SOUTHWEST REGION

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SUMMARY

The Nanaimo office of the Mining Operations Branch of the British Columbia Ministry of Energy and Mines was closed on March 31, 2003. As a result, monitoring of exploration activity in the Southwest Region was reduced in 2003, and this review is much less detailed than in previous years. This report has been prepared by Mike Cathro of the Kamloops office of the Mining Operations Branch, but draws heavily on material presented previously in British Columbia Mineral Exploration Review 2003 (Schroeter *et al.*, 2004). It is hoped that a more complete review will be possible in future years.

Exploration activity in the Southwest Region was steady in 2003 with most investment directed to precious-metal rich vein, stratiform base-metal and industrial mineral targets.

Exploration spending was estimated at $3.0 million, down slightly from 2002 (Figure 1). Drilling activity was up significantly to about 40 000 metres (Figure 2), mainly because of a renewal of underground exploration work at the Myra Falls mine. There were nine major exploration projects (Figure 3).

The region hosts one large underground base-metal mine, one small underground coal mine and numerous industrial mineral quarries. These operations and the region's major exploration projects are shown on Figure 4. Major exploration projects are also listed in Table 1.

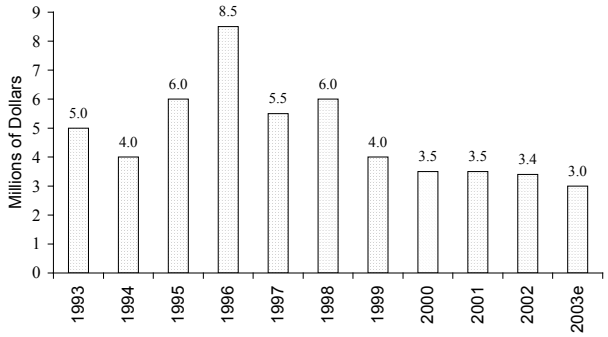

Figure 1. Annual exploration spending, in millions of dollars, Southwest Region.

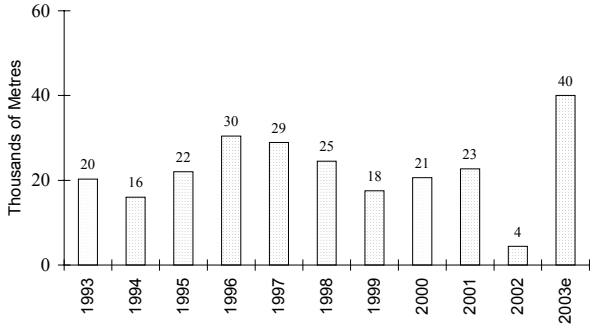

Figure 2. Annual exploration and development drilling, in thousands of metres, Southwest Region.

MINES AND QUARRIES

Metals

The **Myra Falls** mine, owned and operated by Boliden-Westmin (Canada) Ltd., has been in operation since 1966. In excess of 23 million tonnes of massive sulphide, copper-zinc-gold-silver ore has been mined from several orebodies along a 6-kilometre northwest trend. Current ore reserves are situated in two main areas, Battle-Gap and HW-43 block.

In 2003, Boliden re-established its exploration program at the mine, including the development of a 5-year exploration plan. A total of 35 targets have been identified and prioritized. Underground drilling will test for additional ore in a number of zones, including HW North lens, north of Gap, south of Gopher, east of Battle

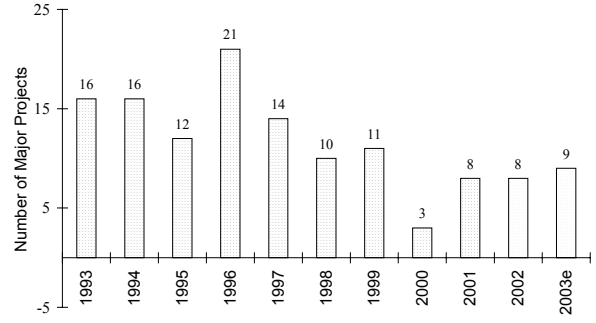

Figure 3. Number of major exploration projects per year, Southwest Region. Major projects are defined as those with trenching or drilling and expenditures exceeding $100 000.

