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DST consulting engineers

March 1, 2013

DESCRIPTION OF DESIGNATED PROJECT UNDER THE CANADIAN ENVIRONMENTAL ASSESSMENT ACT, 2012

Proposed Redevelopment of the Griffith Iron Ore Mine

Northern Iron Corp.

Submitted to:
Canadian Environmental Assessment Agency
55 St. Clair Avenue East, Suite 907
Toronto, ON M4T 1M2

and

Ministry of Northern Development and Mines
435 James Street South, Suite B002
Thunder Bay, ON P7E 6S7

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List of Acronyms and Abbreviations

AANDC	Aboriginal Affairs and Northern Development Canada
ABA	Acid base accounting
The Agency	Canadian Environmental Assessment Agency
ANFO	Ammonium nitrate/fuel oil
ARD	Acid rock drainage
ATRIS	Aboriginal and Treaty Rights Information System
asl	Above sea level
ATK	Aboriginal Traditional Knowledge
AWS	Automated weather station
BIF	Banded iron formation
BSM	Broad-scale fish community monitoring
CEAA	*Canadian Environmental Assessment Act*
CO	Carbon monoxide
CO_2	Carbon dioxide
Cr	Chromium
Cu	Copper
CWS	Canadian Wildlife Service
Dillon	Dillon Consulting Limited
DRI	Direct reduced iron
DFO	Department of Fisheries and Oceans/Fisheries and Oceans Canada
DST	DST Consulting Engineers
EA	Environmental Assessment
EC	Environment Canada
ECA	Environmental Compliance Approval
EEM	Environmental Effects Monitoring
EGR	Exhaust gas re-circulations
FBMP	Forest Bird Monitoring Program
Fe	Iron
ft	Feet
GHG	Greenhouse gas
Goldcorp	Goldcorp Canada Ltd.
GSC	Geological Survey of Canada
HADD	Harmful alteration, disruption or destruction of fish habitat
HBI	Hot briquetted iron
IFNA	Independent First Nations Alliance
kg	Kilogram
km	Kilometre
kV	Kilovolt
L	Litre
LUS	Land Use Strategy

LWCB	Lake of the Woods Control Board
m	Metre
MAA	Ministry of Aboriginal Affairs
mi	Mile
MISA	Municipal Industrial Strategy for Abatement
ML	Metal leaching
mm	Millimeter
MMER	Metal Mining Effluent Regulations
MNR	Ministry of Natural Resources
MNDM	Ministry of Northern Development and Mines
MNO	Métis Nation of Ontario
Mo	Molybdenum
MOE	Ministry of Environment
MW	Megawatt
Ni	Nickel
NIC	Northern Iron Corp (the Company)
NO_x	Nitrogen oxides
NTS	National Topographic System
N_2O	Nitrous oxide
OP	Official Plan
O. Reg.	Ontario Regulation
OSAP	Ontario Stream Assessment Protocol
OWRA	*Ontario Water Resources Act*
PAH	Polycyclic aromatic hydrocarbons
Pb	Lead
PCV	Positive Crankcase Ventilation
PD	Project Description
pH	Acid alkaline balance
PM	Particulate matter
PM_{10}	Particulate matter with aerodynamic diameter less than 10 microns
$PM_{2.5}$	Particulate matter with aerodynamic diameter less than 2.5 microns
The Guide	The Guide to Preparing a Description of a Designated Project under the Canadian Environmental Assessment Act 2012
The Project	Griffith Mine redevelopment
ROW	Right-of-way
PTTW	Permit to Take Water
PWQO	Ontario Provincial Water Quality Objectives
SCR	Selective catalytic reductions
SO_2	Sulphur dioxide
Sn	Tin
TBD	To be determined
TEK	Traditional Ecological Knowledge
TLU	Traditional Land Use
TMA	Tailings management area
tpa	Tonnes per annum

tpd	Tonnes per day
TSP	Total suspended particulates
V	Vanadium
VOC	Volatile Organic Compound
WRM	Water Resource Management
ZB	Zoning By-law

Preamble

Northern Iron Corp. (NIC) is a natural resource and mining company in the business of acquiring and exploring mineral properties primarily in the Red Lake Mining Division in northwestern Ontario. These include the El Sol Property, the Karas Property, the Papaonga Property, the Whitemud Property, and the Griffith Property, the site of a past-producing iron ore mine in the Township of Ear Falls.

Prior to the recent changes in the *Canadian Environmental Assessment Act* (CEAA), Dillon Consulting Limited (Dillon) and DST Consulting Engineers (DST) were retained by NIC to undertake a Scoping Study to determine potential environmental assessment and permitting requirements for the re-establishment of the Griffith Mine. During the development of the Scoping Study, changes were made to the CEAA which have implications for environmental assessment (EA) requirements. While the original Scoping Study identified that it may be possible to re-establish the mine without triggering the CEAA, new regulations do not require a "trigger" in order for a project to be designated under the Act. In fact, a mine such as the Griffith Mine would be considered to be a "Designated Project" under the CEAA 2012. This Project Description (PD) was therefore modified to meet the new requirements of the Canadian Environmental Assessment Agency (the Agency). It has been drafted in accordance with the *Guide to Preparing a Description of a Designated Project under the Canadian Environmental Assessment Act, 2012* (July 2012) (the Guide) in order to better assist decision making with regard to the applicability of the CEAA 2012, while providing other interested parties with information regarding the proposed redevelopment of the Griffith Mine.

The re-establishment of the Griffith Mine will:

- dewater the existing north open pit in order to continue advanced exploration (under a permit to take water [PTTW] received from the Ministry of the Environment [MOE] which assesses water quality, quantity, discharge conditions and public comments through a posting on the Ontario Environmental Bill of Rights Registry);
- continue mining operations to deepen the existing north open pit under provisions of the *Mining Act* (1990, as amended);
- re-use established waste rock and tailings areas including containment facilities;
- re-use the existing road and rail network (and/or upgrade as necessary);
- re-use existing waste rock for any aggregate requirements through a licence granted by the Ministry of Natural Resources (MNR);
- require a new supply of natural gas to the mine by twinning the existing Union Gas pipeline that parallels Highway 105 from the vicinity of Highway 17;
- require the development of a natural gas-fired generating station (to be owned, permitted, constructed, operated and decommissioned by others) capable of supplying 60 megawatts (MW) to the mine, or a 115 kilovolt (kV) transmission line from the Dryden area (to be owned, operated and decommissioned by Hydro One);
- re-use the existing facilities area for the proposed new processing facilities;
- be subject to a host of permits as outlined in **Appendix 1** in order to operate the facility;
- prepare a mine Closure Plan as per Ministry of Northern Development and Mines (MNDM) requirements (*Ontario Regulation 240/00*); and
- provide for rehabilitation of the existing south tailings management area (TMA).

The definition of "environmental effects" in CEAA 2012 has been reduced in scope and narrowed to focus on environmental effects that fall under federal areas of responsibility. Taken in conjunction with other federal

acts such as the *Fisheries Act* (which focuses on the protection of fisheries rather than fish that might be found in the tailings impoundment area), it appears to reduce the environmental effects that would fall under federal jurisdiction.

With respect to EA requirements, while there are no apparent EA triggers at the provincial level other than for project specific components like a natural gas pipeline and a natural gas-fired power plant or transmission line, that would be constructed by others, the municipality of the Township of Ear Falls has a requirement in their Official Plan that an EA be undertaken to their requirements, **incorporating the requirements of provincial and federal agencies**. NIC will work with the municipality to ensure that their requirements are addressed in the EA being conducted under CEAA 2012.

1 General Information and Contacts

1.1 General Description of the Project

The Griffith Mine Project is a proposed redevelopment of a brownfield site within the Township of Ear Falls in northwestern Ontario (**Figure 1**). The former Griffith Mine produced iron pellets from 1968 until 1986 and sponge iron during 1975 and 1976 for the Steel Company of Canada Limited (now US Steel Canada). NIC is currently engaged in re-establishing the Griffith Mine.

The 2,928 hectare Griffith Property consists of 18 patented contiguous ground-staked mining claims. In August 2010, NIC acquired 100% ownership of the Griffith Property mining claims. The proposed Project consists of the redevelopment of an open pit mine with waste rock storage at the site along with the development of associated infrastructure, an ore processing facility, and tailings management facilities. Most of the mining components are anticipated to remain in areas generally consistent with the previous mining operations. The projected lifespan of the re-established mine (i.e. the north pit) is expected to be approximately 20 years, based on a production rate of slightly more than 4,000 tonnes per day of HBI, from about 16,000 tonnes of iron ore.

The purpose of the re-established mine is to extract iron ore for processing and to produce hot briquetted iron (HBI) ore for sale. HBI is a premium steelmaking raw material designed for ease of shipping and storage. NIC has negotiated two off-take agreements for iron extracted from the Griffith Mine. China Railway Materials Import and Export Co. Ltd. has ordered 900,000 metric tonnes of HBI annually, to be delivered starting in 2016. This order represents approximately two thirds of the anticipated annual production of HBI at the Griffith site. In addition, on September 5, 2012, NIC announced the receipt of an order from Tianjin Materials & Equipment Group Corporation of China for 60,000 metric tonnes of HBI to be delivered annually, starting in 2016. The rest of the production will be offered for sale to the world market. Press releases regarding these off-take agreements issued by NIC on May 23, 2012 and September 5, 2012 are available on the company's website at www.northernironcorp.com/news. These press releases are an important means of communicating progress updates on the Griffith Mine to the investment community.

1.2 Proponent Contact Information

1.2.1 Name of Designated Project

This Project is commonly referred to as the Griffith Mine; however, it has also been referred to as Bruce Lake Mine. For the purposes of this report, the Project will be referred to as the Griffith Mine or Griffith Mine Redevelopment.

1.2.2 Name of the Proponent

Northern Iron Corp.

MANITOBA

ONTARIO

Red Lake

Ear Falls

105

Sioux Lookout

72

Dryden

17

Kenora

71

Lake of the Woods

Rainy River

Fort Frances

11

17

11

Lake Nipigon

Thunder Bay

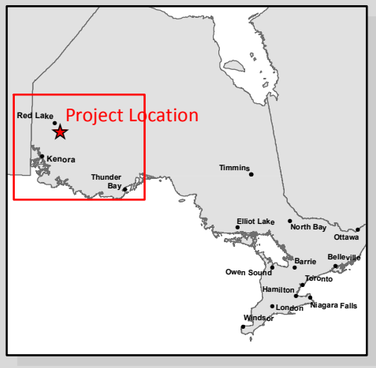
Lake Superior

U. S. A.

GRIFFITH MINE REDEVELOPMENT

GENERAL PROJECT LOCATION
FIGURE 1

AREA OF INTEREST



1:1,850,000

0 25 50 100 km

N W E S

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNR

MAP CREATED BY: GM
MAP CHECKED BY: MB
MAP PROJECTION: NAD 1983 UTM Zone 15N

FILE LOCATION: I:\GIS\126239 - Griffith Mine\Mapping

DILLON CONSULTING

PROJECT: 12-6239
STATUS: DRAFT
DATE: 12/7/2012

1.2.3 Address of the Proponent

Unit 1051 - 409 Granville Street
Vancouver, BC V6C 1T2
Tel: 604-566-8570
Fax: 604-602-9867
Website: www.northernironcorp.com

1.2.4 Chief Executive Officer

Basil Botha, President CEO
409 Granville Street, Suite 1051
Vancouver, BC V6C 1T2
Tel: 604-566-8570
Fax: 604-602-9867
Email: bbotha@northernironcorp.com

1.2.5 Principal Contact Person

Cameron Tymstra, Operations Officer
141 Adelaide Street West, Suite 340
Toronto, ON M5H 3L5
Tel: 647-725-3794
Fax: 647-725-3796
Email: ctymstra@northernironcorp.com

1.3 Parties Consulted During the Preparation of the Project Description

Consultations with MNDM, Aboriginal Affairs and Northern Development Canada (AANDC) and the Agency have identified that there are First Nation communities in the area surrounding the Griffith Mine that may have an interest in the Project. NIC has initiated preliminary consultation activities with First Nations listed in **Table 1**. Aboriginal engagement with First Nations and Métis identified by the Agency and MNDM will continue throughout the preparation of the EA, and through the development, operation and decommissioning of the mine. Correspondence with MNDM, AANDC and MAA is provided in **Appendix 2**.

Consultation with federal, provincial, and municipal regulatory agencies has been initiated and will continue throughout the preparation of the EA, as well as the development, operation and decommissioning of the mine. Consultation activities conducted thus far included stakeholders identified in **Table 2**. A full list of Project stakeholders, including Aboriginal and non-Aboriginal parties, is provided in **Appendix 3**.

Following the submission of the PD, Aboriginal communities identified will be notified and extended an offer to meet with NIC to obtain further information on the Project and express any comments and/or concerns related to their traditional territory. Stakeholder consultation completed to date and plans for future engagement are discussed in greater detail in **Sections 6** and **7**.

Table 1: First Nations Pre-submission Consultation

First Nation	Contact
Grassy Narrows First Nation Chief Simon Fobister	General Delivery Grassy Narrows, ON P0X 1B0 807-925-2202
Lac Seul First Nation Chief Clifford Bull	P.O. Box 100 Hudson, ON P0V 1X0 807-582-3211
Cat Lake First Nation Chief Matthew Kewaykapow	P.O. Box 81 Cat Lake, ON P0V 1J0 807-347-2100
Mishkeegogamang (New Osnaburgh) Chief Connie Grey-McKay	1 First Nation Street Mishkeegogamang, ON P0V 2H0 807-928-2414
Wabaseemoong Independent First Nation Chief Eric Nelson Fisher	General Delivery Whitedog, ON P0X 1P0 807-927-2000
Slate Fall First Nation Chief Lorraine Crane	48 Lakeview Drive Slate Falls, ON P0V 3C0 807-737-5700
Métis Nation of Ontario President Gary Lipinski	500 Old St. Patrick St., Unit D Ottawa, ON K1N 9G4 613-798-1488
Grand Council of Treaty 3 Chief Warren White	P.O. Box 1720 Kenora, ON P9N 3X7 807-548-4214
Wabauskang First Nation Chief Leslie Cameron	P.O. Box 339 Ear Falls, ON P0V IT0 807-529-3174

Table 2: Pre-submission Stakeholder Consultation Contacts

Stakeholder	Contact
Mayor, Red Lake Phil Vinet	2 Fifth Street Balmertown, ON P0V1C0 807-735-2096 ext.233
Economic Development Officer, Red Lake Bill Greenway	2 Fifth Street Balmertown, ON P0V1C0 807-735-2096 ext.238
Mayor, Ear Falls Kevin Kahoot	P.O. Box 309; 2 Willow Crescent Ear Falls, ON P0V 1T0 807-222-3624 ext. 30 kkahoot@ear-falls.com

Stakeholder	Contact
Chief Building Official, Fire Chief & By-Law Enforcement, Ear Falls Gary Gazankas	P.O. Box 309; 2 Willow Crescent Ear Falls, ON P0V 1T0 807-222-3732 ggazankas@ear-falls.com
Clerk Treasurer & Administrator, Ear Falls Kimberly Balance	P.O. Box 309; 2 Willow Crescent Ear Falls, ON P0V 1T0 807-222-3624 x 27 kballance@ear-falls.com
Mayor, Dryden Craig Nuttall	30 Van Horne Avenue Dryden, ON P8N 2A7 807-223-6119 cnuttall@dryden.ca
City Manager, Dryden Joe van Koeverden	30 Van Horne Avenue Dryden, ON P8N 2A7 807-223-1194 jvankoeverden@dryden.ca
Ministry of Northern Development and Mines Patrick Barnes	435 James Street South, Suite B002 Ontario Government Building Thunder Bay, ON P7E 6E3 807-475-1583 patrick.m.barnes@ontario.ca
Department of Fisheries and Oceans Neville Ward	100 Main Street, Suite 425 Thunder Bay, ON P7B 6R9 807-346-8251 neville.ward@dfo-mpo.gc.ca
Environment Canada David Laverdiere	4905 Dufferin Street Toronto, ON M3H 5T4 416-739-5872 David.Laverdiere@ec.gc.ca
Canadian Environmental Assessment Agency Steve Woolfenden Amiel Blajchman Ellen Campbell	55 St. Clair Avenue East, Suite 907 Toronto, ON M4T 1M2 416-952-1576 Amiel.Blajchman@ceaa-acee.gc.ca
Pakwash Lake Camp Owners Association	P.O. Box 330 Red Lake, ON P0V 2M0

1.4 Other Relevant Information

1.4.1 Regulatory Requirements of Other Jurisdictions

Appendix 1 provides a summary of potential permit and approval requirements of federal, provincial and municipal agencies. The summary provides information regarding the type of approval, the approval body, the Act and/or regulation, and the applicability to the Griffith Mine. Provincial permits and approvals will be coordinated through the MNDM "One Window" coordination process where MNDM coordinates provincial responses to the proposal. The permits span all aspects of pre-development, construction, operation and closure of the mine. Further details related to closure planning are included in **Section 2.1** and **2.5.2.3**. The required Environmental Compliance Approval (ECA) is addressed in **Section 2.4.2** and **2.4.3**.

With respect to EA, mining is not designated under Ontario's EA Act and thus not subject to the Act. Some greenfield mining developments have chosen to voluntarily designate themselves as being subject to an Individual EA under the Ontario EA Act. The Griffith Mine redevelopment is being undertaken on an existing brownfield site and NIC has not voluntarily designated the Project as being subject to a provincial Individual EA. The only components requiring a provincial EA (natural gas pipeline and electricity supply) will be subject to established EA processes as follows:

- The *Ontario Energy Board Act* requires an EA under the Ontario Energy Board (OEB) "Environmental Guidelines for the Location, Construction and Operation of Hydrocarbon Pipelines and Facilities in Ontario" to establish a new gas pipeline supply to service the Mine;
- A screening EA is required under the Electricity Regulation (O. Reg. 116/01) in order to locate a natural gas-fired power plant that could provide up to 60 MW of electrical power to the mine; and
- An individual EA for an electrical transmission line greater than 50 km may be required should the natural gas-fired power plant option not be chosen.

Further, the Township of Ear Falls requires an Environmental Impact Assessment as a condition of Site Plan Approval (*Planning Act*, RSO 1990, c. P. 13). More information is found in **Section 3.2** of this PD.

NIC currently holds the majority of the lands associated with the mine through claims, patents or agreements. A small amount of Crown land will be required and will be applied for under the *Mining Act (1990 as amended 2009)* rather than the *Public Lands Act*. As such, the MNR Class EA for Resource Stewardship and Facility Development will not be triggered for public land disposition.

NIC currently holds all permits required for carrying out the current drilling and exploration program being undertaken at the Griffith Mine and is in the process of acquiring additional permits required for future production. An application for a Permit to Take Water (PTTW) was submitted to the Ministry of the Environment (MOE) in December 2011 and approved in August 2012. See **Section 2.4.2** for more details.

1.4.2 Regional Environmental Studies

Under the CEAA 2012, the Minister of the Environment has authority to establish a committee jointly with other jurisdictions to conduct regional studies - a Regional Environmental Assessment - for regions outside federal lands (CEAA, 2012b). The Agency was contacted for information regarding any regional environmental

studies that may be relevant. A response from Stephanie Davis of the Canadian Environmental Assessment Agency, dated July 31, 2012, indicated that there are no regional studies in the vicinity of the Project.

While not defined as a "Regional Environmental Study," the Trout Lake Forest, which the mine site is within, is managed under a sustainable forest licence issued by MNR to Domtar Pulp and Paper Products Inc. As a result, there is a Forest Management Plan (FMP) which applies to the general area surrounding the mine. The Griffith Mine is not subject to the FMP since the area of the open pit, waste rock management areas, tailings management areas and facility areas have removed the existing forest cover. Further, the majority of this area is considered private land, through previous dispositions. The Griffith Mine redevelopment is in compliance with the applicable MNR land use policies in this area, which are described further in **Section 3.2.3**.

2 Project Information

2.1 Project Description

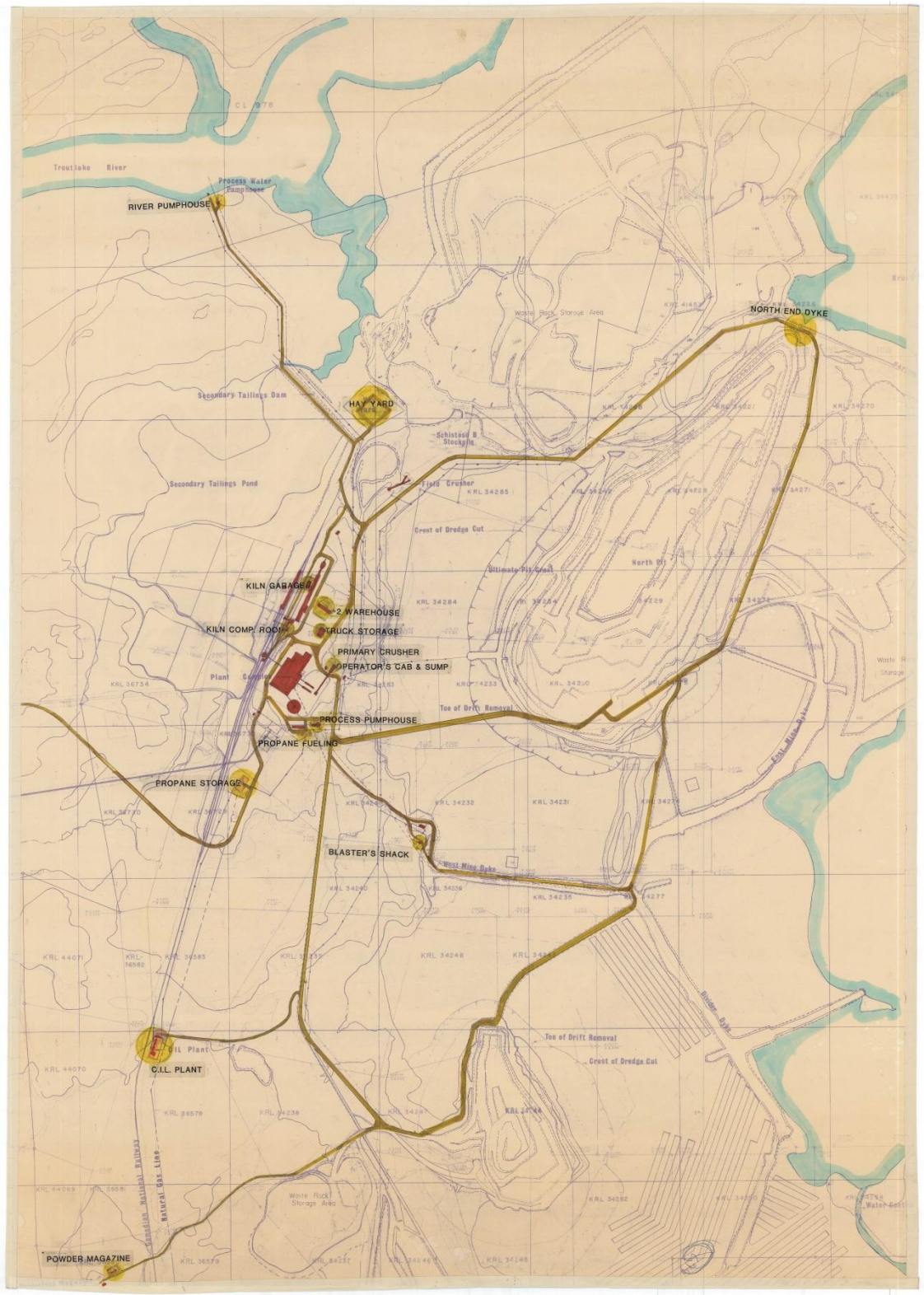
NIC, which is a natural resource and mining company that acquires and explores mineral properties primarily in northwestern Ontario, is proposing to re-establish the Griffith Mine. The mine that operated on the Griffith Property was referred to as the Griffith Mine after Taconite Lake Iron Co. Ltd. assigned all of its interest in the Griffith Property to Stelco by indenture on August 16, 1965. The mine was referred to as the Griffith Iron Mine until its closure by Stelco on March 31, 1986. At that time, the mine consisted of two open pits (north and south), an ore processing facility west of the north pit, waste rock storage areas north, east and south of the north pit, and tailings management areas generally located east of the north and south pits (**Photograph 1, 2** and **3**). **Figure 2** provides an historic drawing of the mine layout, while **Figure 3** is a 1:50,000 scale National Topographic Series map of the area. The only remaining structures on-site are some concrete foundations and the lower section of the rail load-out facility.

Photograph 1: Aerial View of Historic North Pit

Photograph 2: Aerial View of Historic Griffith Mine Operations

Photograph 3: Aerial View of Access to Historic Griffith Mine Site

Figure 2: Historical Griffith Mine Layout

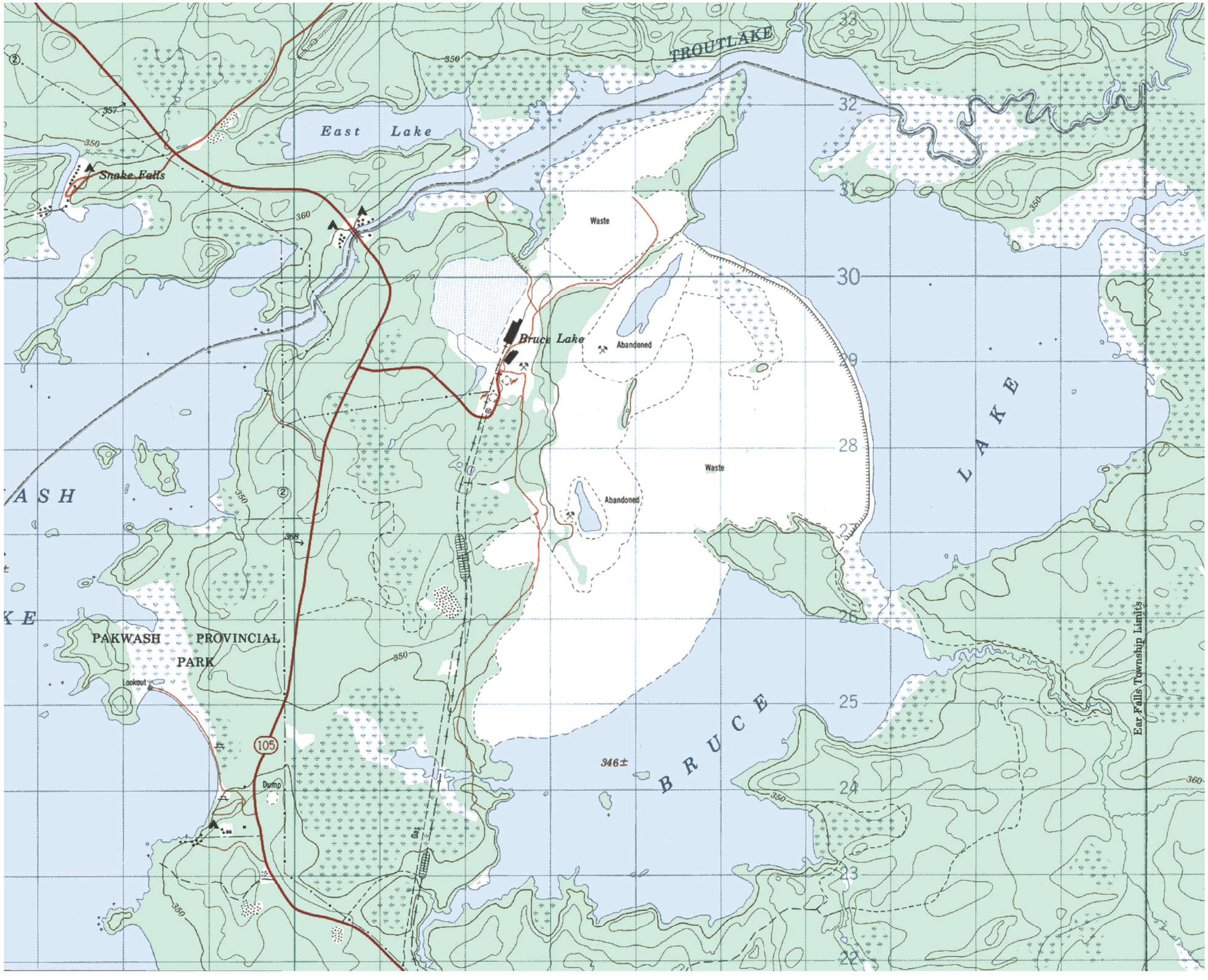


Source: Northern Iron Corp. [NIC], n.d.a

GRIFFITH MINE REDEVELOPMENT

NATIONAL TOPOGRAPHIC SYSTEM (NTS) MAP

FIGURE 3



BUILDING

CAMPGROUND

PICNIC SITE

DYKE

GAS PIPELINE

RAILWAY

TRANSMISSION LINE

GRAVEL PIT

WETLAND

1:43,000

0 0.5 1 2 km

N W E S

MAP DRAWING INFORMATION:
DATA PROVIDED BY NATIONAL TOPOGRAPHIC SERIES

MAP CREATED BY: GM
MAP CHECKED BY: MB
MAP PROJECTION: NAD 1983 UTM Zone 15N

FILE LOCATION: I:\GIS\126239 - Griffith Mine\Mapping

DILLON CONSULTING

PROJECT: 12-6239

STATUS: DRAFT

DATE: 1/4/2013

The proposed Project consists of the redevelopment of an open pit mine with waste rock storage at the site along with the development of associated infrastructure, an ore processing facility, and tailings management facilities. Most of the mining components are anticipated to remain in areas consistent with the previous mining operations. NIC is engaged specifically in re-establishing the north pit and associated mining components. The north pit is currently being dewatered and its access ramps refurbished to facilitate further drilling in order to confirm the size of the remaining deposit. The footprint of the north pit is expected to remain, with the depth increasing from 102.1 m to 335.28 m, which was the previously planned depth of the Griffith Mine. **Section 3.1.2** provides a preliminary concept plan for the redevelopment of the mine.

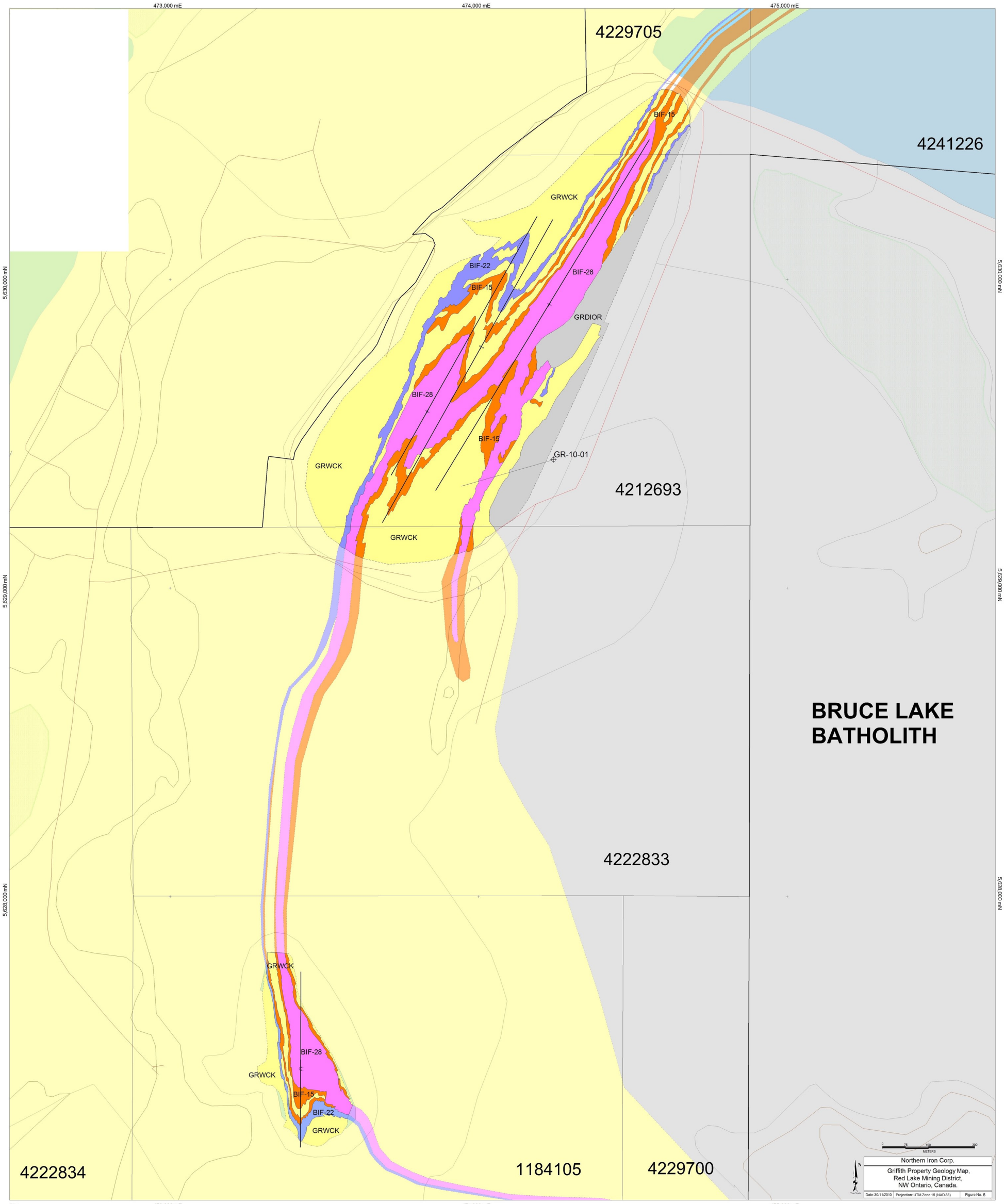
The purpose of the redevelopment Project is to extract iron ore for processing and to produce HBI ore for sale. HBI is a premium steelmaking raw material that contains 91% to 94% Fe (Iron) that can be used in the iron blast furnace, the basic oxygen steelmaking converter, and the electric arc furnace. HBI is a compacted form of direct reduced iron (DRI), designed for minimizing shipping and storage costs. HBI is predominately exported from countries such as Venezuela, Iran and India. It has distinct operating benefits for manufacturing because of its iron concentration, density, purity and application flexibility in steel production. It is also desirable because of its ability to increase blast furnace productivity and significantly reduce the use of coke (NIC, n.d.b).

The Griffith Mine contains a typical northern Ontario Algoma-type iron formation deposit (**Figure 4**). Iron deposits in Algoma-type iron-formations consist mainly of oxide and carbonate lithofacies that contain 20 to 40% Fe as alternating layers and beds of micro- to macro-banded chert or quartz, magnetite, hematite, pyrite, pyrrhotite, iron carbonates, iron silicates and manganese oxide and carbonate minerals. The deposits are interbedded with volcanic rocks, greywacke, turbidite and politic sediments; sequences are commonly metamorphosed (Hutchings, 2011).

The north pit deposit (474,020 m E; 5,629,620 m N, Zone 15) is north trending and crescent-shaped consisting of a magnetite-quartz (chert, jasper) iron formation interlayered with hematite rich chert and some intercalated greywacke. In 1970, the dimensions of the north deposit were estimated at 610 m (2,000 ft) in length, having a variable width of 61 m (200 ft) at the northern end to approximately 183 m (600 ft) at the southern end, due to folding which produced repetition of units (Hutchings, 2011). The proposed ore production rate is slightly more than 4,000 tonnes per day (tpd) of HBI, while the proposed mill rate is approximately 16,000 tpd of ore.

It is estimated that there will be an average workforce of 300 persons per year during the operations phase of the mine. During construction, the workforce could peak at about 1,000 persons per year. Employees for the Project will be sourced locally where possible. Living quarters will be provided on-site for the construction phase only.

As per the requirements of Part VII of the *Mining Act (1990 as amended 2009, c. M. 14)*, a certified Closure Plan will be submitted for the Project. The Closure Plan will be prepared based on specific requirements outlined in *Ontario Regulation 240/00* and will include a description of the method, schedule, cost and financial assurance of all rehabilitation of the disturbed areas including watercourses and land. These disturbed areas will be restored to pre-development conditions to the extent feasible. This would include stabilizing the tailings that were placed into the water of the south TMA by encouraging growth of aquatic plants to bind the colloidal clay particles of the tailings. An assessment will also be undertaken with respect to the removal of the barriers to facilitate water flow and fish passage between the north and south basins.



Notes:
1. Geology derived in part from digital OGS files.
2. Geology derived in part from geological mine plans and sections of Griffith Mine (Unknown, 1985).
3. Geography derived from digital OGS files.
4. Claim boundaries NOT SURVEYED, location derived from MNDM ClaimMaps.

Map Source: **Hutchings, 2011.**

GRIFFITH MINE REDEVELOPMENT

GRIFFITH PROPERTY GEOLOGY
FIGURE 4

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Legend

Rock Types

Recorded and Observed in Mine Pits

GRWCK	Greenschist to amphibolite grade interlayered meta-greywackes and mafic to felsic meta-volcanics.
BIF-28	Banded iron formation, primarily sillicate and oxide facies, 28% Fe from magnetite.
BIF-22	Banded iron formation, primarily sillicate and oxide facies, 22% Fe from magnetite.
BIF-15	Banded iron formation, primarily sillicate and oxide facies, 15% Fe from magnetite.
GRDIOR	Massive medium grained granodiorite from the Bruce Lake Batholith.

Inferred

	Greenschist to amphibolite grade interlayered meta-greywackes and mafic to felsic meta-volcanics.
	Banded iron formation, primarily sillicate and oxide facies, 28% Fe from magnetite.
	Banded iron formation, primarily sillicate and oxide facies, 22% Fe from magnetite.
	Banded iron formation, primarily sillicate and oxide facies, 15% Fe from magnetite.
	Massive medium grained granodiorite from the Bruce Lake Batholith.

Other

Drillhole collar — Drillhole plan view

Geography

Roads
Rivers
Topography contours
Edge of outcrops
Northern Iron Corp. Claims
Swamps
Lakes

Structural Symbols

Fold axis, synclin
Fold axis, anticline
Fold axis, overturned syncline
Observed contact
Inferred contact

2.2 Designated Activities

Based on the CEAA 2012, the Griffith Mine redevelopment is a Designated Project under Section 15 of the *Regulations Designating Physical Activities*. Specifically, this section states that an EA may be required when an undertaking involves "*the construction, operation, decommissioning and abandonment of:*

(a) a metal mine, other than a gold mine, with an ore production capacity of 3,000 tpd or more; and

(b) a metal mill with an ore input capacity of 4,000 tpd or more…"

The Griffith Mine will mill approximately 16,000 tpd of ore and produce approximately 4,000 tpd of HBI.

2.3 Components and Activities

The Project components would be re-instated in the general area they were located during the previous mine operation, in order to take advantage of the existing road infrastructure and to minimize additional areas that would be impacted.

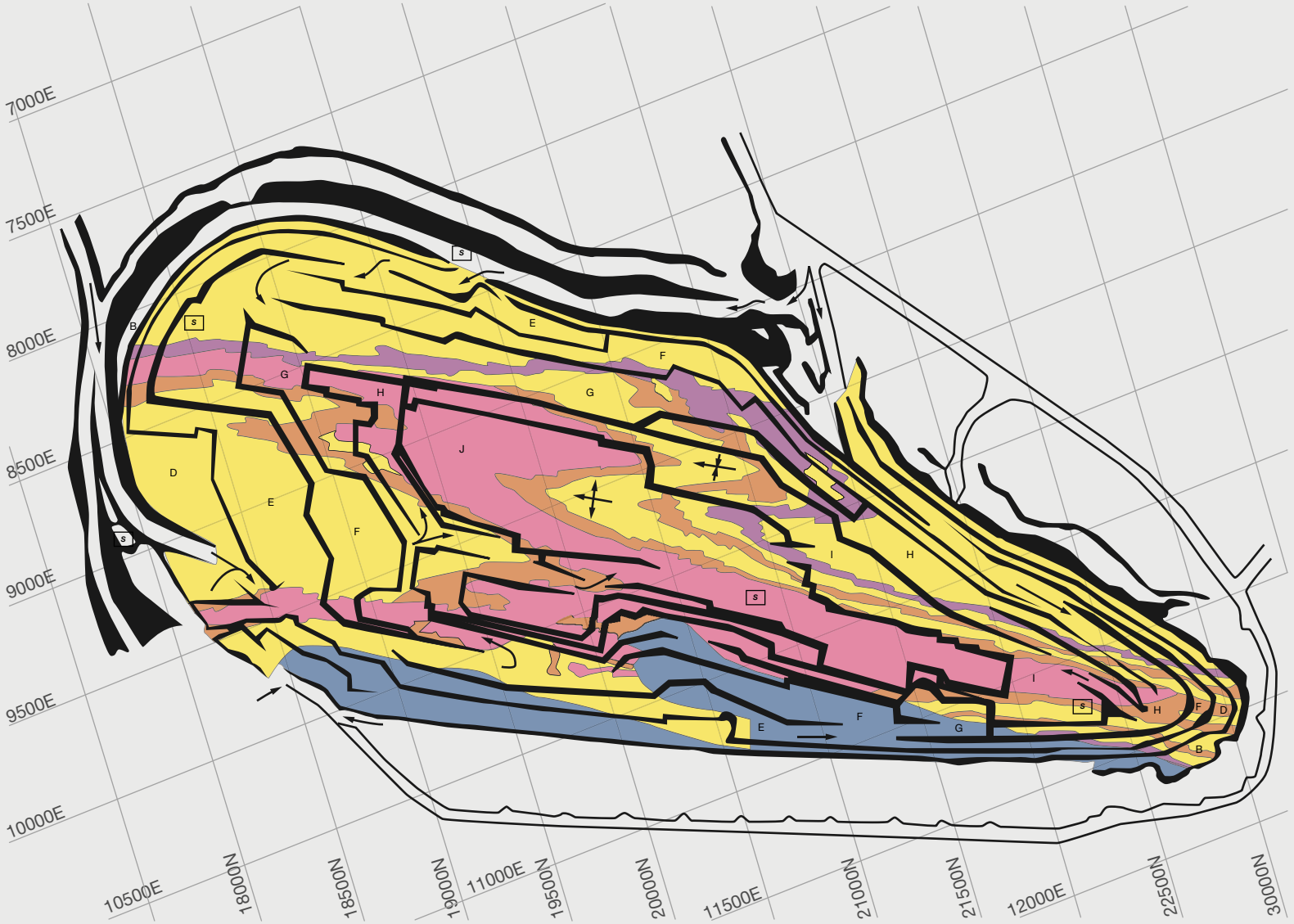
2.3.1 Major Physical Features

2.3.1.1 Open Pit

Dimensions of the north pit at the time of the 1986 closure were approximately 1,828.8 m long x 609.6 m wide x 102.1 m deep (6,000 ft x 2,000 ft x 335 ft). The planned ultimate depth of the pit was 335.28 m (1,100 ft), although it was only mined to a depth of 102.1 m (335 ft). The pit was designed with an overall slope angle of 53½° and a grade on haul ramps of 10%. Elevations of benches numbered A to J are 345.94 m to 249.93 m (1,135 ft to 820 ft) above sea level (asl) (Hutchings, 2011). In summary, the plan is to keep the existing length and width of the pit, but increase the depth from the historic 102.1 m to 335.28 m. The 1985 and ultimate pit outline area are shown in **Figure 5** and **Figure 6**. **Photos 4** through **6** were recently taken (summer 2012) at the north pit.

2.3.1.2 Waste Rock Stockpile Areas

Three waste rock stockpile areas remain on-site from the previous operations, and are located north, east and south of the north pit (illustrated on **Figure 11).** These existing areas are sufficient for the storage of waste rock generated through the future operations at the Griffith Mine redevelopment (see **Photograph 7** through **9**) and waste rock storage will be limited to these areas. Design slopes will be consistent with those existing on-site. The height of the waste rock areas is not constrained by visibility from adjacent cottages as there are none in this area of Bruce Lake. A detailed calculation of waste rock volumes and stockpile design will be provided during the EA.



GRIFFITH MINE REDEVELOPMENT

GRIFFITH NORTH DEPOSIT MINE
PLAN

FIGURE 5

Map Source: Hutchings, 2011
Note: This figure is based on an original plan prepared in October 1985.

LEGEND

Iron Information

- (15)% Mag. Fe.
- (22)% Mag. Fe.
- (28)% Mag. Fe.
- Pit Bank
- S Sumps
- W Intrusive
- W Greywacke

Bench	Elevation
A	1135
B	1100
C	1065
D	1030
E	995
F	960
G	925
H	890
I	855
J	820

North

0 250 500 ft

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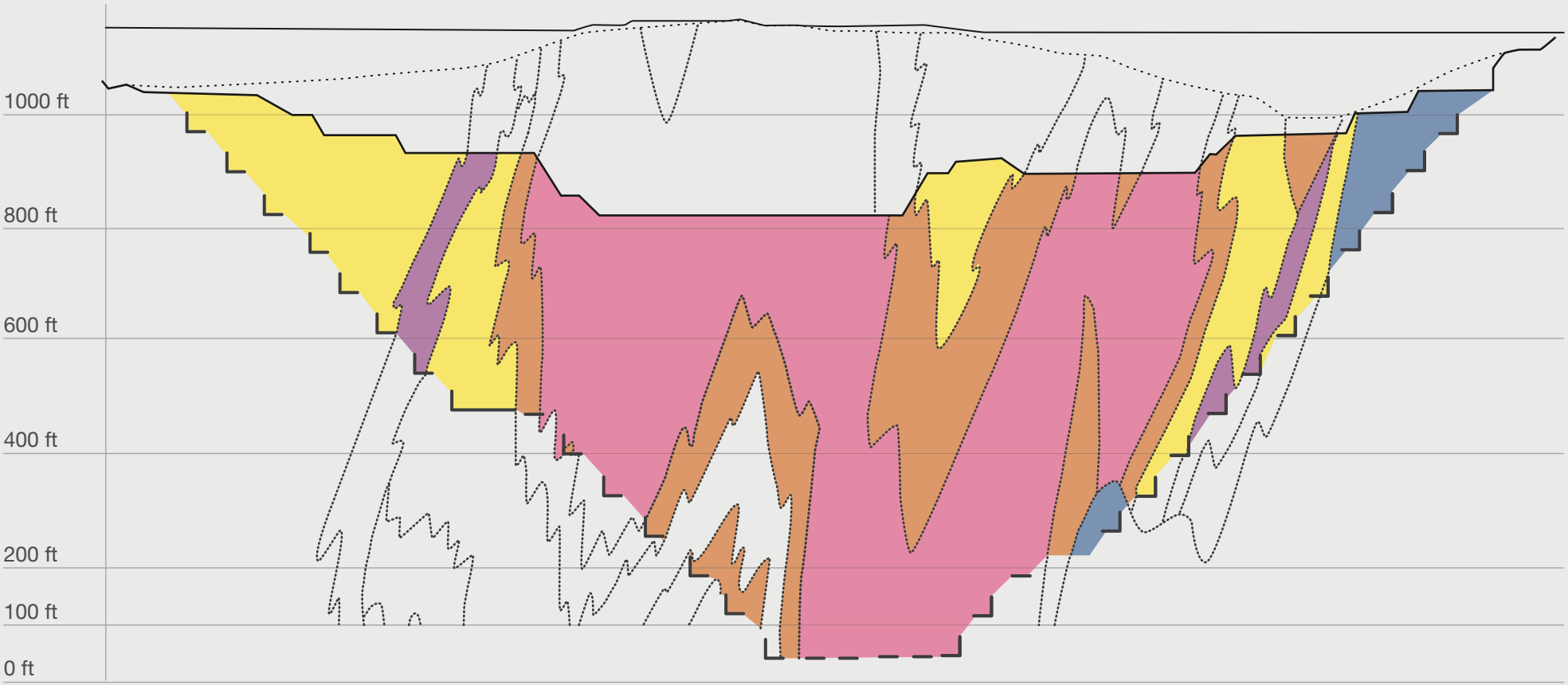

GRIFFITH MINE REDEVELOPMENT

GRIFFITH NORTH DEPOSIT MINE
CROSS-SECTION

FIGURE 6

Map Source: Hutchings, 2011
Note: This figure is based on an original cross-section prepared in October 1985.

LEGEND

Iron Information
- (15)% Mag. Fe.
- (22)% Mag. Fe.
- (28)% Mag. Fe.

- W Intrusive
- W Greywacke
- Pit at Closure
- Pit Design

0 100 200 ft

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Photograph 4: East Side of North Pit

Photograph 5: North Pit Looking East

Photograph 6: Centre of North Pit (East Side Looking West)

Photograph 7: South Waste Rock Area

Photograph 8: North Waste Rock Pile looking west

Photograph 9: Waste Rock Pile (Looking Northeast)

In 2007, an aggregate permit was obtained from the MNR by a third party for the removal of waste rock from the north waste dump of the former Griffith Mine (Permit No. 607526). The geology in the area has low potential for sulphides, meaning that the likelihood of acid rock drainage (ARD) and metal leaching (ML) is low (Golder Associates, 1991). Further, based on preliminary testing of the waste rock, together with the fact that the aggregate permit was issued by the MNR for reuse of this material, there is low potential for ARD or ML from waste rock at the Griffith Mine. NIC has since acquired this aggregate permit, located on Claim 4265689.

2.3.1.3 Tailings Management Areas (TMAs)

The Tailings Management Areas (TMAs) at the Griffith Property consist of two expansive, somewhat distinctive, rehabilitated areas (referred to as the Iron Bay [north TMA] and south TMA). The TMA footprints are still perceptible at this time, although both areas have undergone intense rehabilitation and are currently covered in vegetative ground cover. The TMAs are separated by a waste rock access road that leads to a peninsula in Bruce Lake. The capacity of the TMAs has yet to be verified and this will be done during the EA once further studies have been undertaken in Iron Bay. There is no containment in the south TMA; the tailings are piled dry and slope down toward a beach. This area will not be used for future tailings disposal in the redevelopment.

The previous north TMA (known as Iron Bay TMA) is anticipated to provide sufficient storage to service the mine going forward and dewatering is unlikely to be required in order to use this area (see **Photograph 10, 11** and **12**). Since Iron Bay was historically part of Bruce Lake, DFO considers it to be fish habitat (Neville Ward, personal communication). No direct or obvious corridors for fish passage (i.e. dyke breaches, culverts, etc.) were observed by DST during 2012 baseline studies in this area. Further investigation regarding the dyke condition will be included in future baseline studies as will the physical and natural conditions in Iron Bay to support fish.

Photograph 10: Aerial View of Existing Site Conditions

Photograph 11: North Tailings Management Area (Iron Bay)

Photograph 12: South Tailings Management Area

The south pit may be used as a TMA should it be determined through future study that there are no linkages between the pit and the south basin of Bruce Lake and that, similar to the north pit, it is not considered to be a recreational fishery. Dimensions of the south pit cited after closure are approximately 762.0 m long x 457.2 m wide x 85.3 m deep (2,500 ft x 1,500 ft x 280 ft) and the ultimate planned depth was 128.0 m (420 ft) (Hutchings, 2001). The priority will be to use the north TMA; the south pit will only be used should higher volumes of tailings than anticipated be produced. The capacity of the south pit and in fact, the use of the pit will be determined during the EA.

A *Site Inspection Summary Report* was prepared for the Griffith Property in September 2002 (**Appendix 4**). This report indicated that the majority of the tailings in the north TMA are submerged in the water of Iron Bay adjacent to Bruce Lake and that tailings samples collected from the north and south TMAs suggest that the tailings are not acid generating. No discharge structures or outlets were observed in either the north or south TMAs. A rounded dyke extends from the north shore of the north TMA southeast to an east-west trending peninsula in Bruce Lake. The dyke separates the milky waters of Iron Bay where the submerged tailings materials are located, from the waters of Bruce Lake to the east. Evidence of the tailings is almost unnoticeable as over half of the area is submerged in the Iron Bay and the remaining exists as beach.

"*The surface of the tailings beach is dry, visibly compact and pervasively covered with mature deciduous and coniferous trees, shrubs and grasses. The shoreline of the tailings area consists predominantly of wetland vegetation types (e.g. cattails, reeds, rushes) with little evidence of exposed tailings beach material. No ponds were observed on the tailings surface*" (deGagne & Yaw, 2002).

A tailings material sample was collected from both the north and south TMAs at a depth of 0.4 m and submitted for acid base accounting (ABA) analysis. These test results suggest that the tailings in both north and south TMAs are not acid generating and that the water in Bruce Lake meets regulatory standards (Ontario Drinking Water Quality Standards). These results are summarized in **Table 3**. The existing south TMA will be rehabilitated to improve the water quality in Bruce Lake and a new tailings management may be proposed in the area of the existing south pit, if determined to be required.

Table 3: Summary of Tailings Testing

Tailings Area	North TMA	South TMA
Paste pH	10.01	10.16
Ration of neutralizing to acid potentials	57.1	44.8
Sulphide content	<0.01%	<0.01%

Source: deGagne & Yaw, 2002

2.3.1.4 Perimeter Dyke – Iron Bay TMA

During previous operations at the Griffith Mine, it was necessary to dyke off parts of Bruce Lake and construct a tailings retention dyke between the north and south basins of the lake due to the location of the deposit, which was partially under the lake. The dyke, with an overall length of 3.2 km (2 mi) was completed over a two year period (**Photograph 13**). The redevelopment will use the existing north (Iron Bay) TMA, contained with the existing perimeter dyke, for tailings disposal. Fish are known to live within Iron Bay. This area is historically part of Bruce Lake. Additional disposal of tailings within Iron Bay is anticipated to require further work to characterize the fishery and habitat, as well as DFO approval.

The dyke abuts the waste rock access road that overlies bedrock on the mainland at the north end and bedrock at the south end of the structure on the peninsula in Bruce Lake. Exposed surface material on the crest and side slopes appear to consist of course waste rock (approximately plus or minus 500 mm). The crest and side slopes are extensively vegetated with small birch and poplar trees, shrubs and grasses. The upstream side of the dyke contains the submerged tailings in the milky, turbid waters of Iron Bay (as evidenced by **Figure 7**). The downstream side of the dyke contains the waters of Bruce Lake. No discharge structures or outlets have been observed in the dyke, which appears to be in good condition (deGagne & Yaw, 2002).

Table 4 provides further detail on the perimeter dyke.

2.3.1.5 Processing Plant

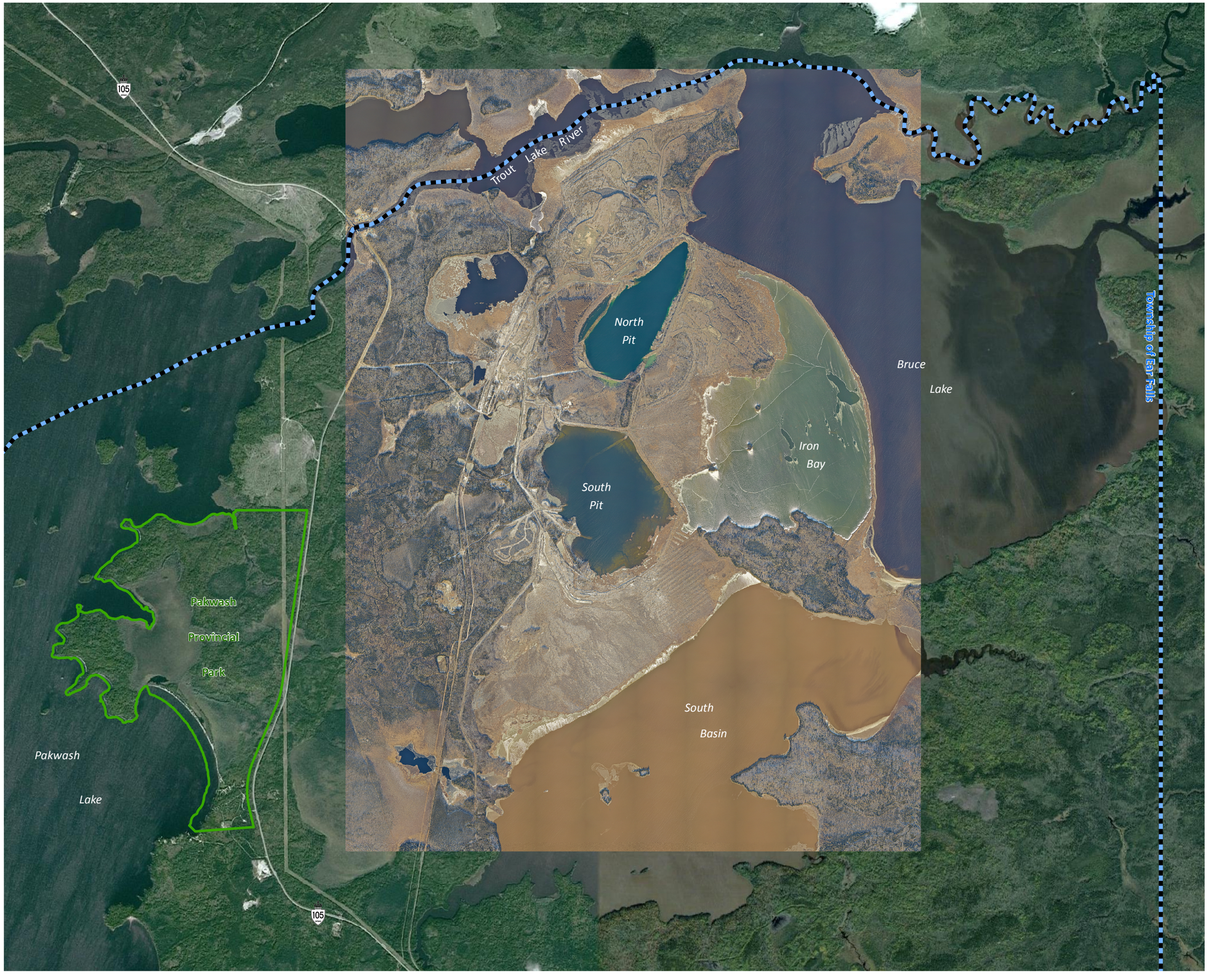
Ore will be processed on-site to produce HBI for sale under established agreements and to the global market. The processing plant, which may be situated in one or more buildings, will be located in generally the same area as previously used so as to take advantage of existing infrastructure. The estimated footprint of the processing plant is approximately 130 m x 160 m (426 ft x 524 ft). The processing facilities are anticipated to occupy a total area of 320 m x 320 m (1,050 ft x 1,050 ft), including the temporary HBI storage area located adjacent to the processing plant.

The blast rock will be sorted and the waste rock removed. The ore containing rock will be mechanically crushed and a wet magnetic separation process will be used to produce concentrate. The MIDREX process will be used to transform the pellets into HBI. For a detailed description of this process, see **Appendix 5**.

Photograph 13: Existing Perimeter Dyke

Table 4: Perimeter Dyke Statistics

Max height (m)	2.5
Length (m)	4,500
Ponded water	No
Construction	Rock fill
Observed concerns	None
Freeboard (m)	2.5
D/S slope (H:1V)	2
Crest width (m)	25
Foundation	Unknown
Abutments (left/right)	Bedrock/Bedrock



GRIFFITH MINE REDEVELOPMENT

AERIAL VIEW OF PROJECT LOCATION

FIGURE 7

MUNICIPAL BOUNDARY
PROVINCIAL PARK

MAP DRAWING INFORMATION:
IMAGE PROVIDED BY GOOGLE EARTH, 2011 AND
KBM RESOURCES GROUP, NOVEMBER 2012

MAP CREATED BY: GM
MAP CHECKED BY: MB
MAP PROJECTION: NAD 1983 UTM Zone 15N

FILE LOCATION: I:\GIS\126239 - Griffith Mine\Mapping

DILLON CONSULTING

PROJECT: 12-6239
STATUS: DRAFT
DATE: 1/30/2013

2.3.1.6 Buildings

The only structures remaining on the site from the previous operation include some concrete foundations from the old buildings as well as the lower section of the rail load-out facility. Based on preliminary assessment, there are no existing buildings that can be refurbished.

As part of the redevelopment of the Griffith Mine, a processing plant and an administrative building will be required. The processing plant may be situated in two or more separate buildings connected by enclosed conveyor belt systems. These will include a crushing facility and the infrastructure necessary to process the HBI. The warehouse and truck storage facilities are anticipated to occupy approximately 700 m^2 (7,534 ft^2) and 900 m^2 (9,687 ft^2), respectively. The administrative building will occupy approximately 300 m^2 (3,230 ft^2) and house offices, meeting rooms, lunch room, locker rooms, restrooms, first aid and emergency response equipment. There will also be a pump house which will supply water. Living quarters will be provided on-site for the construction phase only. The temporary accommodation complex is expected to occupy approximately 10,000 m^2 (107,639 ft^2) and will consist of a series of trailers providing a kitchen, restrooms and accommodation facilities. Additional buildings may house the power plant and ancillary facilities, such as a transformer switch yard housing the step-up transformer. The power generating station is expected to occupy approximately 90,000 m^2 (968,752 ft^2) of the site.

2.3.1.7 Fuel and Chemical Storage

Diesel, gasoline and propane fuel will be stored in above ground tanks on-site to service back-up diesel generators and other equipment. Equipment that is more difficult to move around the site (i.e. loaders and bulldozers) will be refueled by a mobile fuel delivery vehicle. Storage facilities will be located on a concrete pad in areas of restricted traffic flow. A Fuel Storage Management Plan will be developed and implemented to meet all applicable requirements for fuel storage and handling, including secondary containment. A spill management and emergency response plan will include consideration of these facilities.

In addition to diesel, propane and gasoline, process related chemicals and reagents will be used at the mine site. Chemicals such as degreasers, antifreeze, hydraulic oil, glycol and others will be required for equipment maintenance. Chemical storage facilities will have secondary containment and meet all applicable regulatory requirements. Antifreeze/glycol will be stored in a tank and used chemicals will be transferred to an approved waste disposal facility by a licensed handler.

2.3.1.8 Natural Gas Pipeline

A Union Gas pipeline provided natural gas for the former Griffith Mine via a 6-inch, 117.48 km (73 mi) welded steel pipeline that is still present on the property and currently capped off. The line was recently extended to Red Lake to service the town and mining developments in the area. There is not enough capacity left in the line to service the Project. Consequently, a new gas distribution pipeline is required. The environmental approvals for this pipeline would be obtained by Union Gas under the OEB EA process. It is anticipated that the new pipeline will be approximately 12 inches in diameter and will parallel Highway 105 and the existing gas pipeline to the mine site from the TransCanada mainline. By using a previously disturbed right-of-way and pipeline industry best practices, environmental effects will be minimized.

2.3.1.9 Electrical Power Supply

Power in the area is supplied by Hydro One Networks Inc. through two single-circuit 115 kV transmission lines. NIC has reviewed the alternatives for power supply and participated in a meeting, organized by the Economic Development Officer of the Municipality of Red Lake, with a number of mining companies and Hydro One to discuss the lack of electrical capacity in the area. NIC would require the full capacity of a single 115 kV circuit. The present 115 kV system would not be able to supply NIC, Goldcorp, Rockex and a number of other potential mining developments being proposed in the general area, unless Hydro One constructed a double circuit 115 kV line. Even with a double circuit 115 kV transmission line, the capacity of the line would be consumed in short order.

NIC has negotiated off-take agreements that require production in advance of a possible in-service date of new electric transmission lines. As a result, NIC is considering the option of a natural gas-fired power plant and has entered into discussions with third party service providers that would own, construct, operate and ultimately decommission a long term supply of power for the Griffith Mine and other developments further north. This service provider, which would be responsible for obtaining applicable permits, has not yet been determined. All generation and electrical distribution will be "behind the fence." A standby diesel generator would be on-site to supply basic power needs in case of an electrical outage, but would not be capable of operating all mining and processing operations. The power plant would consist of either two natural gas-fired turbine engines or at least 6 x 10 MW natural gas-fired reciprocating engines. The power generated by the plant would be stepped up via an electrical transformer station in order to be supplied through the 27.6 kV distribution voltage on-site. The location of the power station is illustrated on the Conceptual Site Plan (**Figure 11**). The power supply from the station to the processing facility would be an extension of the existing hydro line toward the east and parallel the rail line toward the north.

Another alternative that is still under consideration is the possibility of constructing a 115 kV transmission line from a transformer station in the Dryden area. Both the power station and the transmission line alternative will be evaluated through the EA. While NIC would obtain all approvals required to construct the line, once it was energized, it would be turned over to Hydro One to own, operate, maintain and ultimately decommission. The location of the line is also illustrated on **Figure 11**. The transmission line, to be constructed by a third party, would parallel the existing 115 kV line using the existing right-of-way to the greatest extent possible.

2.3.1.10 Roads and Railways

The mine site is serviced by Highway 105, which is an all-weather road. Currently, the main access road to the Griffith Mine and several on-site roads are accessible to the public. A sign at the site entrance provides information about the site and advertises the areas of the road network as an interpretive trail system. It is not anticipated that new roads will be required, although old roads on the site may need to be refurbished and the site would be closed to the public for security and liability reasons.

A rail line that previously serviced the site from the CN main line was removed following closure, although the original rail bed still remains. Because this corridor is being used as a logging road, the bridges and culverts are considered to be intact (see **Photograph 14**).

The majority of the surface rights within the rail line are held by Domtar Pulp and Paper Products Inc. (Domtar), together with the Town of Ear Falls at the south end. NIC is currently in discussion with Domtar, who uses the right-of-way as a logging road, and the Town to develop an agreement to potentially share the right-of-way in order to re-establish the rail line.

NIC will enter into an agreement with Domtar for the use of the right-of-way for the purposes of constructing and operating a railway. The term of the agreement would extend to the end of the mine life. NIC would be responsible for securing all required approvals to construct, operate, maintain and decommission the railway and ensure that road access within the right-of-way is maintained for existing users. This may necessitate a minor widening of the right-of-way. Under contract to NIC, CN will ship the HBI by rail car to the main CN line. Once the mine is no longer operating, the rights within rail right-of-way will revert to Domtar.

Photograph 14: Rail Bed (Looking South)

2.3.1.11 Airfields

The Project can be serviced by existing airfields in Ear Falls, Red Lake and Dryden.

2.3.1.12 Water Supply

The required water to service the operations will be piped from the Troutlake River, consistent with previous operations, and treated if required. The location of the water pipeline is illustrated on the Conceptual Site Plan (see **Figure 11**). Historic operations included two 4,500 gpm water pumps to supply the facility with fresh process water. The tailings thickener on-site recovered approximately 30,000 gpm of water for reuse. Based on the anticipated rate of processing, it is expected that 42,000 to 49,000 gpm will be required for operations, of which 3,000 to 7,000 gpm will be needed from the Troutlake River. A PTTW is required to facilitate this water taking, as well as the associated discharge of process water. Seepage into the pit removed through normal dewatering operations could be treated if required and used to supplement process water. Should Bruce Lake be used as a water source, the location of the water intake will be situated so as to cause little disruption to the natural environment and a screen will be employed to restrict fish entrainment and impingement. Potable water will be supplied by a drilled well during both the construction and operations phases.

2.3.1.13 Explosives Storage

Blasting activities will be the responsibility of an external contractor. An explosives factory may not be required on-site, however, a designated area for explosives storage will be required. Explosives will be primarily ammonium nitrate based on an ammonium nitrate/fuel oil (ANFO) blended emulsion form suitable for use in wet conditions. Permits required for construction of the facility are included in **Appendix 1**.

2.3.2 Production Processes and Anticipated Production Capacity

Archean banded iron formation (BIF) is the only known geological unit of potential economic value on the property. The Project will process approximately 16,000 tpd of iron ore from the north pit and move approximately 9 million tonnes of waste rock and 5 million tonnes of tailings per year on average for the entire life of the mine. The iron ore will be further processed to produce 4,000 tpd of HBI, which only slightly exceeds the threshold set out in subsection 15 (b) of the *Regulations Designating Physical Activities* (See **Section 2.2** for further information). Based on the estimated reserves, the mine is projected to have a life span of approximately 20 years.

HBI is a premium, compacted form of DRI containing 90-94% total iron (Fe). Compacted at a temperature greater than 650° Celsius, HBI's higher density and pillow shape provide superior handling, shipping, storage, and melting characteristics. Other benefits of HBI, as outlined by the International Iron Metallics Association, include:

- High bulk density of 2,500-3,300 kg/m^3 (156-206 lbs/ft^3);
- Known, consistent chemistry certified by the producer;
- Minimal (trace) amounts of undesirable chemical elements (Cu, Ni, Cr, Mo, Sn, Pb, and V);
- High thermal and electrical conductivity;
- Low reactivity with fresh and saltwater (reoxidation);
- Resistant to degradation due to handling and weathering;
- Compatible with all bulk materials handling equipment; and
- Safe, easy to store in all types of weather.

Two options were considered for processing the concentrate into HBI:

1. The crushing, grinding and concentrating is conducted on-site in the general area that previous facilities were located, with the concentrate shipped south by rail, truck, or slurry pipeline to the Dryden area where it would be pelletized and direct reduced into a briquette.

2. Perform all processing activities at the Project site, including crushing, grinding and wet magnetic separation to produce a magnetite concentrate (68% Fe). This concentrate would then be mixed with a binding agent (typically bentonite) and rolled into balls. The balls then get fired in a rotary kiln, turning them into a hard hematite pellet (66.5% Fe). These pellets would then move on to the direct reduction facility where natural gas is used to reduce a pellet in a shaft furnace to a metallic iron product with 90-94% Fe.

After evaluating these options, option 2 was selected. Processing activities would take place on-site in the general areas that previous facilities were located. The limiting factors were a lack of adequate electrical power and natural gas at the site for processing. The plan is to engage Union Gas, the local natural gas distribution company, to twin the existing supply pipeline that parallels Highway 105 from a station near

Highway 17. This will allow for the development of a natural gas-fired power station to provide the 60 MW power requirement of the facility. Further information related to the production process is included in **Appendix 5**. Associated buildings and infrastructure, including permanent and temporary structures to be constructed as part of the redevelopment, are described in **Section 2.3.1**.

2.3.3 Increase in Production Capacity

The proponent is seeking to redevelop and expand portions of the old Griffith Mine, which is currently an inactive brownfield site with zero production capacity.

2.3.4 Description of Activities

The Griffith Mine Project involves the construction, operation, closure and remediation of a past-producing open pit iron ore mine that was closed in the mid-1980s. The proposed site plan locates the redeveloped facilities in generally the same locations as in the original mine in order to take advantage of existing infrastructure (e.g. roads, natural gas pipeline, protective dams and dykes). The mine redevelopment will not expand the boundaries of the mine. It will, however deepen it by roughly 200 m. The process of dewatering has begun in order to undertake additional drilling to confirm the value of the resource. NIC intends to manufacture HBI, which is a value-added product, and has off-take agreements for the majority of production. CN (under contract to NIC) will ship the HBI by rail car to the main CN line, via an existing rail bed that will be rebuilt, and then to the west coast of Canada to serve the off-take agreements in China. An agreement between NIC and CN would seek CN operation of the spur line to the mine. There is also potential for the HBI to be shipped to Thunder Bay for transport by boat to steel mills on the Great Lakes.

Drilling Program

An initial diamond drilling program consisting of one hole (GR-10-01) was carried out by NIC in October 2010 at the Griffith north pit. It confirmed the presence of a BIF body of unsubstantiated parameters with respect to the north deposit. This finding supports the rough accuracy of the north pit deposit model acquired from previous work and the existing Griffith Mine documents.

In February, 2012, NIC released assay results for a second drill hole (GR-11-01), which tested non-mined magnetite mineralization under the north pit, and intersected a continuous interval of magnetite mineralization, still open at the bottom of the hole. The hole was directed as perpendicular as possible to the mineralized zone and did not hit the footwall of the magnetite rich iron formation. Iron grades are comparable to the historically reported grades on the Griffith Mine (NIC, 2012a).

Attributes of the north pit are currently undefined and historical references require complete re-evaluation. Delineation drilling, as part of a two-phase work program, is required on the Griffith Property's north pit to validate the historical "reserves" and to determine if sufficient parameters are present for an eventual NI 43-101 compliant mineral resource to mineral reserve estimation. Based on NI 43-101 requirements, recommendations for a Phase I (dewatering) and Phase II (drilling) work program include dewatering of the north pit and subsequent implementation of diamond drilling to investigate the *in-situ* iron formation (Hutchings, 2011).

Phase I dewatering is necessary to initiate Phase II drilling. A PTTW has been approved by the MOE to permit dewatering of first 25 m of water of the north pit (see **Section 2.4.2** for more details). The water is pumped out using diesel pumps located on the mine ramp at the west side of the pit. The pumps will be moved further

down the ramp as the water level is lowered. Water travels through high-density polyethylene pipe around the west side of the pit and be discharged into Bruce Lake. Below 25 m, the dissolved oxygen levels are too low to discharge the water directly, so water from this point will be sprayed or agitated at the discharge end to ensure adequate oxygenation as it enters Bruce Lake.

The first phase of dewatering is about 60% complete and the water level is down about 5 m (16 ft). Water was being pumped at a rate of 53,000 litres per minute. The pumps were winterized to allow the dewatering program to continue running into December and dewatering will resume when the ice melts in the spring. This dewatering program will allow Phase II drilling on the first tier of benches through the summer of 2013.

Phase II drilling is proposed to test the mineralization to a maximum depth of 333 m (consistent with the historical planned ultimate limits), and is designed to cut the deposit perpendicularly by drilling 32 inclined holes on 13 lines, for a total of 12,000 m. In August 2012, NIC announced the commencement of drilling for the 2012-2013 season at the Griffith Mine. NIC has engaged Core Tech Diamond Drilling Ltd. to conduct definition drilling of the 45 drill holes in the northern part of the pit, 11 of which were drilled this year. After pumping the top 25 m of water, a drill rig can be placed on the benches to access the main part of the iron mineralized zone. The drill core will be logged, sampled on-site and submitted to SGS Minerals Services, Red Lake for sample preparation and pulps to SGS Lakefield, Ontario for analysis (NIC, 2012b). The drilling program is intended to adequately increase confidence levels regarding correlation between holes and any irregular distribution of the mineralization and to provide a better understanding of the deposit and is required to produce a NI 43-101 compliant resource estimate.

Site Preparation and Construction

Since this Project involves the redevelopment of a brownfield site, the vegetation that needs to be cleared is relatively immature (approximately 25 years of growth). No significant logging will be required to prepare the site for construction, and clearing of overburden will be minimal. Domtar Pulp and Paper Products Inc. is the sustainable forest licence holder for the Trout Lake Forest. According to the Trout Lake Forest Management Plan Map 8.1 (Area Selected for Operations) (Domtar 2009-2019, Trout Lake Forest Management Plan), the mine site has been identified as patented land and the surrounding area is not included in the area proposed for operations (i.e. harvesting). MNDM, on behalf of the Crown, will facilitate any necessary consultation with the appropriate parties, including Domtar and MNR, through the "One Window" process. Clearing of significant amounts of topsoil is not anticipated to be required since much of the area consists of waste rock piles and tailings, as well as the open pits.

As noted above, the north pit will be dewatered to expose the mine benches to facilitate further drilling and future mining. Although the existing road network will likely require improvements in accordance with current specifications, the location of roads and mine components is expected to remain consistent with the historic Griffith Mine. The internal road network generally follows the historic dyke system. A thorough evaluation of present berms and dykes on-site is required to ensure future adequacy to handle 100 million tonnes of additional tailings and to be able to withstand a 1:100 year storm event.

Activities carried out during the site preparation include clearing, stripping, grubbing and removal of debris. Once site preparation is completed, the processing plant and administrative buildings will be constructed in the location of the previous buildings and using the existing road network and infrastructure system. These facilities will be located as close to the open pit as is reasonable in order to reduce transportation. A slurry pipeline will be constructed from the processing plant to the primary TMA (Iron Bay) in the same area as

previously used (see **Section 3.1.2**). Water will be added to the slurry pipeline to liquefy tailings to be pumped to the Iron Bay TMA. A water intake pipeline and pumphouse will be re-constructed in the same area as previously located along the Troutlake River. A potential natural gas-fired power plant, step up transformer and distribution line infrastructure capable of supplying the 60 MW electrical load of the mine would be owned, constructed, operated and decommissioned by others. In the event that an electric transmission line constructed, it would be owned, operated and decommissioned by Hydro One. On-site accommodations will be provided during the construction phase only and will consist of a series of trailers. Potable water will be supplied by a drilled well during both the construction and operations phases. Refer to **Section 2.3.1.12** for more information.

