

DÉVELOPPER LE FUTURE

SDE G EDC

Société du développement
économique de Greenstone

Greenstone Economic
Development Corporation

DEVELOPING THE FUTURE

**Greenstone Region
Mining Sector Strategy**
Northern Communities Investment
Readiness Project

Erratum – March 31st. 2010

Submitted by:
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Economic Development Solutions

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www.gedc.ca

SUMMARY OF RECOMMENDATIONS

In the previous report entitled “*Greenstone Region Gap Analysis and Market Study*” a number of recommendations intended to improve the “readiness” of the Greenstone region were provided. Those recommendations are applicable to the “Greenstone Region Mining Sector Strategy” and are repeated here for the benefit of the reader:

Recommendation

It is recommended that the Municipality of Greenstone make an urgent appeal to the Provincial government for assistance in upgrading sewage treatment capacity in the communities of Longlac and Geraldton or risk losing potential development opportunities arising from the possible development of gold mines by Premier Gold/Goldstone and other players now working in the community.

Recommendation

It is recommended that the Municipality of Greenstone take immediate steps to extend the runway at the Nakina Airport to 5,000 ft., and add to the fuel storage capacity available on site.

It is also recommended that the Municipality develop a limited number of building lots at the airport (similar to what has been done at Geraldton Airport) to ensure the continued growth and development of air services business and the Nakina Airport itself.

Recommendation

In addition to the land recommended for development at the Nakina Airport, we recommend the creation of an industrial park of between 40 and 60 acres with room to expand along the Hwy 11 corridor. The land should be zoned industrial and subdivided into serviced building lots of 2.5 to 5.0 acres.

Recommendation

It is recommended that the GEDC convene a meeting of power users who are or expect to be operating in the Beardmore-Geraldton Gold Camp, along with representatives from the Municipality and the Chamber of Commerce to develop a list of potential (future) power requirements for discussion with Hydro One to see if there is an economic method of improving the hydro service to the region.

Recommendation

It is recommended that Greenstone Economic Development Corporation launch an Awareness Campaign with the aim of informing the Greenstone region about the services provided by GEDC to the business community including the availability of capitalization to support all businesses in the community.

Recommendation

It is recommended that GEDC and the Municipality of Greenstone meet regularly to agree on roles and responsibilities in economic development programming, with particular attention paid to responding to inquiries from prospective investors.

In addition we have further recommendations to make.

Recommendation

It is recommended that the Greenstone Region routinely monitor the web-sites and analyst reports for developments of interest among exploration companies active in the Beardmore - Geraldton Gold Camp and the Ring of Fire and to disseminate this information to stakeholders in the community to ensure they are aware of changes that could have a bearing on the Mining Strategy.

Recommendation

It is recommended that as a first step, the resumes of the displaced workers on file with the Greenstone Labour Adjustment Committee be reviewed for their relevance to exploration and mining operations. This will provide a picture of the training programs that need to be put in place to help prepare this available labour force for the expected jobs in the mining sector.

Recommendation

It is recommended that at the appropriate time, the Greenstone Region invite those companies that are expected to undertake exploration and potential development activities on mine sites in the Beardmore- Geraldton Gold Camp and the contractors of the rail road from Nakina to McFaulds Lake to participate in procurement workshops with local entrepreneurs and suppliers to stimulate local sourcing of materials and services.

We say “at the appropriate time” because we suspect it would be premature to stage such a workshop now because it is still several years before development will begin on either the mine site or the railroad and it is unclear at this stage which companies will be involved.

In the meantime it is vital that our recommendations pertaining to sewage treatment capacity, hydro electric power, the airport infrastructure be addressed so that the community is ready for investment.

ACKNOWLEDGEMENTS

A number of people generously contributed their time and expertise to help build upon our limited understanding of the mining industry. We wish to acknowledge the following for their contribution to this report:

Peter Picore – Goldcorp Porcupine Mine
Roger Souckey – Barrick Gold Hemlo Mine
Tim Twomey – Premier Gold
Peter McBride – Ontario Mining Association
John Mason – Ministry of Northern Development Mines and Forestry (MNDMF)
Mark Smyk – Ministry of Northern Development Mines and Forestry (MNDMF)
Guylene Levesque – Ministry of Northern Development and Mines Forestry (MNDMF)
Richard Pohler – Thunder Bay Community Economic Development Commission

As well we wish to thank the board members and staff of the Greenstone Economic Development Corporation and members of Municipal Council for their assistance and support during the development of this report.

The “Greenstone Region Mining Sector Strategy” presents an approach to ensure that the local economy derives the greatest benefit possible from the expected developments in the mining sector - both in the Beardmore - Geraldton Gold Camp which is found in Greenstone’s backyard and in the mineral rich “Ring of Fire” located approximately 300 km north.

The Beardmore - Geraldton Gold Camp is a historic gold producing area that was actively mined from the 1930’s to the 1970’s producing more than 4 million ounces of gold during its lifetime. With gold valued at an all time high (over US\$1,110 per ounce compared to US\$35 per ounce in the 1970’s) the gold deposits are once again economically viable to mine.

Past Producers (1934-1968)	Tons Milled	Average Grade of Gold (oz/ton)	Gold Produced (oz)
Leitch Mine	920,745	0.92	847,690
Sand River Mine	157,870	0.32	50,065
Northern Empire Mine	425,866	0.35	149,493
Magnet Mine	359,912	0.42	152,089
Little Long Lac	1,780,516	0.34	605,499
Bankfield Mine	231,009	0.29	66,417
Hard Rock	1,458,375	0.18	269,081
MacLeod-Cockshutt	10,337,229	0.14	1,475,728
Mosher Long Lac	2,710,657	0.12	330,265
Talmora-Long Lac	6,634	0.21	1,417
Jellicoe Mine	10,620	0.40	4,238
Tombill Mine	190,622	0.36	69,120
Dikdik – Orphan - Mantis	3,525	0.70	2,460
Sturgeon River Mine	145,123	0.51	73,438
Total Beardmore-Geraldton	18,738,703	0.30	4,097,000

McLeod-Cockshutt Mine – Geraldton ~ Circa 1934



Courtesy: Premier Gold Mines Ltd.

Considerable exploration is being carried out by more than a dozen companies led by Premier Gold Mines Ltd. and Goldstone Resources Inc. Many well recognized names are exploring the region including Kodiak Exploration Ltd., Sage Gold Inc., and TLC Explorations Inc.

Based on discussions with MNDMF in Thunder Bay, it appears Premier's Hardrock Project is the most advanced of all the exploration projects in the region, although there are still many steps to be completed before opening a mine. On March 2, 2010, Premier Gold released an indicated resource of 11.6 million tonnes grading 1.82 g/t gold.

Exploration in the Ring of Fire in the James Bay Lowlands has revealed massive deposits of copper, zinc, nickel, platinum, palladium, gold and other precious metals, but most significantly a massive deposit of chromite, a material not mined in North America. It is critical to the production of stainless steel.

Several prominent companies including Cliffs Natural Resources Inc. (and subsidiary Freewest Resources Canada Inc.), KWG Resources Inc. (and their wholly owned subsidiary Canada Chrome Corp.) and Noront Resources Ltd. are currently active in the Ring. This find is of great significance to Greenstone because Nakina, one of the communities in the new municipality is the closest settlement area and will be the likely connection point for a rail line that is being proposed by Cliffs Natural Resources Inc. to haul out the ore and haul in supplies to this remote region.

Location of the Ring of Fire



Public reports from some of the junior mining companies that are active in the Beardmore-Geraldton Gold Camp indicate they are conducting diamond drilling in the order of several thousand metres per year. For example Kodiak, which has extensive holdings in the Beardmore-Geraldton drilled between 8,000 and 9,000 m in 2009 and another 5,000 m is planned in 2010. Sage Gold drilled 3,777 metres in 2009.

