurassic age. Above the sedimentary section are the Jurassic Bonanza Volcanics, an assemblage of flows, tuffs and fragmental rocks largely of andesitic composition but with minor basaltic and rhyodacite sections.

During and after eruption of the Bonanza Volcanics, granitic bodies were emplaced within the Karmutsen-Quatsino-Bonanza sequence. These bodies ranged in size from dykes and small plugs to masses having batholithic proportions. Some of these intrusives formed the underground reservoirs, which broke through to surface to deposit the Bonanza Volcanics. Reaction between these very hot, high-level vent zones and circulating ground and seawater led to the development of numerous zones of highly altered rock, within or adjacent to which are copper-

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<sup>41</sup> Nilsson, John; op cit

gold-molybdenum deposits. The alteration zones are generally, characterized by the presence of large amounts of silica, clay minerals, pyrite, pyrophyllite and laumontite. Of the various alteration zones, perhaps 90% lie in the belt immediately north of Rupert and Holberg Inlets particularly in the vicinity of the PEM100 pit and Pemberton Hills which are now encompassed by the Apple Bay Claims and mining lease.

#### 4.3 GENERAL GEOLOGY

At some time during the latter part of the Jurassic age following a long period of northward drift, the Vancouver Island - Queen Charlotte Islands - Southeast Alaska terrane, apparently somewhat fragmented, collided with and fused to the North American Continent. Following this accretion and elevation of the landscape, highland portions of the terrane were eroded into basinal areas forming continental transgressive sandstones of Cretaceous age which included numerous coal measures, those of the Nanaimo basin being most notable. One of the small basins of sandstone extends from the western edge of the Island Copper mine area westwards to the vicinity of Apple Bay. Since the deposition of these various sandstones, there has been minor volcanic and intrusive activity on the island.

#### 4.4 PROPERTY GEOLOGY

Geological mapping and diamond drilling on the Apple Bay Project indicates that the area extending northwest from the pit, to and including the Pemberton Hills is underlain by a series of large-scale extrusive rhyolite flow domes. These rhyolite domes are made up of both flow banded and coarse pyroclastic units containing differing alumina concentrations. These units form steep bluffy knobs on the property, and blocky talus fans occur at the base of the bluffs. The geology is shown on Plate 4-2 Property Geology.

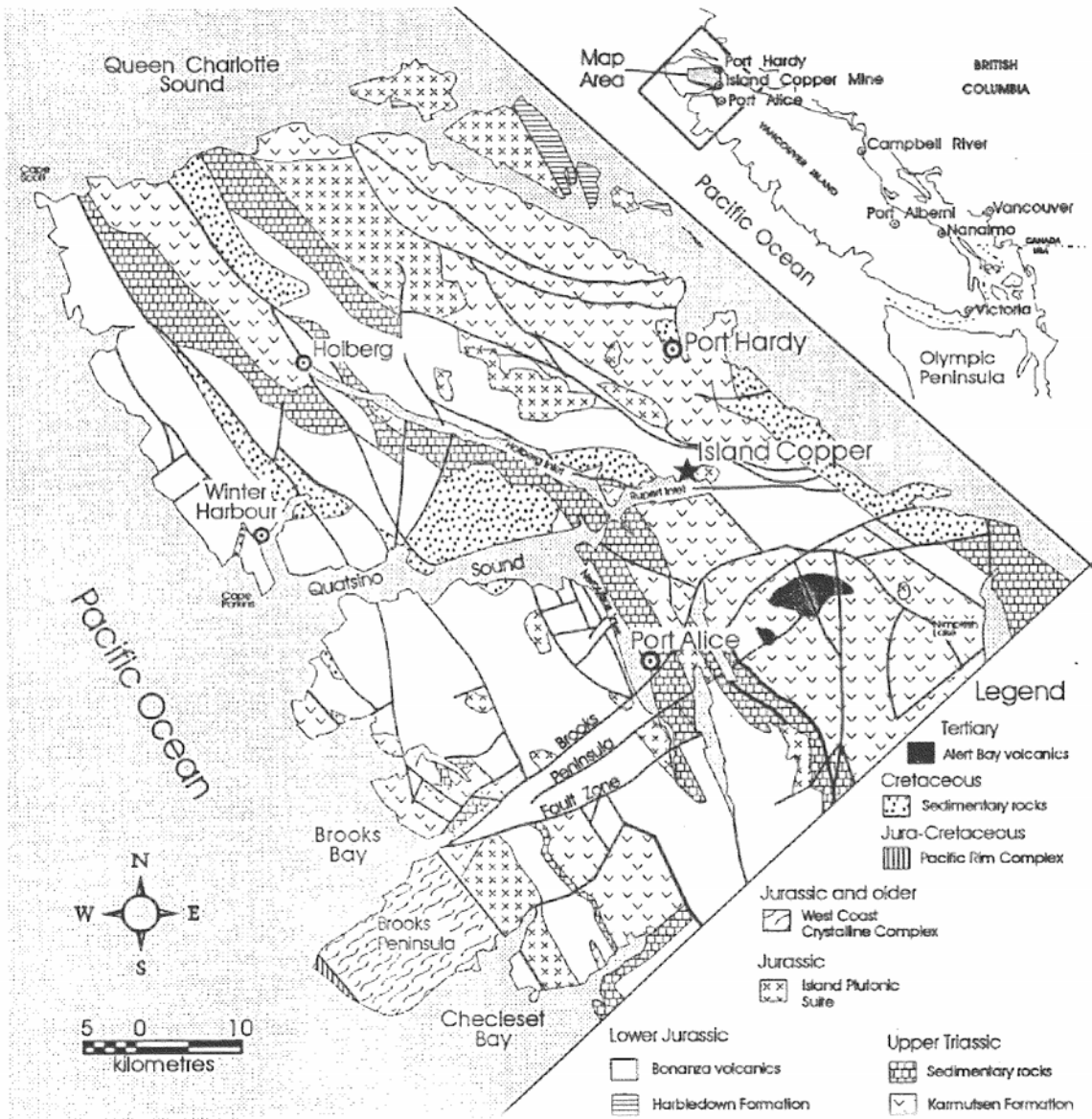
The introduction of intrusive granitic rocks into the Bonanza Volcanics created high level vent zones, which, with heated ground water, gave rise to alterations in the rhyolitic rocks with the introduction of silica and clay minerals. Late-stage, intense acid sulphate and advanced argillic alteration occurred throughout the entire system. The schematic relationships between permeable lithologies, volcanic structures, hydrothermal conduits and mineralization in the Pemberton Hills are shown in Plate 4-3.