Operations

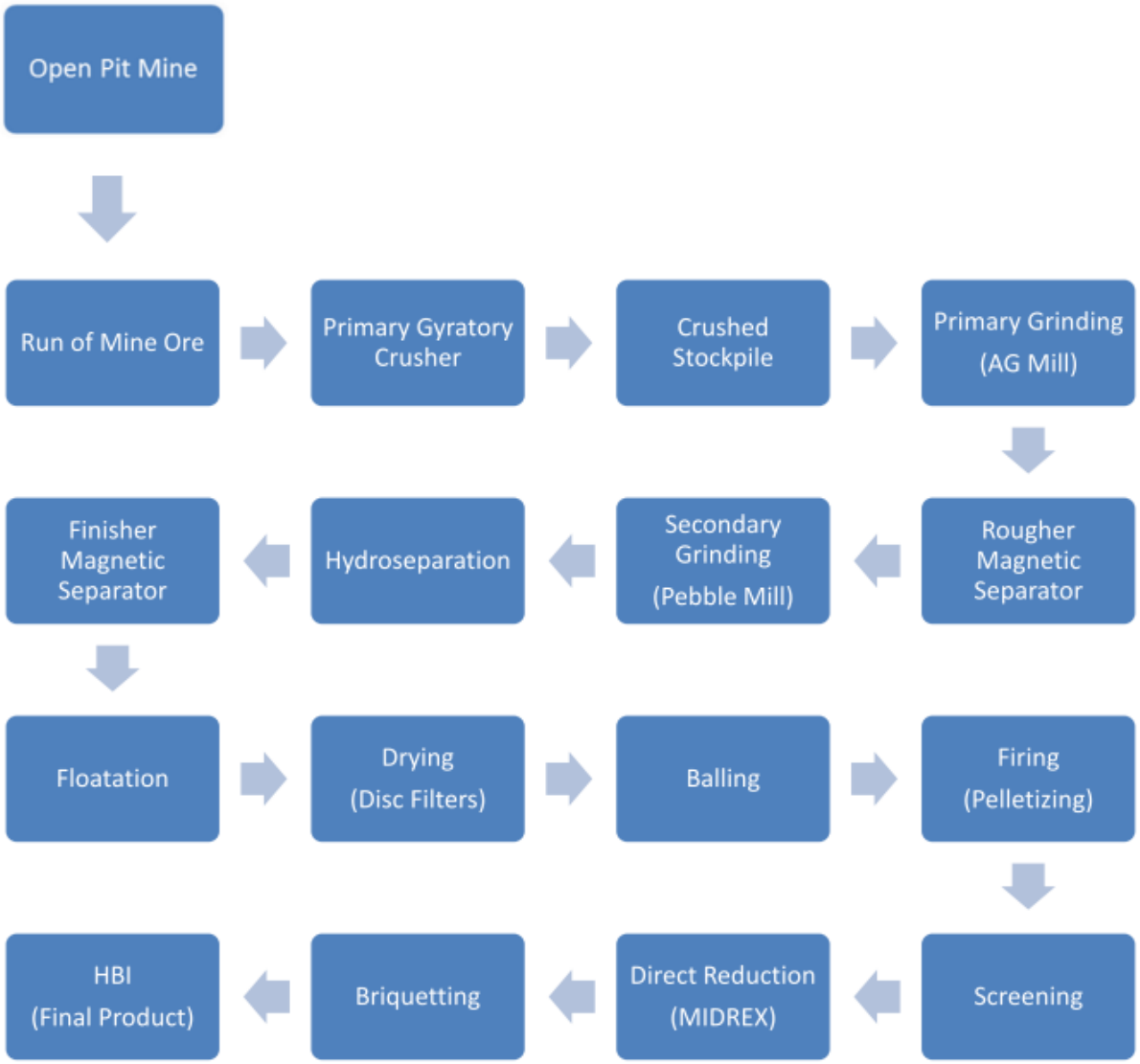
The layout of Project components will follow the general layout of the historic Griffith Mine site, including the redevelopment of the north pit, a processing facility, three waste rock storage areas and two TMAs. As outlined in **Section 2.3.2**, there will be an on-site processing facility. Once the mine site is operational, it is anticipated that operations will follow a schedule of three shifts, 7 days per week. As part of operations, routine maintenance, monitoring and environmental management will be conducted. The major components of the Project include:

- Open pit mine
- Waste rock stockpiling area
- Processing plant
  - Crushing and grinding facility
  - Magnetic separation
  - Pelletizing
  - Direct reduction
- Ore stockpiles from mine
- Ore stockpiles from crushing
- Concentrate storage facilities
- Finished product storage and loading facilities
- Administrative offices and accommodations
- Maintenance offices and shop areas
- Warehouse and other buildings used to store materials and equipment required in the manufacturing process
- Tailings management area
- Slurry pipeline
- Fuel storage facilities
- Electricity generating power plant or high voltage power supply from Dryden
- Electrical power lines and substation
- Natural gas pipeline and distribution area
- Process water lines for water taking
- Process water lines for recirculation
- Waste management facilities
- Water management facilities
- Maintenance, access and haul roads

Figure 8 represents the processing of the rock from the mine into HBI. Rock from the open pit will be separated into waste rock (rock with not enough iron in it to be crushed) and "run of mine" ore. The waste rock will be trucked to one of three existing waste rock storage areas using the existing roads on-site. The run of mine ore will undergo primary, secondary and potentially tertiary crushing in order for it to be reduced

in size enough to undergo magnetic separation. Typical equipment used in this process includes gyratory, jaw and cone crushers operating in conjunction with sizing screens and conveyor systems. Additional waste rock will be generated from the primary crushing operation. The iron ore reduction process will be completed through primary and secondary grinding. The grinding process also uses process water to create slurry from which iron concentrate is produced.

Figure 8: HBI Processing



In order to obtain adequate fineness of the particles, autogenous mills, ball mills, rod mills and a high pressure grinding roll system may be used. Particle separation equipment is used to ensure the desired particle size is achieved and the maximum amount of iron concentrate is produced. The residual particles will be pumped by slurry pipeline to one of two TMAs.

The iron concentrate, in combination with other raw materials will be manufactured into pellets, after which they will be fed into the reduction furnace. Process gas is formed by different methods to generate H^2 and

CO to remove the oxygen from the ore. Once reduced, the product is briquetted while hot as HBI. The HBI is then cooled before being stored in piles.

Closure and Rehabilitation

In accordance with the requirements of the *Mining Act (1990 as amended 2009)*, a certified Closure Plan will be submitted for the Project. Refer to **Section 2.5.2.3** for more information.

2.4 Emissions, Discharges and Waste

2.4.1 Atmospheric Contaminant Emissions

The proposed Project consists of an open pit mine and an ore processing facility. Atmospheric emissions are expected during construction, operations and decommissioning phases of the Project. For the construction phase, the atmospheric emissions are associated with typical construction activities, including surface preparation (e.g., scraping, grading, road constructions), wind erosion, material transfer, mobile equipment and stationary combustion sources. For the operations phase, the Project activities that are associated with atmospheric emissions include drilling, blasting, material handling, transportation, crushing, screening, HBI processing, mobile equipment and stationary combustion sources. The atmospheric emissions during the decommissioning phase of the Project are associated with activities that are similar to the construction phase. The majority of the emissions are expected during the operations phase of the Project. All emission sources during operations will be modelled to ensure regulatory requirements are adequately addressed.

For the Project, the atmospheric emissions can be categorized into non-combustion and combustion emissions. The non-combustion emissions include particulate matter and its constituents (e.g., metals, metallic salts). The combustion emissions include conventional combustion products, including nitrogen oxides (NO_x), fine particulate matter, sulphur dioxide (SO_2), carbon monoxide (CO) and carbon dioxide (CO_2). Also associated with combustion are volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs) and nitrous oxide (N_2O). The latter is mainly associated with blasting operation. From the above list of air contaminants, CO_2, N_2O and some of the VOCs (e.g. unburned hydrocarbons such as methane) are considered to be greenhouse gases (GHGs) which contribute to climate change.

For particulate matter, the emissions are categorized into 3 fractions based on the particulate size, as follows:

- Total Suspended Particulates (TSP), particulate matter with aerodynamic diameter less than 44 microns;
- PM_{10} or inhalable particulate matter – particulate matter with aerodynamic diameter of less than 10 micron; and
- $PM_{2.5}$ or respirable particulate matter – particulate matter with aerodynamic diameter of less than 2.5 micron.

Particulate emissions associated with combustion sources, including internal combustion engines, are typically of the finer fraction (i.e., $PM_{2.5}$), whereas those associated with mining operations are mainly of courser fraction (i.e., TSP). Particulate matter from mining operations, including tailings areas, can also have higher concentrations of metals/metal salts, and depending on the nature of these constituents, the particulate matter emissions can have a greater impact on the environment and human health.

Some of the above-mentioned sources are discussed in more detail below:

Mobile Equipment – Heavy non-road mobile equipment such as excavators, loaders, earth movers and mining trucks fall under this category. Also included in this category are road trucks and vehicles as well as trains. For these sources, atmospheric emissions consists of tailpipe/exhaust emissions associated with internal combustion of fossil fuels (i.e. diesel and gasoline) as well as particulate emissions from re-suspension of road dust as well as tire and brake wear. The tailpipe emissions are typically controlled by on-board emission control devices such as catalytic converters, particulate traps, selective catalytic reductions (SCRs), exhaust gas re-circulations (EGRs) and positive crankcase ventilation (PCVs) as well as by regular maintenance of the engines. The emissions associated with the travel of the mobile equipment are typically controlled by sweeping and/or water of travel routes and use of dust suppressants on road surfaces.

Stationary Emission Sources – Process equipment such kilns, furnaces and generators fall into this category, where the emissions are exhausted through stacks. Emissions from these sources include combustion and process products and by-products. The process emissions are typically controlled using emission control systems such as dust collectors and scrubbers.

Other types of stationary emission sources are crushers and screeners. Particulate matter is the main air contaminant emitted from these sources. Particulate emissions can be controlled by using water sprays during crushing/screening as well as utilizing enclosures with dust collection systems.

Wind Erosion – Wind results in re-suspension of particulate matter from disturbed surfaces, travel routes, mine tailings, open conveyors and stockpiles. These sources are commonly referred to as fugitive sources of particulate matter. Their emissions can be reduced by applying water and dust suppressant chemicals to the exposed/disturbed surfaces as well as by enclosing exposed conveyors and conveyor transfer points. Minimizing the exposed areas through staging the extraction and timely rehabilitation of the disturbed areas can also help reduce fugitive particulate emissions. This also applies to the TMAs.

Indirect Sources of Emission – There will also be indirect atmospheric emissions due to the use of electricity from the grid to power the Project's operations. Atmospheric emissions associated with electricity generation pertain to fossil fuel (e.g. natural gas, coal, and diesel) combustion and are similar in nature to those mentioned above. Emissions from fossil fuel-fired generating stations are controlled by emission control systems such as electrostatic precipitators, low-NO_x burners and scrubbers.

2.4.2 Liquid Discharges

The north pit will be completely dewatered to facilitate the initiation of a comprehensive evaluation by drilling, approximately 30 million cubic metres will be removed (Hutchings, 2011). In February 2011, water quality tests for the north pit and Bruce Lake areas returned satisfactory results, meeting water quality specifications. Although water quality meets MOE regulations, a PTTW is required due to the quantity of water and duration of pumping. In April 2011, Fisheries and Oceans Canada indicated that the north pit will not be considered fish habitat subject to protection provisions under the *Fisheries Act* (Hutchings, 2011).

An application for a PTTW was originally submitted in December 2011. This application was later amended into two separate permit applications; one for the first 25 m of water and a second for water below 25 m, which includes an ECA application for discharging of the water below 25 m. The water would be pumped out to expose the 1986 pit floor for further exploration. Based on testing to date, the water quality is within the

thresholds required as per the *Environmental Protection Act*/*Ontario Water Resources Act* (OWRA) and is therefore acceptable for discharge without treatment (**Appendix 6** and **Appendix 11**). The geology in the area has low potential for sulphides, meaning that the likelihood of ARD and ML is low (Golder Associates, 1991). Further, the results of a site inspection conducted by MNDM indicated that tailings samples collected from the north and south TMAs suggest that the tailings are not acid generating.

NIC received a PTTW (0716-8UMJEA) for the taking of water from the north pit of the former Griffith Mine on August 15, 2012. This permit allows dewatering to a maximum depth of 25 m below the water level measured upon commencement of this taking, as well as the discharge of this water into Bruce Lake (permit included in **Appendix 6**). However, water samples indicate that the levels of dissolved oxygen in the waters below 25 m are too low, meaning that the water will need to be sprayed or agitated at the discharge end to ensure adequate oxygenation of the water as it enters Bruce Lake. Process water will be recycled where possible and tested prior to release. On January 24, 2013, NIC submitted a copy of the Monitoring Results Report required as part of the Phase I PTTW to the MOE for review. No comments have been received from the MOE at the time of submission of this PD.

Permits to facilitate the dewatering, recycled process water will be used to liquefy tailings (slurry), which will then be discharged into the north TMA (Iron Bay) through the slurry pipeline, if it meets provincial requirements. Water used for cooling processing equipment is expected to evaporate. Water from site runoff (i.e. stormwater) will be collected and contained in a series of swales, ditches and catchment basins as per a surface water management plan throughout all phases of the Project. Catchment areas and/or settlement ponds will be constructed as necessary for the storage of water prior to treatment, should site runoff not meet criteria for the safe release into the surrounding environment. Iron Bay will serve as a settlement area for site runoff, which is contained from Bruce Lake. A side-scan sonar and other studies will be undertaken this year to determine the integrity of the perimeter dyke. Based on the results of this study, any necessary reinforcement of the perimeter dyke will be done.

There are three waterbodies within the English River sub-basin that have the potential to receive liquid discharge from the Project site: Bruce Lake, the Troutlake River and Pakwash Lake. Surface water runoff from the Project site flows naturally into Bruce Lake and subsequently drains into Pakwash Lake through the Troutlake River. The current drainage pattern is expected to be generally maintained as no major grading work is anticipated through the redevelopment. The surface water management plan will address the potential for runoff to these waterbodies. See **Section 5.1.1.4** for more information on hydrology and drainage.

2.4.3 Types of Waste and Disposal Plans

Sewage disposal will be managed in an on-site disposal system as there is no municipal service available. The existing septic system and tile fields will be evaluated to ensure that current standards are achieved and may require redevelopment. The sewage disposal system will be operated and maintained in accordance with an ECA issued pursuant to the OWRA. **Table 5** lists the waste streams anticipated.

Table 5: Anticipated Waste Streams

Waste Stream	Anticipated Annual Volumes	Potential Locations for Disposal	Other Notes
Solid Wastes			
Municipal Solid Waste	TBD	Transported via MOE approved hauler for disposal at an MOE approved facility	Source separated either on-site or at disposal location
Recyclables	TBD	Transported via MOE approved hauler for disposal at an MOE approved facility	Reduce, Reuse, Recycle, and Recover. Source separated either on-site or at disposal location
Solid Non-Hazardous Waste (Domestic and Industrial)	TBD	Transported via MOE approved hauler for disposal at an MOE approved facility	To be stockpiled on-site
Cleared Brush	TBD	Burned	
Hazardous Waste	TBD	Transported via MOE approved hauler for disposal at an MOE approved facility	To be stored in bermed and lined facility/container
Process Solids Fine Tailings	TBD	TMA	
Liquid Wastes			
Sanitary Wastewater (i.e. Sewage) Construction	TBD	Transported via MOE approved hauler for disposal at an MOE approved facility or treated and disposed via approved on-site facility	Collected in portable infrastructure for approximately 1,000 construction workers (at peak)
Sanitary Wastewater (i.e. Sewage) Operations	TBD	Treated and disposed via approved on-site facility (i.e. septic tank and tile field)	
Vehicle Wash Facility Wastewater	TBD	Treated and disposed via approved on-site facility (i.e. septic tank and tile field)	
Site Runoff (i.e. Storm water) Construction	Runoff volumes from hard surfaces – TBD	Temporary collection areas and/or north TMA	
Site Runoff (i.e. Storm water) Operations	Runoff volumes from hard surfaces – TBD	Collection in ditches to Storm Water Management Pond(s) Discharge to north TMA or infiltration	Treatment depends on quality
Process Plant and Tailings Water	TBD	North TMA and south pit, as necessary	
Hazardous Liquid Waste	TBD	Transported via MOE approved hauler for disposal at an MOE approved facility	

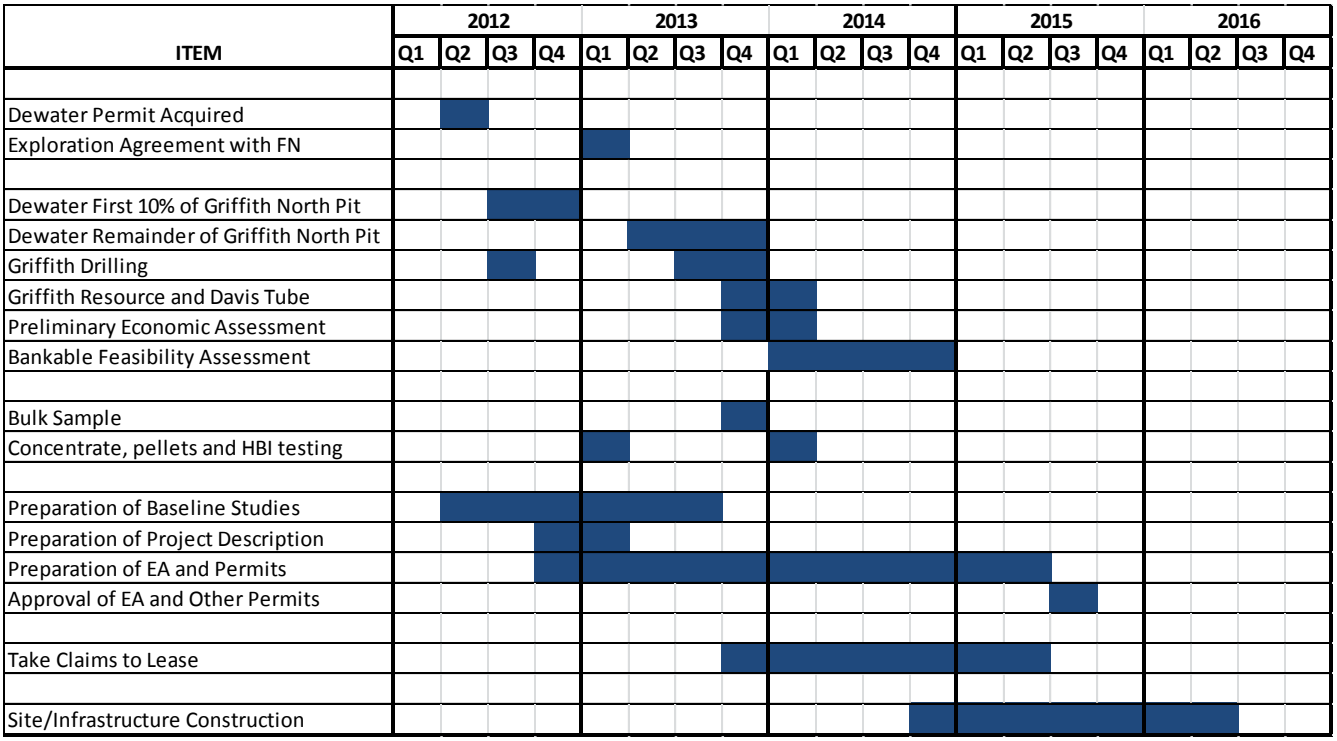
2.5 Project Phases and Scheduling

2.5.1 Anticipated Scheduling

A preliminary schedule for the development of the Project, including permitting and construction, is illustrated on **Figure 9**. The actual timeline for the Project will depend in part on environmental approvals, as well as Aboriginal community and other stakeholder consultations and agreements.

It is anticipated that the first eighteen months post-approval will be dedicated to construction of key infrastructure. A 20 year Project life is expected based on the resources remaining in the north pit. Ore production and processing would begin in Year 2 at a rate of 4,000 tpd of HBI, which is expected to remain consistent throughout the life of the Project. At the end of the project life, the mine will be closed and rehabilitated in accordance with the Mine Closure Plan.

Figure 9: Conceptual Project Development Schedule



2.5.2 Main Activities by Project Phase

Following the receipt of all applicable approvals, the Project will be developed in these three phases:

- Site preparation and construction;
- Operations; and
- Closure.

2.5.2.1 Site Preparation and Construction

Site preparation will include any necessary clearing to remove vegetation to allow for the construction of surface facilities and redevelopment of the north pit. The north pit will be completely dewatered to facilitate mining once access ramps are refurbished. All supporting infrastructure and buildings will be constructed during this phase. As much of the required infrastructure for the mining operation existed previously at the Project site, the amount of disturbance to the natural environment is expected to be minimal (i.e. this is a brownfield site). Since the construction phase will require the transport of heavy equipment to the Project site, the existing roads may require repair/redevelopment. During the construction phase, a temporary camp will be established on-site to accommodate the workforce. Labour will be sourced locally where possible, including from the Aboriginal communities. Construction activities are expected to take approximately 18 months to two (2) years to complete.

2.5.2.2 Operations

The current footprint of the mine is not expected to change significantly. The south pit is not expected to be mined further; however, this area may be used as a TMA. The original design included three waste rock stockpile areas (west, east and south), a primary tailings basin, secondary tailings basin and a spoil basin, which are intended to be reused to service this Project. Results of testing conducted on existing tailings determined it is unlikely that there will be any reprocessing of the tailings.

Processing will result in waste rock and tailings, which will be moved to the north TMA. Waste rock will be trucked while tailings will be piped in a slurry format. The south tailings area will not be re-used, however, rehabilitation of this area will be undertaken in order to reduce the turbidity levels in the south basin of Bruce Lake and prevent suspended solids from moving downstream.

During operations it is expected that labour will be sourced locally from Red Lake, Ear Falls, Dryden, and the surrounding areas.

2.5.2.3 Closure and Rehabilitation

The Closure Plan will be prepared based on the specific requirements outlined in *Ontario Regulation 240/00* and will include a description of the method, schedule, cost and financial assurance of all rehabilitation to be conducted on the site once closure commences. The proposed closure is anticipated to include natural flooding of the pit and rehabilitation of the disturbed areas including watercourses and land. These disturbed areas will be restored to pre-development conditions, to the extent feasible.

Upon closure, all building and supporting infrastructure will be decommissioned in accordance with the certified Closure Plan that will be submitted for the Project (per Part VII of the *Mining Act (1990 as amended 2009*).

The previous operation of the Griffith Mine predated the *Mining Act (1990 as amended 2009)* requirement to establish and implement a Closure Plan, meaning that site works do not constitute a breach of an existing Closure Plan. Following closure of the mine in 1986, the lessee of the historical property, Stelco Inc. provided the following comment on the environmental controls throughout the life of the mine:

> "Early in the life of the operation, mine personnel worked with experts from Lakehead University to develop seed and fertilizer mixtures for re-vegetating mine tailings; various species of trees were also

tested. The program was a success and at closure about 1,100 acres of tailings had been re-vegetated. In addition to tailings, waste dump slopes were also planted successfully" (Hutchings, 2011).

Waste rock piles will be contoured, similar to the historic restoration and re-vegetated similar to the previous reclamation. The open pit will be allowed to fill with water naturally as before. Access to mine roads will be blocked with boulders to prevent vehicle access to the pits.

3 Project Location

3.1 Description of Project Location

The Griffith Property covers approximately 2,928 hectares and is situated within the Kenora District on NTS Map Sheet 052K/14SE, Red Lake Mining Division, northwestern Ontario. The mine site is located within the municipal boundary of the Township of Ear Falls. It lies approximately 400 km northwest of Thunder Bay and 26 km northwest of Ear Falls. The Property is accessible by the Griffith Mine Road and is approximately 1.5 km east of Highway 105. The Property has 18 patented contiguous ground staked mining claims comprised of 183 claim units. **Figure 10** illustrates the Project location.

At a general elevation of 350 m asl, the property is predominantly situated on dry ground with gentle topography, interspersed by two open pits and forest screens. Vegetation varies from grasses to young coniferous and deciduous trees. The region experiences temperatures ranging from 27°C to lows of -30°C, with winter generally lasting until April or May and freeze-up occurring by mid-November.

3.1.1 Project Coordinates

The approximate centre of the Property is located at Longitude 92°22'40"W; Latitude 50°48'37"N (473,440 m E, 5,628,240 m N – NAD 83, Zone 15).

3.1.2 Site Plan

A conceptual layout for the proposed Project components including the open pit mine, ore processing facility, waste rock storage areas, TMAs and associated facilities are illustrated in **Figure 11**. These locations have been selected based on the historic location of similar Project Components. Details of the site plan and operations are provided in **Section 2 and 3**. The physical footprint of the Project Components is approximately 2,928 hectares, including the open pit, waste rock storage, TMAs and processing facility. The preferred site configuration is intended to contain site works within the existing footprint for the purpose of efficiency and to ensure that the requisite mine related facilities are located in close proximity to the Griffith iron ore deposit.

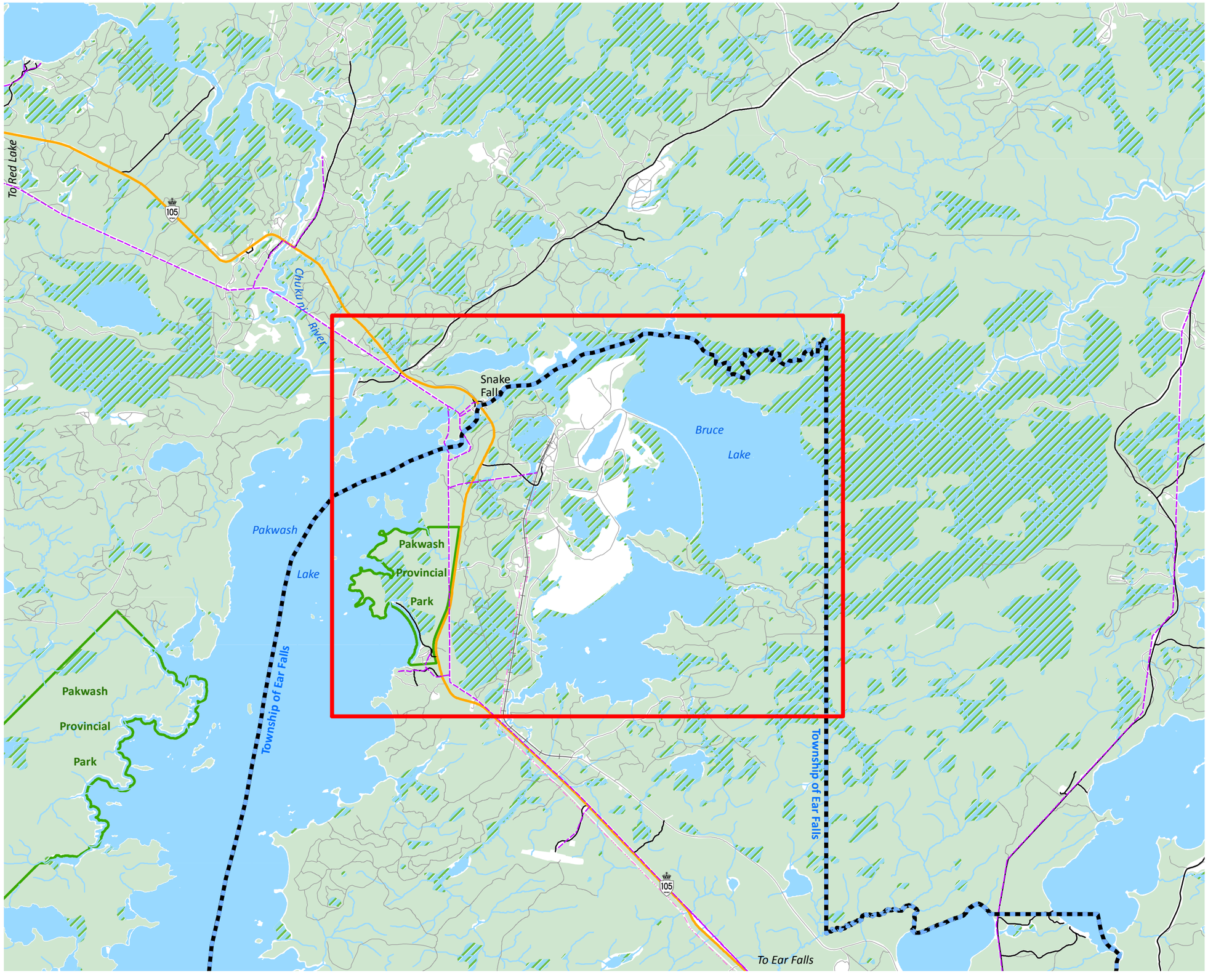
3.1.3 Relative Location of Project Components

3.1.3.1 Watercourses and Waterbodies

The Griffith Property borders the western shore of Bruce Lake, which is approximately 1,625 ha. Bruce Lake itself is connected via the Troutlake River to Pakwash Lake, which is approximately 4 km (2.5 mi) west of the property on the opposite side of Highway 105. Pakwash Lake is recognized for its excellent fishing, beautiful scenery and abundant wildlife. Recreational fishing opportunities include smallmouth bass, walleye, whitefish, yellow perch and northern pike. The lake is approximately 27 km (17 mi) long, 8 km (5 mi) wide and 15 m (50 ft) deep. The Pakwash Lake System is situated at the junction of three major rivers in northern Ontario, the Chukuni, Trout and English Rivers, which drain much of the region.

GRIFFITH MINE REDEVELOPMENT

PROJECT LOCATION
FIGURE 10



- HYDRO LINE
- NATURAL GAS PIPELINE
- HIGHWAY
- MINOR ROAD
- LOCAL ROAD
- RAILWAY
- WATERCOURSE
- AREA OF INTEREST
- MUNICIPAL BOUNDARY
- PROVINCIAL PARK
- WATER BODY
- WETLAND
- WOODLAND

0 0.5 1 2 km

1:100,000

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNR

MAP CREATED BY: GM
MAP CHECKED BY: MB
MAP PROJECTION: NAD 1983 UTM Zone 15N

FILE LOCATION: I:\GIS\126239 - Griffith Mine\Mapping

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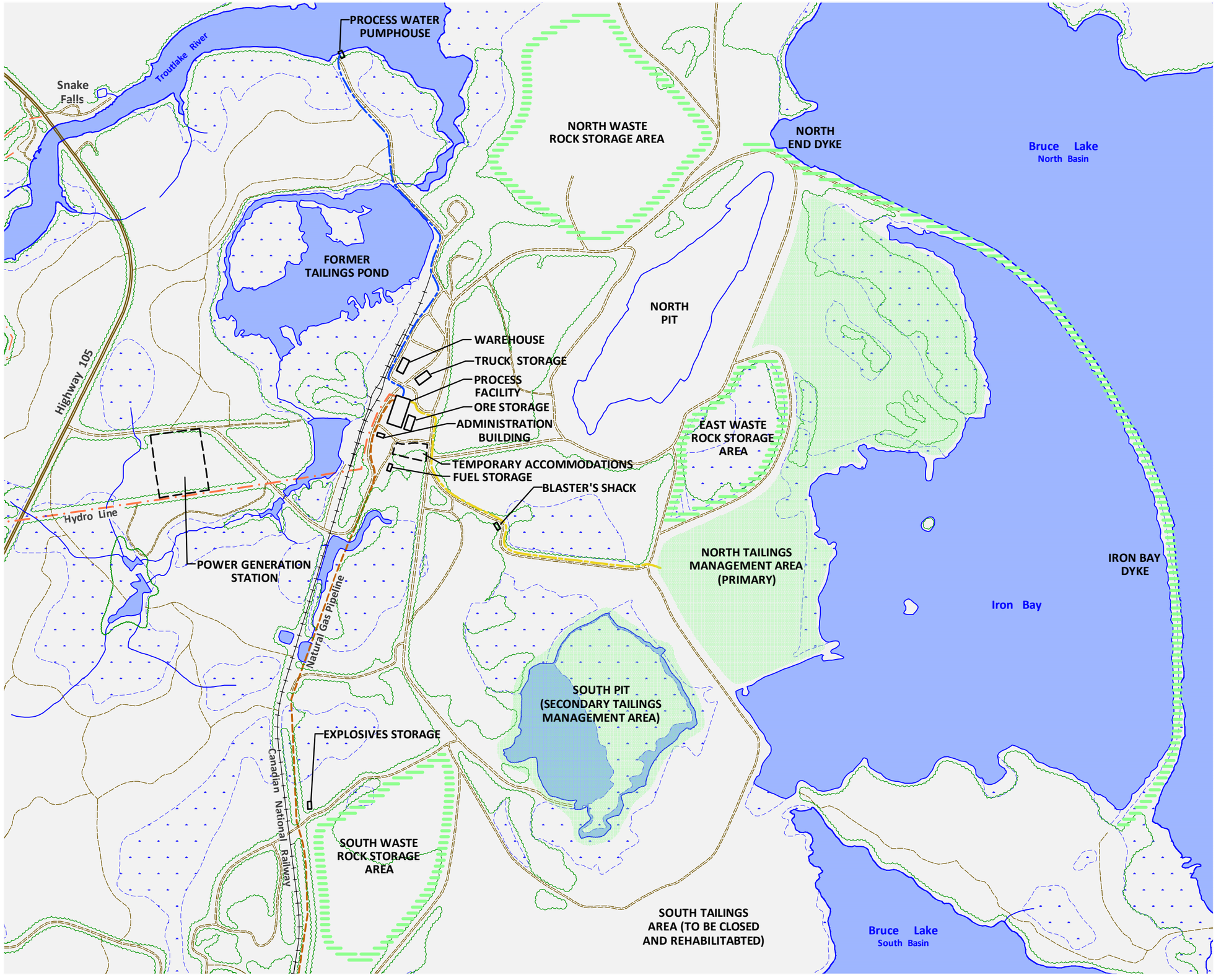
PROJECT: 12-6239
STATUS: DRAFT
DATE: 12/12/2012



GRIFFITH MINE REDEVELOPMENT

CONCEPTUAL SITE PLAN

FIGURE 11

- PROVINCIAL HIGHWAY 105
- EXISTING ROAD NETWORK
- EXISTING TRAIL
- FORMER RAILWAY BED
- WOODLAND
- WETLAND
- EXISTING WATERCOURSE
- NATURAL GAS PIPELINE (TO BE TWINNED)
- HYDRO LINE
- PROPOSED BUILDING
- PROPOSED PROCESS WATER PIPELINE
- PROPOSED SLURRY PIPELINE
- PERIMETER DYKE
- TAILINGS MANAGEMENT AREA

1:20,000

0 250 500 1000m

N W E S

MAP/DRAWING INFORMATION
DATA PROVIDED BY MNR

CREATED BY: JMM
CHECKED BY: MM

File Location:
\\20dillon\cad\cad\126239 griffith mine\cad figures nov 2012\126239 site plan base.dwg

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PROJECT: 12-6239
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DATE: 01/30/2013

3.1.3.2 Linear and Transportation Components

The 1.5 km Griffith Mine Road connects the mine to Highway 105; a paved highway that passes the Township of Ear Falls to the south and Red Lake to the north. Highway 105 connects to the TransCanada Highway (Highway 17) at Vermillion Bay, approximately 130 km to the south of the mine. Excellent access throughout the property is provided by an extensive network of mine hauling and gravel roads left from the previous Griffith Mine operations.

During former operations, ore was moved from the Griffith Mine via railway, connecting with the Canadian National Railway line to the south. This connecting rail line was removed, but the rail bed still exists.

Power in the area is supplied by Hydro One Networks Inc. through two single-circuit 115 kV transmission lines located along Highway 105. Both lines are near capacity and cannot provide enough power for the electrical requirements of the mine.

A Union Gas pipeline provided natural gas to the former Griffith Mine via a NPS 6 (6-inch), 117.48 km (73 mi) welded steel pipe that is still present on the property and currently capped off. The line was extended to Red Lake to service the Town and mining developments in the area. There is not enough capacity left in the line to service the Project. Consequently, in order to use the HBI process at the mine site, a new gas distribution pipeline would be required.

3.1.3.3 Other Features of Existing or Past Land Use

As discussed in **Section 1.1**, the Project is a proposed redevelopment of a brownfield site. The former Griffith Mine produced iron ore from 1968 until 1986 for The Steel Company of Canada Limited (now US Steel Canada). In addition to pellets, the mine also produced sponge iron grading 93% Fe (a DRI product) between 1975 and 1976 at a rate of 300,000 tpa. Throughout this period, a total of 183,200,000 tonnes of crude ore and rock from two open pits (north and south) was removed and used to produce 22.85 million tonnes of iron pellets, grading 66.7% Fe from 78.8 million tonnes of concentrate grading 23.9% Fe.

Components of the Griffith Mine, with respect to development, consisted of the north pit, south pit, processing plant, kiln, three waste rock storage areas including west, east and south, mine dyke, east mine dyke, west mine dyke, divider dyke, west road dyke, perimeter dyke, primary tailings basin, secondary tailings basin, spoil basin and south basin (see **Photograph 10** and **Appendix 7**).

The Griffith Mine Interpretive Trail currently brings outdoor enthusiasts to the site for passive recreational activities (Ontario Trails Council, 2012). While the mine is active, the trail will be inoperative due to safety and liability concerns. Once the mine is closed and a certain degree of rehabilitation has occurred, the feasibility of re-establishing the interpretive trail network throughout the Project site will be considered.

The Trout Lake and Trout Lake River Canoe Route is known to be in close proximity to the Project site. This 125 km route starts approximately 45 km north of Red Lake, travels through Trout Lake, winds southward into the Trout Lake River and ends at Highway 105 north of the mine site. The redevelopment of the Griffith Mine is not anticipated to impact use of this canoe route.

3.1.3.4 Location of Aboriginal Groups

There are no Aboriginal communities directly adjacent to the Project; however, there are a number of First Nation and Métis communities in the regional area. The Project does not require access to or occupation of First Nation Reserve lands. Refer to **Section 6** for more information and **Appendix 2** for correspondence received from MNDM and AANDC.

3.1.3.5 Federal Land and Related Lands of Interest

Federal lands are not required to facilitate the Project, including federal park land and/or First Nation Reserve land. There are no national parks or historic sites in the vicinity of the Project.

3.1.3.6 Nearby Communities

Dryden is located approximately 170 km southeast of the Project and is the largest city centre in the area with a population of nearly 8,000. Red Lake has a population of approximately 5,000 and is the primary industrial centre for the district. It is located approximately 40 km (25 mi) northwest of the Project. The Township of Ear Falls is the nearest community to the Project, located approximately 26 km southeast (16 mi) of the mine site. Ear Falls has a population of approximately 1,200.

Ear Falls is connected to Red Lake by Highway 105 and to Dryden by Highway 105 and the TransCanada Highway. The public waterfront park in Ear Falls features a beach, a covered picnic area, and beach volley-ball courts. The Ear Falls area is home to many resorts and lodges, making it a popular destination for hunting and fishing enthusiasts. Local recreational opportunities include a nine-hole golf course, a fitness centre and arena, cross-country ski trails and extensive snowmobile trails (Ontario Towns, 2012). Since the mid 1950's, the Ear Falls area has been known for its hydroelectric power generation, forestry, lumber production and mining industries. With the closure of the Chukuni lumber mill and Griffith Mine, the community of Ear Falls is seeking economic development opportunities. **Figure 12** provides information on the human features or built environment of the area.

NIC is aware that there are First Nation communities in the surrounding area that may have an interest in the Project. Wabauskang is the nearest Reserve and is situated approximately 20 km south of Ear Falls, along Highway 105. Southeast of Ear Falls, the Lac Seul First Nation is established along the southern shores of Lac Seul. Grassy Narrows First Nation is located approximately 100 km southwest of Ear Falls along the English River.

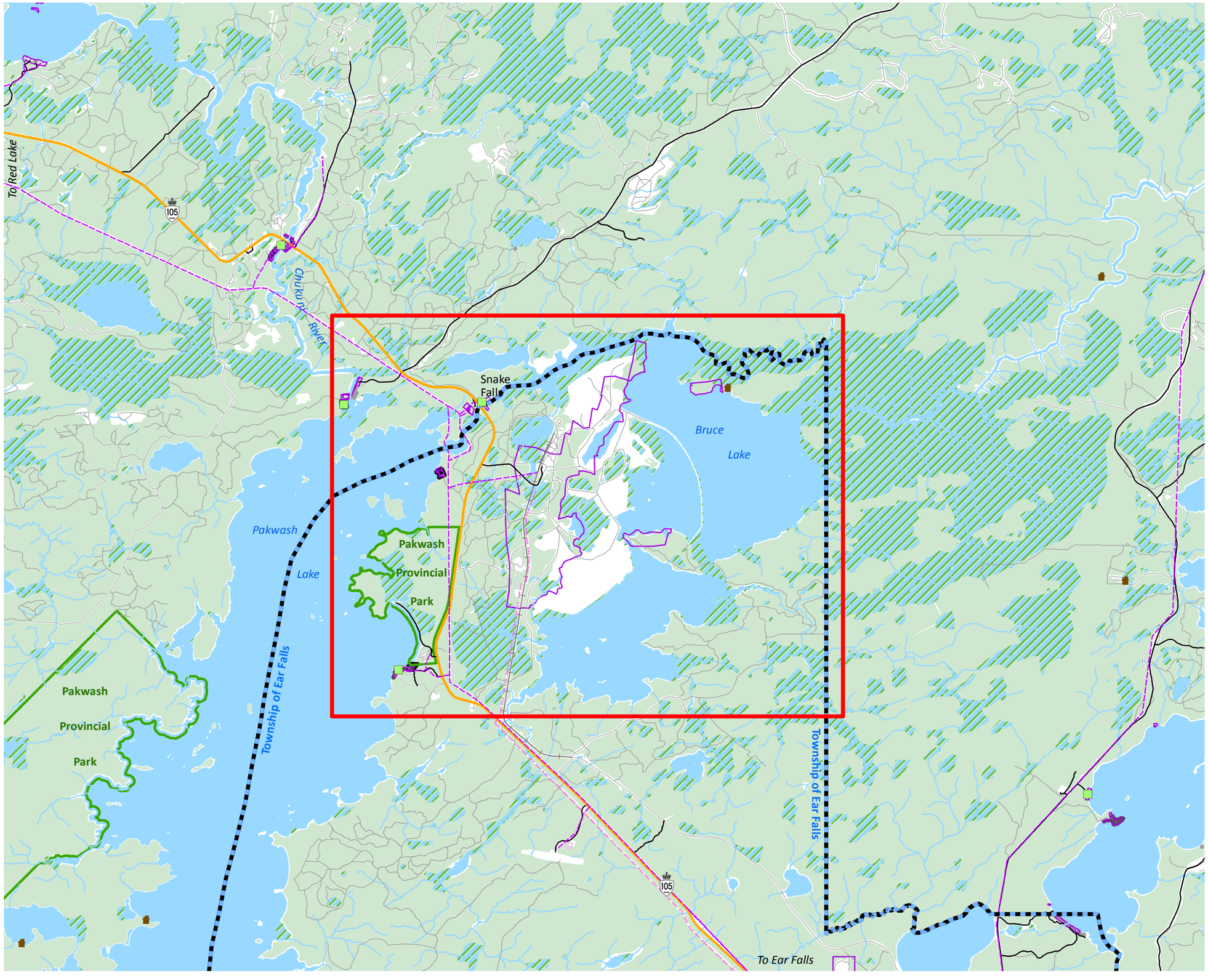
3.1.3.7 Fishery and Fishing Areas

Recreational fishing is popular in areas adjacent to the Project location, specifically Bruce Lake and through the Troutlake River to East Lake and Pakwash Lake. Through personal communication it was found that there is also an active commercial fishery license in the area, held by Bill Deschamps (owner of Trout River Lodge). It is unknown what particular species are targeted through this license.

A number of tourist lodges and recreation camps are located on Pakwash Lake and surrounding area, which are generally illustrated on **Figure 12**. These lodges are likely used as remote accommodations for hunting and fishing tourists. Refer to **Section 5.1.4** for more information on fish habitat.

GRIFFITH MINE REDEVELOPMENT

HUMAN FEATURES
FIGURE 12



- TRAPPER CABIN
- TOURIST LODGE
- AREA OF INTEREST
- MUNICIPAL BOUNDARY
- HYDRO LINE
- NATURAL GAS PIPELINE
- HIGHWAY
- MINOR ROAD
- LOCAL ROAD
- RAILWAY
- WATERCOURSE
- PROVINCIAL PARK
- FEDERAL LAND
- PRIVATE LAND
- COTTAGE SITE, NOT REMOTE
- COTTAGE SITE, REMOTE
- RESIDENTIAL SITE, NOT REMOTE
- WATER BODY
- WETLAND
- WOODLAND

0 0.5 1 2 km

1:100,000

N W E S

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNR

MAP CREATED BY: GM
MAP CHECKED BY: MB
MAP PROJECTION: NAD 1983 UTM Zone 15N

FILE LOCATION: I:\GIS\126239 - Griffith Mine\Mapping

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PROJECT: 12-6239
STATUS: DRAFT
DATE: 12/7/2012

3.1.3.8 Environmentally Sensitive Areas

The Project is immediately east of the Woodland Caribou Signature Site designated by MNR. This Signature Site consists of 544,160 hectares including a provincial park, four recommended wilderness park additions, a conservation reserve, an enhanced management area and a forest reserve (Ontario Parks, 2007).

The Trout Lake Provincial Nature Reserve is located approximately 35 km due north of the Project. Nature Reserve Parks are established to represent and protect the distinctive natural habitats and landforms of the province. These areas are reserved for educational and research purposes. Due to the fragility of many of these natural features, the Trout Lake Nature Reserve is accessible via air only (Ontario Parks, 2008).

The southern basin of Bruce Lake has also been identified as a fish sanctuary from April 1 to June 14 to protect spring spawning (MNR, 2012).

3.1.4 Photographs of Work Locations

Appendix 7 contains representative photographs showing the current condition of the property. Also contained in **Appendix 7** are historic photographs of the mine and processing equipment.

3.1.5 Legal Description of Land

Section 3.2.2 includes a description of the mining claims involved in the Project (also see **Table 6**). A PTTW will be required for process water supply (see **Section 2.3.1.12**).

3.1.6 Proximity to Residences and Traditional Territories

The Project is located on the east side of Highway 105 and abuts Bruce Lake. There are no permanent residences in close proximity to the mine site. A trapper's cabin has been identified on the northeast shore of Bruce Lake. A number of private recreational camps as well as Pakwash Provincial Park have been identified west of Highway 105, fronting on Pakwash Lake.

No land claims have been identified in the area, however, most of this area of northwestern Ontario is claimed to be the traditional territory of the Wabauskang First Nation. The Project is also located within the Lake of the Woods/Lac Seul Traditional Harvesting Territory (Métis Nation of Ontario [MNO], 2012).

3.2 Land and Water Use

In addition to mining, resource uses such as forestry, lumber production and hydroelectric power are important primary industries in the regional area. This regional area is also a popular tourist destination for hunting, fishing and wilderness experiences. As the Project is generally surrounded by Crown lands, there are a number of Crown land uses in the vicinity (i.e., Trout Lake Forest Management Unit, Trout Lake Provincial Nature Reserve, Pakwash Provincial Park, Bruce Lake Conservation Reserve, and Bruce Lake Forest Reserve).

3.2.1 Zoning Designations

The Township of Ear Falls has an Official Plan (OP) and a Zoning By-law (ZB). The OP for the Township of Ear Falls, which was approved by the Ministry of Municipal Affairs and Housing (MMAH) on June 26, 2006,

designates the Griffith Mine site as a "*Natural Resources Area*" (Township of Ear Falls, 2004). The following sections of the OP are relevant to the redevelopment of the Project:

Section 3.12.4: New extractive and mining industrial operations or major expansions to existing operations are permitted in the Natural Resources Area.

Section 4.6.3.1: An environmental impact assessment shall be required for extensive new commercial, industrial and recreational development projects, as determined by Council, and which will require an amendment to the Official Plan.

Section 4.6.3.2: In determining what is considered to be an extensive development, regard shall be had to the relationship to the surrounding area, the possible effects on water quality, the scale of change that may be caused and the need to preserve the amenity of the Township.

Section 4.6.3.3: An Environmental Impact Assessment undertaken in accordance with the policies of this Plan shall include a description and analysis of the following:

i. The proposed development;

ii. The boundaries of the natural features and ecological functions of the area potentially affected directly and indirectly by the development;

iii. The sensitivity of the features and functions to development;

iv. The direct and indirect effects to the ecosystem that might be caused by the development;

v. Any environmental hazards (i.e. slope, flooding contaminants) that need to be addressed as part of the development;

vi. Identification and evaluation of measures to avoid and minimize impacts and mitigation measures to be employed before and after development; and,

vii. A Management Plan identifying:

How the adverse effects will be avoided or minimized over the construction period and the life of the undertaking; and,

How environmental features and functions will be enhanced where appropriate and describing the net effect of the undertaking after implementation of the Management Plan.

The Management Plan shall also establish the limits of buffers and/or setbacks adjacent to components of the Environmental Resource.

viii. Any monitoring that may be required to ensure that mitigating measures are achieving the intended goals.

Section 4.6.3.4: An environmental impact assessment shall be prepared by the agency or developer concerned and, prior to the approval of the proposed development, it shall be submitted to Council and to all other parties who can justify an interest in the matter.

Section 4.6.3.6: Stormwater management is to be addressed prior to the approval of development with the preparation of a Stormwater Management Report. All major commercial, industrial and residential proposals shall be accompanied by a Stormwater Management Report prepared by a qualified professional to the satisfaction of the Township.

Section 4.6.3.7: All applications for major development proposals such as subdivisions or commercial, industrial or institutional shall be accompanied by a Water Resource Management (WRM) Report. The WRM Report shall be prepared by a qualified professional to the satisfaction of the Township and other agencies as may be required. The WRM Report shall address the potential impacts and cumulative impacts on surface and ground water quality and quantity by requiring:

i. maintenance or enhancement of natural hydrological characteristics including baseflow of watercourses;

ii. maintenance or enhancement of sensitive groundwater recharge/discharge areas, aquifer and headwater areas;

iii. the development and monitoring of water budgets for groundwater aquifers;

iv. the protection or enhancement of fish and wildlife habitat; and

v. maintenance of existing drainage patterns where possible.

Section 5.8.2: All Zones within the boundaries of the Township of Ear Falls are hereby designated as proposed site plan control areas.

The Restricted Area (Zoning) By-law No. 1010-02 for the Corporation of the Township of Ear Falls was approved on November 6, 2002 (Township of Ear Falls, 2002). In accordance with this By-law, the Property is zoned Natural Resources (NR), which permits mineral exploration. However, the NR zone does not explicitly permit a mining operation. Further consultation with the Township of Ear Falls is required to determine information and process requirements associated with a Zoning By-law Amendment application to facilitate the proposed mine.

Section 15: Deals with Extractive Industrial (M3) Zone Regulations.

Section 15.1 (d): Identifies mines and mineral exploration as a permitted use within the M3 zone, subject to certain height and setback restrictions.

Section 21: Deals with Natural Resources (NR) Zone Regulations.

Section 21.1 (a): Identifies mineral exploration as a permitted use within the NR zone.

3.2.2 Current Land Ownership Including Sub-surface Rights

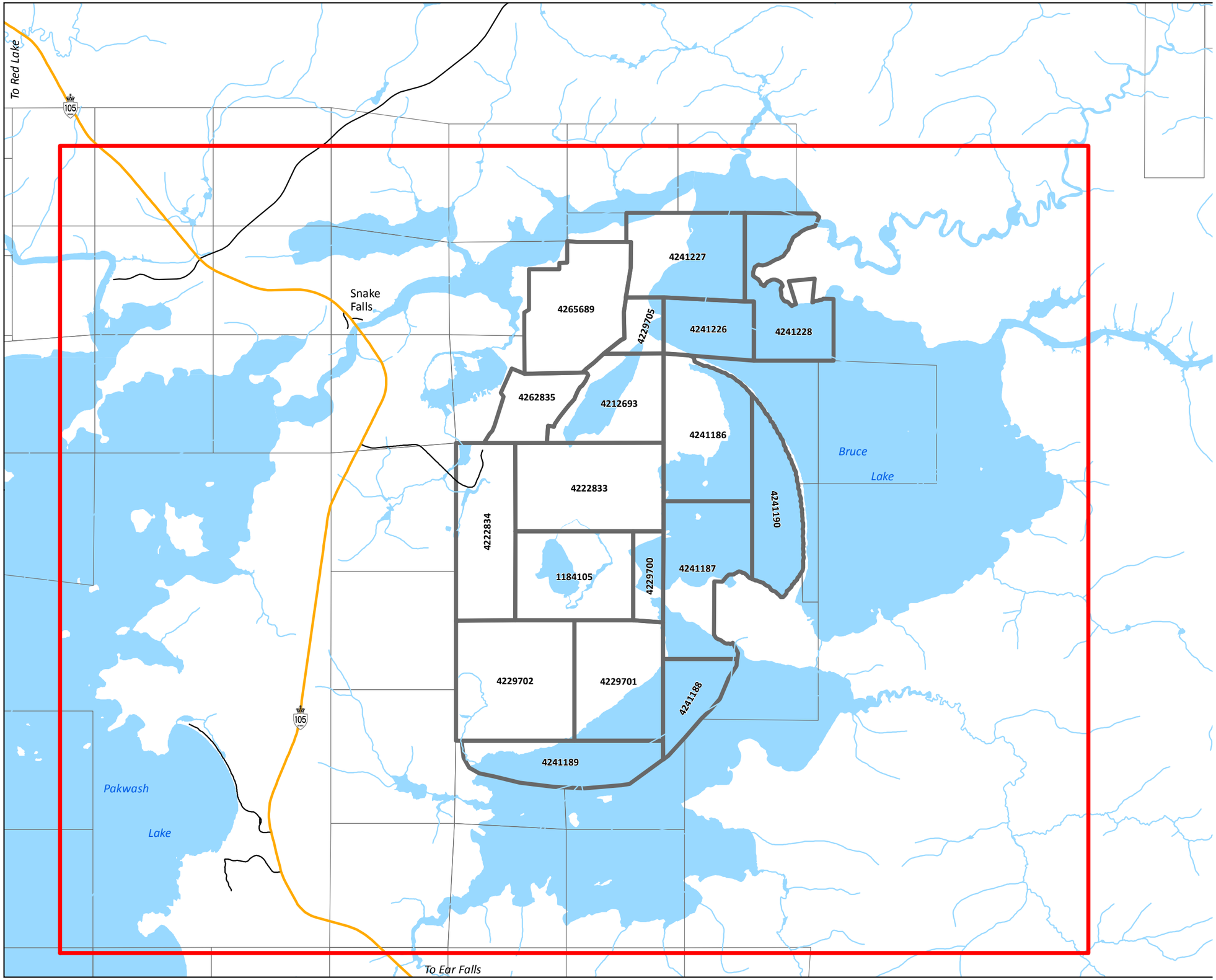
The Ontario Ministry of Northern Development and Mines (MNDM) lists the registered holder of the Griffith property claims as Northern Iron Corp. (100.00%). In August 2010, the previous owner (Mr. Herbert) transferred 100% interest in claims 4241228, 4241227, 4241226, 4229705, 4212693, 4222833, 4229700, 1184105, 4222834, 4229701 and 4229702, totalling 1,776 hectares, to NIC. Mr. Herbert retains the right to a 1% royalty on net smelter returns (NSR Royalty) from the claims on the Griffith Mine. This purchase agreement, dated January 5, 2010, excluded any surface rights which were retained by Herbert (Hutchings, 2011). In December 2011, NIC announced the signing of a second agreement with Mr. Herbert whereby the company acquired a 100% interest in five additional contiguous mineral claims to the east and south of the past-producing Griffith Mine totalling 848 hectares (Claims 4241186, 4241187, 4241188, 4241189, 4241190) (NIC, 2011). NIC recently acquired two additional claims at the Griffith property (Claims 4265689 and 4262835). With these transfers, the total mineral claim area is 2,928 hectares (**Figure 13**). A summary of NIC's land tenure is provided in **Table 6**. All claims are in good standing.

Table 6: Griffith Property Mining Claims Statistics

Holder (100.00%)	Claim No	Claim Units	Recorded Date	Report Due Date
Northern Iron Corp.	KRL4241228	11	2008-Apr-30	2014-Apr-30
Northern Iron Corp.	KRL4241227	12	2008-Apr-30	2014-Apr-30
Northern Iron Corp.	KRL4241226	6	2008-Apr-30	2014-Apr-30
Northern Iron Corp.	KRL4229705	3	2009-Feb-12	2014-Feb-12
Northern Iron Corp.	KRL4212693	9	2009-Feb-12	2014-Feb-12
Northern Iron Corp.	KRL4222833	15	2009-Feb-03	2014-Feb-03
Northern Iron Corp.	KRL4229700	3	2008-Apr-07	2014-Apr-07
Northern Iron Corp.	KRL1184105	12	2009-Feb-19	2014-Feb-19
Northern Iron Corp.	KRL4222834	12	2009-Feb-03	2014-Feb-03
Northern Iron Corp.	KRL4229701	12	2008-Apr-07	2014-Apr-07
Northern Iron Corp.	KRL4229702	16	2008-Apr-07	2014-Apr-07
Northern Iron Corp.	KRL4241186	14	2010-Feb-24	2013-Feb-24
Northern Iron Corp.	KRL4241187	12	2010-Feb-24	2013-Aug-24
Northern Iron Corp.	KRL4241188	8	2010-Feb-24	2013-Aug-24
Northern Iron Corp.	KRL4241189	10	2010-Feb-24	2013-Aug-24
Northern Iron Corp.	KRL4241190	9	2010-Feb-24	2013-Aug-24
Northern Iron Corp.	KRL4265689	11	2012-Jun-21	2014-Jun-21
Northern Iron Corp.	KRL4262835	8	2012-Jun-21	2014-Jun-21

Surface rights on a portion of the Griffith Property are held by the Township of Ear Falls and the Crown (**Figure 14**). NIC will apply under the *Mining Act (1990 as amended 2009)* for surface rights, most notably on the east side of the north pit.

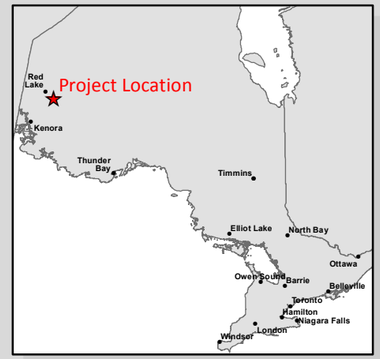
The MNDM CLAIMaps system indicates a Notice of Alienation on the majority of the Project site. Disturbance of these rehabilitated mining lands requires the written consent of the Director of Mine Rehabilitation in accordance with section 164(3) of the *Mining Act (1990 as amended 2009)*.



GRIFFITH MINE REDEVELOPMENT

MINERAL RIGHTS
FIGURE 13

- AREA OF INTEREST
- HIGHWAY
- MINOR ROAD
- WATERCOURSE
- MINERAL RIGHTS OWNED BY NIC
- MINERAL RIGHTS
- WATER BODY



1:50,000

0 0.5 1 2 km

N W E S

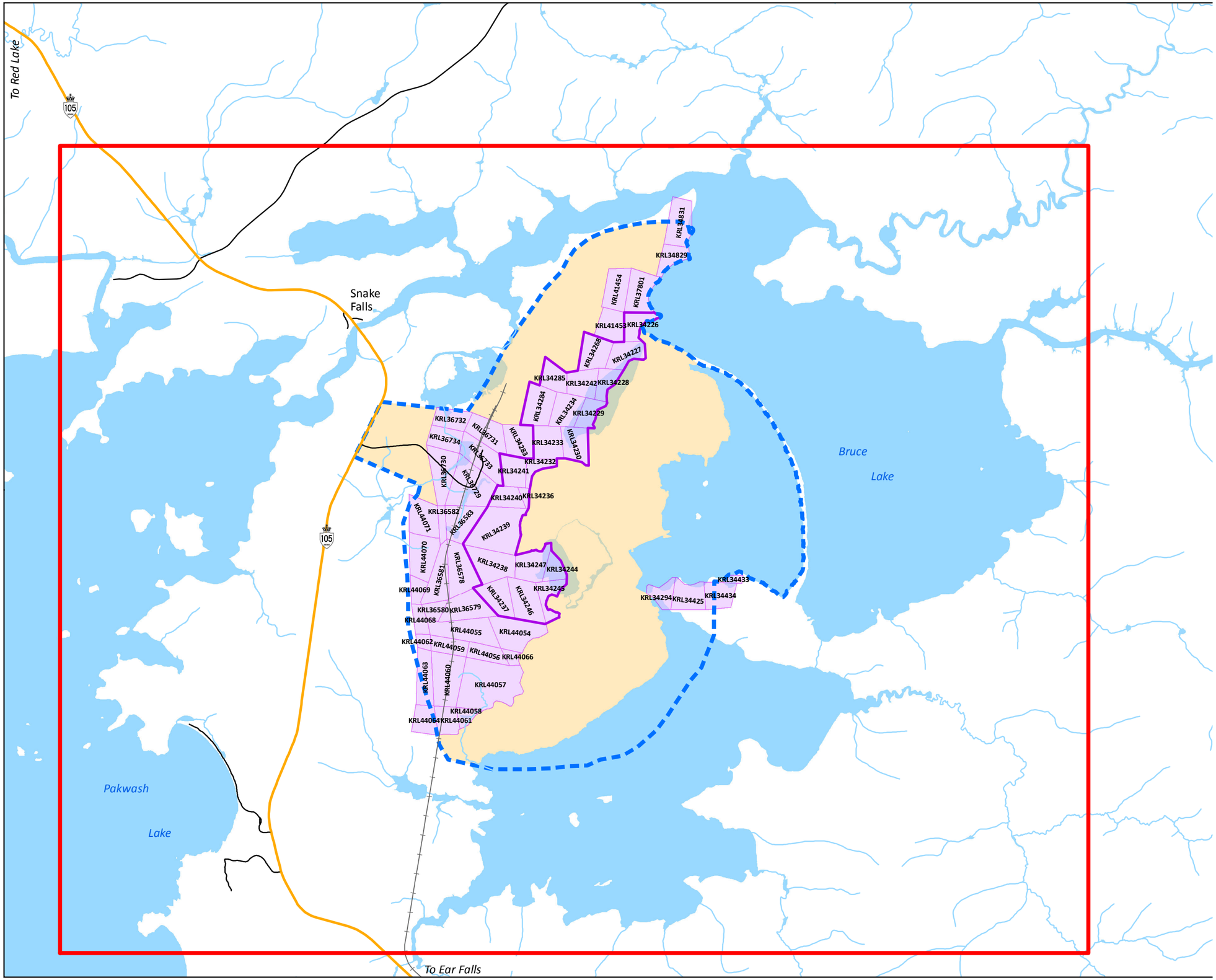
MAP DRAWING INFORMATION:
DATA PROVIDED BY MNR

MAP CREATED BY: GM
MAP CHECKED BY: MB
MAP PROJECTION: NAD 1983 UTM Zone 15N

FILE LOCATION: I:\GIS\126239 - Griffith Mine\Mapping

DILLON CONSULTING

PROJECT: 12-6239
STATUS: DRAFT
DATE: 12/7/2012



GRIFFITH MINE REDEVELOPMENT

SURFACE RIGHTS

FIGURE 14

- AREA OF INTEREST
- HIGHWAY
- MINOR ROAD
- WATERCOURSE
- SURFACE RIGHTS REQUIRED BY NIC
- SURFACE RIGHTS OWNED BY NIC
- SURFACE RIGHTS BEING OBTAINED FROM THE TOWNSHIP OF EAR FALLS
- SURFACE RIGHTS BEING OBTAINED FROM THE CROWN UNDER THE MINING ACT
- WATER BODY

1:50,000

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N W E S

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNR

MAP CREATED BY: GM
MAP CHECKED BY: MB
MAP PROJECTION: NAD 1983 UTM Zone 15N

FILE LOCATION: I:\GIS\126239 - Griffith Mine\Mapping

DILLON CONSULTING

PROJECT: 12-6239

STATUS: DRAFT

DATE: 12/7/2012

3.2.3 Local Land Use Plans

In the late 1970's, MNR conducted a Crown Land Use Planning program which resulted in the approval of Regional Strategic Land Use Plans. The *Northwestern Ontario Strategic Land Use Plan* identifies the Project location as having high mineral potential. Among other things, this plan sought to ensure that lands with high and moderate mineral potential remain open for mineral exploration wherever possible and encourage the processing of ore in Canada, specifically northwestern Ontario (Ministry of Natural Resources [MNR], 1982).

Within the framework of Regional Strategic Land Use Plans, MNR prepared District Land Use Plans, however there is no approved District Land Use Plan for the Red Lake District, so land use direction has been provided over time through the interpretation of provincial policy. Although most land use activities are permitted in this area, any new activities will be subject to a review and evaluation by MNR, resulting in approval, modification or denial depending on the extent of resource or user impacts.

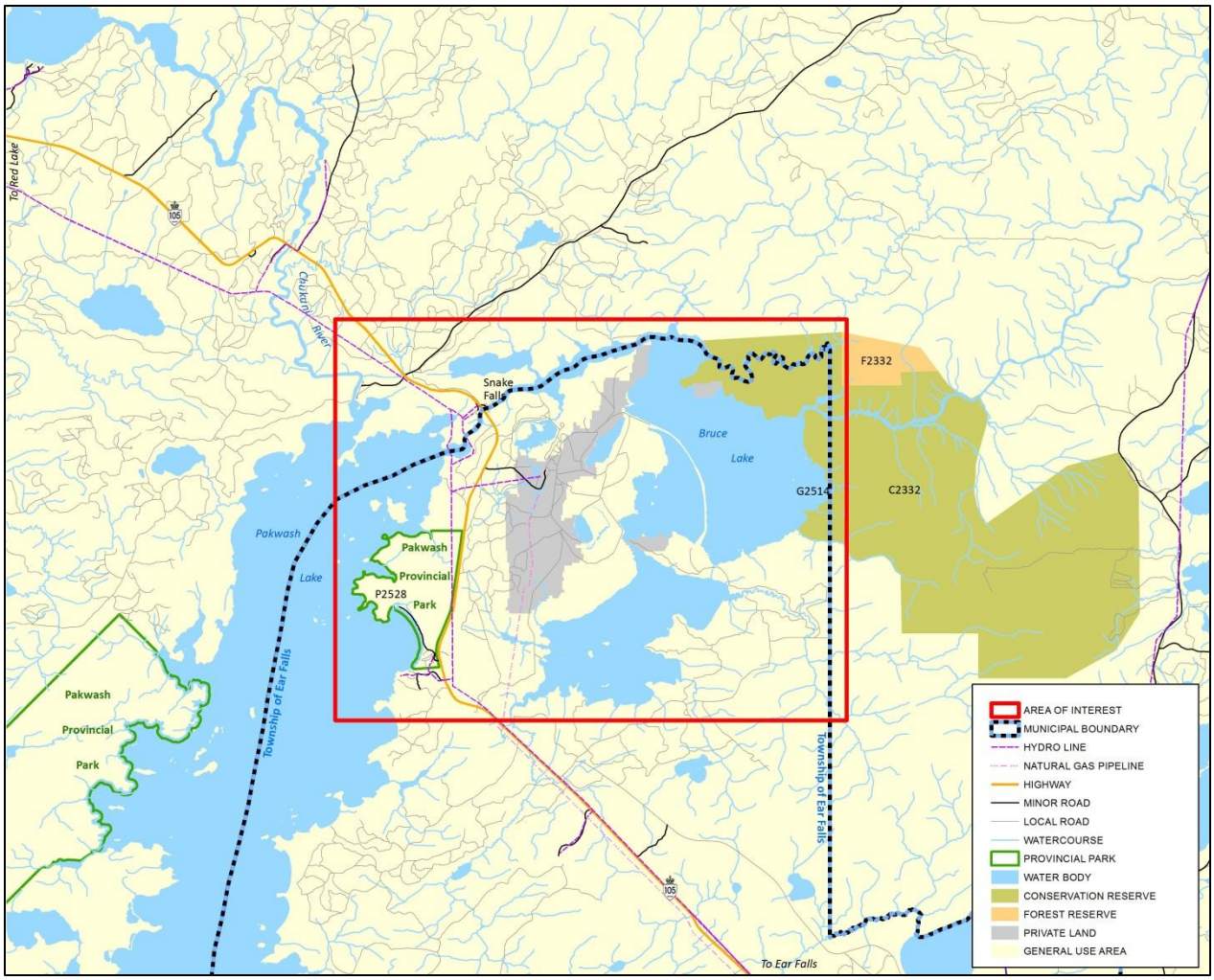
Between 1997 and 1999, MNR conducted the Lands for Life planning exercise, which led to the approval of Ontario's Living Legacy Land Use Strategy (LUS) in 1999. Because the LUS overlaid existing land use plans, there was uncertainty about the relationship with existing planning policies. To provide further clarity, MNR launched the online Crown Land Use Policy Atlas, which consolidated the various plans and policies in the Province.

In accordance with Ontario's Living Legacy Land Use Strategy (1999), portions of the Griffith Property that are Crown land are subject to MNR Crown Land Use Policy Area G2514 General Use - Red Lake (**Figure 15**). This designation includes all Crown lands not placed into a specific designation (e.g. conservation reserve) or enhanced management area (e.g. fish and wildlife). Present uses in this General Use area include mining, forestry, cottaging, tourism, Crown land recreation, fishing, hunting, and fur harvesting. The communities of Balmertown, Cochenour, Red Lake and Ear Falls are the major population centres. Mining, forestry and resource-based tourism are the major industries in the area. Also permitted within the General Use area are uses and activities such as mineral exploration and development, Crown land dispositions, and development and/or maintenance of new or existing roads. MNR will consider the land use intent and management direction outlined in policy report G2514 when reviewing applications for permitted activities that require licences, leases, permits or other forms of approval (**Appendix 8**). The review of individual applications requires the consideration of a variety of factors on a site specific basis in addition to land use policy G2514 (MNR, 2006).

This area contains a significant resource based tourism industry ranging from road accessible main base lodges to remote outpost camps. Bruce Lake and Pakwash Lake are not designated as tourism lakes, although these lakes do support resource based tourism.

Bruce Lake Conservation Reserve is located approximately 25 km north of Ear Falls and east of Pakwash Lake Provincial Park. The purpose of establishing and managing conservation reserves is to permanently protect representative ecosystems, provide opportunities for ecologically sustainable land uses, and facilitate scientific research to support monitoring of ecological change. The Bruce Lake Conservation Reserve contains representative landform and vegetation types, including a diverse peatland (C2332).

Figure 15: Crown Land Use Policy Area Map



The Bruce Lake Forest Reserve consists of 2 mining claims on the northern boundary of the Bruce Lake Conservation Reserve. Forest reserves are areas where protection of natural heritage and special landscapes is a priority, but some resource uses are permitted, subject to appropriate conditions. The Ministry's intent is that the Bruce Lake Forest Reserve will become part of the Bruce Lake Conservation Reserve (F2332).

The Pakwash Provincial Park is located on the east and west sides of Pakwash Lake, west of the Griffith Mine site. This Park is described as a secluded and serene northern park that offers a sandy beach and warm, shallow waters ideal for swimming, fishing and canoeing (Ontario Parks, 2009). Pakwash Provincial Park, which is operated by the Township of Ear Falls in partnership with the MNR, is home to a variety of wildlife including moose, black bear, deer, otter, mink, bald eagle and osprey. It offers 69 camp sites including 26 with electricity (Ontario Towns, 2012). Services and activities offered at the Park include showers, flush toilets, a laundromat, swimming, a boat launch and nature/hiking trails. The Park, which is 3,993 ha, is classified as a natural environment park, which protects outstanding recreational landscapes, representative ecosystems and provincially significant elements of Ontario's natural and/or cultural heritage.

A *Preliminary Park Management Plan* was developed for Pakwash Provincial Park by the MNR in 2009 and approved by the Minister of Natural Resources in July 2012. The approved park management plan is intended to guide the management, operation and development of the Park over a 20 year period. In accordance with this Plan, land within Pakwash Provincial Park is zoned in accordance with its natural and cultural features and values, and their sensitivity to development. Pakwash is managed under four proposed zones: nature reserve, natural environment, access and development, based on the *Ontario Provincial Parks: Planning and Management Policies*. The zones differentiate the sensitivity of the natural and cultural values, and the degree of development, recreational uses and management practices within the park (Ontario Parks, 2009).

Nature reserve zones protect provincially significant earth and/or life science features within a park, and may include protective buffers in which limited development is permitted. Development is typically restricted to trails, necessary signage, interpretive facilities and temporary facilities for research and management. Two nature reserve zones exist in Pakwash Provincial Park, including a wetland and moraine.

Natural environment zones include natural landscapes which permit minimal development required to support low-intensity recreational activities. Development is generally limited to back-country campsites, portages, necessary signage and interpretive facilities. Two natural environmental zones exist in Pakwash Provincial Park.

Development zones contain areas of the park that support intensive day-use and car camping activities, which generally constitute a small portion of most parks. Development may include roads, visitor control structures, beaches, picnic areas, car campgrounds, commercial service facilities, maintenance facilities, park offices, as well as interpretive, educational, research and management facilities. There is one development zone in Pakwash Provincial Park.

Access zones serve as staging areas, which provide for and regulate use in areas of a park that support extensive recreation. Development is typically limited to roads, visitor control structures and group campgrounds. There is one access zone in Pakwash Provincial Park (MNR, 1999).

The Trout Lake Provincial Nature Reserve is located approximately 35 km due north of the Project site. Nature reserve parks are established to represent and protect the distinctive natural habitats and landforms of the province. These areas are reserved for educational and research purposes. Due to the fragility of many of these natural features, this nature reserve is accessible via air only (Ontario Parks, 2008).

The Project is located within the Trout Lake Forest Management Unit (120), which is an area of merchantable timber. The Sustainable Forest License holder is Domtar Pulp and Paper Inc. (Domtar, 2009). Since there is no merchantable timber on the property and it is a past producing mine, it is not anticipated that the redevelopment of the mine will conflict with the management of the forest unit.

With respect to water use, a PTTW has been approved by the MOE to dewater the first 25 m of the north pit. A second PTTW will be required for water below 25 m. The pit will be entirely dewatered, exposing the mine benches from previous operations to facilitate further drilling. A future PTTW will be required to supply process water from the Troutlake River.

3.2.4 Marine Terminal

No marine terminal is planned or included in the local land use plan.

3.2.5 Canada Port Authority

The Project does not include Canada Port Authority lands as defined under the *Canada Marine Act* regulations.

3.2.6 Aboriginal Land and Resource Requirements

The Project is not located on or adjacent to a First Nation Reserve. However, NIC has been notified by MNDM and AANDC that there are First Nation communities in the surrounding area that may have an interest in the Project. These include Grassy Narrows, Lac Seul, McDowell Lake, Cat Lake, Slate Falls, Mishkeegogamang (New Osnaburgh), Wabaseemoong Independent Nations and Wabauskang First Nations, as well as the Grand Council of Treaty 3 and the Métis Nation of Ontario. Wabauskang is the nearest Reserve and is situated approximately 20 km south of Ear Falls, along Highway 105. Southeast of Ear Falls, the Lac Seul First Nation is established along the southern shores of Lac Seul. Grassy Narrows First Nation is located approximately 100 km southwest of Ear Falls along the English River.