At an average cost of \$100 per metre (MNDMF told us drilling costs range from approximately \$80 per metre to as much as \$120 per metre depending on terrain, material being drilled, etc.) this represents investments in the order of \$500,000 to \$1,000,000 per year.

Premier Gold is currently drilling on their Hardrock Project in Geraldton at a rate 10 times more than any of the other companies in the region (130,000 metres diamond drilled in 2008/2009)

Mining companies can be classified based on their size and financial capabilities:

- **Junior** exploration companies rely on equity financing as their principal means of funding exploration. Juniors are mainly pure exploration companies, but may also produce minimally, and have revenue of less than US\$50 million.
- **Intermediate** companies have at least \$50 million in annual revenue but less than \$500 million.
- **Major** companies are considered to have annual mining-related revenue of more than US\$500 million, with the technical and financial capability to develop a major mine on their own and generate revenue from production.

Development decisions are very sensitive to external market conditions therefore timeliness is critical. The historic mines in the Beardmore-Geraldton Gold Camp all closed in the early 1970's because gold was then priced at \$US 35 per ounce and it became uneconomic to carry on mining. Today gold prices are more than \$US 1,110 per ounce which have prompted renewed activity throughout the area.

Assuming the feasibility studies prove positive, companies still must conduct consultations with the First Nations and Métis in the area, go through a one window permitting regime with MNDMF as lead and prepare a complete closure plan which will detail the plans to remediate the site after the ore is exhausted. Finally with all permits in hand they can proceed to the Construction phase. The mine operation will be one of two different types:

Open Pit



Underground



The costs of operations will be dramatically different for the two different types with Open Pit being much more inexpensive in terms of development and mining.

It is a complex, onerous and expensive task to open a new mine in Ontario and it is not a decision taken lightly. The Ministry of Northern Development, Mines & Forestry (MNDFM) reports that:

- only 1 prospect in 10,000 will ever become a mine.
- more than five companies can be involved in bringing one prospect to the mine stage.
- each mine developed represents approximately \$200 million in exploration costs.

We need to emphasize the point as many as five companies can be involved over time in bringing a prospect to a mining stage.

It is very likely that the various projects in the Beardmore-Geraldton Gold Camp will change hands several times before they are brought to fruition. This is the nature of the mining industry. A Junior's interests will be acquired by an Intermediate company who may begin mining but ultimately the project is acquired by one of the Majors such as Barrick Gold Corporation, GoldCorp Inc., Vale Inco, Xstrata or Teck Resources for example.

Beardmore-Geraldton Gold Camp

Premier Gold's Hardrock Project is a 15-kilometre long property that previously produced more than 3.0 million ounces of gold in a district that has historic production in excess of 4.0 million ounces. The property is only a few kilometers south of the Geraldton and is serviced by the Trans-Canada Highway, Trans-Canada Pipeline and a Hydro One transmission line.

Premier acquired the property from Barrick Gold in 2008 and since then have completed more than 130,000 metres of diamond drilling - 40,000 metres in 2008 and another 90,000 metres in 2009. They plan a further 70,000 metres of drilling for 2010. In other words they are currently spending between \$10 to \$12 million per year as they collect samples to map the near surface and underground resource before committing to a decision to begin mining.

Premier has a joint-venture partner in this project, Goldstone Resources which has a 30% stake in Hardrock. Goldstone was created from a merger of Ontex Resources and Roxmark Mines Ltd. in late 2009. It also has the Brookbank Project and the Northern Empire Mine just west of Hardrock.



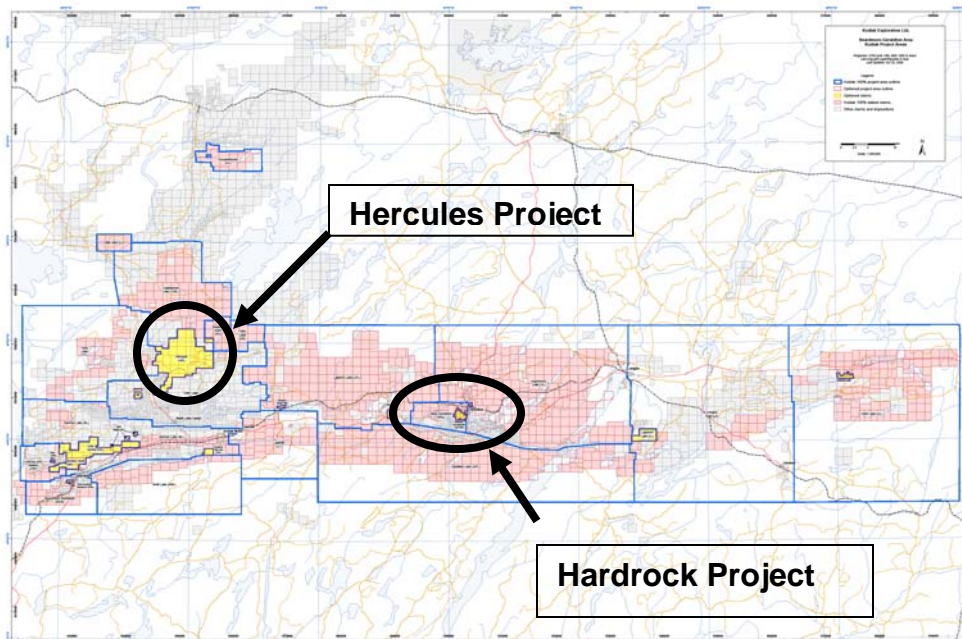
Source: Goldstone Resources

In addition to Premier and Goldstone we have identified at least 11 other companies active in the region. The following is a list of those companies with their web addresses:

Companies Active in the Beardmore - Geraldton Gold Camp

<i>Company</i>	<i>Headquarters</i>	<i>Web Address</i>
Premier Gold Mines Limited	Thunder Bay	www.premiergoldmines.com
Sage Gold Inc.	Toronto	www.sagegoldinc.com
Goldstone Resources Inc.	Toronto	www.goldstoneresourcesinc.com
Kodiak Exploration Limited	Vancouver	www.kodiakexp.com
TLC Explorations Limited	Toronto	www.tlcexplorations.com
Source Gold Corp	Toronto	www.sourcegoldcorp.com
Highland Resources Inc.	Vancouver	www.highlandresources.ca
Advantel Minerals (Canada) Ltd.	Toronto	www.advantelminerals.com
Alto Ventures	Vancouver	www.altoventures.com
Ultra Uranium	Vancouver	www.ultrauranium.com
Mantis Mineral Corp.	Toronto	www.mantismineralcorp.com
Spruce Ridge Resources	Simcoe	www.spruceridgeresources.com
Stratabound Minerals Corp	Calgary	www.stratabound.com

Kodiak has the largest holdings in the region, controlling over 36,600 acres of land (2,100 square kilometres) in the Beardmore – Geraldton gold camp. Kodiak’s Hercules gold project was an important new gold discovery. It contains an area called the Golden Mile with multiple parallel vein systems.