Geological mapping and logging of drill core indicates that an intensely altered 20-35 m thick section of rhyolite, also referred to as white chalky geyselite, overlies a unit of less altered rhyolitic breccia. The white chalky geyselite, which is of primary economic interest because of its silica and alumina content, the later occurring as kaolinite, is made up of interbedded units of flow-banded rhyolite and coarse pyroclastic fragmental rocks. These units are described below:

Flow-banded, white chalky geyselite is characterized by:

- fine-grained matrix with weak to pronounced flow banding,
- flow folding is present as shown by convoluted bands,
- flow banding often exhibits welded texture,
- limonite staining is common and flow banded sections often appears to contain more kaolinite alteration than the more siliceous fragmented units,
- occasionally flow top brecciation is observed.

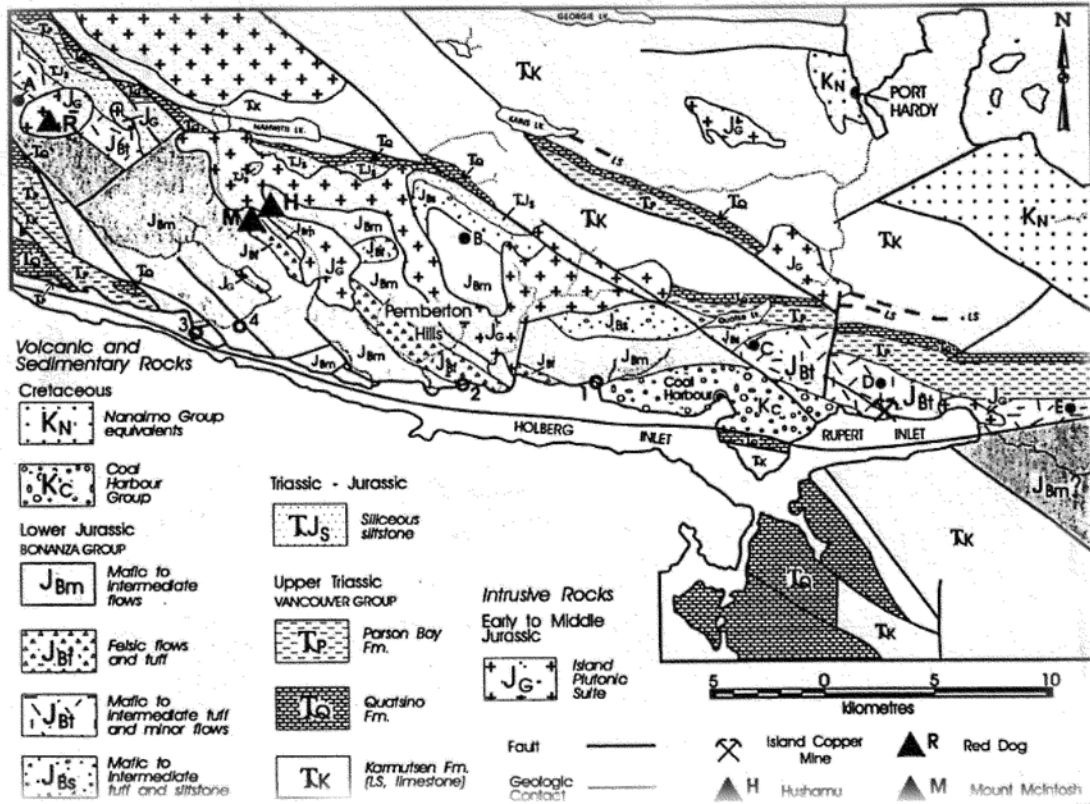
Fragmental white chalky geyselite breccia is characterised by:



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Regional Geology

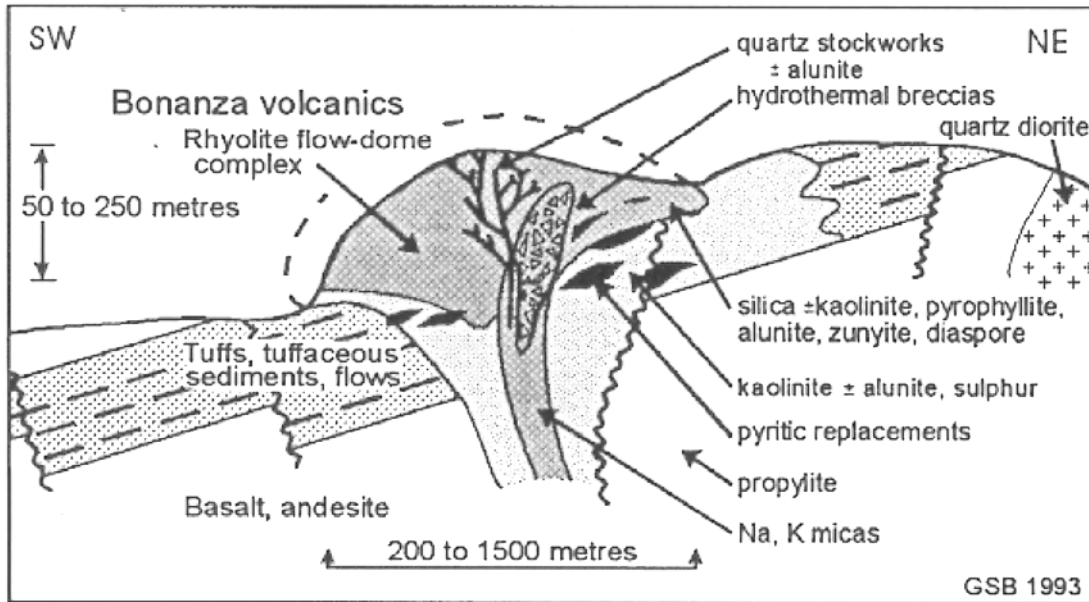
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| M.D.:   | Nanaimo  | Plate:    | 4-1       |



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Local Geology

|         |          |          |           |
|---------|----------|----------|-----------|
| Base:   | Nilsson  | Scale:   | scale bar |
| Region: | n Van Is | Rpt Date | Jan 2003  |
| M.D:    | Nanaimo  | Plate    | 4-2       |



Apple Bay Project  
Electra Gold Ltd

Geological relationships -schematic

|         |            |          |           |
|---------|------------|----------|-----------|
| Base:   | Panteleyev | Scale:   | scale bar |
| Region: | n Van Is   | Rpt Date | Jan 2003  |
| M.D:    | Nanaimo    | Plate    | 4-3       |

- often intensely silicified matrix with chalky, clay (argillic) altered fragments,
- more strongly silicified fragments appear to be found near flow-bonded units. Some fragments appear to be partially digested,
- fragments can be > 10 cm in diameter and vary from rounded to angular in shape,
- fragments sometimes appear to be flattened into elongated shapes.

The fragmented rhyolitic breccia underlying the white chalky geysersite is described as:

Less -altered fragmental rhyolite

- unit is medium green coloured,
- fragments are fine grained. closely packed in a dark grey matrix,
- minor fine-grained pyrite along fractures possibly associated with some yellowish alunite alteration,
- some fragments are kaolinized but are not bleached.

## 5 THE PROJECT

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### 5.1 PREAMBLE

Section 5 The Project sets out the concepts and strategies of Electra management with regard to the mineral potential and their commercial opportunities. Support for the strategy is discussed.

### 5.2 CONCEPT

Electra's management concept lies in three parts:

- mine and ship cement feedstock
- develop kaolin resources to meet diversified market demands
- investigate opportunities of metal deposits

### 5.3 MINERAL COMPONENTS

#### 531 CEMENT FEEDSTOCK

##### .1 Source

Two of the key ingredients for cement are alumina and silica. As noted in Section 3 - Past History, over the years cement manufacturers have shown interest in the property for a rock, which can supply both requirements in one rock. This is chalky geyselite. In addition where a blend needs balancing a high silica material is also available and that is geyselite.

In 1999 and 2000, drilling and sampling programs were carried out on the claims in what is now the mining lease area. Indications were of geyselite and chalky geyselite 20 – 35 m thick. These were sponsored by Lehigh HeidelbergCement group, via their Monteith Bay Resources Ltd, whose interest was in the potential of the site for replacement mineral for the current supply purchased from a third party for their Tilbury Cement operation in Delta, BC.<sup>42</sup>

Lehigh decided the analytical results from the drilling samples confirmed their interest and decided to proceed with kiln trials. About 12 000 t of chalky-geyselite was extracted from the pit sometimes referred to as PEM100 and approximately 5 400 t of which were shipped to the

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<sup>42</sup> of historical link here is the term 'Lehigh Cement Rock' used for an argillaceous limestone found in the Lehigh district of Pennsylvania – Lea, F.M., and Desch, C. H.; 'The chemistry of cement and concrete' Edward Arnold & Co, London (1935)

Tilbury plant. The residual 6 600 t remains stockpiled in Jenson Cove in Port Hardy awaiting shipment to the Lehigh plant in Delta.<sup>43</sup>

## .2 Analytical Testing

Analytical work of samples was carried out by Lehigh's Tilbury cement plant in Delta, BC. Standard whole rock, XRF was used to measure alumina content to qualify the material as potentially suitable for feedstock.<sup>44</sup> Some sulphur assays were also run.<sup>45</sup>

Core splits, from the drilling, were taken during core logging and samples were prepared by PRA Testing in Vancouver – air drying, crushing to 1 mm and a 14 g sample cut, pulverized to a nominal 150 mesh.<sup>46</sup>

Check assays were reported as being carried out by Chemex Labs in North Vancouver.<sup>47</sup>

## .3 Results

For Lehigh's needs for feedstock evaluation, a data base was compiled of selected chemical elements based on the cement industry standard characteristics of total sulphur, standard oxides as measured in the whole rock XRF and SO<sub>3</sub> and SO<sub>3</sub>C. Other analytical work covered grinding and abrasion characteristics, the latter being for cement plant needs for grind evaluation.