The Griffith Mine site is located within lands bound by Treaty 3 of 1873, Treaty 5 and Treaty 9, the Métis Nation of Ontario Region 1, and Lake of the Woods/Lac Seul Traditional Harvesting Territory (MNO, 2012). Recent correspondence from the Agency indicates that NIC should focus consultation efforts on three First Nation communities (Wabauskang, Lac Seul and Grassy Narrows) and the Métis Nation of Ontario Region 1. Details related to traditional use have not been identified through Aboriginal consultations to date. NIC is committed to obtaining any such information through consultation activities with First Nation and Métis communities. Any available information relating to traditional land use will be considered in the EA of the proposed undertaking as appropriate. Refer to **Section 6** for more information.

4 Federal Involvement – Financial Support, Lands and Legislative Requirements

4.1 Federal Financial Support

There is currently no federal funding identified for this Project. The need for and/or availability of federal funding for programs such as Aboriginal skills training from Human Resources and Skills Development Canada will be further assessed during the economic assessment.

4.2 Federal Lands

There are no federal lands required to facilitate the redevelopment of the Griffith Mine.

4.3 Federal Legislative Requirements

Appendix 1 illustrates the federal legislative requirements anticipated to be required to facilitate the redevelopment of the Griffith Mine.

5 Environmental Effects

5.1 Physical and Biological Setting

5.1.1 Physical Environment

5.1.1.1 Geology

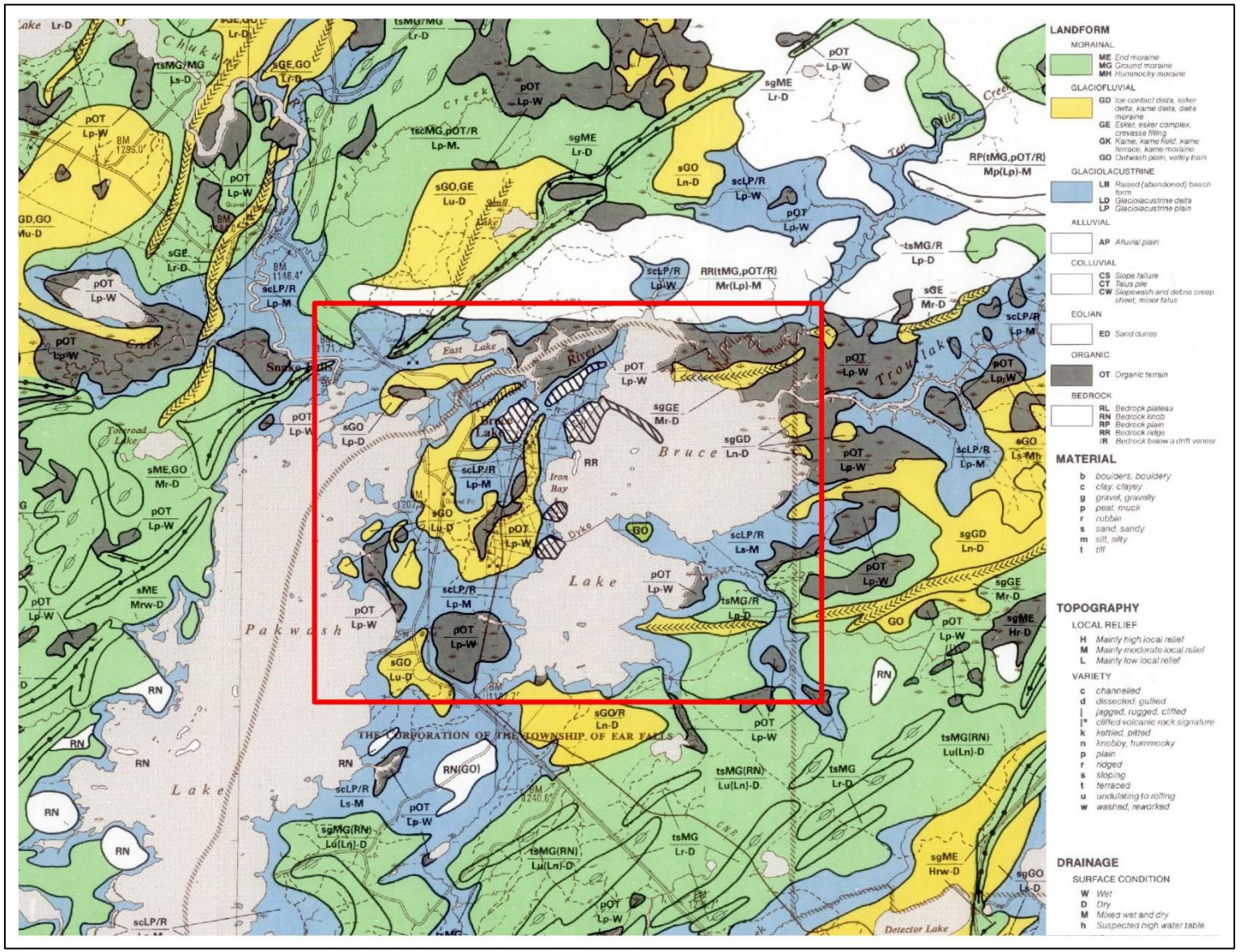
The Geological Survey of Canada (GSC) locates the Trout Lake Forest in the Uchi and the English River Belts of the Superior Province. The Uchi Belt is composed of linear, supra crustal, predominantly metavolcanic-metasedimentary sequences separated by complex granitic batholiths. The English River Belt contains supra crustal sequences that are predominantly metasedimentary, with a comparatively lesser amount of granitic rocks. Bedrock is primarily granite and greenstone comprised of metavolcanic and metasedimentary rocks with granitoid intrusions. Common economic mineral types contain precious metals (i.e. gold, silver, platinum) and associated sulphides (i.e. iron, copper, zinc and lead). The bedrock is generally covered with a thin layer of glacial and post-glacial deposits and has been subject to scouring. Sediments consisting of sandy-silt, sand and gravel are overlain by lacustrine sand, silt and varved clays (Domtar, 2009).

5.1.1.2 Surficial Geology

The predominant landforms within the Project area are peaty organic terrain; sandy glaciofluvial outwash plains; and sandy, clayey glaciolacustrine plains (deGagne & Yaw, 2002). **Figure 16** provides an excerpt of Map 5107 Pakwash Lake published by MNDM as part of the Northern Ontario Engineering Geology Terrain Study. Based on the June 2011 Technical Report (Hutchings, 2011), the surficial geology on the property is characterized as follows:

"The property is predominantly situated on dry ground with gentle topography, interspersed by two open pits and forest screens. Vegetation varies from grasses, coniferous and deciduous trees. Mine tailings consisting of fine to very fine sand, 1-15 m thick predominate. Flanking to the north and west are slivers of Holocene organic deposits, peat and muck, 1-4 m thick. Late Wisconsinan deep water glaciolacustrine laminated to varved clay, silt and fine sand; 1-50 m thick, is ubiquitous beyond the general property area. A unit of drift and bedrock occur as two patches in close proximity, roughly corresponding with the North Pit area; glacial drift within the vicinity is 1-3 m thick in depressions. Four small patches of glacial outwash consisting of sand and gravel, 1-4 m thick, occur immediately west of the property. Ice flow direction from glacial striations is predominantly 270 degrees."

Figure 16: Map 5107 Pakwash Lake Geology



Source: Neilson, 1989

5.1.1.3 Meteorological Conditions

The climate in the study area is moderate continental, which is characterized by long, cold winters and relatively short, cool summers. The average annual number of frost-free days is 116, generally between May and September. Prevailing winds throughout the year are generally from the northwest averaging 13 km per hour from January to September. Fall winds in October and November increase to 16 km per hour from the northwest (Domtar, 2009). At least 80 years of weather data exists for Ear Falls. **Table 7** provides climate normals for Ear Falls.

Table 7: Climate Normals for Ear Falls 1971-2000

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Year
Daily Average (°C)	-18.4	-14.3	-6.7	2.4	10.6	15.6	18.4	17.1	10.9	4.1	-6	-15.3	1.5
Daily Maximum (°C)	-13.5	-8.7	-0.9	8.5	17.1	21.6	24.2	22.7	15.6	8	-2.5	-11.1	6.8
Daily Minimum (°C)	-23.3	-19.8	-12.4	-3.7	3.9	9.7	12.5	11.5	6.1	0.2	-9.5	-19.5	-3.7
Rainfall (mm)	0	0.2	7.3	20.7	55.9	95.4	96.3	100.9	84.1	37.5	4.2	0.2	502.6
Snowfall (cm)	31.4	22.3	23.7	11.2	1.6	0.3	0	0	0.9	12	34.7	35.7	173.7
Precipitation (mm)	31.4	22.5	31	32.6	57.5	95.7	96.3	100.9	85	49.5	38.9	35.8	677.1

Source : Environment Canada, n.d.

Meteorological data will be obtained from both an on-site automated weather station (AWS) and from regional historical Environment Canada (EC) data. Data required to complete a meteorology study includes: wind direction, wind speed, precipitation, snow depth, temperature, barometric pressure and humidity. The scope of the meteorology study will include a desktop review of the pre-existing regional weather data. The baseline meteorology study will include an analysis of weather and climate for the project area in the context of historical regional data from EC. Given the fact that local data within a 10 km radius of the Project is not available, an on-site AWS was recommended and installed.

The installation of the on-site meteorology station has been completed and includes a 10 m tower and support wires installed as practical according to the Meteorological Service of Canada Guidelines for Co-operative Climatological Autostations (Environment Canada, 2004). The weather station was placed on a concrete pad in an open, level location away from significant site activity to avoid inadvertent damage or false readings from the station. The station was equipped with the appropriate sensors to monitor precipitation, wind, temperature, barometric pressure, humidity, and snow depth.

5.1.1.4 Hydrology and Water Quality

The Project site is located within the Winnipeg River Drainage Basin and the English River sub-basin, which ultimately drains into Hudson Bay via the Nelson River (**Figure 17**). The drainage is controlled at various points by hydroelectric and control dams governed by the Lake of the Woods Control Board (LWCB). Water flows in the English River downstream of Lake of the Woods and Lac Seul are regulated by the LWCB.

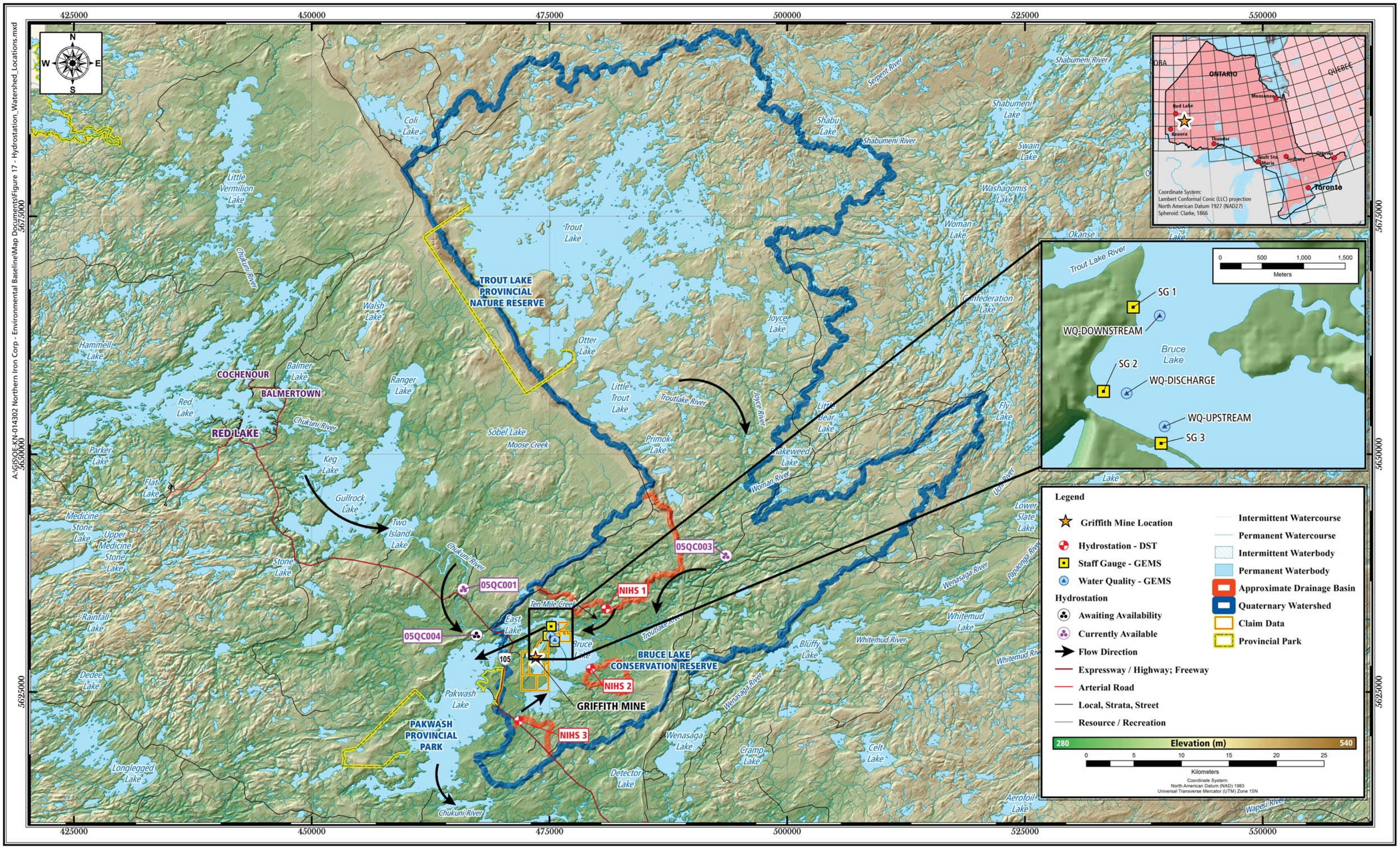


Figure 17: Hydrostation Drainage Basin Locations

All runoff from the Project site naturally flows into Bruce Lake, which subsequently drains into Pakwash Lake through the Troutlake River. The two main tributaries to Bruce Lake are Ten Mile Creek and the Troutlake River. Both waterways flow through the Bruce Lake Conservation Reserve and are gently sloped with very slow flow and meandering waterways through marshlands. On the former mine site, surface drainage generally runs off into the former open pit mines, into Iron Bay or into Bruce Lake. The site itself is generally flat and low-lying with the exception of the waste rock piles located in the northeast area of the site.

In June 2009, a Mine Rehabilitation Inspection was conducted at the Griffith site by MNDM staff (see **Appendix 9**). The focus of this inspection was to observe water levels in the two open pits and determine if the dykes surrounding the pits will require modifications to ensure that the final post-rehabilitation pit water levels are approximately equal to the level of Bruce Lake. It was found that the south pit is completely filled with water and had reached the perimeter dyke system that was constructed to the north, east and south of the pit. No breaches were noted along the vehicle accessible portions of the access road across the dyke. However, it appeared that water may periodically flow between the pit and the lake where the eastern pit perimeter dyke separates the south pit from Iron Bay of Bruce Lake. The water level in the north pit had not yet reached the perimeter dykes. Because the north pit perimeter dykes are believed to be at higher elevations, it is possible that the final water elevation in this pit will be significantly above the Bruce Lake water level. No evidence of a channel being cut through the dyke to facilitate water movement between the pit and Bruce Lake was noted during the inspection. Prior to the proposed redevelopment of the Griffith Mine, MNDM staff indicated that an engineering evaluation of the perimeter dykes would be necessary to determine where these dykes should be breached to facilitate the free movement of water between the pits and Bruce Lake (Puumala, 2009).

Based on Lake of the Woods Control Board (LWCB) monitoring, the local English River basin received the highest precipitation on record for the period of mid-April through August 2010. The wet summer conditions of 2010 in the Red Lake, Chukuni River, and Trout Lake basins contributed to high water levels on Pakwash Lake and at Grassy Narrows, although the peak levels were considerably lower than those experienced in the previous two summers. The total outflow from Manitou Falls during the summer period was substantially lower than in the same period in 2008 and 2009 (Lake of the Woods Control Board, 2012).

Similarly, the Pakwash Camp Owners Association noted that the level of Pakwash Lake has not only been excessively high more frequently due to high flow years, but also the level has generally been higher overall than it has traditionally been. The Board decided to assess historic data for any trend in water level over time. Daily tailwater level data for the Ear Falls dam from 1948 through to 2008 was averaged for the May to October period each year and plotted against time, along with the maximum and minimum daily levels in each May to October period. Initial plots indicated that the new higher water level regime was the result of the construction of the Manitou Falls dam. Data for the Ear Falls tailwater levels revealed the following trends:

- During the May to June period, the average level in the last decade (2000 to 2008) has been 16 to 20 cm (6 to 8 in) higher than in the previous four decades (1960s to 1990s);
- During the July to August period, the average level in 2000 to 2008 has been 18 to 26 cm (7 to 10 in) higher than in the 1960s to 1990s; and
- During the September to October period, the average level in the last two decades has been 8 to 16 cm (3 to 6 in) higher than in the previous 3 decades (1960s to 1980s).

Following this assessment, it was concluded that the average level of Pakwash Lake throughout the tourist operating season has definitely been higher in recent years than in the previous several decades, which appears to be the result of higher flows through the system in recent years, primarily in the summer.

In 2012 NIC commenced a hydrology study which included the installation of automated hydrology stations paired with field measurements at selected locations both immediately upstream of the proposed Project site and immediately downstream, where applicable. In addition, one more drainage point had a hydrology station installed to assess for seasonal flow variations. One hydrometric station was installed downstream of Bruce Lake, one station on Bruce Creek and one station on Ten Mile Creek. Each hydrometric station consists of a pressure transducer with data logger, and a 1 m staff gauge, all attached to a wooden post. The post was anchored into place to prevent movement using steel rods driven into the substrate in a tripod fashion and anchored to the wooden post. The pressure transducers were installed at a height relative to the staff gauge so that water depths can be converted to flow estimates. The data loggers were set to record every 15 minutes (96 times per day).

Staff gauges were surveyed for elevations relative to a local arbitrary benchmark that was established at each site, by anchoring a bolt into a tree (where bedrock is not available) or using a marked point on a bedrock outcrop. The channel bottom was also surveyed at 0.15 m intervals at the time of installation to establish a cross-section profile of the channel at each monitoring location.

Manual flow monitoring measurements were collected on a regular basis and will continue during the open water season. Flow measurements combined with water depth data will be used to determine discharge from each of the monitoring points during the open water season. The 2012 monitoring season discharge rates (litres per second) based on manual flow measurements are presented in **Table 8**. The hydrology study will continue through the 2013 season and data will be used to generate a hydrological model and water balance for the site.

Table 8: Preliminary Manual Flow Measurements (2012)

Station	Date	Time (CST)	Discharge Rate (L/s)	Guage Height (m)	Drainage Area (km^2)
NI-HS1	7-Jun-12	13:30	873	0.560	95.5
Ten Mile Creek	18-Jul-12	10:30	1,000	0.802	
	17-Aug-12	10:30	362	0.808	
	18-Sep-12	16:30	1212	0.782	
NI-HS2	7-Jun-12	18:45	68	0.279	10.1
South Bruce Lake inlet	18-Jul-12	13:30	14	0.190	
	17-Aug-12	8:45	46	0.268	
	18-Sep-12	2:00	13	0.184	
	2-Nov-12	10:45	55	0.380	
NI-HS3	8-Jun-12	9:00	15	0.448	32.4
Bruce Creek	17-Jul-12	17:35	207	0.716	
	15-Aug-12	17:05	140	0.689	
	17-Sep-12	16:00	6	0.486	
	1-Nov-12	9:00	280	0.790	

5.1.1.5 Atmospheric Environment and Noise

The Project site is located in an area of the Boreal Forest that is dominated by natural sounds as well as road noise (Highway 105), forestry activities and outdoor recreation. Therefore, it is assumed that the Project site will be categorized by the MOE as a Class 3 (Rural) Area prior to mine development.

5.1.1.6 Geochemistry

Some historical information exists for mine site-drainage chemistry for the Griffith property, including metal leaching (ML) and acid rock drainage (ARD) (deGagne & Yaw, 2002). Based on a Site Inspection Report for the Griffith Mine (September 2002), tailings samples collected from the north and south TMAs suggest that the tailings are not acid generating (**Appendix 4**). A complete geochemical study will be completed in accordance with the *Ontario Regulation 240/00* requirements for more reliable predictions of ML-ARD, and to fulfill closure planning and other permitting requirements.

5.1.1.7 Archaeology

Since this is an abandoned mine site more than 40 years old, it will require an historical study to determine if foundations and other facilities within the boundary of the property will require historical recording. A Stage 1 Archaeological Assessment will be conducted to determine if there is any potential for archaeological resources and/or heritage at the Griffith the site. The existing waste rock storage and tailings areas covering portions of the site will be excluded from this Assessment, as will the pit areas and other disturbed parts of the site.

5.1.2 Biological Environment

The conceptual schedule for baseline environmental studies is included in **Appendix 10**. Existing documented natural environmental features are generally described in **Figure 18**.

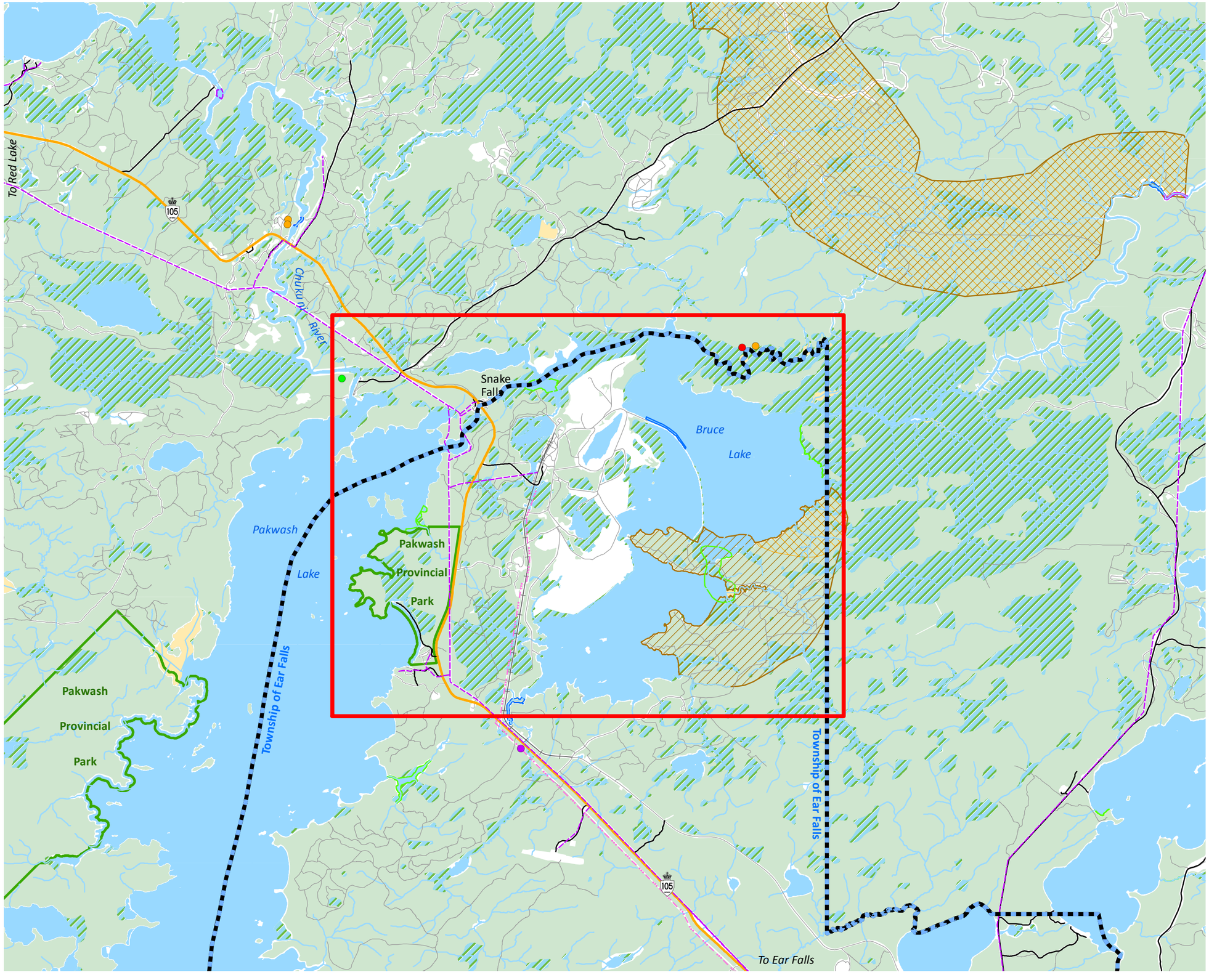
5.1.2.1 Terrestrial Resources

The mine site is located within the Boreal Forest Region, comprised mainly of coniferous trees (e.g. spruce and jack pine), trembling aspen and white birch. Small pockets of red and white pine occur, along with a limited extent of tamarack (Domtar, 2009).

According to MNR Natural Resource Values Information System (NRVIS) data, there are three nesting sites within the area of interest for the Project. These nesting sites are occupied by the following species: osprey (west of Chukuni River, north of Pakwash Lake), Turkey Vulture (north of Bruce Lake located within a wetland) and unidentified eagle/osprey (north of Bruce Lake located within a wetland). Moose habitat is identified on the east side of Bruce Lake and south of the primary tailings management area. No similar sites have been identified at the mine site.

GRIFFITH MINE REDEVELOPMENT

NATURAL ENVIRONMENT FEATURES
FIGURE 18



- OSPREY NESTING SITE
- TURKEY VULTURE NESTING SITE
- UNIDENTIFIED EAGLE/OSPREY NESTING SITE
- UNIDENTIFIED HAWK/OWL NESTING SITE
- HYDRO LINE
- NATURAL GAS PIPELINE
- HIGHWAY
- MINOR ROAD
- LOCAL ROAD
- RAILWAY
- WATERCOURSE
- AREA OF INTEREST
- MUNICIPAL BOUNDARY
- PROVINCIAL PARK
- NORTHERN PIKE SPAWNING AREA
- WALLEYE SPAWNING AREA
- WHITEFISH SPAWNING AREA
- MOOSE EARLY WINTERING AREA
- MOOSE LATE WINTERING AREA
- MOOSE AQUATIC FEEDING AREA
- WATER BODY
- WETLAND
- WOODLAND

0 0.5 1 2 km

1:100,000

N W E S

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNR

MAP CREATED BY: GM
MAP CHECKED BY: MB
MAP PROJECTION: NAD 1983 UTM Zone 15N

FILE LOCATION: I:\GIS\126239 - Griffith Mine\Mapping

DILLON CONSULTING

PROJECT: 12-6239
STATUS: DRAFT
DATE: 12/7/2012

The Trout Lake Forest area has historically provided habitat for Woodland Caribou and Moose. White-tailed deer have been present since the 1950s and 1960s, primarily due to less severe winter temperatures (Domtar, 2009). The Trout Lake Forest also provides habitat for Species at Risk, including Great Grey Owl and Woodland Caribou, and provincially featured[1] species including Marten, Moose, and Pileated Woodpecker (Eastern Ontario Model Forest, n.d.). Although there are no known Species at Risk within the Project site, further field studies will need to be conducted to verify the wildlife species and/or habitat present. The Winter 2013 Aerial Ungulate Survey (conducted by DST) indicated no signs of Caribou within the Project site. The northeast area of the site, including the north pit, is within the trapline management area identified as RL073. The southwest area of the site, including the area anticipated to house the processing and administrative facilities, is within trapline management area RL068. The mine site is also within bear management area RL-03-032.

5.1.3 Surface Water and Sediment Quality

In 2002, water quality at the north TMA met the Municipal Industrial Strategy for Abatement (MISA) control levels as well as Ontario Provincial Water Quality Objectives (PWQO) with the exception of total suspended solids (PWQO=15; Sample=16) (deGagne and Yaw, 2002). Surface water samples were also collected in 2009 as part of a Mine Rehabilitation Report (Puumala, 2009). These surface water samples showed hardness and sulphate levels somewhat higher than typical surface water values (Puumala, 2009). Metal concentrations were below PWQO with the exception of a marginally elevated concentration of uranium (relative to the interim PWQO for uranium) in the north pit. Recent water quality samples taken with respect to the PTTW are consistent with previous samples. **Appendix 6** provides information with respect to the approved PTTW and the drill program in the north pit which will result from the dewatering activity, while **Appendix 11** provides an analysis of pit water.

Quarterly surface water sampling will be completed for Bruce Lake (north and south), three stream sites, the north and south pits, the Iron Bay Tailings Pond, a reference lake and a reference stream. Baseline surface water sampling at lake sites during the summer will also include mid-depth and bottom sample collection (1 m above bottom). Samples collected will enable temporal comparisons at each location with these reference or benchmark values that will be generated. The selected number of sites may be expanded depending upon consultation with regulatory authorities and the location of other facilities and/or infrastructure as planning progresses.

Sediment sampling will be completed once annually during the fall, concurrently with the collection of benthic invertebrates at the north and south basins of Bruce Lake, as well as three stream sites, a reference lake and a reference stream. The collection of these samples will provide NIC with baseline information that can then be compared to conditions at the site during exploration, active mine life and closure.

Surface water and sediment analyses will include a comprehensive assessment of inorganics and metals (total and dissolved) for surface water, as identified in the **Table 9, 10** and **11**.

[1] Featured species are determined by a provincial committee and district biologists, and are listed in the forest management plan. Featured species may be species at risk, locally rare or provincially rare plant and animal species (Eastern Ontario Model Forest, n.d.).

Table 9: Surface Water Field Parameters and Associated Detection Limits

Group	*Parameter*	*Detection Limit*	*Unit*
Field Parameters	pH	0.1	pH
	Conductivity	1	µmho/cm
	Dissolved Oxygen (DO)	0.1	mg/L
	Temperature	0.1	^{o}C
	Oxidation Reduction Potential (ORP)	0.1	mV
Laboratory: Inorganics	Alkalinity (Total as $CaCO_3$)	1	mg/L
	Bicarb. Alkalinity (calc. as $CaCO_3$)	1	mg/L
	Ammonia Nitrogen (NH_3 + NH_4+)	0.05	mg/L
	Bromide (Br-)	1	mg/L
	Chloride (Cl)	1	mg/L
	Conductivity	1	µmho/cm
	Dissolved Inorganic Carbon (DIC)	1	mg/L
	Dissolved Organic Carbon (DOC)	0.1	mg/L
	Dissolved Phosphorus (P)	0.1	mg/L
	Fluoride (F-)	0.1	mg/L
	Hardness (calc. as $CaCO_3$)	1	mg/L
	Nitrate (NO_3^-)	0.1	mg/L
	Nitrite (NO_2)	0.01	mg/L
	Orthophosphate (P)	0.01	mg/L
	pH	0.01	pH
	Sulphate (SO_4)	1	mg/L
	Total Dissolved Solids (TDS)	10	mg/L
	Total Kjeldahl Nitrogen (TKN)	0.1	mg/L
	Total Organic Carbon (TOC)	0.1	mg/L
	Total Suspended Solids (TSS) - low level	1	mg/L
	Turbidity	0.1	NTU

Table 10: Total and Dissolved Metals and Associated Detection Limits

Group	*Parameter*	*Detection Limit*	*Unit*
***Laboratory:* Dissolved Metals** (ICP-MS)	Aluminum (0.2 U, Clay Free)	5	µg/L
	Mercury (Hg) - low level	0.1	µg/L
Total Metals (ICP-MS)	Mercury (Hg)	0.02	µg/L
Dissolved and Total Metals (ICP-MS)	Aluminum (Al)	5	µg/L
	Antimony (Sb)	0.5	µg/L
	Arsenic (As)	1	µg/L
	Barium (Ba)	5	µg/L
	Beryllium (Be)	0.5	µg/L
	Bismuth (Bi)	1	µg/L
	Boron (B)	10	µg/L
	Cadmium (Cd)	0.1	µg/L
	Calcium (Ca)	200	µg/L
	Chromium (Cr)	5	µg/L
	Chromium (Cr) VI	0.5	µg/L
	Cobalt (Co)	0.5	µg/L
	Copper (Cu)	1	µg/L
	Iron (Fe)	100	µg/L
	Lead (Pb)	0.5	µg/L
	Lithium (Li)	5	µg/L
	Magnesium (Mg)	50	µg/L
	Manganese (Mn)	2	µg/L
	Molybdenum (Mo)	1	µg/L
	Nickel (Ni)	1	µg/L
	Potassium (K)	200	µg/L
	Selenium (Se)	2	µg/L
	Silicon (Si)	50	µg/L
	Silver (Ag)	0.1	µg/L
	Sodium (Na)	100	µg/L
	Strontium (Sr)	1	µg/L
	Tellurium (Te)	1	µg/L
	Thallium (Tl)	0.05	µg/L
	Thorium (Th)	1	µg/L
	Tin (Sn)	1	µg/L
	Titanium (Ti)	5	µg/L
	Tungsten (W)	1	µg/L
	Uranium (U)	0.1	µg/L
	Vanadium (V)	1	µg/L
	Zinc (Zn)	5	µg/L
	Zirconium (Zr)	1	µg/L

Table 11: Sediment Parameters and Associated Detection Limits

Group	***Parameter***	***Detection Limit***	***Units***
Particle Size	Sand	1	%
(hydrometer)	Silt & Clay	1	%
Inorganics	Ammonia-N, Total	25	ug/g
	Bromide (Br-)	20	ug/g
	Chloride (Cl)	10	ug/g
	Moisture	0.2	%
	Nitrate (N)	10	ug/g
	Natrate + Nitrite	3	ug/g
	Nitrite (N)	0.5	ug/g
	Phosphate (P)	20	ug/g
	Sulphate (SO_4)	20	ug/g
	Total Kjeldahl Nitrogen (TKN)	50	ug/g
	Total Organic Carbon (TOC)	500	mg/kg
Metals	Aluminum (Al)	5	µg/g
	Antimony (Sb)	1	µg/g
	Arsenic (As)	1	µg/g
	Barium (Ba)	1	µg/g
	Beryllium (Be)	0.5	µg/g
	Bismuth (Bi)	1	µg/g
	Boron (B)	5	µg/g
	Cadmium (Cd)	0.5	µg/g
	Calcium (Ca)	20	µg/g
	Chromium (Cr)	1	µg/g
	Cobalt (Co)	1	µg/g
	Copper (Cu)	1	µg/g
	Iron (Fe)	5	µg/g
	Lead (Pb)	1	µg/g
	Magnesium (Mg)	20	µg/g
	Manganese (Mn)	1	µg/g
	Molybdenum (Mo)	1	µg/g
	Nickel (Ni)	1	µg/g
	Phosphorus (P)	10	µg/g
	Potassium (K)	10	µg/g
	Selenium (Se)	1	µg/g
	Silver (Ag)	0.2	µg/g
	Sodium (Na)	20	µg/g
	Strontium (Sr)	1	µg/g
	Thallium (Tl)	1	µg/g
	Tin (Sn)	1	µg/g
	Titanium (Ti)	5	µg/g
	Uranium (U)	1	µg/g
	Vanadium (V)	1	µg/g
	Zinc (Zn)	1	µg/g
	Zirconium (Zr)	1	µg/g

5.1.4 Fish Habitat

A letter from the Department of Fisheries and Oceans (DFO) stated that fish habitat protection provisions will not be applied to the north pit (i.e. it is not considered fish habitat), and as such, no fisheries work is planned to be completed at the north pit (**Appendix 12**). Historic MNR catch records indicate the following (L. Barnes, personal communication, 2010):

North pit: 10 gillnets and 10 minnow traps set June 4, 2010. Total catch was 177 rock bass and 9 northern pike in the gillnets and 1 small rock bass in the minnow traps.

South pit: 10 gillnets and 9 minnow traps set June 8, 2010. Total catch was 7 northern pike, 1577 yellow perch, and 4 crayfish in the gillnets. 5 sticklebacks were caught in the minnow traps.

Iron Bay Tailings Pond: 3 gillnets set October 7, 2010. Catch was 35 walleye, 17 northern pike and 6 yellow perch. All walleye were quite large, most being between 50 - 60 cm and the majority of the pike were between 55 - 65 cm.

While there are fish found in the Iron Bay TMA, there is no apparent hydrological connection between this area and Bruce Lake. This is evidenced by **Figure 7** which shows a significant colour difference between the two areas and a previously mentioned inspection report by the MNDM that substantiate the lack of connection between Iron Bay TMA and Bruce Lake. Field studies will confirm the integrity of the perimeter dyke through underwater and surface examination. However, considering that Iron Bay was historically part of Bruce Lake, it is likely that Iron Bay would be deemed fish habitat under current legislation. As such, a regulatory amendment to list the water body on Schedule 2 of the MMER is expected to be required.

Spawning areas in close proximity of the Project are generally occupied by the following species:

- Northern Pike (4 occurrences - eastern shore of Pakwash Lake, immediately north of the Provincial Park, east of Snake Falls, along the eastern shore of the north basin of Bruce Lake and generally the east side of the area between the north and south basins); and

- Walleye (2 occurrences - along a portion of the tailings retention dyke on the Bruce Lake side and the south end of Bruce Lake, immediately north of Highway 105).

The southern basin of Bruce Lake has been identified as a fish sanctuary from April 1 to June 14 to protect spring spawning (MNR, 2012). As a result, a detailed assessment and evaluation of the spawning habitat in Bruce Lake will be completed. Fish community surveys, fish tissue metal analyses, benthic invertebrate assessment, and fish habitat assessments will be completed in order to assess the baseline conditions of aquatic features at the mine site and within the area of interest.

5.1.5 Ground Water Information

A suitable baseline hydrogeological study will be developed to define pre-development hydrogeological conditions to fulfil environmental assessment and permitting requirements for the Griffith Mine Project. This information will be subsequently used to develop conceptual and numerical groundwater models and to predict potential impacts of the mine. The baseline assessment also provides the framework for on-going

groundwater monitoring during site development, operation, and closure. A suitable hydrogeological study will be developed, including the following tasks:

1. Identify data gaps through review of available information to develop a work plan;
2. Fieldwork, laboratory tests and monitoring program;
3. Establish a groundwater model to evaluate the subsurface conditions, surface drainage and produce a conceptual model of the proposed operation;
4. Analyse effects and predict impacts of Project; and
5. Identify and assess mitigation options.

Existing hydrogeological data will be reviewed and data gaps assessed. Following this review, a hydrogeologist will visit the site to inspect existing infrastructure (i.e. open pits, TMAs, etc.), drill cores and complete field work. Field work will consist of monitoring well installation, groundwater levels monitoring and groundwater quality monitoring, aquifer tests analysis, core logging, packer test analysis (in the rock), pumping test analysis (in overburden material). Aquifer tests will be carried out to determine hydraulic properties within local hydrostratigraphic units. The location of these test well sites will be determined after the review of all available field data for the site.

A network of groundwater monitoring wells are also planned to be installed and tested to determine the hydraulic characteristics and water quality of the project area aquifers. Boreholes and groundwater observation wells will be distributed such that the groundwater conditions are well defined for the site and nearby surrounding area.

Data collected in the hydrology study will assist in establishing groundwater contribution to stream flow and infiltration as part of the water balance assessment. Collection of groundwater and surface water samples for laboratory analyses of major ion chemistry will establish the background water quality across the site area. Data loggers will be installed to automatically continuously record water levels and provide detailed records of the response of groundwater and climatic conditions throughout the year.

To assess bedrock hydraulic characteristics, rock core from boreholes at the proposed open pit extents will be logged for hydrogeological characteristics. Pump tests will be conducted to determine hydraulic characteristics such as transmissivity and storativity, as well as any boundary conditions existing at the site. Slug testing will be conducted to test overburden and packer tests will be completed in deeper boreholes around the north pit.

A water balance analysis will be conducted to determine the pre-development and post-development interflow and deep recharge volumes. The water balance will utilize the longest and most continuous local daily climate data and a soil-moisture balance approach with daily or monthly calculations reported on an average annual basis. Surface water flow and elevation data will be used to validate the existing conditions water balance where possible. A conceptual groundwater site model will be developed through integrating the results of field investigations and be supplemented with the existing site information.

In addition to the outline above, the hydrogeological study will also consider the following, where required:

1. Regulatory requirements for preparing and submitting an application for a PTTW, where dewatering will result in a water taking exceeding 50,000 L/day, in reference to MOE guidelines; and/or

2. Regulatory requirements (*Ontario Regulation 903*) for decommissioning any on-site wells (water supply and/or monitoring wells).

5.2 Changes to Fish and Fish Habitat, Aquatic Species, and Migratory Birds

5.2.1 Fish and Fish Habitat

The Griffith Property, having a general elevation of 350 m asl, borders Bruce Lake. Pakwash Lake occurs to the west beyond claim boundaries. Both waterbodies provide fishing opportunities. Pakwash Lake is known to contain walleye, northern pike, smallmouth bass, muskellunge, Lake Whitefish and yellow perch.

Bruce Lake is known to contain walleye, pike, and perch. From a historical perspective, the southeast portion of the Lake was utilized as a tailings area for the previous mining operation. Due to the location of the iron ore deposit which was partially under the lake, it was necessary to dyke off parts of Bruce Lake and also construct a tailings retention dyke between the north and south basins of the lake. By June, 1966, construction of a dredging disposal basin was in progress. The dykes, with an overall length of 3.2 km were completed over a two year period.

The Project will utilize this existing Iron Bay tailings area for tailings disposal for the proposed Project. While there are some fish found in the area presently, they are opportunistic and the tailings area does not have a direct linkage with Bruce Lake.

As of July of 2012, the Government of Canada proposed new changes to the *Fisheries Act* as follows (specifically in Section 35):

> *(1) No person shall carry on any work, undertaking or activity, other than fishing, that results in an adverse effect on a fish of economic, cultural or ecological value.*
>
> *(2) No person contravenes subsection (1) if:*
>
> *a. the adverse effect is authorized by the Minister and is produced in accordance with the conditions established by the Minister;*
>
> *b. the adverse effect is authorized by a person prescribed by the regulations and is produced in accordance with the conditions prescribed by the regulations;*
>
> *c. the work, undertaking or activity is carried on in accordance with the conditions set out in the regulations or with any other authorization issued under this Act;*
>
> *d. the work, undertaking or activity is carried on in, on, over, under, through or across any Canadian fisheries waters, and:*
>
> *i. the work, undertaking or activity falls within a class of works, undertakings or activities, or the Canadian fisheries waters fall within a class of Canadian fisheries waters, established by regulation; and*

ii. the work, undertaking or activity is carried on in accordance with the conditions prescribed by the regulations.

Based upon a review of this revised section of the *Fisheries Act*, and in consideration of the fact that the previous tailings area is physically separated by a dyke from Bruce Lake, it is anticipated there will be little to no impact to fish of an economic, cultural or ecological perspective. NIC is committed to fully studying fish and fish habitat as a component of the field studies program discussed below.

5.2.1.1 Potential Changes to Fish and Fish Habitat

There are a number of potential changes to fish communities and fish habitat that may result from mine redevelopment activities, they can include but are not limited to:

- Alteration or loss of fish habitat;
- Changes in water quality and hydrology;
- Fish mortalities related to redevelopment activities;
- Exposure to deleterious substances;
- Introduction of invasive species; and
- Harm or harassment of Species at Risk

There is a limited body of data regarding historical fisheries for waters on the Griffith Mine redevelopment site, and surrounding area. In 2010, MNR completed a gill netting effort in the waters of the north pit, south pit and Iron Bay. These data provide a preliminary understanding of fish species present in each waterbody (L. Barnes, personal communication 2010). Pakwash Lake, downstream of the project location has been surveyed as a part of the MNR Broadscale Fish Community Assessment Program (L. Barnes, personal communication 2013). Results provide additional insight into fish community composition, relative abundance and fish population health in Pakwash Lake.

Due to the paucity of current fish and fish habitat information for the Griffith Mine redevelopment site, and surrounding waters, and extensive baseline study has been proposed and scheduled to begin in the spring of 2013. The purpose of the study is to collect the necessary data to support future mine permitting, design, develop appropriate and effective mitigation measures and develop the mine Closure Plan. Potential changes to fish communities and fish habitat are outlined in **Table 12**. This table only includes the potential changes identified to date. It will be updated to include insights gained from baseline studies, and ongoing consultation with regulatory agencies, First Nations and other stakeholders.

5.2.1.2 Fish and Fish Habitat Studies

Mapping and Characterization

An assessment of physical and chemical characteristics of waterbodies within the Project area will be undertaken, including information such as: area; flow rates; depth profiles; shoreline structure; water clarity; temperature; oxygen; pH; conductivity profiles; substrate composition in streams; connectivity of waterbodies; and barriers to fish movement. Habitat mapping for streams will follow the Ontario Stream Assessment Protocol (OSAP) and include: substrate, depth, in-stream morphology, cover and bank stability at each site. The southern basin of Bruce Lake has been identified as a fish sanctuary (MNR, 2012). While no facilities are planned for the southern basin, a detailed assessment and evaluation of the spawning habitat in

Bruce Lake will be carried out. This component of the fish habitat surveys are planned to begin in early spring, soon after ice-out has occurred.

Fish Community Surveys

Fish community surveys will take place at the north and south basins of Bruce Lake and at two streams (Ten Mile Creek, Bruce Creek). No fisheries studies will be completed in either the north or south pits or the tailings ponds. It is understood that fish have been captured in these bodies of water. Fish community surveys are also planned for a reference lake. At this time Bluffy Lake, east of the Griffith Mine site, has been identified as a possible reference lake. A stream on the north shore of Bluffy Lake has been selected as a potential reference stream (UTM: 15U 502315.55 mE; 5631678.72 mN). After regulatory consultations have occurred and potentially critical areas have been identified, additional assessments may be required or locations may be changed.

Sampling methods for lake systems will follow the broad-scale fish community monitoring (BSM) protocol designed by the MNR. The BSM protocol targets large and small bodied fish by setting large and small mesh gillnets at all depth strata throughout a lake system. Gill netting can be a lethal form of fish sampling; however, mortalities tend to be ≤ 2% of the total fish population of a given lake. BSM netting can occur anytime while surface water temperatures are above 18°C. Fish community surveys for streams in the study area will be conducted by electrofishing during the open water season. Electrofishing is not considered to be a lethal form of fish sampling and there tend to be no mortalities associated with this effort.

All assessments conducted will include details such as, date, time, effort (e.g. hours set), UTM coordinates, and various other details, when deemed appropriate.

Fish Population Health and Age Analysis

Detailed assessment of two fish species will occur to collect baseline data that will be used to compare to data collected once the Griffith Project is operating under the Metal Mining Effluent Regulation (MMER). The selection of fish species for detailed assessments depends on the fish community dynamics, trophic structure, abundance of each species within the community, and the exposure level of the waterbody with respect to proposed mine-related activities. As part of an Environmental Effects Monitoring (EEM) program, a requirement of the MMER, recommendations for the selection of fish species for detailed data collections are as follows (Environment Canada, 2002).

- Two species of relatively sedentary finfish;
- Commercial, sport, or subsistence fish are not recommended, as resident populations are already under pressure from existing activities; and
- Large species should be avoided since adult abundance of small species will respond more rapidly to stressors that affect fecundity and survival.

Internal organ measurements and age determinations for up to two fish species will be completed in the Bruce Lake north and south basins as well as at Bluffy Lake (or another suitable reference lake) as part of an intensive fisheries program that will be planned upon completion of regulatory consultations and identification of critical areas.

A total of 40 to 60 (depending on body size) individuals per species will be collected from each site chosen for detailed morphological analyses. Internal organ (liver and gonads) and aging structure (scales and otoliths) data obtained will allow for a thorough and intense comparison of growth, reproduction, condition, and survival among fish populations.

Fish Tissue Analysis

Fish tissue metal analysis will be carried out for several waterbodies within the vicinity of proposed mine-related activities after regulatory consultations have occurred and critical areas have been confirmed.

A fillet from each of eight adults from each location of interest will be collected and analyzed for metals, along with recording associated characteristics such as length, weight, and sex, and collecting age structures (i.e. otoliths and scales).

Benthic Invertebrate Assessment

Benthic invertebrates will be collected from Bruce Lake in the north and south basins, Ten mile creek, Bruce Creek and at Bluffy Lake and a reference stream (to be identified). Three grab samples will be collected per sample location using a petit ponar sampler (lake sites). One sample from each of the three creek locations will also be collected using the kick and sweep method following the Ontario Benthos Biomonitoring Network protocol. All samples will be cleared of any debris, placed in laboratory supplied containers and fixed with 10% formalin for at least 72 hours. After 72 hours fixation, samples will be changed to 80% ethanol. Samples will be shipped to a laboratory for sorting and identification by a professional taxonomist. Taxon density, taxon richness, the relative proportion of the most abundant taxa, Simpson's diversity, evenness and the Bray-Curtis index will be determined from the resulting data and statistical comparisons of invertebrate communities will be made between the reference and potentially impacted sites.

5.2.1.3 Aquatic Species (Species at Risk)

An "aquatic species" as defined under the Federal Species at Risk Act is defined as a "*wildlife species that is a fish, as defined in section 2 of the Fisheries Act, or a marine plant, as defined in section 47 of that Act*."

Under section 2 of the *Fisheries Act*, a "fish" includes:

(a) parts of fish;
(b) shellfish, crustaceans, marine animals and any parts of shellfish, crustaceans or marine animals; and
(c) the eggs, sperm, spawn, larvae, spat and juvenile stages of fish, shellfish, crustaceans and marine animals

Under section 47 of the *Fisheries Act*, a "marine plant" includes all benthic and detached algae, marine flowering plants, brown algae, red algae, green algae and phytoplankton. As no aquatic Species at Risk, as defined above, are known to be present at, or in the vicinity of, the site, no mitigation of environmental effects is anticipated to be required. Should additional information on the presence of aquatic Species at Risk at the site become available, applicable consultation, assessment and mitigation plans will be considered.

5.2.1.4 Migratory Birds

There are a number of potential ways that the proposed Project could affect migratory birds including, but not limited to:

- Mortality as a result of construction;
- Mortality as a result of vehicle collisions;
- Modification of behaviour (e.g. movement);
- Habitat fragmentation and loss;
- Displacement due to invasive species; and
- Increased predation

The principal potential adverse effects of the Project on migratory birds would be those associated with direct habitat loss as a consequence of vegetation removal. The disturbance of nesting birds during the nesting season (April 1 to August 15) is also a concern.

A waterfowl survey was conducted in October coinciding with the southerly migration of the Atlantic and Mississippi flyway species. The most common waterfowl species observed was mallard duck, red head duck, and scaup species. The majority of observations were within the wetland associated with the Bruce Lake Conservation Reserve. This area is not expected to be adversely affected by the Project development.

The following measures will be implemented in order to reduce the potential impacts of Project construction:

- Prior to construction, the site will be searched for nesting birds;
- Construction will occur outside the nesting season (April 1 to August 15) for migratory birds in areas where nesting birds are discovered;
- The overall footprint of the project will be minimized where possible;
- The project site will be decommissioned and re-vegetated to the extent possible as per the mine Closure Plan;
- Where practicable, a 30 m buffer will be maintained on all lakes, rivers, wetlands and unique or sensitive habitats; and
- Best management practices from the Stand and Site guide for song birds and other small birds will be followed.

For the study of avian resources at the Griffith Mine Project, the proponent will undertake a general validation of wildlife habitat and communities within the study area to verify the presence and abundance of birds and bird habitat.

Breeding bird surveys consist of point count surveys, marsh bird monitoring, nocturnal owl surveys and waterfowl surveys. Breeding bird surveys will occur throughout the study area and will follow the protocol described for the Ontario Breeding Bird Atlas (Cadman et al., 2007). Point counts consisted of a ten minute non-fixed radius count during which all bird species heard or seen were recorded. Point count locations were distributed to represent the range of habitat types found throughout the study area. This protocol uses a point-count method and requires two visits between the dates of May 24th, and June 17th. Ideally sites are visited under clear, calm and slightly damp conditions with winds under 15 km/h. All birds seen or heard are counted during a ten minute period at each station.

A waterfowl survey will be conducted within the study area to determine species composition and richness. An investigation of all bays and islands of Bruce Lake will take place by boat. Efforts will be made to identify individual birds, couples and groups of birds to develop bird phenological indices.

Marsh birds will be surveyed in accordance with Bird Studies Canada protocol. Call playback will be used over two visits; one in late May and a second in late June. Surveys will be conducted in the evening so songbird and marsh bird surveys can ideally be completed over the same days.

Owls will be surveyed on clear, windless nights in April over several routes using the call playback method as per Bird Studies Canada.

Species at Risk values are an important part of bird community surveys; species such as the Whip-poor-will may be present at the Project area. It is important to confirm the presence or absence of such species for future mine permitting. In addition, the Canadian Wildlife Service (CWS), together with EC, will be consulted to evaluate the presence of any critical migratory bird habitat (e.g., nesting, staging, feeding, etc.). If critical habitat is identified on the site or provincially rare, threatened or endangered species are thought to be present within the study area, additional assessment will be recommended to satisfy CWS requirements.

5.3 Overview of Potential Environmental Effects

Table 12 describes potential changes to the environment as a result of carrying out the Project, based on components of the undertaking. The amount of disturbance to the natural environment is expected to be significantly reduced (in comparison to a greenfield site), as the areas planned to accommodate necessary infrastructure have been previously disturbed. Further, considering that this is a previously disturbed brownfield site, the re-establishment of the Griffith Mine represents an opportunity for appropriate rehabilitation and site reclamation activities to be undertaken, in consultation with the applicable regulating authorities. Baseline environmental studies will be undertaken to determine the extent and significance of natural features and their current functions in the natural environment.

In addition to the potential biophysical effects, there is likely to be positive socio-economic impacts associated with the redevelopment of the Griffith Mine. NIC has received support from representatives of local communities through preliminary consultation activities.

Table 12: Possible Effects of the Project on the Environment

Project Component	Possible Effects of Development
Open Pit	• Potential for changes to surface and groundwater quality and flow associated with deepening of the north pit. • Potential impacts to the atmospheric environment including noise, dust, and emissions. • Potential loss or fragmentation of wetland habitat at the south pit. • North pit is known to contain Northern Pike and Rock Bass (L. Barnes, personal communication, 2010). DFO has stated fish habitat protection provisions will not apply north pit (N.Ward, personal communication 2011, **Appendix 11**) • South Pit known to contain Northern Pike, Yellow Perch and a

Project Component	Possible Effects of Development
	Stickleback species (L. Barnes, personal communication 2010) • The South Pit, like the North Pit is the result of an excavation and has no known connection to Bruce Lake it is possible that it will also be exempt from fish habitat protection provisions. NIC will consult with DFO to determine if the South pit will be considered fish habitat. Fish community, population, fish tissue and fish habitat assessments to identify potential changes and support future mine permitting and/or design of potential mitigation measures.
Waste Rock Stockpile Areas	• Potential loss or fragmentation of terrestrial habitat through site preparation. • Potential for changes to surface and groundwater quality as a result of ARD/ML (potential expected to be low).
Processing Plant	• Potential for impacts to the atmospheric environment including noise, dust, and emissions. • Potential loss or fragmentation of terrestrial habitat through site preparation. • Potential disturbance to terrestrial and avian species associated with operational noise.
Storage and Loading Facilities (i.e. warehouse and inventory, ore storage, fuel storage, chemical storage, explosives storage, truck storage)	• Potential loss or fragmentation of terrestrial habitat through site preparation. • Potential for changes to surface and groundwater through accidental spills.
Buildings (e.g. administration and temporary accommodations)	• Potential loss or fragmentation of terrestrial habitat through site preparation.
Tailings Management Areas	• Potential loss or fragmentation of terrestrial, wetland, and aquatic habitat associated with tailings disposal. • Potential for changes to surface and groundwater quality as a result of ARD/ML (potential expected to be low). • All potential fisheries values for proposed location of this project component are not known. Iron Bay known to contain: Walleye Northern Pike, and Yellow Perch (L. Barnes, personal communication, 2010). Fish community, population, fish tissue and fish habitat assessments to identify potential changes and support future mine permitting and/or design of potential mitigation measures. • South tailings management area will be closed and rehabilitated as part of the Griffith Mine redevelopment
Slurry Pipeline	• Potential loss or fragmentation of terrestrial and aquatic habitat associated with the construction of the slurry pipeline.

Project Component	Possible Effects of Development
	• Potential for changes to surface and groundwater quality as a result of ARD/ML (potential expected to be low) should the pipe break. • Potential for changes to surface and groundwater quality associated with spillage of tailings should the pipe break.
Electrical Power Supply and Infrastructure (i.e. gas-fired power plant or transmission line)	• Potential loss or fragmentation of terrestrial habitat through site preparation. • Potential for impacts to the atmospheric environment including noise and emissions. • Potential for noise during construction and operation. • Potential fisheries values for proposed location of this project component are not known. Fish community and fish habitat assessments to identify potential changes and support future mine permitting and design of potential mitigation measures. • Potential for aesthetic impacts.
Natural Gas Pipeline	• Potential loss or fragmentation of terrestrial and aquatic habitat through site preparation (existing right-of-way to be used, where possible). • Potential for impacts to the atmospheric environment associated with greenhouse gas emissions. • Potential fisheries values for proposed location of this project component are not known. Fish community and fish habitat assessments to identify potential changes and support future mine permitting and design of potential mitigation measures.
Water Management Facilities (i.e. vehicle washing and stormwater)	• Potential loss or fragmentation of terrestrial habitat through site preparation. • Potential for changes to surface and groundwater quality associated with stormwater discharge.
Waste Management Facilities	• Potential loss or fragmentation of terrestrial habitat through site preparation. • Potential for changes to surface and groundwater through accidental spills or seepage of wastewater.
Roads and Railways	• Potential for impacts to the atmospheric environment associated with noise and dust. • Potential loss of existing recreational trails in the vicinity of the mine. • Potential fisheries values for proposed location of this project component are not known. Fish community and fish habitat assessments to identify potential changes and support future mine permitting and design of potential mitigation measures.

Project Component	Possible Effects of Development
	• Potential disruption of trail use while the rail bed is being re-constructed. • Potential loss or fragmentation of vegetation adjacent to rail right-of-way (to accommodate potential widening).
Process Water Pipeline and Pumphouse	• Potential loss or fragmentation of terrestrial and aquatic habitat through site preparation. • All potential fisheries values for proposed location of this project component are not known. Walleye, Sauger, Northern Pike, Yellow Perch, Muskellunge, Rock Bass and Lake White Fish may be present in Trout Lake River. Fish community, population, fish tissue and fish habitat assessments to identify potential changes and support future mine permitting and/or design of potential mitigation measures.

Table 13 summarizes the potential interactions of the Project with the environment.

5.4 Changes to Federal Lands and Transboundary Effects

There are no federal lands on or adjacent to the area of the proposed undertaking. As such, no federal lands will be impacted by the Project. There are no anticipated impacts to areas outside of the Project study area including areas outside of Ontario or Canada.

5.5 Effects on Aboriginal Peoples

Based upon research conducted through MNDM, AANDC and the Agency there are no areas within the Project study area that are classified as Aboriginal Reserves. Despite this, NIC will continue to actively engage potentially affected Aboriginal groups as identified by the Agency and MNDM. The names and descriptions of these groups and consultation activities to date are included in **Section 6** of this PD. The purpose of this consultation is to determine the potential impact of the Project on Aboriginal communities, including:

- Health and Socio-economic Conditions: NIC is also actively engaging with these groups to determine local employment opportunities both in construction and operation phases (e.g. geologist assistants, assistance with baseline studies, labourers during pumping set up/take down, surveyors, core cutters, and ongoing monitoring work). NIC issued a notice to Wabauskang and Lac Seul seeking two geologist assistants. Representatives from Lac Seul First Nation indicated that the notice had been received and posted, however, no response was received from members. A member of the Wabauskang First Nation owns a sawmill and is currently employed by NIC to build core boxes and has built fences at the mine site previously.
- Physical and Cultural Heritage Features: The study team will also be conducting an archaeological assessment of the study area which may involve Aboriginal participation.
- The use of lands and resources for traditional purposes.

Table 13: Potential Interaction Matrix

Environmental Features	Physical Environment			Natural Environment			Human Environment							
Activity	Physiography, Topography and Surficial Geology	Surface water	Ground water	Fish and Aquatic	Terrestrial (Vegetation)	Wildlife and Species At Risk	Noise	Vibration	Climate Change & Air Quality	Solid Waste	Liquid Waste	Existing and Planned Land Use	Aboriginal Peoples	Cultural Heritage
Site Preparation														
Clearing/Grubbing	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
Re-establishment of Road Network	✓	✓		✓	✓	✓	✓		✓	✓		✓	✓	✓
Construction of Gas Pipeline	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Construction of Transmission Line	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Construction of Power Plant	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Construction of Water Pipeline	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓
Construction of Slurry Pipeline	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓		✓	✓
Construction of Facilities Buildings	✓	✓			✓	✓	✓	✓	✓	✓		✓	✓	✓
Pit Dewatering		✓		✓			✓		✓		✓		✓	✓
Reconstruction of Rail Line	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
Operations														
Open Pit			✓				✓	✓	✓	✓	✓		✓	
Facilities Buildings			✓				✓			✓			✓	
Waste Rock Storage	✓	✓	✓	✓						✓			✓	
TMAs	✓	✓	✓	✓						✓			✓	
Ore Processing				✓			✓	✓	✓		✓		✓	
Slurry Pipeline		✓	✓	✓							✓		✓	
Gas Pipeline			✓										✓	✓
Fuel Storage Area		✓	✓								✓			
Blasting			✓			✓	✓	✓	✓	✓		✓	✓	
Power Plant							✓						✓	
Transmission Line							✓						✓	✓
Rail Line							✓	✓					✓	✓
Equipment Maintenance		✓	✓				✓				✓			
Stormwater Management		✓												
Closure and Rehabilitation														
Removal of Facilities	✓	✓					✓	✓		✓		✓	✓	
Remediation of TMAs		✓	✓		✓								✓	

Note: ✓ indicates potential interaction

- The determination of significant structures, sites, or items from of historical, archaeological, paleontological or architectural significance.

Although details related to traditional use have not been identified through Aboriginal consultations to date, potential effects on Aboriginal Peoples include:

- Potential effects on aquatic populations and habitat;
- Potential effects on traditional harvesting area;
- Potential effects on archaeological resources (expected to be low due to previous disturbance);
- Potential presence of native medicines;
- Potential effects on traditional canoe/portage routes; and
- Potential socio-economic effects (i.e. employment opportunities)

NIC will confirm these effects on aboriginal communities through the discussions held as part of the EA.

6 Proponent Engagement and Consultation with Aboriginal Groups

6.1 Potentially Interested Aboriginal Groups

On August 19, 2011, NIC received correspondence from MNDM staff (Director, Mineral Development and Lands Branch) identifying potentially interested Aboriginal communities that should be notified of the Project, including Grassy Narrows, Lac Seul, Cat Lake, Slate Falls, Mishkeegogamang, and Wabaseemoong First Nation, as well as Grand Council of Treaty 3 and the Métis Nation of Ontario (**Appendix 2**). These communities were sent letters in August and October of 2011, introducing the company and Project, as well as requesting a formal meeting to provide further information on future exploration activities in the Ear Falls and Red Lake area. See **Section 6** for further information on Aboriginal engagement and consultation.

Correspondence from AANDC, dated July 10, 2012, identified three First Nations within 100 km of the Project and three beyond 100 km of the Project, that may be interested in and/or potentially affected by the Project (**Appendix 2**). These include Grassy Narrows, Lac Seul, McDowell Lake, Slate Falls Nation, Wabaseemoong Independent Nations, and Wabauskang First Nation (**Figure 19**).

Correspondence from the Ontario Ministry of Aboriginal Affairs (MAA), dated November 29, 2012, indicated that MAA would not be responding to NIC's request for assistance in identifying Aboriginal communities with potential interest in the Project (**Appendix 2**). This correspondence states that because NIC has been working with MNDM, it is the preference of MAA that any further inquiries related to the Project are directed to MNDM.

In January 2013, the Agency identified the following Aboriginal communities that are likely to have an interest in the Project: Wabauskang, Lac Seul, Grassy Narrows and Métis Nation of Ontario – Regional Consultation Committee. This section provides the location, name and contact information for each of the communities identified, as well as information on relevant Treaties, claims, negotiations or litigation. Applicable information regarding the communities affiliated with various Treaties and the Métis Nation of Ontario is also included. Following the submission of the PD, the Aboriginal communities identified through consultation with the Agency and MNDM will be notified and once again extended the offer to meet with NIC to obtain further information on the Project and express any comments and/or concerns related to their traditional territory.

6.1.1 Treaty 3

The Griffith Mine is located within the boundaries of Treaty 3. The Grassy Narrows, Lac Seul, Wabaseemoong Independent Nations, and Wabauskang First Nation are all signatories to Treaty 3. Grand Council Treaty 3 is the traditional government of the Anishinaabe Nation, representing 28 First Nations across 55,000 mi^2 of land. The Treaty area includes 26 First Nations in northwestern Ontario and 2 First Nations in Manitoba. Any and all consultation with these communities must be framed by the "Great Earth Law" ("Manito Aki Inakonigaawin" in Anishinaabemowin) (Grand Council Treaty 3, n.d.).

GRIFFITH MINE REDEVELOPMENT

ABORIGINAL AREAS OF INTEREST
FIGURE 19

1:1,300,000

0 10 20 40 km

N W E S

AREA OF INTEREST
100 km PROJECT LOCATION SETBACK
FIRST NATION COMMUNITY
WATER BODY

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNR

MAP CREATED BY: GM
MAP CHECKED BY: MB
MAP PROJECTION: NAD 1983 UTM Zone 15N

FILE LOCATION: I:\GIS\126239 - Griffith Mine\Mapping

DILLON CONSULTING

PROJECT: 12-6239
STATUS: DRAFT
DATE: 2/11/2013

Contact

Chief Warren White
Grand Chief of Treaty 3
Office of the Grand Chief
P.O. Box 1720
Kenora, Ontario
P9N 3X7
Toll Free: 800-665-3384
Local: (807) 548-4214
Fax: (807) 548-5054
grand.chief@treaty3.ca

Cheryl Becker
Mining Information Officer, Treaty 3
Cheryl.Becker@treaty3.ca
T: 807.548.4214

6.1.1.1 Grassy Narrows

A signatory to Treaty 3 and a member of the Bimose Tribal Council (Bimose Tribal Council, 2009), the Grassy Narrows First Nation (Band Number 149) has a total registered population of 1,455, of which 906 live on English River 21 Reserve in the District of Kenora (AANDCa, 2012). The 4145 ha English River 21 is located approximately 40 km northeast of Kenora and 85 km southwest of the Griffith Mine. An Ojibwa First Nation, Grassy Narrows is also known as *Asubpeescheewagong Netum Anishinabek* in the Anishinaabe language (Anishinaabemowin).

Contact

Chief Simon Fobister
General Delivery
Grassy Narrows, ON
P0X 1B0
T: 807.925.2201
F: 807.925.2649

6.1.1.2 Lac Seul

Lac Seul First Nation (Band Number 205) is located on the southeastern shores of Lac Seul, 56 km northeast of Dryden and approximately 100 km southeast of the Griffith Mine. A signatory to Treaty 3, Lac Seul is also a member of the Independent First Nation Alliance (Independent First Nations Alliance [IFNA], n.d.). The registered population of Lac Seul was 3,162 persons in June of 2012, of which 838 lived on-Reserve (AANDC, 2012b). The 26,821.5 ha Lac Seul 28 Reserve is made up of three communities: Kejick Bay, Whitefish Bay, and Frenchman's Head. Frenchmen's Head is accessible by road and is approximately 40 km from Sioux Lookout. Kejick Bay and Whitefish Bay are approximately 60 km northwest of Sioux Lookout and are accessible by water and air (IFNA, n.d.). The Lac Seul First Nation is also known as *Obishikokaang* in the Anishinaabe language.

Contact

Chief Clifford Bull
PO Box 100
Hudson, ON
P0V 1X0
exec.admin@lsfn.ca
T: 807.582.3503
F: 807.582.3449

6.1.1.3 Wabaseemoong Independent Nations

A signatory to Treaty 3 and a member of the Bimose Tribal Council (Bimose Tribal Council, 2009), the Wabaseemoong Independent Nations (Band Number 150) has a total registered population of 1,853, of which 919 live on-Reserve (AANDC, 2012c). The Wabaseemoong are located across four Reserves: Agency 30, One Man Lake 29, Swan Lake 29, and the main community of Wabaseemoong. Wabaseemoong, or Whitedog as it is also known, is located 50 km northwest of Kenora and approximately 135 km southwest of the Griffith Mine near the Ontario-Manitoba border.

Contact

Chief Eric Nelson Fisher
General Delivery
Whitedog, ON
P0X 1P0
nvq@live.ca
T: 807.927.2000
F: 807.927.2037

6.1.1.4 Wabauskang First Nation

The Wabauskang First Nation (Band Number 156) is a signatory to Treaty 3 and a member of the Bimose Tribal Council (Bimose Tribal Council, 2009). The Wabauskang First Nation has a total registered population of 296, of which 125 members live on-Reserve at the 3254.5 ha Wabauskang 21 Reserve (AANDCd, 2012). The Wabauskang Reserve lies 28 km south of Ear Falls and approximately 50 km southeast of the Griffith Mine.

Contact

Chief Leslie Cameron
PO Box 418
Ear Falls, Ontario
P0V 1T0
lesliecameronrc@gmail.com
T: 807.529.3174
F: 807.529.3007

6.1.2 Treaty 5

Treaty 5 was originally established in 1875 with adhesions added between 1908 and 1910. The Treaty covers much of what is today central and northern Manitoba as well as small adjoining portions of the present-day provinces of Saskatchewan and Ontario.

6.1.2.1 McDowell Lake

The McDowell Lake First Nation community (Band Number 326) is located within the Treaty 5 areas on the central western shore of McDowell Lake approximately 155 km northeast of Red Lake and 160 km north of the Griffith Mine. As of June 2012, the McDowell Lake First Nation had a total registered population of 51 (AANDC, 2012e). The group is a member of the Keewaytinook Okimakanak Northern Chiefs Council, a non-political Oji-Cree Chiefs Council providing various community services for McDowell Lake and five other First Nations (Keewaytinook Okimakanak, n.d.).

Contact

Chief Eli James
PO Box 740
Red Lake, ON
P0V 2M0
T: 807.735.1381
F: 807.735.1383

6.1.3 Treaty 9

Also known as the James Bay Treaty, Treaty 9 was negotiated in 1905-1906. Together with area acquired by adhesions in 1929-1930, Treaty 9 covers almost two-thirds of the area that became northern Ontario.

6.1.3.1 Slate Falls Nation

Slate Falls Nation (Band Number 259) is a signatory of Treaty 9 with a total registered population of 256 as of June, 2012 (AANDC, 2012f). The Slate Falls settlement, which is accessed by a gravel road from Sioux Lookout, is located approximately 130 km northeast of the Griffith Mine.

Contact

Chief Lorraine Crane
48 Lakeview Drive
Slate Falls, ON
P0V 3C0
T: 807.737.5700
F: 807.347.1299

6.1.3.2 Cat Lake First Nation

Cat Lake First Nation (Band Number 216) had a total registered population of 690 as December 2012 (AANDC, 2012g). The Cat Lake settlement is a remote community located approximately 150 km northeast of the Griffith Mine on Cat Lake and 180 km northwest of Sioux Lookout (Cat Lake First Nation, 2012).

Contact

Chief Matthew Keewaykapow
PO Box 81
Cat Lake, ON
P0V 1J0
catlakefirstnation@knet.ca
T: 807.347.2100
F: 807.347.2116

6.1.3.3 Mishkeegogamang First Nation (New Osnaburgh)

As of December 2012, the Mishkeegogamang First Nation (Band Number 203) has a total registered population of 1,764 (AANDC, 2012h). The Mishkeegogamang First Nation is located approximately 500 km northwest of Thunder Bay and approximately 220 km from the Griffith Mine.

Contact

Chief Connie Grey-McKay
1 First Nation Street
Mishkeegogamang, ON
P0V 2H0
T: 807.928.2414
F: 807.928.2077

6.1.4 Métis Nation of Ontario

The Métis people in Canada are a distinct Aboriginal people and nation within the Canadian federation. The Métis people have their own unique culture, traditions, language, way of life, collective consciousness, and nationhood. Founded in 1983, the Métis National Council (MNC) is a Métis-specific national representative body that promotes the desires and aspirations of the Métis people nationally and internationally. The Métis Nation of Ontario (MNO) was established in 1993 to represent Métis people and communities in Ontario that are a part of the Métis Nation while Chartered Community Councils across the province represent Métis citizens at the local level. The nearest two Community Councils to the proposed Griffith Mine are the Northwest Métis Council and the Kenora Métis Council.

In 1875, a group of Métis signed the Treaty 3 Adhesion. They received provisions similar to Treaty 3 as well as two reserves on the shore of Rainy Lake adjacent to the reserve of the Little Eagle Band. The Métis were eventually absorbed by the Little Eagle Band and are now part of the Couchiching Reserve (Daugherty, 1986).

Contacts

Northwest Métis Council
Alvina Cimon, President
34A King Street
Dryden, ON, P8N 1B4
nwmetis@drytel.net

T: 807-223-8082
F: 807-223-8083

Kenora Métis Council
Joel Henley, President
70 Park Street
Kenora, ON, P9N 1Y6
kmc@kmts.ca
T: 807-468-2034
F: 807-468-1979

6.1.5 Litigation and Specific Land Claims

In addition to treaty rights in the area of interest surrounding the Griffith Mine, there are numerous specific land claims being undertaken by the First Nations which are either: a) in negotiations; b) under assessment; or, c) in active litigation. Details of the specific land claims can be found on the Aboriginal Affairs and Northern Development Canada website (http://www.aadnc-aandc.gc.ca/) and **Appendix 2.**

Treaty interpretation is becoming increasingly important in the context of consultation activities. For instance, in the 2011 *Keewatin v. Minister of Natural Resources* decision, the Ontario Superior Court of Justice held that Ontario does not have authority under either Treaty 3 or the *Constitution Act, 1867* to "take up" tracts of land and authorize logging activities which would limit the Treaty hunting and fishing rights. Only the Government of Canada can authorize such activity. The decision could impact upon Ontario's understanding of its jurisdiction over Provincial Crown land and natural resources (Marchant, 2011).

6.2 Engagement and Consultation Activities Completed to Date

Beyond the introductory letters sent in August and October 2011 to First Nations identified by MNDM, further Aboriginal engagement regarding the proposed redevelopment that has occurred to date has been primarily with Wabauskang and Lac Seul First Nations. **Table 14** and **Table 15** summarize these consultation activities.