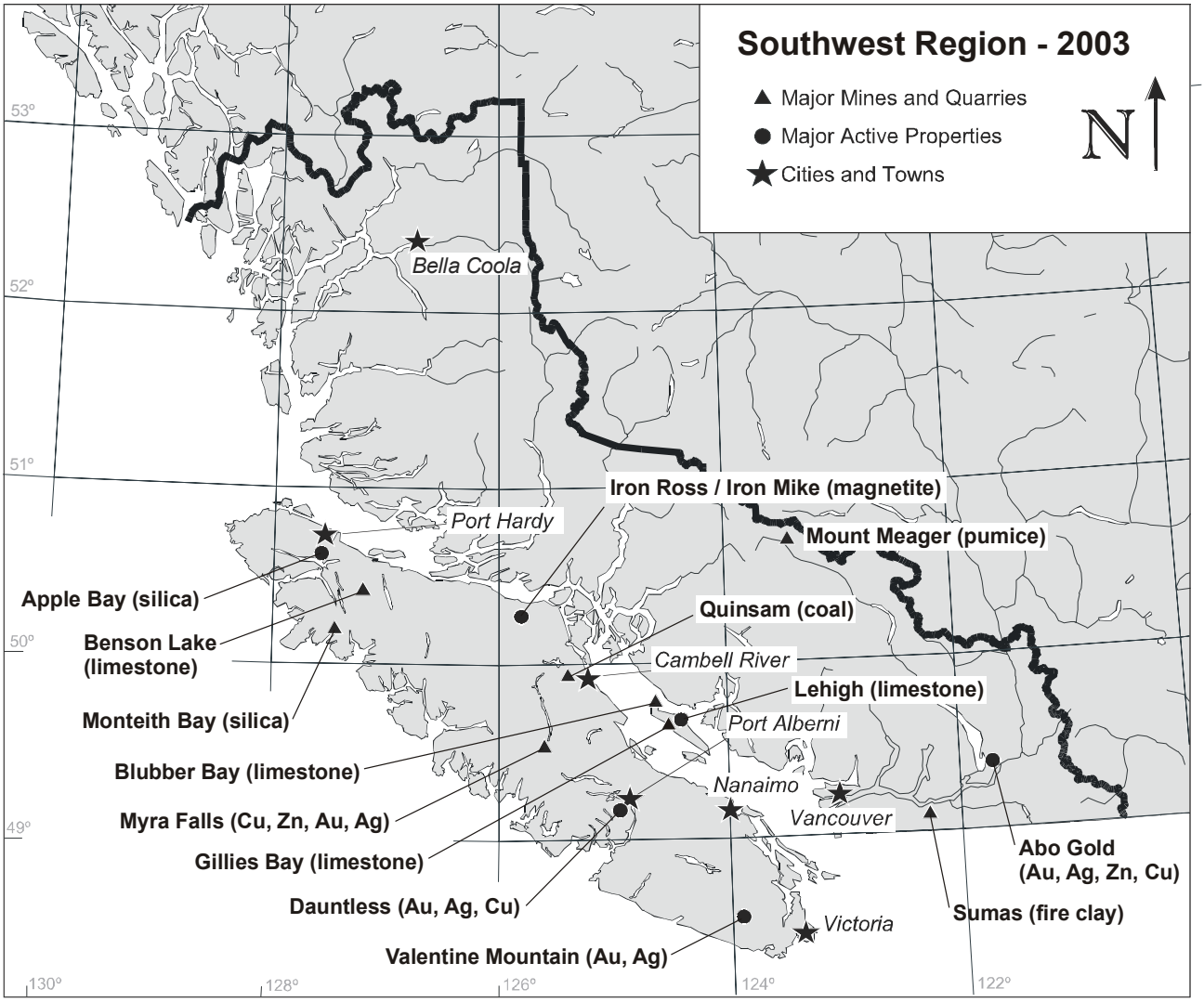

Figure 4. Mines, quarries and major exploration projects, Southwest Region, 2002.

and north of Extension. A larger drilling program is planned and an exploration drift towards the Marshall zone at the western end of the property has been proposed for 2004. Boliden submitted a revised report requesting permission to connect to the BC Hydro power grid.