Overall, the sulphur content was found to be lower than the Monteith supply and Lehigh advised that a chalky geyselite feedstock with alumina at a mean of 15 ± 2% (measured as Al<sub>2</sub>O<sub>3</sub>) should balance the silica/alumina content to their needs.<sup>48</sup>

Test results from this first trial were satisfactory and Lehigh, with the knowledge so gained, plan for a second and third trial.<sup>49</sup> These could be expected to require 7 000 and 15 000 t of chalky geyselite.<sup>50</sup> Trial two can be set up when some operational constraints at the plant are overcome; this could be expected by spring 2003.<sup>51</sup>

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<sup>43</sup> some operational restrictions are present in the cement plant – pers comm J Shearer 2002

<sup>44</sup> Nilsson, John; 'PEM100 Apple Bay project. Preliminary Resource Estimate' (19 Sep 2002)

<sup>45</sup> by standard Leco analyzer, Nilsson, idem .

<sup>46</sup> Nilsson, idem

<sup>47</sup> Nilsson, idem

<sup>48</sup> Savelieff, Ron, 'Chalky geyselite and complimentary material as argillaceous raw additives.' email cc to J Shearer (6 Aug 2002)

<sup>49</sup> pers comm ex Ron Savelieff, Manger Monteith Bay Resources

<sup>50</sup> Savelieff, idem

<sup>51</sup> Savelieff, idem

.4 Possible Demand

As a first pass estimate, assuming the chalky geyselite supplies 10% of the feedstock and the Delta plant needs 1 500 000 t/a total feed, then a demand estimate could be 150 000 t/a for chalky geyselite at mean shipping grade measured as  $15 \pm 2\%$  alumina.<sup>52</sup>

This should not be viewed as precluding demand from other plants.

.5 Site Production Requirements

Mine production would be by drill and blast within pit limits set to exclude 'contaminants' and control alumina content for a mean shipping grade of  $15 \pm 2\%$  alumina. This would mean selective mining; from large faces if the blending vs grade distribution so dictated or, alternatively, two or more pits. Crushing would be required and a nominal 12 mm has been mentioned. Site blending could be expected and production grade control would have to be rigorous and driven from data from blast holes drilled in advance.<sup>53</sup> Ephemeral stockpiling may be required. Prior exploration data should allow for setting general pit limits.

532 KAOLIN

.1 The Opportunity

Kaolin, as a potential industrial mineral market-type-product, has been proposed based on professional judgement of the geological environment and identification in core samples.

.2 Identification

Technically the mineral is kaolinite whereas kaolin is a white, soft plastic clay composed of well-ordered kaolinite with a low iron content. For this report we will ignore the difference and use the term kaolin.

Kaolin has been identified on the property and confirmed from petrographic examination as:

The [thin] section consists of fine to medium-grained, tabular feldspar phenocrysts in a microcrystalline groundmass. The feldspars are pervasively replaced by kaolinite. The groundmass appears to consist of a mixture (approximately 50-50) of quartz and kaolinite. A fine-grained (micro crystalline) mineral is disseminated throughout and may consist of mixtures of rutile and possible Fe-oxide minerals. A foliation is evident in portions of the thin section with minor zones of apparent brecciation. The textures are consistent with a felsic flow or welded tuffaceous protolith.

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<sup>52</sup> Savellieff, Ron; 'Chalky geyselite and . . . . . ' email cc op cit

<sup>53</sup> akin to an OR vehicle routing model

The minerals are extremely fine-grained and estimates of abundances are only approximate. Comparison of the mineralogy to geochemistry could help to clarify the amount of kaolinite present.<sup>54</sup>

and from PIMA short-wave infra-red analysis:

... the minerals in the sample set include kaolinite, dickite and quartz ... two samples contained significant quantities of kaolinite and dickite. ... positive identification of these minerals typically requires the presence of greater than 5% in the sample.<sup>55</sup>

Dickite and nacrite are all chemically the same as kaolinite but crystallised varieties founded on optical properties.<sup>56</sup>

That kaolinite can be expected to exist on the property follows from the reported and described hydrothermal alteration.<sup>57</sup> Plate 2 of the paper referenced shows argillic and propylitic alteration on the site between the Youngpan and Wanakana creeks and a quote is:

The advanced argillic alteration is characterized by the presence of kaolinite, dickite, alunite and pyrophyllite.<sup>58</sup>

### .3 Exploration

Exploration has not yet been carried out for kaolin but is needed and justified –Section 7 Development and Recommendations.

### .4 Characteristics

#### .41 Supply vs Demand

Characteristics for saleable kaolin market products are balanced between the deposit supply and the market needs.<sup>59</sup>

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<sup>54</sup> Thompson, Anne J. B.; 'Petrographic report – Sample APBY 99-01. 75', Kaolinite prospect. northern Vancouver Island' PetraScience Consultants Inc. (28 March 2001)

<sup>55</sup> Thompson, Anne J. B.; 'PIMA short-wave Infrared analysis, Kaolinite prospect. northern Vancouver Island' PetraScience Consultants Inc. (26 February 2001)

<sup>56</sup> Read, H. H.; 'Rutley's Elements of Mineralogy' 24 Ed Thomas Murby & Co, London (1948)

<sup>57</sup> Panteleyev Andre and Koyanagi Victor M.; 'Advanced Argillic Alteration in Bonanza volcanic rocks, northern Vancouver Island – Lithologic and permeability controls. Geological Fieldwork paper 1994-1 (1993)