Table 14: Consultation with Wabauskang First Nation

Date	Participants	Activity Summary
July 28, 2010	Peter Arendt, Former President & CEO, NIC	Sent an introductory fax addressed to Chief Cameron of Wabauskang First Nation
August 17, 2010	Peter Arendt, NIC	Called and left a voice mail message for Chief Cameron
August 31, 2011	Basil Botha, President & CEO, NIC	Sent an introductory letter addressed to Chief Cameron (via fax)
October 7, 2011	Basil Botha, NIC	Sent fax addressed to Chief Cameron
January 25, 2012	Rick Brown, Cameron Tymstra and Basil Botha, NIC Chief Cameron and members of Wabauskang First Nation	First meeting was held in Kenora, Ontario

Date	Participants	Activity Summary
February 2, 2012	Wabauskang First Nation MOE	Letter from Wabauskang First Nation to MOE indicating general concerns related to dewatering
March 13, 2012	Wabauskang First Nation MOE	Letter from MOE to Wabauskang First Nation acknowledging receipt of their letter, including an attached copy of the PTTW application and supporting documents. Requested comments by April 12, 2012
March 27, 2012	Cameron Tymstra and Basil Botha, NIC Wabauskang First Nation Council members	Wabauskang presents a draft Exploration Agreement for NIC to review
April 2, 2012	Wabauskang First Nation	An article is published containing Chief Cameron's comments regarding NIC's work within Wabauskang traditional territory, without having consulted Wabauskang
April 5, 2012	Wabauskang First Nation MOE	Telephone call between MOE and Wabauskang resulting in an extension of comment period to April 20, 2012
April 9, 2012	NIC Wabauskang First Nation	NIC returns draft agreement to Wabauskang
April 23, 2012	NIC Wabauskang First Nation	NIC cancels the meeting with Wabauskang scheduled for April 24, 2012
May 1, 2012	NIC Wabauskang First Nation	Letter from Chief Cameron to NIC
May 8, 2012	Wabauskang First Nation MOE	Follow up letter extending the comment period to May 18, 2012
May 24, 2012	Basil Botha, NIC Wabauskang First Nation	Letter from Basil Botha to Chief Cameron
June 11, 2012	Wabauskang First Nation MOE MNDM	Meeting to discuss dewatering and other regional issues
July 11, 2012	Rick Brown and Cameron Tymstra, NIC Wabauskang First Nation and Council	Meeting held in Winnipeg to discuss various issues including continued work towards a formal Consultation Agreement and a budget for capacity funding
July 26, 2012	Rick Brown, NIC Wabauskang First Nation	Letter from Rick Brown to Wabauskang to notify the First Nation of NIC's upcoming exploration activities

Date	Participants	Activity Summary
August 16, 2012	Rick Brown, NIC Wabauskang First Nation	Letter from Rick Brown to Wabauskang to notify the First Nation of NIC's PTTW and intent to commence dewatering at the end of September 2012
August 16, 2012	Wabauskang First Nation MOE	Letter from MOE to Wabauskang to notify the First Nation of the issuance of the PTTW
August 2012	Cameron Tymstra, NIC Don Morrison, Wabauskang First Nation	Cameron Tymstra and Don Morrison work towards coordinating a meeting
September 28, 2012	Rick Brown, Cameron Tymstra, and Eka Maysyuk, NIC Don Morrison and Barbara Katic, Wabauskang First Nation	Meeting to discuss capacity funding budget. NIC agreed to provide funding for the First Nation to hire a consultant to review the PTTW and write a summary report.
October 18, 2012	Wabauskang First Nation MOE	Letter from MOE to Wabauskang offering to meet with the community to discuss concerns with the PTTW
October 31, 2012	Wabauskang First Nation MOE	Letter from Wabauskang to MOE in opposition to the PTTW
November 26, 2012	Wabauskang First Nation MOE	Letter from MOE to Wabauskang extending another offer to meet with the community to discuss concerns related to the PTTW and committing to further consultation regarding the Phase II PTTW

Various emails have been exchanged between the parties and NIC has provided several files summarizing plans for the Griffith Mine site as well as details of the dewatering program. NIC has scheduled a meeting with the Wabauskang First Nation to review details of the Consultation Agreement on February 12, 2013. A copy of the Monitoring Results Report as part of the Phase I dewatering will be provided to representatives of Wabauskang First Nation at this future meeting (**Appendix 6**).

Table 15: Consultation with Lac Seul First Nation

Date	Participants	Activity Summary
August 31, 2011	Basil Botha, President & CEO, NIC	Sent an introductory letter addressed to Chief Bull (via fax)
October 7, 2011	Basil Botha, NIC	Sent fax addressed to Chief Bull
October 10, 2011	Sam Manitowabi, General Manager, Economic Development, Lac Seul First Nation	Email received from Mr. Manitowabi thanking NIC for their letters and accepting the offer to meet for further information.

March 29, 2012	Basil Botha and Cameron Tymstra, NIC Chris Angeconeb and Selina Vincent of Lac Seul First Nation	A meeting was held with the Lac Seul First Nation. NIC provided information on current and planned activities related to the Griffith Mine site. Some discussion of partnership companies occurred.
August 16, 2012	Lac Seul First Nation MOE	Letter from MOE to Lac Seul to notify the First Nation of the issuance of the PTTW.
November 20, 2012	Council and Resources Manager, Lac Seul First Nation Rick Brown, Cameron Tymstra, and Eka Maysyuk, NIC	NIC provided a project update and established official lines of communication. Lac Seul confirmed that they have received previous correspondence from NIC and have posted job notifications sent by the company.

Beyond this consultation with Wabauskang and Lac Seul First Nations, NIC met with the former Chief Diane Kelly of the Grand Council of Treaty 3 and Ms. Cheryl Becker (Mining Information Officer, Treaty 3) on January 25, 2012 in Winnipeg. At that time, representatives of Treaty 3 did not express direct concerns with the Project, and advised that NIC contact each First Nation community individually as Chief Kelly did not speak on behalf of them. NIC assured Chief Kelly that these First Nations had been contacted and their engagement would continue to be sought throughout the process.

In response to the introductory letter, NIC had additional email and telephone correspondence with Mr. Brian Tucker (Manager of Lands, Resources and Consultation, MNO). Mr. Tucker provided a copy of the MNO "Duty to Consult Guide" and indicated that he would pass on any information related to the Project to the Consultation Committee that represents the Métis communities in the area. A meeting is expected to be arranged between NIC and MNO representatives in the coming months.

6.3 Key Comments and Concerns to Date

The posting of the PTTW application on the Environmental Bill of Rights Registry provided the public and Aboriginal communities with the opportunity to comment on the mine and related processes. One comment received was by the Wabauskang First Nation. They had a very broad perspective related to mining developments and their effects on traditional lands and identified concerns regarding potential impacts on water quality. Although the PTTW has been issued by MOE, concerns of the Wabauskang remain regarding water discharge from the north pit directly into Bruce Lake. The MOE has consulted with the Wabauskang First Nation and NIC continues consult with and coordinate meetings with representatives of Wabauskang. Based on preliminary consultation, local First Nation groups have identified the desire to share in the economic benefits of the redevelopment of the Griffith Mine. **Section 6.2** provides a synopsis of correspondence with Wabauskang related to the PTTW.

Comments remain regarding water discharge from the north pit directly into Bruce Lake. These concerns will be addressed during the second stage of the PTTW for the north pit.

6.4 Traditional Land Use

Aboriginal traditional knowledge (ATK) is knowledge that is held by, and unique to, Aboriginal peoples. It is a living body of knowledge that is accumulated over time to reflect changes in the social, economic, environmental, spiritual and political spheres of the Aboriginal peoples. It often includes knowledge of the land and its resources, spiritual beliefs, language, mythology, culture, laws, customs and medicines. The term traditional ecological knowledge (TEK) is often used interchangeably with ATK. However, TEK is generally considered to be a subset of ATK that is primarily focused on knowledge of the environment.

ATK and TEK have not been identified through Aboriginal consultations to date. NIC is committed to obtaining any such information through consultation activities with First Nation and Métis communities. This knowledge will be developed through direct discussions with each community. Any available ATK and TEK relating to land use and traditional uses will be considered in the EA of the proposed undertaking as appropriate.

6.5 Aboriginal Consultation Strategy

NIC understands that there is a formal Constitutional requirement for Federal and Provincial Crown agency representatives to conduct meaningful consultations with interested Aboriginal communities. NIC is committed to assisting the Federal and Provincial governments in meeting this requirement by conducting meaningful and respectful consultations with all First Nations and Métis communities potentially impacted by or interested in this Project.

In order to properly inform NIC with respect to Aboriginal engagement and stakeholder consultations, the following documents have been reviewed:

- Draft Guidelines for Ministries on Consultation with Aboriginal Peoples Related to Aboriginal Rights and Treaty Rights (2006);
- Aboriginal Consultation and Accommodation: Updated Guidelines for the Federal Officials to Fulfill the Legal Duty to Consult (March 2011);
- *Ontario Regulation 240/00* (2009);
- Canadian Association of Petroleum Producers: Industry Best Practice Guide: Developing Effective Working Relationships with Aboriginal Communities;
- Association for Mineral Exploration British Columbia: Mineral Exploration, Mining and Aboriginal Community Engagement Guide; and
- Prospectors and Developers' Association of Canada: Mining Information Kit for Aboriginal Communities.

Effective communication and engagement can be an important step towards building good relationships with neighboring Aboriginal communities. From our experience, effective consultation should take into account:

- Diversity of Project participants and group dynamics;
- Historical relationships between First Nations, Métis, and government agencies;
- Sensitivity to setting, location of meetings, and scheduling constraints; and
- Encouraging discussion, good communication, and an open dialogue.

Aboriginal communities will be included in all steps of the stakeholder consultation plan outlined above. In addition to this, the following outlines specific activities that will be/have been conducted as part of the consultation with Aboriginal communities for this Project:

1. Initial contact with AANDC and the Ministry of Aboriginal Affairs (MAA). Through our experience working on similar Projects have established contacts in both agencies and understand the regulatory process to follow;
2. Initial contact with First Nation and/or Métis communities not already contacted. This involves a preliminary phone call to confirm contact information;
3. Notice of Commencement (NoC) and Newsletter distribution using a letter drafted specifically for First Nation and Métis communities and including the Newsletter with additional Project details;
4. Follow-up phone call to confirm receipt of NOC and to solicit information pertaining to traditional use and/or interest (claims) in the vicinity of the Project area;
5. Public Information Centres (PICs) and other Project notifications; and
6. Additional follow-up phones calls, faxes, and emails.

Depending on the level of interest of First Nation or Métis communities outside of the local area, additional consultation may be required and would be determined as the Project proceeds. Further meetings will be planned with identified communities to establish a positive relationship between NIC and the respective First Nation and Métis communities.

All comments and concerns identified by the Aboriginal communities with an interest in the Project and NIC's responses to those concerns and how they have been incorporated into the Project will be documented in a Stakeholder Consultation Report, which will form a supporting report to the main EA document.

7 Proponent Engagement and Consultation with the Public and Other Parties (Non-Aboriginal)

7.1 Potentially Affected and Interested Stakeholders and Consultation Activities Completed to Date

Meetings have been held with representatives of the local communities and the Project has received positive support. Key Project stakeholders identified to date are listed in **Appendix 3**.

Table 16 provides a summary of non-Aboriginal consultation activities conducted to date and **Table 17** provides a summary of consultation activities related to the PTTW.

Table 16: Non-Aboriginal Consultation Review

Date	Participants	Activity Summary
Summer 2010	Cameron Tymstra, NIC MNR MOE DFO MNDM	All agency meeting to notify ministries of the proposed redevelopment of the Griffith Mine and seek preliminary feedback
Spring 2012	Basil Botha and Cameron Tymstra, NIC Mayor, Red Lake Economic Development Officer, Red Lake	Meeting and conference call
Spring 2012	Basil Botha and Cameron Tymstra, NIC Mayor, Ear Falls	Meeting and conference call
Spring 2012	Basil Botha and Cameron Tymstra, NIC Mayor, Dryden Economic Development Officer, Dryden	Meeting and conference call
October 22, 2012	Cameron Tymstra, NIC Approximately 30 members of the community (Red Lake and Ear Falls), including Mayors and Councillors	NIC hosted a "Pump Fest" gathering in Ear Falls to celebrate the start of dewatering of the old pit, as well as to thank members of the community and local politicians that work with NIC and/or support the Project
December 5, 2012	Cameron Tymstra, NIC Matt Hoffmeister, MOE Member of the Pakwash Lake Camp Owners Association (PLCOA)	Members of the Camp Owners Association identified concerns regarding water quality as a result of past mining operations. NIC informed the PLCOA that there is a monitoring program in place and offered to forward the Monitoring Results Report as part of the Phase I dewatering to their attention.

Table 17: Permit to Take Water Applications

Date	Activity
December 20, 2011	Original PTTW was submitted
January 2 – February 2, 2012	30 day public review of posting on the Environmental Registry
February 16, 2012	Submission of revised PTTW for Phase 1 only (the application was split into Phase 1 and Phase 2)
February 2 – March 3, 2012	30 day public review of posting of revised (Phase 1) application on the Environmental Registry
March 30, 2012	Submission of PTTW for Phase 2
April 18 – May 18, 2012	30 day public review of posting of Phase 2 application on the Environmental Registry
April 26, 2012	MOE provided comments related to the progress of the Phase 1 PTTW permit and consultation efforts
August 15, 2012	Phase 1 PTTW is issued by the MOE for dewatering the top 25 m

7.2 Key Comments and Concerns to Date

Key interests and concerns to date include:

- Members of the PLCOA identified concerns regarding water quality as a result of past mining operations. This group also expressed interest in receiving future information from NIC and providing input to any matters pertaining to water in Bruce Lake and Pakwash Lake.
- One comment in response to the PTTW application posted on the Environmental Bill of Rights Registry, from Wabauskang First Nation, which was related to possible effects on water quality in Bruce Lake and subsequently Pakwash Lake (see **Section 6.2** and **6.3**).
- Discussions with representatives of Red Lake, Ear Falls and Dryden have been very positive and these communities are looking forward to the positive economic effects associated with the mine.
- General interest in the Ear Falls community because of potential jobs and economic benefits associated with the mine.

7.3 Ongoing and Proposed Consultation Activities

As part of the EA process, NIC will undertake a comprehensive stakeholder consultation program. The following are components of the proposed program:

Mailing List

NIC will develop a comprehensive list of municipal, provincial and federal agency representatives having an interest in the Project. In addition, aboriginal representatives, private landowners, registered trapline owners, land use permit holders, commercial interests and others expressing an interest in the Project will be added to the list. This contact list will be used at various points in the EA process in order to disseminate information about the Project and to gather feedback.

Elected Officials

Elected officials are an important part of our consultation efforts during the EA process. At the start of the EA, we will hold a briefing for local Councillors to ensure they are aware of the Project and provide them the opportunity to ask questions such that they have the information needed to respond to their constituents. Municipal Councillors will be on the Project contact list and will also be invited to a preview of the PICs.

Notices and Newsletters

Project notification will include both newspaper notices and newsletters. Notices will be developed to provide information to the public about upcoming events and the process underway. Newsletters will augment public notices to provide additional information on the Project. There are four notification points that warrant additional newsletter-type information within our proposed consultation plan:

- The first newsletter would be developed early in the Project and will be used as a tool for Project pre-consultation. This would provide an item that could be left with key agencies and councillors explaining the Project, need, and other pertinent information.
- Following this, the first notice and newsletter (same as above but revised according to potential Project changes) will be sent out at Project inception, providing additional information on the Project origin, potential alternatives and inviting people to the first PIC.
- The second notice and newsletter will invite participation at the second Public Information Centre (PIC) and include details on the preliminary preferred route, as well as potential construction impacts and mitigation proposed.
- The third notice and newsletter would advertise completion of the EA and invite feedback on the Project.

Agency Workshops

We propose to gather expertise and advice through workshops with representatives from local municipalities, provincial agencies and other key stakeholders. Workshops could be held at two key points in the process:

- Early in the Project to provide advice and guidance highlighting challenges and opportunities associated with the redevelopment of the mine; and
- Following the first PIC (March 2012) to present the comments and public input, confirm the preferred development plan and identify potential mitigation efforts and construction requirements.

PICs

NIC proposes to hold PICs in Ear Falls at key stages during the EA process in order to present Project information to the general public. The format for the open houses consists of a series of panels. Project staff will be available to answer questions. Questionnaires will be available for the public to complete, along with other supporting information.

Other

In addition to the standard public involvement techniques (newspaper advertisements, PICs, exit questionnaires, etc.), we propose the following to be undertaken during the EA process:

- Establishing a website (note: this would be an adaptation of the existing NIC website, providing a description of the process and downloadable information); and
- Providing a great deal of related information to the public to alleviate any concerns that they might have to the re-establishment of the mine.

7.4 Consultation with Other Jurisdictions

Prior to preparing this PD, Dillon undertook a Scoping Study to advise NIC if, in Dillon's opinion, NIC would be subject to federal EA requirements. This study was driven by the fact that recently, a number of mine redevelopments were not subject to federal or provincial EAs for the redevelopment (Ontario EAs for Project components such as a high voltage transmission line may have been required). Examples include Goldcorp Canada Ltd.'s Hollinger Project and Rubicon Minerals Corporation's Phoenix Gold Project. Since the Griffith Mine is a redevelopment of a brownfield mine site, it was logical to ask the question whether the same rationale would apply to Griffith Mine as it applied to the other examples.

As part of consultation activities associated with this Project, NIC has issued a number of press releases to the public providing progress updates on the Griffith Mine. **Appendix 13** provides selected media releases and articles related to drilling, dewatering and the potential sale of certain NIC properties.

This PD is being submitted in order for the Agency to make a determination on whether an EA under CEAA 2012 is warranted. *"A determination that an environmental assessment under CEAA 2012 is not warranted could be made, for instance, if it is established through the review of the project description and public comments received on the project description that the designated project has no potential to cause adverse environmental effects, or has the potential to cause minor environmental effects that can be adequately managed through other existing legislative or regulatory processes"* (CEAA, 2012a).

City of Timmins

On June 6, 2012, Dillon (Mario Buszynski and Joe Muraca) contacted Andre Robichaud, Planning Director with the City of Timmins to determine why Goldcorp undertook an "equivalent EA" process for the redevelopment of their Hollinger mine. Mr. Robichaud explained that Goldcorp undertook a "One Window" process facilitated by MNDM. The rationale for the "equivalent EA" was that the Hollinger Mine redevelopment was subject to a site plan agreement made under the *Planning Act* and the information provided was required to satisfy municipal planning requirements in the City of Timmins as the mine was located within municipal boundaries. This has relevance to the Griffith Mine redevelopment since NIC will also be subject to Site Plan Control and will have to been the requirements of the Township of Ear Falls.

MNDM

On June 6, 2012, Dillon (Mario Buszynski and Joe Muraca) contacted Mark Puumala to discuss the Phoenix Gold Project. This Project is very similar to the redevelopment of the Griffith Mine. The Phoenix Gold Project is a brownfield mine site in the Red Lake area that was closed in the mid-1980s. Since the redevelopment was to take place within the footprint of the former mine, use the existing tailings area, there were no significant chemical or physical stability liabilities associated with the Phoenix Gold Project site and a Closure Plan was recently filed, it was determined that an EA under CEAA 2012 would not be required since there were no triggers determined.

The redevelopment of the Griffith Mine (closed in the mid-1980s) would also use the existing footprint of the former mine, use the existing tailings area, has a stable iron oxide ore body with the bulk of the tailings being comprised of silicate minerals with little or no sulphides (and thus low potential for acid rock drainage or metal leaching) and a closure plan would be filed as part of the permit requirements.

A follow-up meeting between Patrick Barnes, Andrew Kane and Mike Grant of the MNDM and Mario Buszynski and Joe Muraca of Dillon was held on June 11, 2012. Part of the discussion centered around potential federal and provincial EA triggers. It was determined that if NIC applied (under the *Mining Act (1990 as amended 2009*) for additional surface and sub-surface rights to Crown lands in order to extend the existing boundaries of their mine eastward, this would not trigger the MNR Class EA process which, in our experience would have led to an individual EA as the MNR Class EA is not designed for the complexity of mining projects. It was also determined that if infrastructure improvements were necessary (i.e. natural gas pipeline) this project would be undertaken by Union Gas using their own EA process apart from NIC.

Mario Buszynski and Michelle McCarthy of Dillon had a conference call with Patrick Barnes on November 27, 2012. The process of obtaining surface rights on Crown lands under the *Mining Act (1990 as amended 2009)*, as well as associated timelines, was discussed. Mr. Barnes advised that changes resulting from the *Mining Act (1990 as amended 2009)* Modernization exercise should be reviewed prior to the submission of a Closure Plan. He also advised that the submission of the "Notice of Project Status" would initiate the "One Window" coordination approach and allow MNDM to provide NIC with a list of Aboriginal communities that may have an interest in the Project and therefore must be consulted with.

On November 29, 2012, Michael Hepworth and Cameron Tymstra of NIC met with Robert Merwin, Stephen DeVos and Bryce Barker of MNDM. NIC provided an update on plans for the Griffith Mine redevelopment. MNDM provided feedback on process and timelines related to obtaining a lease for the mineral claims. Representatives from MNDM also suggested that the submission of a "Notice of Project Status" to the Ministry would initiate the "one window" process and facilitate the provision of First Nation contacts to be consulted through the process. NIC indicated that a copy of the PD would be circulated for comment when available.

DFO

Dillon (Mario Buszynski) discussed potential *Fisheries Act* triggers with Neville Ward of DFO. In terms of the TMAs, Mr. Ward felt that the water contained in the north and south TMAs would be considered to be fish habitat (Note: this was prior to changes to the *Fisheries Act*, which shifted the focus from fish habitat specifically to fisheries, such as commercial, recreational or Aboriginal). Subsequently, Mr. Ward indicated that DFO has not taken a position on whether the TMA pond would be considered to be a fishery.

A letter was received from Mr. Ward of DFO October 4, 2012, including questions, comments and concerns based on DFO's review of the draft PD. A conference call was held on October 31, 2012 with Mr. Ward, Kris Tuuttila and Terry Hongsberger of DST, Cameron Tymstra of NIC, and Mario Buszynski, Joe Muraca and Michelle McCarthy of Dillon. The purpose of this call was to discuss Neville's letter and obtain feedback from DFO on the draft PD, specifically with respect to fisheries concerns in light of ongoing amendments to the *Fisheries Act*. The potential for rehabilitation of the south basin of Bruce Lake was discussed. It was also suggested that a Schedule 2 Amendment may be required and to seek further direction from Environment Canada.

Environment Canada

Dillon (Mario Buszynski) contacted David Laverdiere of Environment Canada on November 5, 2012 regarding the applicability of the Metal Mining Effluent Regulations. After some discussion, Environment Canada advised that comments would be reserved until the PD is formally circulated by the Agency. Based on the recommendation of the Agency, Michelle McCarthy then contacted Mr. Laverdiere November 21, 2012 to seek EC's advice regarding mine effluent and the MMER. During a telephone call with Ms. McCarthy on November 26, 2012, Mr. Laverdiere recommended that Dillon prepare a list of specific questions that require EC response through the formal submission of the PD. It is Dillon's understanding that the Agency will circulate this PD to EC for comment.

The Agency

Stephanie Davis was identified as the coordinator of this Project for the Agency. Discussions were held via telephone on July 26 and July 30, 2012 with respect to the study and requesting any information concerning "regional studies" as outlined in Section 1.4.2 of the Guide. Stephanie was unaware of any regional studies. Subsequently, a draft PD was informally submitted and Agency representative Steven Woolfenden was assigned as the contact. A meeting with Steve Woolfenden of the Agency was held on October 11, 2012, attended by Mario Buszynski, Michelle McCarthy and Joe Muraca of Dillon. The purpose of this meeting was to provide an overview of the project, discuss the draft PD and seek the Agency's feedback on the approach presented. A concordance table, which included comments on the individual sections of the draft PD, was received on October 22, 2012.

On November 19, 2012, the Project team was notified that Steve Woolfenden would be replaced by Amiel Blajchman as the Agency contact on this file. A meeting with Mr. Blajchman was held on December 17, 2012. The purpose of this meeting was to introduce new Agency staff to the Project, highlight revisions to the PD in response to preliminary Agency comments, and discuss next steps.

Due to staffing changes at the Agency, in late December 2012, the Project team was notified that Ellen Campbell would be the primary contact for the Griffith Mine redevelopment. A revised concordance table was provided by the Agency on January 18, 2013 in response to a second draft of the PD. An additional meeting was held with Agency staff and the Project team on February 2, 2013 to review the final draft prior to formal submission of the PD.

Township of Ear Falls

Dillon (Mario Buszynski) contacted Gary Ganzankis, Chief Building Official for Ear Falls. Mr. Ganzankis explained that Ear Falls has an Official Plan and Zoning By-law developed and administered by Meridian Planning of Barrie Ontario. In addition to assisting Dillon in acquiring the documents, Mr. Ganzankis mentioned that the redevelopment of the mine would be a good news story for the municipality with the closure of the local mill. Subsequent discussions with the Municipal Clerk-Treasurer, Kimberly Balance, confirmed municipal support for this project. On November 7, 2012, the Council of the Corporation of Ear Falls passed a resolution supporting the redevelopment of the Griffith Mine (**Appendix 13**).

Ministry of the Environment

NIC received a PTTW (0716-8UMJEA) for the first phase of dewatering in the north pit. The application was posted on the Environmental Bill of Rights Registry for 30 days, ending March 3, 2012 (Registry Number 011-

5486). Only one comment was received during this time from the Pakwash Lake Association, who had concerns with respect to the water quality in the pit. Following the issuance of the PTTW, the Wabauskang First Nation submitted a letter, dated October 31, 2012, in opposition to the permit to the MOE. MOE's response, dated November 26, 2012, included an offer to meet with the Wabauskang First Nation for further discussion.

Pakwash Lake Camp Owners Association (PLCOA)

NIC met with representatives of the PLCOA and Matt Hoffmeister of MOE on December 5, 2012. Members of PLCOA identified concerns regarding water quality as a result of past mining operations. This group also expressed interest in receiving future information from NIC and providing input to any matters pertaining to water in Bruce Lake and Pakwash Lake. NIC informed the PLCOA that there is a monitoring program in place and offered to forward the Monitoring Results Report as part of the Phase I dewatering to their attention (**Appendix 6**).

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Appendix 1: Agency Involvement and Permitting Requirements

Summary of Potential Permit and Approval Requirements

Agency	Act and/or Regulation	Permit/Approval	Applicability to the Griffith Mine
Local Municipality	*Building Code Act* Section 8, Local Municipal By-laws	Building Permit	▪ Buildings will be constructed at the Mine Site.
	Planning Act, Section 16, 34(1) and 41	Official Plan Amendment and Site Plan Control	▪ Official Plan requires an amendment to permit reuse of the mine. ▪ An EA is required as part of Site Plan Control.
	Municipal Act	Fire Permit	▪ Permit may be required to burn brush associated with site clearing.
	Municipal Act	Road Permit	▪ Permit associated with existing road upgrades.
Local Municipality or Ontario Ministry of Natural Resources (MNR)	*Fire Protection and Prevention Act,* Section 12	Fire Code requirements	▪ Project will need to meet Fire Code at all locations
Local Health Unit	*Health Protection and Promotion Act,* O. Reg. 554/90	Notice of Camp Opening	▪ Will likely be required for the Accommodations Complex at the Mine Site (required for camps with a capacity greater than 5) during the construction phase.
	Ontario Building Code, Part 8	Permit for septic tank at camp location	▪ May be required.
MNR	*Aggregate Resources Act*	Aggregate Permit/License	▪ Aggregate permit already issued to use blast rock for aggregate.
	Public Lands Act, O. Reg. 973-90	Land Use Permit	▪ Not required as surface rights to be applied for under the *Mining Act (1990 as amended 2009).*
	Public Lands Act, Section 20	License of Occupation	▪ Not required as surface rights to be applied for under the *Mining Act (1990 as amended 2009).*
	Public Lands Act, O. Reg. 975/90, O. Reg. 543/96	Work Permit	▪ Not required as surface rights to be applied for under the *Mining Act (1990 as amended 2009).*
	Lakes and River Improvement Act, Sections 14 and 16	Authorization for Water Crossing	▪ Not required as roads are existing.
	Ontario Aggregate Resources Act, Part V Aggregate Permits, O.	Permit for Aggregate Pit/Quarry	▪ Not required as approval previously given by MNR to use blast rock as an

Agency	Act and/or Regulation	Permit/Approval	Applicability to the Griffith Mine
	Reg. 244/97		aggregate source.
	Crown Forest Sustainability Act, Part III – Forest Resource Licenses	Forest Resource License – Cutting Permit for Timber	▪ Not applicable as there is no Crown timber at the mine site.
	Endangered Species Act, Sections 16 to 20	Permits and Agreements	▪ There is potential for listed species. The inventory will confirm presence. The EA will need to demonstrate that if listed species are present, reasonable alternatives, including those that would not adversely affect the species, have been considered, and reasonable steps to minimize adverse effects are taken.
	Fish and Wildlife Conservation Act, Part VI Licenses and Other Authorizations	Authorization/Permit for collection of fish for testing	▪ Baseline studies and consultation with MNR will determine likelihood of requirement for authorization. ▪ An application for a Scientific Collectors Permit will be submitted.
Ontario Ministry of Transportation (MTO)	*Environmental Assessment Act,* Part II.1 – Class Environmental Assessments	Class EA for Provincial Transportation Facilities	▪ Not applicable for private roads at the mine site. ▪ Entry to mine site from Highway 105 exists.
	Public Transportation and Highway Improvement Act Section 31, 34 and 38	Entrance Permit	▪ May be required for upgrading access to Highway 105.
Ontario Ministry of the Environment (MOE)	*Environmental Protection Act*, Part II.1	Environmental Compliance Approval	▪ Various sources of air and noise associated with the mine development and operation. ▪ Required for tailings management, sewage (domestic wastewater) treatment, and stormwater management.
	Environmental Protection Act, O. Reg. 560/94 and O. Reg. 561/94	Effluent Monitoring and Effluent Limits – Metal Mining Sector and Industrial Mining Sector	▪ Applicable (<50 m^3 /day of process effluent, cooling water or overflow effluent)
	Environment Protection Act, O. Reg. 222/07 and O. Reg. 224/07	Environment Penalties and Spill Prevention and Contingency Plans	▪ Detailed spill identification and response plans required for Mine Site.
	Safe Drinking Water Act, O. Reg. 170/03 and O.	Environmental Compliance Approval – Municipal and Non-	▪ May be required for Accommodations Complex at

Agency	Act and/or Regulation	Permit/Approval	Applicability to the Griffith Mine
	Reg. 248/03	municipal Drinking-water Systems (transitioning to the Drinking Water Works Permit)	Mine Site, depending on capacity and servicing requirements.
	Ontario Water Resources Act, Section 34, O. Reg. 387/04	Permit to Take Water	▪ Applied for PTTW to dewater the north pit in order to undertake detailed exploration. ▪ First stage (top 25 m) approved August 15, 2012.
	Environmental Assessment Act, O. Reg. 116/01	Electricity Projects Regulation (Guide to EA Requirements for Electricity Projects)	▪ Required to facilitate the development of energy generation on site. ▪ Required to facilitate the construction of an electric transmission line.
	Environmental Protection Act, O. Reg. 347/90	Generator Registration Number	▪ Required for waste management.
Ontario Ministry of Labour (MOL)	*Occupational Health and Safety Act*, O. Reg. 854/90	Pre-development review process	▪ Mine site will require safety and procedures review prior to Project development.
	Occupational Health and Safety Act, O. Reg. 213/91	Notice of Project under Section 23(2)	▪ Will be applicable to the mine site and associated facilities.
Ontario Energy Board (OEB)	*Ontario Energy Board Act,* Section 92(1)	Leave to construct a Power Transmission Line (order Pursuant to the OEB Act)	▪ May be required if NIC planned their own transmission line as opposed to Hydro One making the application.
Ontario Ministry of Northern Development and Mines (MNDM)	*Mining Act (1990 as amended 2009),* Sections 91(1) and (3)	Domestic Processing Exemption	▪ Not applicable as all processing is within Canada.
	Mining Act (1990 as amended 2009), Sections 140 and 141, O. Reg. 240/00	Mine Closure Plan	▪ Will be required for the mine.
	Mining Act (1990 as amended 2009), O. Reg. 240/00	Public Notice of Project Status	▪ Public Notice of Project Status will be provided.
	Mining Act (1990 as amended 2009), Section 81	Application for lease of Surface Rights	▪ Required for Crown land adjacent to the east side of the north pit.
Ontario Ministry of Tourism, Culture	*Ontario Heritage Act,* Part IV – Conservation of Resources of	Archaeological Assessment	▪ Will be completed as part of the EA

Agency	Act and/or Regulation	Permit/Approval	Applicability to the Griffith Mine
and Sport (MTCS)	Archaeological Value		
Transport Canada (TC)	*Transportation of Dangerous Goods Act,* Section 31, Transportation of Dangerous Goods Regulations Part 14	Permits of Equivalent Level of Safety	▪ All activities will be conducted in a manner consistent with the Act.
	Navigable Waters Protection Act, Part I – Approval of Works, Navigable Waters works Regulations	Approval of Works	▪ Not applicable due to changes in the Act.
Canada Transportation Agency	*Canada Transportation Act,* Part III – Railway Transportation	Re-establishment of railway line	▪ Reconstruction of approximately 110 km of tracks within an existing rail corridor.
	Canada Transportation Act, Section 6(1)	Re-establishment of explosives storage facility with a capacity of less than 200 tonnes	▪ Construction of an explosives storage facility
Canadian Environmental Assessment Agency	*Canadian Environmental Assessment Act*	Submission of Project Description Report	▪ Determination of applicability being undertaken through submission of Project Description.
Governor in Council	Metal Mining Effluent Regulations	Regulatory Amendment to Schedule 2	▪ Placement of deleterious waste rock or tailings in fish-frequented water bodies may be required. A determination of whether the Iron Bay tailings pond is fish habited must be made by DFO.
Environment Canada (EC)	Metal Mining Effluent Regulations		▪ Regulatory requirements apply to the area of mine operations.
	Species at Risk Act, Section 73	*Species at Risk Act* Permit	▪ There is potential for listed species. The EA will need to demonstrate that reasonable alternatives, including those that would not adversely affect the species have been considered, and reasonable steps to minimize adverse effects are taken are taken.
	Migratory Birds Convention Act, Sections 4 & 5	Authorization under Section 5 of the *Migratory Birds Convention Act,* Permit under Section 4 of Migratory Birds Regulations	▪ Prohibitions apply to all works and activities affecting migratory birds and their nests and eggs, should the inventory determine the

Agency	Act and/or Regulation	Permit/Approval	Applicability to the Griffith Mine
			presence of migratory birds.
Natural Resources Canada (NRCan)	*Explosives Act,* Section 7	Explosives Permit	▪ Explosives will be shipped to the mine site by a third party contractor. ▪ No explosives factory will be located onsite.
Fisheries and Oceans Canada (DFO)	*Fisheries Act*, Section 35(2)	To be determined as amendments to the Act are currently being finalized	▪ A determination will have to be made regarding the Iron Bay tailings management area and south pit as potential fish habitat. ▪ Compensation would be offered through the rehabilitation of the south tailings management area.

Appendix 2: Potentially Interested Aboriginal Communities

Ministry of Northern Development, Mines and Forestry

Mineral Development and Lands Branch

933 Ramsey Lake Road, B6
Sudbury ON P3E 6B5
Tel.: (705) 670-5784
Fax: (705) 670-5803
Toll Free: 1-888-415-9845, Ext 5784

Ministère du Développement du Nord, des Mines et des Forêts

Direction de l'exploitation des minéraux et de la gestion des terrains miniers

933, chemin du lac Ramsey, étage B6
Sudbury ON P3E 6B5
Tél.: (705) 670-5784
Téléc.: (705) 670-5803
Sans frais : 1-888-415-9845, poste 5784

Ontario

August 19, 2011

Dear Sir/Madam:

RE: **Contacting Aboriginal Communities**

Recent amendments to Ontario's Mining Act are intended to provide greater clarity and certainty to the province's mining industry while acknowledging and respecting Aboriginal and treaty rights.

These amendments address consultation with Aboriginal communities taking a graduated approach in which the degree of consultation reflects the nature of proposed mining activities and their potential adverse impacts on Aboriginal and treaty rights. While work is underway to develop the regulations and policies that will implement this approach, the Ministry of Northern Development, Mines and Forestry ("MNDMF") is continuing to take a transitional approach, reflected by this letter, to ensure that its consultation obligations are being met.

Enclosed with this letter is an attachment that provides contact information for the Aboriginal communities located in the area of your mining claim(s), which should be contacted with regard to intended mineral exploration activities. This list reflects MNDMF's current understanding, which continues to develop with time, of the traditional or asserted land use areas of local Aboriginal communities. These same communities are provided quarterly updates and maps with regard to the mining claims recorded in the area of their communities. If you become aware of other Aboriginal communities who express an interest in your project, please contact us as soon as possible.

MNDMF continues to advise proponents to engage with Aboriginal communities and begin developing a working relationship as early in the mining sequence as possible. We believe that early contact and relationship-building with Aboriginal communities makes good business sense and can help a proponent to address any potential issues at the outset, as well as those that may arise later in a project.

While the Crown has the ultimate responsibility for ensuring appropriate consultation takes place with Aboriginal communities, both the Courts and mineral industry guidelines indicate that proponents have an important role to play in carrying out aspects of the consultation process. For example, a proponent is in the best position to describe their exploration plans and develop measures to prevent or diminish potential adverse impacts identified by the Aboriginal communities.

.../2

On that basis, MNDMF is advising mining claim holders to contact potentially affected Aboriginal communities, describe your intended mineral project activities and seek the input of the communities. We recommend that you keep a written record of your contact and communications with the communities. Where you authorize another party to explore on your claim(s), you should ensure that they are aware of the contents of this letter. Where any significant issues arise during your interactions with Aboriginal communities, MNDMF should be contacted. Ministry staff are available to meet with Aboriginal communities and proponents to hear concerns and attempt to address them.

While MNDMF does not require proponents to enter written arrangements with Aboriginal communities, we recognize that in many circumstances such arrangements can help to structure and advance the parties' relationship. Where aspects of an arrangement are intended to address any consultation and accommodation obligations that arise from your exploration activities, MNDMF may require further information in order to assess their adequacy.

You may also wish to consider the following industry resources around engaging with Aboriginal communities:

- Ontario Mineral Industry Cluster Council (OMIC) – "Guide for Junior Exploration Companies and Prospectors"
  http://www.omicc.ca/doc/2007Aug10BuildingADialogue.pdf
- Prospectors and Developers Association of Canada (PDAC) – "e3Plus: A Framework for Responsible Exploration"
  http://pdac.ca/e3plus

If you have any questions or concerns, I can be reached at the numbers above or by email at: MED@ontario.ca

Sincerely,

C. Blancher-Smith

C. Blancher-Smith
Director, Mineral Development and Lands Branch

Enclosure

First Nation:	Grassy Narrows First Nation (Asubpeeschoseewagoong Netum Anishnabek)
Tribal Council:	Bimose
Contact's Title:	Chief
First Name:	Simon
Last Name:	Fobister
E-Mail:	gnfnecodev@northone.ca
Website:	http://grassynarrowsfirstnation.myknet.org/
Phone Number:	(807) 925-2202
FAX Number:	(807) 925-2649
Address:	General Delivery
City/Town:	GRASSY NARROWS
Province:	Ontario
Postal Code:	P0X 1B0
Last Updated:	5/4/2010
Contact made? ○ Retry ☑ Waiting for response	(Use this space to document your interactions with this contact.) Township(s): Bruce Lake Area
Response? ○ Denied ○ Denied until condition met ○ Approved ○ Approved with restrictions	

First Nation:	Grand Council Treaty 3
Tribal Council:	
Contact's Title:	Lands and Resource Director
First Name:	
Last Name:	
E-Mail:	land.resources@treaty3.ca
Website:	
Phone Number:	(807) 548-4214
FAX Number:	(807) 548-5041
Address:	P.O. Box 1720
City/Town:	KENORA
Province:	Ontario
Postal Code:	P9N 3X7
Last Updated:	
Contact made? ○ Retry ✓ Waiting for response	(Use this space to document your interactions with this contact.) Township(s): Avis Lake Area Bruce Lake Area Curie Lake Area
Response? ○ Denied ○ Denied until condition met ○ Approved ○ Approved with restrictions	

First Nation:	Métis Nation of Ontario
Tribal Council:	
Contact's Title:	President
First Name:	Gary
Last Name:	Lipinski
E-Mail:	garyl@metisnation.org
Website:	http://www.metisnation.org/
Phone Number:	(613) 798-1488
FAX Number:	(613) 722-4225
Address:	500 Old St. Patrick Street
City/Town:	OTTAWA
Province:	Ontario
Postal Code:	K1N 9G4
Last Updated:	6/17/2010
Contact made? ○ Retry ✓ Waiting for response	(Use this space to document your interactions with this contact.) Townships: Auld Lake Area Bruce Lake Area Curie Lake Area
Response? ○ Denied ○ Denied until condition met ○ Approved ○ Approved with restrictions	

First Nation:	Cat Lake First Nation
Tribal Council:	Windigo
Contact's Title:	Chief
First Name:	Matthew
Last Name:	Keewaykapow
E-Mail:	catlakefirstnation@knet.ca/matthewk@catlake.ca
Website:	http://www.chiefs-of-ontario.org/profiles/pr_catlake.html
Phone Number:	(807) 347-2100
FAX Number:	(807) 347-2116
Address:	P.O. Box 81
City/Town:	CAT LAKE
Province:	Ontario
Postal Code:	P0V 1J0
Last Updated:	8/20/2010
Contact made? ○ Retry √ Waiting for response	(Use this space to document your interactions with this contact.) Townships: Avis Lake Area Curie Lake Area
Response? ○ Denied ○ Denied until condition met ○ Approved ○ Approved with restrictions	

First Nation:	Mishkeegogamang First Nation (New Osnaburgh)
Tribal Council:	Unaffiliated
Contact's Title:	Chief
First Name:	Connie
Last Name:	Grey-McKay
E-Mail:	conniegreymckay@msn.com
Website:	
Phone Number:	(807) 928- 2414
FAX Number:	(807) 928-2077
Address:	1 First Nation Street
City/Town:	MISHKEEGOGAMANG
Province:	Ontario
Postal Code:	P0V 2H0
Last Updated:	9/9/2010
Contact made? ○ Retry ✓ Waiting for response	(Use this space to document your interactions with this contact.) Township(s): Avis Lake Area Curie Lake Area
Response? ○ Denied ○ Denied until condition met ○ Approved ○ Approved with restrictions	

First Nation:	Wabaseemoong Independent Nation (Whitedog)
Tribal Council:	Bimose
Contact's Title:	Chief
First Name:	Eric
Last Name:	Fisher
E-Mail:	Email: N/A
Website:	http://www.onemanlakeclassic.com/wabaseemoong/index.html
Phone Number:	(807) 927-2000
FAX Number:	(807) 927-2037
Address:	General Delivery
City/Town:	WHITEDOG
Province:	Ontario
Postal Code:	P0X 1P0
Last Updated:	9/13/2010
Contact made? ○ Retry ✓ Waiting for response	(Use this space to document your interactions with this contact.) Township(s): Bruce Lake Area
Response? ○ Denied ○ Denied until condition met ○ Approved ○ Approved with restrictions	

First Nation:	Slate Falls First Nation
Tribal Council:	Windigo
Contact's Title:	Chief
First Name:	Lorraine
Last Name:	Crane
E-Mail:	lorrainecrane@knet.ca
Website:	
Phone Number:	(807) 737-5700
FAX Number:	(807) 347-1299
Address:	48 Lakeview Drive
City/Town:	SLATE FALLS
Province:	Ontario
Postal Code:	P0V 3C0
Last Updated:	9/13/2010
Contact made? ○ Retry ✓ Waiting for response	(Use this space to document your interactions with this contact.) Townships: Avis Lake Area Currie Lake Area
Response? ○ Denied ○ Denied until condition met ○ Approved ○ Approved with restrictions	

First Nation:	Lac Seul First Nation
Tribal Council:	Independent FN Alliance
Contact's Title:	Chief
First Name:	Clifford
Last Name:	Bull
E-Mail:	cbull@lsfn.ca
Website:	http://www.ifna.ca/lac_seul.html
Phone Number:	(807) 582-3503
FAX Number:	(807) 582-3449
Address:	P.O. Box 100
City/Town:	HUDSON
Province:	Ontario
Postal Code:	P0V 1X0
Last Updated:	9/9/2010
Contact made? May 10, 2011 ○ Retry ✓ Waiting for response	(Use this space to document your interactions with this contact.) Township(s): Avis Lake Area Bruce Lake Area Curie Lake Area
Response? ○ Denied ○ Denied until condition met ○ Approved ○ Approved with restrictions	

July 4, 2012

Aboriginal Affairs and Northern Development Canada
Ontario Region
8th Floor, 25 St. Clair Avenue East
Toronto, ON M4T 1M2

RE: Northern Iron Corp. Griffith Mine Redevelopment Project
Northwest of Ear Falls, Ontario

Dear Sir/Madam:

Northern Iron has retained Dillon Consulting Limited (Dillon) to undertake a scoping study to determine environmental assessment and permitting requirements for their Griffith Mine property in northwestern Ontario. The proposed development at the site involves the re-establishment of a past-producing iron ore mine, with associated waste rock, tailings storage and processing infrastructure. The project site is located approximately 26 kilometres northwest of Ear Falls, along the western shore of Bruce Lake.

Aboriginal (First Nation and Métis) consultation is a key component of this environmental assessment. We are interested in hearing from you regarding issues/concerns that you (your organization) may have regarding this project.

Information that is of interest to us includes:

- identification of and contact information for Aboriginal communities that may have an interest in this project;
- relevant Aboriginal interests (lands claims, rights and litigation) in relation to the project; and
- potential risks/impacts that the project may have on Aboriginal activities (historical and archaeological sites).

We would be pleased to work with representatives of Aboriginal communities that have an interest in the project and to receive comments or answer any questions that they may have. Please send this information to my attention at the above address or by email to mmccarthy@dillon.ca. If you require any further information at this time, please do not hesitate to contact me.

Yours very truly,

DILLON CONSULTING LIMITED

Michelle McCarthy, MCIP, RPP
Planner
Encls. Project Location

MM:mrb
Our File: 12-6239

DILLON CONSULTING

235 Yorkland Blvd.
Suite 800
Toronto, Ontario
Canada
M2J 4Y8
Telephone
(416) 229-4646
Fax
(416) 229-4692

Dillon Consulting
Limited

July 10, 2012

Michelle McCarthy
Planner
Dillon Consulting Ltd.
235 Yorkland Blvd, Suite 800
Toronto, Ontario M2J 4Y8
mmccarthy@dillon.ca

Dear Ms. McCarthy,

Thank you for your letter of May 28, 2012 regarding your request for information held by Aboriginal Affairs and Northern Development Canada (AANDC) on established or potential Aboriginal and treaty rights in the vicinity of the Northern Iron Corp. Griffith Iron Mine Redevelopment Project, northwest of Ear Falls, Ontario.

Consulting with Canadians on matters of interest or concern to them is an important part of good governance, sound policy development and decision-making. In addition to good governance objectives, there may be statutory or contractual reasons for consulting, as well as the common law duty to consult with First Nations, Métis and Inuit when conduct that might adversely impact Aboriginal or treaty rights (established or potential) is contemplated.

It is important to note that the information held by AANDC is provided as contextual information and may or may not pertain directly to Aboriginal or treaty rights. In most cases, the Aboriginal community remains best positioned to explain their traditional use of land, their practices or claims that may fall under section 35, including claims they may have put before the courts.

The Department has recently developed a new information system, the Aboriginal and Treaty Rights Information System (ATRIS), which brings together information regarding Aboriginal groups such as their location, related treaty information, claims (specific, comprehensive and special) and litigation. Using ATRIS and a 100 km radius surrounding the project location, information regarding potentially affected Aboriginal communities is presented in the attached report in the following sections for each community:

Aboriginal Community Information includes key contact information and any other information such as Tribal Council affiliation.

Treaties, Claims and Negotiations includes Historic Treaties, Specific, Comprehensive and Special Claims. Self-Government may be part of Comprehensive claims or stand-alone negotiations.

Litigation usually refers to litigation between the Aboriginal Group and the Crown, often pertaining to section 35 rights assertions or consultation matters.

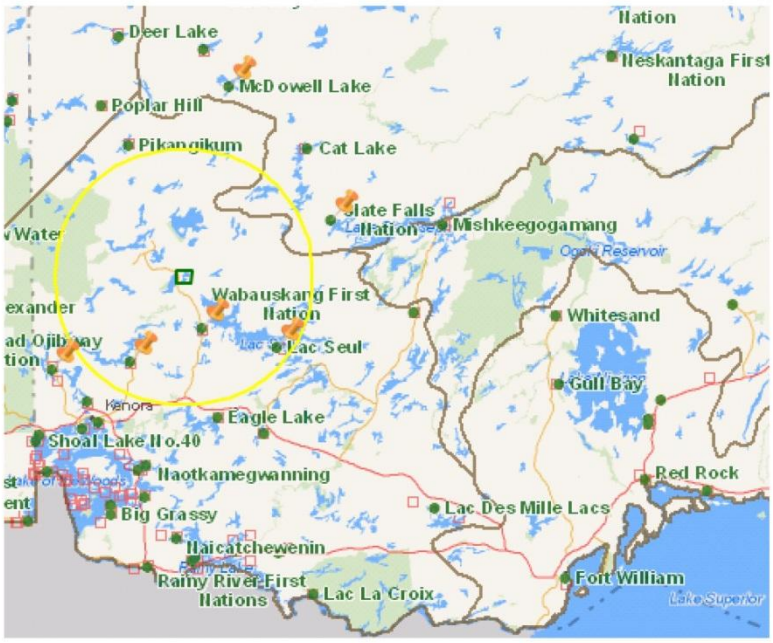
Also included, where available, is a section entitled **Other Considerations**. This may include information on Métis rights, consultation-related protocols or agreements and other relevant information.

Should you require further assistance regarding the information provided, or if you would prefer that a smaller or greater buffer be used to gather information, please do not hesitate to contact me.

Regards,

Allison Berman
Regional Subject Expert for Ontario
Consultation and Accommodation Unit
Aboriginal Affairs and Northern Development Canada
300 Sparks Street, Ottawa
Tel: 613-943-5488

First Nation/Aboriginal Community Information



Within a 100 km radius of your project there are 6 First Nation communities. The following information should assist you in planning any consultation that may be required.

In general, where historic treaties have been signed, the rights of signatory First Nation's are defined by the terms of the Treaty. In many cases, however, there are divergent views between First Nations and the Crown as to what the treaty provisions imply or signify. For each First Nation below, the relevant treaty area is provided.

In areas where no historic treaty exists or where such treaties were limited in scope (i.e. where only certain rights were addressed by the treaty, such as the Peace and Friendship Treaties), there may be comprehensive claims that are asserted or being negotiated. Comprehensive claim negotiations are the means by which modern treaties are achieved.

Specific claims refer to claims made by a First Nation against the federal government related to outstanding lawful obligations, such as the administration of land and other First Nation assets, and to the fulfillment of Indian treaties, although the treaties themselves are not open to re-negotiation. The below response provides summaries of relevant claims that are current to the date of the response. As the claims progress regularly, it is recommended that the status of each claim be reviewed through the Reporting Centre on Specific Claims at: http://pse4-esd4.ainc-inac.gc.ca/SCBRI/Main/ReportingCentre/IndexExternal.aspx?lang=eng

Self-government agreements set out arrangements for Aboriginal groups to govern their internal affairs and assume greater responsibility and control over the decision making that affects their communities. Many comprehensive claims settlements also include various self-government

arrangements. Self-government agreements address: the structure and accountability of Aboriginal governments, their law-making powers, financial arrangements and their responsibilities for providing programs and services to their members. Self-government enables Aboriginal governments to work in partnership with other governments and the private sector to promote economic development and improve social conditions.

Grassy Narrows
Chief Simon Roy Fobister
General Delivery
Grassy Narrows, Ontario, P0X 1B0
Phone: (807) 925-2201 Fax: (807) 925-2649

Treaty Area - Treaty 3 (1873)
See "Other Considerations" below for more information.

Membership
Bimose Tribal Council
Chiefs of Ontario
See "Other Considerations" below for more information.

Specific Claims
Name: Treaty Land Entitlement
Status: concluded 2011
Description: The First Nation alleges that an 1883 survey did not provide the band with its proper land entitlement under the terms of Treaty 3. They argue there was a shortfall of 11.43 square miles (7,314 acres). Furthermore, the First Nation alleges the Crown's failure to set aside the proper amount of reserve land constitutes a breach of fiduciary duty. This is a joint claim with the Wabauskang First Nation. See 'Other Considerations' for more information on Treaty Land Entitlements.

Name: Anicinabe Park
Status: concluded
Description: The Grand Council of Treaty 3 alleged that in 1959, the Department of Indian Affairs sold Anicinabe Park belonging to them, to Kenora Township. This sale went forward without consultation and without fulfilling several agreements.

Name: Headlands
Status: file closed- incomplete submission
Description: The First Nation alleged a breach of fiduciary obligation regarding the 1894 agreement between Canada and Ontario, and the later revocation of this portion of the agreement by Ontario in 1915 (Canada/Ontario Boundary Dispute). This claim involves Indian Reserve no. 21.

Litigation
Name: Francis Kavanaugh v. Attorney General of Canada
Status: active
Court No.: 99-0039

Description: The plaintiff is Grand Chief of the Grand Council Treaty Number 3 (1873), which is composed of Anishnaabeg of Naongashiing, Big Grassy, Couchiching First Nation, Eagle Lake, Grassy Narrows First Nation Iskatewizaagegan No 39 Independent First Nation, Lac Des Mille Lacs, Lac La Croix, Lac Seul, Naicatchewenin and Naotkamegwannings First Nations. They allege that oral promises were made at the time of the treaty as to First Nations ownership of all minerals.

Name: HMTQ in Right of Canada, Laurie Desautels, Ministry of Natural Resources v. Larry Beacham, Robert Beacham
Status: active
Court No.: not available
Description: The accused, on different occasions, were charged by Conservation Officers for illegal hunting practices in a Treaty 3 area. They had previously received permission letters provided by the Grand Council of Treaty 3 and were told that this permission was sufficient for them to exercise their hunting and fishing rights.

Name: Andrew Keewatin Jr. and Joseph William Fobister on their own behalf and on behalf of all other members of Grassy Narrows First Nation v. Minister of Natural Resources and Abitibi-Consolidated Inc. and the Attorney-General of Canada
Status: active
Court No.: 05-CV-281875
Description: Canada is a third party to the litigation challenging the Government of Ontario's right to authorize logging on Treaty 3 lands. The Plaintiffs allege that "take-up" power is reserved for the Government of Canada.

Name: Grassy Narrows First Nation for itself and on behalf of all members of Grassy Narrows First Nation, Wabauskang First Nation for itself and on behalf of all members of Wabauskang First Nation v. Attorney General of Canada, HMTQ in Right of Ontario
Status: closed (administrative closure)
Court No.: 01-265
Description: The Plaintiffs alleged that an 1883 survey did not provide them with proper land entitlement under the terms of Treaty 3. The Plaintiffs also alleged that the Crown's failure to set aside the proper amount of reserve land constituted a breach of the fiduciary duty.

Lac Seul
Chief Clifford Bull (appointment expires October 15, 2012)
P.O. Box 100
Hudson, Ontario, P0V 1X0
Phone: (807) 582-3503 Fax: (807) 582-3449

Treaty Area - Treaty 3 (1873)
See "Other Considerations" below for more information on the treaty.

Membership
Independent First Nation Alliance

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The IFNA provides its member communities with technical advisory and community development support programs. Under the guidance of its members, the Alliance Chiefs direct the affairs of the IFNA based on customary norms and traditional concensus building.
P.O. Box 5010
98 King Street
Sioux Lookout, Ontario, P8T 1K6
Phone: (807) 737-1902
www.ifna.ca/index.html

Grand Council of Treaty No. 3
For more information, see "Other Considerations" below.

Specific Claims
Name: Flooding 1936
Status: active litigation
Description: The First Nation alleged illegal flooding of reserve land and inadequate compensation paid for flooding damages. The claim is located north west of Sioux Lookout.

Name: Anicinabe Park
Status: concluded
Description: The Grand Council of Treaty 3 alleged that in 1959, the Department of Indian Affairs sold Anicinabe Park belonging to them, to Kenora Township. This sale went forward without consultation and without fulfilling several agreements.

Litigation
Name: HMTQ in Right of Canada, Laurie Desautels, Ministry of Natural Resources v. Larry Beacham, Robert Beacham
Status: active
Court No.: not available
Description: The accused, on different occasions, were charged by Conservation Officers for illegal hunting practices in a Treaty 3 area. They had previously received permission letters provided by the Grand Council of Treaty 3 and were told that this permission was sufficient for them to exercise their hunting and fishing rights.

Name: Lac Seul First Nation v. HMTQ in Right of Canada
Status: active
Court No.: T-2481-03
Description: In this action, the plaintiffs seek damages for the flooding of more than 8,000 acres of reserve land between 1929 and 1935. This flooding occurred as a result of the creation of a reservoir for a hydro-electric power generating station at Lower Ear Falls. The plaintiffs allege that the compensation paid for the flooding was inadequate and that the flooding was done without legal authority.

Name: Francis Kavanaugh v. Attorney General of Canada
Status: active
Court No.: 99-0039
Description: The plaintiff is Grand Chief of the Grand Council Treaty Number 3 (1873), which is composed of Anishnaabeg of Naongashiing, Big Grassy, Couchiching First Nation, Eagle Lake, Grassy Narrows First Nation Iskatewizaagegan No 39 Independent First Nation, Lac Des Mille Lacs, Lac La Croix, Lac Seul, Naicatchewenin and Naotkamegwannings First Nations. They

allege that oral promises were made at the time of the treaty as to First Nations ownership of all minerals.

McDowell Lake
Chief Eli James
P.O. Box
Red Lake, Ontario, P0V 2M0
Phone: (807) 735-1381 Fax: (807) 735-1383

Treaty Area - Treaty 5 (1875)
See "Other Considerations" below for more information on the treaty.

Membership
Keewaytinook Okimakanak Northern Chiefs Council
This is a non-political Oji-Cree Chiefs Council providing various community services for six First Nations.
Head Office:
Fort Severn First Nation
Fort Severn, Ontario, P0J 1W0
Phone: (807) 478-1114 Fax: (807) 478-1136
www.knet.ca/

Chiefs of Ontario
See "Other Considerations" below for more information.

Specific Claims
No claims to report.

Self Government Negotiations
Nishnawbe Aski Nation (NAN) Stand-Alone Self Government Negotiations
See "Other Considerations" below for more information.

Litigation
No litigation to report.

Slate Falls Nation
Chief Lorraine Crane (appointment expires November 30, 2012)
48 Lakeview Drive
Slate Falls, Ontario, P0V 3C0
Phone: (807) 737-5700 Fax: (807) 347-1299

Treaty Area - Treaty 9 (adhesion of 1929-30)
See "Other Considerations" below for treaty information.

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Membership
Windigo Chiefs Council
This Council works to deliver programs and services for seven remote northern communities.
160 Alcona Drive
P.O. Box 299
Sioux Lookout, Ontario, P8T 1A3
www.windigo.on.ca/article/welcome-1.asp

Chiefs of Ontario
See "Other Considerations" below for more information.

Specific Claims
No claims to report.

Self Government Negotiations
Nishnawbe Aski Nation (NAN) Stand-Alone Self Government Negotiations
See "Other Considerations" below for more information.

Litigation
Name: Slate Falls Nation, Stanley Carpenter v. AG (Canada), Ontario Power Generation Inc.
Status: active
Court No.: 01-CV-213506; 01-CV-213506C
Description: The Plaintiff claims that the Defendant breached its fiduciary duty by failing to prevent the flooding of their reserve lands by Ontario Hydro. The boundaries of the reserve are also an issue, and the First Nation questions whether their reserve matches up to what was intended in Treaty discussions.

Note:
The address for Slate Falls is the location of the Indian Settlement. Slate Falls has access to the Lac Seul Reserve, a First Nation which they previously split from. Slate Falls First Nation signed Treaty 9 at Osnaburg along with Cat Lake First Nation and Mishkeegogamang First Nation, who at the time were all part of one collective under Chief Missabay.

Wabaseemoong Independent Nations
Chief Eric Nelson Fisher
General Delivery
Whitedog, Ontario, P0X 1P0
Phone: (807) 927-2000 Fax: (807) 927-2037
www.win-tlua.ca

Treaty Area - Treaty 3 (1873)
See "Other Considerations" below for treaty information.

Membership
Bimose Tribal Council
Grand Council of Treaty No. 3
See "Other Considerations" below for treaty information.

Litigation
Name: Wabaseemoong Independent Nations of One Man Lake, Whitedog and Swan Lake (formerly collectively, the Islington Band) v. Attorney General of Canada et al
Status: active (agreement signed August 18, 2011)
Court No.: 59433
Description: The Plaintiff, Wabaseemoong Independent Nations of One Man Lake, White Dog and Swan Lake ("Wabaseemoong") assert existing Aboriginal and Treaty rights in lands described as the Traditional Land Use Area ("TLUA") which they claim have never been surrendered or extinguished. The Plaintiff claims inter alia that Canada, Ontario, Ontario Power Generation and the Ontario Electricity Financial Corporation are liable in damages for breach of contract, breach of fiduciary duty, trespass to property, negligence, nuisance, misrepresentation, infringement of the Plaintiff's Aboriginal and Treaty rights, breach of Treaty obligations, and the Plaintiff's loss of use of its TLU in relation to its actions concerning the lands within Wabaseemoong's TLUA. The Plaintiff claims that Canada failed to ensure adequate consultation and accommodation of the Plaintiff's interests in relation to activities carried out in the TLUA.

Name: HMTQ in Right of Canada, Laurie Desautels, Ministry of Natural Resources v. Larry Beacham, Robert Beacham
Status: active
Court No.: not available
Description: The accused, on different occasions, were charged by Conservation Officers for illegal hunting practices in a Treaty 3 area. They had previously received permission letters provided by the Grand Council of Treaty 3 and were told that this permission was sufficient for them to exercise their hunting and fishing rights.

Traditional Territory
Visit the Wabaseemoong First Nation website for a description of their asserted traditional territory.

Wabauskang First Nation
Chief Leslie Cameron (appointment expires June 13, 2012)
P.O. Box 418
Ear Falls, Ontario, P0V 1T0
Phone: (807) 529-3174 Fax: (807) 529-3007
www.wabauskang.ca/index.html

Treaty Area - Treaty 3 (1873)
See "Other Considerations" below for more treaty information.

Membership
Bimose Tribal Council
Chiefs of Ontario
Grand Council of Treaty No. 3
See "Other Considerations" below for more information.

Specific Claims
Name: Treaty Land Entitlement
Status: concluded 2011
Description: The First Nation alleges that an 1883 survey did not provide the band with its proper land entitlement under the terms of Treaty 3. They argue there was a shortfall of 11.43 square miles (7,314 acres). Furthermore, the First Nation alleges the Crown's failure to set aside the proper amount of reserve land constitutes a breach of fiduciary duty. This is a joint claim with the Grassy Narrows First Nation. See 'Other Considerations' for more information on Treaty Land Entitlements. See 'Other Considerations' for more information on Treaty Land Entitlements.

Name: Anicinabe Park
Status: concluded
Description: The Grand Council of Treaty 3 alleged that in 1959, the Department of Indian Affairs sold Anicinabe Park belonging to them, to Kenora Township. This sale went forward without consultation and without fulfilling several agreements.

Name: Headlands
Status: file closed- incomplete submission
Description: The First Nation alleged a breach of fiduciary obligation regarding the 1894 agreement between Canada and Ontario, and the later revocation of this portion of the agreement by Ontario in 1915 (Canada/Ontario Boundary Dispute). This claim involves Indian Reserve no. 21.

Litigation
Name: Grassy Narrows First Nation for itself and on behalf of all members of Grassy Narrows First Nation, Wabauskang First Nation for itself and on behalf of all members of Wabauskang First Nation v. Attorney General of Canada, Her Majesty the Queen in Right of Ontario
Status: closed (administrative closure)
Court No.: 01-265
Description: The Plaintiffs allege that an 1883 survey did not provide them with proper land entitlement under the terms of Treaty 3. The Plaintiffs also allege that the Crown's failure to set aside the proper amount of reserve land constitutes a breach of the fiduciary duty.

Name: HMTQ in Right of Canada, Laurie Desautels, Ministry of Natural Resources v. Larry Beacham, Robert Beacham
Status: active
Court No.: n/a
Description: The accused, on different occasions, were charged by Conservation Officers for illegal hunting practices in a Treaty 3 area. They had previously received permission letters provided by the Grand Council of Treaty 3 and were told that this permission was sufficient for them to exercise their hunting and fishing rights.

Current Events:
As of April 2012, this First Nation reported over 40 resource companies staking claims in their traditional territory. They maintain that consultation efforts by proponents have not been consistent and in some cases non-existant. They are also struggling with a small leadership and membership base from which to review the amount of information that they are provided. It is recommended that their concerns be considered when engaging this First Nation on consultaiton issues prior to advancing projects and activities.

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Other Considerations

Aboriginal Rights Assertions: the Métis

The inclusion of the Métis in s.35 represents Canada's commitment to recognize and value their distinctive cultures, which can only survive if they are protected along with other Aboriginal communities. In 2003, the Supreme Court of Canada affirmed Métis rights under s.35 of the Constitution Act, 1982, in the Sault St. Marie area, in the *Powley* decision. For more information on the Powley decision visit the following link: www.aadnc-aandc.gc.ca/eng/1100100014419

The Office of the Federal Interlocutor for Métis and Non-Status Indians (OFI) is aware that the Métis Nation of Ontario (MNO), its regional and community councils, have asserted a Métis right to harvest in a large section of the province.

The provincial government has accommodated Métis rights on a regional basis within Métis harvesting territories identified by the MNO. These accommodations are based on credible Métis rights assertions. An interim agreement (2004) between the MNO and the Ministry of Natural Resources (MNR) recognizes the MNO's Harvest Card system. This means that Harvester's Certificate holders engage in traditional Métis harvest activities within identified Métis traditional territories across the province. For a map of Métis traditional harvesting territories visit the MNO website at: http://www.metisnation.org/harvesting/harvesting-map.aspx

The MNO maintains that Aboriginal 'rights-holders' are Métis communities which are collectively represented through the MNO and its Community Councils. In partnership with community councils, MNO has established a consultation process. The MNO has published regional consultation protocols on their website which offer pre-consultation stage instructions on engaging the Métis through their community councils (via the consultation committee made up of an MNO regional councilor, a community councilor representative and a Captain of the Hunt). A list of the community councils is also available on their website. However, that this organization does not represent all Métis in Ontario.

Métis Nation of Ontario
Métis Consultation Unit is located within the MNO head office.
500 Old St. Patrick Street, Unit D
Ottawa, Ontario, K1N 9G4
Phone: (613) 798-1488 Fax: (613) 725-4225
www.metisnation.org/home.aspx

Métis National Council
350 Sparks Street, Suite 201
Ottawa, Ontario, K1R 7S8
Phone: (613) 232-3216 Fax: (613) 232-4262
www.metisnation.ca

For an indication of the population in Ontario who self-identify as Métis, visit the Statistics Canada website. The Ontario map indicates populations as small as 250 up to over 2,000 within its borders.
http://geodepot.statcan.gc.ca/2006/13011619/20080513012009031301161 9/16181522091403090112_13011619/15140102151809070914011 2_2015200112130520091909041615 16_0503-eng.pdf

Métis Litigation in Ontario

Name: HMTQ in Right of Canada v. Denis Larabie

Status: active
Court No.: n/a
Description: The defendant has been charged for unlawfully hunting cow and bull moose without a license and possessing killed wildlife contrary to s.6 (1)(a) and s.12 of the Fish and Wildlife Conservation Act. The defendant identifies himself as Métis and claims that he was exercising his Aboriginal and/or treaty right by hunting within his traditional territory in Ontario.

Name: HMTQ in Right of Canada, Laurie Desautels v. Henry Wetelainen Jr.
Status: active
Court No.: CV-08-151
Description: The defendant, Henry Wetelainen Jr., intends to question the constitutional validity of sections 28, 31 and 40 of the Crown Forest Sustainability Act (1994), S.O. 1994, c. 25 and Ontario Regulation 167/95, as amended, in relation to an act or omission of the government of Ontario. The defendant claims that he was exercising Aboriginal and treaty rights afforded by the Adhesion to Treaty 3, by harvesting wood within his traditional territory. He claims that he is a Métis/Non-Status Indian and that the imposition of payment for harvesting or use of the forest resource is an infringement and violates is constitutional rights.

Name: Ministry of Natural Resources v. Kenneth Sr. Paquette
Status: active
Court No.: to be determined
Description: This Notice of Constitutional Question relates to a provincial prosecution involving a charge pertaining to hunting moose. The Defendant intends to assert his s. 35 right as a Métis person to hunt moose, and he also intends to seek a Charter remedy under s. 15 of the *Charter.*

Court Decisions concerning Métis in Ontario
R. v. Laurin, Lemieux, Lemieux - 2007
Court No.: ONCJ 265

Three Métis defendants were charged with fishing violations and claimed that the decision of the Ministry of Natural Resources (MNR) to prosecute them violated the terms of the Interim Agreement (2004) between the MNR and the Métis Nation of Ontario (MNO). As the defendants were indeed Harvester Card holders authorized to fish in the Mattawa/Nipissing territory, therefore, they were entitled to the exemption in the agreement.

The Court concluded that laying of charges against any valid Harvester Card holder who is harvesting in the territory designated on the card within 2 years of the 2004 agreement was a breach. The Interim Agreement itself was silent as to any geographic limitations. There was no mention of the Agreement only applying north and east of Sudbury. Further, the reliance on Harvester Cards, which explicitly contained the territorial designation of the cardholder, signified that the MNR accepted such designations for the purpose of the agreement. The Court was clear to note that this case did not make any ruling regarding the merits of any claim that the Mattawa/Nipissing area contains section 35 rights bearing Métis communities.

Membership

First Nations may or may not delegate certain authority and/or powers to tribal councils to administer programs, funding and/or services on their behalf. The best source of information with respect to consultation is though individual First Nations themselves.

Bimose Tribal Council
598 Lakeview Drive
Kenora, Ontario, P9N 3P7
Phone: (807) 468-5551 Fax: (807) 468-3908
www.bimose.ca

Chiefs of Ontario
The Chiefs of Ontario is a coordinating body for 133 First Nation communities in Ontario. The main objective of this body is to facilitate the discussion, planning, implementation and evaluation of all local, regional and national matters affecting its members.
www.chiefs-of-ontario.org

Administrative Office:
111 Peter Street, Suite 804
Toronto, Ontario, M5V 2H1
Phone: (416) 597-1266
Fax: (416) 597-8365

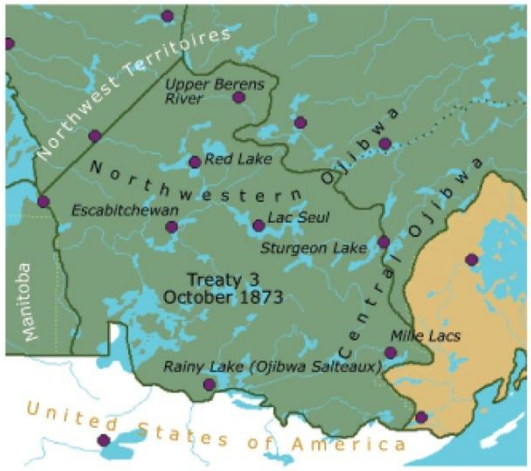
Political Office:
Fort William First Nation
RR 4, Suite 101, 9- Anemki Drive
Thunder Bay, Ontario, P7J 1A5
Phone: (807) 626-9339
Fax: (807) 626-9404

Grand Council Treaty No. 3
This council is the historic government of the Anishinaabe Nation in Treaty 3. It is the political government for 26 communities in northwestern Ontario, and for two communities in Manitoba.
P.O. Box 1720
Kenora, Ontario, P9N 3X7
Phone: (807) 548-4214 Fax: (807) 548-5041
www.gct3.net

Treaty Areas

Treaty 3 of 1873
The Northwestern Ojibwa occupied this land from Rainy River to the Lake of the Woods. The Ojibwa would not allow the use of their land or waterways without fair compensation. Thus the government conceded more right to the Ojibwa than in the earlier numbered Treaties 1 and 2.

All treaties thereafter contained many of the provisions provided for in Treaty 3 such as domestic animals, farm equipment, annuities, clothing and education. The Crown agreed that signatories **"…shall have right to pursue their avocations of hunting and fishing throughout the tract surrendered… subject to such regulations as may from time to time be made…"** These rights were not extended to "such tracts as may, from time to time, be required or taken up for settlement, mining, lumbering or other purposes…".



*Atlas of Canada Map

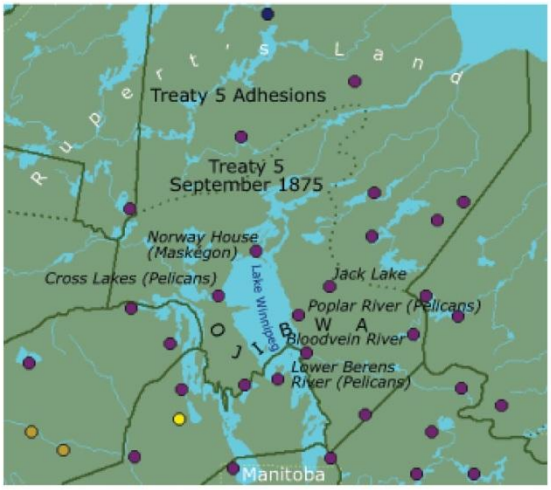
Treaty 3 included Métis as part of an "adhesion" to the original agreement. Métis individuals were offered status and reserve lands. The Métis lands set aside now consist of the Couchiching First Nation reserve.

Key Litigation to Consider -The *Keewatin* Decision and Treaty 3 Interpretation
Treaty interpretation is becoming increasingly important in the context of consultation. It is an area of law that is evolving quickly. In the *Keewatin, Willie et al. v. Minister of Natural Resources et al* decision the court set out findings regarding the proper interpretation of Treaty 3.
The Court found:

- That Ontario does not have the authority under Treaty 3 to take up tracts of land and authorize logging activities which would limit the Plaintiffs' treaty hunting and fishing rights. Only the Government of Canada can authorize such activity.
- That Ontario does not have the right under the Constitution to justifiably infringe the Plaintiff's treaty harvesting rights by taking up land so as to authorize forestry operations.

The Court also found that both Canada and the Ojibway understood that under the Treaty, the Ojibway would retain a continuing right to exercise their traditional subsistence harvesting and trading activities as they had done prior to entering into the treaty. Both Canada and Ontario have filed notices of appeal on this decision.

<u>Treaty 5 of 1875</u>
Chief Negotiator Commissioner Morris treated with the Swampy Cree in the vicinity of Lake Winnipeg. The intention was to secure undisturbed access to navigable waters for new settlers.



*Atlas of Canada Map

The Crown agreed that **"…Indians shall have right to pursue their avocations of hunting and fishing throughout the tract surrendered as hereinbefore described, subject to such regulations as may from time to time be required or taken up for settlement, mining, lumbering or other purposes…".**

Treaty 9 of 1905

Also known as the James Bay Treaty, the area is comprised of approximately 90,000 square miles of the provincial lands drained by the Albany and Moose River systems. This area was occupied by the Ojibwa and the Cree.

In July 1905, it was agreed in Council by the Government of Canada to admit to treaty any Indian whose hunting grounds cover portions of the Northwest Territories lying between the Albany River, the District of Keewatin and Hudson Bay, and to set aside reserves in that territory. Due to the absence of Aboriginal peoples in the treaty region in 1905, negotiators returned in August of 1906. Additional clauses were added to the treaty along with the inclusion of eight additional reserves.

*Atlas of Canada Map

Signatories and their descendants **retained "the right to pursue their usual vocations of hunting, trapping and fishing throughout the tract surrendered"**. Exceptions to these rights pertain to tracts of land that have been taken up "for settlement, mining, lumbering, trading and other purposes".

Treaty 9 (adhesion of 1929-30)
In an effort to secure the remaining Aboriginal title in Ontario, an adhesion to Treaty 9 was undertaken throughout Northeastern Ontario. The adhesions were signed with the Ojibway Indians and the Swampy Cree at Trout Lake on July 5th, 1929; at Windigo River on July 18th, 1930; at Fort Severn on July 25th 1930; and at Winisk on July 28th, 1930.

Treaty Land Entitlement (TLE)
Treaty Land Entitlement is a term used to describe Aboriginal rights to reserve lands in the Prairie provinces, northern Ontario and northern British Columbia which flow from Treaties 1 to 11, negotiated and confirmed between various First Nations and the Crown in right of Canada. It is a "subset of specific claims.

Treaty Land Entitlement claims are intended to settle the land debt owed to those First Nations who did not receive all the land they were entitled to under historical treaties signed by the Crown and First Nations. Settlement agreements are negotiated among First Nations, the Government of Canada and provincial/territorial governments. According to the terms of the agreement, a specified amount of Crown lands is identified and/or a cash settlement is provided so that a First Nation may purchase federal, provincial/territorial, or private land to settle the land debt. Once selected or purchased, this land can be added to the First Nations' reserve under the Additions to Reserve process.

