MASON GRAPHITE

NI 43-101 Technical Report

FEASIBILITY STUDY UPDATE of the LAC GUÉRET GRAPHITE PROJECT

Québec, Canada

Prepared by Qualified Persons:

Jeffrey Cassoff, P. Eng., BBA Inc.
Angelo Grandillo, M. Eng., P. Eng., BBA Inc.
Luciano Piciacchia, Ph.D., P. Eng., BBA Inc.
Simon Fortier, P. Eng., Soutex Inc.
Claude Duplessis, P. Eng., GoldMinds Geoservices Inc.
Merouane Rachidi, Ph.D., P. Geo., GoldMinds Geoservices Inc.

BBA

GOLDMINDS GEOSERVICES

SOUTEX

Effective Date: December 5, 2018
Issue Date: December 11, 2018

DATE AND SIGNATURE PAGE

This report is effective as of the 5th day of December 2018.

"Original signed and sealed"	December 11, 2018
Jeffrey Cassoff, P. Eng. BBA Inc.	Date
"Original signed and sealed"	December 11, 2018
Angelo Grandillo, M. Eng., P. Eng. BBA Inc.	Date
"Original signed and sealed"	December 11, 2018
Luciano Piciacchia, Ph.D., P. Eng. BBA Inc.	Date
"Original signed and sealed"	December 11, 2018
Simon Fortier, P. Eng. Soutex Inc.	Date
"Original signed and sealed"	December 11, 2018
Claude Duplessis, P. Eng. GoldMinds Geoservices Inc.	Date
"Original signed and sealed"	December 11, 2018
Merouane Rachidi, Ph.D., P. Geo. GoldMinds Geoservices Inc.	Date

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T +1 514.866.2111
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bba.ca

December 11, 2018

TO: Mason Graphite Inc.

AND TO:

Alberta Securities Commission
Autorité des marchés financiers (Québec)
British Columbia Securities Commission
Ontario Securities Commission

AND TO: Toronto Stock Exchange

CONSENT of QUALIFIED PERSON – FILED BY SEDAR

I, Jeffrey Cassoff, P. Eng., consent to the public filing of the Technical Report titled "NI 43-101 Technical Report: Feasibility Study Update of the Lac Guéret Graphite Project, Québec, Canada" (the "Technical Report") dated December 11, 2018 and prepared for Mason Graphite Inc. with the securities regulatory authorities referred to above.

I also consent to any extracts from or a summary of the Technical Report in the press release entitled "Mason Graphite Presents Its Updated Feasibility Study Economic Results for the Lac Guéret Graphite Project" and dated December 5, 2018 (the "Press Release").

I certify that I have read the Press Release and that it fairly and accurately represents the information in the sections of the Technical Report for which I am responsible.

Dated this 11th day of December, 2018.

"Original signed"

Jeffrey Cassoff, P. Eng.

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Montréal, QC H3A 2A5
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bba.ca

CERTIFICATE OF QUALIFIED PERSON

Jeffrey Cassoff, P. Eng.

This certificate applies to the NI 43-101 Technical Report for the Feasibility Study Update of the Lac Guéret Graphite Project in Québec, Canada (the "Technical Report"), prepared for Mason Graphite Inc. issued on December 11, 2018 and effective on December 5, 2018.

I, Jeffrey Cassoff, P. Eng., do hereby certify that:

1. I am a Senior Mining Engineer and Team Leader with BBA Inc. located at 2020 Robert-Bourassa Blvd., Suite 300, Montreal, Quebec, H3A 2A5.
2. I am a graduate of McGill University of Montréal with a B. Eng. in Mining in 1999.
3. I am in good standing as a member of the Order of Engineers of Québec (#5002252).
4. I have practiced my profession continuously since my graduation in 1999. My relevant experience includes mine planning and mine operations. As a consultant I have worked on many NI 43-101 studies including several graphite projects.
5. I have read the definition of "qualified person" set out in the NI 43-101 – Standards of Disclosure for Mineral Projects ("NI 43-101") and certify that, by reason of my education, affiliation with a professional association, and past relevant work experience, I fulfill the requirements to be a qualified person for the purposes of NI 43-101.
6. I am independent of the issuer applying all the tests in Section 1.5 of NI 43-101.
7. I am responsible for the preparation of Chapters 15 and 16. I am also responsible for the relevant portions of Chapters 1, 25, 26, and 27 of the Technical Report.
8. I personally visited the Lac Guéret property on December 1, 2014 and the Baie-Comeau site on December 2, 2014.
9. I have had prior involvement with the Lac Guéret Project as a "qualified person" for the June 2013 Preliminary Economic Assessment Study and the February 2016 Feasibility Study.
10. I have read NI 43-101 and the sections of the Technical Report for which I am responsible have been prepared in compliance with NI 43-101.
11. As at the effective date of the Technical Report, to the best of my knowledge, information and belief, the sections of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the portions of the Technical Report for which I am responsible not misleading.

Signed this 11th day of December, 2018.

"Original signed and sealed"

Jeffrey Cassoff, P. Eng.

BBA

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December 11, 2018

TO: Mason Graphite Inc.

AND TO:

Alberta Securities Commission
Autorité des marchés financiers (Québec)
British Columbia Securities Commission
Ontario Securities Commission

AND TO: Toronto Stock Exchange

CONSENT of QUALIFIED PERSON – FILED BY SEDAR

I, Angelo Grandillo, M. Eng., P. Eng., consent to the public filing of the Technical Report titled "NI 43-101 Technical Report: Feasibility Study Update of the Lac Guéret Graphite Project, Québec, Canada" (the "Technical Report") dated December 11, 2018 and prepared for Mason Graphite Inc. with the securities regulatory authorities referred to above.

I also consent to any extracts from or a summary of the Technical Report in the press release entitled "Mason Graphite Presents Its Updated Feasibility Study Economic Results for the Lac Guéret Graphite Project" and dated December 5, 2018 (the "Press Release").

I certify that I have read the Press Release and that it fairly and accurately represents the information in the sections of the Technical Report for which I am responsible.

Signed this 11th day of December, 2018.

"Original signed"

Angelo Grandillo, M. Eng., P. Eng.

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Montréal, QC H3A 2A5
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bba.ca

CERTIFICATE OF QUALIFIED PERSON

Angelo Grandillo, M. Eng., P. Eng.

This certificate applies to the NI 43-101 Technical Report for the Feasibility Study Update of the Lac Guéret Graphite Project in Québec, Canada (the "Technical Report"), prepared for Mason Graphite Inc. issued on December 11, 2018 and effective on December 5, 2018.

I, Angelo Grandillo, M. Eng., P. Eng., do hereby certify that:

1. I am an Associate and a Project Manager in the consulting firm:

   BBA Inc.
   2020 Robert-Bourassa Blvd., Suite 300
   Montréal, Québec, Canada H3A 2A5
2. I am a graduate of McGill University of Montréal with a B. Eng. in Metallurgy in 1981, and M. Eng. in 1988
3. I am in good standing as a member of the Order of Engineers of Québec (#38342) and Professional Engineers and Geoscientists, Newfoundland and Labrador (#06360)
4. I have practiced my profession continuously since my graduation in 1981. My relevant experience includes technical and operations management and project management
5. I have read the definition of "qualified person" set out in the NI 43-101 – Standards of Disclosure for Mineral Projects ("NI 43-101") and certify that, by reason of my education, affiliation with a professional association, and past relevant work experience, I fulfill the requirements to be a qualified person for the purposes of NI 43-101.
6. I am independent of the issuer applying all the tests in Section 1.5 of NI 43-101.
7. I have audited and reviewed and am responsible for Chapters: 2, 3, 18 (except Section 18.2.6), 19, 21, 22 and 24, and Sections 4.2, 5.2 and 6.2. I am also responsible for the relevant portions of Chapters 1, 25, 26 and 27 of the Technical Report.
8. I personally have not visited the property that is the subject to the Technical Report.
9. I have had no prior involvement with the property that is the subject of the Technical Report.
10. I have read NI 43-101 and the sections of the Technical Report for which I am responsible have been prepared in compliance with NI 43-101.
11. As of the effective date of the Technical Report, to the best of my knowledge, information and belief, the sections of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the portions of the Technical Report for which I am responsible not misleading.

Signed this 11th day of December, 2018.

"Original signed and sealed"

Angelo Grandillo, M. Eng., P. Eng.

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Montréal, QC H3A 2A5
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bba.ca

December 11, 2018

TO: Mason Graphite Inc.

