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Pig Iron Facility Project - Saguenay

Final Report (English Version)

Environmental Impact Study submitted to the Ministry of Sustainable Development, Environment and the Fight against Climate Change (MDDELCC)

File: 3211-14-037

North Atlantic Iron Corporation



Environment & Geoscience



July | 2016

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Acronyms

AADT	Average Annual Daily Traffic
AARQ	Amphibian and Reptile Atlas of Quebec (<i>Atlas des amphibiens et des reptiles du Québec</i>)
AEGL	Acute Exposure Guideline Levels
AEPHIS	Association of the Enterprises of the Industrial Park of the Haut-Saguenay Inc. (<i>Association des Entreprises du Parc Industriel du Haut-Saguenay inc.</i>)
AIHA	American Industrial Hygienist Association
APS	Saguenay Port Authority (<i>Administration portuaire de Saguenay</i>)
ATU	Acute Toxicity Unit
AVS	Attestation of Vocational Specialization
BAPE	Bureau des audiences publiques sur l'environnement
BATEA	Best available technologies economically achievable
BDTQ	Quebec Topographic Database
BF	Blast Furnace
BNQ	<i>Bureau de la normalisation du Québec</i>
BOD ₅	Biological Oxygen Demand, 5 days
BOF	Basic Oxygen Furnace
BPT	Best Practicable Control Technology
BQMA	Aquatic Environment Quality Database (<i>Banque de données sur la qualité du milieu aquatique</i>)
C ₁₀ -C ₅₀	Petroleum Hydrocarbon Chains 10-50 Carbons in Length
CA	Certificate of Authorization
CAAQS	Canadian Ambient Air Quality Standards
CAR	Clean Air Regulation
CCISF	Chamber of commerce and industry in Saguenay-Le Fjord (<i>Chambre de commerce et d'industrie Saguenay – Le Fjord</i>)
CCPS	Center for Chemical Process Safety
CDPNQ	Quebec Natural Heritage Data Center
CEC	Chicoutimi Environment Committee (<i>Comité de l'environnement de Chicoutimi</i>)

CEGEP	General and Vocational Education Colleges
CEMP	Construction Environmental Management Plan
CFRS	Roberval and Saguenay Railway Company
CFU	Colony-Forming Units
CIUSSS	Integrated University Health and Social Services Center
CLD	Local Development Center (<i>Centre Local de Développement</i>)
CLSC	Health and Social Services Center
CN	Canadian National (Railway)
CNRC	National Research Council of Canada (<i>Conseil national de recherche du Canada</i>)
COP21	21st Conference of Parties
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
COSEPAC	Comité sur la situation des espèces en péril au Canada
CPTAQ	Commission for the Protection of Agricultural Land in Quebec
CQRDA	Quebec Aluminum Research and Development Center
CRAIM	Council for the Reduction of Major Industrial Accidents
CREDD	Regional environmental and sustainable development council of Saguenay-Lac-Saint-Jean (<i>Conseil régional de l'environnement et du développement durable du Saguenay-Lac-Saint-Jean</i>)
CRRNT	Commission régionale sur les ressources naturelles et le territoire du Saguenay-Lac-Saint-Jean
CSA	Canadian Standards Association
CSE	Canadian Securities Exchange
CSSSC	Chicoutimi Health and Social Services Center
CTA	Aluminum Technology Center
CTU	Chronic Toxicity Unit
CURAL	University Research Center on Aluminum
DEE	Direction générale de l'évaluation environnementale
DIPPR	Design Institute for Physical Property
DMDS	Dimethyl Disulfide
DR	Direct Reduction

DRI	Direct Reduced Iron
DUC	Ducks Unlimited Canada
EAF	Electric Arc Furnace
EDO	Environmental Discharge Objective
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EPA	Environmental Protection Agency
EPOQ	Studies of Bird Populations in Quebec
ERPG	Emergency Response Planning Guidelines
ESAI	Environmental and Social Impact Assessment
ESP	Electrostatic Precipitator
FSM	Forks Specialty Metals
FQCQ	Fédération québécoise des clubs quad
FTE	Full-time Equivalents
GDP	Gross Domestic Product
GHG	Greenhouse Gases
GIEBV	Integrated Management of Water per Watershed (<i>Gestion intégrée de l'eau par bassin versant</i>)
GR3MB	Research Group on Renewable Resources in the Boreal Forest
GRI	Grand River Ironsands
HBI	Hot Briquetting Iron
HHV	High Heating Value
HRC	Hot Rolled Coil
ISQ	Statistical Institute of Quebec
JSE	Johannesbourg Stock Exchange
LEMV	Act Respecting Threatened or Vulnerable Species
LFL	Lower Flammable Limit
LNG	Liquefied Natural Gas
LS	Liquid Steel

