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A Member of the BCResources Group

### FACT SHEETS

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B.C. Coal International Westshore Terminals Environmental Services

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Prepared by:

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Β.	С.	COAL	LTD	FACT	SHEET

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### Principal Officers

Walter J. Riva	- Chairman and Chief Executive Officer
Bruce I. Howe	- Vice-Chairman of the Board and
	Chairman of the Executive Committee
Gary K. Livingstone	- President
Robert C. Stanlake	– Executive Vice President,
	Marketing and Transportation
Robert H. Gronotte	- Senior Vice President, Engineering
	and Capital Projects
Thomas A. Beckett	- Vice President, General Counsel
	and Secretary
Robert F. Chase	<ul> <li>Vice President, Brae and Treasurer</li> </ul>
Gary S. Duke	- Vice President, Government Relations
Arthur E. Geikie	- Vice President, Human Resources
W. Larry Millar	<ul> <li>Vice President and Controller</li> </ul>
John Powell*	<ul> <li>Vice President, Mining Operations</li> </ul>
Suzanne K. Wiltshire	- Assistant Secretary

\*Located in Sparwood

B.C. Coal Ltd. is a diversified Canadian energy company incorporated in the province of British Columbia. The company is engaged in the production and sale of metallurgical and thermal coal, the operation of a coal handling facility near Vancouver and in the exploration for offshore crude oil and natural gas.

The company operates coal mining and processing facilities at Sparwood in southeastern British Columbia. Forty kilometres north of Sparwood, the company is constructing its new Greenhills Mine. Thermal coal shipments began in August 1982 and metallurgical production will begin mid-1983. At Roberts Bank, south of Vancouver, Westshore Terminals Ltd., a wholly-owned subsidiary, operates a bulk-handling facility which ships coal and related products from B.C. Coal's mines and other B.C. and Alberta mines.

Ownership: 67% - British Columbia Resources Investment Corporation (BCRIC) 33% - A consortium of nine Japanese steelmills and Mitsubishi Corporation.

Subsidiaries: Westshore Terminals Ltd., - 100% owned. B.C. Coal International Ltd., - 100% owned.

Major Products:	Metallurgical coal (used in the ste Thermal coal (used to generate ele	el manufact ectricity and	uring process) I heat for industrial use)	
Location:	Balmer Operations (existing mine) Greenhills Mine, (new mine) - Elki Westshore Terminals Ltd Rober Corporate Head Office - Vancouv	- Sparwood ord, B.C. ts Bank, Del er, B.C.	, B.C. 1a, B.C.	
	B.C. Coal's properties comprise t extends about 160 kilometres n southeastern British Columbia to Kootenay Formation in which B.C thickness of about 600 metres an seams ranging in thickness from sandstone overlie the coal seams.	he central property or the inner for the contains for two to fift	art of a belt of coal that om the U.S. border in sothills of Alberta. The ning reaches a maximum om eight to fifteen coal een metres. Shale and	
Total Reserves:	463 million tonnes proven recover	able clean c	oal.	
1982: Revenue: Sales by market:	\$430,609,000 : Japan & Orient: 89.6%; Denmark Pakistan: 2.7%; other: 0.6%.	6.0%; Mexic	o & Latin America: 1.1%;	
Balmer Production:	Raw Coal - Harmer Surface Mine - Underground - Panel 6 - Underground - Balmer North · total raw production	6,409,000944,000132,0007,485,000	tonnes tonnes tonnes tonnes	
Sales:	Clean coal - metallurgical - thermal total clean production Metallurgical Thermal Coke Braeze	5,599,000 7,000 5,606,000 4,955,000 223,000 16,0000 16,0000 16,0000 16,0000 16,0000 16,0000 16,0000 16,00000 16,000000 16,000000 16,0000 16,0000 16,0000 1	tonnes tonnes tonnes tonnes tonnes tonnes	
	total sales	5,210,000	tonnes	