AND TO:

Alberta Securities Commission
Autorité des marchés financiers (Québec)
British Columbia Securities Commission
Ontario Securities Commission

AND TO: Toronto Stock Exchange

CONSENT of QUALIFIED PERSON – FILED BY SEDAR

I, Luciano Piciacchia, Ph.D., P. Eng., consent to the public filing of the Technical Report titled "NI 43-101 Technical Report: Feasibility Study Update of the Lac Guéret Graphite Project, Québec, Canada" (the "Technical Report") dated December 11, 2018 and prepared for Mason Graphite Inc. with the securities regulatory authorities referred to above.

I also consent to any extracts from or a summary of the Technical Report in the press release entitled "Mason Graphite Presents Its Updated Feasibility Study Economic Results for the Lac Guéret Graphite Project" and dated December 5, 2018 (the "Press Release").

I certify that I have read the Press Release and that it fairly and accurately represents the information in the sections of the Technical Report for which I am responsible.

Signed this 11th day of December, 2018.

"Original signed"

Luciano Piciacchia, Ph.D., P. Eng.

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Montréal, QC H3A 2A5
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bba.ca

CERTIFICATE OF QUALIFIED PERSON

Luciano Piciacchia, Ph.D., P. Eng.

This certificate applies to the NI 43-101 Technical Report for the Feasibility Study Update of the Lac Guéret Graphite Project in Québec, Canada (the "Technical Report"), prepared for Mason Graphite Inc. issued on December 11, 2018 and effective on December 5, 2018.

I, Luciano Piciacchia, Ph.D., P. Eng., do hereby certify that:

1. I am an engineer and the director of Waste Management with BBA Inc. located at 2020 Robert-Bourassa Blvd., Suite 300, Montréal, Québec H3A 2A5, Canada.
2. I am a graduate of mining engineering from McGill University in 1981 and a Masters' and Ph.D. focusing in soil and rock geotechnics, also from McGill in 1983 and 1988.
3. I am a member of the order of engineers in, Quebec, Ontario, Newfoundland & Labrador, British Columbia and Nunavut.
4. I have over 30 years of experience in geotechnical engineering with a focus on mining. I have applied my geotechnical / civil background to mine waste management, including waste rock, tailings and water.
5. I have read the definition of "qualified person" set out in the NI 43-101 – Standards of Disclosure for Mineral Projects ("NI 43-101") and certify that, by reason of my education, affiliation with a professional association, and past relevant work experience, I fulfill the requirements to be a qualified person for the purposes of NI 43-101.
6. I am independent of the issuer applying all the tests in Section 1.5 of NI 43-101.
7. I am responsible for the preparation of Chapter 20 and Section 18.2.6 as they relate to the tailings facility. I am also responsible for the relevant portions of Chapters 1, 25, 26 and 27 of the Technical Report.
8. I personally visited the property that is the subject to the Technical Report on June 7, 2017.
9. I have had no prior involvement with the property that is the subject of the Technical Report.
10. I have read NI 43-101 and the sections of the Technical Report for which I am responsible have been prepared in compliance with NI 43-101.
11. As at the effective date of the Technical Report, to the best of my knowledge, information and belief, the sections of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the portions of the Technical Report for which I am responsible not misleading.

Signed this 11th day of December, 2018.

"Original signed and sealed"

Luciano Piciacchia, Ph.D., P. Eng.

2999 Chemin Ste-Foy, suite 200
Québec, QC G1X 1P7
T +1 418.653=9559
GoldMindsGeoservices.com

December 11, 2018

TO: Mason Graphite Inc.

AND TO:

Alberta Securities Commission
Autorité des marchés financiers (Québec)
British Columbia Securities Commission
Ontario Securities Commission

AND TO: Toronto Stock Exchange

CONSENT of QUALIFIED PERSON – FILED BY SEDAR

I, Claude Duplessis P. Eng., consent to the public filing of the Technical Report titled "NI 43-101 Technical Report: Feasibility Study Update of the Lac Guéret Graphite Project, Québec, Canada" (the "Technical Report") dated December 11, 2018 and prepared for Mason Graphite Inc. with the securities regulatory authorities referred to above.

I also consent to any extracts from or a summary of the Technical Report in the press release entitled "Mason Graphite Presents Its Updated Feasibility Study Economic Results for the Lac Guéret Graphite Project" and dated December 5, 2018 (the "Press Release").

I certify that I have read the Press Release and that it fairly and accurately represents the information in the sections of the Technical Report for which I am responsible.

Signed this 11th day of December, 2018.

"Original signed"

Claude Duplessis, P. Eng.

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GoldMindsGeoservices.com

CERTIFICATE OF QUALIFIED PERSON

Claude Duplessis, P. Eng.

This certificate applies to the NI 43-101 Technical Report for the Feasibility Study Update of the Lac Guéret Graphite Project in Québec, Canada (the "Technical Report"), prepared for Mason Graphite Inc. issued on December 11, 2018 and effective on December 5, 2018.

I, Claude Duplessis, P. Eng., do hereby certify that:

1. I am a senior engineer and consultant with GoldMinds Geoservices Inc. with an office at 2999 Chemin Ste-Foy, Suite 200, Québec, Québec, Canada, G1W 3N3;
2. I am a graduate from the University of Québec in Chicoutimi, Québec in 1988 with a B.Sc.A in geological engineering and I have practiced my profession continuously since that time, I am a registered member of the Ordre des ingénieurs du Québec, registration #45523, a registered member of APEGNB license #L5733 as well as in Ontario, Alberta and Newfoundland & Labrador. I have worked as an engineer for a total of 30 years since my graduation. My relevant experience for the purpose of the Technical Report is: Over 25 years of consulting in the field of exploration, mineral resource estimation, orebody modeling, engineering geology, mineral resource auditing, geotechnical engineering, mine planning and project economic analysis;
3. I have read the definition of "qualified person" set out in the NI 43-101 – Standards of Disclosure for Mineral Projects ("NI 43-101") and certify that, by reason of my education, affiliation with a professional association, and past relevant work experience, I fulfill the requirements to be a qualified person for the purposes of NI 43-101.
4. I am independent of the issuer applying all the tests in Section 1.5 of NI 43-101.
5. I am responsible and co-author for the preparation of Chapters 1, 4 to 12 (except 4.2, 5.2 and 6.2), 14, 23, 25 and 26 of the Technical Report.
6. I personally visited the property that is the subject to the Technical Report on August 2-3, 2016.
7. I have had no prior involvement with the property that is the subject of the Technical Report.
8. I have read NI 43-101 and the sections of the Technical Report for which I am responsible have been prepared in compliance with NI 43-101.
9. As at the effective date of the Technical Report, to the best of my knowledge, information and belief, the sections of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the portions of the Technical Report for which I am responsible not misleading.

Signed this 11th day of December, 2018.

"Original signed and sealed"

Claude Duplessis, P. Eng.

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British Columbia Securities Commission
Ontario Securities Commission

AND TO: Toronto Stock Exchange

CONSENT of QUALIFIED PERSON – FILED BY SEDAR

I, Merouane Rachidi, P. Geo., Ph.D., consent to the public filing of the Technical Report titled “NI 43-101 Technical Report: Feasibility Study Update of the Lac Guéret Graphite Project, Québec, Canada” (the “Technical Report”) dated December 11, 2018 and prepared for Mason Graphite Inc. with the securities regulatory authorities referred to above.

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I certify that I have read the Press Release and that it fairly and accurately represents the information in the sections of the Technical Report for which I am responsible.

Signed this 11th day of December, 2018.

“Original signed”

Merouane Rachidi, P. Geo., Ph.D.

2999 Chemin Ste-Foy, suite 200
Québec, QC G1X 1P7
T +1 418.653=9559
GoldMindsGeoservices.com

CERTIFICATE OF QUALIFIED PERSON

Merouane Rachidi, P. Geo., Ph.D.

This certificate applies to the NI 43-101 Technical Report for the Feasibility Study Update of the Lac Guéret Graphite Project in Québec, Canada (the "Technical Report"), prepared for Mason Graphite Inc. issued on December 11, 2018 and effective on December 5, 2018.