Coal

Hillsborough Resources Ltd. continues to operate its **Quinsam** underground thermal coal mine at about 330 000 clean tonnes per year, with a work force of about 40 people. In 2003, the company planned a 900-metre exploration drilling program in the South 4 area, as well as some in-fill drilling for reserves. In September the company signed a two-year contract with a large international cement manufacturer, to supply between 118 000 and 150 000 tonnes of coal per year to two cement plants in Vancouver and Seattle. Quinsam is being considered as a supplier for a possible 60-megawatt power plant, which would use 0.5 to 1 million tonnes per year. A letter of intent was signed with Cinergy Corp. of Cincinnati, Ohio to submit an independent power generation proposal to BC Hydro.

Industrial Minerals

Limestone and Dolomite

The largest limestone production centre in the province is **Texada Island**, where two quarries, **Gillies Bay** (Texada Quarrying Ltd.) and **Blubber Bay** (Ash Grove Cement Corporation), traditionally ship 5 to 6 million tonnes annually. Their customers are in British Columbia, Washington, Oregon and California and they use the limestone for cement, chemical and more recently, agricultural use. In 2003, 3.25 million tonnes of limestone and 750 000 tonnes of aggregate are expected to be shipped from Gillies Bay where limestone production capacity is over 5 million tonnes and aggregate (crushed rock) capacity is approximately 1.5 million tonnes.

TABLE 1. MAJOR EXPLORATION PROJECTS, SOUTHWEST REGION, 2003

Property	Operator	MINFILE	NTS	Commodity	Deposit Type	Work Done
Abo Gold (Harrison Gold)	Northern Continental Resources Ltd. / Eagle Plains Resources Ltd.	092HSW092	92H/05E, W	Au, Ag, Zn, Cu	Mesothermal vein	4 ddh, 682 m; trenching; 15 km road rehab.
Apple Bay (Pem 100)	Electra Gold Ltd.	092L 150, 269, 308	92L/12E	Chalky geyserite	Industrial mineral	30,000 tonne bulk sample; approx 20 ddh, 1200 m; environmental studies
Blubber Bay	Ash Grove Cement Company	92F 479	92F/10E	Dolomite	Industrial mineral	~ 29 holes, 1200 m
Dauntless	SYMC Resources Ltd.	092F 168	92F/02W	Cu, Ag	Mesothermal vein	road; prosp; geol; trenching
Iron Ross / Iron Mike	Hillsborough Resources Ltd.	92K 043	92K/05W	Magnetite	Industrial mineral	percussion drilling; bulk sample; road upgrading
Lehigh Central Texada	Lehigh Northwest Cement / Chemical Lime Company of Canada Ltd.		92F/10E	Limestone	Industrial mineral	~ 1200 m drilling; 4 km trenching
Myra Falls	Boliden-Westmin (Canada) Ltd.	092F 330, 071, 072, 073	92F/12E	Cu, Zn, Pb, Au, Ag	VMS	u/g exploration drilling; approx. 33,500 m
Quinsam	Hillsborough Resources Limited	092F 319	92F/14W	Coal	Sedimentary	planned 6 ddh, 900 metres
Valentine Mountain	Beau Pre Explorations Ltd.	092B 108		Au, Ag	Mesothermal vein	3 ddh, 950 m completed and one 300 m hole planned for Dec; environmental studies

Depending on customer demand, aggregate may be newly quarried granitic rock, stockpiled granite, limestone or a combination of these products.

Ash Grove Cement upgraded its crushing plant in 2002. In 2003, four million tonnes of rock are expected to be mined and over two million tonnes of limestone shipped from Blubber Bay. Aggregate production was about 400 000 tonnes. Depending on its ability to win future contracts in California, the company is considering building a $10-million ship-loading facility on Texada Island. A joint venture of Lehigh Northwest Cement Limited and Chemical Lime Company of Canada Limited conducted exploration drilling and trenching on the **Lehigh Central Texada** project.

White, high-calcium carbonate is also produced from the Texada Quarrying Ltd. Gillies Bay quarry and from the IMASCO Minerals Ltd. **Benson Lake** quarry on Vancouver Island. It has a variety of uses including paper, paint and plastic filler.