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Greenhills			
Production:	Raw coal	<u>673,000</u> tonnes	
	Clean coal - thermal	<u>347,000</u> tonnes	
Sales:	- Thermal	254,000 tonnes	
Workforce	Vancouver	32	
	Balmer Operations		
	Greenhills	333 *	
	Westshore Terminals	118 **	
		9 029	
		2,022	

\* estimated to increase to 500 by mid 1983
\*\* estimated to increase to 150 by end 1984

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# BALMER OPERATIONS - FACT SHEET

	Japanese steel mills.)
Major Products:	Metallurgical and thermal coal
Location	East Kootenay region of southeastern British Columbia at Sparwood,
Elevation:	Ranges from 1,140 metres at the administration building to 1,800 metres at the surface mine.
<u>Reserves</u> :	277.3m tonnes of clean proven recoverable reserves. The coal is contained in a dozen seams. Nearly all the mining during the past ten years has been confined to the bottom seam designated as "No. 10 Seam". This seam is 12 to 15 metres thick, low volatile with excellent coking characteristics. All the seams are low in sulphur.
<u>Mining</u> :	The Balmer Operations consist of a large-scale surface mine - one of the largest in North America; an innovative hydraulic mine, a conventional room and pillar underground mine, a preparation plant and support activities.
	During 1982, the Harmer Surface Mine produced 86 percent of total production.
	Harmer Surface Mine
	Method - surface, open pit terracing (pit measures 1,200 hectares).
	Overburden is drilled with rotary drills and loaded with ANFO for blasting. Fragmented rock is removed using electric shovels and trucks. Front-end loaders assisted by bulldozers load coal into trucks for transportation to the breaker station. Crushed coal is then conveyed to the Elkview Preparation Plant for processing.

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#### Major equipment

shovels	- 4 x 19 cu. metre electric
qrills	- 1 x % cu. metre electric - 1 x % cu. production - 8 x %1 cm. production
front-end loader	-3 4 x 17 eu. metre
trucks	- 23 x 180 tonne - 18 x 90 tonne - 23 x 154 tonne
Production 1982	- 1 x 320 tonnes : 7,485,000 raw tonnes

Underground Mines: Panel 6

#### Method - Hydraulic

The hydraulic mining method uses a high-pressure water jet to dislodge the coal, which is then flumed by gravity to a primary underground dewatering station for sizing. The coarse material is conveyed to a surface stockpile and the finer coal is pumped in a slurry form to a secondary dewatering plant on the surface. The water is removed from the coal and recirculated to the highpressure hydraulic mining system. The dewatered coal is transported in trucks to the Elkview Preparation Plant for processing.

Major equipment

4 hydraulic monitors plus feeder-breakers 4 continuous miners

Production 1982: 944,000 raw tonnes

#### Balmer North

Method - room and pillar

This is an old mine worked by the room and pillar method. Continuous miners dig the coal, while shuttle cars and belt conveyors carry it to the surface. From there the coal is trucked to the Elkview Preparation Plant for processing.

### Major equipment

2 continuous miners with shuttle cars

Production 1982: 132,000 raw tonnes

#### Elkview Preparation Plant:

(Largest of its kind in the world) The plant produced 5.6 million tonnes during 1982. The \$5 million stockpile reclaim system is capable of loading rail cars at a rate of 2,730 tonnes per hour.

In the preparation process, raw coal is conveyed from the storage silos to the wash plant and screened. Raw coal larger than 1 cm is washed in heavy media vessels and delivered directly to the clean coal silos. Finer coal is screened in two sizes for washing by separate processes. After washing, the two size fractions are recombined and conveyed to a thermal dryer to reduce the moisture content. From the dryer, the coal is conveyed to the clean coal silos to await loading onto unit trains for transportation to the company's port facilities at Roberts Bank, near Vancouver, B.C.

#### Maintenance facilities:

To minimize down-time, maintenance facilities, located at the surface mine, are equipped to handle preventative maintenance and repairs to all types of equipment. A \$10.8 million extension was completed in December 1982 providing 8 new truck bays. A central warehouse carries an inventory of over 35,000 parts and both the inventory control program and equipment maintenance schedules are completed for maximum efficiency. A major facility has been ettablished for rebuilding engines, transmissions, hydraulic and braking systems for trucks and other equipment.

