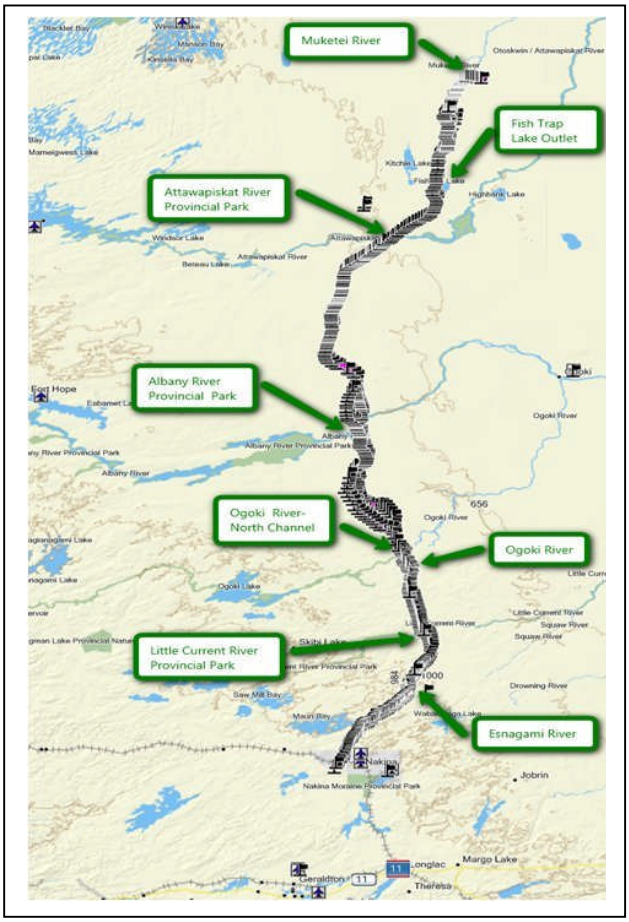
*The following was published in the Times Star, a community weekly based in Greenstone, Ontario, in January, 2010:*

**CANADA CHROME RAILWAY PROJECT**
**Ring of Fire Smoulderin'**
by Edgar J. Lavoie
**Section A – Project Overview**

If you want to move 4 million tonnes of rock every year, from the James Bay Lowlands to Greenstone, you need a railway. Canada Chrome Corporation has engaged a firm to recommend a route and to produce a feasibility study.




**The recommended route for the rail line runs north from Exton for 350 km with an anticipated 65 water crossings.**
***Presentation image.***

Canada Chrome Corp. is a subsidiary of KWG Resources Inc., one of the big players in the Ring of Fire, also known as the McFauld's Lake area. KWG has found the grand-daddy of all chromite deposits, and has called it, appropriately, the Big Daddy.

Chromium is the metal in chromite, and chromium is the essential metal in the manufacture of stainless steel alloys. No other metal can be substituted. Once chromite ore is mined, it is usually converted to ferrochrome at a smelter. Ferrochrome is an alloy of iron and chromium. Up to twenty-five percent of the weight of stainless steel is ferrochrome.

There is one tiny chromite mine in North America, located in the U.S.A. The Ring of Fire has the potential to become one of the world's leading suppliers of chromite, right up there with South Africa, which has seventy percent of the world's chromite reserves. There may be – now hold your breath for this – enough chromite in the Ring of Fire to keep mines operating there for a hundred and fifty years.

One hundred and fifty years. However, this is not going to happen this year or next year or even five years from now. It will take a lot of planning and studies and construction to bring a chromite mine into operation in the James Bay Lowlands.

On September 24th, 2009, KWG Resources announced that its subsidiary, Canada Chrome Corp., had engaged Krech Ojard & Associates, PA, of Duluth, Minnesota, to provide engineering services for the construction of a 250-mile (350-km) railway link to the Ring of Fire. The principal shareholder of KWG is Cliffs Natural Resources, an international company and the leading supplier of iron ore pellets in North America. Krech Ojard, a railroad engineering and construction firm, has over the years completed a number of projects for Cliffs.