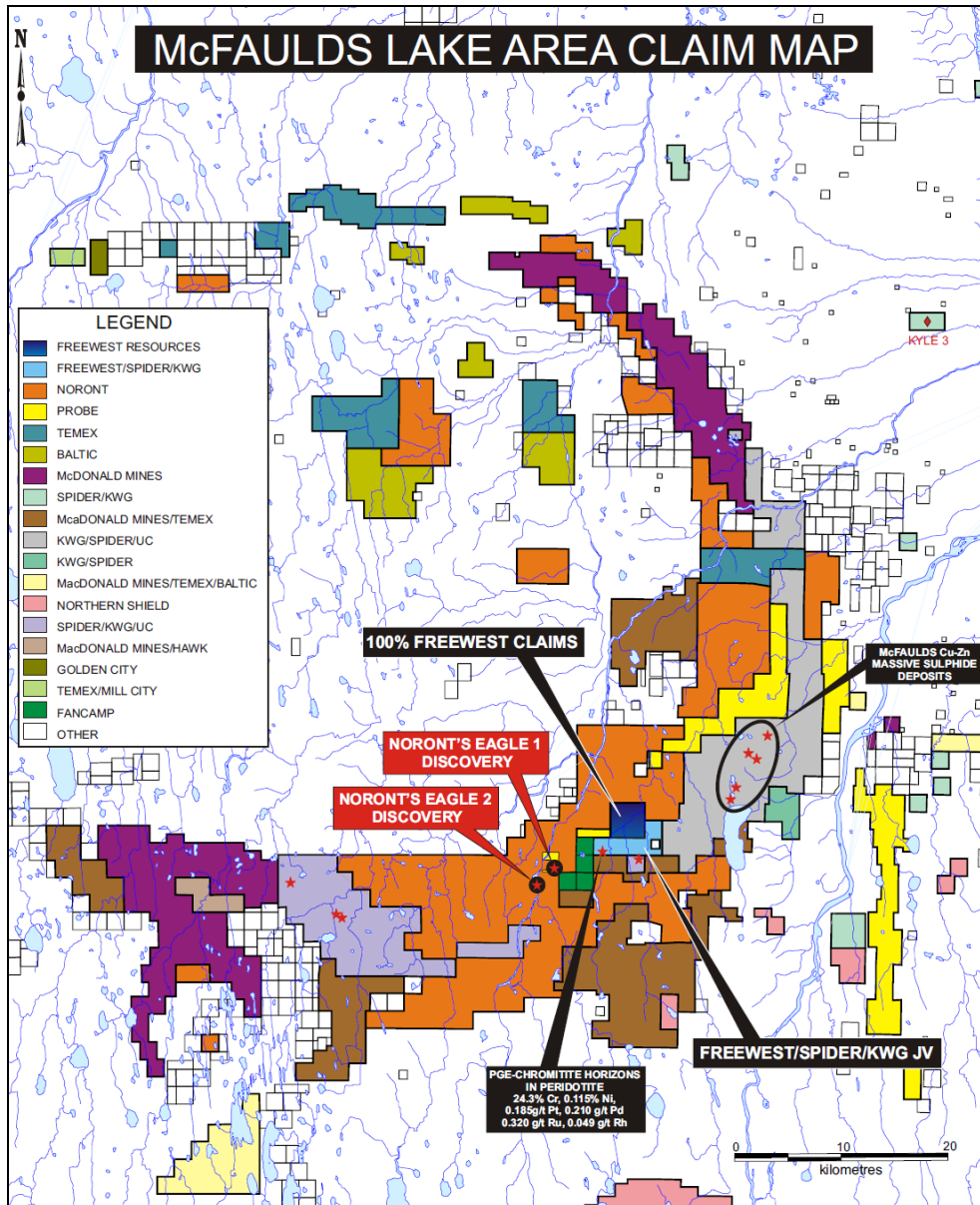
Source: Kodiak Exploration Ltd. – Oct. 2009

It will be important to closely monitor developments among these companies as there will be new discoveries announced and merger & acquisition activity as the companies jockey for position.

Ring of Fire – McFaulds Lake Area

Three hundred kilometres north of Greenstone/Nakina is one of the most significant developments in the Canadian mining industry. In 2007 Noront Resources discovered massive deposits of a number of precious metals in the area called the “Ring of Fire” in the McFaulds Lake area of the James Bay lowlands.

Exploration to date by junior exploration companies has discovered platinum, palladium and most significantly, chromite which is used in the production of stainless steel. It has been suggested that there is a 50 to 100 year supply of chromite. The only deposit with a compliant resource is the Black Thor held by Cliffs Natural Resources (69.5 Mt grading, 31.9% cr2o3).



Companies Active in the McFaulds Lake Area

Company	City	Website
Arctic Star Diamond Corp.	Vancouver	www.arcticstardiamond.com
Baltic Resources Inc.	Toronto	www.balticresources.ca
Bold Ventures Inc.	Vancouver	www.boldventuresinc.com
Canada Chrome Corp. (KWG subsidiary)	Toronto	www.kwgresources.com/
Canadian Orebodies Inc.	Toronto	www.canadianorebodies.com
Canstar Resources Inc.	Toronto	www.canstarresources.com
Debuts Diamonds Inc.	Toronto	
Diamondex Resources Ltd.	Vancouver	www.diamondex.net
East West Resource Corporation	Thunder Bay	www.eastwestres.com
Fancamp Exploration Ltd.	Burnaby	www.fancampexplorationltd.ca
Freewest Resources Canada Inc.	Montreal	www.freewest.com
Golden Valley Mines Ltd.	Val-d'Or	www.goldenvalleymines.com
Goldeye Explorations Ltd.	Richmond Hill	www.goldeye.ca
Greenstone Exploration Company Ltd	Beardmore	
Hawk Uranium Inc.	Toronto	www.agoracom.com/ir/hawk
International Nickel Ventures Inc.	Toronto	www.nickelventures.com
James Bay Resources	Toronto	cancap@on.aibn.com
KWG Resources Inc.	Montreal	www.kwgresources.com
MacDonald Mines Exploration Limited	Toronto	www.macdonaldmines.com
Melkior Resources Inc.	Montreal	www.melkior.com
Metalex Ventures Ltd.	Kelowna	www.metalexventures.com
Mill City Gold Corp.	Calgary	www.millcitygold.com
Noront Resources Ltd.	Toronto	www.norontresources.com
Northern Shield Resources Inc.	Ottawa	www.northern-shield.com
Pele Mountain Resources Inc.	Toronto	www.pelemountain.com
Probe Mines Limited	Toronto	www.probemines.com
Renforth Resources Inc.	Toronto	www.renforthresources.com
Seafield Resources Inc.	Toronto	www.sffresources.com
SouthernEra Resources Limited	Toronto	www.southernera.com
Spider Resources Inc.	Toronto	www.spiderresources.com
Temex Resources Corp.	Toronto	www.temexcorp.com
Tribute Minerals Inc.	Toronto	www.tributeminerals.com
Trigon Exploration Canada Ltd.	Kelowna	www.trigonexploration.com
UC Resources Ltd.	Vancouver	www.ucresources.net
White Pine Resources Inc.	Toronto	www.wprres.com
Cliffs Natural Resources	Cleveland	www.cliffsnaturalresources.com

Source: Ministry of Northern Development, Mines & Forests

Northern Ontario Business Magazine recently carried a story summarizing the developments in the Ring of Fire both from a geological perspective as well as the corporate maneuverings that have typified this development. A portion of the story is reproduced below.

KWG Resources, Spider Resources and Freewest Resources are juniors to watch

By: Ian Ross (originally appearing NOBM, Feb. 5, 2010)

KWG Resources, Spider Resources and Freewest Resources are the triumvirate of junior miners behind a monumental chromite discovery that will open up Ontario's Far North and make the province a first-time producer of a highly strategic global mineral.

Now American iron and coal behemoth Cliffs Natural Resources has entered into the picture with a \$240-million offer to take over Freewest (to be decided at a special shareholder meeting in late January) and assist KWG and Spider in developing its massive, high-grade chromite deposits in the James Bay Lowlands.