#### Other facilities:

Construction of a new surface mine office and washhouse facility, completed in 1982, provides modern facilities for both hourly and staff employees, and a new analytical lab provides better conditions for quality analysis of the company's product and for the evaluation of coal samples generated by B.C. Coal's extensive exploration program. In addition, an extension to one of B.C. Coal's settling lagoons near the Elkview plant is in progress which will provide for the storage of plant rejects.

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# GREENHILLS MINE PROJECT - FACT SHEET

<u>Ownership</u> :	80% B.C. Coal Ltd. (67% owned by British Columbia Resources Investment Corporation "BCRIC" and 33% by Mitsubishi Corporation of Japan and a consortium of 9 Japanese steelmills) 20% Pohang Iron and Steel Company Limited (POSCO) of Seoul, South Korea,
Major Products:	Metallurgieal coal - 1.8 million tonnes annually. Thermal coal - up to 1 million tonnes annually.
Location:	East Kootenay region of southeastern British Columbia. Approxi- mately 6 km east of Elkford, B.C. and 35 km north of B.C. Coal's existing Balmer Operations at Sparwood, B.C.
Elevation:	Ranges from 1,500 metres at the coal load-out site to 2,300 metres within the surface mine area.
Geology:	The coal seams are within the Kootenay Formation of the Elk Valley coalfield. A broad open syncline which plunges gently to the north with limbs dipping from $20^{0} - 60^{\circ}$ is the dominant structure. The east limb of the syncline is cut by the Greenhills normal fault with displacements up to 140 metres.
Reserves:	Coal deposits have been estimated at 172 million raw tonnes, of which 50 million clean recoverable tonnes of proven reserves will be mined during the initial 20-year life of the mine.
<u>Coal Quality</u> :	Up to 26 seams have been identified. Seams 1, 7, 10 and 16 considered to be the major seams. Seams 1, 7 and 10, which represent 68% of the total geological reserves, are medium-volatile bituminous coals with a raw ash content of between $12 - 18\%$ . Seam 16 and those which are stratigraphically higher are high-volatile bituminous coals, with raw ash content of less than 10%. All the seams are low in sulphur.
Mining:	Fully integrated, truck and shovel surface operation, to become fully operational by mid-1983 with a total workforce of about 500.
	Overburden is drilled with rotary drills and loaded with ANFO for blasting. Fragmented rock is removed by hydraulic shovel and 90- tonne trucks. Front-end loaders assisted by bulldozers load coal into trucks for transportation to breaker station stockpiles. When the facilities are completed, the coal will be blended as it is fed into the breaker station. Crushed coal will be conveyed to preparation plant for processing. After cleaning, the coal will be conveyed to thermal dryer, stored in clean coal silos at the load-out area and then shipped via unit trains to Roberts Bank for export.

Surface Mine - major equipment on site includes:

2 x 14 cu. metre hydraulic shovel

8 x 90 tonne trucks

1 x 9cu. metre front-end loader

1 x 17 cu. metre front-end loader

2 x 22 cu. metre front-end loaders-

2 x 25cm blasthole drills

An additional hydraulic shovel, nine trucks, one blasthole drill and two bulldozers will be delivered by mid=1983.

-Production 1982: 673,000 raw tonnes

Stripping ratio: 5.8 bank cu. metres overburden : 1 raw tonne coal.

Breaker Station - capable of crushing coal to less than 5 cm.

Raw Coal Feed System consisting of:

- overland conveyor system measuring 2.5 km long x 107 cm wide;

 $-2 \times 1,800$  tonne raw coal silos

- frozen coal crusher station

- coal fed to plant via conveyor

<u>Preparation Plant</u> located approximately 4.5 km from pit. Heavymedia single circuit plant designed to produce 1.8 million tonnes of clean metallurgical coal per annum, based on a 24-hour, 7-days-aweek operation. (A complete plant by-pass is designed into the system should it become desirable to direct ship a portion of the coal production).