MAPAQ	Ministry of Agriculture and Fish of Quebec (<i>Ministère de l'Agriculture et des Pêches du Québec</i>)
MAPR	Multi-sector Air Pollutants Regulations of Canada
MCC	Ministry of Culture and Communication (<i>Ministère de la Culture et des Communications</i>)
MDDEFP	Ministry of Sustainable Development, Environment, Wildlife and Parks (<i>Ministère du Développement durable, de l'Environnement, de la Faune et des Parcs</i> , former name of the MDDELCC)
MDDELCC	Ministry of Sustainable Development, Environment, and the Fight against Climate Change (<i>Ministère du Développement durable, de l'Environnement, de la Lutte contre les Changements Climatiques</i>)
(a)MDEA	(Activated) Methyl diethanolamine
MEDD	Ministry of Ecology and Sustainable Development
MEEDDM	Ministry of Ecology, Energy, Sustainable Development and the Sea
MEIE	Ministry of Economy, Innovation and Exports
MERN	Ministry of Energy and Natural Resources
MFFP	Ministry of Wildlife, Forests and Parks
MMER	Metal Mining Effluent Regulations
MRNF	Ministry of Natural Resources and Wildlife
MTM	Modified Transverse Mercator
MTQ	Ministry of Transport of Quebec
NAFTA	North American Free Trade Agreement
NAD83	North American Datum of 1983
NAIC	North Atlantic Iron Corporation
NBC	National Building Code of Canada
NFC	National Fire Code of Canada
NFPA	National Fire Protection Association
NQISL	Internal Short Line Railroad of Northern Quebec
OBV	Watershed Organization (<i>organisme de bassin versant</i>)
OSHA	Occupational Safety and Health Administration
PAE	Comprehensive Development Plan
PAHs	Polycyclic Aromatic Hydrocarbons

PCB	Polychloride biphenyl
PCDD-F	Polychlorinated dibenzodioxins/furans
Petmin	Petmin Limited
PHAST	Process Hazards Analysis Software Tools
PM	Particulate Matter
PM _{2.5}	Particulate Matter, diameter ≤ 2.5 microns
PM _T	Total Particulate Matter
PVC	Polyvinyl chloride
Q2	2 nd Quarter
QCT	Quenching Cooling Tower
RAA	Clean Air Regulation
RCM	Regional County Municipality (<i>Municipalité régionale de comté, MRC</i>)
RMMP	Residual Material (Waste) Management Plant
RMRCECA	Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere
RQO	Regroupement Quebec Oiseaux
RPRT	Land Protection and Rehabilitation Regulation (<i>Règlement sur la protection et la réhabilitation des terrains</i>)
SAA	Secrétariat aux affaires autochtones
SAE	Service to companies (<i>Service aux entreprises</i>)
SARA	Species at Risk Act
SCR	Selective Catalytic Reduction
SEI	Irreversible Effects Threshold (<i>seuil des effets irréversibles</i>)
SELS	Lethal Significant Effects Threshold (<i>seuil des effets létaux significatifs</i>)
SER	Reversible Effects Threshold (<i>seuil des effets réversibles</i>)
SIEF	Ecoforest Information System (<i>système d'information écoforestière</i>)
SIGEOM	Geomining Information System of Quebec (<i>Système d'information géominière du Québec</i>)
SLDTV	Species Likely to be Designated Threatened or Vulnerable
SME	Small and Medium-sized Enterprises

SMS	Surface Mineral Substances
SOS-POP	Endangered Species Monitoring
SPA	Saguenay Port Authority
SPEL	First Lethal Effects Threshold (<i>seuil des premiers effets létaux</i>)
TERMPOL	Technical Review Process of Marine Terminal Systems in Transshipment Sites
TOC	Total Organic Compounds
TSS	Total Suspended Solids
UGAF	Fur-Bearing Animal Management Unit
UQAM	University of Quebec in Chicoutimi
UTM	Universal Transverse Mercator
UV	Ultra-violet
VOC	Volatile Organic Compound
VSD	Vocational Studies Diploma
WSA	Waterfowl Staging Area
WHMIS	Canadian Workplace Hazardous Materials Information System
ZEC	Controlled operating zone (<i>Zone d'exploitation contrôlée</i>)
ZR	Zero Reformer

Chemical Formulas

Al_2O_3	Aluminum Oxide, Alumina
CaCO_3	Calcium Carbonate
CaO	Calcium Oxide
CH_4	Methane
CO	Carbon Monoxide
CO_2	Carbon Dioxide
Fe	Iron
Fe_2O_3	Iron(III) Oxide
Fe_3C	Iron Carbide
FeCl_3	Ferric Chloride
H_2	Hydrogen
H_2O	Water
H_2S	Hydrogen Sulfide
MgO	Magnesium Oxide
N_2	Nitrogen
Na^+	Sodium Ion
NaCl	Salt, Sodium Chloride
NO_3	Nitrates
NO_x	Mono-nitrogen Oxides
SiO_2	Silicon Oxide
SO_2	Sulfur Dioxide

Units and Symbols

dBa	A-weighted decibels
g/kmV	grams per kilometer traveled
ha	hectares
kg/h	kilogram per hour
km	kilometer
kV	kilovolt
m ³	cubic meters
m ³ /d	cubic meters per day
m ³ /h	cubic meters per hour
mg/l	milligram per liter
M t/y	Million tons per year
MVA	Mega Volt Amp
MW	megawatts
Nm ³ /h	Normal cubic meters per hour
Ppb	parts per billion
ppmvs	parts per million by volume
t/h	tons per hour
µg/m ³	micrograms per meter cubed