All selections and acquisitions are proceeding through the TLE and Additions to Reserves processes and are at various stages ranging from initial acquisition/selection to the Federal Order that would set the lands apart as reserve.

For more information on Treaty Land Entitlement, please consult the AANDC website.
www.ainc-inac.gc.ca/enr/lds/tle-eng.asp

Self Government Agreement Negotiations
Nishnawbe Aski Nation (NAN) Stand-Alone Self Government Negotiations

Bilateral framework agreements on governance and education jurisdictions were formally signed between Canada and NAN in 1999. The negotiations are intended to provide the First Nations of NAN with on-reserve jurisdiction over their governance and education systems.

The aggregation of 49 First Nations and communities in northern Ontario who make up NAN signed agreements-in-principle (AIPs) pursuant to the framework agreements. The AIPs represent a step toward a Final Agreement that will lay the foundation for effective and accountable First Nation governance and education jurisdiction.

A requisite number of AIPs have been initialed and the parties are seeking authority to approve signing these documents. At this time, NAN continues to do preparatory work for moving into the Final Agreement stage of the negotiations. This year, NAN will be doing rounds of community consultations to seek input from their First Nations in the development of possible models of government.

Provincial guidelines
Under its responsibility to promote stronger Aboriginal relationships, the Ontario Ministry of Aboriginal Affairs has produced *Draft Guidelines on Consultation with Aboriginal Peoples Related to Aboriginal Rights and Treaty Rights.* These guidelines are for use by ministries who seek input from key First Nations and Métis organizations, all Ontario First Nations and selected non-Aboriginal stakeholders. To review the guidelines, visit:
http://www.aboriginalaffairs.gov.on.ca/english/policy/draftconsultjune2006.pdf

DILLON CONSULTING

McCarthy, Michelle <mmccarthy@dillon.ca>

Northern Iron Corp. Griffith Mine Redevelopment Project, Northwest of Ear Falls

Johnson, Ashley (MAA) <Ashley.Johnson@ontario.ca> Thu, Nov 29, 2012 at 1:25 PM
To: "mmccarthy@dillon.ca" <mmccarthy@dillon.ca>

Hi Michelle,

As per our phone conversation this morning, I wanted to confirm via email that the Ministry of Aboriginal Affairs (MAA) will not be sending a response to your Environmental Assessment request for assistance in identifying Aboriginal communities who may be interested in your project. MAA understands that you have been working with the Ministry of Northern Development and Mines (MNDM) and that they have provided you with a list of Aboriginal communities to contact. Please direct any further inquiries about the project to MNDM.

Kind regards,

Ashley Johnson

Senior Advisor, Consultation Unit

Ministry of Aboriginal Affairs

T: 416-326-6313

Appendix 3: Project Stakeholder List

Surname	First Name	Organization	Department	Title	Address	Address 2	Postal Code	Telephone	E-Mail/Fax
Federal Agencies									
Blajchman	Amiel	Canadian Environmental Assessment Agency	Ontario Region	Project Manager	55 St. Clair Avenue East, 9th Floor	Toronto, ON	M4T 1M2	416-952-1576	Amiel.Blajchman@ceaa-acee.gc.ca
Campbell	Ellen	Canadian Environmental Assessment Agency	Ontario Region	Project Manager	55 St. Clair Avenue East, 9th Floor	Toronto, ON	M4T 1M2	416-952-7006	ellen.campbell@ceaa-acee.gc.ca
Laverdiere	David	Environment Canada	Environmental Protection Operations Division (ON)	Senior Engineer	4905 Dufferin Street	Toronto, ON	M3H 5T4	416-739-5872	David.Laverdiere@ec.gc.ca
Hysenaj	Sheelagh	Environment Canada	Environmental Assessment Section	Environmental Assessment Officer	4905 Dufferin Street	Toronto, ON	M3H 5T4	416-739-5910	sheelagh.hysenaj@ec.gc.ca
Ward	Neville	Fisheries and Oceans	Northern Ontario District	Fish Habitat Biologist	100 Main Street, Suite 425	Thunder Bay	P7B 6R9	807-346-8214	tom.kleinboeck@dfo-mpo.gc.ca
Mousseau	Monique	Transport Canada	Environmental Affairs, Programs Branch	Regional Manager	4900 Yonge Street, Suite 300	Toronto, ON	M2N 6A5	416-952-0485	moussem@tc.gc.ca
Loon	Cheyenne	Aboriginal Affairs & Northern Development Canada	Environmental Unit, Environmental Assessment Coordination	Senior Environmental Advisor	25 St. Clair Avenue East, 8th Floor	Toronto, ON	M4T 1M2	416-952-9601	Cheyenne.Loon@aandc-aadnc.gc.ca
Berman	Allison	Aboriginal Affairs & Northern Development Canada	Consultation and Accomodation Unit (CAU)	Regional Subject Expect for Ontario	Room 205 (2nd Floor), 300 Sparks Street	Ottawa, ON	K1A 0H4	613-943-5488	CAU-UCA@ainc-inac.gc.ca
Lalani	Melanie	Health Canada	Safe Environments Program	Regional Environmental Assessment Coordinator	180 Queen Street West, 10th Floor	Toronto, ON	M5V 3L7	416-954-5013	melanie_lalani@hc-sc.gc.ca
Cavallero	Kathleen	Natural Resources Canada	Science and Policy Integration	Senior Environmental Assessment Officer	580 Booth Street, 3rd Floor, Room A8-1	Ottawa, ON	L1A 0E4	613-996-0055	kathleen.cavallaro@nrcan-mcan.gc.ca
Provincial Agencies									
Park	Trevor	Ministry of Natural Resources	Red Lake District	Planning and Information Specialist	P.O. Box 5003	Red Lake, ON	P0V 2M0	807-727-1344	trevor.park@ontario.ca
Swanwick	Graeme	Ministry of Natural Resources	Red Lake District	District Manager	P.O. Box 5003	Red Lake, ON	P0V 2M0	807-727-1333	graeme.swanwick@ontario.ca
Barnes	Lesley	Ministry of Natural Resources	Red Lake District	Management Biologist	P.O. Box 5003	Red Lake, ON	P0V 2M0	807-727-1395	lesley.barnes@ontario.ca
Ellery	Scott	Ministry of Natural Resources (Ontario Parks)	Northwest Zone Office	Park Superintendent	435 James Street South	Thunder Bay, ON	P7E 6S8	807-223-7535	scott.ellery@ontario.ca
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Bull	Clifford	Lac Seul First Nation	Chief & Council	Chief	P.O. Box 100	Hudson, ON	P0V 1X0	807-582-3503	807-582-3449
James	Eli	McDowell Lake First Nation	Chief & Council	Chief	P.O. Box 740	Red Lake, On	P0V 2M0	807-727-1168	807-727-2170
Crane	Lorraine	Slate Falls Nation	Chief & Council	Chief	48 Lakeview Drive	Slate Falls, ON	P0V 3C0	807-737-5700	807-347-1299
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		Treaty 5 (Keewaytinook Okimakanak Northern Chiefs Council)	Fort Severn First Nation Head Office		General Delivery	Fort Severn, ON	P0J 1W0	807-478-1114	807-478-1136
		Treaty 9 (Windigo Chiefs Council)	Council		160 Alcona Drive, PO Box 299	Sioux Lookout, ON	P8T 1A3	807-737-1585	807-737-3133
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		Chiefs of Ontario	Administrative Office		111 Peter Street, Suite 804	Toronto, ON	M5V 2H1	416-597-1266	416-597-8365
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Appendix 4: Site Inspection Report (September 2002)

AMIS No. 03873		**Griffith**
Mining Division:	Red Lake	
Township:	Bruce Lake Area	

Inspection by: R. deGagne and D. Yaw **Date:** September 27, 2002

Site Coordinates: UTM15 N 5627175, E 472963 NAD83

This site summary report is to be read in conjunction with the accompanying Main Report (AMEC, 2003).

Site Background:

The Griffith mine site is situated on the west shore of Bruce Lake approximately 2 km east of Pakwash Provincial Park on Highway 105, and 25 km north of the community of Ear Falls. A paved mine road leads through an unlocked gate to the mine workings. The mine site is about 8 km long and 5 km wide. The site consists of two expansive, water filled open pits, leveled waste rock piles, and a vegetated tailings area. The Griffith site was an iron and hematite mine producing iron ore for the Steel Company of Canada Ltd. from 1968 to 1986. Approximately 20 million tons of iron pellets were produced during the operating period.

Mining rights on the mine and surrounding the tailings area are held by Crown with surface and mining rights withdrawn from disposition (Mining Act Withdrawals). A number of patented mining claims are situated adjacent to the mine site to the west and north.

Topography surrounding the site is flat to undulating with mainly local relief and mixed wet and dry surface drainage conditions.

Surficial Geology: The predominant landforms in the site area are peaty organic terrain; sandy glaciofluvial outwash plains; and sandy, clayey glaciolacustrine plains (Neilson, 1989).

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AMIS No. 03873		**Griffith**
Mining Division:	Red Lake	
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Tailings Management Area (TMA):

The TMA at the Griffith mine site consists of two expansive, somewhat distinctive rehabilitated areas (referred to as the North and South Tailings areas in this study). The tailings footprints are almost imperceptible, as both areas have undergone intense rehabilitation as expressed by the dense vegetative ground cover. The tailings areas are separated by a waste rock access road that leads to a peninsula in Bruce Lake.

The majority of the tailings in the North tailings area are submerged in the waters of Iron Bay in Bruce Lake. No discharge structures or outlets were observed in either of the tailings areas. A rounded dyke or causeway extends from the north shore of the North Tailings area southeast to an east-west trending peninsula in Bruce Lake. The causeway separates the milky waters of Iron Bay that hosts the submerged North Tailings material to the west, and the waters of Bruce Lake to the east.

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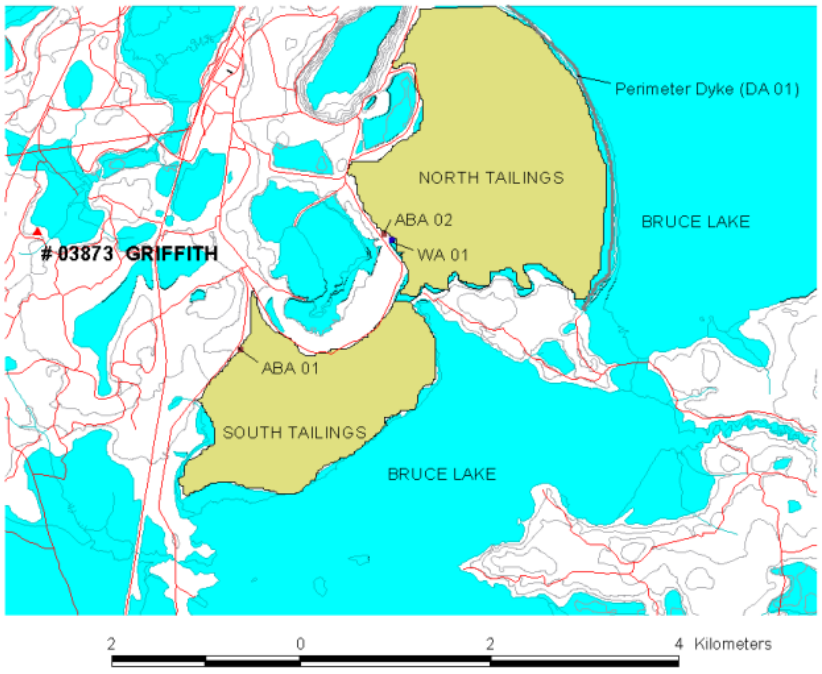
AMIS No. 03873	**Griffith**
Mining Division:	Red Lake
Township:	Bruce Lake Area

TA-01:

Type of Deposit	Submerged (North Tailings) / Raised Stack (North and South Tailings)
Basin Area (ha)	900 ha in 2 areas
Pond Area (ha)	N.A.
Watershed Area (ha)	475 ha
Tailings (tonnes)	60,000,000

N.A. – Not Applicable

ABA Sample	27-Sept-02
Water Sample	27-Sept-02
Disch. Structure	N.A.
Disch. Rate (L/s)	N.A.
Beaver Activity	No



North Tailings Area

The North Tailings area extends from the northeast section of the mine site into the waters of Iron Bay in Bruce Lake. Evidence of a tailings footprint is almost imperceptible owing to the extensive rehabilitation of the tailings. Over half of the area is submerged in the Iron Bay, and the remaining exists as beach. The surface of the tailings beach is dry, visibly compact and pervasively covered with mature deciduous and coniferous trees, shrubs, and grasses. The

AMIS No. 03873		**Griffith**
Mining Division:	Red Lake	
Township:	Bruce Lake Area	

shoreline of the tailings area consists predominantly of wetland vegetation types (cattails, reeds, rushes, etc.) with scant evidence of exposed tailings beach material. No ponds were observed on the tailings surface.

Photo 1. Looking southwest from perimeter dyke/causeway in Bruce Lake (Iron Bay) toward north tailings area (TA-01).

South Tailings Area

The South Tailings area is situated in the southeast section of the mine site and extends to the northwest shores of a now isolated arm of Bruce Lake. As with the North Tailings area, the footprint of the South Tailings is virtually imperceptible. The surface of the tailings has undergone extensive rehabilitation as evidenced by dense vegetative ground cover in the way of deciduous and coniferous trees, shrubs, and grasses.

Occasional tracts of exposed barren surface material occur in the north section of the tailings area and appear to represent test growth plots. No ponds were observed on the tailings surface.

AMIS No. 03873		**Griffith**
Mining Division:	Red Lake	
Township:	Bruce Lake Area	

Photo 2. Looking northeast from access road into vegetated South Tailings area.

Containment Dams:

A densely vegetated, curved causeway (or perimeter dyke) extends from east perimeter of the North Tailings into the waters of Bruce Lake and trends southeast for approximately 4 km where it attaches to a peninsula on the mainland. The crest of the dyke serves as an access road around the North tailings area. The dyke divides the submerged tailings in Iron Bay from the natural waters of Bruce Lake. Exposed material on the crest and side slopes that makes up dyke consists of coarse waste rock material (approximately minus 500 mm).

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AMIS No. 03873		**Griffith**
Mining Division:	Red Lake	
Township:	Bruce Lake Area	

Photo 3. Looking northeast from the dyke/causeway into Bruce Lake.

Perimeter Dyke DA-01

The dyke / causeway abuts the waste rock access road that overlies bedrock on the mainland at the north end, and bedrock at the south end of the structure on the peninsula in Bruce Lake. Exposed surface material on the crest, and side slopes appears to consist of coarse waste rock, (approx. minus 500 mm). The crest and side slopes are extensively vegetated with small birch and poplar trees, shrubs, and grasses. The upstream side of the dyke contains the submerged tailings in the milky, turbid waters of Iron Bay. The downstream side of the dyke contains the waters of Bruce Lake. (Narendra –This section was from another report, please disregard). No discharge structures or outlets were observed in the dyke. The dyke structure appeared to be in good condition.

DA-01

Max. Height (m)	2.5	Freeboard (m)	2.5
Length (m)	4500	D/S Slope (H:1V)	2
Ponded Water	No	Crest Width (m)	25
Construction	Rock fill	Foundation	Unknown
Observed Concerns	None	Abutments (Left/Right)	BR/BR

BR – Bedrock Outcrop

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AMIS No. 03873		**Griffith**
Mining Division:	Red Lake	
Township:	Bruce Lake Area	

Downstream Conditions:

The Griffith mine site is located on the west side of Bruce Lake, with the North and South Tailings areas forming the shoreline. Drainage appears to flow naturally eastward from the North Tailings toward Iron Bay, and southeast from South Tailings reporting to the waters of an isolated arm of Bruce Lake. A number of seasonal and/or permanent residents occur within 2 km of the site. Pakwash Provincial Park is within 4 km of the mine site. It is likely that the waters of Bruce Lake are host to coldwater fisheries habitat. The tailings, as well as other areas on the mine site have been rehabilitated into an outdoor recreational area with nature trails, moose and beaver habitat, wetlands, and waterfowl observation sites. Land use in the vicinity of the site appears to be mining, recreational sport fishing, and nature reserves.

Water Quality and ABA Test Results:

A water sample was collected from the waters over the submerged tailings in the North Tailings area, and the test results are summarized below.

	pH	Conductivity	Total Alkalinity (CaCO3)	Total Suspended Solids	Ammonia as N (1)	Total Cyanide	
MISA	**6.0 - 9.0**			**25**		**2.0**	
PWQO	**6.5-8.5**			**15**	**10**	**0.005**	
Drainage ditch	7.89	301	87	16	0.03	<0.001	

	Total Hardness (CaCO3)	Sulphate	Total Dissolved Solids	Total Acidity	Chemical Oxygen Demand	Total Arsenic	
MISA						**1.0**	
PWQO						**0.005**	
Drainage ditch	121	66.3	203	2	20	0.002	

	Total Cadmium (2)	Total Copper	Total Iron	Total Lead (2)	Total Mercury	Total Nickel	Total Zinc
MISA		**0.6**		**0.4**		**1.0**	**1.0**
PWQO	**0.0005**	**0.005**	**0.3**	**0.005**	**0.0002**	**0.025**	**0.02**
Drainage ditch	<0.0001	<0.001	0.059	<0.001	<0.0001	<0.005	<0.005

1. PWQO for NH3 have been adjusted to reflect a pH of 7 and a temperature of 10 C.
2. PWQO limit presented represents upper bound and varies with alkalinity.
3. Conductivity units are in us/cm
4. All other units in mg/L

The water had a neutral pH with adequate buffering capacity (Alkalinity 87 mg/L). The water was moderately hard (121 mg/L) with a TDS of 203 mg/L. The tailings surface water sample meets the MISA control levels for all tested parameters. It also meets the PWQO requirements, except for suspended solids, which exceeds the requirement slightly (16 versus 15).

AMIS No. 03873		**Griffith**
Mining Division:	Red Lake	
Township:	Bruce Lake Area	

A tailings material sample was collected from both the North Tailings and South Tailings areas at a depth of 0.4 m and submitted for ABA analysis. The results are summarized as follows:

Tailings Area	North Tailings Area	South Tailings Area
Paste pH	10.01	10.16
Ratio of Neutralizing to Acid Potentials	57.1	44.8
Sulphide Content	< 0.01%	< 0.01%

These test results suggest that the tailings in both North and South Tailings Areas are not acid generating.

Hazard Potential Assessment – Causeway Dyke:

Dyke acts as a barrier between submerged tailings in Iron Bay and the natural waters of Bruce Lake. No development occurs in the immediate area.

Criteria	Considerations	Potential
Loss of Life:	None.	Very Low
Economic/Social Losses:	None	Very Low
Environmental Losses:	Submerged tailings from North Tailings area are separated from Bruce Lake by dyke. Bruce Lake is probable host to sensitive aquatic habitats and coldwater fish species. Tailings areas have undergone extensive rehabilitation and are an interpretive nature site. Dyke appears stable and in good condition. Tailings are considered to be non-acid generating and the lake water meets regulatory standards.	Very Low

OVERAL HAZARD POTENTIAL CLASSIFICATION: Very Low

Minimum Inflow Design Flood (as per Ontario Dam Safety Guidelines)

Min. Inflow Design Flood:	Not Applicable
Basin Discharge under IDF Conditions:	Not Applicable
Risk of Overtopping:	Not Applicable
Existing Discharge Capacity:	Not Applicable

Recommended Action:

Short Term:

- Continued assessment of stability of dyke / causeway
- Monitoring of aquatic habitat and water chemistry of Bruce Lake

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AMIS No. 03873		**Griffith**
Mining Division:	Red Lake	
Township:	Bruce Lake Area	

References:

1. Neilson, J.M. (1989) NOEGTS, " Pakwash Lake", OGS Map 5107
2. MNDM (2000) AMIS Database
3. MNDM (1997) Mineral Deposit Inventory – 2, Database
4. Golder Associates Ltd. (1991), "Preliminary Stability Evaluation of Unattended Tailings Sites, Ontario, Volume I – Prioritization Study"
5. V. B. Cook Engineering Ltd. (1994), "AMIS Site Assessment Report", March 31, 1994

Air Photo: 1996 – 5027 R-06 (193)
Mapping: OBM Sheet 20 15 4700 56200

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Appendix 5: How HBI is Made

HOW HBI IS MADE

(Based on the *Direct Reduction Fundamentals and Applications – Short Course* presented by Roy Whipp, President of Whipp Technology, Inc., and an HBIA Special Member)

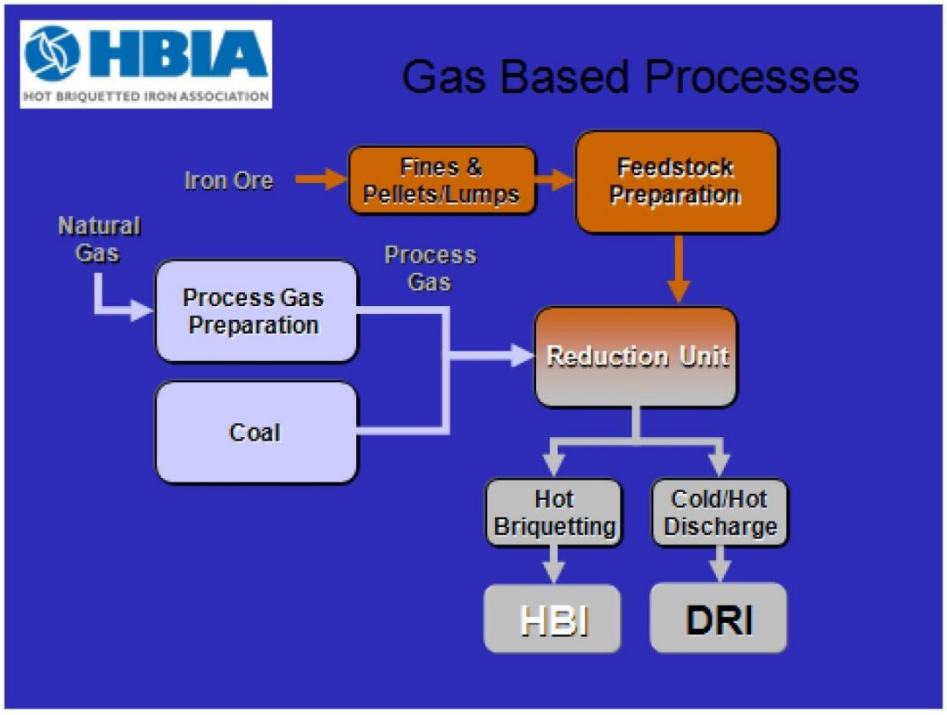
Gas-Based Processes

The majority of the direct reduction processes are gas-based; therefore, we will focus on them today.

The iron ore feed is either fines in fluid beds or pellets and lump in the other reduction furnaces. The feedstock is prepared to adjust the size to that required in the reduction furnace. This may require screening for separation or grinding to adjust the particle size downward.

The process gas is formed by different methods to generate H_2 and CO to remove the oxygen from the ore. Coal is also added in some processes to the process gas to actuate in the reduction. Natural gas enters the reduction furnaces and is heated to the required temperature for reduction of the oxide feed. We will look at the reduction furnaces in more detail in the following two slides.

Once reduced, the product is either briquetted while hot as HBI (hot briquetted iron) or cooled and discharged as DRI. In the hot briquetting process, the HBI must be cooled prior to storage in piles.

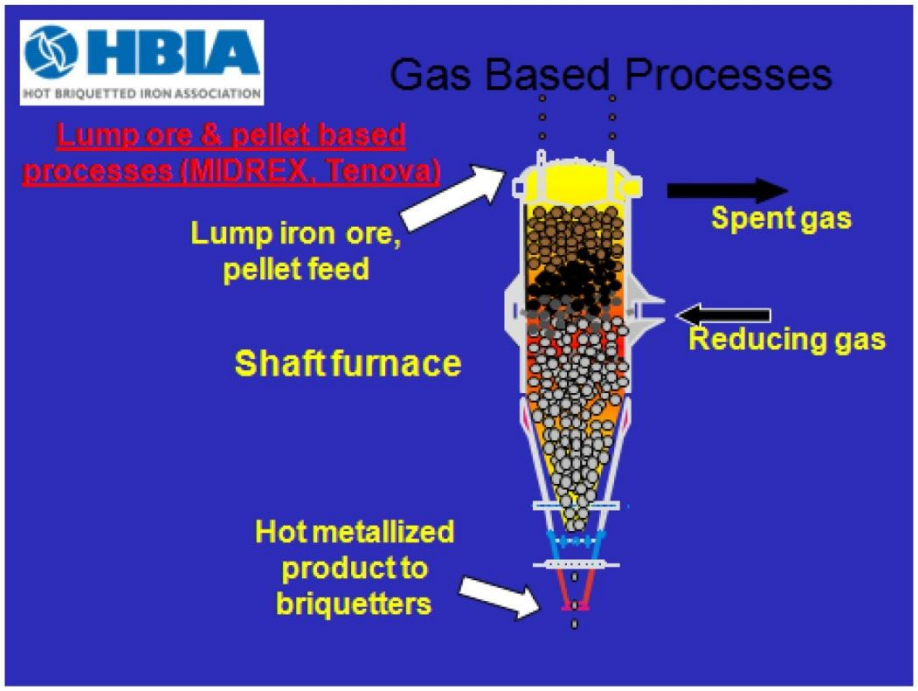


Gas-Based Processes - Lump and Pellet Feed

The principal shaft-based furnace operations are those of Midrex and Tenova/HYL, which together account for 98% of the gas-based processes. In these furnaces, the mixture of lump ore and pellets is introduced for reduction by different systems that we will clarify later. The ore flows by gravity downwards and is contacted by upflowing reducing gas. The ore is reduced and heated during the downward flow.

The hot reducing gas enters the shaft around the exterior diameter and flows upwards. In the upwards flow, the reduction of the Fe_2O_3 occurs. By the time the gas exits the reducing zone, it has been partially cooled by the heating of the incoming ore feed.

The shaft furnace can provide either hot product for briquetting or cooled final product.



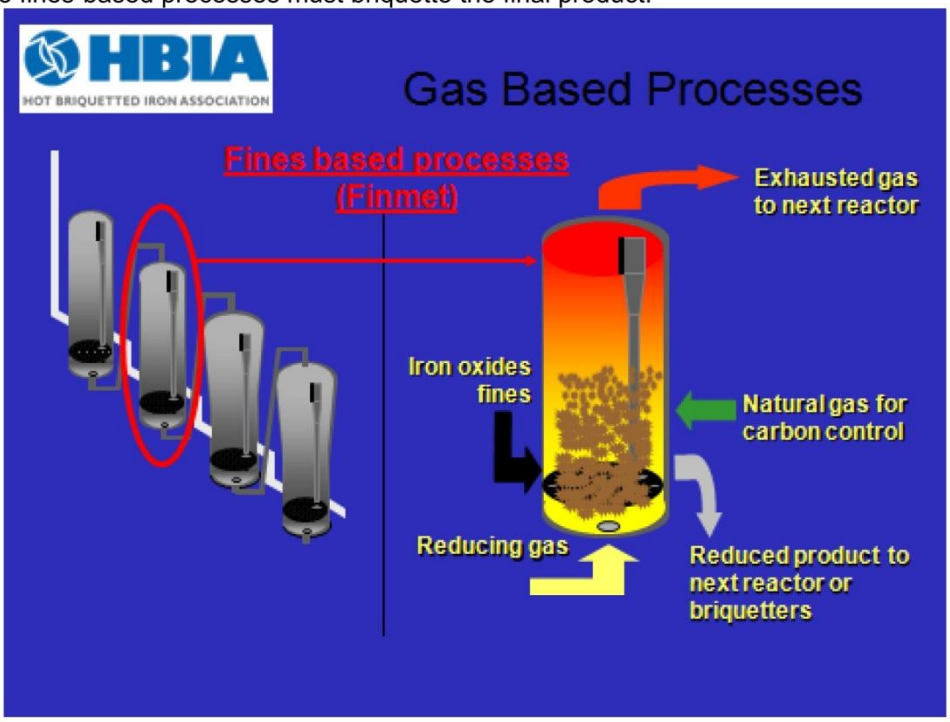
Gas-Based Processes – Fines Feed

The principal fines reactor-based furnace operation is that of FINMET, which is the only fines-based process in service at present. In the FINMET Process, the reactor layout is different from another fines-based process, CIRCORED, as we will see later. In all cases, the fines are maintained in a fluidized condition by upwards flowing reducing gas. In the FIOR and FINMET Processes, a total of four fluid beds are used. In the CIRCORED Process, two fluid beds of different conditions are used.

Between reactors, the ore flows by gravity downwards and is contacted in each by upflowing reducing gas. The ore is reduced and heated during the downward flow.

The hot reducing gas enters the reactors through fluid bed grids from the reactor bottom and flows upwards. By the time the gas exits the top, it has been partially cooled by the heating and reduction of the incoming ore feed.

The fines-based processes must briquette the final product.



FINMET Process Flowsheet

There are four reactors in series, which are interconnected with gas and solids transfer lines. For a 500,000 t/y module, the reactors are 4.5 meters in diameter. Ore fines flow downward by gravity from the upper to lower reactor, while reducing gas flows upward in a countercurrent direction. This countercurrent flow improves the efficiency of the process, thus increasing the reduction over what can be achieved in a single reactor for given gas and ore flows.

The fine ore is heated in the first reactor to about 450º C by the partially spent reducing gas from the previous reactor, which enters into contact with the ore by way of a gas distribution grid. The gas leaves the fluid bed carrying entrained dust, which is removed in internal cyclones in the reactor, and this dust is returned to the fluid bed. The spent reducing gas passes out of the reactor to the gas handling system and is recycled to the process.

The gas required for reduction is supplied by a mixture of recycled top gas and fresh gas provided by a steam reformer. Because not all of the H_2 and CO in the reducing gas is consumed during reduction, this gas has to be recycled. To vent it or use it as fuel would make the process energy consumption excessively high.

The top gas is first quenched and scrubbed in a wet scrubber, where the gas is cooled and any remaining dust is removed. A small part of the scrubbed gas is removed to control inert gas build-up in the system, and this is used as fuel in the reducing gas furnace. The remaining recycle gas is compressed in a centrifugal compressor and returned to the process.

The gas required to make up that which is consumed in the process is supplied from a conventional steam reformer. The reformed gas stream, as well as part of the recycle gas is sent through a CO_2 removal system, and then the gas is preheated in the reducing gas furnace before being sent to the reactors.

The ore flows down through the remaining reactors, becoming higher in metallic iron in each step due to the contact with progressively richer fluidizing gas. It reaches a metallization of around 91-92% in the last reactor. The operating temperatures of the reactors vary from about 450º C in the upper reactor to 780- 800º C in the lower one. The pressure of the reactors is between 11 and 13 bars gauge (barg). Carbon, in the range of 0.5-1.5%, also can be formed in the ore. This carbon is over 90% in the form of cementite, or Fe_3C, and is mostly formed in the last stage.

The fines are fed into double roll briquetting machines, where they are compacted to a density of more than 5 g/cc. The strings of briquettes exiting the machines are separated into individual briquettes in a revolving drum or trammel, which can be seen under the briquetter. Fines generated by the breaking process are separated from the product briquettes and recycled to the briquetting machines. The briquettes are then cooled on a forced air cooler and stockpiled.

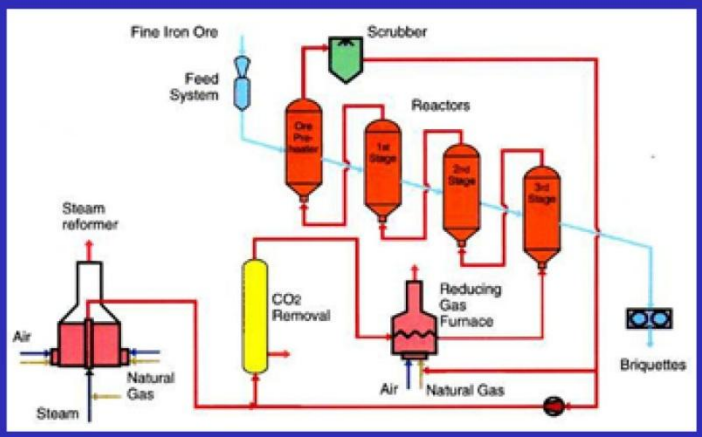
HBIA
HOT BRIQUETTED IRON ASSOCIATION

FINMET Process

Feed	Fines 10 to 0.01 mm
Reductant	Reformed nat gas
Reactor Type	Fluid beds (4)
Pressure	12 bar
Temperature	450-800 C
Product	HBI
Use	Merchant
Plants (MIDREX Data)	2 (One is being demolished)
Production capacity	4.4 Mt/y
Production in 2005	1.3 Mt

HBIA
HOT BRIQUETTED IRON ASSOCIATION

FINMET Process Flowsheet



Tenova HYL Process

Tenova HYL has formed an alliance with Danieli & Co. for the development and supply of direct reduction technology and plants worldwide. This alliance, known as Energiron HYL, combines the long technological experience of Tenova HYL with the metallurgical plant and equipment design and supply capabilities of Daniel.

As a historical note, Tenova HYL, then known as HYL Technologies, built the first commercial DR plant in 1957.

Energiron HYL also offers reducing gas produced directly in the shaft reactor by means of in-situ reforming reactions in addition to other sources of reducing gas including reformed gas, natural gas, coke oven gas, syngas from coal, and exhaust gas from smelters.

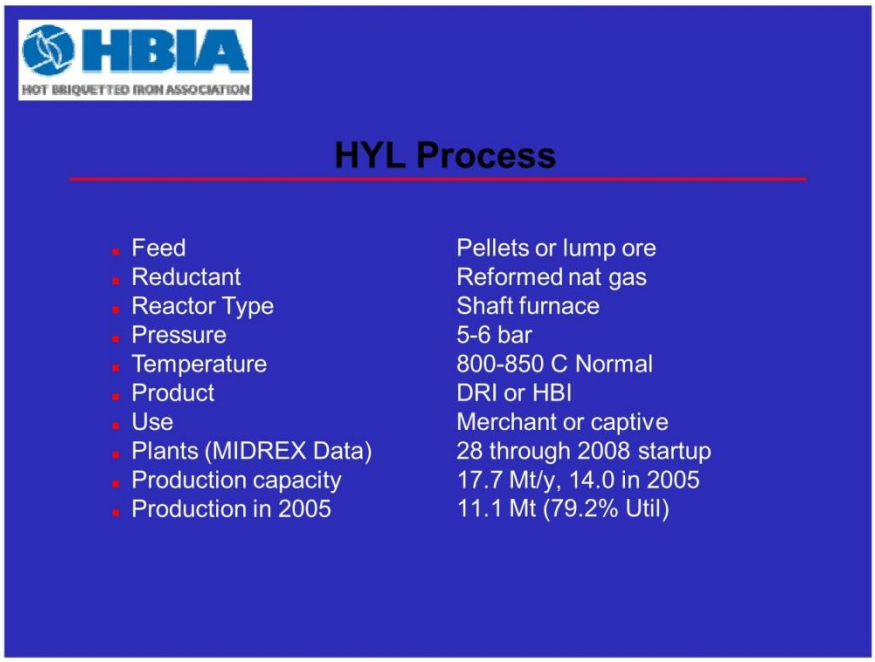
The reactor is a shaft furnace with internal lining. Energiron HYL has defined the reactor diameter size to be approximately 6 meters for 2 million t/y production.

The reactor internal pressure is normally 5-6 bars, which is higher than the MIDREX Process. In the latest process information, the gas pressure is listed as 2.5 to 6 bars.

Operating temperature mentioned in the standard HYL process flowsheet was 800-850° C in the past, but it was raised in the Tenova HYL ZR process. The Energiron HYL process info sets gas temperature at 950° C. Gas temperature quoted is 930° C from the heater with O_2 addition taking it above 1000° C to as high as 1085° C in the in-situ reforming.

Product from the systems is either DRI or HBI. Both merchant and captive plant configurations are offered. ENERGIRON HYL is quoting carbon from 1-4%.

According to published data, there will be 28 Tenova HYL plants through 2008 with a capacity of 17.6 million tons. Total production last year was 11 million tonnes with a utilization of 73.2% according to published figures.



Tenova HYL Process Flowsheet

Iron ore pellets, lump ore, or mixtures of both are transported by belt conveyor to the top of the reduction tower. An automated system of bins and pressure locks allows receiving the ore at atmospheric pressure in an open bin, pressurization in intermediate bins, and discharge to continuously feed the vessel.

The components included in the reducing gas circuit are: shaft furnace reduction zone, top gas quenching/scrubbing system, reducing gas recycle compressor, CO_2 removal system, and process gas heater. As an option, a heat recuperator can be included to recover energy from the reactor top gas stream.

The reduction furnace operates at a pressure of around 6 bar absolute, allowing a high productivity of about 9 t/h x m^2 and minimizing dust losses through top gas carry-over. The natural gas stream (or reducing gas make-up) is mixed with the reducing gas recycle stream from the CO_2 removal system. This reducing gas stream is passed through the gas heater where it is heated up to 930-950° C.

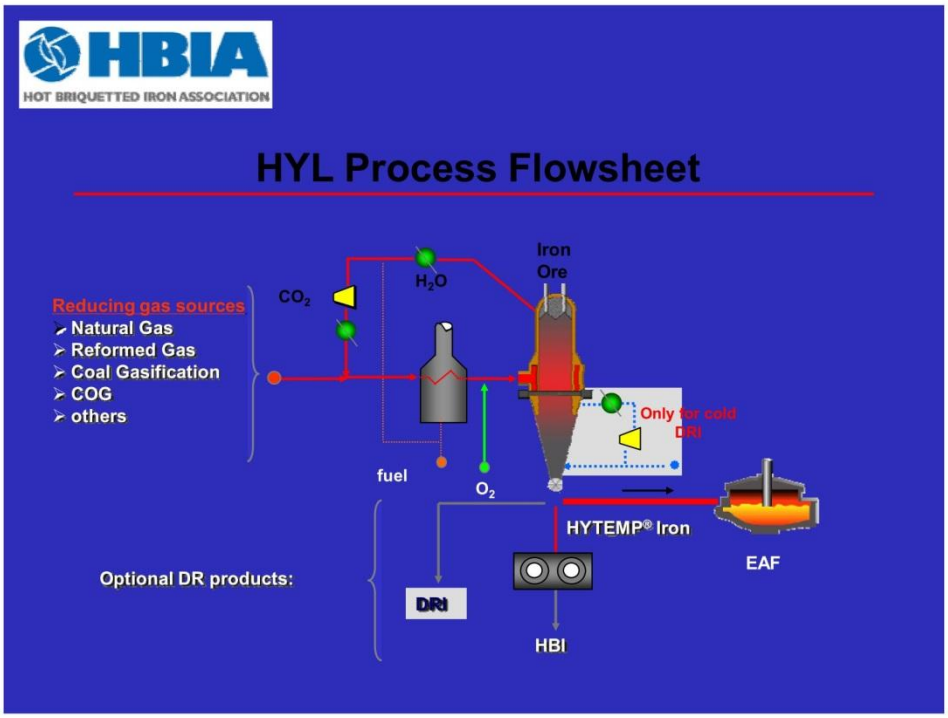
Inside the shaft furnace, hot reducing gas is fed to the reduction zone and flows upward counter-current to the iron ore moving bed. The in-situ reforming and reduction reactions take place in this zone. The exhaust reducing gas (top gas) leaves the reactor at about 400° C and passes through the top gas heat recuperator, where its energy is recovered to produce steam or alternatively to preheat the reducing gas stream, and then it passes through the quenching/scrubbing system. Scrubbed gas is then passed through the process gas recycle compressor, where its pressure is

increased. Compressed gas, after being sent to the carbon dioxide removal unit, is mixed with the natural gas make-up, thus closing the reducing gas circuit.

A rotary valve, located at the bottom of the vessel, regulates the continuous gravity flow of the charge downward through the reduction furnace. DRI is discharged by automated mechanisms consisting of pressurized bins and pressure locks.

For cold DRI, a cooling gas is fed to the lower conical part of the furnace at about 40° C, flowing upward countercurrent to the DRI moving bed. The gas distribution is uniform, and there is a high degree of direct contact between the gas and solid without physical restrictions to the flow of solids or gases inside the unit. The cooling gas exits from the upper conical part, at about 460° C, and is quenched/scrubbed by means of cooling water. Natural gas is injected as make-up to the cooling gas circuit for optimum efficiency and control of the cooling and carburization processes.

For hot product discharge and use, the cooling circuit is eliminated and hot DRI is continuously discharged at >700° C. For the HYTEMP pneumatic transport system, the product is transported by means of a carrier gas to the surge bins located at the melt shop for controlled feeding to the electric arc furnace. For production of HBI, hot DRI is continuously discharged at >700° C to the hot briquetting machines arranged below. The HBI is cooled in vibrating cooling conveyors using cooling water and then discharged to the HBI transport conveyor.



Tenova HYL ZR Process Flowsheet

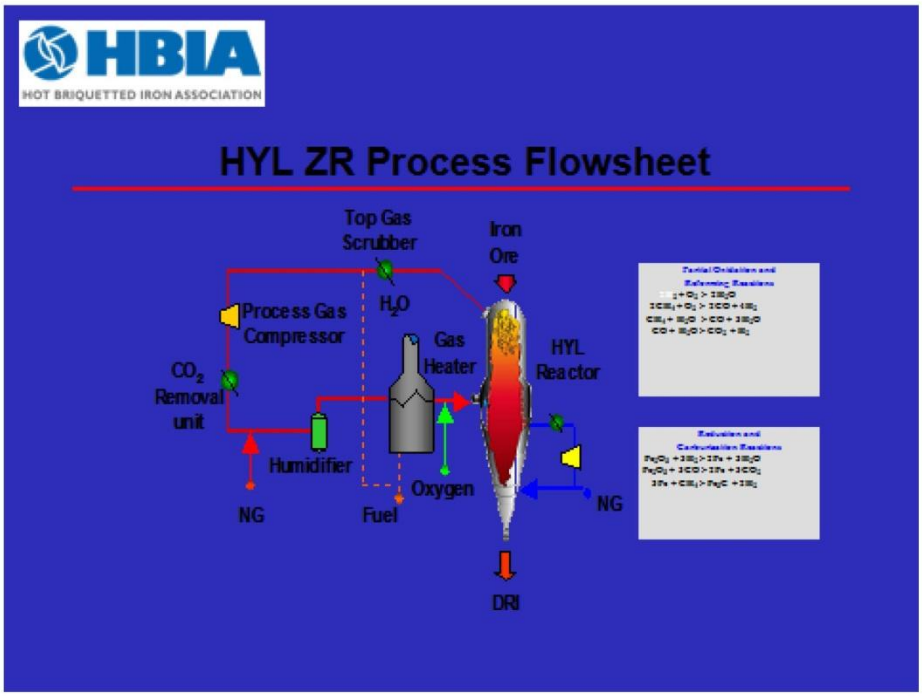
The ZR Process is based on the reduction of iron ores with reducing gases, which are generated from partial combustion and in-situ reforming of natural gas, taking advantage of the catalytic effect of the metallic iron inside the reduction reactor. The plant can be designed for production of cold DRI,hot DRI, or for direct charging.

Because of partial combustion, the reducing gas temperature at the reactor inlet is very high – above 1000° C. Due to the endothermic behaviour of the combined chemical reactions taking place inside the reactor, the resulting temperature at the reduction zone is below the potential condition for material cluster formation.

For the production of high quality DRI (94% metallization, 4% carbon), natural gas consumption is 2.25-2.3 Gcal/ton DRI and electricity usage is 60-80 kWh/ton DRI with low iron ore consumption of 1.35-1.40 t/t DRI, mainly due to high operating pressure.

The reactor operates at elevated pressure (6 bars absolute), allowing a high reactor productivity of about 9 t/h x m² and minimizing dust losses through top gas carry-over. This is reflected in low iron ore consumption, which keeps the operating cost low.

One of the inherent characteristics of the Tenova HYL Process scheme and of high importance for this application is the selective elimination of both by-products generated from the reduction process: water (H_2O) and carbon dioxide (CO_2) through top gas scrubbing and CO_2 removal systems, respectively.



MIDREX Process

In the 1st Qtr 2007 DIRECT FROM MIDREX, it was reported that since 1969, Midrex and its partners have built or are constructing 63 MIDREX® Modules (shaft furnaces plus reformers and associated systems) in 21 countries. To date, these facilities have produced over 500 million tons (Mt) of DRI and HBI, having a market value exceeding $70 billion. This record of plant sales, successful startups, and continued outstanding performance has resulted in a market share for MIDREX technology of 60 percent or more each year since 1987.

Feed is pellets or lump ore, with pellets normally the majority of the charge.

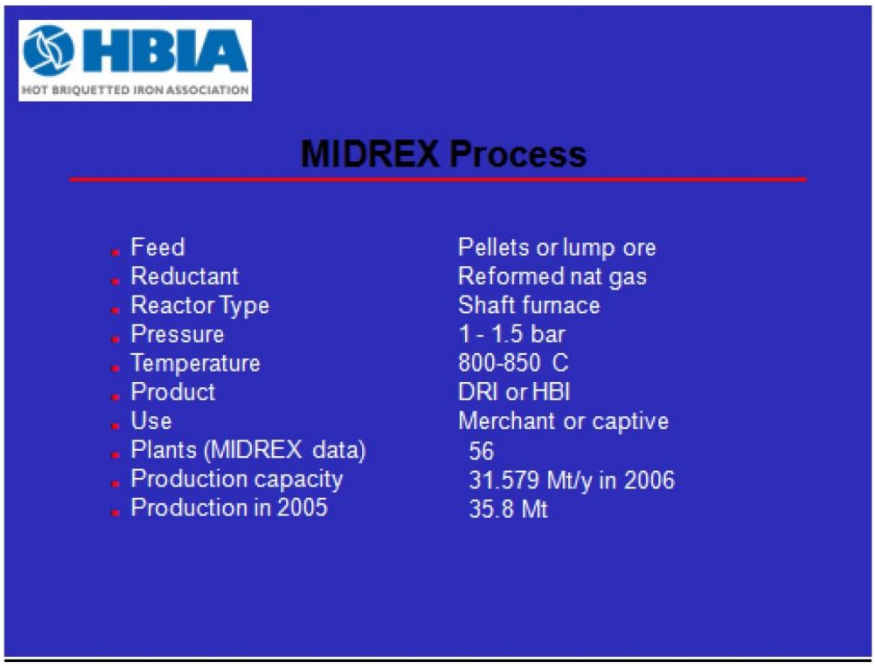
The reducing gas is reformed natural gas, but there is no cooling and treating and then reheating of the gas as is done in other processes. The H_2/CO ratio is lower than in HYL and FINMET. This is typically 1.5, but due to the different reforming systems, it can range from 0.5 to 3.5.

The reactor is a shaft furnace operating at a relatively low pressure (in the range of 0.4-1.5 bar overall). The largest diameter shaft furnace ever supplied is being installed at HADEED in Saudi Arabia (7 meter diameter).

Temperature has been increased with the process development and now exceeds 980° C in the new plants.

Both hot and cold DRI and HBI are produced for captive plant and merchant applications, respectively.

There are presently 51 operating plants and eight are in construction or commissioning at present. The production of the 51 operating plants was 35.71 million tons in 2006, including 3.9 million tonnes for 3 plants started up during the year. Midrex has reported capacity utilization as high as 131%.



MIDREX Process Flowsheet

The MIDREX Process consists of three major stages: 1) reduction, 2) reforming, and 3) heat recovery. Midrex claims that the plant is simpler in design as compared to other gas-based direct reduction processes.

Reduction

Iron oxide, in pellet or lump form, is introduced through a proportioning hopper at the top of the shaft furnace. At VENPRECAR in Venezuela, the feed mix is 65% pellets, 32% lump ore, and the rest is recycled remet.

As the ore descends through the furnace by gravity flow, it is heated and the oxygen is removed from the iron (reduced) by counterflowing gases, which have a high H_2 and CO content. In the VENPRECAR plant, the process gas is 60% H2 and 35% CO on a dry basis. These gases react with the Fe_2O_3 in the iron ore and convert it to metallic iron, leaving H_2O and CO_2.

For production of cold DRI, the reduced iron is cooled and carburized by counterflowing cooling gases in the lower portion of the shaft furnace. The DRI also can be discharged hot and fed to a briquetting machine for production of HBI, or fed hot, as HDRI, directly to an EAF using the HOTLINK System or insulated transfer vessels.

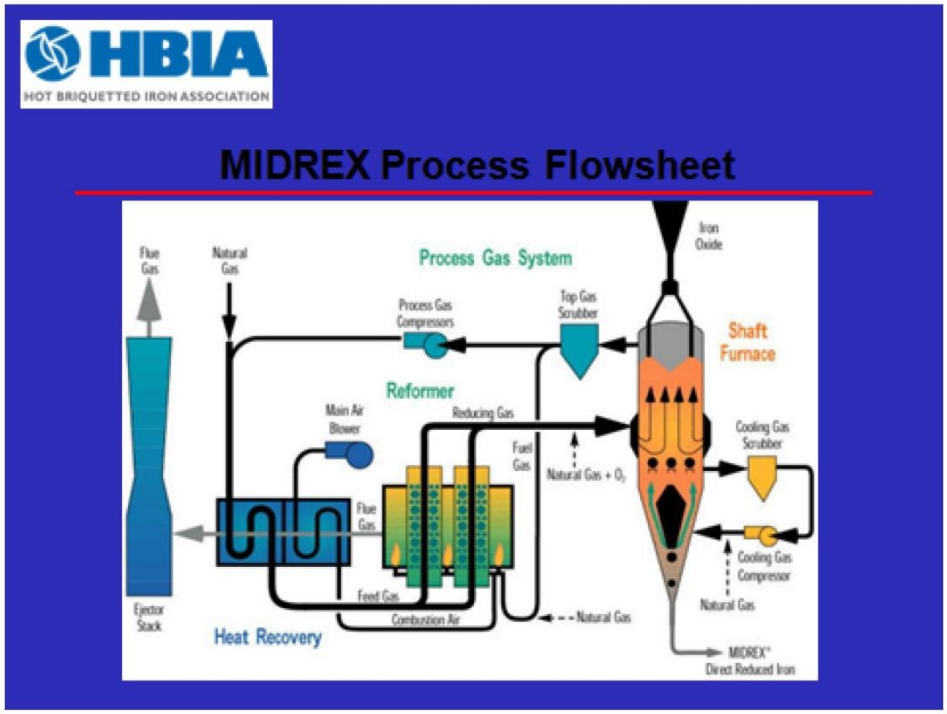
Reforming

To maximize the efficiency of reforming, off-gas from the shaft furnace is recycled and blended with fresh natural gas. This gas is fed to the reformer, a refractory-lined

furnace containing alloy tubes filled with catalyst. The gas is heated and reformed as it passes through the tubes. The newly reformed gas, containing 90-92 % H_2 and CO, is then fed hot directly to the shaft furnace as reducing gas. At VENPRECAR, the gas temperature exiting the reformer is 940° C and is cooled to 850° C to enter the shaft furnace.

Heat Recovery

The thermal efficiency of the MIDREX Reformer is greatly enhanced by the heat recovery system. Sensible heat is recovered from the reformer flue gas to preheat the feed gas mixture, the burner combustion air, and the natural gas feed. In addition, depending on the economics, the fuel gas also may be preheated.



HBI – Industrial Production

HBI is produced in the form of briquettes at high temperature and pressure with roller presses. Alternative briquette sizes and shapes have been tested in several plants. The typical volume of industrially manufactured briquettes is in the range of approx. 100 cm³. So far, this is independent of the method used in the preceding direct reduction process.

Figure 1 represents the hot briquetting process for the production of HBI. The direct reduced iron is discharged hot form the reduction process. With a screw this hot feed is

pushed into the nip between two counterrotating rollers. Pockets in the synchronously rotating rollers form the briquettes. This process occurs at high temperatures (typically approx. 700 °C) and high pressing forces (e.g. 120 kN per cm active roller width). The continuous string of briquettes leaving the rollers is guided by a heavy chute and is separated into mostly singles for example by a rotor with impact bars. Briquettes from fine material, produced in fluidized bed processes, may also be separated in a rotating tumbling drum.

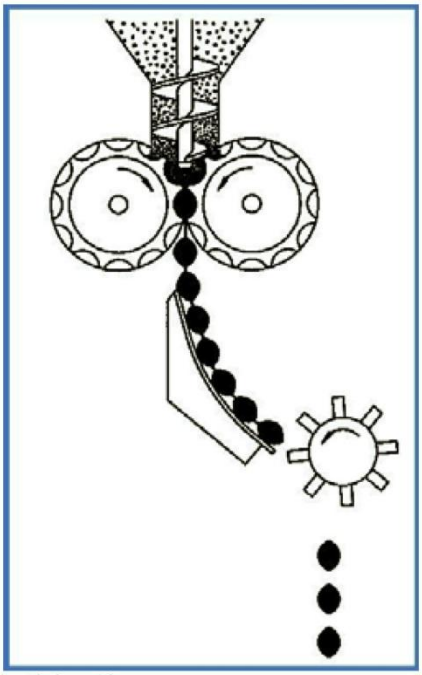


Figure 1: Typical schematic of hot briquetting

The key component in hot briquetting is a specially designed roller press. Figures 2 and 3 show the assembly bay of Maschinenfabrik KÖPPERN featuring modern machines for the production of HBI.

The entire plant for the hot briquetting of sponge iron typically consists of (Figs. 4 and 5):

- Briquetting press with screw feeder and material supply
- Briquette string separator (impact separator or tumbling dru
- Hot screen for the elimination of fines which occur during briquetting and separation
- Product cooler
- Bucket elevator for the recirculation of fines to the briquetting press
- Chutes and accessories

For hot briquetting of the total production of a direct reduction facility several of the above described "briquetting lines" are used. The layout of the briquetting plant is designed such that during the necessary scheduled maintenance on the machines and the system the overall availability of the plant is guaranteed.

In addition to the above mentioned industrially proven features, optimizations and new developments take place. For example, alternative concepts for briquette cooling are presently under consideration and larger machines are being designed to handle more effectively the higher output of future direct reduction plants.

Figure 2: Briquetting machine for DRI from pellets and lump ore, roller diameter 1,000 mm

Figure 3: Briquetting machine for the production of HBI from fine ore, roller diameter 1,400 mm

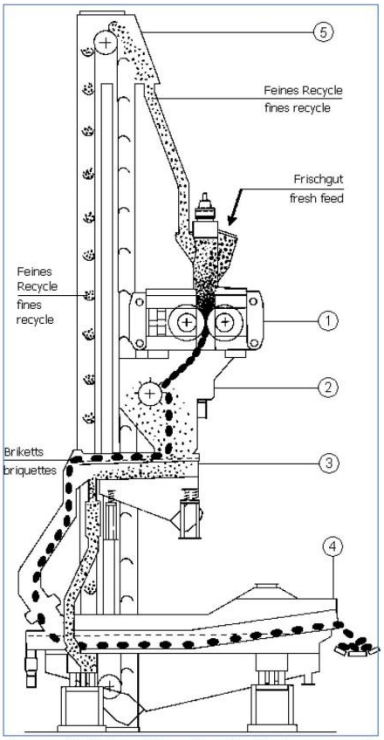


Figure 4: Briquetting line for hot sponge iron from lumps and pellets

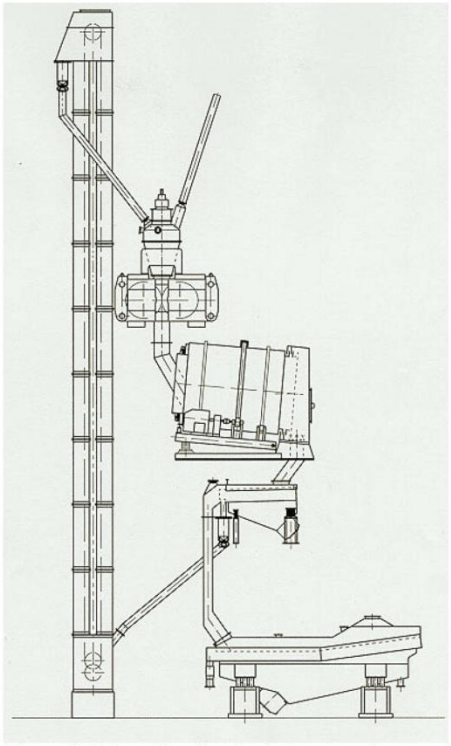


Figure 5: Briquetting line for hot sponge iron fines with drum separator

HBI – From Various DR Processes

Hot briquetting is applied both for products from pellets and lump ore (shaft furnaces) and from fine ore (fluid bed reactors). Particularly in the case of fine DRI from fluidized bed processes, in addition to passivation, it is a major task of hot briquetting to eliminate the inherent handling problems of this material. Both direct reduction technologies are based on gaseous reductants.

More recent investigations, including operation of a pilot plant, have shown that products from coal based processes (rotary hearth furnace) can be also briquetted hot at suitable conditions.

The mechanism of briquetting as well as the briquette structure and, consequently, details of the equipment used in the particular system, depend on the characteristics of the material to be briquetted.

The deformed pellets and lump ore pieces originating from a gas based shaft furnace technology are still visible in the briquette structure, while a more uniformly briquette results from the fine particles of a fluidized bed process.

The knowledge of briquette structure that depends on the properties of the particular feed from different reduction processes helps in optimizing the briquetting process (e.g. material feed systems, pressing tools, etc.)

Source: International Iron Metallics Association, n.d.

Appendix 6: Permit to Take Water

Ministry of the Environment
Northern Region
Technical Support Section
Water Resources
331-435 James St S
Thunder Bay ON P7E 6S7
Fax: (807)475-1754
Tel: (807) 475-1717

Ministère de l'Environnement
Bureau principal de la région du Nord
331-435 rue James S
Thunder Bay ON P7E 6S7
Télécopieur: (807)475-1754
Tél:(807) 475-1717

Ontario

August 15, 2012

Attention: Cameron Tymstra
Northern Iron Corp.
Unit 1051 - 409 Granville St
Vancouver, British Columbia, V6C 1T2
Canada

Dear Mr. Tymstra,

RE: Permit to Take Water Number 0716-8UMJEA
Reference Number 8678-8Q6K6D
(Former Griffith Mine North Pit Dewatering - Phase 1)

Please find attached Permit to Take Water (PTTW) 0716-8UMJEA, which grants the taking of water from the Former Griffith Mine North Pit, in the Town of Ear Falls, District of Kenora, for the purpose of dewatering. The rate of taking shall not exceed a maximum of 150,000 litres per minute and 216,000,000 litres per day. In addition dewatering of the North Pit permitted under this Permit is to a maximum depth of 25 m below the water level measured upon commencement of the taking only. No dewatering below 25 m benchmark is permitted. The Permit is valid until **August 13, 2013.**

The Terms and Conditions are shown on pages 2-6 of the Permit. The Terms and Conditions have been designed to allow for the development of water resources, while providing reasonable protection to existing water uses and users.

This application was posted on the Environmental Bill of Rights electronic registry for 30 days ending March 3, 2012. No comments were received during the comment period, however after the comment period had closed comments were received from the Pakwash Lake Association who have concerns with the effects of the discharge of this water to Bruce Lake. These comments will be reviewed and considered as part of the North Pit dewatering Phase 2 PTTW application, currently under review by the Ministry.

This Permit does not relieve you, or Northern Iron Corp. as the proponent, from compliance with provisions of any of the applicable Federal or Provincial statutes, regulations or other legal requirements.

Ontario Regulation 387/04 (Water Taking) requires all water takers to report daily water taking

amounts to the Water Taking Reporting System (WTRS) electronic database: http://www.ene.gov.on.ca/envision/water/pttw.htm. Daily water taking must be reported on a calendar year basis. If no water is taken, then a "no taking" report must be entered. Please consult the Regulation and Section 4 of this Permit for monitoring requirements.

If you have questions about reporting requirements, please call the WTRS Help Desk at 416-235-6322 (toll free: 1-877-344-2011) or by email, WTRSHelpdesk@ontario.ca. It is preferred that you submit your data directly and electronically to the WTRS. Where this is impracticable, please use the Water Taking Submission Form (included as Appendix C of the Technical Bulletin: Permit To Take Water (PTTW) - Monitoring and Reporting of Water Takings), which can be downloaded from the above web site, and fax your completed forms to 416-235-6235 or mail them to: Water User Reporting Section,125 Resources Rd. Toronto, ON M9P 3V6.

Should you have any questions or concerns, please contact this office as soon as possible.

Yours truly,

Mira Majerovich
Junior Scientist
Northern Region

File Storage Number: 11-P-6036 NORTHERN IRON CORP. (FORMER GRIFFITH MINE - NORTH PIT DEWATERING)

cc: Mihran Aslanyan, Groundwater Environmental Management Services Inc.
Ross Mabee, Groundwater Environmental Management Services Inc.
Kenora Area MOE Office

Ontario

Ministry of the Environment
Ministère de l'Environnement

PERMIT TO TAKE WATER
Surface and Ground Water
NUMBER 0716-8UMJEA

Pursuant to Section 34 of the Ontario Water Resources Act, R.S.O. 1990 this Permit To Take Water is hereby issued to:

Northern Iron Corp.
Unit 1051 - 409 Granville St
Vancouver, British Columbia, V6C 1T2
Canada

For the water taking from: North Pit / Phase 1 (Initial Dewatering)

Located at: Approx. 2.5 km east of Highway 105 and 25 km North of the Town of Ear Falls
Ear Falls, District of Kenora

For the purposes of this Permit, and the terms and conditions specified below, the following definitions apply:

DEFINITIONS

(a) "Director" means any person appointed in writing as a Director pursuant to section 5 of the OWRA for the purposes of section 34, OWRA.

(b) "Provincial Officer" means any person designated in writing by the Minister as a Provincial Officer pursuant to section 5 of the OWRA.

(c) "Ministry" means Ontario Ministry of the Environment.

(d) "District Office" means the Kenora District Office.

(e) "Permit" means this Permit to Take Water No. 0716-8UMJEA including its Schedules, if any, issued in accordance with Section 34 of the OWRA.

(f) "Permit Holder" means Northern Iron Corp..

(g) "OWRA " means the *Ontario Water Resources Act,* R.S.O. 1990, c. O. 40, as amended.

You are hereby notified that this Permit is issued subject to the terms and conditions outlined

Page 1 - NUMBER 0716-8UMJEA

below:

TERMS AND CONDITIONS

1. Compliance with Permit

1.1 Except where modified by this Permit, the water taking shall be in accordance with the application for this Permit To Take Water, dated February 16, 2012 and signed by Cameron Tymstra, and all Schedules included in this Permit.

1.2 The Permit Holder shall ensure that any person authorized by the Permit Holder to take water under this Permit is provided with a copy of this Permit and shall take all reasonable measures to ensure that any such person complies with the conditions of this Permit.

1.3 Any person authorized by the Permit Holder to take water under this Permit shall comply with the conditions of this Permit.

1.4 This Permit is not transferable to another person.

1.5 This Permit provides the Permit Holder with permission to take water in accordance with the conditions of this Permit, up to the date of the expiry of this Permit. This Permit does not constitute a legal right, vested or otherwise, to a water allocation, and the issuance of this Permit does not guarantee that, upon its expiry, it will be renewed.

1.6 The Permit Holder shall keep this Permit available at all times at or near the site of the taking, and shall produce this Permit immediately for inspection by a Provincial Officer upon his or her request.

1.7 The Permit Holder shall report any changes of address to the Director within thirty days of any such change. The Permit Holder shall report any change of ownership of the property for which this Permit is issued within thirty days of any such change. A change in ownership in the property shall cause this Permit to be cancelled.

2. General Conditions and Interpretation

2.1 Inspections
The Permit Holder must forthwith, upon presentation of credentials, permit a Provincial Officer to carry out any and all inspections authorized by the OWRA, the *Environmental Protection Act* , R.S.O. 1990, the *Pesticides Act* , R.S.O. 1990, or the *Safe Drinking Water Act,* S. O. 2002.

2.2 Other Approvals
The issuance of, and compliance with this Permit, does not:

(a) relieve the Permit Holder or any other person from any obligation to comply with any other applicable legal requirements, including the provisions of the *Ontario Water Resources Act* , and the *Environmental Protection Act* , and any regulations made thereunder; or

(b) limit in any way any authority of the Ministry, a Director, or a Provincial Officer, including

Page 2 - NUMBER 0716-8UMJEA

the authority to require certain steps be taken or to require the Permit Holder to furnish any further information related to this Permit.

2.3 Information

The receipt of any information by the Ministry, the failure of the Ministry to take any action or require any person to take any action in relation to the information, or the failure of a Provincial Officer to prosecute any person in relation to the information, shall not be construed as:

(a) an approval, waiver or justification by the Ministry of any act or omission of any person that contravenes this Permit or other legal requirement; or

(b) acceptance by the Ministry of the information's completeness or accuracy.

2.4 Rights of Action

The issuance of, and compliance with this Permit shall not be construed as precluding or limiting any legal claims or rights of action that any person, including the Crown in right of Ontario or any agency thereof, has or may have against the Permit Holder, its officers, employees, agents, and contractors.

2.5 Severability

The requirements of this Permit are severable. If any requirements of this Permit, or the application of any requirements of this Permit to any circumstance, is held invalid or unenforceable, the application of such requirements to other circumstances and the remainder of this Permit shall not be affected thereby.

2.6 Conflicts

Where there is a conflict between a provision of any submitted document referred to in this Permit, including its Schedules, and the conditions of this Permit, the conditions in this Permit shall take precedence.

3. Water Takings Authorized by This Permit

3.1 **Expiry**

This Permit expires on **August 13, 2013**. No water shall be taken under authority of this Permit after the expiry date.

3.2 Amounts of Taking Permitted

The Permit Holder shall only take water from the source, during the periods and at the rates and amounts of taking specified in Table A. Water takings are authorized only for the purposes specified in Table A.

Table A

	Source Name / Description:	Source: Type:	Taking Specific Purpose:	Taking Major Category:	Max. Taken per Minute (litres):	Max. Num. of Hrs Taken per Day:	Max. Taken per Day (litres):	Max. Num. of Days Taken per Year:	Zone/ Easting/ Northing:
1	North Pit / Phase 1 (Initial Dewatering)	Mine	Other - Dewatering	Dewatering	150,000	24	216,000,000	364	15 474729 5630653
						Total Taking:	216,000,000		

3.3 Notwithstanding Table A, dewatering authorized under this Permit at the Former Griffith Mine Site North Pit is to a maximum depth of 25 m below the water level measured upon commencement of the taking only. No dewatering below 25 m benchmark is permitted.

4. Monitoring

4.1 The Permit Holder shall, on each day water is taken under the authorization of this Permit, record the date, the volume of water taken on that date and the rate at which it was taken. The daily volume of water taken shall be measured by a flow meter or calculated in accordance with the method described in the application for this Permit or as otherwise accepted by the Director. A separate record shall be maintained for each source. The Permit Holder shall keep all records required by this condition current and available at or near the site of the taking and shall produce the records immediately for inspection by a Provincial Officer upon his or her request. The Permit Holder, unless otherwise required by the Director, shall submit, on or before March 31st in every year, the daily water taking data collected and recorded for the previous year to the ministry's Water Taking Reporting System.

4.2 The Permit Holder shall undertake a monitoring program in accordance with the report entitled: *"Receiving Water (Bruce Lake) Monitoring, Triggers, and Mitigation Plan* " prepared by Groundwater Environmental Management Services Inc., dated April 30, 2012 and attached in Schedule A below.

4.3 The Permit Holder shall submit to the Director and to the District Manager (Thunder Bay/Kenora District Office), a report summarizing the monitoring data collected in Condition 4.2 above. The report shall be submitted three months after initiation of the water taking in the Former Griffith Mine Site North Pit and include data interpretations, recommendations on the need for changes to monitoring locations and frequency, and/or the need for mitigation.

4.4 The Director may amend the monitoring program referenced in Condition 4.3 by letter requiring the Permit Holder to modify the monitoring and/or reporting program. The amendment shall be effective immediately upon notification by the Director.

5. Impacts of the Water Taking

5.1 Notification

The Permit Holder shall immediately notify the local District Office of any complaint arising from the taking of water authorized under this Permit and shall report any action which has been taken or is proposed with regard to such complaint. The Permit Holder shall immediately notify the local District Office if the taking of water is observed to have any significant impact on the surrounding waters. After hours, calls shall be directed to the Ministry's Spills Action Centre at 1-800-268-6060.

5.2 For Surface-Water Takings

The taking of water (including the taking of water into storage and the subsequent or simultaneous withdrawal from storage) shall be carried out in such a manner that streamflow is not stopped and is not reduced to a rate that will cause interference with downstream uses of water or with the natural functions of the stream.

For Groundwater Takings

If the taking of water is observed to cause any negative impact to other water supplies obtained from any adequate sources that were in use prior to initial issuance of a Permit for this water taking, the Permit Holder shall take such action necessary to make available to those affected, a supply of water equivalent in quantity and quality to their normal takings, or shall compensate such persons for their reasonable costs of so doing, or shall reduce the rate and amount of taking to prevent or alleviate the observed negative impact. Pending permanent restoration of the affected supplies, the Permit Holder shall provide, to those affected, temporary water supplies adequate to meet their normal requirements, or shall compensate such persons for their reasonable costs of doing so.

If permanent interference is caused by the water taking, the Permit Holder shall restore the water supplies of those permanently affected.

5.3 The Permit Holder shall operate the discharge of the water taking from the Former Griffith Mine Site North Pit into Bruce Lake such that there is no erosion or scouring of the lake bed. Any observed erosion or scouring of the lake bed shall be reported to the District Manager (Thunder Bay/Kenora District Office) verbally forthwith and in writing within one (1) week of the observation.

5.4 If any evidence of water contamination is detected during dewatering activities, the Permit Holder shall undertake proper measures to ensure that water taken is in compliance with PWQO criteria, prior to its discharge to the environment (Bruce Lake).

6. Director May Amend Permit

The Director may amend this Permit by letter requiring the Permit Holder to suspend or reduce the taking to an amount or threshold specified by the Director in the letter. The suspension or reduction in taking shall be effective immediately and may be revoked at any time upon notification by the Director. This condition does not affect your right to appeal the suspension or reduction in taking to the Environmental Review Tribunal under the *Ontario Water Resources Act* , Section 100 (4).

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The reasons for the imposition of these terms and conditions are as follows:

1. Condition 1 is included to ensure that the conditions in this Permit are complied with and can be enforced.

2. Condition 2 is included to clarify the legal interpretation of aspects of this Permit.

3. Conditions 3 through 6 are included to protect the quality of the natural environment so as to safeguard the ecosystem and human health and foster efficient use and conservation of waters. These conditions allow for the beneficial use of waters while ensuring the fair sharing, conservation and sustainable use of the waters of Ontario. The conditions also specify the water takings that are authorized by this Permit and the scope of this Permit.

In accordance with Section 100 of the Ontario Water Resources Act, R.S.O. 1990, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 101 of the Ontario Water Resources Act, R.S.O. 1990, as amended, provides that the Notice requiring the hearing shall state:

1. The portions of the Permit or each term or condition in the Permit in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

In addition to these legal requirements, the Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Permit to Take Water number;
6. The date of the Permit to Take Water;
7. The name of the Director;
8. The municipality within which the works are located;

This notice must be served upon:

The Secretary
Environmental Review Tribunal
655 Bay Street, 15th Floor
Toronto ON
M5G 1E5
Fax: (416) 314-4506
Email: ERTTribunalsecretary@ontario.ca

AND

The Director, Section 34
Ministry of the Environment
331-435 James St S
Thunder Bay ON P7E 6S7
Fax: (807)475-1754

Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal:

by telephone at (416) 314-4600 ***by fax at (416) 314-4506*** ***by e-mail at www.ert.gov.on.ca***

Dated at Thunder Bay this 14th day of August, 2012.

D Hamilton

Don Hamilton
Director, Section 34
Ontario Water Resources Act , R.S.O. 1990

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Schedule A

This Schedule "A" forms part of Permit To Take Water 0716-8UMJEA, dated August 14, 2012.

- Revised PTTW application for Northern Iron Corp. for Phase 1 dewatering of the North Pit at the former Griffith Mine, dated February 16, 2012.

PTTW Application Revision_MOE 9599-8PTML6.pdf

- Monitoring report entitled: *"Receiving Water (Bruce Lake) Monitoring, Triggers, and Mitigation Plan* " prepared by Groundwater Environmental Management Services Inc., dated April 30, 2012.

PTTW Monitoring Plan April 30 2012.pdf

Revised PTTW Application (February 16, 2012)

February 16, 2012

Ontario Ministry of the Environment
Technical Support, Northern Region
435 James Street South, Suite 331
Thunder Bay, Ontario, P7E 6S7

Attn: Jacinth Gilliam-Price, Environmental Scientist

RE: Category 3 Surface Water Permit To Take Water Application Revision – Dewatering of the Former Griffith Mine North Pit, Ear Falls, Ontario (MOE Ref. #9599-8PTML6)

Ms. Gilliam-Price;

On behalf of Northern Iron Corporation (NIC), Groundwater Environmental Management Services Inc. is respectably submitting this application revision regarding a Category 3 Permit to Take Water (PTTW) (MOE Ref. #9599-8PTML6) to comply with the Water Taking Regulation (O. Reg. 387/04) under Section 34 of the Ontario Water Resources Act for surface water taking from the North Pit reservoir located on the property of the former Griffith Mine, near Ear Falls, Ontario.

The original PTTW was submitted as a two phase permit that would require an Environmental Compliance Authorization (ECA) to be applied to dewatering discharge originating in the low oxygen region, below approximately 25m in depth, of the North Pit. The rational for this approach, as discussed with MOE during project scoping activities, was to ensure that deoxygenated water discharged during the second phase of the dewatering plan would not cause adverse effects on the local receiving environment, namely Bruce Lake. However, due to the scale of the dewatering plan, it became evident that this approach would cause delays in NIC's exploration program as the entire original permit application was dependent upon successfully obtaining the ECA prior to planned dewatering initiation. Through discussions with MOE staff in Kenora and Thunder Bay on February 14, 2012 it was decided that the best approach to meet NIC's timeline would be to apply for two separate permits, one without the need for an ECA the other contingent on an ECA. The first permit would entail a relatively straight forward PTTW that would enable NIC to begin dewatering the pit as per their planned schedule. While this permit would not require an ECA MOE requested that NIC develop a monitoring program to ensure that the receiving environment would not be adversely impacted by initial dewatering of the upper portion of the North Pit water column.

The following conditions were agreed upon in order to proceed with the suggested PTTW application amendment.

1. Dewatering under the phase 1 permit would be limited to the oxygenated portion of the North Pit which is represented by the upper 25m of the water column.
2. NIC would submit a revised PTTW application form reflecting the requirements for the Phase 1 permit.
3. As the original permit has already been posted on the EBR the revision would not be subject to a subsequent posting period and the overall review period would not be

IECA Member

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9030 Leslie St. Unit 208 Richmond Hill, ON L4B 1G2 Tel: 905.907.3077 Fax: 905.907.6617
GemServicesInc.com

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significantly affected by the submission of the application revision, however the Phase 2 permit would be subject to the entire review process.

4. No additional processing fee would be leveed against the application revision, however the Phase 2 permit would be subject to the full Category 3 PTTW application fee.
5. NIC would develop a receiving environment monitoring program that will be referenced by the Phase 1 Permit.

Please find attached the revised PTTW Application Form and "Receiving Water (Bruce Lake) Monitoring, Triggers, and Mitigation Plan: Surface Water Permit to Take Water Revision (MoE Reference #9599-8PTML6) – Northern Iron Corporation".

Should there be questions on any aspects of this submission, please do not hesitate to contact the undersigned at (905) 907-3077 x 212 or ross@gemservicesinc.com.

Regards,

Groundwater Environmental Management Services Inc.