On Wednesday evening, January 13th, Canada Chrome and Krech Ojard made a presentation to GANRAC – Geraldton Area Natural Resources Advisory Committee. M.J. "Moe" Lavigne, vice-president/exploration and development, represented Canada Chrome, and Nels J. Ojard, PE, spoke for the Krech Ojard firm.

Moe Lavigne began by explaining that a railway is necessary to, first, bring in the heavy equipment to develop a mine, and second, to bring out the ore, in either raw or concentrated form. Once it reaches the CN Rail main line near Nakina, it can be shipped practically anywhere to a smelter.

How big are the chromite discoveries? How rich? "The volume is bigger and richer than anything else found on the planet," said Lavigne.

Krech Ojard & Associates has evaluated several routes. The northern terminus of the recommended route begins a few kilometers west of McFauld's Lake itself, east of Webequie First Nation. For about two-thirds of its route, it runs more or less south across the muskegs and clays of the Lowlands. However, Krech Ojard has identified a series of glacial eskers and the potential of isolated sand and gravel borrow pits in proximity to the route. The last third of the route traverses typical Canadian Shield terrain. The southern terminus will be at Exton siding, just west of Nakina in the vicinity of the lumber mill of the Buchanan Group.

Proceeding north from Exton, the rail line will use or follow beside existing logging roads as far as the Little Current River for a distance of about 35 miles (Krech Ojard, an American firm, often used Imperial measurements in its presentation). For the next 25 miles, the presence of rock outcrops decreases, as does the presence of sand and gravel deposits, and the number of sections of low and wet ground increases. At this point, the line will have crossed the south and north forks of the Ogoki River.

For the remainder of the route, rock outcrops are few and far between, fine-grained glacial tills predominate, the ground is low and wet, and all are relieved by glacial deposits of sand and gravel on higher ground, including eskers.

From south to north, the elevation of the terrain decreases, from 1,050 feet above sea level at Exton to 500 feet lower at the northern terminus. All streams belong to the James Bay watershed, and flow north and east.

Nels Ojard stated that to date 65 water crossings have been identified, most of them requiring culverts. There will be many single-span bridges, and the larger rivers will require multiple-span bridges. The Little Current crossing, for example, is more than 550 feet; the Albany River, more than 700 feet; and the Attawapiskat, more than 1,250 feet.

**The crossing of the Albany River will be in excess of 700 feet.** ***Pres. image.***

A program of geotechnical drilling began this month, and will extend to April. The program will conduct subsurface sampling for the engineering properties of the soils, to delineate areas of permafrost, and to measure groundwater. In January and February, the program will focus on the northern section while the cold weather holds and water courses can be sampled from the ice. In March and April, the focus will shift to the southern section, where areas can be accessed by logging roads.

Another section of this article will describe how the drilling is carried out. In the Q&A session after the presentation, GANRAC members were surprised to learn that Krech Ojard expects to encounter very little permafrost.

**Section B – KWG's Big Daddy Deposit**

In its joint presentation on January 13th, Canada Chrome Corp. and Krech Ojard & Associates reviewed the development plans for KWG Resources' open pit mine. The Big Daddy chromite deposit stretches across the swampy terrain near McFauld's Lake.

KWG envisions multiple open pits to exploit the deposit, which is from 400 to 1,000 m wide, and from 200 to 450 m deep. From the pits alone, the mine would have a life of 150 years. There is also potential for underground development.

Moe Lavigne of Canada Chrome compared the site to the only chromite mine in the European Union, the Kemi in Northern Finland. The Kemi mine has reserves of 41.1 million (M) tonnes, and additional resources of 86.1 M tonnes. The Big Daddy deposit has, so far, outlined 450 M tonnes.

The Kemi resources described above have grades of 24.5% and 29.1% chromite. The Big Daddy has a grade of approximately 35%.

