

Successful Start of Operations as Labrador Iron Mines Records First Shipment and Sale of Iron Ore in 2012

Silver Yards Plant Re-Starts for the 2012 Processing Season

Toronto, Ontario, May 22, 2012. **Labrador Iron Mines Holdings Limited** ("LIM" or the "Company") (TSX: LIM) is pleased to provide an operations and status report for the first six weeks of the 2012 production season. After the successful re-start of full-scale mining operations at our 100%-owned James Mine on April 2, we are pleased to announce that LIM's first shipment and sale of iron ore has been recorded in 2012.

Operational Highlights:

- The James Mine commenced its first full season of production on April 2 and is on track to mine approximately **3.0 million tonnes of iron ore, with a saleable production target of 2.0 million tonnes for 2012.**
- The first shipment of iron ore containing **175,738 wet tonnes of direct rail ore (DRO) at a grade of 63.65% iron (Fe)** departed the Port of Sept-Îles on May 19. This is five months earlier than the first shipment in 2011. Going forward, **at least two shipments are anticipated each month during the operating year,** with the next shipment scheduled in early June.
- The Silver Yards Processing Facility re-started for the season on May 18 and the Phase 3 plant expansion, designed to increase production capacity to approximately 2.0 million tonnes per year, is slated for completion in the summer.
- **By May 15, four train sets at 120 cars each (~10,000 tonnes per train) were in service,** which is approximately one month ahead of the planned schedule. Four train sets are expected to be in service for the balance of the 2012 season.
- **Construction at the Houston Project commenced in May.** Following the receipt of initial permits, a contract has been awarded for tree clearing work to be completed along the access road alignment. Development of the Houston Project is proceeding according to plan, with an experienced team of engineers and construction managers in place.
- As LIM enters an exciting phase of growth, operations and expansion, we have made a number of key appointments to strengthen our executive and mine management teams.

"This has been an extremely positive start to 2012, as we have executed on key milestones that will ensure a successful operating season," stated Mr. John Kearney, Chairman and Chief Executive Officer. "With LIM's first shipment and sale of iron ore, we are off to a good start to meet our production target of two million tonnes this year."

Mr. Rod Cooper, President and Chief Operating Officer, commented: "On the operations front, mining at James is progressing well and is now complemented with the start-up of the Silver Yards plant. As railway operations are critical to our success, we are very encouraged by the improvements evident in railway efficiency. We are also encouraged and excited with the development at Houston, as construction activities are now underway."

"As we forge ahead with our 2012 season, the recent additions to both our executive and operational teams will ensure we have the organizational capacity to remain focused on delivering our goals and expanding our operations as we move forward with the growth and success of our company."

Figure 1 – James Mine commenced its first full season of production on April 2, 2012.



Figure 2 – A LIM train departing Silver Yards loaded with iron ore in May. Four train sets are expected to be in service for the balance of the 2012 season.



Figure 3 – The “First Eagle” loading LIM’s iron ore, which departed the Port of Sept-Îles on May 19, 2012.



Ramping Up Production, Increasing Throughput and Expanding Rail Capacity

Ramping up production at James

The James Mine commenced its first full season of production on April 2, 2012 and mining operations will continue until the end of November. Mining activity focused on waste removal from the pit in order to establish the required ore release for later in the quarter. At the end of April, the mine was operating at a rate of 17,000 tonnes per day (tpd) and will continue to ramp up to a planned mining rate of approximately 28,000 tpd.

LIM's First Shipment and Sale of Iron Ore in 2012

The first shipment carrying LIM iron ore departed the Port of Sept-Îles on May 19, bound for China. This is significantly earlier than the 2011 season, when the first shipment was recorded in the month of October. The shipment contained 175,738 wet tonnes of DRO at a grade of 63.65% Fe. This mixed-size cargo, with an estimated moisture content of 6.6%, was sold to the Iron Ore Company of Canada (IOC) based on a price of US\$126.00 per dry metric tonne, CFR China (before ocean freight and IOC allocation). LIM expects the proceeds from the sale of this shipment to be received in mid-June. Moving forward, at least two shipments of iron ore are anticipated each month during the operating year, with the next shipment scheduled in early June.

Iron ore sales are forecasted at 2.0 million tonnes in 2012, including lump iron ore, sinter fines and ultra fines products. Operating costs for products delivered to the Port of Sept-Îles are expected to be in the range of \$60 to \$65 per dry metric tonne, including mining, processing, general and administrative costs, railway costs and train unloading.

Railway operations started with two train sets in April and successfully moved stockpiles at Silver Yards. Early movement of these stockpiles has allowed us to develop our “just-in-time” rail yard stockpile system, and will advance our sales by one month. A further stockpile of approximately 230,000 tonnes of DRO at a grade of about 63% Fe had been built up by May 19 and remains at the Port after the first shipment.

Starting up the Silver Yards Processing Plant

The Silver Yards processing plant re-started on May 18, 2012. Initial throughput is targeted at 8,000 tpd. The Phase 3 expansion program, which includes the installation of a second washing and screening plant and a new magnetic separator to enhance the recovery of fines material, continues to be on schedule and is expected to be completed in the summer. This expansion is expected to increase plant throughput to 12,000 tonnes per day, or an annual throughput of 2.0 million tonnes per year, and is also expected to improve weight recoveries to approximately 75% – 80%.

Expanding Rail Capacity

We have expanded our available railway capacity, from two operating trains in April to four operating trains by May 15, approximately one month ahead of the original schedule. The four trains will ensure the timely transportation of LIM's iron ore product to the Port of Sept-Îles and moves the Company closer to fulfilling its "a train a day" objective in 2012. During the month of April, LIM railed 108,000 wet tonnes of run-of-mine stockpile to the Port of Sept-Îles.