In a remote muskeg swamp, now known as the 'Ring of Fire', they discovered a commodity that's never been found in any size or degree in North America. Geologist Bob Middleton, director of Aboriginal and Regulatory Affairs for the Canada Chrome Corporation, a subsidiary of KWG Resources, said the tale of McFauld's Lake is really one of a "series of accidents."

What began as a search in Ontario's North for diamonds, turned into discoveries of copper and zinc that now has the potential to be the world's biggest chromite mine, possibly by 2015. Middleton, who was brought into the KWG fold as an exploration advisor, said there is enough tonnage at the McFauld's deposits to see chromite production for 150 to 200 years.

KWG and Spider have been developing the flagship Big Daddy chromite property adjacent to two other chromite deposits, Black Thor and Black Label, owned by Freewest Resources. The three companies have formed an alliance. It was the discovery of diamonds at the current De Beers Canada Victor site which opened up the James Bay Lowlands to exploration.

The whole region was examined by detailed magnetics looking for the tell-tale bull's eye anomalies that are indicative of kimberlite bodies, a mineral pointing to the presence of diamonds. Eight kimberlites and multiple volcanic massive sulphide (VMS) discoveries led to the KWG joint venture in the mid-1990s.

It was the beginning of a whole series of VMS discoveries - as many as 13 - by 2003.

A flurry of staking rushes and VMS exploration followed over the next three years. It led to a drill hole discovery on the KWG-Spider ground that hit a black mineral that was at first ignored but was soon realized to be chromite.

Cliffs officially entered the picture early last year with an investment in KWG to finance their exploration drill program for a 20 per cent stake.

Canada Chrome was set up as KWG's subsidiary that will be the operating company to take care of the mining operations and building a 350-kilometre long ore haul railroad from McFauld's to a Canadian National Railway junction near the northwestern Ontario village of Nakina.

Chromite is considered a strategic mineral, especially by the U.S. defense establishment. It's used to make missile components, armour plating and jet engines. All of the chromite imported into North America comes mostly from Zimbabwe and South Africa, which mines 70 per cent of the world's supply. Chromite is processed into ferrochrome, used in making stainless steel. Ninety per cent of the world's chromite is used in making stainless steel. China uses half of the world's chromite. The North American stainless steel industry consumes four-million tonnes annually.

Noront Resources is not mentioned in this article but they are also a key player in the “Ring of Fire” as discoverer of the Eagles nest nickel deposit.

A railroad from McFaulds Lake to the CNR in Nakina is being proposed by Canada Chrome depending on geotechnical testing among other factors. The implications for the Greenstone region will be enormous because this puts Greenstone/Nakina directly on the supply route for the Ring of Fire. It is also the end of road for overland deliveries.

The Nakina Airport has been experiencing a surge of new business and this is expected to intensify as requirements for men and materials increase.

Due to economies of scale it would appear that most of the major supplies will be sourced in larger centres such as Thunder Bay, but Nakina will be the jumping off point for air service and the transshipment of personnel and materials to build the proposed railroad.

There was been much speculation about the possibility of processing the chromite ore from the Ring of Fire into chromium in northwestern Ontario. Owing to Ontario’s high costs of electrical power (as shown in the following illustration) this is not likely. Electricity is a huge input in processing of chromite.

Average Electricity Prices for Large Power Customers in Major North American Cities (in Cdn¢/kWh)



Source: "Comparison of Electricity Prices in North American Cities", Hydro Quebec, 2008 (7/2009) Based on a monthly consumption of 3,060,000 kWh and power demand of 5,000 kW; rates in effect April 1, 2008.

UPDATE

In a February 3rd interview with TBNewsWatch, KWG Resources Inc. president Frank Smeenck stated that after shipping chromite from a proposed railway to Nakina, the shipments would most likely be processed in places like Prince Rupert, B.C. to the West or Montreal in the East to reach demanding markets such as China and Europe. Shipping south to Lake Superior is still a possibility, but Smeenck said it's not as likely as originally anticipated as energy is a huge cost for refineries. The Ontario Mining Act requires that further processing of a mineral mined in Ontario must be done in Canada, so chromite would have to be processed somewhere in the country.

Greenstone will benefit enormously from the development of Ring of Fire. The most significant impact will be the job creation which has been estimated to exceed 2,200 during the construction phase (including the building of a railroad) and steadying out at approximately 820 for ongoing mine operations. In addition there would be an estimated 2,460 indirect jobs created by the new economic activity. (*Employment estimates by Canada Chrome Corporation*)

Nakina will also benefit from being the transshipment point and a staging area for the construction of the railroad and to supply air services to the north.

ECONOMIC IMPACT OF A REPRESENTATIVE MINE

To fully appreciate the potential impact of the Hardrock mine and other projects in the Beardmore-Geraldton Gold camp we need to consider the up and down stream economic impacts of the expected new operations.

The Ontario Mining Association has produced a number of reports which document the economic contribution that the mining industry makes to Ontario. One report in particular calculates the economic impacts of a typical mine in Ontario based on research by the Institute of Policy Analysis at the University of Toronto. The report is entitled “**Ontario Mining: A Partner in Prosperity Building – The Economic Impacts of “Representative Mine” in Ontario**”, by Peter Dungan and Steve Murphy, December 2007.

The “*Representative Mine*” was determined by taking an average of the operating characteristics of 12 existing mines in Ontario. It is a non-ferrous metal ore mine producing nickel, copper and some precious metals as part of the mix producing an output of approximately \$270 million per year. The “*Representative Mine*” is located in Northern Ontario near an urban area with established infrastructure such as we find in Geraldton.

The mine envisioned in the study is larger than what has been proposed for the Hardrock Project. The “*Representative Mine*” employed 480 workers. We understand the Hardrock Project would employ approximately 300 during the construction phase and approximately 200 in mine operations. Officials with the Ontario Mining Association confirmed that operating costs of a gold mine would be quite similar to those of base metals mine and more importantly they are scalable based on employment. Therefore the results of the report can be applied to assess the potential impact of the Hardrock Project in Greenstone.

Table 1: Production Characteristics of a “Representative Mine”

- Roughly the average size of the 12 major operating mines in Ontario
- Includes initial on-site milling operations

	(\$Million)	Scaled Down Version
Mine Output/Sales	\$ 270.0	
Number of Employees on site	480	200
Average wage per employee	\$ 85,000	\$ 85,000
Employment Costs		
Wage Bill	\$ 40.8	\$ 16.97
Pension Contributions	\$ 22.4	\$ 9.31
Employee Benefits	\$ 2.0	\$ 0.83
Canada Pension, Employment Insurance, Workplace Safety, Employer Health Tax	\$ 4.2	\$ 1.75
Total	\$ 69.5	\$ 28.86 (25%)
Capital Consumption Allowance (Depreciation)	\$ 40.5	\$ 16.84 (15%)
Gross Profit (before taxes)	\$ 40.5	\$ 16.84 (15%)
Purchased Inputs and Production Costs	\$ 119.5	\$ 49.71 (45%)

Source: “Ontario Mining: A Partner in Prosperity Building – The Economic Impacts of “Representative Mine” in Ontario” by Peter Dungan and Steve Murphy, Dec. 2007

The operating characteristics of the “Representative Mine” and a “Scaled-Down Version” using the differential in employment between the Hardrock Project and the study’s “Representative Mine” are shown in Table 1.

As can be seen even the scaled down version of the representative mine would generate wages of nearly \$17million - to be spent in the community. Another \$11 million would go to employee benefits, pension and employment taxes producing a total Employment Costs of \$28.86 million per year – 25% of the total cost of mine operations.

The mine operation would spend another nearly \$50 million or 45% of its total budget on purchased inputs and production costs.