<sup>58</sup> Panteleyev Andre and Koyanagi Victor M.; op cit , p 101

<sup>59</sup> Slim, Bryan A.; 'Economics of various industrial minerals in the BC pulp and paper industry' Industrial minerals conference, Vancouver (Oct 1995)

.42 Deposit Potential

Given it is the mineral or minerals which are saleable then these must be described by mineralogy, chemistry, physical, optical or other attributes as illustrated in Figure 5-1. This description, even when completed and analysed, is still only the statement of deposit potential ownership. This information will then be used to investigate market opportunities and allow for an analysis to determine which market type products – if any – can be produced and sold at a profit.<sup>60</sup>

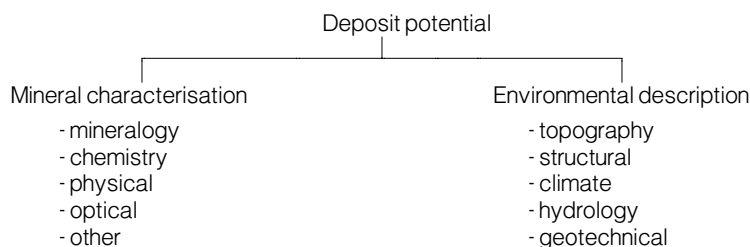


Figure 5-1: Description of industrial mineral deposit

.5 Market Demand

The markets need certain properties in the minerals they buy and these can have precise definitions accorded by trade standards and/or buyer specifications. In addition a market buyer will also be concerned about the risks of ‘contaminants’ (defined as a component interfering in the product specifications) – if something is 98% pure what is the other 2%?

In addition to the material criteria will be the specific needs for shipping frequency and quantities, and methods of packing and product form such as bulk truck loads, crystallised, slurry or dried, etc. Finally, prices will be needed.<sup>61</sup>

The key here is not only matching the needs but also the contaminants and other buyer criteria. These are illustrated in Figure 5-2

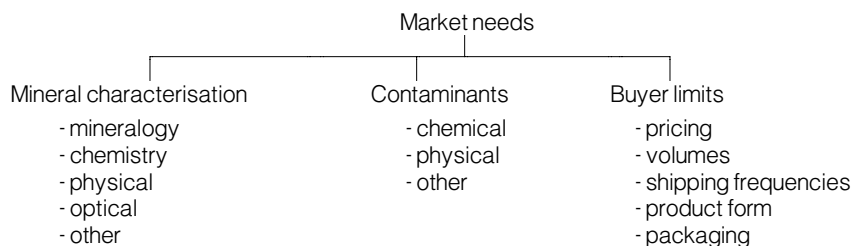


Figure 5-2: Industrial mineral market demand factors

<sup>60</sup> Slim B. A.; ‘Zeolites: An examination of the industry, markets and demand’ MBA Research project Simon Fraser University (Feb 1990)

<sup>61</sup> the commercial aspects of branding are ignored for now

.6 Reserves Concept

The prospective mine developer, in comparing the buyer needs to the mineral descriptions, will realise that parts of the deposit will not meet certain specifications although quite often the natural blending from mining and beneficiation can yield a product within the tolerance range of a market need. At times it could be necessary to resort to either active blending of raw feed from different areas of the deposit or possible beneficiation.

However, this non-homogeneity can be exploited to develop various grades of the same fundamental mineral, e.g. various brightness grades or particle size distribution or even rheological characteristics, by selective mining and batch or differential beneficiation.

As such a deposit must be viewed as a bundle of goods which are identified from sufficient exploration and laboratory analyses and market studies and whose inventory is determined from planning and costing as being a good mix for sales. As such the 'reserve' is not stated as 'x' tonnes but rather as series of tonnages each qualified with specified market type characteristics and position within the deposit. This is a dynamic state as changing market conditions can reduce or increase demand or change grades.<sup>62</sup>

533 METALLIC MINERALS

Other than an awareness of the exploration as noted in § 3 Exploration History the issuer has not carried out any work for metallics.

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<sup>62</sup> Slim, Bryan A.; 'Industrial mineral reserves – determined by the markets'. CIM District 6 AGM Vancouver (Oct 1994)

## 6 DISCUSSION AND CONCLUSIONS

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### 6.1 PREAMBLE

Section 6 Discussion reviews the project from the viewpoint of exploration. Details already presented in previous sections will not be repeated here.

### 6.2 FIELD INVESTIGATIONS

#### 621 CEMENT FEEDSTOCK

Past field work has indicated the potential for cement feedstock on the Apple Bay property and current exploration and bulk sampling for an industrial kiln trial, all sponsored by Lehigh HeidelbergCement group, have so far confirmed that potential. Further kiln trials are planned and will be carried out at the Delta, BC cement works of Lehigh when a plant operating constraint is fixed.<sup>63</sup>

Plate 6-1 shows the drill hole positions and three nominal boundaries interpreted from the analysis of drill core sampled from collar to toe. A and B are for the higher alumina (chalky geyselite) content; A being the general area of the old pit and from where the bulk sample was taken. Area C shown on Plate 6-1 has high silica content, typically in the +95% range. Since the drilling was stopped while the drill bit was still in either chalky geyselite or geyselite, an ultimate thickness has not been determined; similarly the lateral bounds for this site are not yet described.