Focusing on the Growth and Expansion of our Operations and Projects

Early Start at the Houston Project – Receipt of Initial Construction Permits

The Houston Project will represent LIM's flagship operation in future years. The Houston Project consists of a series of adjacent open pit deposits with a NI 43-101 compliant resource containing approximately 22 million tonnes at a grade of 57.3% (see technical report dated March 25, 2011 filed on SEDAR). LIM received the environmental approval and project release for the Houston Project (Stage 1 and 2) from the Government of Newfoundland and Labrador in March 2012.

We are now focused on fast-tracking the development of the Houston Project and with receipt of the initial permits, a contract has been awarded for the tree clearing work to be completed along the access road alignment. Subject to receipt of the remaining permits, commencement of full construction activities at Houston is planned for the summer of 2012. LIM expects initial production of Houston ore, including in-pit dry crushing and screening, will commence in the second half of 2013.

Expanding Infrastructure

LIM is committed to expanding its infrastructure to accommodate the rapid development at our operations. Currently, electric power at our Silver Yards plant and camp accommodation is being provided by diesel generators. Plans are currently underway to connect to the existing hydroelectric grid by the end of the third quarter of 2012, resulting in fuel savings for the remainder of the year and subsequent operating seasons.

As a result of expanding activities at site, the camp accommodation is also undergoing a doubling of capacity, from 70 to 140 persons. Completion of the expansion is expected by the end of the summer.

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Exploration Program

Following on the success of previous exploration programs, a 2012 budget of approximately CAD\$8 million has been set to support LIM's aggressive drilling efforts. An exploration drill contractor has been selected to carry out this work in 2012. Drill programs at Houston as well as a number of other deposits will focus on generating further technical information required for more detailed mine planning. In addition to this drilling, a bulk sampling program of some historic stockpiles will be initiated with a view to providing supplemental plant feed.

In a new initiative to the main focus on direct shipping (DSO) iron ore, LIM plans an initial core drill program on previously identified, lower grade taconite iron mineralization, which will be supported by geophysical programs. In addition, metallurgical test work aimed at evaluating historical manganese resources will be carried out with a view to ascertaining compatibility with the Silver Yards processing plant flow sheet.

Recent Management Appointments

LIM is pleased to announce that a number of key senior appointments, with strong technical expertise, have been made to its executive and operations team as the Company continues to focus on growth and expansion: Bernie Maskerine, VP Transportation; Michel Cormier, Vice President, Exploration; Stephen McGinn, Vice President, Human Resources and Health & Safety; and Keren Yun, Vice President of Investor Relations & Communications.

Biographies of these and the Company's senior executive team are available on LIM's website.

LIM has also put in place experienced mine management personnel at its operations. The team at Schefferville is now headed by Guy Moores, General Manager; Jonathan Hill, Mine Operations Manager; and Yves Pelletier, Human Resources & Communications Manager. The team at Sept-Îles is led by Wayne Walsh, General Manager, Transportation.

The Company has also commenced the integration of an enterprise software system for efficient reporting in the areas of budgeting, purchasing, operations management, inventory, accounting and financial reporting. The enterprise solution is expected to be fully integrated in October.

Analyst Site Tour June 2012

LIM will be hosting a full-day analyst site tour of the Schefferville operations on June 5, 2012, which will include property tours of the James Mine and Silver Yards Processing Facility.

Qualified Person

Mr. Terence N. McKillen, M.Sc., P. Geo., Executive Vice President and a Director of the Company is the Company's Qualified Person under Canadian National Instrument 43-101 (NI 43-101) and has reviewed the geological disclosure in this press release.

About Labrador Iron Mines Holdings Limited (LIM)

Labrador Iron Mines (LIM) is Canada's newest iron ore producer. We own a portfolio of direct shipping (DSO) iron ore operations and projects located in the prolific Labrador Trough. Initial production commenced at our 100%-owned James Mine in June 2011 and we recorded the sale of 400,000 tonnes of iron ore in our first start-up season. The first full production season commenced on April 2, 2012, with a sales target of 2 million tonnes of iron ore for the 2012 year.

LIM is focused on a strategic and robust growth plan arising from our portfolio of 20 iron ore deposits in Labrador and Quebec, all within 50 kilometres of the town of Schefferville. The James Mine is connected by a direct rail link to the Port of Sept-Iles, Québec. The area also benefits from established infrastructure including the town, airport hydro power and railway service. Starting with the James Mine and leading to the development of the expanding Houston flagship project, our objective is to provide shareholders with long-term value as we ramp up production and sales towards 5 million tonnes by 2015.

We are currently the only independently-owned iron ore producer listed on the Toronto Stock Exchange and trade under the symbol LIM.

For further information, please visit LIM's website at www.labradorironmines.ca or contact:

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Cautionary Statements:

Some of the statements contained herein may be forward-looking statements which involve known and unknown risks and uncertainties. Without limitation, statements regarding potential mineralization and resources, exploration results, and future plans and objectives of the Company are forward looking statements that involve various degrees of risk. The following are important factors that could cause the Company's actual results to differ materially from those expressed or implied by such forward looking statements: changes in the world wide price of iron ore and steel, general market conditions, the uncertainty of future profitability and access to additional capital, risks inherent in mineral exploration and risks associated with development, construction and mining operations, delays in obtaining or failures to reach agreements with any potentially impacted aboriginal groups or to obtain required governmental, environmental or other project approvals. There can be no assurance that the Company will be successful in reaching any agreement with any First Nations groups who may assert aboriginal rights or may have a claim which affects the Company's properties or may be impacted by the Schefferville Area project. Caution should be exercised on placing undue reliance on forward looking information.