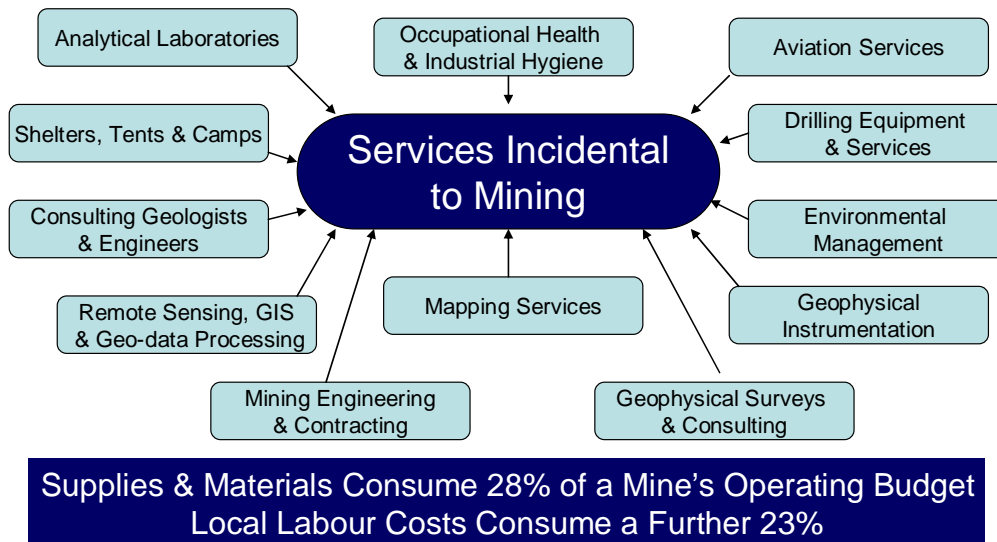
A second report by the Ontario Mining Association (“Ontario Mining: A High Tech Productivity Powerhouse” by G&K Chartered Accountants, Dec. 2006) highlights the fact that local suppliers – those within 80 km of the mine site – would provide 45% of the total value of goods and services required for mine operations.

That suggests that the Greenstone Region could capture another \$21.5 million in purchased goods and services from the mine operations.

Roughly ½ the total operating budget of a mine operation – in this case approximately \$50 million - will be spent locally.

Mining Services

45% of Purchased Goods & Services
Supplied from within 80 km of the Mine Site



5

Source: Adapted from “What is a Mine” by MNDMF

This however is just the first level of an economic impact analysis.

When measuring the full economic impact of a project, one has to look beyond the **direct** jobs created in the mine to consider the **indirect** jobs created as a result of the purchase of goods and services by the mine operations and the household expenditures of mine employees. This stimulates further economic activity up and down the supply chain which leads to the further creation of **induced** jobs.

Statistics Canada uses an input/output model to calculate the following employment impacts from the “representative” mine, which we have scaled down to suit the expected size of the operation in Geraldton.

Table 2: Employment Impacts of a “Representative Mine” in Ontario

		<i>Scaled to Hardrock Project</i>
Direct Employment	480	200
Total Labour Compensation	\$69.5	\$28.86
Indirect Employment	1,103	458
Total Labour Compensation	\$52.3	\$21.75
Induced Employment	697	289
Total Labour Compensation	\$30.4	\$12.64
Total Direct, Indirect & Induced Employment (Ontario & elsewhere)	2,280	948
Total Labour Compensation	\$152.2	\$63.31
Local Area Impacts – Expected Local Employment	1,519	631
Total Labour Compensation	\$115.1	\$47.88

Source: “The Economic Impacts of a Representative Mine in Ontario” – Ontario Mining Association, Dec. 2007

The average compensation per employee in Canadian mines is very high. \$85,000 per employee goes to direct wages plus another \$60,000 per employee goes to pensions and benefits for a total average compensation of \$145,000 per job.

The compensation cost for the indirect jobs created by the mine activity is much lower - an average of \$47,500 - which is more in line with Ontario averages.

The figure for the induced jobs is \$44,000, somewhat lower than for the indirect but still in line with provincial average compensation.

Note that while the direct jobs will be at the mine site, many of the indirect and induced jobs are not necessarily local. They are created in the supplier companies and manufacturers of equipment and materials used on site and in the banks and accounting companies, head offices – and so on.

The report examined individual industrial sector impacts of the mine at the indirect and induced level to determine how many jobs would reasonably be expected to remain close to the site and those that would be most likely be sourced from further afield. It is estimated that more than 1,500 (65%) of the nearly 2,300 total jobs created by mine operation would be close to the mine site.

We estimate that the total employment impacts of the Hardrock project as currently envisioned would be in the order of 950 new jobs - of which more than 630 would be in the local community - injecting nearly \$50 million in wages and benefits into the local economy.

This is just for the Hardrock project. Other mine projects will add to the total impacts in the community.

The Input/Output analysis shows the distribution of those indirect and induced jobs across all sectors of the economy for the “representative” mine. Based on this analysis it can be confidently stated that the multiplier effect for a representative mine is 1:4 - in others words every job created in the mine produces 4 new jobs in the economy.

Table 3 shows that more than a third of the jobs are found in;
the mines (23.59%)
construction (10.91%)

60% of the new jobs will be created in the service sector with significant concentrations found in;
retail (9.42%)

- and in business services including
- finance, insurance, real estate & leasing (8.19%),
 - professional, scientific & technical services (8.60%)
 - administrative & support services (6.88%)
 - accommodation & food (3.66%)
 - public administration (5.29%).

Table 3: Distribution of Employment Impacts for a “Representative Mine”

Agriculture Forestry, Fishing & Hunting	11	0.49%
Mining, Oil and Gas	521	23.59%
Utilities	45	2.03%
Construction	241	10.91%
Manufacturing	157	7.11%
Wholesale	133	6.02%
Retail	208	9.42%
Transportation & Warehousing	75	3.39%
Information & Culture	47	2.12%
Fin. Ins. Real Estate & Leasing	181	8.19%
Professional, Scientific & Technical	190	8.60%
Administrative & Support Services	152	6.88%
Education	7	0.31%
Health Care & Social Services	29	1.31%
Arts, Entertainment & Rec.	19	0.86%
Accommodation & Food	81	3.66%
Other Services	65	2.94%
Public Administration	117	5.29%
	<u>2,208</u>	<u>100.00%</u>

Source: “The Economic Impacts of a Representative Mine in Ontario” – Ontario Mining Association, Dec. 2007

The report goes on to note that there are a host of further economic and social impacts that can be associated with a representative mine, however it is very difficult to reliably quantify them.

For example there is the economic activity associated with municipal workers, teachers, police, fire and health care, and all the necessary infrastructure services that are part of maintaining a community.

Mining companies make many contributions to the well-being of their communities -- for instance, by providing medical centers, sports facilities, and recreation and community centers.

Mining companies also make a special contribution to the well-being and development of First Nations and Métis communities. The industry makes a concerted effort to employ and make entrepreneurial opportunities available to First Nations and Métis workers in mining activities.

As well, mining companies in Ontario have quite generous pension plans. The spending of retired miners living off their pension plans has not been included in the calculations above.

Moreover, the mining industry is not static: new mines come into production and older ones are phased out. The development of a new mine requires significant expenditure on exploration and analysis that employs some very high-productivity (and high-paid) technicians – none of which is included in these impact estimates.

Even a phased-out mine generates ongoing economic activity as the site continues to be rehabilitated, returned to a natural state, and is continually monitored.