As an examination for the potential of the area so far drilled, we estimate for the Lehigh alumina specifications (see § 531.3), a conceptual range from 680 000 t to 4.8 Mt of cement feedstock at an alumina grade of 15.7% (as  $\text{Al}_2\text{O}_3$ ) with an effective mean thickness of 24.7 m.<sup>64</sup> The exploration to-date has been insufficient to define a mineral resource and the results of further exploration are uncertain. The estimate reflects a selective mining approach. Each hole was examined for a mineral contribution having an aggregate potential of  $15 \pm 2\%$  alumina. The lower tonnage was estimated for an assumed relative density of 2.6 and 15 m radius of influence for holes making a contribution. For the upper range we assumed continuity of the 24.7 m across areas A and B and a RD of 2.6. The overall grade estimated from a weight averaging of sample thickness and grade of that sample as determined from the lab analysis. The mineral contribution per hole was modelled on an interactive spread-sheet using drill logs and XRF analyses as input.<sup>65,66</sup>

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<sup>63</sup> actual date will be an industry decision made from head office and based on the corporate needs of a group operating many sites in North America

<sup>64</sup> this is not and not meant to be an estimate of resource or reserve but merely a conceptual indication for management of the potential

<sup>65</sup> the spread sheet model was developed by the author for this study

Three items are important here – buyer specification, grade description and sample increment. First, the above potential range estimate is specific to Lehigh requirements and the tonnage and grade, and thus confidence level, could vary for other buyers with different grade requirements –see §532.6 Reserve Concept. Secondly, the overall grade estimate of 15.7% fits well with the Lehigh specification of  $15 \pm 2\%$  alumina. The alumina grade is a measure of the raw rock and assumes that after selective mining there is only crushing and blending needed to supply kiln feedstock to the buyer, within the specified range requested. No beneficiation is called for. Thirdly, the sample increment, at a nominal 3 m, is a realistic sensitivity match for selective mining.

Production modelling could well allow for the incorporation of lower grades than assumed here but still meeting buyer specification.<sup>67</sup> This could mean higher sales productivity from lower interburden handling.

No significant negative environmental problems have been reported although there is an apparent sensitivity in the claims environment to acid rock drainage and metal leach. The former is possibly related to sulphides in the claims and the leaching, as higher concentrations of aluminum and iron. Potential receiving waters show concentrations above standard although these could be related to prior activity and construction of logging roads from sulphide and also natural phenomena. Mitigation from any ARD or ML from mining is possible from the ideal of avoiding sulphides by judicious setting of mining boundaries. Mitigation may also be possible by use of limestone based systems such as lined ponds, isolating trenches or 'hockey stick' type filters. There is a known source of limestone in the area.<sup>68</sup>

## 622 KAOLIN

In the case of kaolin, the area, from a geological perspective, can be considered prospective and supported by occasional field observations and the petrographic and infra-red spectroscopy work and, of course, the 'chalky' component of chalky geysirite being kaolinite.

## 6.3 METALLIC MINERALS

The metallic mineral component rests on the adjacent occurrence of two base metals with gold deposits lying within 10 km either side of the property in illustrating a successful mine operation and indications for a potential economic mineral deposit.

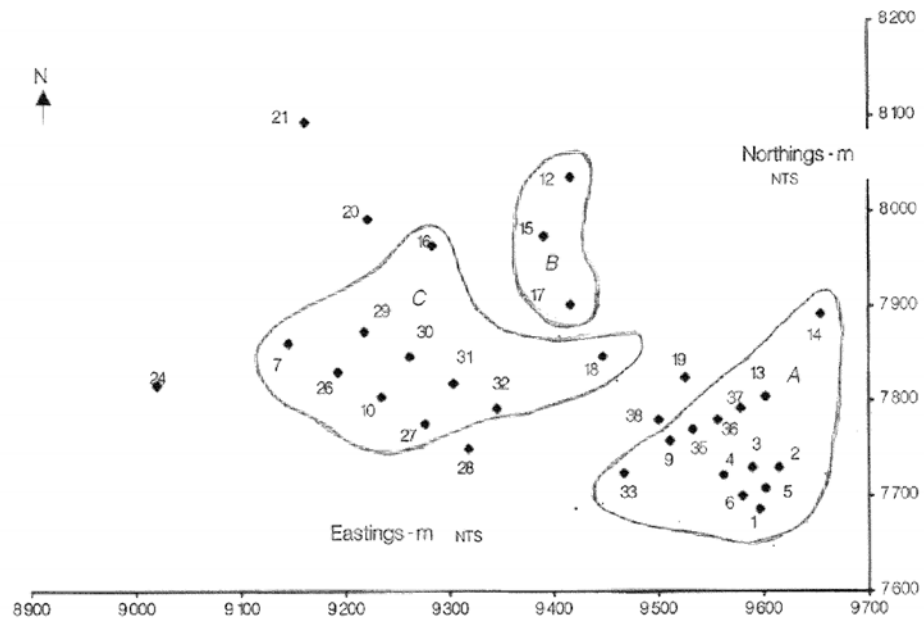
First is the Island Copper mine lying about 10 km to the east of Apple Bay and which was in operation from 1971 to 1996 and produced concentrate yielding approximately 1.4 Mt of copper, 34 t of gold, 363 t of silver, 35 kt of molybdenum and 28 t of rhenium. The final pit bottom reached 1 320 ft below sea level.

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<sup>66</sup> for increasing the confidence level and thus improving the classification, an evaluation of hole density is needed with respect to continuity/variability of mineral grades between holes and sensitivity of blending to the inclusion of lower grades; lateral and depth boundaries also need to be established. Final selective mining boundaries will be determined from blast hole.