I, Merouane Rachidi, P. Geo., Ph.D., do hereby certify that:

1. I am a Geologist and consultant with GoldMinds Geoservices Inc. with an office at 2999 Chemin Ste-Foy, Suite 200, Québec, Québec, Canada, G1W 3N3;
2. I am a graduate from Laval University in Québec city (Ph.D., in Geology, 2012) and I have practiced my profession continuously since that time. I am a registered member of the Ordre des Géologues du Québec, registration #1792, a registered member of APEGNB license # L5769, and member of APGO registered #2998. I have worked as a geologist since my graduation. My relevant experience for the purpose of the Technical Report is over five years of consulting in the field of exploration, mineral resource estimation, 3D orebody modeling, geology, mineral resource estimation and mine planning;
3. I have read the definition of "qualified person" set out in the NI 43-101 – Standards of Disclosure for Mineral Projects ("NI 43-101") and certify that, by reason of my education, affiliation with a professional association, and past relevant work experience, I fulfill the requirements to be a qualified person for the purposes of NI 43-101.
4. I am independent of the issuer applying all the tests in Section 1.5 of NI 43-101.
5. I am responsible and co-author for the preparation of Chapters 1, 4 to 12 (except 4.2, 5.2 and 6.2), 14, 23, 25, 26 and 27 of the Technical Report.
6. I have not visited the property that is the subject to the Technical Report.
7. I have had no prior involvement with the property that is the subject of the Technical Report.
8. I have read NI 43-101 and the sections of the Technical Report for which I am responsible have been prepared in compliance with NI 43-101.
9. As at the effective date of the Technical Report, to the best of my knowledge, information and belief, the sections of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the portions of the Technical Report for which I am responsible not misleading.

Signed this 11th day of December, 2018.

"Original signed and sealed"

Merouane Rachidi, P. Geo., Ph. D.

SOUTEX

25 boulevard La Fayette
Bureau 202
Longueuil, QC J4K 5C8
T +1 418.871.2455

soutex.ca

December 11, 2018

TO: Mason Graphite Inc.

AND TO:

Alberta Securities Commission
Autorité des marchés financiers (Québec)
British Columbia Securities Commission
Ontario Securities Commission

AND TO: Toronto Stock Exchange

CONSENT of QUALIFIED PERSON – FILED BY SEDAR

I, Simon Fortier, P. Eng., consent to the public filing of the Technical Report titled "NI 43-101 Technical Report: Feasibility Study Update of the Lac Guéret Graphite Project, Québec, Canada" (the "Technical Report") dated December 11, 2018 and prepared for Mason Graphite Inc. with the securities regulatory authorities referred to above.

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I certify that I have read the Press Release and that it fairly and accurately represents the information in the sections of the Technical Report for which I am responsible.

Signed this 11th day of December, 2018.

"Original signed"

Simon Fortier, P. Eng.

SOUTEX

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Simon Fortier, P. Eng.

This certificate applies to the NI 43-101 Technical Report for the Feasibility Study Update of the Lac Guéret Graphite Project in Québec, Canada (the “Technical Report”), prepared for Mason Graphite Inc. issued on December 11, 2018 and effective on December 5, 2018.

I, Simon Fortier, P. Eng., do hereby certify that:

1. I am a Senior Metallurgist and Director with Soutex located at:
   25 rue La Fayette, bureau 202
   Longueuil, Québec
   J4K 5C8, tel: (418) 871-2455
2. I am a graduate of Bachelor of Materials and Metallurgical Engineering from Laval University, Quebec, Canada in 2000.
3. I am a registered member of the “Ordre des Ingénieurs du Québec” (OIQ#125118).
4. I have practiced my profession continuously since 2000 and have been involved in mineral processing for a total of 17 years since my graduation from University. This has involved working in Canada. My experience is principally in ore processing.
5. I have read the definition of “qualified person” set out in the NI 43-101 – Standards of Disclosure for Mineral Projects (“NI 43-101”) and certify that, by reason of my education, affiliation with a professional association, and past relevant work experience, I fulfill the requirements to be a qualified person for the purposes of NI 43-101.
6. I am independent of the issuer applying all the tests in Section 1.5 of NI 43-101.
7. I am responsible for the preparation of Chapters 13 and 17. I am also responsible for the relevant portions of Chapters 1, 25, 26, and 27 of the Technical Report.
8. I have not visited the property that is the subject to the Technical Report.
9. I have had no prior involvement with the property that is the subject of the Technical Report.
10. I have read NI 43-101 and the sections of the Technical Report for which I am responsible have been prepared in compliance with NI 43-101.
11. As at the effective date of the Technical Report, to the best of my knowledge, information and belief, the sections of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the portions of the Technical Report for which I am responsible not misleading.

Signed this 11th day of December, 2018

“Original signed and sealed”

Simon Fortier, P. Eng.

TABLE OF CONTENT

List of Tables

List of Figures

LIST OF ABBREVIATIONS AND UNITS OF MEASURE

Company and Organization Names Used in this Report

Full Name	Short Form
Accurassay Laboratories	Accurassay
AGAT Laboratories	AGAT
BBA Inc.	BBA
Bureau d'audiences publiques en environnement	BAPE
City of Baie-Comeau	Baie-Comeau or the City
Golder Associates	Golder
GoldMinds Géoservices Inc.	GMG
Groupe Cadoret, Arpenteurs Géomètres	Cadoret
International Plasma Laboratory Ltd.	IPS
Mason Graphite Inc.	Mason Graphite or the Company or the Issuer
Ministère de l'Environnement et de la Lutte contre les changements climatiques (Québec)	MELCC
Ministère de l'Énergie et des Ressources naturelles (Québec)	MERN
Ministère des Transports du Québec	MTQ
Municipalité Régionale de Comté	MRC
National Research Council of Canada	NRC
Quinto Technologies / Quinto Mining	Quinto
Process Research Associates Ltd.	PRA
Roche Ltée, Groupe Conseil	Roche
SGS Canada Inc.	SGS
Soutex Inc.	Soutex
Tekhne Research Inc.	Tekhne
Réserve Mondiale de la Biosphère Manicouagan-Uapishka	RMBMU
Société d'expansion de Baie-Comeau	SEBC
Unité de recherche et de services en technologie minérale de l'Université du Québec en Abitibi-Témiscamingue	URSTM

Technical Abbreviations Used in this Report

Description	Abbreviation
Acid Rock Drainage	ARD
Carbon, graphite	Cg Cgr in certain figures
Carbon, total	Ct Ctot in certain figures
Cost, Insurance and Freight (Incoterms)	CIF
Electric Vehicles	EV
Environmental Design Flood	EDF
Environmental & Social Impact Assessment	ESIA
Free Carrier (Incoterms)	FCA
Free On Board (Incoterms)	FOB
Inflow Design Flood	IDF
International Organization System	ISO
Loss On Ignition	LOI
Medium Voltage	MT (MV)
National Instrument 43-101 (Canadian)	NI 43-101
Net Operating Hours	noh
Potentially Acid Generating	PAG
Preliminary Economic Assessment	PEA
Qualified Person (as defined by National Instrument 43-101)	QP
Raw Water Reserve (contact water collection pond)	RWR
Run of Mine	ROM
Specific gravity	s. g.
Suspended Matters	MY
Tailings Management Facility	TMF
Uniaxial Compressive Strength	UCS
Un-Organized Territory (Manicouagan)	UOT

Measure Units Used in this Report

Description	Abbreviation
Length	
metre, kilometre, millimetre, micrometer (micron)	m, km, mm, µm
inch, foot	in, ft
Volume and volumetric flowrate	
litre	L

Description	Abbreviation
cubic metre, millions of cubic metres	m^3, Mm^3
cubic metre per hour	m^3/h
Mass and mass flowrate	
gram, kilogram, milligram	g, kg, mg
tonne (metric), kilotonne (metric), millions of tonnes (metric)	t, kt, Mt
tonne per hour, tonne per day, tonne per month, tonne per year	tph, tpd, tpm, tpy
Surface area	
square metre	m^2
hectare	ha
square foot	ft^2
Concentrations	
gram per litre, milligram per litre	g/L, mg/L
gram per tonne	g/t
part per million, part per billion	ppm, ppb
Energy and power	
ampere	A
volt, kilovolt, megavolt	V, kV, MV
volt-ampere, kilovolt-ampere, megavolt-ampere	VA, kVA, MVA
watt, kilowatt, megawatt	W, kW, MW
kilowatt–hour, megawatt–hour	kWh, MWh
kilowatt-hour per tonne	kWh/t
Others	
decibel	dB or dBA
pascal	Pa
millions of years	Ma

Mesh and Micrometer (Micron) Conversion

mesh	µm
20	850
50	300
80	180
100	150
150	106
325	44

1. SUMMARY

1.1 INTRODUCTION

Mason Graphite Inc. (Mason Graphite, the Company or the Issuer) is a Montreal based company listed on the Toronto Stock Exchange Venture under symbol TSX.V: LLG. The Company was formed in 2012 for the acquisition and the development of the Lac Guéret graphite deposit. The Lac Guéret property (the Property) is located approximately 285 km north of the city of Baie-Comeau, Québec, Canada. Baie-Comeau is also the location selected for the construction of the concentrator.