A major exploration program is underway by Ash Grove Cement to delineate a dolomite deposit adjacent to its Blubber Bay limestone quarry on Texada Island. If needed, this deposit may be in production early next year.

Crushed Stone and Aggregate

Grassroots exploration for traditional construction materials continues to expand along the British Columbia coastline. Shipments of crushed stone from Texada Island and other coastal sources are making significant inroads into the Vancouver, Seattle, San Diego, San Francisco and Los Angeles markets. Texada Island limestone producers have already started to exploit this opportunity (see above). Texada Island producers are well established, and crushed rock is the natural byproduct of their limestone operations. Natural aggregate is the focus of similar market demands. Lehigh Northwest Cement Limited shipped approximately one million tonnes of aggregate from its facility at **Sechelt** to the San Francisco Bay area in 2003.

Polaris Minerals Corporation, in partnership with Eagle Rock Materials Ltd., is participating in the development of the **Eagle Rock** aggregate operation near Port Alberni. Qualark Resources Inc. and the Yale First Nation have proposed a 12 million tonne-per-year aggregate operation, together with placer gold washing, at the **Hillsbar** quarry near Yale. Polaris Minerals Corp. and the Kwakateil First Nation have a proposal for quarrying from its **Orca** sand and gravel operation near Port McNeil. Other companies propose similar ventures, including Southern Pacific Development Corp.'s project near **Port Renfrew** on southwestern Vancouver Island.

Silica-Alumina Rock

During 2003, Lehigh Northwest Cement Limited (formerly Tilbury Cement Ltd.) mined 49 000 tonnes of geyserite (silica material and minor clay) from its quarry at **Monteith Bay** on western Vancouver Island to supply its cement plant in Delta. Electra Gold Ltd. and Homegold Resources Ltd. mined about 30 000 tonnes of geyserite from its **Apple Bay** deposit on Vancouver Island; this material will be tested at the Ash Grove Cement plant in Washington State.

Industrial Clay and Shale/Sandstone

Clayburn Industries Ltd. of Abbotsford processes fireclay from **Sumas Mountain** into a variety of refractory bricks and castable products, which are exported worldwide. Sumas Clay Products Ltd. also produces small quantities of flueline pipe and ornamental and facing bricks near Abbotsford. Clayburn, Lafarge Canada Inc. and Lehigh Northwest Cement can produce about 500 000 tonnes of shale and sandstone from their Sumas shale quarry. Clayburn is developing new lightweight aggregate with good insulation properties, based on this material.

Ironwood Clay Company Inc. is the largest producer of cosmetic/medical clay in British Columbia. It mines seasonally from the **De Cosmos Lagoon** on Hunter Island, west of Bella Coola. Similar material is also mined from **Carrie Cove** in the Comox Valley. It is currently sold by Carrie Cove Cosmetics for medicinal and cosmetic applications. It is also expected that Glacial Marine Clay Inc. will be producing clay for specialized hydroponics applications. Mr. Robert Davie has an undeveloped clay deposit on King Island. The market for cosmetic/medical clay is limited; however, the processed product may retail for about $100/kilogram. The market for specialized hydroponics clays is larger and less stringent; however, the material still retails at prices around $20/kilogram.

Dimension Stone

Westcoast Granite Manufacturing Inc. in Delta, Margranite Industries Ltd. in Surrey and Matrix Marble Corporation in Duncan operate stone-processing plants. Margranite processes imported granite, and nine granite varieties, from at least three quarries in the **East Anderson River**, **Beaverdell** and **Skagit Valley** areas. Another processor, Garibaldi Granite Group Inc. of Squamish, declared bankruptcy during the year.

Huckleberry Stone Supply Ltd. of Burnaby and Mountain High Properties Ltd. of Pemberton produced basalt from small quarries near **Whistler**. In 2003, Matrix Marble concentrated on processing imported and domestic materials at its plant near Duncan, but also extracted blue and white marble from its **Tahsis** quarry in Tlupana Bay. Hardy Island Granite Quarries Ltd. extracted about 3500 tonnes of stone this year and sold it through Bedrock Granite Sales Ltd. in Coquitlam. In 2003, Quadra Stone Ltd. produced a small tonnage of Cascade Coral blocks from its new **Fox Island** quarry.