Ross Mabee, BSc., RPBio.(BC)

Ontario
Ministry of the Environment

Application for Permit to Take Water

Ce formulaire est disponible en français

For Office Use Only			
Reference Number	Payment Received $	Date *(y/m/d)*	Initials

General Information and Instructions

General:

Information requested in this form is collected under the authority of the *Ontario Water Resources Act,* R.S.O. 1990 (OWRA) and the *Environmental Bill of Rights*, C. 28, Statutes of Ontario, 1993, (EBR) and will be used to evaluate applications for a Permit to Take Water as required by Section 34 (OWRA).

Instructions:

1. **Applicants are responsible for ensuring that they complete the most recent application form.** When completing this form, please refer to the "Guide to Permit to Take Water Application Form" (referred to as the Guide). Application forms and supporting documentation are available from your local Regional or District Office of the Ministry of the Environment, and in the "Publications" section of the Ministry of the Environment website at http://www.ene.gov.on.ca/envision/gp/index.htm.

2. Questions regarding completion and submission of this application should be directed to local Regional Office of the Ministry of the Environment. Contact information for these offices is available in the Guide or on the Ministry of the Environment website at http://www.ene.gov.on.ca/envision/org/op.htm

3. This form must be completed with respect to all the requirements of the Guide for it to be considered an application for approval. **Incomplete applications will be returned to the applicant.**

4. A complete application consists of:

   (1) a completed, signed application form
   (2) all required supporting information identified in this form and the Guide, and
   (3) a certified cheque or money order, in Canadian funds, made payable to the ***Ontario Minister of Finance*** for the application fee when required. Payment may also be made by Visa, MasterCard or American Express,

   The Ministry may require additional information during the technical review of any application initially accepted as complete.

5. The original application, along with supporting information and the application fee should be sent to:

   Ministry of the Environment,
   Attention: Permit to Take Water Director
   Director, Environmental Assessment and Approvals Branch,
   2 St. Clair Avenue West, Floor 12A
   Toronto, Ontario, M4V 1L5

6. Information contained in this application form is not considered confidential and will be made available to the public upon request. Information submitted as supporting information may be claimed as confidential but will be subject to the *Freedom of Information and Protection of Privacy Act* (FOIPPA) and the *EBR*. If you do not claim confidentiality at the time of submitting the information, the Ministry of the Environment may make the information available to the public without further notice to you. If you are identifying confidential material, please indicate why you believe the information is confidential.

1. Permit Administration

Please indicate if this is an application for a:

- ☐ New Permit
- ☒ Amendment to Permit (attach a photocopy of permit)
- ☐ Renewal of Permit (attach a photocopy of permit)

2. Classification

Classification	Fee Required	No Fee Required
☐ Category 1	☐ $750	☐ Reason _____
☐ Category 2	☐ $750	☐ Reason _____
☒ Category 3	☐ $3,000	☒ Reason As discussed with MoE on February 14, 2012

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3. Applicant Information

Applicant Name *(legal name of individual or organization as evidenced by legal documents such as a copy of Driver's Licence or Master Business Licence)*	Business Identification Number
Northern Iron Corporation	002224716

Business Name *(the name under which the entity is operating or trading if different from the Applicant Name - also referred to as trade name)*

Applicant Type:

- ☒ Corporation
- ☐ Individual
- ☐ Partnership
- ☐ Sole Proprietor
- ☐ Federal Government
- ☐ Municipal Government
- ☐ Provincial Government
- ☐ Other *(describe)*:

North American Industry Classification System (NAICS) Code: 2 1 3 1 1 9

4. Applicant Physical Address

Civic Address - Street information *(street number/name/type/direction/unit/suite/emergency 911 location number and street)*: 1051 - 409 Granville Street

City / Town	County/District	Province/State	Country	Postal Code
Vancouver		B. C.	Canada	V6C 1T2

Telephone Number *(including area code)*	Fax Number *(including area code)*	E-mail Address
(604)-602-9868	(604)-602-9867	ctymstra@northernironcorp.com

5. Applicant Mailing Address

Same as Applicant Physical Address? ☒ Yes ☐ No **If no, complete below**

Civic Address - Street information *(street number/name/type/direction/unit/suite/emergency 911 location number and street/P.O.Box/Rural Route Number)*:

City / Town	Province/State	Country	Postal Code

6. Project Technical Information Contact

Same as Applicant? ☐ Yes ☒ No **If no, complete below**

Name	Company
Ross Mabee	Groundwater Environmental Management Services Inc.

Address Information:

Same as Applicant Mailing Address? ☐ Yes ☒ No **If no, please provide technical information contact mailing address below**

Civic Address - Street information *(street number/name/type/direction/unit/suite/emergency 911 location number and street/P.O.Box/Rural Route Number)*: 9030 Leslie Street, Unit 208

City / Town	Province/State	Country	Postal Code
Richmond Hill	Ontario	Canada	L4B 1G2

Telephone Number *(including area code & extension)*	Fax Number *(including area code)*	E-mail Address
(905) 907-3077 x 212	(905) 907-6617	ross@gemservicesinc.com

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7. Source Information – *Note: Source Information must be provided separately for each source. Please complete and submit multiple copies of this Source Information section (pages 3 and 4 of this form) if your application includes more than one source.*

Number of Water Taking Sources Included in this Application *(do not include domestic uses that do not require a permit)*

Total Number of Wells	Total Number of Lake Intakes	Total Number of Ponds	Total Number of Watercourse Intakes
N/A	N/A	1	N/A

Source Location Information *(if multiple sources are included in application, provide information for each source)*

Civic Address - Street information *(street number/name/type/direction/unit/suite/emergency 911 location number and street)*

North Pit-Phase 1 Dewatering, former Griffith Mine. Approx. 2.5 km east of Highway 105 and 25 km north of Town of Ear Falls

Lot	Concession	Part	Reference Plan

Municipality/Unorganised Township	County/District	Original Geographic Township
Town of Ear Falls	Kenora	Ear Falls

Geographic (GPS) Coordinates *(to be provided in Datum NAD83)*

Method of Collection	Accuracy Estimate	UTM Zone	Easting	Northing
OBM Map	+/- 20 m	15N	474600	5630580

Is the Applicant the owner of the site where water taking will occur?

☐ Yes

☒ No **if no, attach the owner's name, address and a signed letter granting consent for the applicant to access the water taking location**

Is the site where water taking will occur located in an area of development control as defined by the *Niagara Escarpment Planning & Development Act*?

☐ Yes ☒ No

Is the site where water taking will occur located on the Oak Ridges Moraine Conservation Area as defined by the Oak Ridges Moraine Conservation Plan (a regulation made under the *Oak Ridges Moraine Conservation Act*)?

☐ Yes ☒ No

Are you aware of any complaints or impacts resulting from water takings at the site?

☐ Yes **if yes, please describe:** _____

☒ No

Will water from the site be packaged in a container (bottled water, tanks)?

☐ Yes **If yes, what size of containers?** ☐ greater than 20 litres ☐ 20 litres or less

☒ No

Are wells located within 500 m of the site where water taking will occur?

☐ Yes

☒ No **if no, what is the distance to the nearest well?** > 1,000 m

Is municipal water available to all dwellings within 500m of the site where water taking will occur?

☐ Yes ☐ No ☒ Unknown

Estimated start date of water taking	Water taking to extend for a period of:						
April 1, 2012	364	☒ days	☐ weeks	☐ months	☐ years	☐ indefinite

Is activity subject to the *Environmental Assessment Act*?

☐ Yes **if yes, please attach approval or Notice of Completion**

☒ No

If yes, did the project receive any Part II Orders / Bump-Up requests?

☐ Yes **if yes, what was the date of the Minister's Decision?** _____ ☐ Decision pending

☐ No

List any public consultation/notification that has occurred related to the proposed water taking (i.e., public hearings, notification of First Nations, etc.)

N/A

☐ **Watercourse -** *please complete this table if applying to take water from a watercourse (i.e., stream, municipal ditch, open drain, etc.)*

Watercourse Name	Tributary to
N/A	

Does flow in the watercourse stop at any time during the year?

☐ Yes **if yes, during which months?** _____ For what period of time? _____

☐ No

Do you move/relocate the water intake (pump)?

☐ Yes **if yes, please provide primary and secondary locations on attached map**

☐ No

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☐ **Well** - *please complete this table if applying to take water from a well (includes sumps for mines and quarries)*

Well Name / Identifier	Water Well Record Number	If not available, provide name of property owner at time of well construction
N/A		

Has the well been deepened?
- ☐ Yes **if yes, what was the date of deepening?** _____
- ☐ No

Type of Well: ☐ Drilled ☐ Bored ☐ Dug ☐ Driven or Jetted (sandpoints/wellpoints)

If 'Driven or Jetted', provide the following:

Total number of sandpoints/wellpoints: _____

Number of interconnected sandpoint/wellpoint systems: _____

Can you measure the depth to water in this well?
- ☐ Yes **if yes, what is the depth to static water level?** _____ Date Measured: _____
- ☐ No

Has a pumping test been done?
- ☐ Yes **if yes, please attach report**
- ☐ No

☐ **Lake** - *please complete this table if applying to take water from a lake*

Lake Name
N/A

☒ **Pond/Reservoir** - *please complete this table if applying to take water from a pond/reservoir*

Pond Name / Identifier: Former Griffith Mine North Pit Lake

Was the pond constructed (man made)?
- ☒ Yes **if yes, please provide date of construction** Between 1968 and 1986
- ☐ No

Pond Size

Average Length	Average Width	Average Depth of Water	Maximum Depth of Water	Approximate Volume of Pond
1,800 m	700 m	60 m	84 m	53,600,000,000 Liters

Pond Type

Select the diagram that most accurately resembles your pond:

☐ online ☐ by-pass ☐ connected ☒ dugout

Source of pond water (select all that apply)
- ☒ Seepage / springs / groundwater
- ☒ Surface water runoff (including tile drains, does not include watercourse or open channel)
- ☐ Pumped water (if water is pumped into a pond, complete section information for source from which water is pumped - i.e., well, lake or watercourse)
- ☐ Flowing water (watercourse, open drains, ditches, etc.)

If "flowing water",

1. Does water flow into the pond (inflow)? ☐ Yes ☐ No
   - If yes, is there a structure to regulate the inflow? ☐ Yes ☐ No If yes, describe: _____
2. Does water flow out of the pond (outflow)? ☐ Yes ☐ No
   - If yes, is there a control structure to regulate the outflow? ☐ Yes ☐ No If yes, describe: _____

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8. Public Consultation / Environmental Bill of Rights (EBR) Requirements

Is this application for water taking to extend for a period of less than one year?

☒ Yes ☐ No If no, this application may be subject to posting and/or public consultation requirements under the Environmental Bill of Rights. For more information, please refer to the Guide.

Is this application for agricultural use or aquaculture?

☐ Yes ☒ No If no, this application may be subject to posting and/or public consultation requirements under the Environmental Bill of Rights. For more information, please refer to the Guide.

9. Water Taking Volumes

	Purpose Options for Water Taking
	Purpose
Agriculture	irrigation of (includes frost protection): field and pasture crops; fruit orchard; market garden/flowers; nursery; sod farm; tender fruits; tobacco, other (must specify)
Commercial	aquaculture, bottled water, golf course irrigation, mall/business; snowmaking, other (must specify)
Construction	Dredging, road building, other (must specify)
Dewatering	pits and quarries; construction; other (must specify)
Industrial	aggregate washing, brewing/soft drinks, cooling water, food processing, manufacturing; pipeline testing; power generation; other (must specify)
Institutional	school, hospital, other (must specify)
Recreation	aesthetic, fish pond, wetland, other (must specify)
Remediation	groundwater; other (must specify)
Water Supply	campground, communal, municipal, other (must specify)
Miscellaneous	dam/reservoir, heat pump, wildlife conservation, pumping test, other (must specify)

Water Source Information – Table A (Units in Litres)

Source Name	Purpose (select from "purpose" column in table above)	Maximum rate per minute	Maximum number of hours of taking a day	Maximum volume per day	Typical volume per day	Maximum number of days of taking in a year	Earliest calendar date of taking (mm/dd)	Latest calendar date of taking (mm/dd)
North Pit - Phase 1	Dewatering	150,000	24	216,000,000	216,000,000	364	04/01	03/30

10. Attachments

The following must be attached for all applications (Category 1, 2 and 3) to be complete:

☒ Map Requirements
On a 1:10 000 OBM (Ontario Base Map) (1:50 000 only acceptable in locations where 1:10 000 is not obtainable), mark and label:
- all existing and proposed water taking locations with sources corresponding with source name
- all of the following features within 500m of each source: existing wells (indicate use of existing well, springs, watercourses, wetlands, water bodies, property lines, locations and name of property owners, nearest road intersection, dwellings.

☒ Describe **in detail** how, where and when all water is obtained, stored, transferred, used and returned to the environment (if applicable). Details must include the source of all water takings (and corresponding source name if applicable), purpose of the water taking, period of water taking, and maximum quantity requested (see Guide for further instruction).
Note: If your application is subject to posting on the Environmental Bill of Rights (EBR) Registry, this description will be used to create the Proposal Notice. The ministry may change the wording as required, to meet the EBR posting requirements.

☒ Describe how water taking needs (rates, amounts and time periods) were determined. Provide all relevant information and calculations to demonstrate the water takings requested are warranted. Calculation worksheets are available. Refer to Appendix E of the Guide.

☒ Attach completed water conservation Schedule 1.

The following must be attached for all Category 2 applications:

☐ Completed Schedule 2 and/or Schedule 3 signed by a Qualified Person.

The following must be attached for all Category 3 applications:

☒ Study Technical Report

11. Statement/Signature of Applicant

I, the undersigned, hereby declare that to the best of my knowledge:

- The information contained herein and the information submitted in support of this application is complete and accurate in every way and I am aware of the penalties against providing false information.
- The Project Technical Information Contact identified in Section 6 if this form is authorized to act on my behalf for the purpose of obtaining this approval.

Print Name	Signature	Date (yyyy/mm/dd)

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Ontario
Ministry of the Environment

Application for Permit to Take Water

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12. Payment Information

Application Category	Amount Enclosed
☐ Category 1 ($750) ☐ Category 2 ($750) ☐ Category 3 ($3000)	$ 0.00 ☒ no fee required

Method of Payment

☐ Certified Cheque ☐ Money Order ☐ VISA ☐ MasterCard ☐ American Express

Credit Card Information *(if paying by VISA, MasterCard or American Express)**

Name on Card *(please print)*	Credit Card Number	Expiry Date (yy/mm)

Cardholder Signature	Date *(y/m/d)*

**NOTE: credit card accepted for payments UNDER $10,000.00 only.*

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Monitoring Report (April 30, 2012)

GEMS

RECEIVING WATER (BRUCE LAKE) MONITORING, TRIGGERS, AND MITIGATION PLAN: Surface Water Permit to Take Water Revision (MoE Reference #9599-8PTML6) – Northern Iron Corporation

As discussed in the previously submitted Technical Report, the proposed dewatering of the Griffith Mine North Pit is not anticipated to impact local groundwater supplies or terrestrial natural heritage features, and thus monitoring will not be required for these attributes. However, a monitoring program within the receiving environment is recommended within Bruce Lake in the vicinity of the dewatering discharge location, DO concentrations, general chemistry, metal concentrations, water levels and lake bed scouring are the key attributes requiring monitoring during active dewatering.

Details of the monitoring program are provided below.

Water Quality Monitoring (Bruce Lake)

Objective: To confirm that dewatering discharge is not substantially altering or impacting water quality in the receiving environment (Bruce Lake) through comparisons between control and effects sampling station within the lake.

Location: Monitoring samples are to be collected at an "upstream" control location approximately 1 kilometer southeast of the discharge point and one "downstream" impact location approximately 200 meters northeast of the discharge point (see Figure 1 attached).

Schedule: Samples to be collected prior to pumping, followed by collection every two weeks for the first 3 months of discharge.

Water quality results from the first 3 months will be submitted to the MOE (District Manager, Kenora Office) for review. If water quality analyses do not indicate potential impacts, reduced sampling frequency can be considered.

General Chemistry and metals analysis: General chemistry, including Total Suspended Solids (TSS), and total metal samples will be collected monthly from the two locations identified above and analyzed at a certified laboratory. The first sample will be collected prior to initiation of pumping activities to provide baseline water quality characteristics

IECA Member

Groundwater Environmental Management Services Inc.
9030 Leslie St. Unit 208 Richmond Hill, ON L4B 1G2 Tel: 905.907.3077 Fax: 905.907.6617
GemServicesInc.com

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that are temporally and spatially relevant to the discharge location and schedule. The initial monitoring sample will be collected within one week of discharge initiation with follow-up sampling occurring monthly thereafter.

Dissolved Oxygen (DO): Daily *In Situ* measurements for DO and temperature will be taken at the 2 identified sampling locations during the initial two weeks of active dewatering. Once the effects of discharge on DO concentrations within Bruce Lake are better understood, sampling may be reduced to twice weekly or weekly to confirm compliance with water quality objectives.

In addition to DO monitoring in Bruce Lake, weekly DO profiles will be recorded for the upper 25m of the water column within the North Pit and monthly full profiles of the residual water column will be completed.

Parameters:

1. *In Situ* tests for DO.

2. Laboratory testing for TSS, general chemistry and suite of metals consistent with the parameters analyzed for samples collected during February and September 2011.

Trigger:

Concentrations of tested parameters vary significantly between the control and effects monitoring stations. Significant trigger variations will generally be identified by concentration differences at the effects station exceeding those of the control station and exceeding applicable PWQO or CCME standards for the protection of aquatic life. Trigger values for dissolved oxygen and TSS will be as follows; DO equal to or better than PWQO for warm water biota if significantly different from the control station, and TSS exceeding 25 mg/L if significantly different from control station.

Mitigation:

In the event that a significant difference in general chemistry, TSS, metals or DO between the control and effects stations is identified a confirmatory sample will be obtained from both established stations as well as from the "end of pipe" discharge location and submitted to the laboratory under instructions for expedited analysis (3 days). The exception to laboratory analysis of a confirmatory sample will revolve around DO. To confirm impacts of low DO a sample will be taken from the discharge point to

confirm that anoxic water is being released into the lake. If anoxic water is being discharge a program of multiple point DO measurements (plume mapping), will be taken in an effort to map the low DO plume and determine its extent and potential impact on the receiving environment. Staff of the MOE district office (Kenora) will be notified. Following confirmation of test results treatment approaches would be reviewed on a specific basis. Upon initiation of a treatment process an additional sample will be collected and tested to ensure compliance with the criteria.

Erosion and Scouring

Objective: To ensure water discharged into Bruce Lake does not cause erosion to the shoreline or lake bed.

Location: Discharge outlet pipe of the pumping system(s).

Schedule: Daily visual inspections of discharge array during active dewatering to ensure system continues to operate as designed.

Parameters: Discharged water directed away from shoreline and lake bed and/or energy attenuation functioning as designed.

Trigger: Discharged water directed at shoreline and lake bed and/or energy attenuation not functioning as designed. Obvious sediment plume localized around discharge point (will be most visible during calm periods when wave action is not disturbing the lake bed and beach line).

Mitigation:

1. Re-align discharge water away from shorelines and lake bed if it has moved.
2. Employ additional energy attenuators to further reduce the erosive force of the discharge.
3. Adjust discharge location to reduce erosive impacts.
4. Reduce pumping rates to reduce erosive energy at discharge point.

Surface Water Levels

Objective: To monitor water levels within Bruce Lake adjacent the discharge location to ensure that localized flooding is not caused by dewatering activities.

Location: Water levels will be monitored at three staff gauges (SG1, SG2 and SG3) installed along the Bruce Lake shoreline (See attached Figure 1). SG1 and SG2 are installed north (downstream) of the proposed discharge point. SG1 is installed approximately 1300 meters to the north and is intended to monitor water levels within the mixing area downstream of the discharge. SG2 is installed approximately 200 meters north of the discharge point and is intended to monitor water levels directly influenced by discharge. SG3 is installed approximately 950 meters southeast (upstream) of the discharge point along the dike containing the Iron Bay tailings facility and is intended to monitor water level within the mixing zone outside the area of direct discharge influence.

Parameter: Bruce Lake water levels and visual inspection of lakeshore area for flooding relative to established high water benchmarks for each staff gauge location.

Schedule: Two baseline measurement events will occur at least one week apart prior to pumping start up to determine pre-discharge water levels relative to the benchmarked high water values. Daily measurements are recommended for the first two weeks of pumping to illustrate the direct effects of discharge on water levels within Bruce Lake. Once the effects of discharge on water levels within Bruce Lake are better understood the monitoring effort may be reduced to weekly or bi-weekly.

Trigger: Bruce Lake surface water levels reaching levels representing 80% of the high water benchmark value (established September 13, 2011) that are directly influenced by North Pit dewatering are considered significant and are established for each staff gauge as summarized in table below. At this level mitigation measures can be employed and water levels further assessed to determine if dewatering is responsible for their elevation or if natural seasonal fluctuations are the cause.

Water Level Trigger Values

Staff Gauge	Established High Water Benchmark Value (cm)	80% Trigger Value (cm)
SG1	43	34
SG2	53	43
SG3	43	34

Mitigation: If the trigger is exceeded, pumping rate will be temporarily reduced or halted until an investigation identifies the cause of the increased water levels. If dewatering is ruled out then pumping will resume. If dewatering is responsible and there is a potential

for significant adverse effects, then contingency measures will be discussed with the relevant agencies and actions implemented, prior to resuming dewatering. The key mitigation measure for dramatically increasing water levels in Bruce Lake would likely be a reduction of pumping rates and increased frequency of water level monitoring to ensure pumping rates do not continue to increase water levels.

Dewatering Discharge Volume

Objective: To confirm compliance with the PTTW.

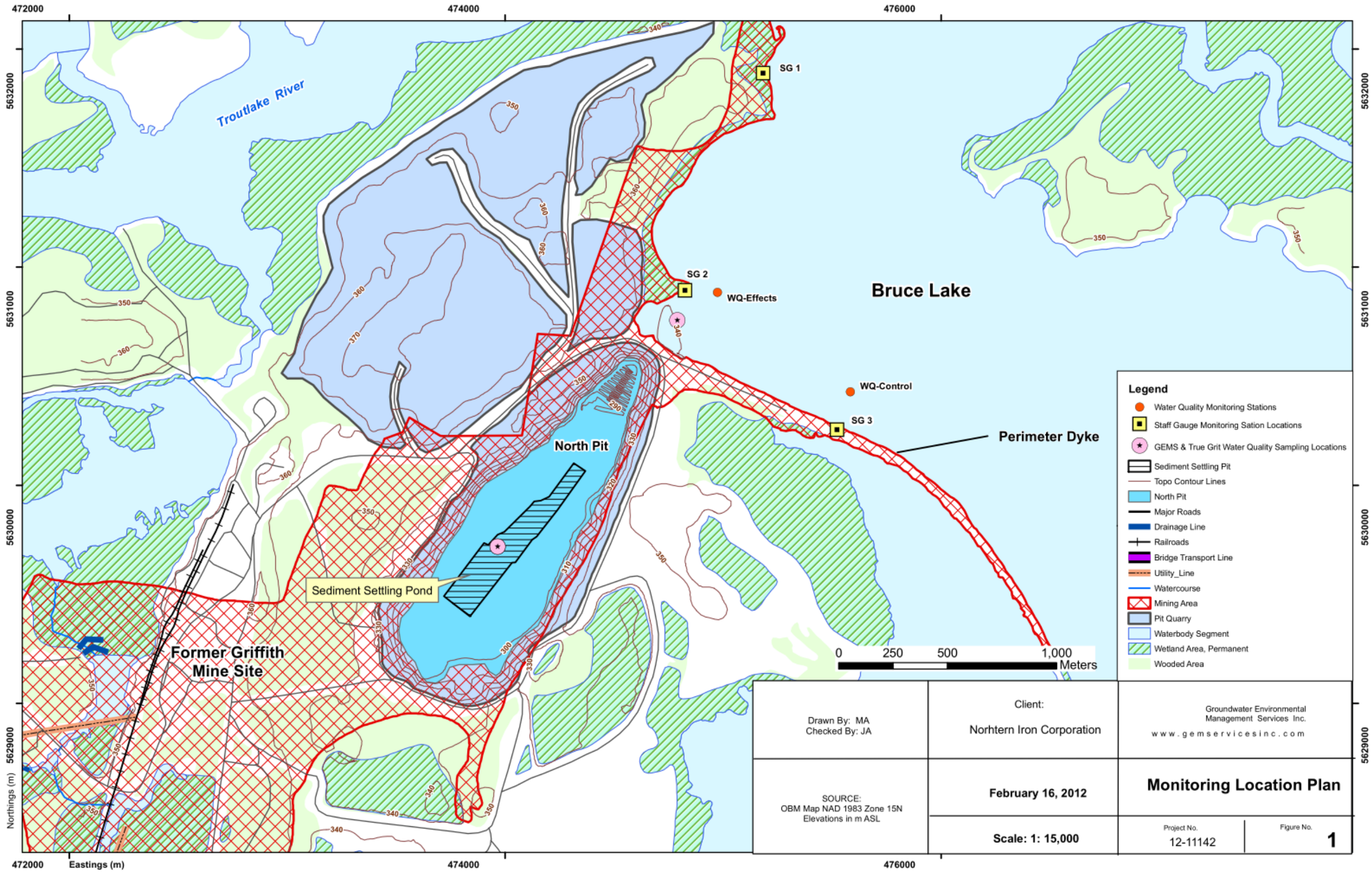
Location: A flow meter attached to the discharge pipe of the pumping system(s).

Parameter: Total volume of discharge, date, and time.

Schedule: Minimum of daily recording by on-site dewatering personnel during active pumping, with values reported to the environmental consultant on a weekly basis. The environmental consultant will provide discharge volumes to Rick Cousins at the Lake of the Woods Control Board (rcousins@lwcb.ca).

Trigger: Discharge volume exceeds the maximum rate of dewatering specified in the PTTW.

Mitigation: Immediately reducing the pumping rate so that discharge is within the PTTW limit.


472000
474000
476000
5632000
5631000
5630000
5629000
Troutlake River
SG 1
SG 2
WQ-Effects
Bruce Lake
WQ-Control
SG 3
Perimeter Dyke
North Pit
Sediment Settling Pond
Former Griffith
Mine Site
0 250 500 1,000
Meters
Legend
Water Quality Monitoring Stations
Staff Gauge Monitoring Sation Locations
GEMS & True Grit Water Quality Sampling Locations
Sediment Settling Pit
Topo Contour Lines
North Pit
Major Roads
Drainage Line
Railroads
Bridge Transport Line
Utility_Line
Watercourse
Mining Area
Pit Quarry
Waterbody Segment
Wetland Area, Permanent
Wooded Area
Drawn By: MA
Checked By: JA
Client:
Norhtern Iron Corporation
Groundwater Environmental
Management Services Inc.
www.gemservicesinc.com
SOURCE:
OBM Map NAD 1983 Zone 15N
Elevations in m ASL
February 16, 2012
Monitoring Location Plan
Scale: 1: 15,000
Project No.
12-11142
Figure No.
1
Northings (m)
Eastings (m)

GEMS

Monitoring Results Report

Phase 1 (Initial Dewatering)
North Pit, Former Griffith Mine
Ear Falls, District of Kenora, Ontario

Permit to Take Water No. 0716-8UMJEA

Prepared for:

Northern Iron Corp.
Unit 1051 - 409 Granville St
Vancouver, British Columbia,
V6C 1T2, Canada
&
Director and District Manager
Ministry of the Environment
Thunder Bay/Kenora District Office

Prepared by:

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69 Connie Crescent
Concord, Ontario L4K 1L3

January 24 , 2013

Ref: 13-12220

TABLE OF CONTENTS

1. INTRODUCTION

Groundwater Environmental Management Services Inc. (GEMS) was retained by Northern Iron Corp. (Northern Iron) to support the implementation of the monitoring program and to prepare the monitoring results report to comply with the condition 4.3 of the Permit to Take Water (PTTW) issued by the Ontario Ministry of the Environment (MOE). The PTTW was issued to Northern Iron by the MOE on August 14, 2012 under the reference No. 0716-8UMJEA. The PTTW was issued for Phase 1(Initial Dewatering) dewatering of the North Pit, Griffith Mine, Approx. 2.5 km east of Highway 105 and 25 km north of the Town of Ear Falls, Ear Falls, District of Kenora, Ontario. The water taking is required to dewater the North Pit of the former Griffith Mine for the geological exploration of historic pit benches to redefine the resource estimates. The Phase 1dewatering program is only permitted to the depth of 25 m below the initial water level at the North Pit. The site location is shown on Figures A & B (Appendix A).

The dewatering system set up consists of two CD300 units, and one 18GSTAR pump. The pumps are located at the north-east end of the North Pit that is accessible via ramp. The pump discharge is directed into Bruce Lake over the land between the pit and the lake.

The intake is located within the North Pit, approximately 23 m offshore from the pumps and has an approved "Fish Basket" attached to the intake to stop fish from entering into the intake pipe. The discharge outlet consists of two 24" diameter ABS pipes with horizontal discharge line that floats at the discharge point into Bruce Lake.

Dewatering pumping commenced intermittently on October 22, 2012 while the system was being checked with consistent pumping beginning on October 24, 2012. Pumping was terminated on January 3, 2013 due winter freeze-up conditions at the North Pit. The dewatering pumping will resume in the late spring of 2013 when ice conditions are suitable for pumping at the North Pit. The pumping was in accordance with the PTTW No. 0716-8UMJEA that allowed pumping rate of 150,000 L/min (216,000,000 L/day) as specified in the permit to take water.

This report provides a summary of conditions encountered during the monitoring program and its results. Section 2 of this report provides detailed information regarding monitoring methodology and Section 3 presents a result summary of the monitoring. The monitoring program fulfills requirements as defined in the Sections 4.2 (Monitoring Program) of the PTTW. Monitoring was undertaken for receiving water (Bruce Lake) and North Pit quality, surface water levels at Bruce Lake, erosion and scouring at the discharge and dewatering pumping volumes.

2. MONITORING METHODOLOGY

2.1 RECEIVING (BRUCE LAKE) & NORTH PIT WATER QUALITY MONITORING

A surface water quality monitoring program was established and carried out as required by the condition of the PTTW.

The sampling and testing program included parameters listed herein:

- TSS, General Chemistry and Metals - submitted to the laboratory for analysis
- Dissolved Oxygen (DO) - *In Situ* by portable calibrated equipment.
- Temperature - *In Situ* by portable calibrated equipment.

Sampling and testing schedule consisted of bi-weekly sampling for TSS, general chemistry and metals, with first sample collected prior to initiation of pumping at SG1, SG2, SG3 and North Pit. DO and temperature measurements were conducted daily for the first two weeks at stations SG1, SG2, SG 3 and North Pit. The DO and temperature measurement frequency was reduced to weekly following initial two weeks of pumping.

It should be noted that there were several periods when the ice on either Bruce Lake or Griffith Pit was such that it was not possible to reach the monitoring locations by boat and too dangerous to walk over the ice to reach the locations. As a result, the full bi-weekly water quality sampling schedule was truncated with samples collected on October 22 (Pre-pumping), November 12 (dewatering inlet and discharge only), November 26 and December 11. Ice conditions also made it impossible to gather DO/Temp readings on November 1st/2nd. Cold water temperatures during December/January also caused the DO/Temperature meter to malfunction, resulting in suspect readings. Based on previous and later readings, there is no reason to suspect DO levels were outside of standards.

In addition to weekly DO and temperature measurements, periodic DO/Temperature profiles were to be measured and recorded for the upper 25m of the water column within the North Pit as well as monthly development of full depth profiles.

Trigger values for DO and TSS were as follows; DO equal to or better than PWQO for warm water biota (6.5mg/L) if significantly different from the reference station, and TSS exceeding 25 mg/L if significantly different from reference station.

Samples were submitted to ALS Analytics Laboratory in Thunder Bay for the analysis of TSS, general chemistry and metals.

Monitoring measurement and sampling locations are identified on Figure B – Monitoring Location Plan (Appendix A).

Sampling and testing for DO, temperature, TSS, general chemistry and metals started on October 22, 2012 and was carried out at SG1, SG2, SG3, North Pit locations until January

5, 2013. As mentioned above the dewatering program was suspended on January 3, 2013 due to ice cover conditions at the North Pit intake. The water quality monitoring data is summarized on Tables 4 to 6 in the Appendix A.

2.2 SURFACE WATER LEVEL MONITORING (BRUCE LAKE)

Bruce Lake water level monitoring program was established and carried out as required by the condition of the PTTW.

Water levels were monitored at three staff gauges (SG1, SG2 and SG3) installed along the Bruce Lake shoreline. The monitoring schedule included two baseline records prior to start of the water taking, with daily frequency for the first two weeks of pumping and was reduced to by weekly after. However, due to ice and snow conditions on the Lake, monitoring the schedule had to be adjusted accordingly. The water level records for the stations SG1, SG2, SG3 are provided on Tables 1 to 3 in the Appendix A.

The water level triggers that were recommended are provided in the table below.

Water Level Trigger Values

Staff Gauge	Established High Water Benchmark Value (cm)	80% Trigger Value (cm)
SG1	43	34
SG2	53	43
SG3	43	34

Following a meeting with the Pakwash Association in December 2012, MOE requested the permit holder should investigate options of establishing trigger values by incorporating the Lake of the Woods Control Board (LWCB) seasonal water distribution curves into receiving water level monitoring program, which may provide additional assurances when considering seasonal water level fluctuations.

Discussions with the LWCB on January 23, 2013 determined trigger development related to water levels in Bruce Lake and the Troutlake River below Bruce Lake is not feasible for two primary reasons. First, the overall low volume of water being discharged (averaging 0.65 m^3/sec) to date are considered inconsequential with regard to flooding potential within this part of the watershed (Figure C illustrates discharge volume plotted against Troutlake River flow data during the period of discharge). On average discharge flow rates represent approximately 4% of Troutlake River flows, as measured upstream of Bruce Lake, during

this period and it is strongly anticipated that this proportion of flow will decrease when Bruce Lake volumes are included. Additionally, the proportion of flow generated by dewatering becomes particularly low (0.2%) when measured against the LWCB base trigger of 400 m^3/sec within the English River. The LWCB indicates that when flow rates in the English River reach 400 m^3/sec impacts to Pakwash Lake and the lower Troutlake River begin in some low lying areas. However, the cumulative effect of discharge from the Griffith Mine North pit is not considered significant enough to influence critical flow levels within the English River. Second, the location of LWCB flow data stations within this portion of the watershed do not provide data relevant to the determination of water level trigger values that would adequately illustrate flood potential resulting from dewatering discharge to Bruce Lake.

At present, the LWCB tactically agrees that a trigger for water levels within Bruce Lake set at 80% of the benchmarked bankfull pre-flood level should be adequate to prevent downstream flooding attributed to dewatering activities if those activities are curtailed when this level is reached.

2.3 Erosion and Scouring Monitoring

Daily visual inspections of the discharge array were conducted during active dewatering to ensure the system continues to operate as designed, ensuring that water discharged into Bruce Lake does not cause erosion to the shoreline or lake bed.

2.4 Dewatering Discharge Rate

The pumping rates were recorded by a totalizing flow-meter attached in-line to discharge piping of the dewatering pumps. During the period between October 24, 2012 and November 27, 2012 flow-meter was not working properly and the daily pumping values were estimated based on the pumping equipment specifications as well as by Dopplar Flow meter during a November 7-8, 2012 site visit by the dewatering contractor. Following re-installation of flow-meter daily water pumping values were recorded as required between November 28, 2012 and January 3, 2012. The values on flow meter were documented daily by Northern Iron staff and their records were reported to GEMS. A summary of daily pumping volumes are provided on Table 7. The daily pumping value was compared to the PTTW limiting rate. The daily rates of dewatering were reported to the MOE database (WTRS), as required by the Permit to Take Water.

3. SUMMARY OF MONITORING RESULTS & RECOMMENDATIONS

3.1 RECEIVING (BRUCE LAKE) & NORTH PIT WATER QUALITY MONITORING

Routine water quality samples from the North Pit and Bruce Lake, were collected on October 22, November 12, and 26 and December 11, showed results consistent with baseline samples collected in February and September 2011. Key elements, including arsenic, cobalt, copper and uranium, all showed concentrations compliant with or within pre-identified marginal PWQO exceedences considered acceptable by MOE during the PTTW application process (See Appendix B for Laboratory results).

Details of water quality monitoring results for key identified parameters measured at monitoring stations SG1, SG2, SG3 and North Pit are discussed below.

Total Suspended Solids (TSS)
During the initial monitoring TSS ranged between a value <2.0 and 4.3 mg/L over all stations which are significantly and consistently below the trigger value of 25mg/L. Treatment for TSS in the discharge water is not anticipated.

Aluminum
Aluminum was consistently below the interim PWQO of 0.075mg/L for water with pH between 6.5 and 9.5 with the exception of the three October 22 samples taken from Bruce Lake which contained concentrations between 0.140 and 0.189mg/L while the north pit was undetectable and 0.105mg/L on November 12 in Bruce Lake while the North Pit registered 0.021 mg/L. It is suspected that the October 22 samples may have been contaminated by an aluminum boat used during sample collection and that the November 12 sample was contaminated by aluminum pipes used to convey discharge water between the north pit and Bruce Lake.

Arsenic
Arsenic concentrations in all samples collected were consistently below the PWQO and iPWQO values of 0.1 and 0.005 mg/L.

Cobalt
Cobalt concentrations in all samples collected were consistently below the PWQO value of 0.0009 mg/L.

Copper
Copper concentrations in all samples collected were consistently below the PWQO value of 0.005 mg/L for water samples with hardness greater than 20mg/L.

Uranium

Three of the 4 samples collected from the North Pit contained uranium concentrations (0.0072-0.0079mg/L) slightly exceeding the interim PWQO of 0.005mg/L but are below the Canadian Water Quality Guidelines of 0.015mg/L for long term exposure. As a result, uranium concentrations in the North Pit remain consistent with those of the baseline samples considered to be of very low risk to aquatic receptors in Bruce Lake.

Dissolved Oxygen (DO) Monitoring

As anticipated DO concentrations measured at all Bruce Lake Monitoring stations and within the North Pit are well above the 6.5mg/L PWQO criterion for warm water biota (Table 4 in Appendix A). Two temperature profiles were completed in the North Pit to help determine DO availability during dewatering and aid in determining if discharge treatment for DO was to be anticipated during Phase I dewatering. The baseline profile (Table 5 in Appendix A) showed DO concentrations consistently above the PWQO guideline up to the 25m depth mark. A subsequent full depth profile (Table 6 in Appendix A) completed on November 25 also showed DO concentrations consistently above the PWQO guideline up to the 23m depth mark, an anomalous reading below the PWQO criteria at 25m and concentrations flirting with the PWQO criteria at 10m intervals from 30-80 meters. Based on these results problems with DO during Phase I dewatering are not anticipated

Recommendations for Water Quality Monitoring Moving Forward

While water quality issues are not anticipated during Phase 1 dewatering at the North Pit a data gap caused by fewer sampling events during the initial dewatering period resulting from safety issues, potential for chemical changes and/or differences in parameter concentrations during the winter shut down period and similar changes resulting from freshet indicate that water sampling for laboratory analysis be repeated for the initial 3 month period of active dewatering during spring start-up. To reiterate, the water quality sampling schedule to be continued in the spring should include;

1. Baseline sample from all four locations prior to dewatering start-up,
2. Bi-weekly samples during the initial 3 months of dewatering (6), and
3. Monthly samples thereafter for the duration of Phase I dewatering.

Daily *In Situ* measurements for DO and temperature should be taken at the 4 identified sampling locations during the initial two weeks of active dewatering. Once the effects of discharge on DO concentrations within Bruce Lake are better understood, sampling may be reduced to twice weekly or weekly to confirm compliance with water quality objectives.

It is also recommended that a full depth DO/Temperature profile be completed in the North Pit at the same time as the renewed water quality baseline samples are collected. The intent is to determine DO levels prior to dewatering start-up and help anticipate the potential for treatment.

3.2 SURFACE WATER LEVEL MONITORING (BRUCE LAKE) RESULTS

At no time did were surface water trigger levels reached during initial Phase I Dewatering (Tables 1-3 in Appendix A). Staff gages SG 1 an SG 3 remained dry for the duration while water levels recorded on SG 3 rose to a peak of 34cm (64% of benchmarked high water mark) and correlated with increased inflow from the Troutlake River measured by LWCB (Figure C in Appendix A). Overall, it appears that increases in the surface level of Bruce Lake are influenced primarily by natural environmental factors and not as a direct result of dewatering activities.

Recommendations for Surface Water Level Monitoring Moving Forward

It is recommended that surface water level monitoring continue in concert with DO monitoring particularly as dewatering, including a minimum of 2 baseline readings prior to start-up, as pumping initiation may coincide with spring high water. Daily measurements are recommended for the first two weeks of pumping to illustrate the direct effects of discharge on water levels within Bruce Lake. Once the effects of discharge on water levels within Bruce Lake are better understood the monitoring effort may be reduced to weekly or bi-weekly as

3.4 EROSION AND SCOURING MONITORING

No erosion of scouring was identified at the discharge location within Bruce Lake. The horizontal orientation of the discharge situated on the surface of Bruce Lake directs discharge flows away from the lake bottom and surrounding shoreline and appears to dissipate erosive energy adequately.

Recommendations for Erosion and Scouring Monitoring Moving Forward

Visual erosion and scouring monitoring should continue on a daily basis during active dewatering of the North Pit.

3.5 DEWATERING DISCHARGE RATE MONITORING RESULTS

Consistent dewatering pumping commenced on October 24, 2012 and was terminated on January 3, 2013 due winter freeze-up conditions at the North Pit. The dewatering pumping will resume in the late spring of 2013 when ice conditions are cleared and suitable for pumping at the North Pit. The pumping was in accordance with the PTTW No. 0716-8UMJEA that allowed pumping rate of 150,000 L/min (216,000,000 L/day) as specified in the permit to take water. Actual pumping volumes for initial Phase 1 dewatering averaged at 56,699,770 L/day. Maximum daily dewatering volume was 70,747,200 L/day, and minimum daily dewatering volume was 23,328,000.

4. CLOSURE

This report was prepared for the Northern Iron Corp. and MOE Director and District Manager, Thunder Bay/Kenora District Office of the Ontario Ministry of the Environment as required by PTTW issued by the MOE under the reference No. 0716-8UMJEA.

During the monitoring period covered by this report, PTTW established monitoring parameters were in compliance with PTTW at all times. No complaints were received; no flooding or erosion was observed during monitoring or was reported to GEMS during the study period.

We trust that the information provided by this report satisfies your requirements. Please don't hesitate to contact us should you have any questions.

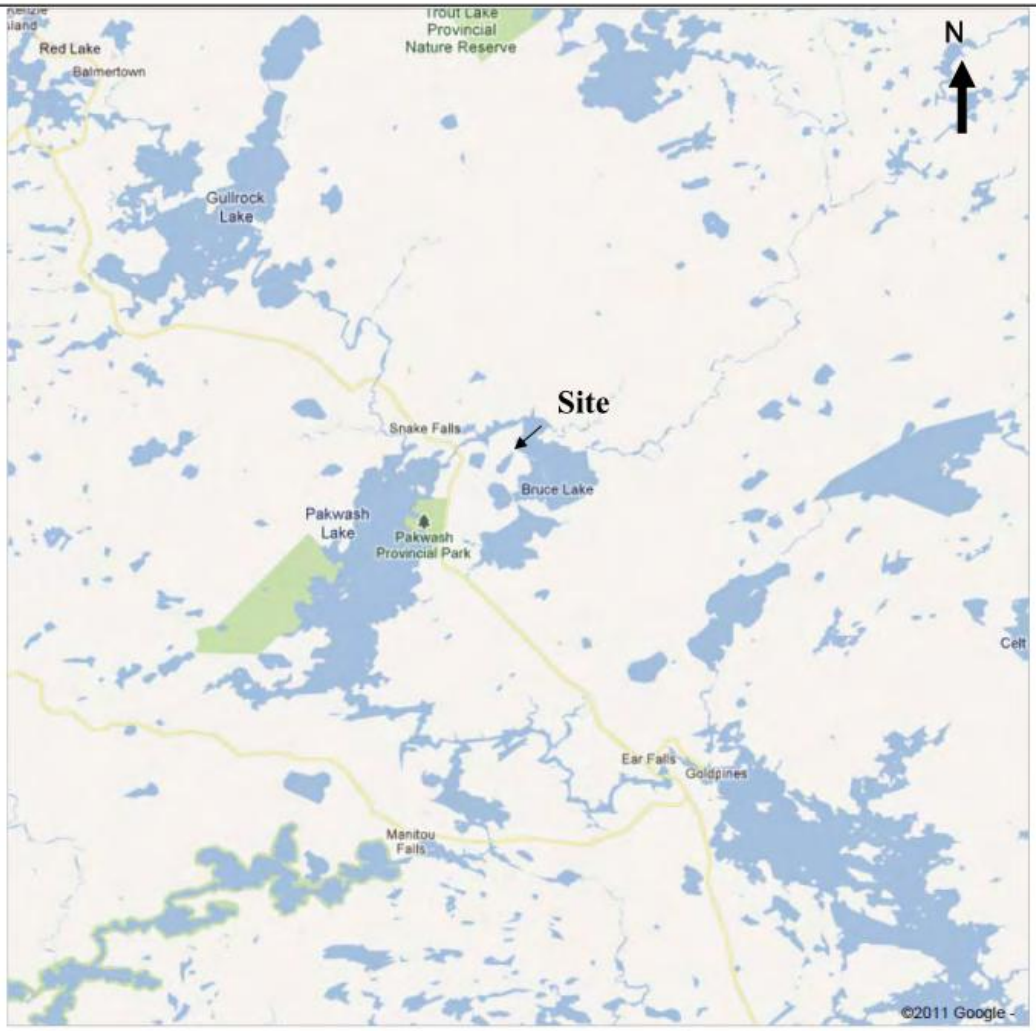
Yours truly,
Groundwater Environmental Management Services Inc.

Prepared By:

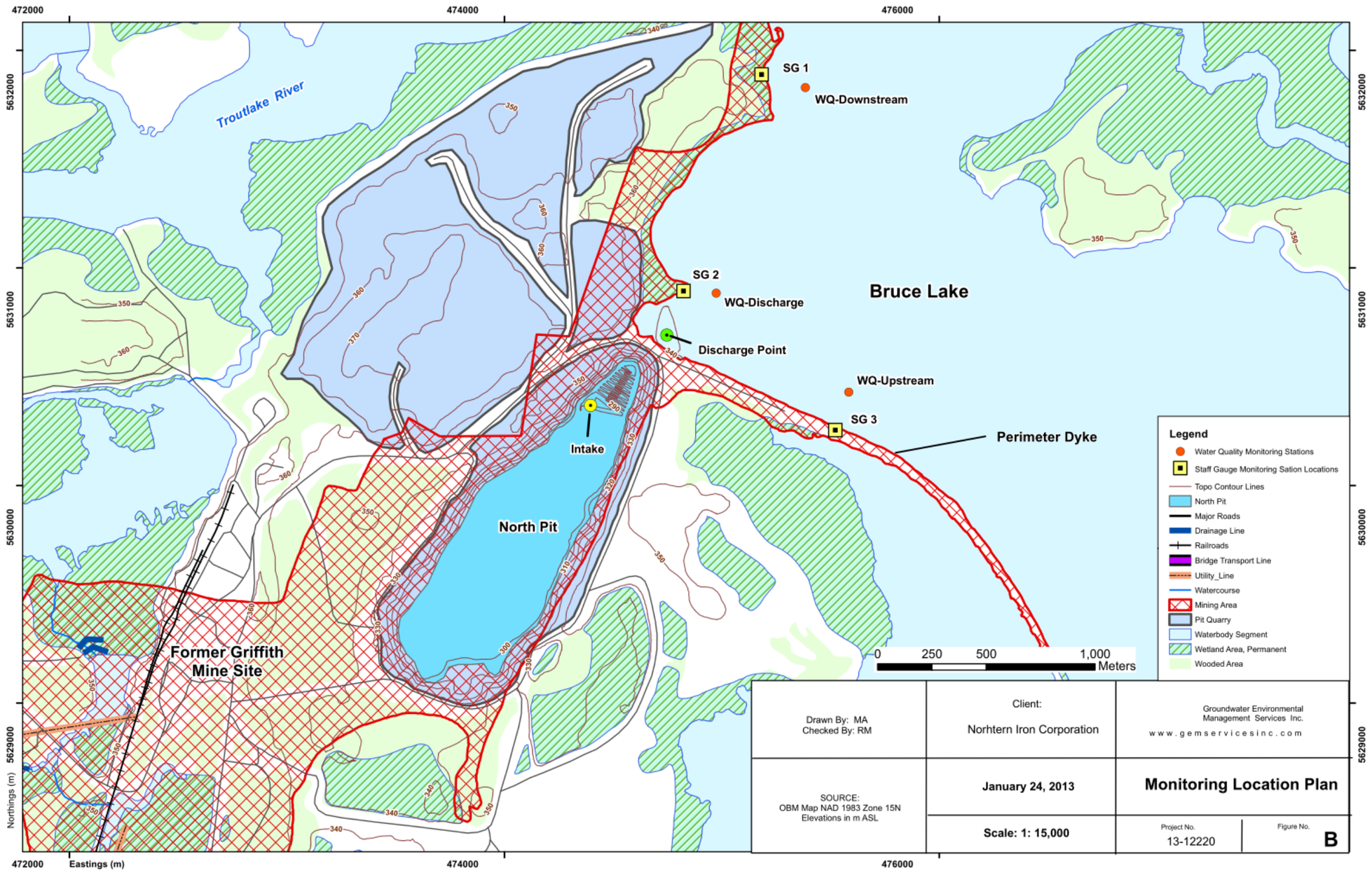
Ross Mabee BSc., RPBio. (BC)
Aquatic Biologist

Appendix A

Figures & Tables



SOURCE OF MAP: Google Maps, 2012	Drawn By: MA Checked By: RM Date: January 24, 2013	GEMS **Site Location Plan**	
Scale: Not to Scale		Project No. **13-12220**	Figure No. **A**



Drawn By: MA Checked By: RM	Client: Norhtern Iron Corporation	Groundwater Environmental Management Services Inc. www.gemservicesinc.com
SOURCE: OBM Map NAD 1983 Zone 15N Elevations in m ASL	**January 24, 2013**	**Monitoring Location Plan**
	Scale: 1: 15,000	Project No. 13-12220 / Figure No. **B**

FIGURE C

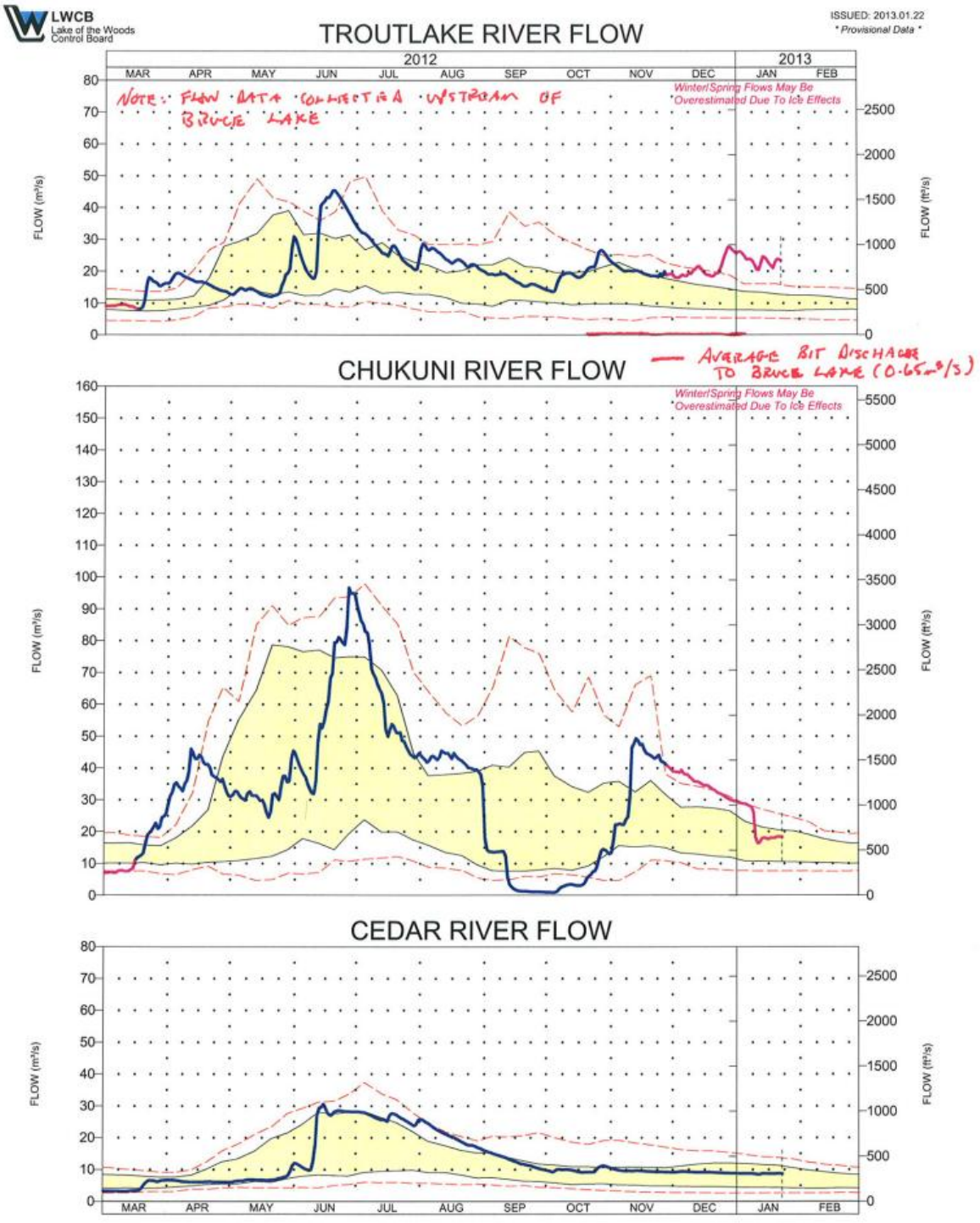

LWCB
Lake of the Woods Control Board
ISSUED: 2013.01.22
* Provisional Data *
TROUTLAKE RIVER FLOW
2012
2013
MAR APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB
NOTE: FLOW DATA COLLECTED UPSTREAM OF BRUCE LAKE
Winter/Spring Flows May Be *Overestimated Due To Ice Effects
FLOW (m³/s)
FLOW (ft³/s)
CHUKUNI RIVER FLOW
AVERAGE BIT DISCHARGE TO BRUCE LAKE (0.65 m³/s)
Winter/Spring Flows May Be *Overestimated Due To Ice Effects
CEDAR RIVER FLOW

Table 1. Water Level Record				Monitoring Station: SG1 - Downstream 2
Date	**Time**	**Water Level (cm)**	**Staff Initials**	**Comments**
16/10/2012	10:30	>10cm below	CT	Water more than 10cm below bottom of staff gauge
21/10/2012	0.7013889	"	TS	Day before pump start
23/10/2012	16:50	7cm below	TS	Water 7cm below SG1
24/10/2012	14:00	5cm below	TS	5cm below SG1. Slight rise from heavy rain
25/10/2012	16:10	"	TS	No change
26/10/2012	14:00	"	TS	Below SG
27/10/2012	16:10	"	TS	Below SG
28/10/2012	14:00	"	TS	Below SG
29/10/2012	15:30	"	TS	Below SG
30/10/2012	15:10	"	TS	Below SG
31/10/2012	14:30	"	TS	Below SG
01/11/2012	-	-	TS	No readings taken
02/11/2012	-	-	TS	No readings taken
28/11/2012	0.5416667	Below	TS	Water level below staff gauge. Ice forming.
December				Too much ice/snow to accurately read staff gauges.

Table 2. Water Level Record				Monitoring Station: SG2 - Downstream 1
Date	**Time**	**Water Level (cm)**	**Staff Initials**	**Comments**
16/10/2012	10:30	22	CT	Week before pumping
21/10/2012	-	-		Day before pumping begins
23/10/2012	16:50	22	TS	No change
24/10/2012	14:00	25	TS	Rain
25/10/2012	16:10	26	TS	Slight increase. Rain run-off?
26/10/2012	14:00	28	TS	
27/10/2012	16:10	29	TS	Calm day
28/10/2012	14:00	30	TS	Light breeze
29/10/2012	13:30	31	TS	Blowing towads gauge
30/10/2012	15:10	32	TS	Calm day
31/10/2012	14:30	34	TS	Calm day
01/11/2012	-	-	TS	Icing up fast. No reading.
02/11/2012	-	-	TS	Ice. No Reading.
08/11/2012	0.5	31	TS	Ice melted. Calm water. Able to get reading.
41241	0.541666667	31	TS	Ice forming, able to get reading.
December				Too much ice/snow to accurately read staff gauges.

Table 3. Water Level Record				Monitoring Station: SG3 - Along Dyke
Date	**Time**	**Water Level (cm)**	**Staff Initials**	**Comments**
16/10/2012	10:30	>20cm below	CT	Water level more than 20cm below bottom of SG
21/10/2012	-	-	-	Day before Pump start
23/10/2012	16:50	>20cm below	TS	No change, still well below
24/10/2012	14:00	18cm belw	TS	Rain.
25/10/2012	16:10	Below SG	TS	Well below gauge
26/10/2012	14:00	"	TS	"
27/10/2012	16:10	"	TS	"
28/10/2012	14:00	"	TS	"
29/10/2012	15:30	"	TS	"
30/10/2012	15:10	"	TS	"
31/10/2012	14:30	"	TS	"
01/11/2012	-	-	TS	No readings taken. Ice.
02/11/2012	-	-	TS	No readings taken. Ice.
08/11/2012	-	Below SG	TS	No ice, water below staff gauge.
28/11/2012	13:20	Below SG	TS	Ice forming, water level well below staff gauge.
December				Too much ice/snow to accurately read staff gauges.

Table 4. Temperature and Dissolved Oxygen Measurements					
Date	Time	Location	Saturation	O2 (mg/L)	Temp
22/10/2012	12:00	SG1	93	11.2	5.9
		SG2	92	11	6.1
		SG3	91	11	5.7
		Pit	95	10.4	10.1
23/10/2012	16:50	SG1	102	12.1	5.9
		SG2	101	12.2	5.4
		SG3	102	12.1	5.7
24/10/2012	13:50	SG1	100	11.9	6.1
		SG2	101	11.9	6.4
		SG3	101	11.9	6.3
25/10/2012	16:05	SG1	100	12.1	6.4
		SG2	101	12.3	4.9
		SG3	100	12.4	4.7
26/10/2012	14:00	SG1	101	12.5	4.8
		SG2	98	12.2	4.2
		SG3	97	12.2	4.4
27/10/2012	16:10	SG1	99	12.5	3.7
		SG2	100	12.8	3.9
		SG3	100	12.7	3.9
28/10/2012	14:00	SG1	100	12.8	3.5
		SG2	100	12.5	3.9
		SG3	100	13.2	3
29/10/2012	15:25	SG1	100	13.1	2.9
		SG2	101	13.5	2.3
		SG3	100	13.4	2.3
30/10/2012	15:10	SG1	101	13.3	3.1
		SG2	100	13	3
		SG3	100	13.2	2.7
31/10/2012	14:30	SG1	101	13.3	2.1
		SG2	100	13.3	2
		SG3	100	13.3	2
01/11/2012	N/A	SG1	N/		
		SG2			
		SG3			
		Pit			
02/11/2012	N/A	SG1			
		SG2			
		SG3			
		Pit			
08/11/2012	12:00	SG1	100	13.4	1.4
		SG2	100	13.6	0.9
		SG3	100	13.5	0.9

Date	Time	Location	Saturation	O2 (mg/L)	Temp
		Pit	101	13.1	2.1
28/11/2012		SG1	160	23.3	0.7
		SG2	163	23.6	0.7
		SG3	159	23.5	0.8
		Pit	159	23.5	0.8
10/12/2012		SG1	100	13.8	0.4
		SG2	100	13.9	0.7
		SG3	123	29.4	0.7
		Pit	122	24.6	0.6
17/12/2012	13:45	SG1	135	18.4	1.1
		SG2			
	14:40	SG3	131	16.7	2.3
	16:10	Pit	207	27.2	1.6
24/12/2012		SG1	102	15	0.1
		SG2	103	14.9	0.1
		SG3	100	13.7	1.2
		Pit	99	12.9	2.2
05/01/2013	11:00	SG1	-	-	-
		SG2	-	-	-
		SG3	-	-	-
		Pit	140	-	-

Table 5. North Pit Profile (25 m) Data for DO and Temperature – Baseline, October 22, 2012				
Depth (m)	Sat (%)	O2 (mg/L)	Temp	Notes
1	95	10.4	10.1	
3	97	10.7	9.5	
5	100	11.1	9.1	
7	100	11.4	8.5	
9	102	11.6	8.5	
11	103	11.7	8.4	
15	103	12	7.7	
20	85	10.2	5.7	
25	66	8.2	4.6	Approximate location of where unoxygenated boundary is.

Table 6. Full Depth Profile (North Pit) Data for DO and Temperature – November 25, 2012			
Depth (m)	O2 (mg/L)	Temp	Notes
80	7.6	4.2	
70	6.9	4.2	
60	6.6	4.2	
50	6.3	4.2	
40	6	4.2	
30	6.8	4.1	
25	2.9	3.4	Possible error in reading? Or boundary location.
23	13.1	3.3	Approximate location of boundary between oxygenated and un-oxygenated water.
21	13.7	3	
20	14.1	2.9	
18	15.1	2.8	% readings higher than normal and started to climb as readings approached 5m depth. Expected DO readings in this zone are 12 to 13mg/L
16	17	2.7	
14	16.6	2.6	
13	17.6	2.5	
11	17.8	2.4	
9	18.1	2.4	
7	19.6	2.3	
5	18.7	2.3	
4	18.6	2.3	
3	12.2	2.2	Re-calibrated unit.
2	10.6	2.1	
1	11.8	2.1	

Table 7. Daily Water Pumping Volume Record - North Pit, Former Griffith Mine		
Daily pumping rates were estimated during period from: October 24, 2012 to November 27, 2012		
Daily pumping rates were measured by calibrated flow meter from: November 28, 2012 to January 3, 2012		
Date	**Total Daily Volume (Litres/Day)**	**PTTW Limit (Litres/Day)**
	Source 1	
	Pumps Start	
24-Oct-12	70,747,200	216,000,000
25-Oct-12	65,831,990	216,000,000
26-Oct-12	70,475,040	216,000,000
27-Oct-12	60,949,440	216,000,000
28-Oct-12	60,480,000	216,000,000
29-Oct-12	60,480,000	216,000,000
30-Oct-12	60,480,000	216,000,000
31-Oct-12	60,480,000	216,000,000
01-Nov-12	60,480,000	216,000,000
02-Nov-12	Pumps down	216,000,000
03-Nov-12	60,480,000	216,000,000
04-Nov-12	60,480,000	216,000,000
05-Nov-12	60,480,000	216,000,000
06-Nov-12	60,480,000	216,000,000
07-Nov-12	60,480,000	216,000,000
08-Nov-12	60,480,000	216,000,000
09-Nov-12	60,480,000	216,000,000
10-Nov-12	60,480,000	216,000,000
11-Nov-12	60,480,000	216,000,000
12-Nov-12	60,480,000	216,000,000
13-Nov-12	60,480,000	216,000,000
14-Nov-12	60,480,000	216,000,000
15-Nov-12	60,480,000	216,000,000
16-Nov-12	60,480,000	216,000,000
17-Nov-12	60,480,000	216,000,000
18-Nov-12	60,480,000	216,000,000
19-Nov-12	61,920,000	216,000,000
20-Nov-12	61,920,000	216,000,000
21-Nov-12	61,920,000	216,000,000
22-Nov-12	61,920,000	216,000,000
23-Nov-12	61,920,000	216,000,000
24-Nov-12	61,920,000	216,000,000
25-Nov-12	61,920,000	216,000,000
26-Nov-12	61,920,000	216,000,000
27-Nov-12	61,920,000	216,000,000
28-Nov-12	61,200,000	216,000,000
29-Nov-12	61,920,000	216,000,000
30-Nov-12	61,920,000	216,000,000
01-Dec-12	63,072,000	216,000,000
02-Dec-12	61,344,000	216,000,000

Date	Total Daily Volume (Litres/Day)	PTTW Limit (Litres/Day)
03-Dec-12	59,328,000	216,000,000
04-Dec-12	58,320,000	216,000,000
05-Dec-12	59,040,000	216,000,000
06-Dec-12	61,920,000	216,000,000
07-Dec-12	61,920,000	216,000,000
08-Dec-12	62,640,000	216,000,000
09-Dec-12	62,640,000	216,000,000
10-Dec-12	62,640,000	216,000,000
11-Dec-12	62,640,000	216,000,000
12-Dec-12	62,640,000	216,000,000
13-Dec-12	62,640,000	216,000,000
14-Dec-12	61,200,000	216,000,000
15-Dec-12	61,776,000	216,000,000
16-Dec-12	59,040,000	216,000,000
17-Dec-12	58,320,000	216,000,000
18-Dec-12	58,608,000	216,000,000
19-Dec-12	57,312,000	216,000,000
20-Dec-12	58,320,000	216,000,000
21-Dec-12	38,880,000	216,000,000
22-Dec-12	52,560,000	216,000,000
23-Dec-12	53,280,000	216,000,000
24-Dec-12	55,296,000	216,000,000
25-Dec-12	52,560,000	216,000,000
26-Dec-12	35,280,000	216,000,000
27-Dec-12	35,280,000	216,000,000
28-Dec-12	37,440,000	216,000,000
29-Dec-12	38,016,000	216,000,000
30-Dec-12	34,128,000	216,000,000
31-Dec-12	23,328,000	216,000,000
01-Jan-13	24,192,000	216,000,000
02-Jan-13	25,200,000	216,000,000
03-Jan-13	24,480,000	216,000,000

Appendix B

Laboratories Certificates of Analysis

Northern Iron Corp..
ATTN: ATTN: Cameron Tymstra
Unit 1051 - 409
Granville St
Vancouver BC V6C 1T2

Date Received: 24-OCT-12
Report Date: 09-NOV-12 12:18 (MT)
Version: FINAL

Client Phone: 604-566-8570

Certificate of Analysis

Lab Work Order #: **L1227936**
Project P.O. #: NOT SUBMITTED
Job Reference: GRIFFITH MINE SITE
C of C Numbers:
Legal Site Desc:

Tricia Sampson
Account Manager Supervisor

ADDRESS: 1081 Barton Street, Thunder Bay, ON P7B 5N3 Canada | Phone: +1 807 623 6463 | Fax: +1 807 623 7598
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09-NOV-12 12:18 (MT)
Version: FINAL

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1227936-1	L1227936-2	L1227936-3	L1227936-4	
	Description	water	water	water	water	
	Sampled Date	22-OCT-12	22-OCT-12	22-OCT-12	22-OCT-12	
	Sampled Time	15:00	15:00	15:00	15:00	
	Client ID	1A BL DOWNSTREAM	1B BRUCE LAKE DISCHARGE	1C BRUCE LAKE UPSTREAM	1D NORTH PIT INTAKE	
Grouping	**Analyte**					
WATER						
Physical Tests	Color, True (T.C.U.)	44.0	44.9	44.5	<1.0	
	Conductivity (EC) (uS/cm)	88.5	89.3	89.5	674	
	Hardness (as CaCO3) (mg/L)	43.6	39.4	41.2	292	
	pH (pH)	7.62	7.66	7.67	8.24	
	Total Suspended Solids (mg/L)	3.1	4.3	4.0	<2.0	
	Total Dissolved Solids (mg/L)	74	76	74	418	
	Turbidity (NTU)	3.57	3.53	3.25	0.33	
Anions and Nutrients	Alkalinity, Bicarbonate (as CaCO3) (mg/L CaCO3)	40.5	40.4	40.0	145	
	Alkalinity, Carbonate (as CaCO3) (mg/L CaCO3)	<5.0	<5.0	<5.0	<5.0	
	Alkalinity, Hydroxide (as CaCO3) (mg/L CaCO3)	<5.0	<5.0	<5.0	<5.0	
	Alkalinity, Total (as CaCO3) (mg/L CaCO3)	40.5	40.4	40.0	145	
	Chloride (Cl) (mg/L)	0.32	0.33	0.31	4.82	
	Fluoride (F) (mg/L)	0.044	0.045	0.046	0.258	
	Nitrate (as N) (mg/L)	<0.030	<0.030	<0.030	<0.030	
	Nitrite (as N) (mg/L)	<0.020	<0.020	<0.020	<0.020	
	Sulfate (SO4) (mg/L)	2.03	2.24	2.22	202	
Total Metals	Aluminum (Al)-Total (mg/L)	0.189	0.159	0.140	<0.050	
	Antimony (Sb)-Total (mg/L)	<0.00060	<0.0060	<0.0060	<0.0060	
	Arsenic (As)-Total (mg/L)	0.0011	<0.010	<0.010	<0.010	
	Barium (Ba)-Total (mg/L)	0.012	<0.10	<0.10	<0.10	
	Beryllium (Be)-Total (mg/L)	<0.0010	<0.010	<0.010	<0.010	
	Bismuth (Bi)-Total (mg/L)	<0.0010	<0.010	<0.010	<0.010	
	Boron (B)-Total (mg/L)	<0.050	<0.50	<0.50	<0.50	
	Cadmium (Cd)-Total (mg/L)	<0.000017	<0.00017	<0.00017	<0.00017	
	Calcium (Ca)-Total (mg/L)	12.7	11.6	12.1	79.9	
	Chromium (Cr)-Total (mg/L)	<0.0010	<0.010	<0.010	<0.010	
	Cobalt (Co)-Total (mg/L)	<0.00050	<0.0050	<0.0050	<0.0050	
	Copper (Cu)-Total (mg/L)	0.0011	<0.010	<0.010	<0.010	
	Iron (Fe)-Total (mg/L)	0.212	<0.20	<0.20	<0.20	
	Lead (Pb)-Total (mg/L)	<0.0010	<0.010	<0.010	<0.010	
	Lithium (Li)-Total (mg/L)	<0.050	<0.50	<0.50	<0.50	
	Magnesium (Mg)-Total (mg/L)	2.87	2.56	2.65	22.4	
	Manganese (Mn)-Total (mg/L)	0.0076	<0.010	<0.010	<0.010	
	Mercury (Hg)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	
	Molybdenum (Mo)-Total (mg/L)	<0.0010	<0.010	<0.010	<0.010	
	Nickel (Ni)-Total (mg/L)	<0.0020	<0.020	<0.020	<0.020	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

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09-NOV-12 12:18 (MT)
Version: FINAL

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1227936-1	L1227936-2	L1227936-3	L1227936-4	
	Description	water	water	water	water	
	Sampled Date	22-OCT-12	22-OCT-12	22-OCT-12	22-OCT-12	
	Sampled Time	15:00	15:00	15:00	15:00	
	Client ID	1A BL DOWNSTREAM	1B BRUCE LAKE DISCHARGE	1C BRUCE LAKE UPSTREAM	1D NORTH PIT INTAKE	
Grouping	**Analyte**					
WATER						
Total Metals	Potassium (K)-Total (mg/L)	1.02	<5.0	<5.0	19.5	
	Selenium (Se)-Total (mg/L)	<0.0010	<0.010	<0.010	<0.010	
	Silver (Ag)-Total (mg/L)	<0.00010	<0.0010	<0.0010	<0.0010	
	Sodium (Na)-Total (mg/L)	1.18	1.1	1.1	10.9	
	Strontium (Sr)-Total (mg/L)	0.0233	0.020	0.021	0.268	
	Tellurium (Te)-Total (mg/L)	<0.0010	<0.010	<0.010	<0.010	
	Thallium (Tl)-Total (mg/L)	<0.00030	<0.0030	<0.0030	<0.0030	
	Tin (Sn)-Total (mg/L)	<0.0010	<0.010	<0.010	<0.010	
	Titanium (Ti)-Total (mg/L)	0.0061	<0.020	<0.020	<0.020	
	Tungsten (W)-Total (mg/L)	<0.010	<0.10	<0.10	<0.10	
	Uranium (U)-Total (mg/L)	<0.0050	<0.050	<0.050	<0.050	
	Vanadium (V)-Total (mg/L)	<0.0010	<0.010	<0.010	<0.010	
	Zinc (Zn)-Total (mg/L)	<0.0030	<0.030	<0.030	<0.030	
	Zirconium (Zr)-Total (mg/L)	<0.0010	<0.010	<0.010	<0.010	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	pH	A	L1227936-1, -2, -3, -4
Comments: mb			
Method Blank	pH	A	L1227936-1, -2, -3, -4
Comments: mb			

Qualifiers for Individual Parameters Listed:

Qualifier	Description
A	Method Blank exceeds ALS DQO. Refer to narrative comments for further information.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-TOT-CAP-TB	Water	Alkalinity, Total (as CaCO3)	APHA 2320 B-Auto-Pot. Titration
BIC-TB	Water	Bicarbonate (HCO3)	APHA 2320 B-POTENTIOMETRIC TITRATION
CL-IC-TB	Water	Anions by Ion Chromatography	EPA 300.1 (modified)
Anions in aqueous matrices are analyzed using ion chromatography with conductivity and/or UV absorbance detectors.			
CO3-TB	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration
COLOUR-TB	Water	Colour, True	CPPA H.5P Spectrophotometry
EC-CAP-TB	Water	Conductivity (EC)	APHA 2510 B-ELECTRODE
F-IC-TB	Water	Anions by Ion Chromatography	EPA 300.1 (modified)
Anions in aqueous matrices are analyzed using ion chromatography with conductivity and/or UV absorbance detectors.			
HARDNESS-CALC-TB	Water	Hardness (as CaCO3)	CALCULATION
HG-T-CVAF-TB	Water	Total Mercury in Water by CVAFS	EPA 245.7
MET-T-MS-TB	Water	Total Metals by ICPMS	APHA 3030E/EPA 6020A
This analysis involves preliminary sample treatment by hotblock acid digestion (APHA 3030E). Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).			
NO2-IC-TB	Water	Anions by Ion Chromatography	EPA 300.1 (modified)
Anions in aqueous matrices are analyzed using ion chromatography with conductivity and/or UV absorbance detectors.			
NO3-IC-TB	Water	Anions by Ion Chromatography	EPA 300.1 (modified)
Anions in aqueous matrices are analyzed using ion chromatography with conductivity and/or UV absorbance detectors.			
OH-TB	Water	Hydroxide	APHA 2320 B-Potentiometric Titration
PH-CAP-TB	Water	pH	APHA 4500-H-ELECTRODE
SO4-IC-TB	Water	Anions by Ion Chromatography	EPA 300.1 (modified)
Anions in aqueous matrices are analyzed using ion chromatography with conductivity and/or UV absorbance detectors.			
SOLIDS-TDS-TB	Water	Total Dissolved Solids	APHA 2540 C (modified)
Aqueous matrices are analyzed using gravimetry and evaporation			
SOLIDS-TOTSUS-TB	Water	Total Suspended Solids	APHA 2540 D (modified)
Aqueous matrices are analyzed using gravimetry			
TURBIDITY-TB	Water	Turbidity	APHA 2130 B-Nephelometer
Aqueous matrices are analyzed using nephelometry with the light scatter measured at a 90" angle.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
TB	ALS ENVIRONMENTAL - THUNDER BAY, ONTARIO, CANADA

Chain of Custody Numbers:

L1227936 CONTD....
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Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Environmental

L1227936-COFC

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thers Limited Company www.alsglobal.com

L1227936.