- coal washed and conveyed 1.8 km to dryer (capacity 50 tonnes per hour);
  - clean coal then conveyed either to emergency coal stockpile or clean coal silos (2 x 13,500 tonnes capacity) to await loading onto unit trains.

Sedimentation Dam constructed on Greenhills Creek, is designed to have a 10-year life (before clean out) with a volume of 275,000 cu. metres.

<u>Rail Loop</u> measuring 6.1 km and switched into the existing CP Rail spur line, began shipping thermal coal in August 1982.

<u>Load-out</u> - coal loaded onto 108-car CP Rail unit trains, sprayed with latex dust suppressant and transported to Westshore Terminals for export.

Maintenance Complex located 2.5 km from the pit consisting of three

main buildings comprising the main repair shop/office/dry complex, service building and light-duty shop. The main repair shop contains 8 x 12.5 metre wide x 18.5 metre long x 13 metre high repair bays; a warehouse capable of storing all materials for the plant and pit. Attached to the main repair shop is a three storey office/dry complex. The service building comprises a separate wash bay, preventative maintenance and tire repair building. A third building contains a 10 bay light vehicle and auxiliary equipment repair facility.

A major advantage of the Greenhills Mine over many mining projects is that it is located close to existing communities, services and transportation. The area has a fully developed social service system as well as convenient access to the existing CP Rail system.

The mine, which is estimated to cost \$300 million, has been designed so that should market conditions justify, it can be readily expanded to produce double its rated capacity.

### Status of Construction:

Jeneral:

completed
completed
completed
completed
May 1983
June 1983
July 1983
July 1983
July 1983

### B.C. COAL INTERNATIONAL LTD. - FACT SHEET

The company's marketing philosophy is based on developing long-term customer relationships and providing uninterrupted service. B.C. Coal is fortunate in that it is the only Canadian coal producer able to provide a complete service from production through to shipment. This service, combined with a highly-efficient, large scale mining operation and a premium quality product, is critical to the establishment of these long-term customer relationships.

In April 1982, B.C. Coal International Ltd., assumed responsibility for the marketing of all B.C. Coal's products. The new company's primary objectives include servicing current contracts and customers including renegotiating long-term pricing agreements, expanding the sale of coal from the company's existing mining operations, and developing new markets for coal produced by new and expanded mine facilities.

In today's highly competitive international coal marketplace, an efficient marketing operation is vital to a company such as B.C. Coal, which is almost exclusively dependent upon exports.

The company's primary product is metallurgical coal which is used in steelmaking. In recent years metallurgical coal has undergone a substantial increase in demand, particularly from customers in the Pacific Rim countries. While the demand for metallurgical coal will continue to grow during this decade the rate of growth is expected to moderate.

The outlook for thermal coal is bright. Thermal coal, used to generate power and heat, is becoming increasingly attractive as an alternative to more expensive fuels like oil and gas. Until recently, the company sold only limited quantities of thermal coal. However, with increased world-wide demand the company has responded by scheduling increases in thermal coal production, particularly from its new Greenhills Mine and has assigned an executive to manage and develop thermal coal markets.

### B.C. Coal International Ltd. Coal Sale Announcements, 1982

- Feb. 9 China Steel of Taiwan. 2.8 million tonnes of <u>Greenhills metallurgical coal</u> over the period April 1982 through March 1992. 200,000 tonnes from Greenhills in 1983 (150,000 from Balmer in 1982 and 100,000 in 1983) and 300,000 tonnes each year after.
- Mar. 25 Elkraft Power Company Ltd., Denmark. 3.8 million tonnes of <u>thermal</u> coal from <u>Balmer</u> and <u>Greennills</u>, beginning in 1982 for a 10 year period. <u>300,000</u> tonnes in 1982 and 1983 and 400,000 tonnes per year thereafter.
- Apr. 7 Japanese Steel Mills. 1,930,000 tonnes of <u>Greenhills metallurgical coal</u>. 406,000 tonnes in the last half of 1983 and then 762,000 tonnes annually through to the end of March 1986.
- Apr. 16 Brazilian Steel Companies. 3,325,000 tonnes of <u>Balmer metallurgical</u> coal from July 1982 through June 1989.
- June 17 Kowloon Electricity Supply Co. Ltd., Hong Kong. 1,570,000 tonnes of <u>Greenhills</u> thermal coal from 1982 through March, 1988. In increasing amounts each year to 500,000 tonnes in 1987.