1.1.1 CHANGES SINCE THE LAST ISSUE OF THE REPORT

In November 2015, Mason Graphite issued a technical report presenting a Mineral Resources update and the results of the Feasibility Study (FS). The FS report was re-issued in February 2016. Since then, the Company has made significant progress on the Project, namely:

- Completion of the environmental evaluation process, culminating with obtaining the Decree authorizing the Project in June 2018;
- Improvement to the tailings storage method, changing from submerged storage in ponds to filtration and dry stacking;
- Selection of the "owner's built" construction strategy, hiring of the construction management team and development of the construction execution plan;
- Start and significant advancement of the detailed engineering (60% globally at time of writing) and procurement (main process equipment ordered), which led to the update of the financial parameters of the Project presented in this Report.

This NI 43-101 Technical Report (the Report) is based on the 2016 issue and integrates all the changes (environmental, technical and financial) made to the Project since then.

This Report was prepared by BBA Inc. (BBA), GoldMinds Géoservices Inc. (GMG) and Soutex Inc. (Soutex) for Mason Graphite to support the disclosure of the Feasibility Study Update (FS Update) results for the Lac Guéret Project in the December 5, 2018 press release entitled "Mason Graphite Presents Its Updated Feasibility Study Economic Results for the Lac Guéret Graphite Project" (the Press Release).

The 2014 mineral resources were revised by GMG in 2018 to take into account the updated economical parameters. The change compared to 2014 is not material (a decrease of 0.25%) and the updated Mineral Resources were disclosed in the Press Release of December 5, 2018. The mineral resource estimation presented in this Report is based on information provided by Mason Graphite and Roche Ltée, Groupe Conseil (Roche) to GMG.

The process and its metallurgical performance were validated through additional pilot plant testing in 2016 and 2018 and remain unchanged.

1.1.2 BRIEF HISTORY OF THE PROJECT

Since the acquisition of the deposit in 2012, Mason Graphite has performed extensive work on the Project:

Environment and Permitting:

- A detailed baseline environmental study for the Lac Guéret site was launched in 2012 and completed in 2013.
- A detailed baseline environmental study for the Baie-Comeau site was conducted in 2015.
- A full Environmental and Social Impact Assessment (ESIA) was conducted in 2015 in order to obtain the necessary permits for construction and operation. The report for the ESIA was filed in November 2015 and the decree for the Project was officialised on June 6, 2018 in the Gazette Officielle du Québec.
- As of December 5, 2018, the first construction permits had been received by the Company and requests for additional permits were under review by the relevant authorities, the mining lease among others.

Geology and Mineral Resources Estimation:

- The first publicly available mineral resource estimate was produced in 2012 based on drilling done by the previous owner. A NI 43-101 technical report was issued.
- The first drilling campaign done by Mason Graphite was conducted in 2012 to define details of the deposit and determine its size, continuity and quality. A resource estimate update was produced in 2013 following the findings of the drilling campaign and a NI 43-101 report was issued.
- The last drilling campaign was conducted at the end of 2013 and the beginning of 2014 with the goals of improving geological knowledge, further defining the parameters of the deposit and exploring graphite showings elsewhere on the Property. A second mineral resource update was produced at the end of 2014. The results of this update were reported in a NI 43-101 technical report issued in 2015 (re-issued in 2016).

Metallurgy:

- Mineralization samples were collected in 2012 and a first concentration process was developed at the laboratory scale.
- Using core samples, additional metallurgical work was performed in 2014 and 2015 and the concentration process was improved.

- A bulk sample was collected in 2014, leading to a first full pilot plant test at the end of the same year.
- A portion of the bulk sample collected in 2014 was used in a second full pilot plant at the end of 2016.
- A new bulk sample was collected in 2018, leading to a third full pilot plant test in 2018 on “unweathered” ore.

Economic and Technical Studies:

- A Preliminary Economic Assessment (PEA) was launched in 2012 and completed in 2013, using the mineral resource estimate of 2012 and the first version of the concentration process. A NI 43-101 technical report was issued.
- In 2014, trade-off studies were conducted and the results of these studies were integrated in the full Feasibility Study conducted in 2015. The NI 43-101 report of 2015 (re-issued in 2016) presented the results of this Feasibility Study.

1.2 PROPERTIES DESCRIPTION AND LOCATION

This section is a summary of Chapter 4.

The Project was developed on two separate sites:

- The Lac Guéret site, comprising the mine and the mining camp;
- The Baie-Comeau site, comprising the concentrator plant with associated support activities, the office complex and the tailings management facility (TMF).

1.2.1 LAC GUÉRET SITE

The Lac Guéret property is located in the Côte-Nord-Nouveau-Québec region, in northeastern Québec on the southwestern shore of the Manicouagan Reservoir. The Property is named Lac Guéret and centered at 51°07’N and 69°05’W. It consists of 162 CDC claims covering 8,570 ha.

Mason Graphite acquired 100% interest in the Lac Guéret property (215 mineral claims at the time of the acquisition) from Quinto Technologies (Quinto) in 2012 and completed the acquisition with a final payment of US4.0M in December 2016. There are effectively no securities left on the claims.

The 215 claims were renewed in July 2013 and June 2015. In July 2017, Mason Graphite renewed 162 of the 215 claims and they are in good standing until July 17, 2019. As of the date of this report, a mining lease request from Mason Graphite for the future mine was being evaluated by the MERN and the validity of three affected claims was suspended as part of the normal evaluation procedure.

In June 2017, Mason Graphite and the Pessamit Innu First Nation signed an Impact and Benefits Agreement (IBA).

During the summer of 2017, as part of the environmental evaluation process, public consultations on the Project were held by the provincial government (by the Bureau des Audiences Publiques en Environnement - BAPE) at the end of which no public hearing was requested by the population, a rare fact for a mining project in Québec.

There are no other known significant risk factors other than standard mineral industry risks such as graphite price, ability to fund the Project, fluctuation of oil, metals and other commodity prices, change in mining laws, environmental laws and permitting.

1.2.2 BAIE-COMEAU SITE

The Baie-Comeau site is located in the Jean-Noël Tessier industrial park in the city of Baie-Comeau. The Property is roughly centered at 49°13'N and 68°14'W. The land, which has been retained for the construction of the concentrator, office complex and TMF, covers an area of roughly 70 ha. The land is zoned for heavy industries, compatible with the proposed industrial activities of Mason Graphite.

The land for the Baie-Comeau property is currently owned by Société d'expansion de Baie-Comeau ("SEBC"). Mason Graphite signed a Memorandum of Understanding with the City and SEBC in June 2015 to set the conditions and benefits of the acquisition of the land, including a five-year decreasing property tax credit and the commitment of the City to provide suitable access to the Property and connection to the local services. The agreement remains valid.

All the necessary permits required for work performed to date on the land were obtained from the city of Baie-Comeau.

The socio-economic risk which may affect access or the right or the ability to perform work on the land in the form of social acceptability of the Project by the population in the region of Baie-Comeau is considered minimal. This is discussed in Chapter 20.

There are no other known significant risk factors.

1.3 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

This section is a summary of Chapter 5.

1.3.1 LAC GUÉRET SITE

Access is by the all-weather Highway 389, 200 km north of Baie-Comeau, Québec, to the logging road turnoff at Km 202. A good gravel logging road (forest road 202) leads another 85 km northwest to the Property.

The climate is typical boreal forest, with summer temperatures of 2 to 30 °C and winter temperatures down to -50 °C. The spring and autumn are short with changeable weather. Precipitation occurs as rain in the summer and snow in the winter, while spring and autumn are often mixtures of both.

The Property is located 285 km by road north-northwest of Baie-Comeau, Québec, the nearest major population and service centre. The northeast corner of the claim block lies on the southwestern shore of the Manicouagan Reservoir, commonly known as the Manic 5 dam, owned by Hydro Québec. The hydroelectric dam is about 85 km southeast of the centre of the Property.

1.3.2 BAIE-COMEAU SITE

Access to the Baie-Comeau site is via Highway 138 and then Avenue du Labrador between the two sectors of Baie-Comeau. Work to extend Avenue du Labrador to the future property of Mason Graphite was done by the City of Baie-Comeau in 2017, bringing the water and sewer services to the Property at the same time.