Other sources indicate that the Kemi mine, owned and managed by Outokumpu Chrome Oy, began production in 1968 with an open pit. The ore body has a strike length of 4.5 km and varies in thickness from a few metres to 105 m. Underground mining has already begun. Production is 1.2 M tonnes annually. The Big Daddy, on the other hand, anticipates 4 M tonnes annually from open pit operations.

**Aerial view of the open pit operation of the Kemi mine, Finland.** ***Pres. image.***

**Chromite – Fe(Mg,Al) Cr2O4 – is a very dark mineral.** ***Pres. image.***

On January 19th, Outokumpu announced that the Kemi mine reserves are far greater than previously believed. Up to that date, mine life had been estimated as 70 to 80 years. The company now believes the ore extends to depths of 2 or 2.5 km, and the mine life to be "hundreds of years".

KWG continues to drill and outline the Big Daddy deposit. Mine infrastructure will include a 150-person camp, a power transmission line, and all-weather airport, and of course, a railway to link up with the CN main line at Exton. Although the chromite ore is extremely rich, Lavigne suggested there may also be a concentration (an enrichment) of some of the ore before shipping. The Kemi mine ships concentrates as well as "upgraded lumpy ore".

It is interesting to note that Outokumpu has facilities nearby that produce ferrochrome and stainless steel products, easily shipped using nearby harbour facilities.

Before the January 13th presentation, KWG Resources had described its Big Daddy deposit extensively. KWG, in equal joint venture with Spider Resources Inc., had discovered chromite in March of 2006 on a property optioned from Freewest Resources Canada Inc. By December of 2008, KWG was referring to the discovery as the Big Daddy. It was within 5 km of chromite discoveries by Freewest and Noront Resources Ltd. (Refer to upcoming stories in this series.)

In December of 2009, KWG described the "Big Daddy Chromite Prospect" as having a strike length of 1,300 m and a depth of 325 m. The chromite remains open along strike in both directions and to depth.

**Section C – Surveys for Proposed Railway**

The geotechnical drilling program in which Canada Chrome Corp. and Krech Ojard & Associates are engaged this winter, involves two types of drill rigs. The work is being carried out by Golder Associates.

A Nodwell carrier is a double-tracked, multi-purpose vehicle that is capable of traversing terrain such as swamp, muskeg, and snow. It can be fitted with equipment such as a man lift, a backhoe, or a dozer blade. Golder Associates is using two Nodwell-mounted drill rigs to

conduct its winter program. The drill is a hollow stem auger for collecting soil and rock core samples, and measuring soil strength at depth.

The company is also using two conventional, stationary drill rigs north of the Albany River. To transport them to new locations, they are slung from helicopters. partially dismantled and

Before deciding on the recommended route, Canada Chrome staked claims along two alternative routes. The routes ran from the McFauld's Lake area to just south of the Albany River. From the Dusey Lake area, more alternative routes ran south to the CN line near Nakina, Exton, and Aroland FN.

At this stage, Canada Chrome had staked about 3,400 claim units along the alternative routes. Responding to an e-mail enquiry, Nels Ojard wrote, "The railway is considered an extension of the mine, as it will likely link the production pit with the crushing and concentrator facility . . ." An official of the Ministry of Natural Resources commented that it had authorized investigations on the land base in aid of a feasibility study.


**This past year, workers took soil samples from locations such as eskers. Note the helicopter transport.** ***Pres. images.***

The selection of the primary route depended on factors such as topography, soil conditions, water crossings, and availability of construction materials.

Krech Ojard arranged for an aerial LiDAR survey. LiDAR [pronounced LYE – dar] stands for Light Detection and Ranging. LiDAR provides a 3-D scan of terrain and vegetation. The survey enabled a 1-km-wide scan with a resolution of 0.15 m per pixel. Compare that with the baseline resolution of 15 m per pixel employed by Google Earth. (In some cities, however, the resolution may be several pixels per metre.)