Page 1 of 1

Company:	Northern Iron Corp.			ory Information	Both questions below must answered for water samples
Contact:	Cameron Tymstra			O. Reg 153 (O. Reg 511 Amend) Table:	Are any samples taken from a regulated DW System? Yes ☒ No
Address:	409 Granville St. Suite 1051			Record of Site Condition Yes No	If yes, an authorized DW COC must be used.
	Vancouver B.C. V6C 1TC			PWQO MISA MMER CCME	Is the water sampled intended for human consumption? Yes ☒ No
Phone:	604-566-8570	Fax:	604-602-9867	Guideline Required:	
Email:	ctymstra@northernironcorp.com			TCLP Regulation 558 Other:	Analysis Request
Project:	Griffith Mine Site	PO:		Service Requested	Please indicate below Filtered, Preserved or both (F, P, F/P)
Quote #				Regular TAT (7 Days)	
Invoice To:		Same as Report:	Yes No	Priority TAT 50% Surcharge (3-5 Days)	
Company:				Emergency TAT 100% Surcharge (1-2 Days)	
Contact:				Specify Date Required:	
Address:				All TAT quoted material is in business days which exclude statutory holidays and weekends. Samples received past 3:00pm or Saturday/Sunday begin the next day.	
Email:					
Account Manager	Tricia	Sampler:	Cameron Tymstra		

Sample #	Sample Identification (This description will appear on the report)	Date	Time	Sample Type	Alkalinity, BiC, Cl, CO3, Colour	Conductivity, F, NO2, NO3, OH, pH	Total Metals, Mercury, Hardness	SO4, TDS, TSS, Turbidity	Number of Containers
1A	~~North Pit Intake~~ BL Downstream	Oct. 22	3:00pm		✗	✗	✗	✗	
1B	Bruce Lake Discharge	"	"		✗	✗	✗	✓	
1C	Bruce Lake Upstream	"	"		✓	✗	✗	✗	
1D	~~Bruce Lake Downstream~~ North Pit Intake	"	"		✓	✗	✗	✗	

Special Instructions / Comments

SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time	Received by:	Date & Time	Temp	Cooling Initiated	Verified by:	Date & Time	Observations: Yes / No ? If Yes add SIF
		CPA	24-Oct-12 8:00	8.9°C	☒ Yes ☐ No	WB	24-OCT-12 10:00	

***Failure to complete all portions of this form may delay analysis.** **TAT may vary dependant on complexity of analysis and lab workload at time of submission. Please contact the lab to confirm TATs. Any known or suspected hazards relating to a sample must be noted on the chain of custody in the comments section. By use of the form the user acknowledges and agrees with the Terms and Conditions as specified on the back page.

TY-FM-0204g v.2 Analytical COC

Northern Iron Corp..
ATTN: ATTN: Cameron Tymstra
Unit 1051 - 409
Granville St
Vancouver BC V6C 1T2

Date Received: 14-NOV-12
Report Date: 27-NOV-12 14:56 (MT)
Version: FINAL

Client Phone: 604-566-8570

Certificate of Analysis

Lab Work Order #: **L1237247**
Project P.O. #: NOT SUBMITTED
Job Reference: GRIFFITH MINE SITE
C of C Numbers:
Legal Site Desc:

Tricia Sampson
Account Manager Supervisor

ADDRESS: 1081 Barton Street, Thunder Bay, ON P7B 5N3 Canada | Phone: +1 807 623 6463 | Fax: +1 807 623 7598
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27-NOV-12 14:56 (MT)
Version: FINAL

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1237247-1	L1237247-2			
	Description	WATER	WATER			
	Sampled Date	12-NOV-12	12-NOV-12			
	Sampled Time	16:15	16:45			
	Client ID	1A NORTH PIT INTAKE	1B BRUCE LAKE DISCHARGE			
Grouping	**Analyte**					
WATER						
Physical Tests	Color, True (T.C.U.)	2.8	62.5			
	Conductivity (EC) (uS/cm)	648	217			
	Hardness (as CaCO3) (mg/L)	318	101			
	pH (pH)	8.16	7.79			
	Total Suspended Solids (mg/L)	<2.0	2.5			
	Total Dissolved Solids (mg/L)	426	141			
	Turbidity (NTU)	0.63	2.49			
Anions and Nutrients	Alkalinity, Bicarbonate (as CaCO3) (mg/L CaCO3)	146	62.4			
	Alkalinity, Carbonate (as CaCO3) (mg/L CaCO3)	<5.0	<5.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L CaCO3)	<5.0	<5.0			
	Alkalinity, Total (as CaCO3) (mg/L CaCO3)	146	62.4			
	Chloride (Cl) (mg/L)	4.99	1.35			
	Fluoride (F) (mg/L)	0.253	0.077			
	Nitrate and Nitrite as N (mg/L)	<0.030	0.031			
	Nitrate (as N) (mg/L)	<0.030	0.031			
	Nitrite (as N) (mg/L)	<0.020	<0.020			
	Sulfate (SO4) (mg/L)	203	45.2			
Total Metals	Aluminum (Al)-Total (mg/L)	0.0121	0.105			
	Antimony (Sb)-Total (mg/L)	<0.00060	<0.00060			
	Arsenic (As)-Total (mg/L)	0.0048	0.0019			
	Barium (Ba)-Total (mg/L)	0.051	0.019			
	Beryllium (Be)-Total (mg/L)	<0.0010	<0.0010			
	Bismuth (Bi)-Total (mg/L)	<0.0010	<0.0010			
	Boron (B)-Total (mg/L)	0.050	<0.050			
	Cadmium (Cd)-Total (mg/L)	0.000025	<0.000017			
	Calcium (Ca)-Total (mg/L)	90.7	29.0			
	Chromium (Cr)-Total (mg/L)	<0.0010	<0.0010			
	Cobalt (Co)-Total (mg/L)	<0.00050	<0.00050			
	Copper (Cu)-Total (mg/L)	0.0018	0.0012			
	Iron (Fe)-Total (mg/L)	<0.020	0.170			
	Lead (Pb)-Total (mg/L)	<0.0010	<0.0010			
	Lithium (Li)-Total (mg/L)	<0.050	<0.050			
	Magnesium (Mg)-Total (mg/L)	22.2	7.02			
	Manganese (Mn)-Total (mg/L)	0.0021	0.0058			
	Mercury (Hg)-Total (mg/L)	<0.000010	<0.000010			
	Molybdenum (Mo)-Total (mg/L)	0.0055	0.0012			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

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ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1237247-1	L1237247-2			
	Description	WATER	WATER			
	Sampled Date	12-NOV-12	12-NOV-12			
	Sampled Time	16:15	16:45			
	Client ID	1A NORTH PIT INTAKE	1B BRUCE LAKE DISCHARGE			
Grouping	**Analyte**					
WATER						
Total Metals	Nickel (Ni)-Total (mg/L)	0.0045	<0.0020			
	Potassium (K)-Total (mg/L)	18.4	4.68			
	Selenium (Se)-Total (mg/L)	<0.0010	<0.0010			
	Silver (Ag)-Total (mg/L)	<0.00010	<0.00010			
	Sodium (Na)-Total (mg/L)	10.5	3.22			
	Strontium (Sr)-Total (mg/L)	0.330	0.0861			
	Tellurium (Te)-Total (mg/L)	<0.0010	<0.0010			
	Thallium (Tl)-Total (mg/L)	<0.00030	<0.00030			
	Tin (Sn)-Total (mg/L)	<0.0010	<0.0010			
	Titanium (Ti)-Total (mg/L)	0.0047	0.0050			
	Tungsten (W)-Total (mg/L)	<0.010	<0.010			
	Uranium (U)-Total (mg/L)	0.0073	<0.0050			
	Vanadium (V)-Total (mg/L)	<0.0010	<0.0010			
	Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030			
	Zirconium (Zr)-Total (mg/L)	<0.0010	<0.0010			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

L1237247 CONTD....
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Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Sulfate (SO4)	MS-B	L1237247-1, -2
Matrix Spike	Calcium (Ca)-Total	MS-B	L1237247-1, -2
Matrix Spike	Magnesium (Mg)-Total	MS-B	L1237247-1, -2
Matrix Spike	Molybdenum (Mo)-Total	MS-B	L1237247-1, -2
Matrix Spike	Potassium (K)-Total	MS-B	L1237247-1, -2
Matrix Spike	Sodium (Na)-Total	MS-B	L1237247-1, -2
Matrix Spike	Strontium (Sr)-Total	MS-B	L1237247-1, -2
Matrix Spike	Aluminum (Al)-Total	MS-B	L1237247-1, -2
Matrix Spike	Calcium (Ca)-Total	MS-B	L1237247-1, -2
Matrix Spike	Magnesium (Mg)-Total	MS-B	L1237247-1, -2
Matrix Spike	Manganese (Mn)-Total	MS-B	L1237247-1, -2

Qualifiers for Individual Parameters Listed:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-TOT-CAP-TB	Water	Alkalinity, Total (as CaCO3)	APHA 2320 B-Auto-Pot. Titration
BIC-TB	Water	Bicarbonate (HCO3)	APHA 2320 B-POTENTIOMETRIC TITRATION
CL-IC-TB	Water	Anions by Ion Chromatography	EPA 300.1 (modified)
Anions in aqueous matrices are analyzed using ion chromatography with conductivity and/or UV absorbance detectors.			
CO3-TB	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration
COLOUR-TB	Water	Colour, True	CPPA H.5P Spectrophotometry
EC-CAP-TB	Water	Conductivity (EC)	APHA 2510 B-ELECTRODE
ETL-N2N3-TB	Water	Calculate from NO2 + NO3	Calculation
F-IC-TB	Water	Anions by Ion Chromatography	EPA 300.1 (modified)
Anions in aqueous matrices are analyzed using ion chromatography with conductivity and/or UV absorbance detectors.			
HARDNESS-CALC-TB	Water	Hardness (as CaCO3)	CALCULATION
HG-T-CVAF-TB	Water	Total Mercury in Water by CVAFS	EPA 245.7
MET-T-MS-TB	Water	Total Metals by ICPMS	APHA 3030E/EPA 6020A
This analysis involves preliminary sample treatment by hotblock acid digestion (APHA 3030E). Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).			
NO2-IC-TB	Water	Anions by Ion Chromatography	EPA 300.1 (modified)
Anions in aqueous matrices are analyzed using ion chromatography with conductivity and/or UV absorbance detectors.			
NO3-IC-TB	Water	Anions by Ion Chromatography	EPA 300.1 (modified)
Anions in aqueous matrices are analyzed using ion chromatography with conductivity and/or UV absorbance detectors.			
OH-TB	Water	Hydroxide	APHA 2320 B-Potentiometric Titration
PH-CAP-TB	Water	pH	APHA 4500-H-ELECTRODE
SO4-IC-TB	Water	Anions by Ion Chromatography	EPA 300.1 (modified)
Anions in aqueous matrices are analyzed using ion chromatography with conductivity and/or UV absorbance detectors.			
SOLIDS-TDS-TB	Water	Total Dissolved Solids	APHA 2540 C (modified)
Aqueous matrices are analyzed using gravimetry and evaporation			
SOLIDS-TOTSUS-TB	Water	Total Suspended Solids	APHA 2540 D (modified)
Aqueous matrices are analyzed using gravimetry			
TURBIDITY-TB	Water	Turbidity	APHA 2130 B-Nephelometer
Aqueous matrices are analyzed using nephelometry with the light scatter measured at a 90° angle.			

L1237247 CONTD....
PAGE 5 of 5
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Version: FINAL

Reference Information

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
TB	ALS ENVIRONMENTAL - THUNDER BAY, ONTARIO, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

(ALS) Environmental

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L1237247

Page ___ of ___

Company:	Northern Iron Corp.		
Contact:	Cameron Tymstra		
Address:	409 Granville St. Suite 1051		
Vancouver B.C. V6C 1TC			
Phone:	604-566-8570	Fax:	604-602-9867
Email:	ctymstra@northernironcorp.com		
Project:	Griffith Mine Site	PO:	
Quote #			
Invoice To:		Same as Report: ☑ Yes ☐ No	
Company:			
Contact:			
Address:			
Email:			
Account Manager	Tricia	Sampler:	Jay Shiels

Regulatory Information

☐ O. Reg 153 (O. Reg 511 Amend) Table:____

Record of Site Condition ☐ Yes ☐ No

PWQO ☐ MISA ☐ MMER ☐ CCME ☐

Guideline Required:

TCLP Regulation 558 ☐ Other:

Service Requested

☐ Regular TAT (7 Days)

☐ Priority TAT 50% Surcharge (3-5 Days)

☐ Emergency TAT 100% Surcharge (1-2 Days)

Specify Date Required:

All TAT quoted material is in business days which exclude statutory holidays and weekends. Samples received past 3:00pm or Saturday/Sunday begin the next day.

Both questions below must answered for water samples

Are any samples taken from a regulated DW System? ☐ Yes ☐ No

If yes, an authorized DW COC must be used.

Is the water sampled intended for human consumption? ☐ Yes ☐ No

Analysis Request

Please indicate below Filtered, Preserved or both (F, P, F/P)

Sample #	Sample Identification (This description will appear on the report)	Date	Time	Sample Type	Alkalinity, BIC, Cl, CO3, Colour	Conductivity, F, NO2, NO3, OH, pH	Total Metals, Mercury, Hardness	SO4, TDS, TSS, Turbidity	Number of Containers
1A	North Pit Intake	Nov 12/12	4:15pm	Water	x	x	x	x	
1B	Bruce Lake Discharge	Nov 12/12	4:45pm	Water	x	x	x	x	
1C	Bruce Lake Point				x	x	x	x	
1D	Bruce Lake Dyke.				x	x	x	x	

Special Instructions / Comments

Collect - Courtesy - 2784709

SEE SIF

SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time	Received by:	Date & Time	Temp	Cooling Initiated	Verified by:	Date & Time	Observations:
T. Shiels	Nov 12/2012	LSS	13:35 14-NOV-12	13.8	☐ Yes ☐ No	LB	13:35 14-NOV-12	(Yes) No ? If Yes add SIF

****Failure to complete all portions of this form may delay analysis.** **TAT may vary dependant on complexity of analysis and lab workload at time of submission. Please contact the lab to confirm TATs. Any known or suspected hazards relating to a sample must be noted on the chain of custody in the comments section. By use of the form the user acknowledges and agrees with the Terms and Conditions as specified on the back page.

TY-FM-0204g v.2 Analytical COC

Northern Iron Corp.
ATTN: ATTN:
Unit 1051 - 409
Granville St
Vancouver BC V6C 1T2

Date Received: 28-NOV-12
Report Date: 04-DEC-12 14:55 (MT)
Version: FINAL

Client Phone: 604-566-8570

Certificate of Analysis

Lab Work Order #: L1242720
Project P.O. #: NOT SUBMITTED
Job Reference: GRIFFITH MINE SITE
C of C Numbers:
Legal Site Desc:

Tricia Sampson
Account Manager Supervisor

ADDRESS: 1081 Barton Street, Thunder Bay, ON P7B 5N3 Canada | Phone: +1 807 623 6463 | Fax: +1 807 623 7598
ALS CANADA LTD Part of the ALS Group A Campbell Brothers Limited Company

L1242720 CONTD....
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04-DEC-12 14:55 (MT)
Version: FINAL

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1242720-1	L1242720-2	L1242720-3	L1242720-4	
	Description	WATER	WATER	WATER	WATER	
	Sampled Date	26-NOV-12	26-NOV-12	26-NOV-12	26-NOV-12	
	Sampled Time	10:00	10:30	11:30	13:30	
	Client ID	A-SG-#1	B-SG#2-DISCHARGE	C-SG#3	NORTH PIT	
Grouping	**Analyte**					
WATER						
Physical Tests	Color, True (T.C.U.)	49.9	49.1	60.5	<1.0	
	Conductivity (EC) (uS/cm)	87.1	244	148	680	
	Hardness (as CaCO3) (mg/L)	44.2	114	69.7	315	
	pH (pH)	7.42	7.65	7.56	8.04	
	Total Suspended Solids (mg/L)	3.3	2.2	<2.0	<2.0	
	Total Dissolved Solids (mg/L)	70	163	122	466	
	Turbidity (NTU)	2.26	1.98	2.92	0.59	
Anions and Nutrients	Alkalinity, Bicarbonate (as CaCO3) (mg/L CaCO3)	40.1	66.6	51.8	147	
	Alkalinity, Carbonate (as CaCO3) (mg/L CaCO3)	<5.0	<5.0	<5.0	<5.0	
	Alkalinity, Hydroxide (as CaCO3) (mg/L CaCO3)	<5.0	<5.0	<5.0	<5.0	
	Alkalinity, Total (as CaCO3) (mg/L CaCO3)	40.1	66.6	51.8	147	
	Chloride (Cl) (mg/L)	<2.0	<2.0	<2.0	4.7	
	Fluoride (mg/L)	<0.10	<0.10	<0.10	0.23	
	Nitrate-N (NO3-N) (mg/L)	<0.10	<0.10	<0.10	<0.10	
	Nitrite-N (NO2-N) (mg/L)	<0.10	<0.10	<0.10	<0.10	
	Sulphate (SO4) (mg/L)	2.2	54.4	19.1	193	
Total Metals	Aluminum (Al)-Total (mg/L)	0.0650	0.0645	0.0751	0.0137	
	Antimony (Sb)-Total (mg/L)	<0.00060	<0.00060	<0.00060	<0.00060	
	Arsenic (As)-Total (mg/L)	0.0011	0.0020	0.0014	0.0047	
	Barium (Ba)-Total (mg/L)	<0.010	0.020	0.014	0.052	
	Beryllium (Be)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Bismuth (Bi)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Boron (B)-Total (mg/L)	<0.050	<0.050	<0.050	0.067	
	Cadmium (Cd)-Total (mg/L)	<0.000017	<0.000017	<0.000017	0.000024	
	Calcium (Ca)-Total (mg/L)	13.3	32.5	20.1	87.5	
	Chromium (Cr)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Cobalt (Co)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Copper (Cu)-Total (mg/L)	0.0010	0.0012	0.0011	0.0017	
	Iron (Fe)-Total (mg/L)	0.141	0.115	0.132	<0.020	
	Lead (Pb)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Lithium (Li)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	
	Magnesium (Mg)-Total (mg/L)	2.71	7.99	4.75	23.5	
	Manganese (Mn)-Total (mg/L)	0.0079	0.0058	0.0065	0.0017	
	Mercury (Hg)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	
	Molybdenum (Mo)-Total (mg/L)	<0.0010	0.0014	<0.0010	0.0051	
	Nickel (Ni)-Total (mg/L)	<0.0020	<0.0020	<0.0020	0.0045	

L1242720 CONTD....
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Version: FINAL

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1242720-1	L1242720-2	L1242720-3	L1242720-4	
	Description	WATER	WATER	WATER	WATER	
	Sampled Date	26-NOV-12	26-NOV-12	26-NOV-12	26-NOV-12	
	Sampled Time	10:00	10:30	11:30	13:30	
	Client ID	A-SG-#1	B-SG#2-DISCHARGE	C-SG#3	NORTH PIT	
Grouping	**Analyte**					
WATER						
Total Metals	Potassium (K)-Total (mg/L)	0.89	5.51	2.56	19.4	
	Selenium (Se)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Silver (Ag)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Sodium (Na)-Total (mg/L)	1.18	3.67	2.06	11.1	
	Strontium (Sr)-Total (mg/L)	0.0229	0.0957	0.0509	0.325	
	Tellurium (Te)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Thallium (Tl)-Total (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	
	Tin (Sn)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Titanium (Ti)-Total (mg/L)	0.0026	0.0031	0.0025	0.0042	
	Tungsten (W)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	
	Uranium (U)-Total (mg/L)	<0.0050	<0.0050	<0.0050	0.0072	
	Vanadium (V)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	
	Zirconium (Zr)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	

L1242720 CONTD....
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Version: FINAL

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-TOT-CAP-TB	Water	Alkalinity, Total (as CaCO3)	APHA 2320 B-Auto-Pot. Titration
BIC-TB	Water	Bicarbonate (HCO3)	APHA 2320 B-POTENTIOMETRIC TITRATION
CL-WT	Water	Chloride	EPA 300.0 (IC)
CO3-TB	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration
COLOUR-TB	Water	Colour, True	CPPA H.5P Spectrophotometry
EC-CAP-TB	Water	Conductivity (EC)	APHA 2510 B-ELECTRODE
F-WT	Water	Fluoride	EPA 300.0 (IC)
HARDNESS-CALC-TB	Water	Hardness (as CaCO3)	CALCULATION
HG-T-CVAF-TB	Water	Total Mercury in Water by CVAFS	EPA 245.7
MET-T-MS-TB	Water	Total Metals by ICPMS	APHA 3030E/EPA 6020A
This analysis involves preliminary sample treatment by hotblock acid digestion (APHA 3030E). Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).			
NO2-WT	Water	Nitrite-N	EPA 300.0 (IC)
A filtered water sample (drinking waters-unfiltered) is analyzed by ion chromatography.			
NO3-WT	Water	Nitrate-N	EPA 300.0 (IC)
A filtered water sample (drinking waters-unfiltered) is analyzed by ion chromatography.			
OH-TB	Water	Hydroxide	APHA 2320 B-Potentiometric Titration
PH-CAP-TB	Water	pH	APHA 4500-H-ELECTRODE
SO4-WT	Water	Sulphate	EPA 300.0 (IC)
SOLIDS-TDS-TB	Water	Total Dissolved Solids	APHA 2540 C (modified)
Aqueous matrices are analyzed using gravimetry and evaporation			
SOLIDS-TOTSUS-TB	Water	Total Suspended Solids	APHA 2540 D (modified)
Aqueous matrices are analyzed using gravimetry			
TURBIDITY-TB	Water	Turbidity	APHA 2130 B-Nephelometer
Aqueous matrices are analyzed using nephelometry with the light scatter measured at a 90° angle.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
TB	ALS ENVIRONMENTAL - THUNDER BAY, ONTARIO, CANADA
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

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Page __ of __

Company:	Northern Iron Corp.		
Contact:	Cameron Tymstra		
Address:	409 Granville St. Suite 1051		
Vancouver B.C. V6C 1TC			
Phone:	604-566-8570	Fax:	604-602-9867
Email:	ctymstra@northernironcorp.com		
Project:	Griffith Mine Site	PO:	
Quote #			
Invoice To:		Same as Report: ☑ Yes ☐ No	
Company:			
Contact:			
Address:			
Email:			
Account Manager	Tricia	Sampler:	

Regulatory Information

- ☐ O. Reg 153 (O. Reg 511 Amend) Table:_____
- Record of Site Condition ☐ Yes ☐ No
- PWQO ☐ MISA ☐ MMER ☐ CCME ☐
- Guideline Required:
- TCLP Regulation 558 ☐ Other:

Service Requested

- ☐ Regular TAT (7 Days)
- ☐ Priority TAT 50% Surcharge (3-5 Days)
- ☐ Emergency TAT 100% Surcharge (1-2 Days)
- Specify Date Required:

All TAT quoted material is in business days which exclude statutory holidays and weekends. Samples received past 3:00pm or Saturday/Sunday begin the next day.

Both questions below must answered for water samples

- Are any samples taken from a regulated DW System? ☐ Yes ☐ No
- If yes, an authorized DW COC must be used.
- Is the water sampled intended for human consumption? ☐ Yes ☐ No

Analysis Request

Please indicate below Filtered, Preserved or both (F, P, F/P)

Sample #	Sample Identification (This description will appear on the report)	Date	Time	Sample Type	Alkalinity, BiC, Cl, CO3, Colour Conductivity, F, NO2, NO3, OH, pH	Total Metals, Mercury, Hardness	SO4, TDS, TSS, Turbidity	Number of Containers
1 A	SG # 1	Nov/26/12	10:00AM	water				
2 B	SG # 2 - Discharge	Nov/26/12	10:30AM	water				
3 C	SG # 3	Nov/26/12	11:30AM	water				
4 D	North Pit	Nov/26/12	1:30PM	water				

Special Instructions / Comments

SEE SIF

SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time	Received by:	Date & Time	Temp	Cooling Initiated	Verified by:	Date & Time	Observations: Yes / No ? If Yes add SIF
		KUM	NOV 28/12 10:45	12.2	☐ Yes ☐ No	KUM	NOV 28/12 18:00	

***Failure to complete all portions of this form may delay analysis.** **TAT may vary dependant on complexity of analysis and lab workload at time of submission. Please contact the lab to confirm TATs. Any known or suspected hazards relating to a sample must be noted on the chain of custody in the comments section. By use of the form the user acknowledges and agrees with the Terms and Conditions as specified on the back page.

TY-FM-0204g v.2 Analytical COC

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Campbell Brothers Limited Company www.alsglobal.com

L1242720

Page __ of __

Company:	Northern Iron Corp.			Regulatory Information	Both questions below must answered for water samples
Contact:	Cameron Tymstra			☐ O. Reg 153 (O. Reg 511 Amend) Table:____	Are any samples taken from a regulated DW System? ☐ Yes ☐ No
Address:	409 Granville St. Suite 1051			Record of Site Condition ☐ Yes ☐ No	If yes, an authorized DW COC must be used.
	Vancouver B.C. V6C 1TC			PWQO ☐ MISA ☐ MMER ☐ CCME ☐	Is the water sampled intended for human consumption? ☐ Yes ☐ No
Phone:	604-566-8570	Fax:	604-602-9867	Guideline Required:	
Email:	ctymstra@northernironcorp.com			TCLP Regulation 558 ☐ Other:	Analysis Request
Project:	Griffith Mine Site	PO:		Service Requested	Please indicate below Filtered, Preserved or both (F, P, F/P)
Quote #				☐ Regular TAT (7 Days)	
Invoice To:		Same as Report:	☑ Yes ☐ No	☐ Priority TAT 50% Surcharge (3-5 Days)	
Company:				☐ Emergency TAT 100% Surcharge (1-2 Days)	
Contact:				Specify Date Required:	
Address:				All TAT quoted material is in business days which exclude statutory holidays and weekends. Samples received past 3:00pm or Saturday/Sunday begin the next day.	
Email:					
Account Manager	Tricia	Sampler:			

	Sample #	Sample Identification (This description will appear on the report)	Date	Time	Sample Type	Alkalinity, BIC, Cl, CO3, Colour	Conductivity, F, NO2, NO3, OH, pH	Total Metals, Mercury, Hardness	SO4, TDS, TSS, Turbidity	Number of Containers
1	A	SG #1	Nov/26/12	10:00AM	water					
2	B	SG #2 - Discharge	Nov/26/12	10:30AM	water					
3	C	SG #3	Nov/26/12	11:30AM	water					
4	D	North Pit	Nov/26/12	1:30pm	water					

Special Instructions / Comments

SEE SIF

SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time	Received by:	Date & Time	Temp	Cooling Initiated	Verified by:	Date & Time	Observations: Yes / No ? If Yes add SIF
		KUM	NOV 28/12 10:45	12.2	☐ Yes ☐ No	KUM	NOV 28/12 18:10	

**Failure to complete all portions of this form may delay analysis. **TAT may vary dependant on complexity of analysis and lab workload at time of submission. Please contact the lab to confirm TATs. Any known or suspected hazards relating to a sample must be noted on the chain of custody in the comments section. By use of the form the user acknowledges and agrees with the Terms and Conditions as specified on the back page.

TY-FM-0204g v.2 Analytical COC

Northern Iron Corp.
ATTN: ATTN: Cameron Tymstra
Unit 1051 - 409
Granville St
Vancouver BC V6C 1T2

Date Received: 12-DEC-12
Report Date: 19-DEC-12 14:52 (MT)
Version: FINAL

Client Phone: 604-566-8570

Certificate of Analysis

Lab Work Order #: **L1248311**
Project P.O. #: NOT SUBMITTED
Job Reference: GRIFFITH MINE SITE
C of C Numbers:
Legal Site Desc:

Tricia Sampson
Account Manager Supervisor

ADDRESS: 1081 Barton Street, Thunder Bay, ON P7B 5N3 Canada | Phone: +1 807 623 6463 | Fax: +1 807 623 7598
ALS CANADA LTD Part of the ALS Group A Campbell Brothers Limited Company

L1248311 CONTD....
PAGE 2 of 5
19-DEC-12 14:52 (MT)
Version: FINAL

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1248311-1	L1248311-2	L1248311-3	L1248311-4	
Description	WATER	WATER	WATER	WATER	
Sampled Date	11-DEC-12	11-DEC-12	11-DEC-12	11-DEC-12	
Sampled Time	11:25	14:00	12:30	13:05	
Client ID	1	2	3	PIT	
Grouping	**Analyte**				
WATER					
Physical Tests	Color, True (T.C.U.)	43.0	33.5	39.4	1.7	
	Conductivity (EC) (uS/cm)	95.3	412	157	706	
	Hardness (as CaCO3) (mg/L)	45.4	118	73.4	381	
	pH (pH)	7.53	7.79	7.62	8.14	
	Total Suspended Solids (mg/L)	2.6	2.0	2.2	2.3	
	Total Dissolved Solids (mg/L)	60	257	93	536	
	Turbidity (NTU)	2.00	1.44	1.65	0.42	
Anions and Nutrients	Alkalinity, Bicarbonate (as CaCO3) (mg/L CaCO3)	42.7	197	52.6	151	
	Alkalinity, Carbonate (as CaCO3) (mg/L CaCO3)	<5.0	<5.0	<5.0	<5.0	
	Alkalinity, Hydroxide (as CaCO3) (mg/L CaCO3)	<5.0	<5.0	<5.0	<5.0	
	Alkalinity, Total (as CaCO3) (mg/L CaCO3)	42.7	197	52.6	151	
	Chloride (Cl) (mg/L)	0.76	1.48	0.72	5.38	
	Fluoride (F) (mg/L)	<0.030	0.087	0.068	0.267	
	Nitrate and Nitrite as N (mg/L)	0.071	<0.030	0.053	<0.030	
	Nitrate (as N) (mg/L)	0.071	<0.030	0.053	<0.030	
	Nitrite (as N) (mg/L)	<0.020	<0.020	<0.020	<0.020	
	Sulfate (SO4) (mg/L)	3.62	56.7	21.6	217	
Total Metals	Aluminum (Al)-Total (mg/L)	0.0598	0.0533	0.0631	0.0072	
	Antimony (Sb)-Total (mg/L)	<0.00060	<0.00060	<0.00060	<0.00060	
	Arsenic (As)-Total (mg/L)	0.0010	0.0019	0.0014	0.0049	
	Barium (Ba)-Total (mg/L)	<0.010	0.019	0.013	0.049	
	Beryllium (Be)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Bismuth (Bi)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Boron (B)-Total (mg/L)	<0.050	<0.050	<0.050	0.064	
	Cadmium (Cd)-Total (mg/L)	0.000020	<0.000017	<0.000017	0.000035	
	Calcium (Ca)-Total (mg/L)	13.5	33.6	21.4	111	
	Chromium (Cr)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Cobalt (Co)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Copper (Cu)-Total (mg/L)	0.0013	0.0011	0.0012	0.0020	
	Iron (Fe)-Total (mg/L)	0.121	0.071	0.120	0.056	
	Lead (Pb)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Lithium (Li)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	
	Magnesium (Mg)-Total (mg/L)	2.81	8.35	4.85	25.1	
	Manganese (Mn)-Total (mg/L)	0.0079	0.0064	0.0076	0.0014	
	Mercury (Hg)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	
	Molybdenum (Mo)-Total (mg/L)	<0.0010	0.0014	<0.0010	0.0054	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

L1248311 CONTD....
PAGE 3 of 5
19-DEC-12 14:52 (MT)
Version: FINAL

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1248311-1	L1248311-2	L1248311-3	L1248311-4	
	Description	WATER	WATER	WATER	WATER	
	Sampled Date	11-DEC-12	11-DEC-12	11-DEC-12	11-DEC-12	
	Sampled Time	11:25	14:00	12:30	13:05	
	Client ID	1	2	3	PIT	
Grouping	**Analyte**					
WATER						
Total Metals	Nickel (Ni)-Total (mg/L)	<0.0020	<0.0020	<0.0020	0.0045	
	Potassium (K)-Total (mg/L)	0.97	5.36	2.61	19.0	
	Selenium (Se)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Silver (Ag)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Sodium (Na)-Total (mg/L)	1.28	3.78	2.20	11.7	
	Strontium (Sr)-Total (mg/L)	0.0245	0.0982	0.0509	0.340	
	Tellurium (Te)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Thallium (Tl)-Total (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	
	Tin (Sn)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Titanium (Ti)-Total (mg/L)	0.0021	0.0026	0.0029	0.0036	
	Tungsten (W)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	
	Uranium (U)-Total (mg/L)	<0.0050	<0.0050	<0.0050	0.0079	
	Vanadium (V)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Zinc (Zn)-Total (mg/L)	0.0059	<0.0030	0.0046	<0.0030	
	Zirconium (Zr)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

L1248311 CONTD....
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Version: FINAL

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	pH	A	L1248311-1, -2, -3, -4
Comments: MB			
Method Blank	pH	A	L1248311-1, -2, -3, -4
Comments: MB			
Matrix Spike	Barium (Ba)-Total	MS-B	L1248311-1, -2, -3, -4
Matrix Spike	Calcium (Ca)-Total	MS-B	L1248311-1, -2, -3, -4
Matrix Spike	Magnesium (Mg)-Total	MS-B	L1248311-1, -2, -3, -4
Matrix Spike	Potassium (K)-Total	MS-B	L1248311-1, -2, -3, -4
Matrix Spike	Sodium (Na)-Total	MS-B	L1248311-1, -2, -3, -4
Matrix Spike	Strontium (Sr)-Total	MS-B	L1248311-1, -2, -3, -4
Matrix Spike	Uranium (U)-Total	MS-B	L1248311-1, -2, -3, -4

Qualifiers for Individual Parameters Listed:

Qualifier	Description
A	Method Blank exceeds ALS DQO. Refer to narrative comments for further information.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-TOT-CAP-TB	Water	Alkalinity, Total (as CaCO3)	APHA 2320 B-Auto-Pot. Titration
BIC-TB	Water	Bicarbonate (HCO3)	APHA 2320 B-POTENTIOMETRIC TITRATION
CL-IC-TB	Water	Anions by Ion Chromatography	EPA 300.1 (modified)
Anions in aqueous matrices are analyzed using ion chromatography with conductivity and/or UV absorbance detectors.			
CO3-TB	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration
COLOUR-TB	Water	Colour, True	CPPA H.5P Spectrophotometry
EC-CAP-TB	Water	Conductivity (EC)	APHA 2510 B-ELECTRODE
ETL-N2N3-TB	Water	Calculate from NO2 + NO3	Calculation
F-IC-TB	Water	Anions by Ion Chromatography	EPA 300.1 (modified)
Anions in aqueous matrices are analyzed using ion chromatography with conductivity and/or UV absorbance detectors.			
HARDNESS-CALC-TB	Water	Hardness (as CaCO3)	CALCULATION
HG-T-CVAF-TB	Water	Total Mercury in Water by CVAFS	EPA 245.7
MET-T-MS-TB	Water	Total Metals by ICPMS	APHA 3030E/EPA 6020A
This analysis involves preliminary sample treatment by hotblock acid digestion (APHA 3030E). Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).			
NO2-IC-TB	Water	Anions by Ion Chromatography	EPA 300.1 (modified)
Anions in aqueous matrices are analyzed using ion chromatography with conductivity and/or UV absorbance detectors.			
NO3-IC-TB	Water	Anions by Ion Chromatography	EPA 300.1 (modified)
Anions in aqueous matrices are analyzed using ion chromatography with conductivity and/or UV absorbance detectors.			
OH-TB	Water	Hydroxide	APHA 2320 B-Potentiometric Titration
PH-CAP-TB	Water	pH	APHA 4500-H-ELECTRODE
SO4-IC-TB	Water	Anions by Ion Chromatography	EPA 300.1 (modified)
Anions in aqueous matrices are analyzed using ion chromatography with conductivity and/or UV absorbance detectors.			
SOLIDS-TDS-TB	Water	Total Dissolved Solids	APHA 2540 C (modified)
Aqueous matrices are analyzed using gravimetry and evaporation			
SOLIDS-TOTSUS-TB	Water	Total Suspended Solids	APHA 2540 D (modified)
Aqueous matrices are analyzed using gravimetry			
TURBIDITY-TB	Water	Turbidity	APHA 2130 B-Nephelometer

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Reference Information

Aqueous matrices are analyzed using nephelometry with the light scatter measured at a 90" angle.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
TB	ALS ENVIRONMENTAL - THUNDER BAY, ONTARIO, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Environmental

L1248311-COFC

8B 5N3 Canada PHONE +1 807 623 6463 FAX +1 807 623 7598
ell Brothers Limited Company www.alsglobal.com

L1248311 Page __ of __

Company:	Northern Iron Corp.		
Contact:	Cameron Tymstra		
Address:	409 Granville St. Suite 1051		
Vancouver B.C. V6C 1TC			
Phone:	604-566-8570	Fax:	604-602-9867
Email:	clymstra@northernironcorp.com		
Project:	Griffith Mine Site	PO:	
Quote #			
Invoice To:		Same as Report: ☑ Yes ☐ No	
Company:			
Contact:			
Address:			
Email:			
Account Manager	Tricia	Sampler:	

ulatory Information
Reg 511 Amend) Table:____
Record of Site Condition ☐ Yes ☐ No
PWQO ☐ MISA ☐ MMER ☐ CCME ☐
Guideline Required:
TCLP Regulation 558 ☐ Other:

Service Requested
☐ Regular TAT (7 Days)
☐ Priority TAT 50% Surcharge (3-5 Days)
☐ Emergency TAT 100% Surcharge (1-2 Days)
Specify Date Required:

All TAT quoted material is in business days which exclude statutory holidays and weekends. Samples received past 3:00pm or Saturday/Sunday begin the next day.

Both questions below must answered for water samples
Are any samples taken from a regulated DW System? ☐ Yes ☐ No
If yes, an authorized DW COC must be used.
Is the water sampled intended for human consumption? ☐ Yes ☐ No

Analysis Request
Please indicate below Filtered, Preserved or both (F, P, F/P)

Sample #	Sample Identification (This description will appear on the report)	Date	Time	Sample Type	Alkalinity, BIC, Cl, CO3, Colour	Conductivity, F, NO2, NO3, OH, pH	Total Metals, Mercury, Hardness	SO4, TDS, TSS, Turbidity	Number of Containers
1		11/12/12	11:25am						
2		11/12/12	2:00pm						
3		11/12/12	12:30pm						
Pit		11/12/12	1:05pm						

Special Instructions / Comments

SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time	Received by:	Date & Time	Temp	Cooling Initiated	Verified by:	Date & Time	Observations: (Yes) / No ? If Yes add SIF
	Dec 11/2:15pm	KUM	Dec. 12/12 10:30	10.2	☐ Yes ☐ No	KUM	Dec. 12/12 10:31	

Failure to complete all portions of this form may delay analysis. **TAT may vary dependant on complexity of analysis and lab workload at time of submission. Please contact the lab to confirm TATs. Any known or suspected hazards relating to a sample must be noted on the chain of custody in the comments section. By use of the form the user acknowledges and agrees with the Terms and Conditions as specified on the back page.

See SIF

TY-FM-0204g v.2 Analytical COC

Appendix 7: Photographs of Griffith Mine Site

Concentrator Foundations Looking North

Haul Road to South Pit Looking South

Inside Rail Load-out Silo

Looking South at Tailings

Kiln Foundation Looking Northeast

Kiln Foundation Looking West

Plant Foundation Looking South

Rail Load-out Silo Looking South

Ramp into North Pit Looking South

Ramp into South Pit from West

Description of Historical Griffith Mine (1968)

The Griffith Mine

Pickands Mather & Co., Managing Agent

Red Lake, Ontario, Canada

CANADIAN BECHTEL LIMITED

MONTREAL, QUEBEC, CANADA

March 1968

THE GRIFFITH MINE

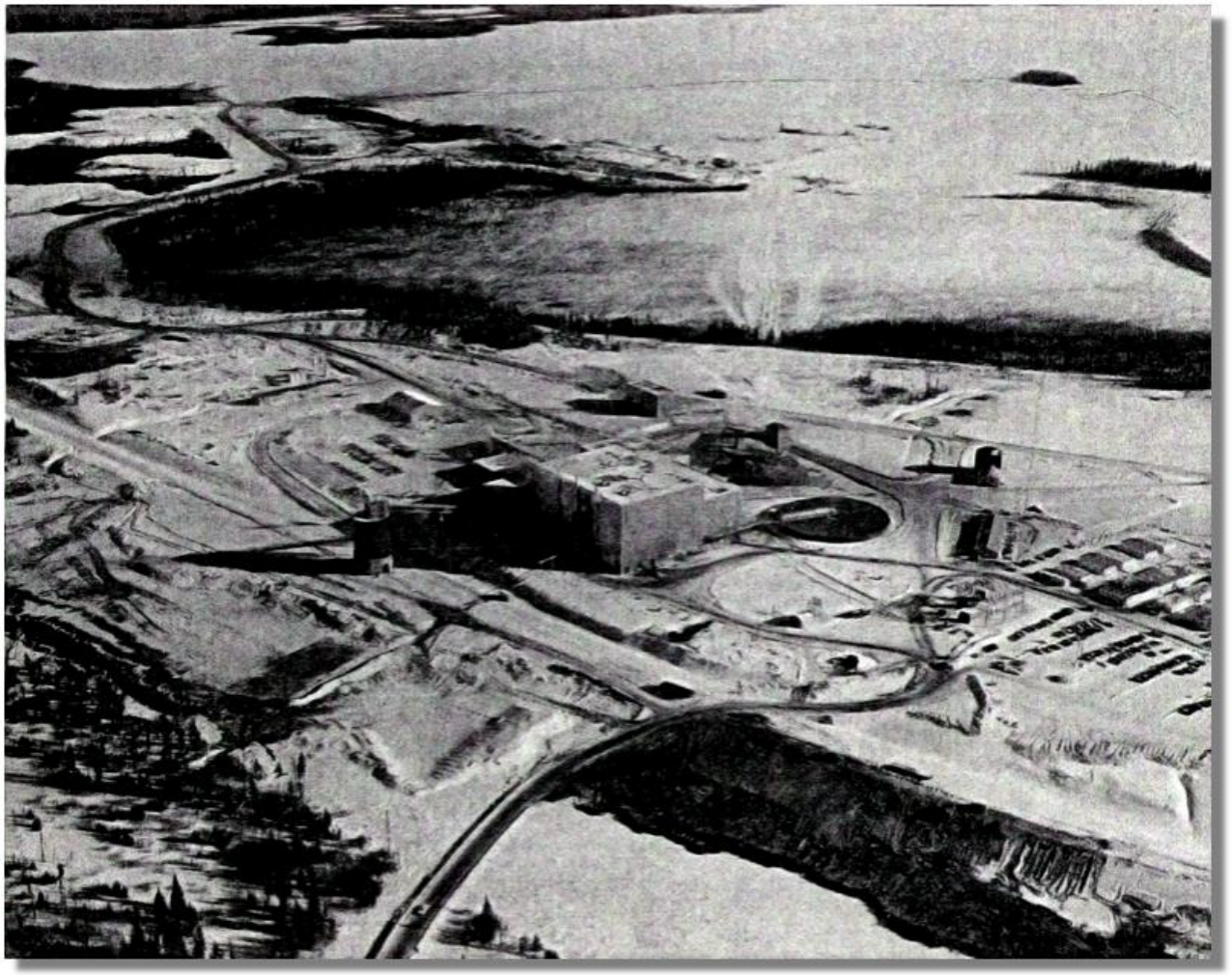
PICKANDS MATHER AND CO.
Managing Agents

for

THE STEEL COMPANY OF CANADA LTD.

BECHTEL JOB NO. 5900

LOCATION:	Bruce Lake, in the Red Lake Division, Sioux Lookout District, Northern Ontario.
PLANT CAPACITY:	The plant is designed to produce 1,500,000 LTPY of high grade iron ore pellets, from low grade magnetic iron ore.
DESCRIPTION:	The major facilities comprise a separate primary crushing building; an outside crude ore stockpile; a grinding, concentrating and pelletizing building with adjacent offices and shops; and a 7000 LT load-out bin. Additional facilities include the main sub-station, 200 ft. dia. outside tailing thickener, lake and plant pumphouses, a truck storage building, and a propane gas storage plant. Some special features of the plant are the dyking required in the lake to prevent flooding of the mine, and to improve the plant tailings, and the 67 mile railroad and 80 mile natural gas line to the site.
DATE OF START OF FINAL ENGINEERING:	December 21, 1965
DATE OF START OF SITE CLEARING:	January 8, 1966
DATE OF FIRST PRODUCTION:	March 1, 1968



THE GRIFFITH MINE

CONCENTRATOR, EAST WALL

Shown are the 105 foot long radial stacker, which can stockpile up to 30,000 long tons of crude ore, the twin mill feed conveyor galleries from the stockpile to the grinding section of the concentrator, and the 200 foot diameter tailings thickener tank and bridge.

THE GRIFFITH MINE

CONCENTRATOR, EAST WALL

The East part of the Concentrator Building houses the primary and secondary grinding circuits, and the concentrating equipment. The tailings from this equipment flows by gravity to the tailings thickener, and the concentrate is pumped to the pelletizing area on the West of the plant.

CONCENTRATOR, WEST WALL

The West part of the Concentrator houses the filters, balling drums and shaft furnaces for the 3-line pelletizing plant.

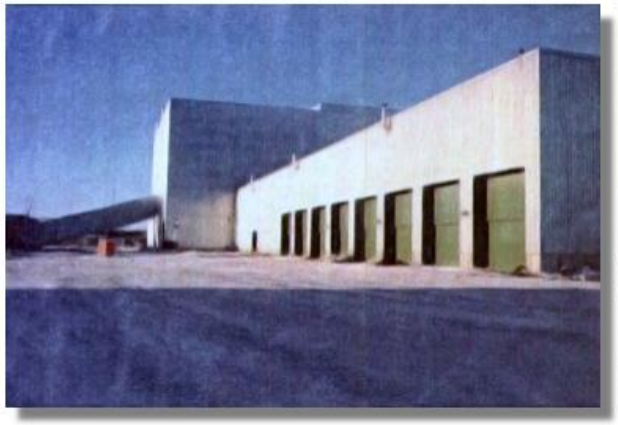
Shown are the main stacks from the three shaft furnaces, and the 800 ton storage bin for the bentonite used in the balling process. The bentonite is transported by rail to the plant, and unloaded dry into the bin by air pumps.

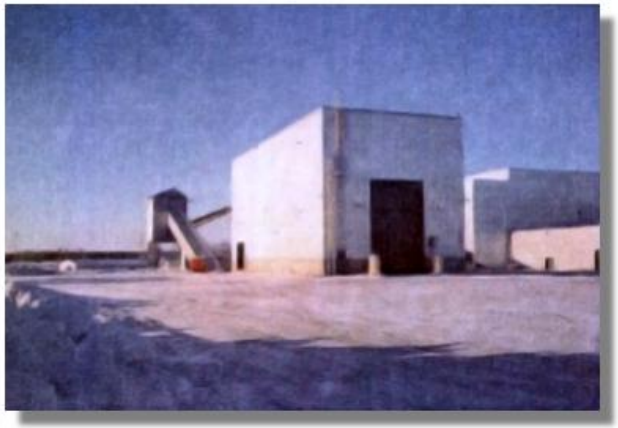
PRIMARY CRUSHER BUILDING

A separate building covers the primary crusher, which is located in an excavated pocket in rock. A 54 inch wide apron feeder beneath the crusher feeds the crushed ore to 48 inch wide conveyor, which transfers the ore to the radial stacker.

SERVICE BUILDING

The service building housing the shop, garage and warehouse facilities is part of the main plant complex, thus providing a good flow of men and materials for operation and maintenance.





THE GRIFFITH MINE

MAIN SUB-STATION

The 115 KV, 33,000 KW incoming power line terminates at the main sub-station, which consists of isolating and circuit switches, and three 115 KV/13.8 KV, 16 MVA transformers.

PLANT PUMPHOUSE

Fresh water from the lake is pumped to the 50 foot diameter insulated storage tank, adjacent to the plant pumphouse. The pumphouse contains two 4500 USGPM process water pumps, and two 1000 USGPM fire pumps.

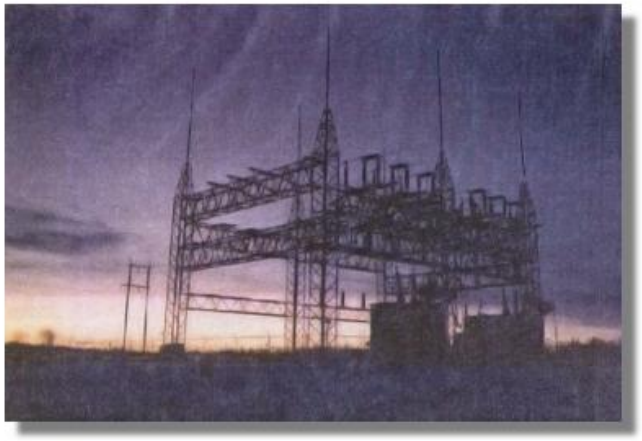
PEBBLE GRINDING MILLS

Secondary grinding is carried out in four 2000 HP rubber-lined, pebble mills. The mills operate in closed circuit with fourteen 10-inch cyclones, arranged radially, and the pebbles required for grinding are screened from the primary autogenous mill discharge.

TAILINGS THICKENER

The 200 foot diameter tailings thickener dewaters the 400 LTPH of plant tailings, and recovers for re-use approximately 30,000 USGPM of water. The thickener is fed by a launder from the concentrator building, and an overflow tunnel is provided from the thickener discharge to the concentrator.

The thickener tank has a steel wall, and the tank bottom consists of impermeable clay resting on a plastic membrane.

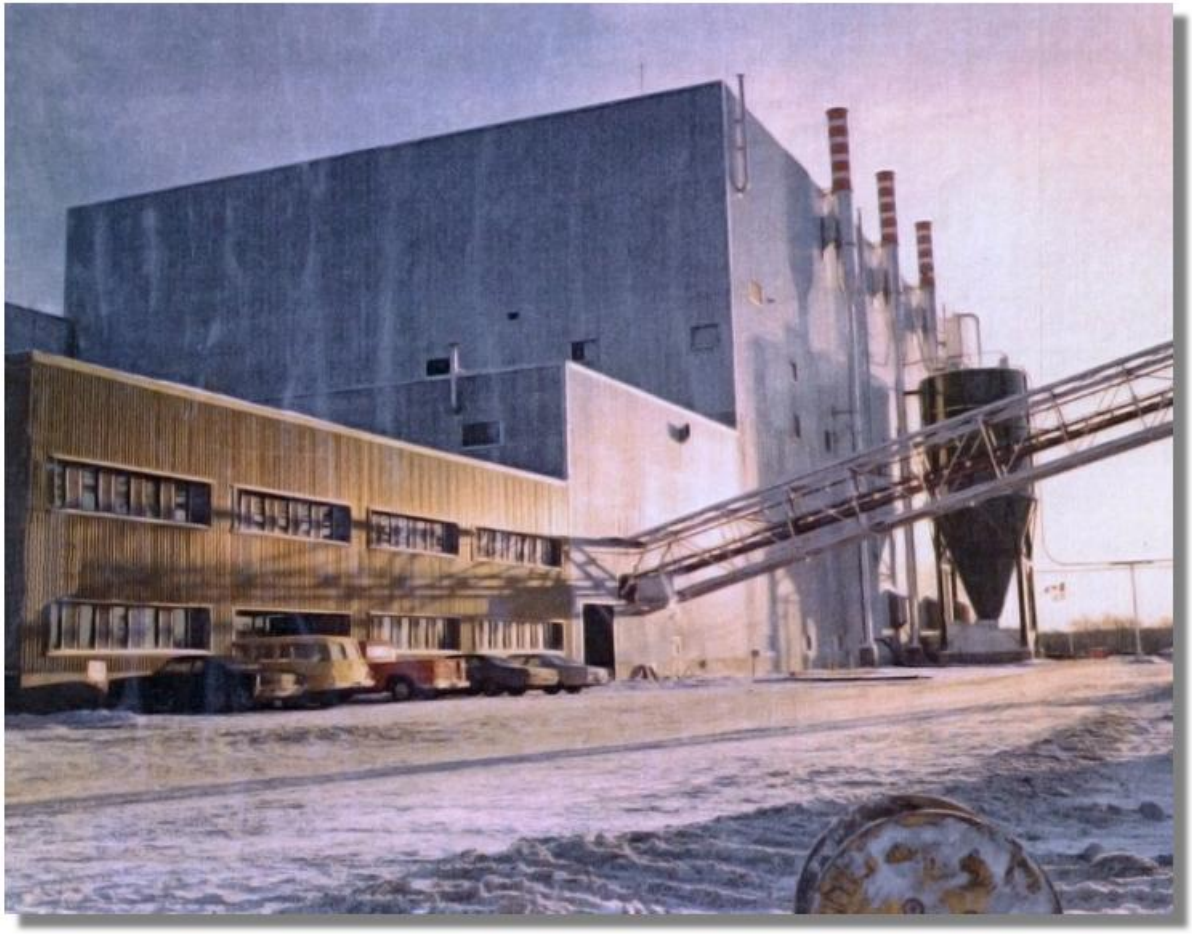


THE GRIFFITH MINE

ADMINISTRATION BUILDING

Like the Service Building, the Administration Offices form part of the main plant complex, and centralize the functions of supervision and administration.

The load-out conveyor, in an open gallery, transfers the fired iron ore pellets from the pelletizing area to the steel load-out bin located above the railroad track.



THE GRIFFITH MINE

PRIMARY CRUSHER

The crude ore from the mine is dumped from 45 ton trucks into the pocket feeding the 54" x 74" primary gyratory crusher. The crusher is designed to reduce the run-of-mine ore, which may be up to 4 foot in size, to a nominal size of 9 inch.

A 60-ton crane over the pocket is used to maintain the crusher, and to remove large rocks from the crusher pocket.

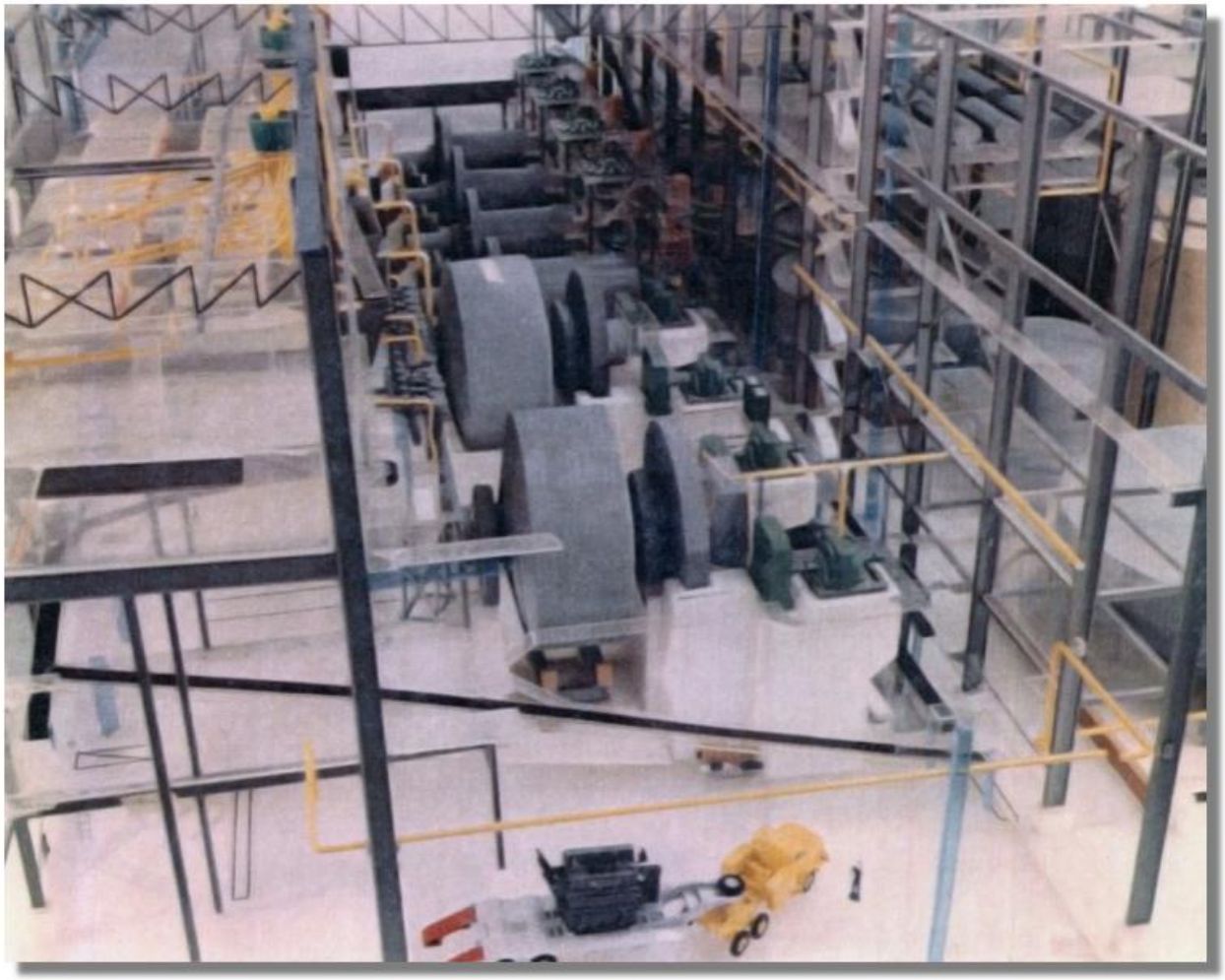
THE GRIFFITH MINE

PLANT MODEL

GRINDING BAY

During the engineering and design phases, a 1/4 inch scale model of the plant was built to assist in the locating of equipment, and the necessary walkways, piping and cable runs. The model was later sent to the site where it was used in the plant construction, and in the training of the future plant operators.

This view of the model shows the primary and secondary grinding mills, the cyclones, and the rougher magnetic separators.

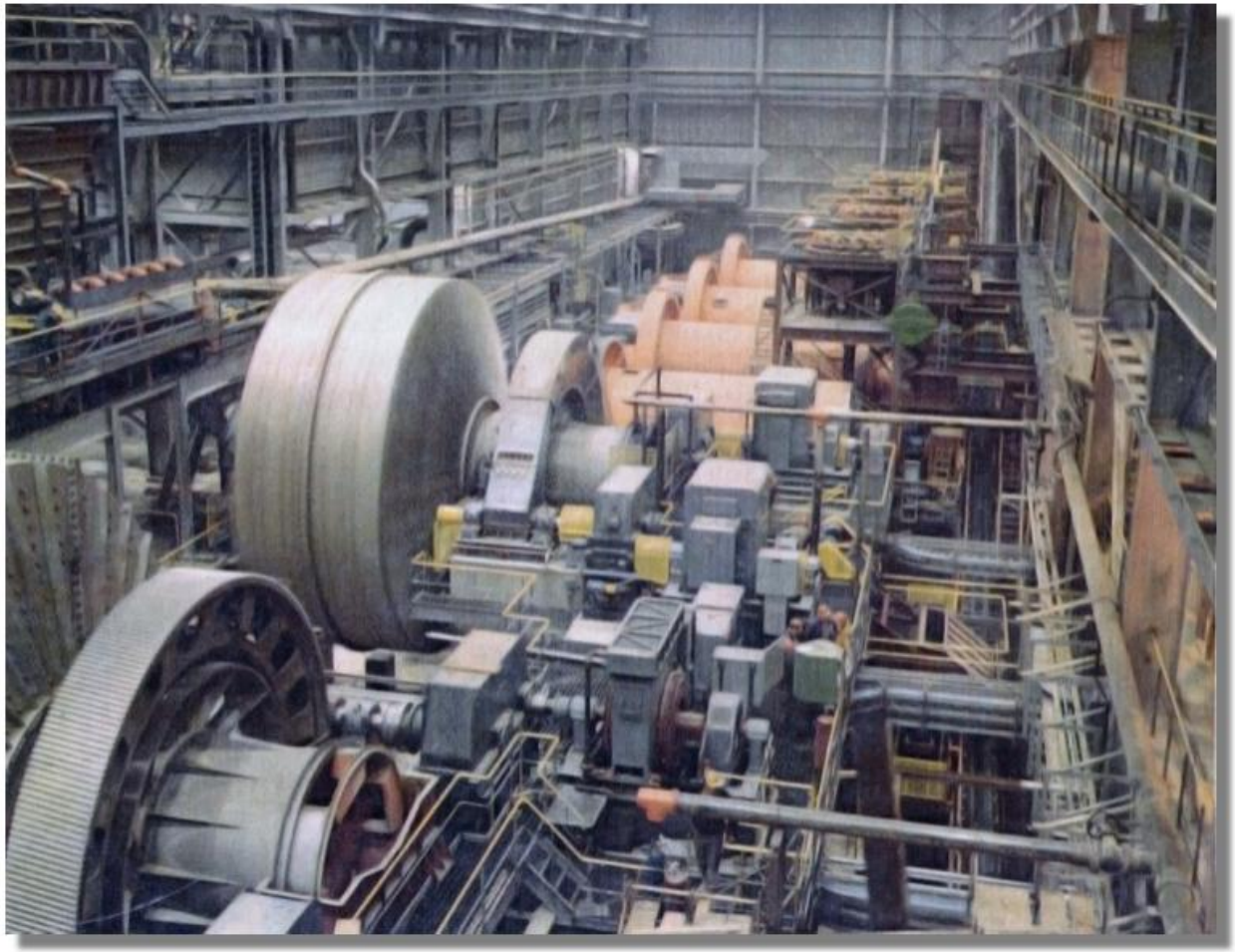


THE GRIFFITH MINE

GRINDING BAY

The crushed ore from the stockpile is ground in two, 32 foot diameter autogenous mills, and screened and pumped to rougher magnetic separators. The concentrate from the separators flows by gravity to six 20 inch cyclones for classification, while the tailings is piped, also by gravity, to the tailings thickener launder.

The sized product from the primary mills is further ground to ± 94% minus 325 mesh in the secondary mills, which use pebbles screened from the primary mill discharge as grinding media. These pebbles are conveyed to a steel bin on the south wall of the building for storage.

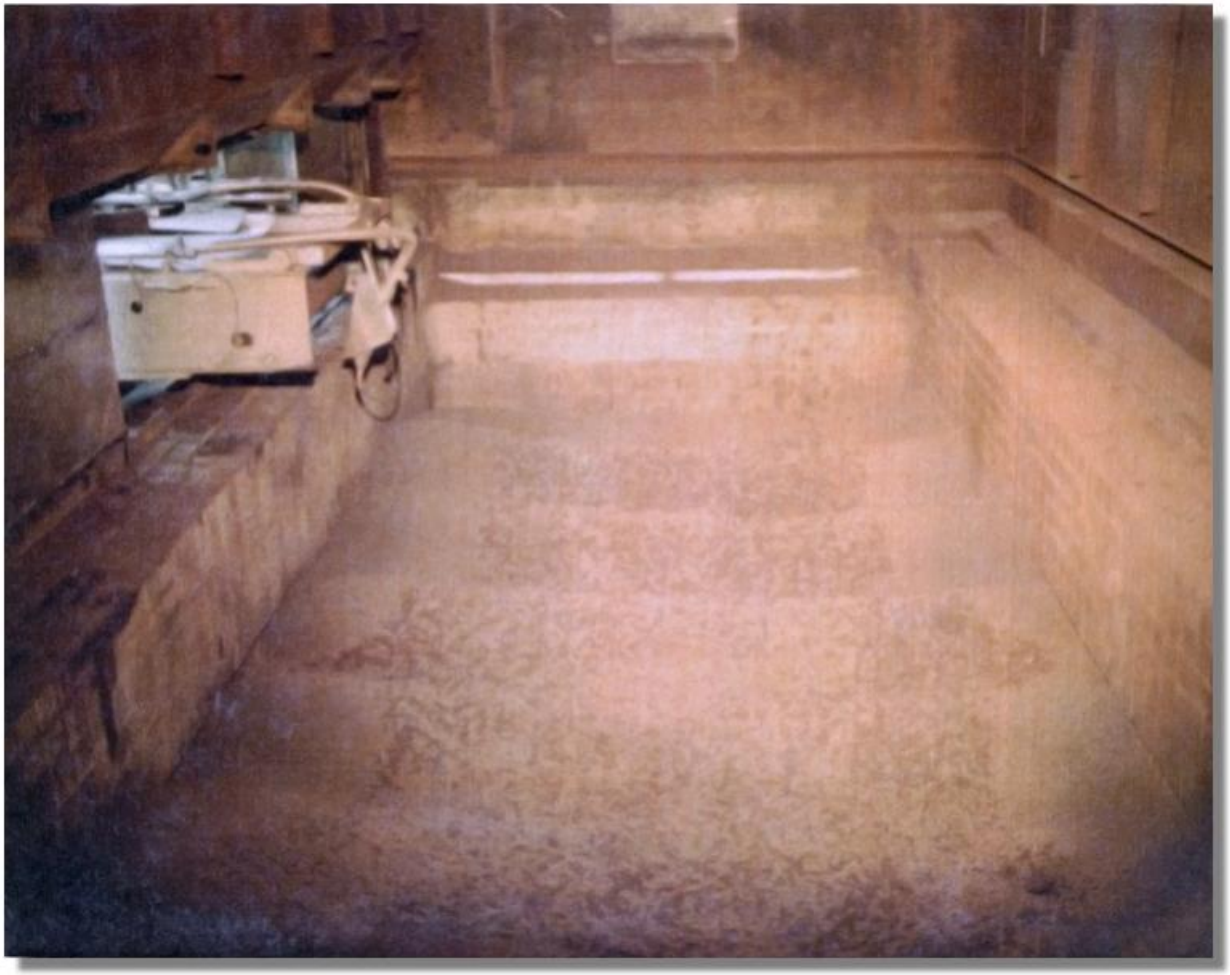


THE GRIFFITH MINE

PRIMARY AUTOGENOUS MILLS

The two primary mills are the largest of their type in the world. They are 32 ft. diameter by 12 ft. long, and are driven by twin 3400 HP, 720 RPM wound rotor motors for a total grinding power of 6800 HP. The mills rotate at approximately 10 RPM.

The mills are fed with nominal 9 inch crushed rock, and reduce it in one stage to 65% minus 325 mesh. The mills operate in closed circuit with twelve 96-inch, three drum rougher magnetic separators, and twelve 20-inch cyclones. Each mill discharge is screened on a double deck, 8 ft. by 20 ft. vibrating screen.

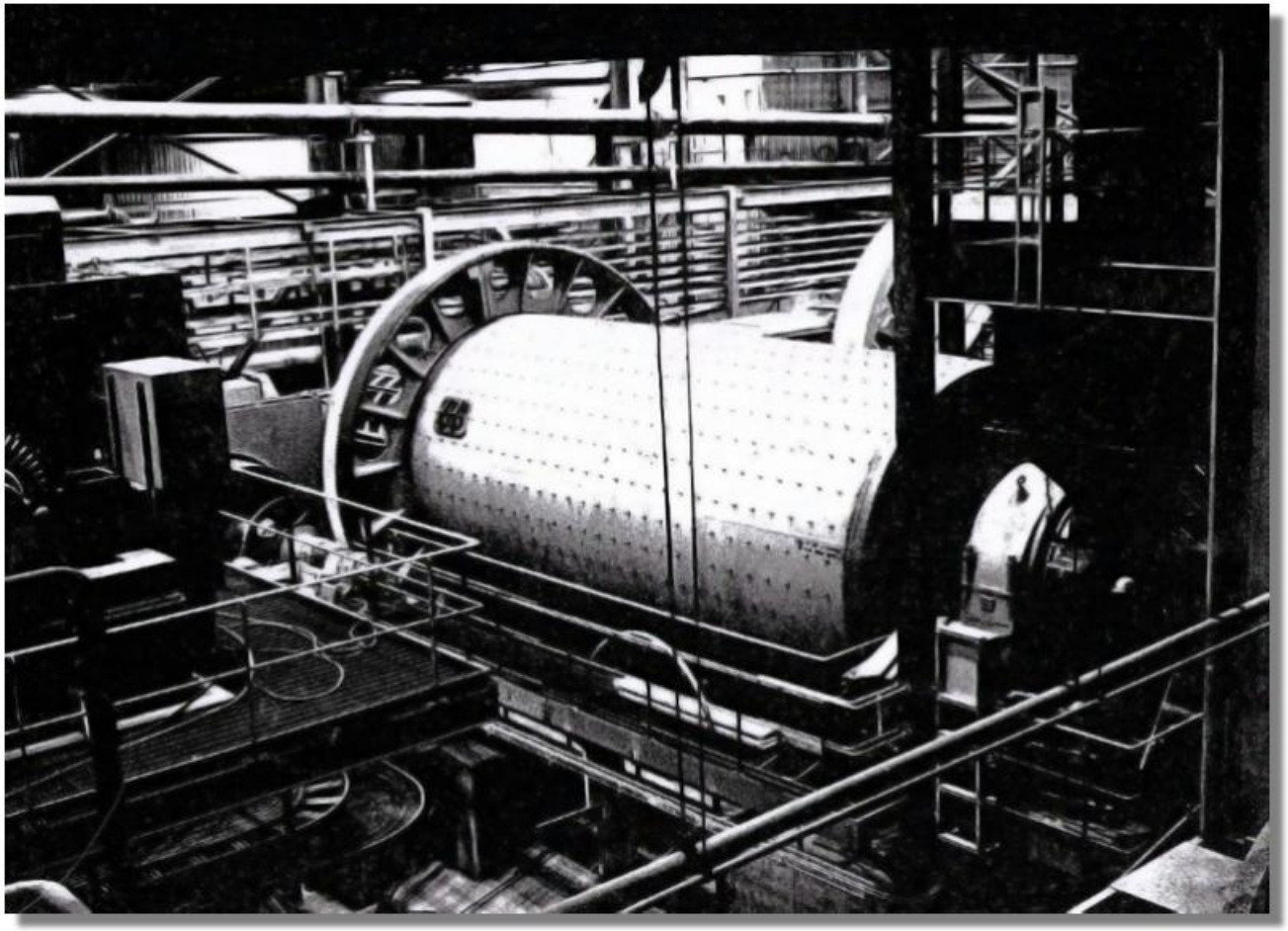


THE GRIFFITH MINE

SECONDARY MILLS

The secondary grinding is carried out in four pebble mills. The mills are 14 ft. diameter by 28 ft. long, and have rubber liners and rubber discharge grates. The mills are driven by 2000 HP, 200 RPM synchronous motors through air clutches.

The pebbles required for grinding are fed from individual day bins to the mills by vibrating feeders. The feeders are automatically controlled by the power drawn by the mill.

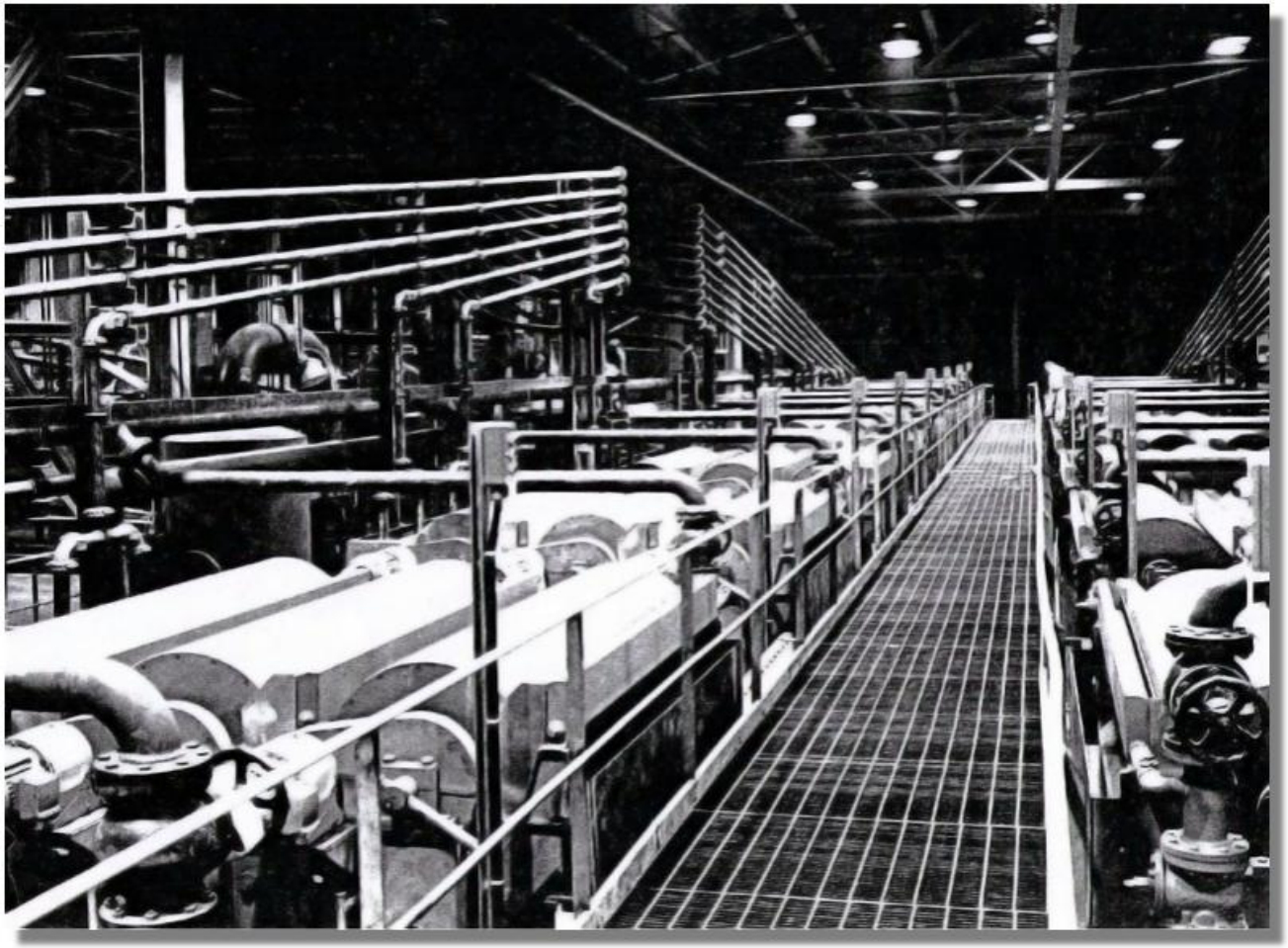


THE GRIFFITH MINE

FINISHER MAGNETIC SEPARATORS

Following secondary grinding, the magnetic concentrate is up-graded by hydroseparation, and further treated in magnetic separators.

The 18 finisher magnetic separators are 96 inch, triple drum units, and are located on the top floor of the concentrator, to provide gravity flow through the balance of the circuit.