Baie-Comeau is served by a regional airport with daily flights to Montreal, a ferry service to the city of Matane on the south shore of the St-Lawrence River and a rail ferry service to the main railway network on the south shore.

Climate around Baie-Comeau is milder than that climate of Lac Guéret with temperatures between 2 and 28 °C in summer and down to –37 °C during winter. Precipitations fall in the form of rain during summer and snow during winter. Spring and fall see a mixture of both rain and snow.

The city of Baie-Comeau with its 22,000 inhabitants is the main administrative and service centre for the large Municipalité régionale de comté Manicouagan (Regional County Municipality, "MRC Manicouagan" or the "MRC") and offers a multitude of services such as hospitals, government branches, construction contractors, various suppliers, etc. The city is home to a few heavy industries: aluminum electrolysis and forestry products. MRC Manicouagan hosts over eight hydroelectric power dams operated by Hydro-Québec.

1.4 HISTORY

This section is a summary of Chapter 6.

1.4.1 LAC GUÉRET SITE

Historical work consists of exploration for iron in the late 1950s by Québec Cartier Mines Ltd. In 2001, Phil Boudrias of Esbec Exploration (Sept-Îles, Québec) acquired the core claims that cover the existing resources based on prospecting road cuts made by Kruger Forest Products. Quinto optioned the Property in 2002 and added claims to cover the potential graphite and iron stratigraphy. It conducted exploration programs since 2002 focusing on the zones under review. No resource estimation has been published on either the graphite deposit or on the iron deposits prior to Mason Graphite's resource estimation published in 2012. Quinto focused on the graphite stratigraphy, since the iron deposits appear to be too small to be economic in this region.

Following the exploration results between 2002 and 2004, in 2006, Quinto conducted a drill program on the northeast part of the GC Graphite Zone to define a tonnage and grade of the graphite in order to continue studies towards initiating an open pit mine. Twenty-six NQ drillholes totalling 2,468 metres were drilled.

1.4.2 BAIE-COMEAU SITE

The land was originally owned by the Ministère de l'Énergie et des Ressources naturelles (MERN). In 2003 it was acquired by the city of Baie-Comeau through its land development branch, the SEBC.

A restriction to mineral exploration and exploitation was applied to the area in 1991, reserving the land for industrial use.

1.5 GEOLOGY AND MINERALIZATION

This section is a summary of Chapters 7 and 8.

1.5.1 GEOLOGY

The regional geology includes the most southwesterly of several elongate anticlinoria of Gagnon Group metasediments that include the traditional iron formation stratigraphy of the Wabush-Mont-Reed iron district. These units are metamorphosed equivalents of the Labrador Trough (New Québec Orogen) sediments that occur around Schefferville, Québec and north. The southwest Manicouagan Anticlinorium shows a core of Denault Formation (Fm) dolomitic marble which lies beneath the Sokoman iron formation level, deposited on a platform of Katsao Fm pelitic metasediments. The Sokoman Fm (iron chemical sediments) overly the Denault Fm. Quartz-rich non/low oxide, iron-oxide, and silicate facies of the Sokoman Fm form infolded synclines and anticlines. The Sokoman Fm quartzite non-oxide facies overlies the iron oxide-bearing facies. The top of the Sokoman Fm has a diachronous, transitional contact with the overlying Menihek Fm pelitic sediments. The basal part of the Menihek unit, informally named the "Upper Gneiss" by Clarke (1977), forms the informal member, here named Lac Guéret Member of the Menihek Fm. The Katsao Fm gneiss has significant potassium feldspar (high K_2O), whereas the paragneiss and schist of the Menihek Fm are deficient in K_2O.

Graphitic metasediments are concentrated in the Lac Guéret Member above the Sokoman Fm iron deposits. Graphite also occurs in minor amounts in the adjoining Sokoman Fm near the contact, but most of the potentially economic graphite lies within the Member. This relationship is common in the district with examples at Lac Knife (QC) and the Mart Lake graphite showing at the Kami iron deposit (Labrador City, NL). Graphite formed as beds within clastic sedimentary basinal deposition under anoxic conditions that preserved the organic carbon and precipitated primary sulphides, mainly pyrrhotite, which is intimately intermixed with the graphite. Sulphides are limited to this depositional regime and do not occur in the host rocks outside of the graphite deposits. Upper amphibolite (kyanite facies) metamorphism affected all the rocks.

The conformation of the formations, including the graphite and iron oxide deposits, was modified by upward of five periods of Grenville-related deformations. The second and third events most strongly control the placement of the deposits into belts aligned northeast and dipping moderately to steeply southeast. Gentle cross-folding created interference fold patterns that affected the foliation dips. The deposits are essentially foliation-parallel. Late extension caused local recrystallization of host rocks, but with no significant remobilisation of minerals. At this time, pyrite was formed from some of the original pyrrhotite.

1.5.2 MINERALIZATION

Graphite of Unit 1 (5-10% Cg) and Unit 2 (10-25% Cg) forms fine to coarse crystal flakes (<0.01 to >4 mm diameter) in quartz and quartzofeldspathic gneiss and schist. The in-situ organic material was concentrated during the post-Labrador Trough deposition and re-crystallised during the Grenville orogeny. It does not appear to have been enriched by tectonics and only locally and small-scale by hydrothermal remobilisation.

The grade limits used in this report are based on the statistical distribution of carbon presented in a study by Denis Marcotte that suggests that the deposit comprises three distinct populations with threshold values of 5%, 10%, and 24.5% (Marcotte, 2013).

The depth of the mineralization is uncertain and the deepest mineralized zone of the Lac Guéret Project is reached by the hole LG 455 (Z = 220 m). It seems that the folded graphite bands are constrained within a broad inclined envelope. This envelope is the actual outline of the deposit.

Interpretation of the sections for the Mineral Resource shows the effects of structure on localizing the graphite deposits. The general trend shows the ~35° SW plunge. The continuity of the structures between 50-metre sections shows rapid changes particularly in the Unit 3. This is interpreted as the result of the focusing of compression on the higher graphite beds which have a predilection for ductile folding and sliding. The graphite can glide readily, thus moving but with little fault brecciation. The Unit 3 observed to the SW in cleaned outcrops shows intense isoclinal folds with amplitudes often less than 5 metres, where the adjacent lower grade graphite schist (Units 1 and 2) and quartz-rich sediment bands are folded in the scale of 10-100 m amplitudes. This ductility makes correlating the higher-grade Units more difficult.

1.6 DRILLING

This section is a summary of Chapters 9 to 12.

1.6.1 2012 EXPLORATION WORK

The 2012 drilling campaign conducted by Mason Graphite had a total of 163 drillholes, with 146 drillholes over the GC zone totaling 24,346.3 m and 17 drilled over the GR zone totaling 2,201.1 m. 16,923 samples were analyzed by AGAT.

In June 2013, the entire 2012 drill core was reviewed under the supervision of Daniel Turcotte, P. Geo. The purpose of the re-logging was to verify the database uniformity on the geological descriptions.

1.6.2 2013-2014 DRILLING CAMPAIGN

The 2013-2014 drilling campaign conducted by Mason Graphite over the GC zone consisted of 86 drillholes totaling 13,418 m with a total of 7,567 assay results for graphitic carbon (% Cg).

1.6.3 EXPLORATION DRILLING CAMPAIGN OUTSIDE THE ESTIMATION RESOURCE STUDY AREA

In November 2013, the Company conducted an exploration drilling campaign, drilling holes on 11 anomalies (one hole each) outside the area of interest, using NQ diamond drill core; 1,700 metres were drilled. The average depth of the drillholes was 150 metres, with a maximum depth of 171 metres. 312 samples were analyzed by AGAT.

1.6.4 GEOTECHNICAL DRILLING

In 2014 Mason Graphite commissioned Groupe Qualitas Inc. (Qualitas) to conduct a geotechnical investigation campaign to collect geological and geomechanical data for the adequate design and construction of an open pit mine, and to conduct a preliminary investigation for the projected storage areas.

A total of 11 boreholes were drilled from October 11 to December 18, 2014. Nine boreholes along the open pit area were drilled to provide geomechanical information for design and engineering purpose of the open pit. Two boreholes were drilled to provide geotechnical information on the overburden and surface bedrock.

1.7 MINERAL PROCESSING AND METALLURGICAL TESTING

This section is a summary of Chapter 13.

