

OPPORTUNITIES FOR

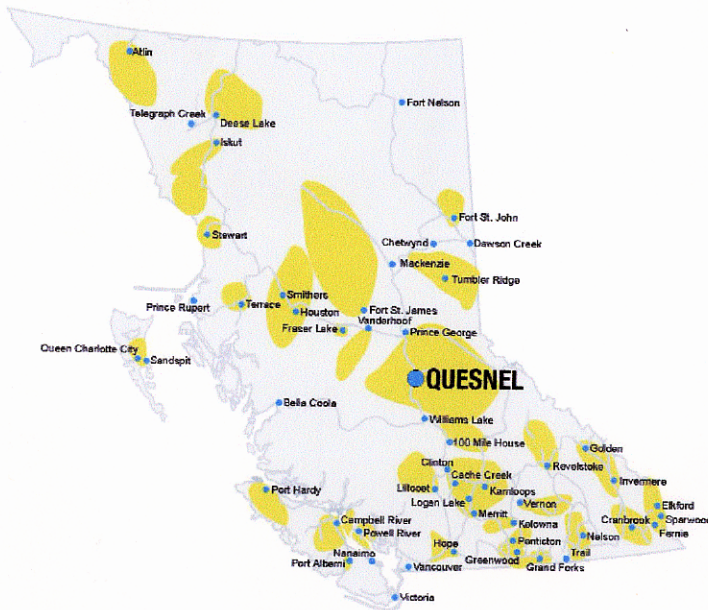
Industrial Mineral Processing

IN QUESNEL, BC, CANADA

FOCUS: LAVAROCK & CALCINED SHALE CEMENT APPLICATIONS — PRE-CAST & MASONRY UNITS — INDUSTRIAL CERAMICS — WATER FILTRATION SYSTEMS

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THE QUESNEL AREA HAS THE LARGEST VOLCANIC DEPOSIT MINING OPERATION IN NORTH AMERICA.



BC AND QUESNEL EXPLORATION AREAS

Shaded areas indicate major exploration activity areas

Map: Ministry of Energy and Mines, Mining and Minerals Division, BC Mining Plan 2005

That deposit, and other minerals, present a number of business opportunities in value added processing of industrial minerals. For example, lavarock and shale represent a group of minerals that are important sources of raw materials for the chemical, metallurgical, construction, agricultural, and related industries.

Industrial minerals are an important element of BC's mining sector, as highlighted by the Ministry of Energy and Mines:

- In recent years British Columbia's annual mineral production has been valued at about \$3 billion, with industrial minerals and structural materials such as aggregate contributing about 20% of this total.
- Industrial mineral mines, processing plants and value added manufacturing employ 2,400 people directly.
- There are about 40 processing plants located in numerous communities across the province.

In the Quesnel area, industrial minerals are extracted and processed by the Canada Pumice Corporation (CPC), a subsidiary of Crystal Graphite Corp. CPC has the largest commercial volcanic deposit quarry in North America and is the only producer of these types of aggregates in Canada. In addition, a large deposit of diatomaceous earth is mined by Dialite Industries near Quesnel.

VESICULAR BASALT (VOLCANIC ROCK)

The volcanic rocks West of Quesnel are categorized as vesicular basalt and scoria which were formed around 7,000 years ago with the last occurrence dating 300 years ago (local traditional knowledge). The first part of the occurrence was the release of black pumice (lapillo). The second part was when the volcanic lava or magma flowed, then cooled and the red, grey and purple vesicular basalt was formed. The rock is fine grained, porous, and low density and contains holes which were formed due to the gas bubbles in the lava.

CPC's volcanic quarry site in the Nazko area, about 100km west of Quesnel, has proven reserves of approximately 44 million metric tons of high quality material and is a unique post glacial reserve in that the volcanic aggregate is not contaminated by glacial till. The aggregate is clean, with very little overburden, and requires minimal processing by crushing and screening to specification. The volcanic aggregate is 100 percent natural and chemically inert. The lapillo (pumice) has no negative environmental side effects and can be used to replace many less friendly man-made products such as slag and expanded clay and shale. CPC's products meet or exceed the requirements of ASTM for all its applicable applications. CPC's products also fit into and meet criteria as laid out in the LEED (Leadership in Energy Efficient Design) program and Kyoto legislation.



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CALCINED SHALE (NATURAL POZZOLAN)

CPC has further secured a local source of tan coloured, naturally calcined shale which is a type of sedimentary soft, layered rock that was formed when clay-size particles were deposited in relatively calm, muddy waters. Over a long period of time these particles became compacted to form a porcelain type shale rock. The material is naturally calcined as it was heated by an underground heat source. The calcined shale is highly desirable as a natural pozzolan and ceramic base material.

APPLICATION AND UTILIZATION

Examples of volcanic rock (vesicular basalt and black pumice) applications include landscaping, barbecue rocks, construction backfill, lightweight aggregate, industrial fillers, anti-slip abrasive traction sand, all weather sports fields, horticultural and agricultural soil amendments, and soil-less growing mediums.

Examples of naturally calcined shale applications include lightweight concrete block aggregate, playfield material, kitty litter, filtration medium, industrial fillers, pigments, industrial ceramics and pottery.

Examples of uses of processed diatomaceous earth include filtration systems applications, filler applications for absorbents and uses as base material in cosmetics and pharmaceutical applications.

Value added processing can add significant value to these industrial mineral products. Quesnel is interested in attracting value added mineral processing operations to the Quesnel area, such as the following examples.



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PROCESSING OPPORTUNITIES

Business opportunities for local industrial mineral processing operations include:

1. CEMENT APPLICATIONS

Volcanic aggregate has weight and fire rating advantages and as a natural pozzolan.

2. CONCRETE MASONRY UNITS

Volcanic aggregate is a more durable, lower cost, environmentally friendly alternative to commercially manufactured expanded clay aggregates.

3. PRE-CAST AND READY MIX APPLICATIONS

The low weight and high strength characteristics make volcanic aggregate a natural alternative to other concrete.

4. INDUSTRIAL CERAMICS

The aggregate's inert and non-conductive characteristics are of special interest to this industry.

5. WATER FILTRATION SYSTEMS

Basalt and naturally calcined shale material are a natural adsorbent and filtration medium that are proven and work very well for water filtration in agriculture, household and industrial applications.

OTHER MINING AND EXPLORATION

The region is also a source for a number of metallic minerals, including:

COPPER, GOLD AND MOLYBDENUM

These are mined at various locations in the Northern Interior of BC. Examples of large operations include the Gibraltar Mine and the Mount Polley Mine.

ADDITIONAL INFORMATION

LOCATION

The Quesnel and Community Economic Development Corporation is looking forward to providing you with community and business information about Quesnel.

MINERAL SUPPLY

For information about the local supply of vesicular basalt or calcined shale, please contact Brian Wear at Canada Pumice Corporation at (604) 852-1888 (see also www.canadapumice.com). For local supply information on diatomite, please contact Elmer Kopetski at (250) 991-0111.

MINERAL PROCESSING

For information about the mineral processing sector, please review the web site of the Ministry of Energy and Mines at www.gov.bc.ca/em.



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