Opening of a Mine

The economic benefits of a new mine are highest during the construction phase because approximately 80% of the cost goes directly to construction activities which by their nature are tightly focused on the mine site. The other 20% is spent on a wide range of machinery and equipment required to operate the mine.

The Ontario Mining Association reports that it normally takes three years to open a mine and that for the “representative mine” used in this report the cost is approximately \$450 million (\$150 million per year).

The “representative mine” would employ approximately 960 during the construction phase with labour compensation per employee of about \$57,000 – considerably above provincial norms although quite a bit less than the operating mine (\$145,000 per employee).

Construction employment in the opening phase is usually about twice the employment of an operating mine so in the case of the Hardrock project we could see employment in the order of 300 to 400 persons. (Premier used a figure of 300 in our interviews however industry averages would suggest this estimate is light).

As before we have to consider the indirect employment created by the construction activity at the mine, which will require aggregate, limestone, machinery and equipment, fuel and host of other inputs. For the “representative mine” in the study, indirect employment was calculated as 440 jobs with an average labour compensation of \$48,000 per employee.

The induced employment created by the spending of the construction workers and the companies producing the mining machinery and equipment would generate an additional 560 jobs with an average labour compensation of \$42,850 per employee.

Table 4 shows the total direct, indirect and induced employment impacts of the “representative mine” as well as a scaled down version reflecting the expected size of the Hardrock Project.

Due to the fact that construction activity is high focused on the site the proportion of local benefit in the total direct, indirect and induced employment is higher than during the operating phase. During construction it is estimated 2/3rd of the benefit stays local.

Table 4: Employment Impacts of Construction of a “Representative Mine”

		<i>Scaled to Hardrock Project</i>
Direct Employment	957	400
Total Labour Compensation	\$54.5	\$22.72
Indirect Employment	441	183
Total Labour Compensation	\$21.3	\$8.88
Induced Employment	561	233
Total Labour Compensation	\$24.5	\$10.21
Total Direct, Indirect & Induced Employment (Ontario & elsewhere)	1,959	816
Total Labour Compensation	\$100.2	\$41.81
Local Area Impacts – Expected Local Employment	1,281	534
Total Labour Compensation	\$66.4	\$27.59

Source: “The Economic Impacts of a Representative Mine in Ontario” – Ontario Mining Association, Dec. 2007

Based on these calculations the Greenstone region could see as many as 534 jobs created locally and more than \$27 million injected into the local economy as a result of the construction of the Hardrock mine, if the project goes forward as envisioned.

The distribution of those employment impacts using Statistics Canada’s Input/Output model is shown in Table 5.

Table 5: Distribution of Employment Impacts during Construction of a “Representative Mine”

Agriculture Forestry, Fishing & Hunting	9	0.40%
Mining, Oil and Gas	40	1.81%
Utilities	6	0.27%
Construction	1,090	49.36%
Manufacturing	198	8.96%
Wholesale	90	4.07%
Retail	159	7.20%
Transportation & Warehousing	42	1.90%
Information & Culture	30	1.35%
Fin. Ins. Real Estate & Leasing	91	4.12%
Professional, Scientific & Technical	176	7.97%
Administrative & Support Services	55	2.49%
Education	6	0.27%

Health Care & Social Services	21	0.95%
Arts, Entertainment & Rec.	12	0.54%
Accommodation & Food	47	2.12%
Other Services	49	2.21%
Public Administration	89	4.03%
	2,208	100.00%

Source: "The Economic Impacts of a Representative Mine in Ontario" – Ontario Mining Association, Dec. 2007

50% of the employment impacts are found directly in the construction sector, with manufacturing following at 8.96%.

The balance of the employment impacts are spread across the service sector with significant concentrations found in;

- retail (7.20%)
- wholesale (4.07%)
- and business services including
 - finance, insurance, real estate & leasing (4.12%),
 - professional, scientific & technical services (7.97%)
 - administrative & support services (2.49%)
 - accommodation & food (2.12%)
 - public administration (4.03%).

Cyclical Nature of Mining

The following table is from the Ontario Mining Association report – "The Economic and Fiscal Contribution of the Mining Industry in Ontario". It shows two aspects of the mining industry:

- the vast majority of all jobs in the mining industry are in production
- employment in the industry is highly cyclical.

Table 6: Mining Employment by Type of Position in Ontario

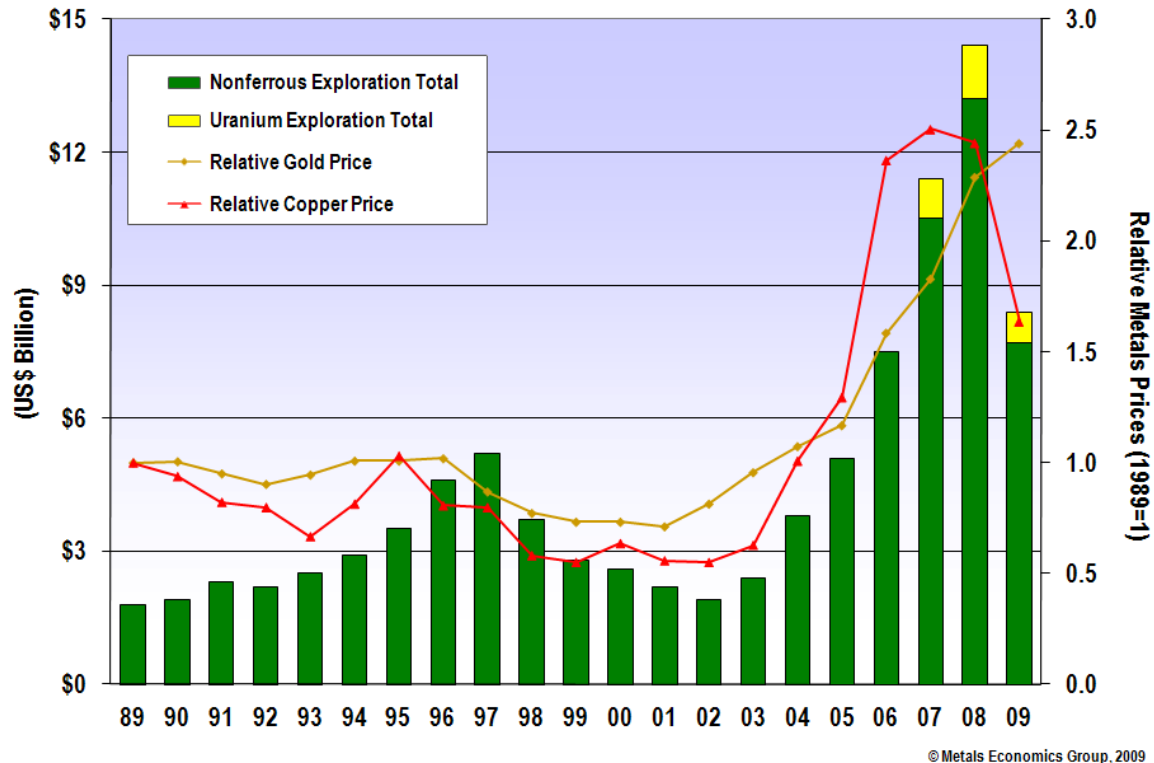
Occupation	'94	'95	'96	'97	'98	'99	'00	'01	'02	'03
Exploration	1,354	1,716	1,398	1,445	1,084	828	603	602	521	537
Production	13,990	14,939	15,427	15,285	12,964	12,950	12,629	12,006	11,504	11,224
Engineering	820	877	1,105	1,145	759	721	837	850	1,053	1,117
R&D	379	261	301	323	326	535	418	687	520	594
Consultants	141	160	8	57	55	10	10	9	8	8
Administration	2,621	2,784	2,971	3,099	2,977	2,818	2,482	2,323	1,924	1,997
Head Office	917	1,035	921	956	1,189	1,148	1,247	1,104	991	1,068
Total	20,221	21,773	22,130	22,309	19,353	19,010	18,226	17,582	16,521	16,545

Source: Ontario Mining Association – "The Economic & Fiscal Contribution of the Mining Industry in Ontario"

This table goes only to 2003 however another source, the *Metal Economics Group* tracks exploration activity on a global basis and they reported that after rising for six straight years to a 19-year record high of \$13.2 billion in 2008, estimated planned exploration spending for 2009 plummeted 42% to \$7.7 billion.