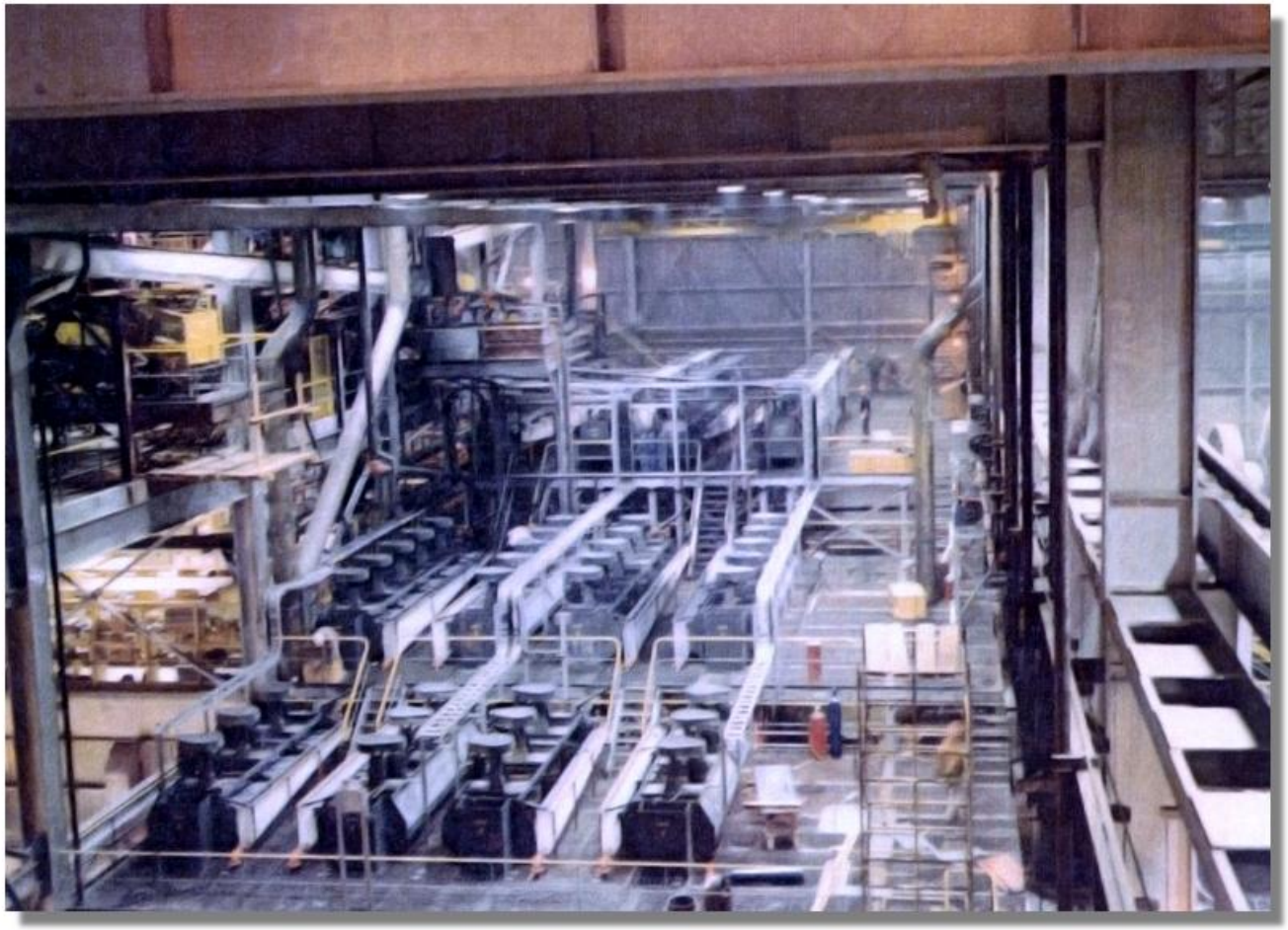


THE GRIFFITH MINE

FLOTATION CIRCUIT

The flotation circuit is fed with the magnetic concentrate from the finisher units, and the flotation cells are used to remove silica from this concentrate. This gives a high grade final product, which can be thickened, and fed to the pelletizing plant.

The circuit consists of four lines of 60 CF flotation cells. Each line comprises 10 rougher cells, 5 scavenger cells, and 3 rescavenger cells. The rougher cells produce the final product as the underflow, while the scavenger and rescavenger cells are used to recover additional valves from the rougher tailings.



THE GRIFFITH MINE

PLANT MODEL

PELLETIZING PLANT

This view of the model shows the operating floor level in the pelletizing plant. Shown are the 6 disc filters, the 3 balling drums, and the 3 shaft furnaces.

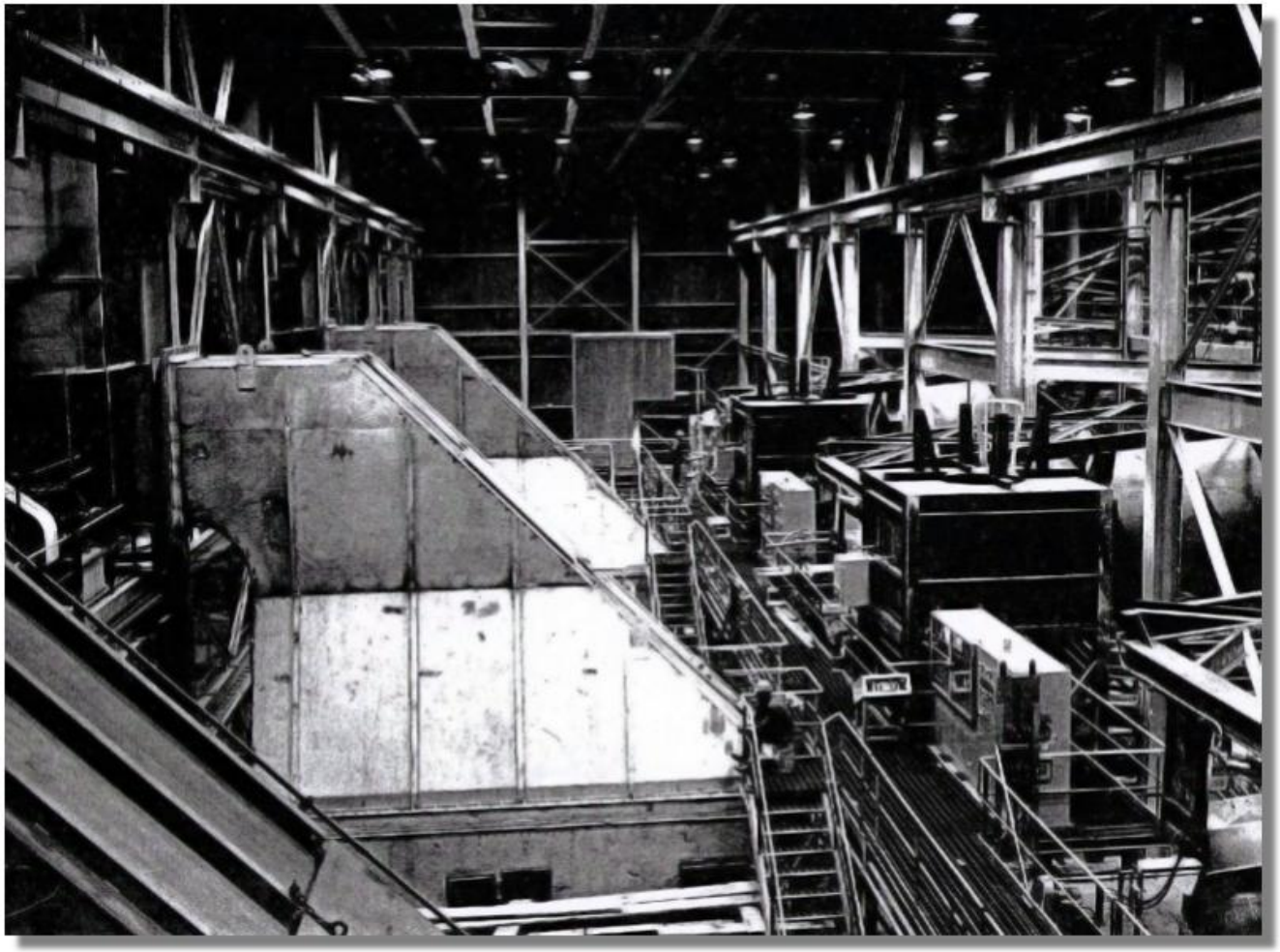
The view also shows the relationship between the pelletizing plant and the concentrator, with the four 50-foot diameter hydroseparators on the ground floor, the flotation circuit above them, and the finisher magnetic separators on the same floor as the disc filters.

THE GRIFFITH MINE

PELLETIZING PLANT

The pellet plant consists of three shaft furnace lines, each including two 10-disc filters, and one 10 ft. diameter by 30 ft. long balling drum. The balling and pelletizing operations for each line are controlled from a control panel located centrally on a platform above the furnace feed floor. Fired pellets may be recirculated to the furnaces from storage bins.

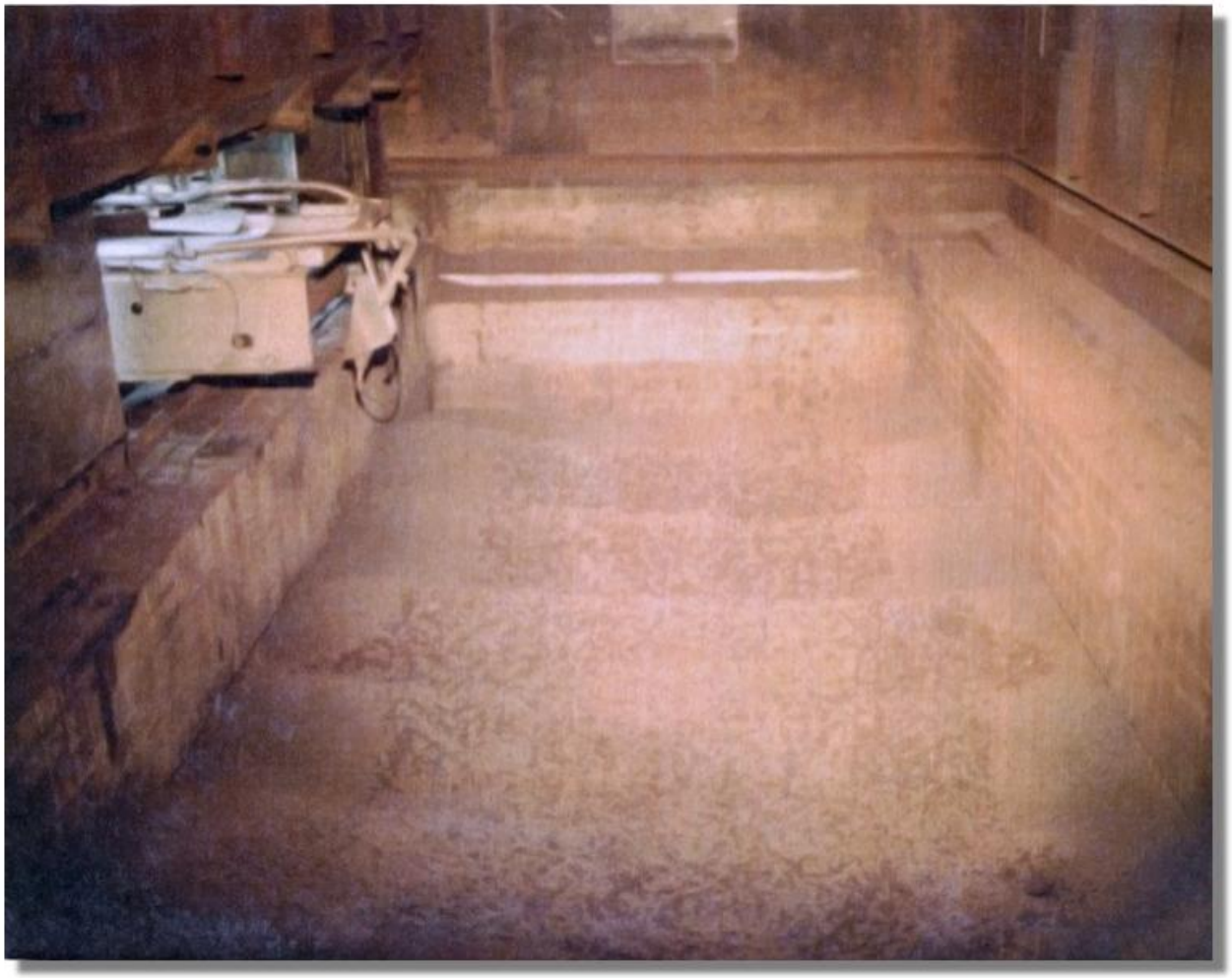
The hot exhaust gases from the furnaces are removed in the top hoods, cleaned in wet scrubber collectors, and discharged by 300 HP fans into the main stacks on the south wall of the plant.

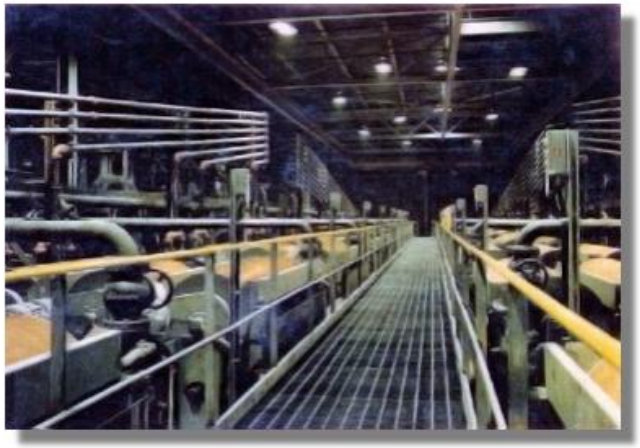


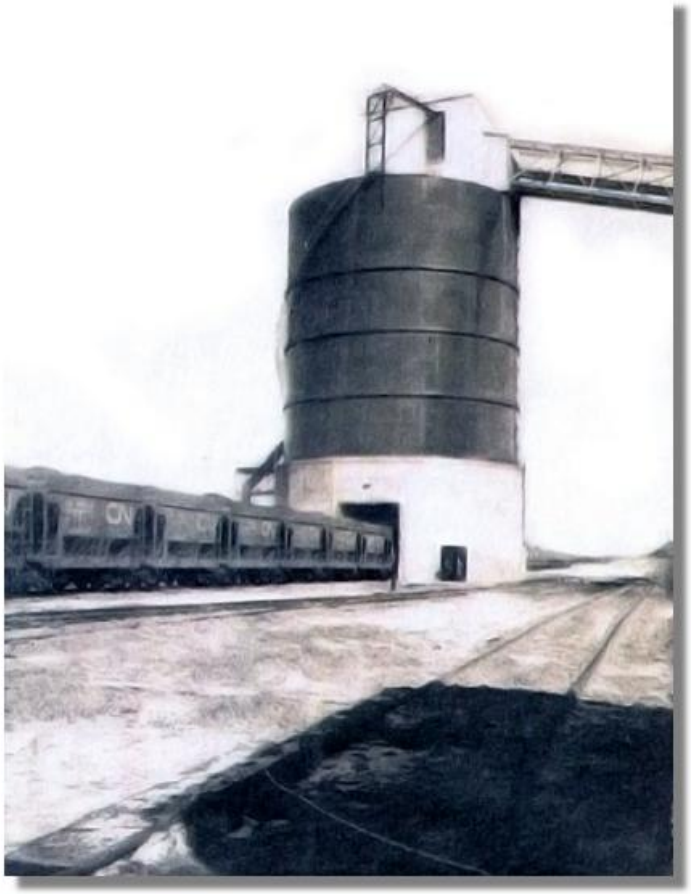
THE GRIFFITH MINE

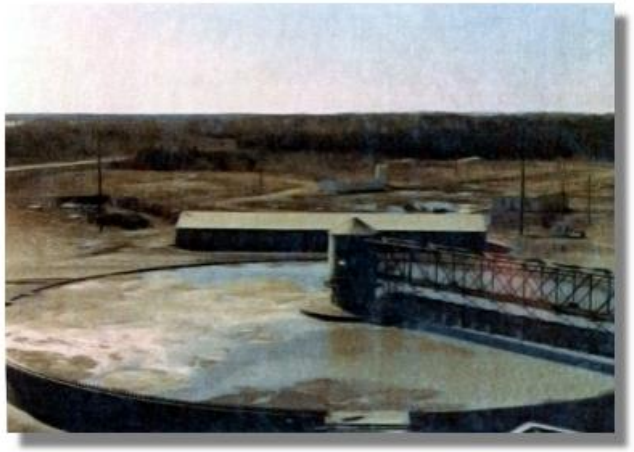
SHAFT FURNACES

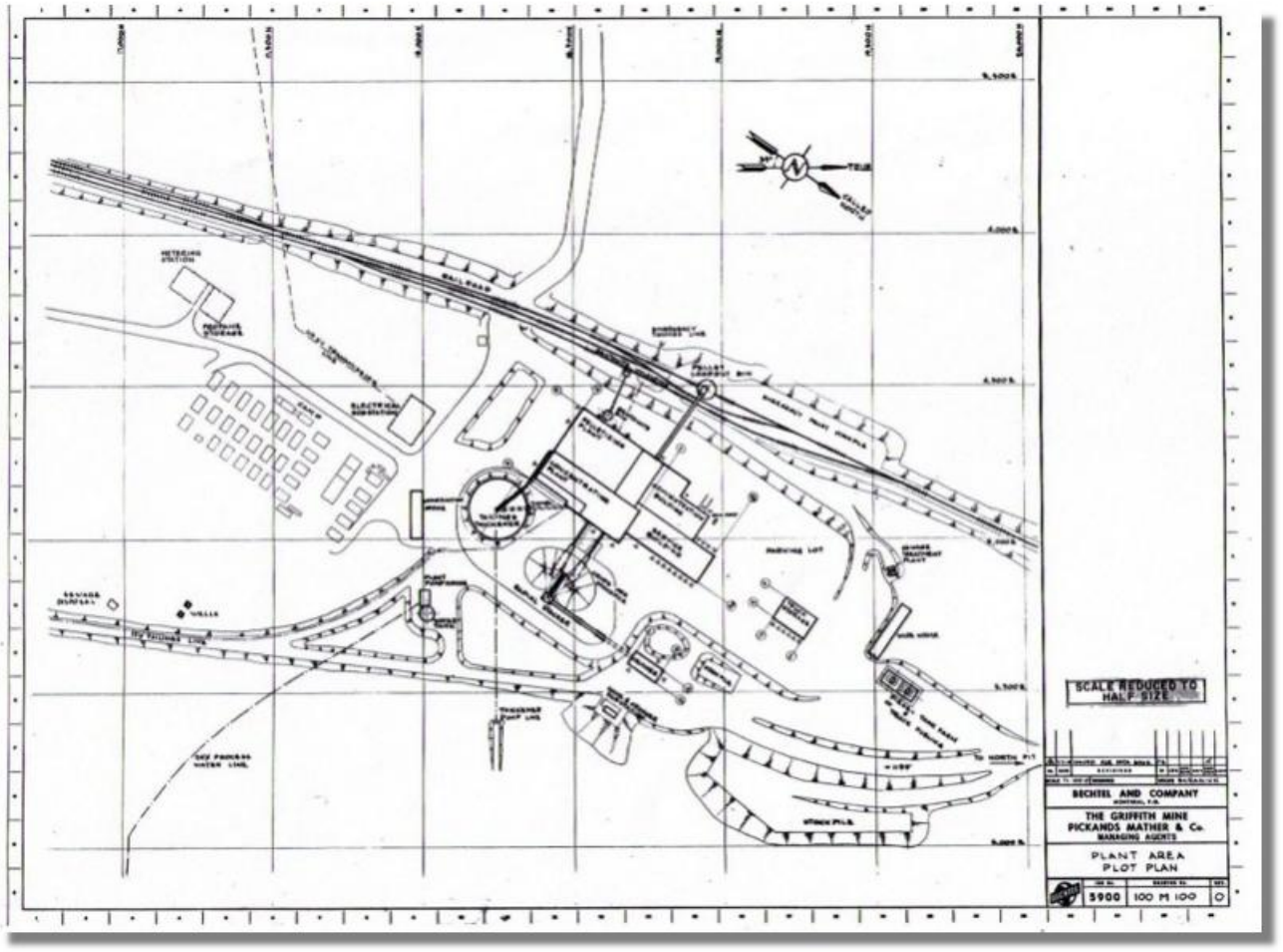
The plant has three 8 ft. by 21 ft. shaft furnaces, each rated at 500,000 LTPY. The magnetic concentrate is rolled into balls, and placed evenly in the furnace shaft by moving belt feeders. Hot gases are blown into the furnace to fluidize the bed, and indurate the pellets. Associated with the furnace are 3 main air blowers, each 2250 HP, 3600 RPM.










SCALE REDUCED TO HALF SIZE
BECHTEL AND COMPANY
THE GRIFFITH MINE
PICKANDS MATHER & Co.
MANAGING AGENTS
PLANT AREA
PLOT PLAN
5900
100 M 100

Source: Canadian Bechtel Limited, 1968

Appendix 8: Crown Land Use Policy G2514

Ontario

Ministry of Natural Resources

Crown Land Use Policy Atlas
Policy Report
G2514: Red Lake

ID: G2514
Area Name: Red Lake
Designation: General Use Area

District(s): Red Lake , Sioux Lookout
Area (hectares): 1417621
Date Policy Report Last Updated: November 14, 2006

DESCRIPTION:

This area includes the majority of the Red Lake District within the Ontario Living Legacy planning area outside provincial parks, conservation reserves, forest reserves and enhanced management areas.

Present uses include mining, forestry, cottaging, tourism, Crown land recreation, fishing, hunting, and fur harvesting. The communities of Red Lake, Balmertown, Cochenour and Ear Falls are the major population centres. Mining, forestry and resource-based tourism are the major industries in the area.

Ear Falls is the location of a large hydro generating station and several water systems (e.g., the English River, Lac Seul) are managed for electric power generation. This area includes 3 forest management units: Trout Lake Forest, Red Lake Forest, and Whiskey Jack forest. Forest management on the latter forest is administered by MNR?s Kenora District.

The area contains a significant resource based tourism industry, ranging from road accessible main base lodges to remote outpost camps. The following lakes have been designated as tourism lakes: Aerofoil, Allison, Bear Paw, Bertha, Betty, Birch, Bluffy, Bug, Coli, Confederation, Confusion, Cook, Copilot, Cristene, Deaddog, Detour, Grace, Gullrock, Hailstone, Jeanette, Joyce, Jubilee, Keg, Latrielle, Little Shabumeni, Little Vermillion, Longlegged, Margaret, Medicine Stone, Nungessor, Okanse, Papaonga, Parker, Perrigo, Pilot, Pineneedle, Red, Ruddy,Seagrave, Sesikinaga, Shabu, Shabumeni, Slate, Springpole, Stone, Swain, Two Island, Uchi, Una, Underbrush, Upper Medicine Stone, Wakeman, Wenasaga, Woman, Women River.

This area is located within the Woodland Caribou Signature Site, one of 9 such areas featured in the Ontario?s Living Legacy Land Use Strategy (1999). Signature Sites are identified for their range of natural and recreational values and their potential to contribute to future recreation and tourism.

This area contains lake(s) designated for lake trout management. For a current list of designated lakes associated with this area, refer to the Lake Trout Lake Search Index accessible via the ?Source of Direction? portion of this policy report.

LAND USE INTENT:

This is a multiple use area that is largely governed by existing provincial policy. Red Lake District did not have an approved District Land Use Guidelines in 1983. In the absence of a District Land Use Guidelines, land use direction has been provided over time through the interpretation of provincial policy. Although most land use activities are permitted within this area, all new activities will be subject to a review and evaluation. The results of such a review may result in the activity being approved, modified or denied, depending on the extent of resource or user impacts.

MANAGEMENT DIRECTION:

COMMERCIAL ACTIVITIES		
Activity	**Permitted**	**Guidelines**
Aggregate Extraction	Yes	
Bait Fishing	Yes	
Commercial Fishing	Yes	
Commercial Fur Harvesting	Yes	
Commercial Power Generation Development	Yes	
Commercial Timber Harvest	Yes	
Commercial Tourism (services and/or facilities), Existing	Yes	
Commercial Tourism (services and/or facilities), New	Yes	
Mineral Exploration and Development	Yes	
Peat Extraction	Yes	
Wild Rice Harvesting	Yes	

LAND AND RESOURCE MANAGEMENT ACTIVITIES		
Activity	**Permitted**	**Guidelines**
Crown Land Disposition	Maybe	There are significant restrictions on land disposition on designated lake trout lakes. See specific direction in Crown land disposition policy (PL 4.02.01 Appendix A).
Crown Land Disposition, Agriculture	No	
Crown Land Disposition, Cottaging	No	
Crown Land Disposition, Rural Residential	No	
Crown Land Disposition, Urban Development	No	
Road	Yes	

Activity	Permitted	Guidelines
Development and Maintenance, Existing		
Road Development and Maintenance, New	Yes	

RECREATION ACTIVITIES AND FACILITIES		
Activity	**Permitted**	**Guidelines**
Crown Land Recreation	Yes	
Hunting	Yes	
Road Use (public), Existing	Yes	Some road systems are closed to public travel - refer to Forest Management or other plans. Some new road systems may be closed to public travel.
Road Use (public), New	Yes	Some road systems are closed to public travel - refer to Forest Management or other plans. Some new road systems may be closed to public travel.
Sport Fishing	Yes	

ADDITIONAL INFORMATION:

Note: *MNR will consider the Land Use Intent and Management Direction outlined in this policy report when reviewing applications for permitted activities that require licences, leases, permits, or other forms of approval. The review of individual applications involves the consideration of a variety of factors and requirements on a site-specific basis in addition to land use policy.*

SOURCE OF DIRECTION:

Amendment to Area-specific Crown Land Use Policy #2005-51 (2005)
Lake Trout Lake Search Index (2009)
Amendment to Area-specific Crown Land Use Policy #2006-24 (2006)
Amendment to Area-specific Crown Land Use Policy #2007-25 (2009)
Crown Land Disposition Policy - Appendix A (2008) (2008)
Inland Ontario Lakes Designated for Lake Trout Management (2006)

Cette Rapport d'orientation en français

This policy report is available online at the following address: http://crownlanduseatlas.mnr.gov.on.ca

Appendix 9: Mine Rehabilitation Inspection Report (June 2009)

Mine Rehabilitation Inspection Report

Compliance with O.Reg.240/00, Schedule 1 - Mine Rehabilitation Code of Ontario

Griffith Mine File CP/AMIS #: G02

Inspection Date:	04-Jun-09
Inspector(s):	Mark Puumala
Company Rep:	Hazards previously returned to Crown Phone:
Others:	Carmen Storey, Genevieve Dorland (MNDM) Trevor Park, Pam Dittrich (MNR)
Current Project Status:	Closed Out Commodity: Fe
Closure Plan?	No Date:
Location and Access:	The Griffith Mine is located in the Township of Ear Falls. Access to the site is obtained via Highway 105.
History of Site:	Between 1968 and 1986, the Griffith Mine produced approximately 20,000,000 tons of iron ore pellets. The mine site was subsequently rehabilitated under a Closure Plan that pre-dates Part VII of the Mining Act. Mining leases were returned to the Crown in 1999, while mining rights for a number of patented claims were forfeited to the Crown in 2001 for tax arrears. Surface rights to the patents are currently held by Mr. Larry Herbert of Red Lake, who has also staked a number of mining claims over the site. Physical disturbance of the rehabilitated lands may only be carried out with the written consent of the Director of Mine Rehabilitation.

INSPECTION

1. Surface Openings None

Features:			Rehabilitated?
			Rehabilitated?
			Rehabilitated?
Rehabilitation:			
Steel Caps?	*(for temporary suspension only)*		
Concrete Caps?			Reinforced Concrete?
Exposed?			Vented < 75mm pipe?
Buried?			Loose rock removed?
Inspected @ 5 yrs?		Concrete	Strength Tested?
Flooding?			Backfilling?
Signage?			Fencing?

Comments: The Griffith Mine was an open pit operation with no underground workings.

2. Open Pits

Are there any open pits on the site?	Yes	Active?	No
Any faces >3m present on pit?	See Comments	Rehabilitated?	See Comments

If the pit is rehabilitated, have the following been employed and are they in compliance with the CP?

Flooded?	See Comments	Backfilled?	
Rehab above water?		Egress?	
Fencing? (2m high, #6 chain link, barbed wire top)……..			No
Signs? (30cmx30cm, 20m apart, Danger Open Hole / Puites Ouvert……			No

Comments: The focus of this inspection was to observe water levels in the two open pits and determine if the dykes that were constructed around the pits to facilitate mine development will require modifications to ensure that the final post-rehabilitation pit water levels are approximately equal to the level of Bruce Lake. Measures to ensure this were recommended in a 1986 Ministry of Natural Resources (MNR) engineering study of the pit perimeter dykes. Specifically, it was recommended (Section 3.3, p. 12) that a channel be excavated through the dykes to prevent water levels in the pit areas from rising above the level of Bruce Lake.

The 1986 MNR report indicates that the owners of the Griffith Mine estimated that the pits would take 25 to 30 years to fill. If this projection was realistic, water levels in the pits should either have reached or be approaching their maximum elevations (i.e., the mine closed 23 years ago).

During this inspection, it was found that the South Pit is completely filled with water to the approximate level of Bruce Lake. The water in the pit has reached the perimeter dyke system that was constructed around the north, east and south margins of the pit area. It is likely that this water level has been reached recently, as some inundated vegetation along the margins of the perimeter dykes still appeared to be alive. No dyke breaches were noted along the vehicle-accessible portions of the dyke-top access road. However, at one location where the eastern pit perimeter dyke separates the South Pit from Iron Bay of Bruce Lake (i.e., lowest point), it appeared that water may periodically flow across the dyke between the pit and lake. Because the southern dyke structure was not entirely road accessible, it is not known if any flow occurs over this portion of the dyke system.

The water level in the North Pit has not yet reached the perimeter dykes. However, it can be anticipated that this pit will also reach capacity at some point in the near future. Because the North Pit perimeter dykes are believed to be at higher elevations, it is possible that the final water elevation in this pit will be significantly above the Bruce Lake water level, inundating an area far beyond the original pre-mining Bruce Lake shoreline. No evidence of a channel having been cut through the North Pit perimeter dykes to facilitate water movement between the pit and Bruce Lake was noted during this inspection.

Because the South Pit is currently full and the North Pit is nearing capacity, an engineering evaluation of the pit perimeter dykes is necessary to determine if and where these dykes should be breached to facilitate the free movement of water between the pits and Bruce Lake. It would also be desirable to obtain periodic measurements (e.g., spring and fall) of the North Pit water elevation to determine the rate of filling, and to obtain an estimate of when the water level will be equal to the Bruce Lake water level.

An aquatic assessment of the pit lakes would also be desirable in order to predict the

potential effects of developing a direct connection between the pit lakes and Bruce Lake.

3. Stability of Crown Pillar and Room and Pillar Operations:

Are there underground workings?	No	Subsidence?	
Fenced?		Backfilled?	
Crown Pillar Thickness:	m		
Surface Land Use:			

Comments: There were no underground workings at the Griffith Mine. As a result, no Crown pillars are present.

4. Tailings, Dams and Other Containment Structures (settling ponds):

Are there **Tailings** on site?	Yes	Active?	No
ARD or ML?	No	Rehabilitated?	Yes
Wind Protection?	Yes	Stable?	Yes
Blowing Tailings?	No	Erosion?	No
Drainage?	Yes	Seepage?	No
Samples taken?	No		

If the site is rehabilitated: describe and does it comply with the Closure Plan?

Revegetated?	Yes	Covered?	Yes
Flooded?			

Revegetation: *% covered? Sustainable? Healthy? Stressed? Type of vegetation?*

Comments: A tailings evaluation carried out for MNR in 2002 (AMEC 2003) did not identify any significant physical or chemical stability issues with the Griffith Mine tailings. A copy of this report is attached.

Are there **Dams** on site?	Yes	Active?	No
ARD or ML?	No	Rehabilitated?	Yes
Drainage?	Yes	Seepage?	No
Stable?	Yes	Erosion?	No
Breach?	No	Animal Activity?	
Samples taken?	No	Revegetated?	
# of dams			

Revegetation: *% covered? Sustainable? Healthy? Stressed? Type of vegetation?*

Have all decant structures been removed or made inoperable?

Comments: See above comments.

5. Surface Water Monitoring

Type:	No monitoring program.	Name:	
Downstream Receiver:		Colour:	
Is water quality impaired?	No	Samples Taken?	Yes
Potential Contaminants:			
Naturally sustainable drainage?		Monitored?	No
Maintenance required?			

Comments: Surface water samples were collected from each pit during this inspection. These samples were analysed for general chemistry and metals. The water samples collected from both pits had pH values greater than 8 (i.e., somewhat alkaline) and were characterized by levels of hardness and sulphate that are somewhat higher than typical values for surface water. This is likely attributable to a combination of the weathering of sulphide minerals and the fact that the pits are currently "closed systems" with no outlets. However, the reported metal concentrations were low, generally meeting Provincial Water Quality Objectives with the exception of a marginal exceedance of the interim PWQO for uranium in the North Pit. A copy of the analytical report is attached to this inspection report.

6. Ground Water Monitoring

Is water quality impaired?		Samples Taken?	No
Potential Contaminants:			
Monitored?	No		

Comments: Groundwater is not monitored at this site. No significant groundwater quality issues have previously been identified at this site.

7. Rock Piles

Are there **rock piles** on the site?	Yes	Active?	No
# of piles	# areas	Type:	
Rehabilitated?	Yes	Erosion?	
Stable?		Sloped?	
Drainage?		ARD or ML?	
Revegetated?		Potential Contaminants?	

Revegetation: *% covered? Sustainable? Healthy? Stressed? Type of vegetation?*

Comments: Waste rock piles were not visited during this inspection. Information on file indicates that there are three rehabilitated waste rock piles on the site (East, West and South Pit Waste Rock Stockpiles). No concerns have been raised previously regarding these waste rock piles.

8. Buildings

Are there **buildings** on the site?	No	Active?
List buildings:		
Describe condition:		

Climbing Hazards?		Describe:	
Tripping Hazards?		Describe:	
Concrete Foundations?	Yes	Describe:	
If present:	*removed to ground level? Soil Applied? Revegetated?*		
# of piles	# areas	Type:	
Stable?		Revegetated?	
Revegetation:	*% covered? Sustainable? Healthy? Stressed? Type of vegetation?*		

Comments: All of the former mine buildings have been removed. Some concrete foundations remain, as was allowed for in the site's closure plan.

9. Revegetation

Have surface materials been stabilized to provide protection from wind and water erosion?	Yes
Have all disturbed areas been revegetated?	Yes
Have the appearance and aesthetics been improved?	Yes
Has natural vegetation been enhanced and self-sustaining vegetation been established?	Yes
Does the revegetation support the end-use of the site?	Yes

Comments: Tailings areas have been revegetated and natural revegetation is occurring in other disturbed portions of the site. As the pits fill with water, some vegetation that has established naturally on the pit walls and in the surrounding dyked areas is being flooded.

10. Landfills and Waste Management Systems (septic beds)

Are there **landfills** on the site?	See Comments	Active?	No
# of landfills:		Type:	
Rehabilitated?		Erosion?	
Stable?		Sloped?	
Drainage?		Leachate?	
Revegetated?		Potential Contaminants?	
Revegetation:	*% covered? Sustainable? Healthy? Stressed? Type of vegetation?*		
Are there **septic systems** on the site?	See Comments	Active?	No
# of septic systems:		Type:	
Rehabilitated?		Leachate?	

Comments: There are no active landfills or septic systems on site.

11. Transportation Corridors

Are there **corridors** on the site?	Yes	Active?	Yes
Rehabilitated?	See Comments		
Stable?		Sloped?	

Rehabilitated?			
Roads?	See Comments	Rail lines?	See Comments
Airstrips?			
Describe condition:			
Stable?		Revegetated?	
Revegetation:	*% covered? Sustainable? Healthy? Stressed? Type of vegetation?*		
Comments:	The main access road and several on-site roads are accessible to the public. A sign (see photo) at the site entrance provides information about the site and advertises the road network as an interpretive trail system. Rail lines that previously accessed the site were removed following closure.		

12. Other

Pipelines on site?	No	Active?	
Removed?			
Machinery or **Equipment** on site?	No	Describe:	
Fuel Tanks on site?	No	Removed?	
Describe:			
Explosives on site?	No	Removed?	
Describe:			
Chemicals on site?	No	Removed?	
Describe:			
Power on site?	No		
Substations?		Disconnected?	
PCBs?			
Power lines?		Removed?	
Contaminated Soils	Are there contaminated soils on site?		No
Samples taken?		Potential Contaminants:	
Size:		Colour:	
Comments:			

Summary of Field Observations and Recommendations:

The most significant observations made during this inspection of the Griffith Mine site relate to the water levels in the two open pit lakes. The South Pit lake has reached the elevation of Bruce Lake, while the North Pit lake is rapidly approaching this level. A 1986 MNR engineering evaluation of the pit perimeter dykes recommended the excavation of a channel(s) to ensure the free flow of water between the pit lakes and Bruce Lake. This action was recommended to ensure that an area significantly beyond the pre-mining shoreline of Bruce Lake is not flooded. It should also be noted that the pit perimeter dykes were designed to keep Bruce Lake from flooding the mines, and not to prevent water from flowing from the pits to Bruce Lake. Therefore, it is possible that dyke stability issues could arise if the pit areas flood to the existing minimum elevations of the dyke structures.

The following recommendations are provided to address the concerns outlined above.

1) An engineering evaluation should be carried out to determine what measures (if any) are necessary to ensure the free flow of water between the pit lakes and Bruce Lake.

2) The water elevation in the North Pit should be measured on a regular basis to establish the rate of flooding and estimate the time that the water level is likely to reach the average elevation of Bruce Lake. This type of information will be required to establish the timing of the construction of any dyke breaches.

3) An assessment of the pit lakes should be carried out to establish the probable impacts of a direct connection between the pit lakes and Bruce Lake on water quality and aquatic habitat.

Because the mining leases upon which the open pits and dykes were constructed were returned to the Crown in 1999, the Province will need to take responsibility for any required changes to the existing infrastructure on this rehabilitated mine site. It should also be noted that any disturbance of these rehabilitated mining lands (i.e., as would be required to excavate channels through the dykes) requires the written consent of the Director of Mine Rehabilitation.

It is anticipated that the work recommended above can be completed through cooperation between the three Provincial agencies (MNDMF, MNR and MOE) that have interest in the land use and water quality issues on this rehabilitated mine site.

Report Date: **03-Sep-09** Signature: ***Original signed by***
Mark Puumala, M.Sc., P.Geo.

Photographs:

1 Shoreline of South Pit lake. The shoreline at this location is the eastern pit perimeter dyke.

2 Recently inundated vegetation on western shoreline of South Pit lake.

3 Inundated vegetation along shoreline of South Pit lake.

Photographs:

4 View of South Pit Lake from lowest point on South Pit eastern perimeter dyke.

5 View of the shoreline of Iron Bay (part of Bruce Lake) from lowest point on South Pit east perimeter dyke.

6 Rock face adjacent to former South Pit.

Photographs:

7 View of North Pit perimeter dyke.

8 Portion of North pit wall. Note that water level has almost reached the top bench level.

9 Sign posted at entrance to Griffith Mine property.

UTMs	Zone:	15	
Feature (or sample)	**Easting**		**Northing**
North Pit water sample	474093		5629926
South Pit water sample	473896		5627385
South Pit dyke low pt.	474320		5627775

Appendix 10: Conceptual Environmental Baseline Schedule

Study	Activities	2013												2014											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	March	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Archaeology	Stage 1 Fieldwork																								
	Stage 2 (If Required)																								
Meteorology	Monitoring																								
	Reporting																								
Hydrology	Field Work																								
	Reporting																								
Hydrogeology	Planning																								
	Well Drilling																								
	Sampling & Testing																								
	Well Drilling-Round 2																								
	Reporting and Modelling																								
Surface Water	Sampling																								
Sediment	Sampling																								
Benthics	Sampling																								
	Reporting for SW, Sed and Benthics)																								
Fisheries	Permitting																								
	Fish Community Surveys																								
	Fish Habitat Surveys																								
	Stream Surveys																								
	Reporting																								
Wildlife	Small Mammals																								
	Amphibians / Reptiles																								
	Large Mammals																								
	Reporting																								
Vegetation	Terrestrial Vegetation																								
	Wetlands Assessment																								
	Reporting																								
Birds	Waterfowl migration																								
	Hawk Migration																								
	Owl Survey (nocturnal)																								
	Breeding Bird Surveys																								
	Whip-Poor-Will																								
	Bat Surveys																								
	Reporting																								
Geochemistry	Plan/Gather Info																								
	1st Round ABA																								
	2nd Round ABA																								
	Kinetic Tests																								
	Data Interpretation and Reporting																								
Air Quality	Field Work																								
	Reporting																								
Noise	Field Work																								
	Reporting																								

Appendix 11: Analysis of Pit Water

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Certificate of Analysis

ONT MNDM THUNDER BAY
ATTN: MARK PUUMALA
SUITE B002
435 JAMES ST S.
THUNDER BAY ON P7E 6S7

Report Date: 15-JUN-09 14:24 (MT)
Version: FINAL

Lab Work Order #: L773709 **Date Received:** 05-JUN-09

Project P.O. #:
Job Reference:
Legal Site Desc: GRIFFITH MINE
CofC Numbers: 08-058846
Other Information:

Comments:

RICHARD CLARA
General Manager, Thunder Bay

ALS Canada Ltd.
Part of the **ALS Laboratory Group**
1081 Barton Street, Thunder Bay, ON P7B 5N3
Phone: +1 807 623 6463 Fax: +1 807 623 7598 www.alsglobal.com
A Campbell Brothers Limited Company

L773709 CONTD....
PAGE 2 of 5
15-JUN-09 14:36

ALS LABORATORY GROUP ANALYTICAL REPORT

	Sample ID	L773709-1	L773709-2			
	Description	SURFACEWATE	SURFACEWATE			
	Sampled Date	04-JUN-09	04-JUN-09			
	Sampled Time	12:30	14:00			
	Client ID	GRIFFITH NORTH PIT JUN 4 12:30	GRIFFITH SOUTH PIT JUN 4 14:00			
Grouping	**Analyte**					
WATER						
Physical Tests	Color, True (T.C.U.)	2.9	5.1			
	Conductivity (EC) (uS/cm)	670	385			
	Hardness (as CaCO3) (mg/L)	338	161			
	pH (pH)	8.28	8.38			
	Total Dissolved Solids (mg/L)	505	265			
	Turbidity (NTU)	0.80	0.68			
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	145	115			
	Chloride (Cl) (mg/L)	5.53	3.02			
	Fluoride (mg/L)	0.247	0.147			
	Nitrate-N (NO3-N) (mg/L)	<0.030	<0.030			
	Nitrite-N (NO2-N) (mg/L)	<0.020	<0.020			
	Sulphate (SO4) (mg/L)	220	78.3			
Total Metals	Aluminum (Al) (mg/L)	0.020	<0.010			
	Antimony (Sb) (mg/L)	<0.0050	<0.0050			
	Arsenic (As) (mg/L)	0.0033	0.0129			
	Barium (Ba) (mg/L)	0.043	0.082			
	Beryllium (Be) (mg/L)	<0.0010	<0.0010			
	Bismuth (Bi) (mg/L)	<0.0010	<0.0010			
	Boron (B) (mg/L)	0.074	<0.050			
	Cadmium (Cd) (mg/L)	<0.000090	<0.000090			
	Calcium (Ca) (mg/L)	87.3	34.6			
	Chromium (Cr) (mg/L)	<0.0010	<0.0010			
	Cobalt (Co) (mg/L)	<0.00050	<0.00050			
	Copper (Cu) (mg/L)	0.0018	<0.0010			
	Iron (Fe) (mg/L)	0.081	0.069			
	Lead (Pb) (mg/L)	<0.0010	<0.0010			
	Magnesium (Mg) (mg/L)	28.8	18.6			
	Manganese (Mn) (mg/L)	0.0038	0.0071			
	Mercury (Hg) (mg/L)	<0.00010	<0.00010			
	Molybdenum (Mo) (mg/L)	0.0049	<0.0010			
	Nickel (Ni) (mg/L)	0.0080	<0.0020			
	Potassium (K) (mg/L)	18.5	21.8			
	Selenium (Se) (mg/L)	<0.00040	<0.00040			
	Silicon (Si) (mg/L)	4.54	0.64			
	Silver (Ag) (mg/L)	<0.00010	<0.00010			
	Strontium (Sr) (mg/L)	0.328	0.195			
	Thallium (Tl) (mg/L)	<0.00030	<0.00030			
	Tin (Sn) (mg/L)	<0.0010	<0.0010			
	Titanium (Ti) (mg/L)	0.0038	<0.0020			
	Tungsten (W) (mg/L)	<0.010	<0.010			
	Uranium (U) (mg/L)	0.0081	<0.0050			

L773709 CONTD....
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ALS LABORATORY GROUP ANALYTICAL REPORT

	Sample ID	L773709-1	L773709-2			
	Description	SURFACEWATE	SURFACEWATE			
	Sampled Date	04-JUN-09	04-JUN-09			
	Sampled Time	12:30	14:00			
	Client ID	GRIFFITH NORTH PIT JUN 4 12:30	GRIFFITH SOUTH PIT JUN 4 14:00			
Grouping	**Analyte**					
WATER						
Total Metals	Vanadium (V) (mg/L)	<0.0010	<0.0010			
	Zinc (Zn) (mg/L)	<0.0030	<0.0030			
	Zirconium (Zr) (mg/L)	<0.0040	<0.0040			
Dissolved Metals	Calcium (Ca) (mg/L)	91.4	37.8			
	Magnesium (Mg) (mg/L)	26.6	16.2			
	Potassium (K) (mg/L)	17.9	20.3			
	Sodium (Na) (mg/L)	12.6	7.55			

L773709 CONTD....
PAGE 4 of 5
15-JUN-09 14:36

Reference Information

Additional Comments for Sample Listed:

Samplenum	Matrix	Report Remarks	Sample Comments

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Analytical Method Reference(Based On)
ALK-TOT-CAP-TB	Water	Alkalinity, Total (as CaCO3)	APHA 2320 B-Auto-Pot. Titration
CA-TB	Water	Calcium (Ca)	APHA 3120 B-ICP-OES
CL-TB	Water	Chloride (Cl)	APHA 4110 B-Ion Chromatography
COLOUR-TB	Water	Colour, True	CPPA H.5P Spectrophotometry
EC-CAP-TB	Water	Conductivity (EC)	APHA 2510 B-electrode
ETL-HARDNESS-CALC-TB	Water	Hardness (as CaCO3)	APHA 2340 B-ICP-OES Calculation
F-TB	Water	Fluoride (F)	APHA 4110 B-Ion Chromatography
HG-ONT-PWQO-WT	Water	Mercury (Hg) -Total PWQO	SW846 7470A
K-TB	Water	Potassium (K)	APHA 3120 B-ICP-OES
MET-ONT-PWQO-WT	Water	Metals, Total PWQO	EPA 200.8 (ICP/MS)
MG-TB	Water	Magnesium (Mg)	APHA 3120 B-ICP-OES
NA-TB	Water	Sodium (Na)	APHA 3120 B-ICP-OES
NO2-TB	Water	Nitrite-N	APHA 4110 B-Ion Chromatography
NO3-TB	Water	Nitrate-N	APHA 4110 B-Ion Chromatography
PH-CAP-TB	Water	pH	APHA 4500 H-Electrode
SO4-TB	Water	Sulphate (SO4)	APHA 4110 B-Ion Chromatography
SOLIDS-TDS-TB	Water	Total Dissolved Solids	APHA 2540 C
TURBIDITY-TB	Water	Turbidity	APHA 2130 B-Nephelometer

** Laboratory Methods employed follow in-house procedures, which are generally based on nationally or internationally accepted methodologies.
The last two letters of the above ALS Test Code column indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location	Laboratory Definition Code	Laboratory Location
TB	ALS LABORATORY GROUP - THUNDER BAY, ONTARIO, CANADA	WT	ALS LABORATORY GROUP - WATERLOO, ONTARIO, CAN

L773709 CONTD....
PAGE 5 of 5

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Analytical Method Reference(Based On)

GLOSSARY OF REPORT TERMS
Surr - A surrogate is an organic compound that is similar to the target analyte(s) in chemical composition and behavior but not normally detected in enviromental samples. Prior to sample processing, samples are fortified with one or more surrogate compounds.
The reported surrogate recovery value provides a measure of method efficiency.
mg/kg (units) - unit of concentration based on mass, parts per million
mg/L (units) - unit of concentration based on volume, parts per million
N/A - Result not available. Refer to qualifier code and definition for explanation

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Although test results are generated under strict QA/QC protocols, any unsigned test reports, faxes, or emails are considered preliminary.

ALS Laboratory Group has an extensive QA/QC program where all analytical data reported is analyzed using approved referenced procedures followed by checks and reviews by senior managers and quality assurance personnel. However, since the results are obtained from chemical measurements and thus cannot be guaranteed, ALS Laboratory Group assumes no liability for the use or interpretation of the results.

Report to:
Company: Ministry of Northern Development & Mines
Contact: Mark Puumala
Address: 435 James St. S., Suite B002
Thunder Bay, ON P7E 6S7
Phone: 807-475-1649 Fax: 807-475-1112

Invoice To: Same as Report ? (Yes) No ?
Company:
Contact:
Address:
Phone: Fax:

Lab Work Order # (lab use only)

Report Format / Distribution
Standard: ✓ Other:
Select: PDF ✓ Excel Digital
Email 1: Mark.Puumala@ontario.ca
Email 2:

Client / Project Information:
Job #:
PO / AFE:
Legal Site Description: Griffith Mine
Quote #:
ALS Contact: Karen Rutledge
Sampler: Mark Puumala

Service Requested (rush - subject to availability)
- Regular (Default)
- Priority (2-3 Business Days) - 50% Surcharge
- Emergency (1 Business Day) - 100% Surcharge
- For Emergency < 1 Day, ASAP or Weekend - Contact ALS

Analysis Request
(Indicate Filtered or Preserved, F/P)

Sample #	Sample Identification (This description will appear on the report)	Date	Time	Sample Type	Routine	Total Metals (P)	Number of Containers
1	Griffith North Pit	June 4/09	12:30	Surface Grab	✓	✓	2
2	Griffith South Pit	June 4/09	14:00	Surface Grab	✓	✓	2

Special Instructions / Regulations / Hazardous Details

12.9, 12.1

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by: [signature]	Date & Time:	Received by: BPB	Date: 5.June.09	Time: 9:25am	Temperature: 12.5°C	Verified by: [initials]	Date & Time: June 5 1:30pm	Observations: Yes / (No) ? If Yes attach SIF

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - REPORT COPY, PINK - FILE COPY, YELLOW - CLIENT COPY

GENF 18.00 Front

DILLON CONSULTING

Appendix 12: Correspondence from DFO

Fisheries and Oceans Canada | Pêches et Océans Canada

425-100 Main Street
Thunder Bay, Ontario
P7B 6R9

Your file *Votre référence*

April 11, 2011

Our file *Notre référence*
KE-10-2724

Cameron Tymstra
Northern Iron Corporation
658 - 409 Granville Street
Vancouver, British Columbia
V6C 1T2

Dear Mr. Tymstra:

Subject: Not applying the fish habitat protection provisions of the Fisheries Act to the North Pit of the former Griffith Mine

The federal *Fisheries Act* applies to "Canadian fisheries waters" which includes all waters in the fishing zones of Canada and all internal waters of Canada. The North Pit of the former Griffith Iron mine was considered fish habitat since fish are present (probably due to the illegal transfer of fish) and there is evidence that people have fished in the pit.

However, the decision not to apply the fish habitat protection provisions of the *Fisheries Act* to the North Pit is based on the following:

- The North Pit is a result of excavating iron ore from an area where there were no natural lakes or streams present.
- Pits left over from mining have a low productive capacity for producing fish due to low levels of nutrients and limited diversity of shallow water habitat features such as wetlands and substrate types (cobbles, gravel).
- The North Pit is not connected to any natural waterbodies (Bruce Lake) and thus the pit does not provide any habitat or support the fishery in Bruce Lake.
- The provincial fisheries managers (MNR) do not have any fisheries management objectives for either the north or south pits, even though in the past they had considered stocking the pits with rainbow trout.
- Fishing opportunities are not scarce in the area – nearby Bruce and Pakwash lakes provide ample fishing opportunities.
- The pits are not fisheries waters since a mining company holds the mineral rights and private interests hold the surface rights (surface rights patents) over both the north and south pits. Since both surface and mining rights are privately held access to the pits can be restricted.

Canada

.../2

Should you have any questions or comments, please contact me directly by telephone at (807) 346-8251, by fax at (807) 346-8545, or by e-mail at Neville.Ward@dfo-mpo.gc.ca.

Yours sincerely,

Neville Ward
Senior Habitat Biologist

Attachment(s):

c.c.: Peter Hinz MNDMF Thunder Bay
Lesley Barnes MNR Red Lake
Darla Cameron CEAA Toronto
Jim Sutton MOE Thunder Bay

Appendix 13: Press Releases

Northern Iron Corp. Tests Mineralization Under The Griffith Mine Pit

Intersection Of 287.78 Metres Of 32.38% Fe2O3 On Hole GR-11-01 Including 80.0 Metres Of 43.27% Fe2O3 And 58m Of 39.09% Fe2O3.

Vancouver, British Columbia, Canada

February 7, 2012

Northern Iron Corp. ("Northern") (TSX-V: NFE) (FRANKFURT: N8I) today released assay results for drill hole GR-11-01 on the Griffith property, and an additional set of 3 drill holes on the Karas Property. The Karas holes continue testing the true thickness and extent of the magnetite mineralized zone towards the east and at depth.

“The exploratory drill hole on the Griffith confirms the result that the team was expecting. We can now work towards the pit dewatering program, which will enable us to start drilling from the pit benches. In the meantime, definition drilling continues on the Karas property and the drill results continue to show consistency as expected.” said Basil Botha, President & CEO.

Hole GR-11-01 tests non-mined magnetite mineralization under the Griffith mine’s north pit, and intersects a continuous interval of magnetite mineralization, still open at the bottom of the hole. The hole was directed as perpendicular as possible to the mineralized zone and didn’t hit the footwall of the magnetite rich iron formation. Iron grades are comparable to the historically reported grades on the Griffith mine.

Highlights Of Hole GR-11-01 Are Summarized In The Table Below

Hole		**From**	**To**	**Interval**	**Fe_2O_3**
GR-11-01		240	259.17	19.17	31.22
	and	264.71	275	10.29	33.63
	and	292.41	580.19*	287.78	32.39

Hole		From	To	Interval	Fe_2O_3
	including	388.0	468.0	80.0	43.27
	and	477.0	535.0	58.0	39.09

***Mineralization open at depth.**

Holes KA-11-23, 24 and 25 were drilled in the easternmost part of the Karas magnetic anomaly. All three drill holes are collared in magnetite mineralization and intersect the footwall of the magnetite mineralized zone. These holes are definition holes, designed to test the outer extent of the magnetite mineralized zone and as would be expected the reported iron grades are considerably lower than in previously reported holes.

The magnetite rich beds are inter-bedded with schist rich bands.

Highlights Of Holes KA-11-23, 24 And 25 Are Summarized In The Table Below

Hole		From	To	Interval	Fe_2O_3
KA-11-23		6.5	263.17	256.67	15.03
	including	33.0	80.0	47.0	33.01
KA-11-24		11.0	53.83	42.83	20.33

	and	63.1	149.75	86.65	15.32
	and	171.0	249.29	78.29	19.82
KA-11-25		16.76	227.8	211.04	16.62
	and	233.37	314.16	80.79	16.30

To date, 29 of the planned 35 drill holes (approximately 14,000 metre program) have been completed on Northern Iron's 100% owned Karas property, located 15km northeast of the town of Ear Falls, Red Lake mining district, Ontario.

All 2011 and 2012 drill holes were surveyed using a Reflex Maxibor II probe to monitor drill hole deviations in magnetic disturbed environments. Northern's personnel were trained "on-site" by Reflex personnel to operate the instrument and process the survey data. All collars are surveyed by Northern's personnel using an APS differential GPS with 3cm accuracy immediately after the holes are completed. The QA/QC protocol system employed during the 2011 exploration program included procedures for monitoring the chain-of-custody of samples and the insertion of blank samples in every batch of samples. Cross-check analyses are planned to be conducted at a second external laboratory from blind duplicate samples. Drill core samples are being prepared at SGS Canada Inc. in Red Lake, Ontario and assayed at SGS Canada Inc., in Lakeview, Ontario.

Raul Sanabria, P. Geo., is the Qualified Person for the purposes of National Instrument 43-101 for the Karas Exploration Project. Mr. Sanabria has verified and approved the contents of this news release.

About Northern Iron Corp.

Northern Iron is a mineral resource company engaged in reviving a past producing iron mine and concurrent exploration of high quality iron ore resources in the Red Lake mining division, district of Kenora, Ontario, Canada.

Northern Iron holds 100% interest in minerals claims covering approximately 14,672 hectares, comprised of the El Sol Property, the past producing Griffith Property, the Karas Property, the Papaonga Property and the Whitemud-Slate Property.

The Griffith Mine owned at the time by Stelco, produced 78.8 million tonnes of iron ore for conversion to pellets and DRI from 1968-1989. Total magnetic iron recovery was 86.26%.

The Red Lake area is accessible year round by Highway 105, which joins the Trans Canada highway at Vermillion Bay, 175 km south and 100 km east of Kenora. Commercial air services operate to Red Lake from Thunder Bay, Ontario and Winnipeg, Manitoba.

Cautionary Statement

The foregoing information may contain forward-looking statements relating to the future performance of the Company. Forward-looking statements, specifically those concerning future performance, are subject to certain risks and uncertainties, and actual results may differ materially from the Company's plans and expectations. These plans, expectations, risks and uncertainties are detailed herein and from time to time in the filings made by the Company with the TSX Venture Exchange and securities regulators. The Company does not assume any obligation to update or revise its forward-looking statements, whether as a result of new information, future events or otherwise.

Neither the TSX Venture Exchange nor its Regulation Service Provider (as that term is defined in the policies of the TSX Venture Exchange) accepts responsibility for the adequacy or accuracy of this release. No stock exchange, securities commission or other regulatory authority has approved of disapproved the information contained herein.

For further information, please contact:

Basil Botha
President & CEO
Northern Iron Corp.

Tel: 604-566-8570
Fax: 604-602-9868
Email: bbotha@northernironcorp.com

Drill Program Commences On Past Producing Griffith Mine, Red Lake, Ontario

August 9, 2012

Vancouver, British Columbia, Canada – Northern Iron Corp. (**TSX-V: NFE**) **(OTCQX: NHRIF) (FRANKFURT: N8I)** (the "**Company**") announces the start of definition drill holes (approximately 20,000 metres) of the planned 45 drill holes for the 2012-2013 season at the past producing Griffith Iron Ore mine.

"Drilling the Griffith property will enable us to complete our resource calculations for this project, which in turn will be an important de-risking consideration for any strategic partner looking to invest in Northern Iron. The Company continues to hold general discussions with a number of large international prospects who have expressed interest in acquiring HBI from Northern Iron. Demand for metallic product is growing and steel scrap prices are expected to increase over the next few years, while the supply and quality of steel scrap is expected to decrease. Where profit margins are extremely tight, HBI provides steelmakers an alternative in order to achieve the lowest cost per ton of liquid steel." said Basil Botha, President and CEO.

The company has engaged Core Tech Diamond Drilling Ltd, out of Penticton, B.C. to commence drilling of the northern part of the pit. The Company plans to move to a two rig program in the upcoming months after pumping the top 26m of water, which will expose the upper benches of the pit enabling a drill rig to be placed on the benches to access the main part of the iron mineralized zone.

The drill core will be logged, sampled on-site at the Company's Ear Falls facilities, and submitted to SGS Minerals Services, Red Lake for sample preparation and pulps to SGS Lakefield, Ontario for analysis.

The Griffith Property is situated approximately 20 km north of Ear Falls by paved gravel road (Highway 105).

The geological information in the news release has been verified by Raul Sanabria, P.Geo., who is the Qualified Person for Northern Iron Corp. under NI 43-101.

About Northern Iron Corp.

The Company is a mineral resource company engaged in the exploration of high quality iron ore in the Red Lake mining division, district of Kenora, Ontario, Canada. The Company holds 100%

interest in minerals claims covering approximately 14,672 hectares, comprised of the El Sol Property, the Griffith Property, the Karas Property, the Papaonga Property and the Whitemud-Slate Property.

Cautionary Statement

The foregoing information may contain forward-looking statements relating to the future performance of the Company. Forward-looking statements, specifically those concerning future performance, are subject to certain risks and uncertainties, and actual results may differ materially from the Company's plans and expectations. These plans, expectations, risks and uncertainties are detailed herein and from time to time in the filings made by the Company with the TSX Venture Exchange and securities regulators. The Company does not assume any obligation to update or revise its forward-looking statements, whether as a result of new information, future events or otherwise.

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For further information, please contact:
Basil Botha
President & CEO
Northern Iron Corp.

Tel: 604-566-8570
Fax: 604-602-9868
Email: bbotha@northernironcorp.com

Northern Iron Receives Dewatering Permit For The Griffith Mine Pit From The Ministry Of The Environment, Ontario

August 20, 2012

Northern Iron Corp. (**TSX-V: NFE**) **(OTCQX: NHRIF) (FRANKFURT: N8I)** (the "**Company**") announces that on August 15, 2012 the Ministry of the Environment of Ontario issued to the Company the Permit to Take Water from the Former Griffith Mine North Pit. The permit allows the Company to dewater the North Pit to a maximum depth of 25 metres, and is valid until August 13, 2013.

"Receiving the dewatering permit for the North Pit is excellent news and will enable our drill crews to drill from the upper benches. The North Pit phase two application to dewater the remainder of the pit is currently under review by the ministry and in conjunction with this application, a number of the baseline studies have commenced and are progressing extremely well.", said Basil Botha, President & CEO.

The company has engaged Dillon Consulting Limited to complete the project description and DST Consulting Engineers who will be completing the baseline studies.

About Northern Iron Corp.

The Company is 100% owner of five iron ore properties in the Red Lake district containing over 500 million tonnes of historical resources. The Red Lake district is situated in an established mining area in Ontario, where the company has two near term development projects, the past producing Griffith mine and the Karas property.

The Company is currently working towards the production of hot briquetted iron (HBI) a transportable form of direct reduced iron. HBI is complementary and a viable metallic alternative to scrap steel. Quality scrap is a critical raw material in the steel making process. With the diminishing supply of quality steel scrap and ever increasing market demand, steel producers around the world will be looking to secure alternative supplies of metallic products.

As part of the business plan, the Company acquired the past producing Griffith Mine, which produced pellets and sponge iron (Direct Reduced Iron/DRI) from 1968 to 1986. The mine was owned and operated by STELCO and supplied pellets and sponge iron to the Hamilton and Nanticoke steel mills in Ontario. The metallurgy of the deposit has been proven over eighteen years of production.

The entire infrastructure is currently in place to both produce HBI and to ship into the North American market via rail and lake barges and into Asian markets via rail through the port of Prince Rupert.

The Company is focusing on de-risking the project by seeking out potential joint venture partners, off-take agreements or a combination thereof.

Cautionary Statement

The foregoing information may contain forward-looking statements relating to the future performance of the Company. Forward-looking statements, specifically those concerning future performance, are subject to certain risks and uncertainties, and actual results may differ materially from the Company's plans and expectations. These plans, expectations, risks and uncertainties are detailed herein and from time to time in the filings made by the Company with the TSX Venture Exchange and securities regulators. The Company does not assume any obligation to update or revise its forward-looking statements, whether as a result of new information, future events or otherwise.

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Basil Botha
President & CEO
Northern Iron Corp.

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minesite.com Informed comment and independent mining news

November 09, 2012

Northern Iron Is Preparing To Drill Up A Massive Historic Resource In The Red Lake Mining District

By Ryan Jackson in Vancouver

After receiving a de-watering permit for the pit at the historic Griffith Iron Mine in the Red Lake mining district of Ontario, the team at Northern Iron have wasted no time getting the pumps flowing to enable them to undertake a highly prospective drilling program. Basil Botha, president and chief executive of Northern Iron, caught up with Minesite having just returned from a trip to Red Lake overseeing the commencement of de-watering.

The Historic Griffith Pit

"The deepest part of the pit is only 85 metres [and] I think in total there's about 17 million cubic metres of water in that pit", he explains. While that seems like a staggering volume, the plan is to only pump out the first 25 metres and, with pumps running 24 hours a day, they should be drilling in no time.

Basil explains the why de-watering is so important: "It brings us a step closer to the second phase; we started drilling in July on the perimeter of the Griffith pit and we've completed that. The idea is to essentially de-water until the first set of benches so that we can put drills on those benches." While it is possible to drill from the perimeter all the way into the centre of the pit, it would result in considerably more metres of drilling and was deemed to be a poor option.

Once the 25 metres of water is drained and the benches are exposed, the team at Northern Iron will be able to fully drill off the historical resource with the intension of compiling a NI 43-101 complaint resource which

will be an important step towards development at Griffith.

With drilling focused on establishing an initial NI 43-101 compliant resource at Griffith, Basil explains that the historical resource there, within the old mine plan, provides a massive opportunity for the company: "We know historically there's still 120 million tonnes of minable ore there. The pit design was to 325 metres and the deepest part is 85 metres so there's still a bigger hole to be dug there."

If the historical resource, of which 120 million tonnes of ore at 20% iron remains unexploited, can be proven up under the rules set out in NI 43-101, that would provide 20 years of mine life at the proposed rate of 6 million tonnes per annum and serve to provide a very exciting first leap into mining within the Red Lake district for Northern Iron.

What's more, Basil reports; "our calculations indicate that there's potentially a whole lot more there," and further exploration drilling holds the potential to expand upon the historical resource. If Basil's suspicions are correct, that could mean a project on an even larger scale. For now though, Basil is cautiously optimistic and maintains that it is far too early to speculate about a larger scale operation.

What's envisioned so far is a 6 million tonne per annum operation which could produce 1.5 million tonnes of hot briquetted iron (HBI) per year. Once in production, Griffith could serve as a jumping off point to fund the development of Northern Iron's four other properties in the Red Lake District.

In unison with the great strides Northern Iron is taking on the exploration front, there has been a fair bit of progress on the corporate end this year as well. While it has become fashionable in the junior mining sphere to be courting eastern interests, Northern Iron has not only been talking the talk but they're delivering the goods: "We're dealing with two state owned enterprises and Normet, our go between, is an extremely good contact for us", explains Basil.

With the help of the Beijing based Normet Group, a company which imports mine ore and coking coal into China, Northern Iron has successfully taken orders for HBI from both China Railway Materials and Tianjin Materials. The two, state owned, enterprises ordered 900,000 metric tonnes and 60,000 metric tonnes of hot briquetted iron respectively with delivery expected in 2016. The two off-take agreements show that 3rd party companies have considerable faith in Northern Iron's ability to deliver and serve to de-risk the project.

As an additional note, forging strong relationships with the three Chinese groups is an important step for the company as Basil and his team continue to search for international companies who could potentially become suitable joint venture partners. Deep pockets and a long term interest in iron are the qualities which Northern

Iron must find, and there is no finer place to look than in the Middle Kingdom.

Basil believes that Northern Iron has just the right combination of factors to make it attractive to Chinese firms and the timing couldn't be better. The big factor working in Northern Iron's favour is the product they intend to produce; hot briquetted iron. "The preferred method in North America to produce steel is from scrap, hot briquetted iron, reduced iron, and pig iron though the electric arc furnace process. You use less electricity, you use less coke, you create less pollution, and it's essentially a more efficient way of producing steel", explains Basil.

That same technology is still relatively new in China but it is starting to take off in response to government mandates aimed at reducing electricity use and pollution. Basil points out that in the next 5 year plan, China intends to double the import of metallics, including HBI, and, "when they mandate something, they expect these targets to be reached." That bodes well for Northern Iron as reaching the government targets will constitute a significantly increased demand for HBI from China

What's more, while a slowdown of Chinese growth has been in the news of late, Basil points out that 10,000 kilometres of rail infrastructure has been planned and 24 cities have been approved for new metro systems in China. An interesting figure when you consider that China Railway Materials, one of Northern Iron's new the off-take clients, is one of China's largest commodity buyers and a state owned corporation of the Ministry of Railways. "Just look at the infrastructure they're still building there, a lot of people are just not aware of these facts", explains Basil.

The off-take agreements with China Railway Materials and Tianjin Materials are a great sign and hopefully the relationships forged through the Normet Group will lead to partnerships and project financing for Northern Iron as they move forward in Red Lake. Over the short term though, it's de-watering, resource definition, and on to a preliminary economic assessment for Northern Iron's flagship Griffith Project. Basil and his team still have much work to do before they can consider a development decision, but having a historical resource with a massive portion of the previous mine plan still unexploited is a enviable target to have. What's more, Basil reports that Northern Iron is well financed, "with close to C$6 million in the till", so it's reasonable to expect good progress from Northern Iron as management concentrate on building relationships with potential partners and advancing their operations.

Northern Iron Agrees To Sell Two Non-Core Iron Ore Properties For $5,000,000

Ontario Iron Mining Inc. executes an asset purchase agreement for El Sol and Whitemud Properties.

Northern Iron and Ontario Iron Mining Inc. agree to work closely to create synergies and share infrastructure costs to develop the region's iron ore resources.

Vancouver, British Columbia, Canada

November 13, 2012

Northern Iron Corp. ("Northern" or the "Company") (TSX-V: NFE) (OTCQX- NHRIF) (FRANKFURT: N8I) today announced the signing of an asset purchase agreement under which Ontario Iron Mining Inc. (OIMI) will acquire 100% of the El Sol and Whitemud Properties from Northern for $5,000,000. The full sale price will be paid on successful completion of OIMI's exclusive four month due diligence and transfer of property titles.

This agreement represents the first step in OIMI and Northern's collaboration in developing the district and acquiring the strategic funding required for building the mining infrastructure in the area.

Basil Botha, Northern's President & CEO stated, "Our primary assets and focus are the Griffith Mine; a past producer, and Karas property, to produce hot briquetted iron (HBI). The El Sol and Whitemud properties have not been a part of the Company's business plan to produce HBI, and is why the board has considered the transaction. The sale of El Sol and Whitemud properties not only provides us with an extra $5,000,000 in cash, it is also the beginning of an important strategic partnership with OIMI."

Jonas Struthers, a spokesperson for OIMI said, "We will expect to work closely with Northern Iron to create synergies where we can share certain infrastructure costs that will benefit both companies and the region. We look forward to an expanding relationship with the Northern Iron team over the coming years."

As part of OIMI's due diligence period, OIMI plans to spend approximately $2.5 million on diamond drilling, logging core and mapping the two properties.

The El Sol and Whitemud properties have not been part of Northern's business plan as all current exploration expenditures have been focussed on the Griffith and Karas properties. Under the terms of the agreement, should OIMI not conclude the sale, all exploration data will become the sole property of Northern.

The transaction is subject to TSX Venture Exchange approval.

A feasibility study has not been completed and there is no certainty the proposed operation will be economically viable and successful in fulfilling the orders.

About OIMI.

OIMI is a privately owned company, registered in Ontario, Canada. Its shareholders are the controlling shareholders of a leading Chinese commodity handler, trading house and asset manager, with core competency in the iron ore market and a focus on developing brownfield iron ore assets for domestic and international sales.

About Northern Iron Corp.

The Company is a 100% owner of five iron ore properties in the Red Lake district containing over 500 million tonnes of historical resources. The Red Lake district is situated in an established mining area in Ontario, where the company has two near term development projects, the past producing Griffith mine and the Karas property.

A qualified person has not done sufficient work to classify the historical estimate as current mineral resources, the issuer is not treating the historical estimate as current mineral resources.

The Company is currently working towards the production of HBI, a transportable form of direct reduced iron. HBI is complementary and a viable metallic alternative to scrap steel. Quality scrap is a critical raw material in the steel making process. With the diminishing supply of quality scrap steel and ever increasing market demand, steel producers around the world will be looking to secure alternative supplies of metallic products.

As part of the business plan, the Company acquired the past producing Griffith mine, which produced pellets and sponge iron (Direct Reduced Iron/DRI) from 1968 to 1986. The mine was owned and operated by STELCO and supplied pellets and sponge iron to the Hamilton and Nanticoke steel mills in Ontario. The metallurgy of the deposit has been proven over eighteen years of production.

Almost the entire transportation infrastructure is currently in place to both produce HBI and to ship produced HBI into the North American market via rail and lake barges and into Asian markets via rail through the port of Prince Rupert. Existing infrastructure includes all weather roads, 115kV power line, natural gas line, rail bed and port facilities.

The Company is focusing on de-risking the project by seeking out potential joint venture partners, off-take agreements or a combination thereof.

Cautionary Statement

The foregoing information may contain forward-looking statements relating to the future performance of the Company. Forward-looking statements, specifically those concerning future performance, are subject to certain risks and uncertainties, and actual results may differ materially from the Company's plans and expectations. These plans, expectations, risks and uncertainties are detailed herein and from time to time in the filings made by the Company with the TSX Venture Exchange and securities regulators. The Company does not assume any obligation to update or revise its forward-looking statements, whether as a result of new information, future events or otherwise.

Neither the TSX Venture Exchange nor its Regulation Service Provider (as that term is defined in the policies of the TSX Venture Exchange) accepts responsibility for the adequacy or accuracy of this release. No stock exchange, securities commission or other regulatory authority has approved of disapproved the information contained herein.

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The Town Council of Ear Falls Passes a Resolution Supporting Northern Iron's Re-Development of The Griffith Iron Ore Mine

The Corporation of the Town of Ear Falls:

- **Recognizes the positive economic impacts the project will have on the community of Ear Falls.**
- **Has no objections and supports the proposed redevelopment of the Griffith Iron Ore Mine.**

Vancouver, British Columbia, Canada – November 29, 2012

Northern Iron Corp. ("Northern" or the "Company") (TSX-V: NFE) (OTCQX- NHRIF) (FRANKFURT: N8I) today announced that it has received notification that on November 7, 2012, the Council of The Corporation of Ear Falls (Ear Falls Ear Council) passed a resolution supporting the proposed redevelopment of the Griffith Iron Ore Mine.

The resolution states that the Ear Falls Council recognizes the positive economic impacts for both the community of Ear Falls and for the region. It also highlighted that the Town of Ear Falls has no objections and supports Northern Iron's proposed redevelopment of the Griffith Iron Ore Mine.

Basil Botha, Northern's President & CEO stated, "Northern Iron is committed to bringing the Griffith Mine back into production and as a result will help re-build a vibrant community in the Ear Falls/Red Lake area. We are grateful for the tremendous amount of verbal support from the local community and this resolution formalizes that. An active mine in the area will bring as many as 600 new quality full time jobs to the region. We are clear that as this project develops we have an important role as good corporate neighbours and a social responsibility to develop facilities that will benefit the community."

Kevin Kahoot, The Mayor of Ear Falls said; "Council and the Township of Ear Falls are very supportive of Northern Iron's project, which is, and will be, a critical economic driver for the community and the region."

A feasibility study has not been completed and there is no certainty the proposed operation will be economically viable and successful in fulfilling the orders.

About Northern Iron Corp.

The Company is a 100% owner of five iron ore properties in the Red Lake district containing over 500 million tonnes of historical resources with grades ranging from 22% to 31% Fe. The Red Lake district is situated in an established mining area in Ontario, where the company has two near term development projects, the past producing Griffith mine and the Karas property.

A qualified person has not done sufficient work to classify the historical estimate as current mineral resources; the issuer is not treating the historical estimate as current mineral resources.

The Company is currently working towards the production of HBI, a transportable form of direct reduced iron. HBI is complementary and a viable metallic alternative to scrap steel. Quality scrap is a critical raw material in the steel making process. With the diminishing supply of quality scrap steel and ever increasing market demand, steel producers around the world will be looking to secure alternative supplies of metallic products.

As part of the business plan, the Company acquired the past producing Griffith mine, which produced pellets and sponge iron (Direct Reduced Iron/DRI) from 1968 to 1986. The mine was owned and operated by STELCO and supplied pellets and sponge iron to the Hamilton and Nanticoke steel mills in Ontario. The metallurgy of the deposit has been proven over eighteen years of production.

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The Company is focusing on de-risking the project by seeking out potential joint venture partners, off-take agreements or a combination thereof.

Cautionary Statement

The foregoing information may contain forward-looking statements relating to the future performance of the Company. Forward-looking statements, specifically those concerning future performance, are subject to certain risks and uncertainties, and actual results may differ materially from the Company's plans and expectations. These plans, expectations, risks and uncertainties are detailed herein and from time to time in the filings made by the Company with the TSX Venture Exchange

and securities regulators. The Company does not assume any obligation to update or revise its forward-looking statements, whether as a result of new information, future events or otherwise.

Neither the TSX Venture Exchange nor its Regulation Service Provider (as that term is defined in the policies of the TSX Venture Exchange) accepts responsibility for the adequacy or accuracy of this release. No stock exchange, securities commission or other regulatory authority has approved or disapproved the information contained herein.

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