<sup>67</sup> from an increased sampling from higher density of drill holes

<sup>68</sup> pers comm, Shearer, J.



See Plate 1-1 for position on the mineral claims

- A high alumina area in general area of old pit
- B high alumina area to the north-west of the pit
- C high silica area

Based on exploration to-date for areas A and B and as a guide for further exploration there are 15 holes which:

- could contribute, selectively, to high spec alumina, and
- have a weighted means of such contribution of 24.7 m thickness and 15.7%  $Al_2O_3$

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Drill Hole plot:

|         |            |           |                 |
|---------|------------|-----------|-----------------|
| Base:   | drill logs | Scale:    | NTS scaled axes |
| Region: | n Van Isl  | Rpt Date: | Jan 2003        |
| M.D.:   | Nanaimo    | Plate:    | 6-1             |

Second is the occurrence, some 8 km to the west of but outside the Apple Bay claims, of Hushamu, a large area of low grade copper-molybdenum, for which an historical estimate has been reported as 58 Mt mineable of 0.32% Cu, 0.008% Mo and 413 ppb gold at a stripping ratio of 2.2: 1.<sup>69, 70</sup> We consider this relevant to Electra in showing mineralisation potential of the area.

#### 6.4 CONCLUSIONS

Based on the evidence in reports, discussions with those noted and contributions, secondary data sources, experience and professional engineering and marketing judgement, all as contained in this report, it is our opinion that:

- exploration results leading to the first kiln trials of chalky geysersite for use as cement feedstock,
- a conceptual tonnage and grade range estimate indicates a potential base for commercial production, and
- the intent for Lehigh HeidelbergCement group at the Tilbury plant in Delta BC to proceed to kiln trial two

indicate the potential for success of an industry sponsored investigation to confirm the suitability of the material at the old pit area on the Apple Bay property for use as cement feedstock. Further exploration is needed to determine boundaries of the specific site and hence the reserves. Exploration for and of further deposits may be necessary.

- the geological argument and field evidence for kaolin deserves an exploration program
- the reported existence of a large volume of low-grade copper with gold at Hushamu and the 25 years of mining success at Island Copper coupled with the results of various exploration programs over the intervening area including that now covered by the Apple Bay claims and mining lease point to the need for further investigations

and therefore

- support for the next stage of kiln trial for the chalky geysersite must be maintained in conjunction with Lehigh,

and

- exploration programmes are justified for kaolin and metals. Such programs, which need ranking for priority, should be planned and carried out in success contingent stages.

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<sup>69</sup> Pickering, Schmidt; 'Ore reserve Hushamu. Internal report for Island Copper Mines (1983) Ltd as cited Dasler Peter G.:' Summary report on the Wan 90 property, north Vancouver Island.' (Jun 1990)

<sup>70</sup> no category was given for the historical estimate made 20 years ago and we have not seen the original documents so as we are unable to qualify the estimate.

## 7 DEVELOPMENT RECOMMENDATIONS AND BUDGET

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### 7.1 PREAMBLE

Section 7 presents recommendations for corporate and technical work and provides a preliminary budget.

### 7.2 RECOMMENDATIONS

#### 721 GENERAL

Clearly the conclusions of this study, in showing potential for cement feedstock, kaolin and metals requires three streams of recommendations for further investigations and development. Within cement feedstock are two streams to accommodate the two industrial sponsors.

#### 722 CEMENT FEEDSTOCK

##### .1 Lehigh

Developing the industrial potential for chalky geysersite for cement feedstock requires management support for Lehigh's sponsored trials for which we recommend Electra:

- to monitor Lehigh,
- continue with the necessary site investigations regarding ARD and ML as indicated as being necessary by the mines inspectorate,
- scope out:
  - the alternatives and risks of material handling and transport from mine-site to Tilbury with regard to routes, terms and conditions e.g. c.i.f., f.o.b., f.a.s., etc.
  - production risks, strategy and tactics including blending sensitivity, face scheduling and maintenance of a constant supply grade
- complete sufficient engineering layout for application for permits when agreement made with Lehigh

These recommendations are intended to obtain a permit; further work will then be needed.

.2 A.N. Other

This company have proposed to and agreed with Electra a three stage, success contingent programme which will be carried out within the mine lease: diamond drilling, bulk sampling for a kiln trial, basic permit application.

723 KAOLIN

For the kaolin, geological judgement has suggested ten nominal sites for investigation and drilling; these need confirmation. At this stage we recommended a minimum of three success-contingent stages with comprehensive reports issued at the completion of each stage to provide conclusions and present recommendations. The first stage is divided into two phases – a preliminary and follow-up.

Stage I

Phase one

- confirm or otherwise the sites nominated for examination
- implement a suitably designed drilling program intended to examine for kaolin and acquire samples, a nominal 400 m should suffice at this stage, core sampling must be continued on regular increments and not lithological
- submit samples to a pre selected laboratory for kaolin analysis
- review program results, including preliminary market matches and make recommendations for phase two

Phase two

- extend drilling ex phase one as recommended
- implement kaolin analytical work as recommended
- make recommendations for Stage II

Stage II

- drilling for resources per stage II recommendations
- characterisation and beneficiation studies
- project scoping
- make recommendations for Stage III

Stage III

- drilling for resources
- characterisation and beneficiation studies
- preliminary feasibility

724 METALS

For the metals a lower priority should be given for now as the important issue here is the gathering of old records and reports and merging all into a compilation and comprehensive report with structured recommendations and budgets: – gather up reports and documents on exploration in the region and develop a comprehensive evaluation

### 7.3 BUDGET

The budget is preliminary and should be viewed for the four separate streams of which the cement feed-stock will be at the expense of the two cement manufactures concerned. Confirmation is needed from specific proposals. Costs are assumed to include travel, accommodation and food, gst is extra. No allowances are included for possible reclamation bonding.