According to the 20th edition of *Corporate Exploration Strategies* (CES), produced by the *Metal Economics Group*, the global economic crisis and declining prices for almost all mineral commodities took their toll on the industry. The drop represents the largest year-on-year decline in global exploration budgets (in both dollar and percentage terms) since the Group began the CES study in 1989.

Estimated Global Nonferrous Exploration Budgets* and Relative Metals Prices, 1989-2009**



*1989-2006 CES did not include uranium; uranium exploration is included for 2007-2009.

**Relative metals prices for 2009 are an average through September 2009.

The *Corporate Exploration Strategies* report goes on to note:

“As aggregate groups, major, intermediate, and junior companies all made deep cuts to their exploration budgets in 2009. Not surprisingly, the bulk of the decline is attributable to the juniors, as their reliance on equity financings prompted most of them to cut exploration much more than the major and intermediate groups, whose deeper pockets at least gave them the option of continuing to fund exploration at higher levels. As a result, the majors now account for the largest share of this year’s exploration budget total after having been surpassed by the juniors’ planned spending in each of the past five years.

Despite the tougher times faced by the juniors, analysts’ projections at the onset of the market crash that “as much as 50% of junior explorers would not survive the next 12 months” have clearly not come true; the number of active junior explorers included in our 2009 study dropped just 6% from last year.

While attracting financing has not been easy for the majority of junior companies over the past year, the equity markets have not been as barren as some suggest, particularly as market sentiment has improved from earlier in the year. Over the first nine months of 2009, the junior explorers included in the CES have recorded more than 300 exploration-related equity financings on exchanges around the world (each raising a minimum of \$2 million), totaling more than \$4.7 billion.

Although not all the money a junior raises in the name of exploration will actually be spent on exploration, the amount raised by the group in exploration-related equity financings suggests that most will be able to fund their plans for this year. Moreover, if recent metals price and financing trends persist through the remainder of the year and into early 2010, it could stop the fall in global exploration spending next year; however, the general uncertainty over the sustainability of the economic recovery, combined with fears of market volatility, may suppress any meaningful increase to overall exploration budgets in the coming year.”

Source: Metals Economic Group

PROCUREMENT REQUIREMENTS IN EXPLORATION

Job opportunities during exploration projects are typically limited and short term, lasting only a few weeks to a few months however these opportunities are often attractive to First Nations communities because they allow community members to gain useful experience and skills expertise that may be transferable to other economic sectors. The lengths of the jobs depend on whether the exploration project is successful.

The single largest cost for an exploration company is for diamond drilling contractors which according to MNDNF represents up to 80% of the cost of exploration. It costs approximately \$40,000 per month for each rig on site. Drilling costs range from \$80 to \$120 per metre. Premier Gold for example currently has 5 rigs on site. Each rig has two man teams working twelve hour shifts.

Diamond drilling contractors are a select group of companies. There are only 30 active contractors Canada-wide. Their association membership directory can be found at this web address:

<http://www.canadiandrilling.com/directory.html>

Much of the work during exploration is carried out by specialists such as geologists, geophysicists, drill operators, and pilots. However projects also employ local personnel as field assistants, camp staff, line cutters, prospectors, and samplers.

Economic opportunities for communities during early exploration are limited, however as projects become more advanced there are a number of business opportunities that are generated by exploration such as:

Business Opportunities to Serve Exploration Companies

- Digging and trenching with heavy equipment;
- Tree planting;
- Construction of camps/camp staff;
- Food, accommodation, and catering;
- Expediting;
- Helicopter/air support rental;
- Equipment/vehicle rental and fuel;
- Drilling contracting;
- Transportation and freight services; and
- Environmental baseline studies
- Laboratories
- Hardware

Source: Natural Resources Canada

When it comes to organizing a field program, exploration companies commonly employ an expediting company to organize activities like camp setup, transportation, and catering.

PROCUREMENT REQUIREMENTS OF A MINE

According to Gary Dillard, a contributing writer for several mining periodicals, the most significant cost for open-pit gold mines is the energy it takes haul massive amounts of rock. Each ton of ore might contain only about 1/10th of an ounce of gold. With gold at \$1,110 an ounce, each ton is worth about \$110. But it's worth the cost of a \$2 million haulage truck because it can carry 300 tons or more in each trip. That makes a load worth a gross of \$33,300. (Cut that in half, since a mine might have to move a ton of waste to get to the ton of ore.)

But these huge trucks, with 2,000-gallon fuel tanks, burn tremendous amounts of diesel, amounting to perhaps 25 percent of total cash costs.

Underground mines, substitute electricity for diesel fuel. This energy must move massive amounts of rock as much as 2 miles to the surface. These ores are considerably richer than the material found in the large open pit, so each ton of underground-mine ore might contain ½ an ounce of gold and not require an accompanying ton of waste to be removed.

Open-pit mines also use large amounts of explosives. The most common blasting agent is ammonium nitrate (garden-variety fertilizer) mixed with fuel oil. This is manufactured from ammonia, which is a product of natural gas and thus dependent on the price of the feedstock. At the same time oil prices were rising, so were natural gas prices, so mining companies were being squeezed by those additional costs.

Another commodity input cost for open-pit mines is cyanide, which is used to leach the gold (and silver) from the ore.

Labor also is a significant cost, more in underground mines than in open pits, where larger equipment has substituted for additional workers. As we have noted in the economic impact section, Canadian mine workers are well paid and enjoy a generous benefits package.

We spoke with several mining operations trying to develop a list of goods and services required by an operating mine without success. We did learn that the range of products and services is vast. For example a representative of the Porcupine Mine operated by Goldcorp near Timmins told us that their total inventory consists of more the 12,000 items of which 1,200 individual items make up 80% of the total. Some of the leading items include:

Materials Required for Typical Mine Operations

- Gasoline & Diesel Fuel
- Lubricants
- Tires
- Electricity
- Explosives
- Underground Support Structures (timbers/fencing)
- Grinding Media
- Reagents (cyanide)
- Spares for the Rod Mill
- Crusher Parts
- Hydraulic Hoses and Fittings
- Drill Bits

Source; Interviews with Mine Operators

Most of the larger inputs would likely be sourced from outside the region however due to the range of products required a great many items could be sourced locally. For example the representative from Porcupine spoke of the importance of general hardware items such as lumber, ply wood, hinges, fasteners and tools of all sorts.

Another significant expense for an open pit mine is the repair and maintenance of the heavy equipment used on site. The Porcupine Mine has a service contract with Toromont CAT who have a base on site to service all the heavy equipment.

Mines also make use of a wide range of contractors for technical services and other services. The list of mine requirements is extensive:

Contracted Services Required by a Typical Mine

- Analytical Laboratories
- Shelters, Tents & Camps
- Consulting Geologists & Engineers
- Remote Sensing, GIS & Geo-data Processing
- Mining Engineering & Contracting
- Geophysical Surveys & Consulting
- Geophysical Instrumentation
- Environmental Management
- Drilling Equipment & Services
- Aviation Services
- Occupational Health & Industrial Hygiene
- Mapping Services

Source: MNDMF – What is a Mine

As noted in the report from the Ontario Mining Association (*“Ontario Mining: A High Tech Productivity Powerhouse”* by G&K Chartered Accountants, Dec. 2006) - 45% of the purchased goods and services by a mine are sourced locally – within 80 km of the mine site.