\*In addition to the above a long-term contract exists for the supply to Pohang Iron and Steel Company Limited (POSCO) of South Korea of 500,000 tonnes of Greenhills metallurgical coal to be delivered annually to POSCO for 20 years beginning in mid-1983.

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# WESTSHORE TERMINALS LTD. - FACT SHEET

Ownership: Function	100% owned by B.C. Coal Ltd. (B.C. Coal is owned 67% by British Columbia Resources Investment Corporation and 33% by Mitsubishi Corporation of Japan and a consortium of nine Japanese steel producers). Coal handling and shipping.
Location	Roberts Burk BC logsted in the Strait of Georgia south of
	Vancouver.
Description:	The deepwater port of Roberts Bank is the largest coal terminals of its kind in Canada. It is located on a 20-hectare man-made island linked to the British Columbia Municipality of Delta by a five kilometre rail and road causeway.
	Operated by Westshore Terminals Ltd., Roberts Bank is the shipping terminal for coal from B.C. Coal's Sparwood and Greenhills mining operations, located 1,125 rail kilometres away in southeastern B.C. The port also handles coal, coke and related products from other British Columbia and Alberta mines. Unit trains (averaging 108 cars, each car carrying 90 tonnes) are used to transport coal from mine site to Roberts Bank.
	The island and causeway were completed in 1970 by the National Harbours Board at an approximate cost of \$5 million. Westshore Terminals, the leaseholder, constructed all bulk-loading and berthing facilities at a cost of approximately \$15 million. The port operates 24-hours a day, year-round and employs 98 people.
	In its first ten years of operation, the port handled more than 69 million tonnes of coal and related products. This involved the unloading of nearly 9,000 unit trains and the loading of more than 1,160 ships. Most of the product was high-quality coking coal destined for the steel mills of Japan and other Pacific Rim countries.
Total 1982 Shipments:	10.5 million tonnes. 1,153 unit trains unloaded; 150 ships loaded)
Total Shipments <u>Since May 1970</u> :	101.4 million tonnes. 12,679 unit trains unloaded; 1,641 ships loaded)
Existing Facilities:	Capable of stockpiling one million tonnes of coal and loading ships of up to 168, 000 dwt, the facilities consist of:

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Capacity - 12.5 million tonnes per annum	<ul> <li>single car rotary dumper (capacity 25 cars per hour, 90 tonnes coal per car)</li> <li>2x stacker/reclaimers (capable of both stockpiling and reclaiming coal for transfer to conveyor system for ship loading)</li> <li>1 x 183 centimetre conveyor system</li> <li>2 x shiploaders (capacity 8,400 tonnes per hour total)</li> </ul>
	See attached brochure for description of operations.
Port Expansion:	To accommodate increased shipments from B.C. and Alberta mines, in August 1980 federal government approval was obtained for expansion of Roberts Bank consisting of the following work to be carried out on behalf of the National Harbours Board at an estimated cost of \$48 million:
	<ul> <li>enlargement by 100% of the existing 20-hectare pad</li> <li>creation of two new 20-hectare pads</li> <li>widening of the causeway</li> <li>dredging of the shipping basin which will accommodate vessels of up to 250,000 dwt</li> </ul>
	Westshore will occupy the expanded pad and the remaining two pads will be developed at a later date by one or two additional tenants.
Ultimate Stage - Intermediate Phase	Already in progress, due for completion January 1984 - estimated cost \$127 million - consists of:
Capacity - 22 million tonnes per annum	<ul> <li>installation of tandem dumper on the expansion site (capable of unloading two cars simultaneously - capacity 65 cars or 5,850 tonnes of coal per hour)</li> <li>creation of new ship loading berth with single ship loader (capacity 6,500 tonnes per hour)</li> <li>installation of third stacker/realsimer</li> </ul>

tallation of third stacker/reclaimer. IIIS

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Ultimate Stage -Final Phase

Capacity - 27 million tonnes per annum Currently in planning stages, will consist of the following additions:

- fourth stacker/reclaimer

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 second tandem dumper (existing single dumper on original site to be dismantled)
 installation of additional 183 centimetre-wide conveyor system
 second shiploader on new site (which will increase loading

capacity at that facility to 13,000 tonnes per hour).