Pumice, Tephra and Lava Rock

Great Pacific Pumice Ltd. ships a variety of pumice-based products from its **Pum** property on Mount Meager, north of Pemberton. Production in 2003 was estimated at 7000 cubic metres and the material from this deposit was successfully tested by two major cement-producing companies as a pozzolanic additive. Garibaldi Aggregates Ltd. also started to produce pumice from the **Mount Meager** area.

EXPLORATION PROJECTS

Veins

Northern Continental Resources Ltd., under an option agreement with Eagle Plains Resources Ltd., completed a four-hole diamond-drilling program on the **Abo Gold (Harrison Lake Gold)** project, 100 kilometres east of Vancouver. Gold mineralization, commonly associated with pyrrhotite, occurs within quartz veins in nine zones on the property. The veins are hosted by quartz dioritic stocks and, to a lesser extent, metasedimentary rocks. Drilling further tested the margin of the Hill stock, together with the newly discovered North Hill stock zone. Mineralization associated with the Jenner and Portal stocks is reported to have a combined indicated resource of 1.8 million tonnes grading 2.8 g/t Au and an inferred resource of 614 000 tonnes grading 2.79 g/t Au.

Near Port Alberni, SMYC Resources Limited owns several high-grade vein prospects including the **Dauntless** copper-gold-silver deposit and the **Mactush South** property which hosts the Fred and David gold-silver vein deposits. In 2003 the company constructed an access road to Dauntless in preparation for pilot mill tests. Mapping, sampling and drilling are also planned.

At **Valentine Mountain** near Sooke, Beau Pre Explorations Ltd. planned trenching and drilling on narrow high-grade gold vein targets, and completed metallurgical and environmental studies.

On Phillips Arm, Castillian Resources Corp. acquired the **Fanny Bay** property that includes the past-producing **Doratha Morton** and **Alexandria** gold-silver mines.

Magmatic Deposits

In May, 2003 Leader Mining International Corp. released the results of a feasibility study from Hatch Associates Ltd. on its **Cogburn** magnesium metal project, northeast of Harrison Hot Springs. The Cogburn deposit is estimated to have a preliminary measured resource of 25.5 million tonnes grading 24.5% Mg by weight in its proposed Emory zone quarry (300 by 300 m). The feasibility study indicated that the deposit has the potential to become a mine because of its large size, high magnesium grade, low impurity levels, favourable metallurgy and proximity to infrastructure. The capital cost of the project was estimated to be US$1.24 billion. Late in 2003, Leader Mining announced it had received an expression of interest from a major mining company.

On the eastern side of Harrison Lake, Stellar Pacific Ventures Ltd. and International Millenium Mining Corp. continued geological and geochemical surveys on several areas in the search for magmatic Ni+/-Cu+/-PGE deposits. A favourable north-northwesterly trending belt of sulphide-bearing ultramafic rocks, 2 to 10 kilometres wide **('Pacific Nickel Complex')** in contact with metasedimentary rocks, was the focus in 2003. This belt extends northwesterly for more than 75 kilometres from the former Giant Mascot nickel producer. The companies completed an airborne geophysical survey over the southern portion of the belt. Also during 2003, International Peruminas Resources Ltd. staked a large block of claims in the northern part of the favourable belt and optioned prospective ground from Murray McLaren and Paul Metcalfe. Follow-up prospecting and mapping resulted in the discovery of several new Ni+/-Cu+/-PGE showings, most notably those on the **Klatt** claim group. These have strong similarities to the mineralization at the Giant Mascot mine, 50 kilometres to the south.

Industrial Minerals

Quinsam Coal optioned the **Iron Ross** and **Iron Mike** magnetite occurrences, approximately 6 km south of Sayward, and several nearby magnetite deposits. Benson Magnetics Ltd. continues to investigate the feasibility of installing a 25 000 tonne-per-year plant near **Benson Lake**, on Northern Vancouver Island.

ACKNOWLEDGEMENTS

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