A comprehensive metallurgical test program designed and supervised by a team of Soutex and Mason Graphite personnel was conducted by COREM. Additional testing was performed at Unité de recherche et de services en technologie minérale (URSTM) from Université du Québec en Abitibi-Témiscamingue (UQAT) and SGS Canada Inc. (SGS).

Testing involved comminution, graphite recovery and sulphur removal characterization sufficient to provide a process flowsheet and criteria required for detailed plant design.

Several drill core samples as well as three blast samples were selected throughout the Lac Guéret mineralization zone and tested. The channel samples used in the PEA work were also used.

Metallurgical testwork was divided into five main themes.

1) Comminution Testwork

Comminution testwork was performed by SGS and COREM. The general conclusion on comminution tests is that the Lac Guéret ore is soft in macro (impact) grinding, and generally soft in micro (attrition) grinding, with the exception of ore Unit U3 which is classified as medium to very hard in attrition grinding.

2) Concentration Testwork - Phase 1

Phase 1 of the concentration tests involved reproducing the PEA flowsheet at COREM and URSTM, using the same samples. Afterwards, core samples were tested using the same flowsheet to determine variability in metallurgical behavior of the different geological Units U1, U2 and U3.

The tests revealed a finer carbon distribution with the increasing carbon content of the samples; for the sample from U3, the largest proportion of the graphite was recovered as -150 mesh concentrate, compared to U2 and U1.

The test conducted on the composite sample made of U1, U2 and U3 revealed that there was no interaction between the different Units when treated together. The results obtained were a weighted average of the individual sample's results.

3) Concentration Testwork - Phase 2

The second phase of concentration tests was conducted at COREM with the drill core composites and had the following objectives: explore potential new technologies for the concentration of the graphite ore, develop and optimize the process flowsheet in preparation for piloting, test the metallurgical performances variability between the mineralogical Units with the final flowsheet and determine the impact of material aging on metallurgical performances.

It was established that regular flotation (cell and column) had the best performances in terms of graphite grade and recovery, compared to any other tested technology.

A new flowsheet was developed, and the operating conditions were determined and then optimized.

As observed during the phase 1 tests, it was confirmed that an ore with higher graphite content yields finer concentrate graphite distributions.

The impact of aging observed is a reduction in carbon recovery at the scavenger stage that begins after eight weeks.

4) Pilot Tests

A first pilot study was conducted in 2014 at COREM with the purpose of validating the metallurgical performances obtained during bench-scale testing of the proposed graphite concentration flowsheet. About 60 tonnes of ore coming from two sampling locations at the Lac Guéret deposit were tested. A second (2016) and third (2018) pilot studies were conducted by COREM for the purpose of validating the metallurgical performances obtained with the proposed graphite concentration flowsheet. About 25 tonnes of ore coming from two sampling locations at the Lac Guéret deposit were tested in the second pilot study and about 75 tonnes of ore from one other sampling location at the Lac Guéret (collected deeper in the deposit to test "unweathered" ore) were tested in the third pilot.

5) Tests at Manufacturers

The following tests were performed at the manufacturers' installation or laboratory: dewatering cyclones, pilot-scale; wet screening, pilot-scale; thickening of concentrate and tailings, bench-scale; Filtration of concentrate, bench-scale; drying of concentrate, pilot-scale; dry screening, bench-scale. The test results were used to determine the dimensions of the processing equipment.

Final Results Used for the Feasibility Study and Plant Design

Results from the pilot plant and bench-scale testwork used for the Feasibility Study are presented in Table 1-1.

Table 1-1 - Final Results Used for Feasibility Study and Plant Design

Stream	Weight Recovery (%)	Carbon Recovery (%)	Carbon Grade (%)
Feed	**100.0**	**100.0**	**27.8**
+50 mesh	*3.3*	*11.4*	*96.0*
-50 to +100 mesh	*4.9*	*17.0*	*96.0*
-100 to +150 mesh	*1.8*	*6.2*	*96.0*
-150 mesh	*17.4*	*57.7*	*92.2*
All Concentrates	***27.4***	**92.5**	**93.7**
Tails	**72.6**	**7.5**	**2.9**

1.8 MINERAL RESOURCES ESTIMATE

This section is a summary of Chapter 14.

A Mineral Resources Estimate update was done on the Lac Guéret graphite deposit in 2013 for Mason Graphite by Roche.

Roche engaged GMG to prepare an updated Mineral Resource Estimate for the Lac Guéret property with the integration of the new drilling data from the 2013-2014 drilling campaign.

After the verification/validation of the Lac Guéret database, GMG conducted a mineralization interpretation and a 3D wireframe envelope modeling of the graphite mineralization. Sixty-six sections were created using all of the drilling results. The interpretation was first completed on sections to define mineralized vertical projection contours called prisms (polygon interpretation) in Genesis© software using assay results. Three envelopes were produced by connecting directly the defined mineralized prisms on each section. GMG followed the same geological interpretation done by Roche in 2013.

Mineral intervals and geological interpretation on section and plan of the mineralized bodies of the Lac Guéret graphite deposit were done by Merouane Rachidi, P. Geo., Ph.D. and Claude Duplessis, P. Eng. Three envelopes were produced by connecting directly the defined mineralized prisms on each section. The waste envelopes were then created and subtracted from the model.

The Mineral Resources of the Lac Guéret deposit were validated in 2018 by GMG and re-estimated with the updated economical parameters and using a cut-off grade of 5.75% Cg as a base case scenario and a fixed specific gravity of 2.9 t/m^3 to convert volume into tonnage. Measured and Indicated pit constrained Mineral Resources are around 65 million tonnes at 17.2% Cg, a decrease of 0.25% compared to the previous estimation (see Table 1-2 below for current estimate).

Table 1-2 - Mineral Resources Estimate for Lac Guéret (2018) [1]

The pit constrained Mineral Resources (cut-off grade 5.75%Cg)	Density	%Cg	Tonnes
Measured 5.75% < Cg < 25%	2.9	15.2	15,646,000
Measured Cg > 25% Cg	2.9	30.6	3,375,000
Total Measured	**2.9**	**17.9**	**19,021,000**
Indicated 5.75% < Cg < 25%	2.9	14.5	40,194,000
Indicated Cg > 25%	2.9	31.6	6,325,000
Total Indicated	**2.9**	**16.9**	**46,519,000**
Indicated + Measured 5.75% < Cg < 25%	2.9	14.7	58,840,000
Indicated + Measured Cg > 25% Cg	2.9	31.2	9,700,000
Total Measured + Indicated	**2.9**	**17.2**	**65,540,000**
Inferred 5.75% < Cg < 25%	*2.9*	*14.9*	*15,145,000*
Inferred Cg > 25%	*2.9*	*31.8*	*2,468,000*
Total Inferred	***2.9***	***17.3***	***17,613,000***

1.9 MINERAL RESERVES ESTIMATE

This section is a summary of Chapter 15.

The Mineral Reserves for the Lac Guéret deposit were prepared by Jeffrey Cassoff, P. Eng., in 2015, using best practices in accordance with CIM guidelines and National Instrument 43-101 reporting. The Mineral Reserves are the Measured and Indicated Mineral Resources that have been identified as being economically extractable and which incorporate mining losses and the addition of waste dilution.

At the start of the Feasibility Study it was decided to limit the Project Life to 25 years since at the planned production rate of 51,900 tonnes of concentrate per year there are sufficient Mineral Resources for a very long mine life. A pit optimization analysis was completed using the MineSight® software, which identified the most economic part of the deposit to mine for the first 25 years.

Using the pit shells that were generated from the pit optimization analysis as well as the pit slope recommendations that were provided following SNC Lavalin's geotechnical investigation, a detailed pit design was completed for the 25-year open pit which contains the Mineral Reserves.

[1] Body 1 + 2 + 3 using a 5.75 < Cg < 25% and Cg > 25% in-pit (cut-off grade 5.75%Cg), rounded numbers.

Table 1-3 presents the Mineral Reserves for the Lac Guéret deposit which include 4.7 Mt of Proven and Probable Mineral Reserves at an average grade of 27.77% Cg and at a waste to ore stripping ratio of 0.8:1. The Mineral Reserves are included in the Mineral Resources presented in Section 1.8 and Chapter 14, the reference point is the mill feed and the cut-off grade is 6% Cg.