When completed, Westshore will occupy 40 of the 80 hectares, have two complete coal unloading and ship loading facilities, and employ a total workforce of 150. The company will have spent in excess of \$150 million these capital improvements.

Attachments:

Diagrams showing Stage I, Intermediate and Final Phase of the expansion program.









### ENVIRONMENTAL SERVICES (RECLAMATION) - FACT SHEET

Reclamation is another area in which B.C. Coal has developed a reputation for innovation. In fact, many of the environmental regulations governing the industry today are based on the company's experience and techniques. A consecutive winner of the B.C. Mine Reclamation Award for Leadership in Restoration, the company has reclaimed over 1,000 bectares since the inception of the program. During 1982, 10,000 trees and shrubs were planted.

It is our policy to address environmental concerns at the conceptual stages of the mine planning process.

The basic aim of the Environmental Services group is to assist the replacement of topsoillost during overburden removal and thus recreate the conditions essential for sustaining plant and wildlife.

Once coal extraction is completed, the land is contoured to a predetermined format. Seeding follows. On the smaller sites this is still done by hand, but on larger sites helicopter seeding and fertilizing is used. After seeding, heavy harrows are drawn across the slope primarily to cover and protect the seed, but also to create a series of small terraces which aid in erosion control and retention of surface water for vegetation.

The grass and legume species used are all agronomic grasses, and the seed mixture is the result of test plot and annual vegetation assessments of reclaimed sites.

During the wintertime, the grass dies off and forms an organic mulch capable of retaining the nutrients vital to sustain plantlife. Within two to three years, the contoured shale begins breaking down into sand and the combination of the two forms sufficient topsoil to allow planting of native shrubs and trees which are grown from seed or cuttings in the company's greenhouses and nurseries. These seedlings are held in the nurseries for at least four years until they are of suitable size for field planting. So far, 360,000 trees and shrubs have been planted. The aim is to plant species which will provide suitable feed and cover for wildlife.

Fertilizer is applied annually to reclaim sites. How many years this will be necessary to make vegetation self sustaining is not yet determined. Research is being done on the use of nutrients and their cycling through the soil. These studies will determine the time necessary to develop a soil type.

In 1974, B.C. Coal adopted exploration techniques which appreciably reduce land and water disturbances. Previously, seam tracing and trenching were largely used to provide geological information. Trenching is now combined with road building. This, as well as increased drilling, greatly reduces land disturbance. All exploration proposals are plotted on sensitivity maps and aerial photographs. This helps in the evaluation of possible land disturbance and the alteration or elimination of bad features. In the field, all roads, drill and adit sites are flagged and inspected prior to construction. Specific changes can be made to avoid sensitive areas which did not show up on the sensitivity maps or aerial photographs. Construction is done by experienced operators, most of whom have attended a B.C. Coal-sponsored course on environmental awareness and protective techniques in exploration. Whenever accessible merchantible timber is encountered, logging of the road right-of-way is carried out. Merchantible timber is sold to local mills. This technique avoids costly and 2/15/83

dangerous slash abatement and wastage of a natural resource.

Environmental Services supervises logging, monitors exploration and reclaims past exploration work. The company has found that sites disturbed by mining can be successfully reclaimed by modified agricultural techniques.

Costs of reclamation differ widely, depending on local conditions and have ranged from \$1,200 to \$12,000 per hectare.

The success of the program is clearly indicated by the ever-increasing numbers of wildlife which inhabit the area.