For the cement feedstock the assumption for now is that Lehigh will sponsor their costs and the same for A. N. Other Company. For the kaolin the costs and work items are allowances for now and they will reflect recommendations from prior stages.

|                                 | \$C  | \$C     |
|---------------------------------|--|---------|
| Cement Feedstock - A N Other Co |  |         |
| Stage 1a                        | 1 000 ft diamond drilling, incl supervision,<br>core splitting, analysis, report                     | 36 200  |
| Stage 1b                        | bulk sample extraction & shipping  | 66 428  |
| Stage 2a                        | basic permit application   | 13 625  |
|                                 |  | 116 253 |
| Cement Feedstock -Lehigh        |  |         |
|                                 | additional drilling for depth and boundaries   | 25 000  |
|                                 | third bulk sample  | 200 000 |
|                                 | support for Lehigh including<br>environmental and engineering studies and<br>application for permits | 75 000  |
|                                 |  | 300 000 |
| Kaolin – Electra Gold Ltd       |  |         |
| Stage I                         |  |         |
| Phase One                       |  |         |
|                                 | planning, selection and site confirmation  | 20 000  |
|                                 | diamond drilling 400 m @ \$90/m*   | 36 000  |
|                                 | characterization and studies of kaolin   | 30 000  |
|                                 | consulting, supervision and reports  | 14 000  |
|                                 |  | 100 000 |
|                                 | Phase Two  | 100 000 |
|                                 | diamond drilling   | 50 000  |
|                                 | characterization and studies of kaolin   | 30 000  |
|                                 | consulting, supervision and reports  | 20 000  |
|                                 |  | 100 000 |
| Stage II                        |  |         |
|                                 | diamond drilling   | 100 000 |
|                                 | characterization and studies of kaolin   | 50 000  |
|                                 | consulting, supervision and reports  | 25 000  |
|                                 | project scoping  | 25 000  |
|                                 |  | 200 000 |
|                                 |  | 200 000 |

|  | <u>\$C</u>    | <u>\$C</u>     |
|--|---------------|----------------|
| Kaolin – Electra Gold Ltd  |               |                |
| Stage III  |               |                |
| diamond drilling   | 100 000       |                |
| characterization and studies of kaolin   | 50 000        |                |
| preliminary feasibility  | <u>50 000</u> |                |
|  | 200 000       | 200 000        |
|  |               | <u>600 000</u> |
| Metals – Electra Gold Ltd  |               |                |
| gather and study reports, produce<br>comprehensive report with<br>recommendations and budget | 15 000        | 15 000         |

\* assumes mob/demob, core splitting and sample shipments to lab and limited drill access support and pad work

10 January 2003

CERTIFICATE of AUTHOR

I Bryan A. Slim PEng do hereby certify that:

- 1 I am an independent consulting mining engineer and principal of MineStart Management Inc
- 2 My academic qualifications are:
  - Bachelor of Science in Mining Engineering from the University of London, England in 1963
  - Associate of the Royal School of Mines (ARSM) from the Imperial College of Science and Technology in London, England in 1963
  - Master in Business Administration (MBA) from Simon Fraser University, Vancouver in 1990
- 3 My professional associations are:
  - member of the Association of Professional Engineers and Geoscientists in the Province of British Columbia, Canada
  - Chartered Engineer in England
  - member of the Institution of Mining and Metallurgy, England
  - Mine Managers Certificate of Competency, Republic of South Africa
  - member of the Canadian Institute of Mining and Metallurgy
- 4 I have been professionally active in the mining industry for 39 years since initial graduation from university.
- 5 I have read the definition of "qualified person" set out in National Instrument 43-101 and certify that by reason of my education, affiliation with a professional association and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
- 6 I am responsible for the preparation of all sections of the technical report entitled 'Cement feedstock and kaolin opportunities' and dated 10 January 2003 relating to the Apple Bay property. I visited the Apple Bay property on 30 September 2002.
- 7 I have not had prior involvement with the property, which is the subject of the technical report.
- 8 I am not aware of any material fact or material change with respect to the subject matter of the technical report, which is not reflected in the technical report, the omission of which makes the technical report misleading.
- 9 I am independent of the issuer, applying all of the tests in section 1.5 of National Instrument 43-101.
- 10 I have read National Instrument 43-101 and Form 43-101FI, and the technical report has been prepared in compliance with that instrument and form.
- 11 Subject to agreement by Electra Gold Ltd., I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report, for reading only.

- 12 As author of this report I consent to its exclusive use by Electra Gold Ltd for their legitimate needs. Neither the report nor any information contain herein or otherwise supplied by MineStart™ in connection with the study shall be used by others in any connection without the express written consent of MineStart™ Management Inc and any use which a third party makes of this report, or any reliance on or decisions to be made based on it are the responsibility of such third parties. MineStart™ accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report. All rights reserved.
- 13 This report entitled 'Cement feedstock and kaolin opportunities' and dated 10 January 2003 supersedes all previous reports of the same title.

Signed and sealed as of 10<sup>th</sup> day of January 2003 in North Vancouver

Bryan Slim, BSc, ARSM, MBA, MIMM, CEng, PEng