Table 1-3 - Lac Guéret Mineral Reserves

Ore Category	Tonnage (t)	Grade (% Cg)	Graphite In-situ (t)
Proven	2,003,000	25.05	502,000
Probable	2,738,000	29.77	815,000
Proven & Probable	**4,741,000**	**27.77**	**1,317,000**

A pit design was also completed in order to show the opportunity beyond the 25-year horizon of the Feasibility Study (In-Pit Mineral Resources beyond the Project Life). This open pit which followed the Revenue Factor – 1.00 pit from the pit optimization analysis contains an additional 58.1 Mt of Measured and Indicated Mineral Resources at a grade of 16.30% Cg beyond the 25-year open pit. Table 1-4 presents the incremental tonnages and grades within this open pit which can be mined at an incremental strip ratio of 1.43:1.

Table 1-4 – In-Pit Mineral Resources Beyond Project Life of 25 Years

Resources Category	Tonnage (t)	Grade (% Cg)	Graphite In-situ (t)
Measured	16,845,000	16.98	2,860,000
Indicated	41,135,000	16.03	6,594,000
Measured & Indicated	**57,980,000**	**16.30**	**9,454,000**

Since the Mineral Reserves are limited by the duration of the updated Feasibility Study and not Mineral Resources, BBA validated and confirms that they remain unchanged for 2018.

1.10 MINING METHODS

This section is a summary of Chapter 16.

The mining method selected for the Project is a conventional open pit, truck and shovel, drill and blast operation. Vegetation, topsoil and overburden will be stripped and stockpiled for future reclamation use. The ore and waste rock will be mined with 10 m high benches, drilled, blasted and loaded into articulated haul trucks with a hydraulic excavator.

The mine will be operated by a 100% owner-operated fleet, seven days per week and ten hours per day. The operations will run for ten months of the year with a two-month shutdown from April to May during the spring thaw season to stop ore transport and protect the forest road; if required, mining operations will be conducted during the spring season

The ore will be hauled to the run of mine (ROM) pad located within one km of the pit and dumped into the ore stockpile. A front-end wheel loader will load the ore haulage trucks which will transport the ore from the mine site to the plant site in Baie-Comeau. The transportation of the ore from the mine to Baie-Comeau will be done during the ten-month period, seven days per week; if required, transport during the thaw period will be possible but at reduced truck capacity.

The overburden and waste rock that will be mined during the 25-year operation will be placed in three stockpiles (one for overburden and two for waste rock). The piles will be located to the southeast of the open pit, outside of areas that have the potential to contain mineralization and a minimum distance of 50 m from any water bodies.

A mine plan was developed which supplies an average of 190,000 tonnes of ore per year for a 25-year period. The mine plan includes a preproduction phase of one year which is required to strip 476,000 tonnes of overburden, construct 2.5 km of mine haul roads and to prepare the pit for operations. The mine development will start in the western part of the pit since this area has a lower stripping ratio and is closer to the ROM pad. In order to offset the relatively lower grades in the first few benches, a small high-grade pit will be developed in the eastern part of the 25-year open pit. This smaller pit will be used to facilitate the blending of ore and to provide a secondary source of production in case there are operational issues in the main pit. The mine will progress in this manner until Year 7, when full development will begin in the eastern part of the pit.

The fleet of mining equipment includes two articulated haul trucks with 23.6-tonne payloads, one hydraulic excavator, one production drill, and one-wheel loader. A total of nine employees are required to operate the mine.

Water in the open pit will be pumped to a control basin for characterization before treatment or release to a nearby stream. Runoff water from the ROM pad, the waste rock piles and the overburden stockpile will also be collected and directed towards the control basin. Runoff water flowing towards the mining infrastructure will be intercepted and diverted before it has a chance to enter into contact with the ore or waste rock, thus preventing its potential acidification.

1.11 RECOVERY METHODS

This section is a summary of Chapters 17.

The industrial concentration process was based on results from metallurgical testing and was designed by a team of Soutex and Mason Graphite personnel. The general process design criteria used for the design of the concentration plant are presented in Table 1-5 below:

Table 1-5 - General Process Design Criteria

Parameter	Units	Value
General Design Criteria		
Concentrate production	tpy	51,865
Ore throughput	tpy	189,620
Process facility service life	y	25
Plant operating time	%	90.0
ROM Ore Characteristics		
Total carbon (average)	% Cg	27.8
Maximum particle size (F100)	mm	630
Final Concentrate		
Concentrate purities		
+50 mesh	% Cg	96.0
-50 to +80 mesh	% Cg	96.0
-80 to +150 mesh	% Cg	96.0
-150 mesh	% Cg	92.2
Average	**% Cg**	**93.7**
Carbon global recovery	%	92.5

The ore mined at Lac Guéret will undergo the following steps:

1. Road transportation between Lac Guéret and Baie-Comeau;
2. Crushing;
3. Primary grinding and rougher flotation;
4. Secondary grinding and scavenger flotation;
5. Polishing grinding and cleaning flotation;
6. Thickening, filtration and drying;
7. Commercial sieving;
8. Packaging.

Table 1-6 below presents the mass balance of the concentration plant. The concentrates and grades presented in the table below are final commercial products and include the effect of dry commercial sieving (they are slightly different from the metallurgical recoveries and grades).

Table 1-6 - Major Process Inputs and Outputs

Description	Solids		Graphite	
	tpy	tph	Grade	Recovery
Feed	**189,620**	**24.1**	**27.8**	**100.0**
+50 mesh concentrate	*6,857*	*0.9*	*96.0*	*12.5*
-50 to +80 mesh concentrate	*8,438*	*1.1*	*96.0*	*15.4*
-80 to +150 mesh concentrate	*7,243*	*0.9*	*96.0*	*13.2*
-150 mesh concentrate	*29,359*	*3.7*	*91.9*	*51.2*
All Concentrates	**51,865**	**6.6**	**93.7**	**92.3**[1]
Tailings	**137,738**	**17.5**	**2.9**	**7.7**

The full concentration plant will comprise one crusher, six grinding mills, 12 flotation cells, eight flotation columns, six wet screens, three thickeners, two press filters, one dryer, one scrubber, four dry screens, three bulk bags loaders and one small bag loader.

Reagents used for the concentration process are: collector, frother and dispersant. Hydrated lime, flocculent and caustic soda will also be required.

Water recycling will be maximized as most of the process water will be recovered from the thickeners. Potable water will be used as make up water.

Tailings from the concentration process will be thickened, filtered and trucked to the tailings management facility.

[1] The 92.3% recovery represents the average over 25 years of operation and takes in account a lower recovery of 87.5% for the ramp-up during production year 1; from production year 2, the recovery will be 92.5%.

1.12 INFRASTRUCTURE

This section is a summary of Chapter 18.

1.12.1 LAC GUÉRET SITE

The Lac Guéret Site is located in a remote location (285 km from Baie-Comeau, the nearest city) and does not have access to public services, requiring it to be autonomous. A small mining camp (ten rooms) will be built on the site of the previous exploration camp, on the east side of Lac Galette, less than 3 km from the mine site.

Power for the camp will be provided by a diesel generator. Water will be supplied from water well or nearby lake and domestic waste water will be treated by a septic tank linked to an infiltration field.

A dome-type garage at the mine site will be used for basic maintenance on the mining equipment. A fuel tank for the mining equipment will also be located at the mine site.

Access roads to the deposit already exist but will have to be improved to support industrial use.

1.12.2 BAIE-COMEAU SITE

An access road to the concentrator site was built by the city of Baie-Comeau as part of Highway 389 rerouting program.

The main industrial installations will comprise an ore storage area with a crusher, concentrator buildings (wet and dry areas) and a warehouse with truck loading docks. A multifunctional building adjacent to the warehouse will house the workshops, the spare parts store and the laboratory. An office building will house the administrative offices, the lunch room and the changing room. Finished products will be stored outside in bulk bags in designated storage areas.

Electrical power will be supplied through the existing grid of Hydro-Québec. A pole line will be required between the existing lines and the concentrator main electrical room.

The city of Baie-Comeau will provide potable water and sewage treatment. The City's water supply will be used for firefighting.

A tailings filtration plant will be built to manage the tailings. They will be thickened then filtered to finally be trucked to a dry stack. The bottom of the dry stack will be lined to collect seepage water.

All of the runoff water having been potentially in contact with graphite ore or tailings will be pumped to a water pond (the raw water reserve) for recycling to the plant or treatment in the effluent treatment plant.

1.13 MARKET STUDIES AND CONTRACTS

This section is a summary of Chapter 19.

Graphite is a natural form of carbon, characterized by its layered hexagonal structure. This structure is the reason behind very unique properties such as high electrical and thermal conductivities, high mechanical strength, inertness to most chemicals, very high sublimation temperature and high lubricating behaviour.