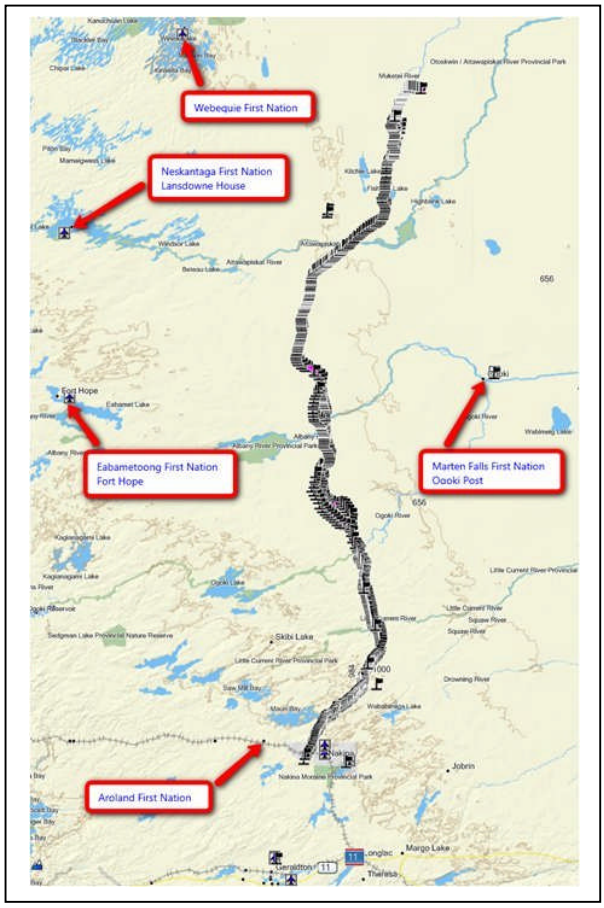
At the same time, high-resolution colour digital photography recorded the routes. The survey occurred from late September to mid October as the leaves were turning and before snow covered the ground. Both LiDAR and photography led to the creation of a 3-D map, which in turn led to a recommended right-of-way.

Combined with Geographic Information Systems (GIS) data from different sources, the company has created 3-D digital models of the recommended route. The models incorporate private and public data, such as model-generated elevation contours, park reserves, place names, environmental values information, and satellite imagery. Nels Ojard, a presenter, stated that even the colour of vegetation suggests the type of terrain; e.g., lighter-coloured hardwoods signify higher ground than the darker-coloured black spruce.

In the summer and fall, surveys included people on the ground. At intervals, workers used hand-held augers to collect soil samples, sinking augers up to depths of 30 feet or to "refusal", meaning that the auger met resistance. They bagged the samples, labeled them, and sent them to a lab for processing. By early December, the data had entered the GIS planning process.

**Section D – Other Activities in Progress**

Before a feasibility report is issued, there is much to be done. Route refinement continues, with a plan, profiles and cross-sections. Permitting and consultation are required in the areas of environment and archaeology. Cost estimates are a must. The presentation at the GANRAC meeting was one of a number of community-based consultations.




Several First Nation communities will be consulted on an on-going basis, including Aroland, Marten Falls (Ogoki), Eabametoong (Fort Hope), Neskantaga (Lansdowne House), and Webequie, and the FN organization of Matawa.

In the Q&A session after the presentation, Ojard described the proposed railway as a Class 3 heavy-load line, the same class as the CN main line. Lavigne stated that the initial estimate of the railway's cost is $600 M.

Residents of Greenstone, take note. Once the ore reaches Exton on the new private railway, it can go anywhere in Canada or the United States. Moe Lavigne stressed that the cost of power is a very large consideration in the smelting process. He pointed out that the X-Strata Copper smelter in Timmins is closing its doors and the Kidd mine ore will be transported to Rouyn-Noranda, Quebec, for processing. He suggested that the cheaper cost of power in Quebec is a big factor.

It is interesting to note there was no suggestion of building a smelter in Thunder Bay District, or using a port nearby.

The Ring of Fire is shaping up to be an economic powerhouse. How will economic benefits accrue to Greenstone? It will be up to the Municipality and its partners to figure that out.

**__THE END__**