The same report notes that supplies and materials consume 28% of the mines operating budget with local labour consuming a further 23%.

CONCLUSIONS & RECOMMENDATIONS

In the previous report entitled “*Greenstone Region Gap Analysis and Market Study*” a number of recommendations intended to improve the “readiness” of the Greenstone region were provided. Those recommendations are applicable to the “Greenstone Region Mining Sector Strategy” and are repeated here for the benefit of the reader:

Recommendation

It is recommended that the Municipality of Greenstone take immediate steps to extend the runway at the Nakina Airport to 5,000 ft., and add to the fuel storage capacity available on site.

It is also recommended that the Municipality develop a limited number of building lots at the airport (similar to what has been done at Geraldton Airport) to ensure the continued growth and development of air services business and the Nakina Airport itself.

Recommendation

In addition to the land recommended for development at the Nakina Airport, we recommend the creation of an industrial park of between 40 and 60 acres with room to expand along the Hwy 11 corridor. The land should be zoned industrial and subdivided into serviced building lots of 2.5 to 5.0 acres.

Recommendation

It is recommended that the GEDC convene a meeting of power users who are or expect to be operating in the Beardmore-Geraldton Gold Camp, along with representatives from the Municipality and the Chamber of Commerce to develop a list of potential (future) power requirements for discussion with Hydro One to see if there is an economic method of improving the hydro service to the region.

Recommendation

It is recommended that Greenstone Economic Development Corporation launch an Awareness Campaign with the aim of informing the Greenstone region about the services provided by GEDC to the business community including the availability of capitalization to support all businesses in the community.

Recommendation

It is recommended that GEDC and the Municipality of Greenstone meet regularly to agree on roles and responsibilities in economic development programming, with particular attention paid to responding to inquiries from prospective investors.

Each of these recommendations still hold true for the Mining Sector Strategy. In addition we have further recommendations to make.

Market Monitor

The mining industry is very much like the food chain in nature with little fish being food for larger fish which are food for even larger fish and so on.

This results in a high degree of merger and acquisition activity in the mining industry and it is very likely that when mines are finally developed in the Beardmore-Geraldton Gold Camp it will be by a different list of companies than those we have identified in this report. The same is true for the Ring of Fire.

During the short time during which this report was being prepared there were several very significant corporate announcements. This underscores the importance of maintaining a market watch on the companies that are active in the Beardmore/ Geraldton Gold Camp and the Ring of Fire.

We have provided web-sites of companies wherever possible and these need to be checked routinely for news of new discoveries, public offerings and merger & acquisition activity. This is made somewhat easier due to the requirements of the Ontario Securities Commission and other regulatory agencies which insist on a fair degree of the transparency in the industry.

Recommendation

It is recommended that the Greenstone Economic Development Corporation assign a staff member to routinely monitor the web-sites and analyst reports for developments of interest among exploration companies active in the Beardmore-Geraldton Gold Camp and the Ring of Fire and to disseminate this information to stakeholders in the community to ensure they are aware of changes that could have a bearing on the Mining Strategy.

Labour Force Implications

In the Gap Analysis prepared for the GEDC we noted that

“The collapse of the forestry industry in the region was a double edged sword. It has caused anguish and pain for hundreds of families but it has also assured an ample supply of labour to meet the demands of the mining companies and their contractors currently considering new projects in the Greenstone area.”

The Greenstone Labour Adjustment Committee reported that 737 workers were affected by the closure of Longlac Wood Industries, Nakina Forest Products and Long Lake Forest Products and another 77 within the community whose layoffs could be attributed to those closures producing a total caseload of 814 affected workers in Greenstone.

As of October 31st, 2009 it was reported that 137 of those displaced workers were in school full time and 58% of the displaced workers (424) were still seeking employment opportunities. We understand that one of the popular training programs was for “diamond driller”.

Recommendation

It is recommended that as a first step, the resumes of the displaced workers on file with the Greenstone Labour Adjust Committee be reviewed for their relevance to exploration and mining operations. This will provide a picture of the training programs that need to be put in place to help prepare this available labour force for the expected jobs in the mining sector.

Mining was once a labour-intensive industry however improvements in equipment and the mechanization of many tasks have reduced the number of workers required. Wages have

increased rapidly in recent decades, and the need to mine larger tonnages of lower-grade ores and to increase productivity has become more urgent. Consequently the industry has become more capital intensive, and, in many mines, investment in equipment now exceeds \$100,000 per miner. Concurrently the proportion of conventional miners has diminished, while that of mechanics, electricians, technicians, etc, has increased.

Emphasis on “Mining Technology” a program that is being offered at Confederation College is well placed. Consideration should be given to expanding the program to the Geraldton Campus to be close to the industry.

Premier Gold has secured exploration agreements with the First Nations communities and we believe that training and employment featured prominently in those consultations. It will be imperative for the Greenstone region to explore and undertake talks with First Nations and Métis in the region to examine different sources of funding to better prepare the labour force.

Procurement Workshops/Seminars

If and when construction begins on the Hardrock Project and the rail line from Nakina to the McFaulds Lake area, there will be opportunities for local entrepreneurs to develop businesses to supply the material requirements of these two large developments.

Until such time as construction is scheduled to begin, local entrepreneurs should be looking at potential opportunities and seeing what supply requirements they might be able to meet.

We recommend the GEDC take a lead in providing a series of workshops and seminars on supplying the mining industry from a local base.

This is a tactic employed by the Thunder Bay Community Economic Development Commission with some success.

We believe that there is benefit to the Greenstone Economic Development Corporation to be gained from cooperating with their counterparts in Thunder Bay to further develop the mining supply chains. This acknowledges that due to “economies of scale” there will be a range of products that need to be sourced in a larger market (tires, fuel, explosives, reagents, etc.) but that there are also products with can more efficiently be supplied closer to the mine site.

Recommendation

It is recommended that at the appropriate time, the Greenstone Economic Development Corporation invite those companies that are expected to undertake exploration and potential development of mine sites in the Beardmore/ Geraldton Gold Camp and the contractors of the rail road from Nakina to McFaulds Lake to participate in procurement workshops with local entrepreneurs and suppliers to stimulate local sourcing of materials and services.

We say “at the appropriate time” because we suspect it would be premature to stage such a workshop now because it is still several years before development will begin on either the mine site or the railroad and it is unclear at this stage which companies will be involved.

In the meantime it is vital that our recommendations pertaining to sewage treatment capacity, hydro electric power, the airport infrastructure be addressed so that the community is ready for investment.

Conclusions

From all appearances events are unfolding as they should. As long as the wheels don't fall of the cart, every indication suggests that the Beardmore-Geraldton Gold Camp will once again be an active gold mining region and furthermore that Greenstone will be jumping off point for the supply of the Ring of Fire further north.

There are still a great number of uncertainties in the path, but if gold prices remain high and there is a continued demand for chromium, we feel cautiously optimistic that market forces will continue to drive development in the mining sector for Greenstone's benefit.

On the other hand several sources have comment on concerns over the progress of negotiations with First Nations communities, both in the Beardmore-Geraldton Gold Camp and the Ring of Fire. These negotiations are a source of uncertainty which can be of great concern to investors. Information sharing to all stakeholders is critical.

Greenstone needs to put the necessary infrastructure in place to capitalize on these opportunities but there is momentum and developments are moving forward on their own steam.