Because of its unique properties, graphite is used in a very wide range of industrial applications. Metallurgy (refractories, carbon raisers...) is, at 40%, by far the largest user in terms of volumes. Many industrial applications such as friction, thermal management, sealing, lubrication and powder metallurgy require various quantities of graphite. Finally, graphite is also an essential component of alkaline and Li-ion batteries. Technical requirements vary significantly from one application to the other.

Worldwide supply of natural flake graphite is estimated at around 706,000 tonnes per year (from Benchmark Mineral Intelligence (BMI)). It is estimated that around two thirds of the production come from China. Other producing continents are South-America, Asia, North America and Europe.

Demand is expected to steadily increase over the coming years as some applications using graphite are expected to grow, such as the Li-ion batteries, used in electric vehicles.

Graphite is not an openly traded commodity; prices are established through usually short-term contracts between producers and buyers, not on public markets. Off-take agreements are not seen in the graphite market either. Therefore, prices are not disclosed, and accurate market prices are difficult to obtain as they are not disclosed publicly.

For this Feasibility Study Update, a 12-month weighed average price of $1,933/tonne FCA Baie-Comeau (from an FOB China price of US$1,190/tonne and an exchange rate of US$0.76 per CA$1.00) was used. Because of the increase in demand, among others, Mason Graphite expects that the graphite prices will continue their long-term upward trend.

Mason Graphite has launched, in 2015, a technical study on the production of coated spherical natural graphite grades for Li-ion batteries based on Lac Guéret products. These products have more stringent technical specifications but command higher prices. Further processing like purification, micronization, shape modification and surface coating is required. The development program is now in the piloting stage for material production, which will be immediately followed by battery tests. Other value added products are also being developed.

1.14 ENVIRONMENTAL STUDIES, PERMITTING, SOCIAL AND COMMUNITY IMPACTS

This section is a summary of Chapter 20.

Environmental Studies

A baseline environmental study was conducted on the Lac Guéret property from 2012 to 2013 by Roche. Since the decision was made to move the concentrator to the Baie-Comeau area for the Project, a baseline environmental study was launched in the summer of 2015 for the Baie-Comeau site and was conducted by WSP. During these studies, components from the physical, biological and social sectors were measured.

The results of these baseline studies were used in the Environmental and Social Impact Assessment (ESIA) started at the end of 2014. The ESIA was conducted by the environmental department of Hatch. The ESIA is required to obtain the construction and operation permits since the mining capacity and treatment capacity both exceed the threshold of 500 tonnes per day. The ESIA analyzed the Project's specifics, the current conditions of the receiving environments and the potential impacts of the Project on each of the components.

The findings of the study are that the Project should have positive impacts for the communities of Baie-Comeau and the First Nation of Pessamit through the creation of around 100 jobs and new business opportunities. Jobs will also be created during construction but will be shorter termed (less than 18 months at most). There are no strong negative impacts of the Project on any physical, biological or social components. This is in part due to the relatively small scale and small footprint of the Project.

The notice of project was presented in April 2015 to the Ministère de l'Environnement et de la Lutte contre les changements climatiques (MELCC). The ESIA report was presented to the ministry at the beginning of November 2015.

Plans for waste and tailings disposal, water management

An environmental characterization of the waste rock was done in 2013 on a series of 15 samples. The results show that no sample would qualify as "High Risk" per Directive 019 classification but would be classified as leachable for aluminum, manganese and zinc. Sulphur content varied from 0.01% to 1.32%; six of the 15 samples would qualify as potentially acid generating. The waste rock will be disposed in a stockpile east of the open pit and the overburden will be stockpiled separately. The stockpiles were purposely located away from existing water courses.

As the contact with ore or waste rock could generate acid water, runoff water coming from the ROM pad, the open pit and the waste rock pile will be intercepted and collected in a control basin.

Water accumulated in the basin will be characterized and treated as required before its release into a receiving stream.

The concentrator tailings (sample from the pilot plant test) were characterized by static and long-term kinetic geochemical analyses. Results show that the tailings are potentially acid generating and leachable for cadmium, copper, lead, nickel and zinc.

The tailings will be filtered then dry stacked in a pile. Runoff and seepage water will be collected for recycling in the plant. Excess water will be treated in a proper effluent treatment plant to ensure that the water released to the environment meets the environmental quality criteria.

Mason Graphite is also evaluating if the tailings can be valorized into commercial co-products. Laboratory scale tests yielded promising results and at the time of writing, a pilot test on 7 tonnes of tailings had been performed, with results pending.

Permitting

As per the Environment Quality Act of Province of Québec, the Lac Guéret Project is required to present an Environmental and Social Impact Assessment, which was done in November 2015.

As part of the evaluation process by the Bureau d'audiences publiques en environnement (BAPE), the Project was presented to the population of Baie-Comeau in June 2017; no public hearings were requested by the population.

The provincial government issued a decree authorizing the Project in May 2018.

A mining lease with the MERN will also be required to open the mine and the request has been made. The lease will be granted after the closure plan presented by Mason Graphite has been accepted.

No federal environmental assessment is required.

Social Aspects

All of the Project's installations will be located in the Côte-Nord administrative region, in the MRC Manicouagan and in the ancestral territory of the Pessamit Innu First Nation. The region has seen a steady population decline over recent decades and the decline is expected to continue in the near future. The Baie-Comeau area is home to a few major industries like Alcoa and Resolute Forest Products but these industries were hit hard by recent job losses. There are no operating mines in the MRC Manicouagan.

The Pessamit Innu First Nation is located about 60 km southwest of Baie-Comeau. Total Nation membership is around 4,000 people, with about 2,900 living on the reserve. The population is very young, with 45% under age 24. Communications with the Innu of Pessamit were established at the beginning of the Project in 2012 and have remained steady since then. A cooperation agreement was signed by the Innu of Pessamit and Mason Graphite in July 2014 and an Impact and Benefits Agreement (IBA) was signed in June 2017.

Mason Graphite's management regularly met with the local stakeholders since 2012 to keep them informed about the Project and to discuss local concerns. The Project was presented to the communities several times over the years, questions were answered and concerns were noted and integrated in the Project designs.

Closure Plans

A preliminary closure plan for both sites was prepared.

At the mine, the haul roads will be removed. The equipment will be disassembled and transported for recycling. The mining camp will be dismantled and sold or disposed of according to regulations. Topsoil from the overburden stockpile will be placed on exposed surfaces such as the waste rock pile, the ROM pad or the haul roads and proper vegetation for the region will be planted. The open pit will fill with water and will eventually overflow to a local stream.

At the concentrator, all the buildings will be dismantled and the materials will be sold, reused or recycled as appropriate. Once clear of any construction, the land will be left available for other eventual industrial uses. The tailings pile will be rehabilitated progressively during the 25 years of the Project.

1.15 CAPITAL AND OPERATING COSTS

This section is a summary of Chapter 21.

The capital expenditures (CAPEX) and operating costs (OPEX) cover the financial needs required to:

- Acquire all the necessary equipment (initial CAPEX);
- Build all the facilities (initial CAPEX);
- Maintain and replace the production equipment and installations (Sustaining CAPEX); and
- Cover the operational expenses (OPEX).

This will allow the extraction, on average, of 190,000 tonnes of ore per year in order to produce approximately 52,000 tonnes of graphite concentrate per year over a period of 25 years.

Although the size of the deposit would allow for a significantly longer operation, the economic figures for the Project were estimated for a limited 25-year Project Life as economic estimates beyond this duration are not meaningful.

CAPEX

The total CAPEX for the Project was estimated by Mason Graphite and validated by BBA. The Project CAPEX is presented in Table 1-7 below.

Table 1-7 - Summary of Project CAPEX over Project Life

ITEM	Initial CAPEX (M$)	Sustaining CAPEX (M$)
Project Initial Direct costs	141.9	16.8
Project Indirect costs	61.5	
Contingency	34.7	
Owner's Costs	20.1	
Total	258.2	16.8

OPEX

The OPEX are an aggregate of estimates from BBA for the mining, Soutex for the concentration process and Mason Graphite (validated by BBA) for the administration and services. Ore transportation between the mine and the concentrator would be contracted. All other activities would be executed by Mason Graphite personnel. OPEX include labour, energy, consumables, fuel, maintenance, fees and local taxes. A summary of the OPEX are presented in the Table 1-8 below.

Table 1-8 - Summary of Project Operating Costs

ITEM	Life of Project (M$)	Annual Average (M$)	$/t of concentrate
Mining and Crushing	69.3	2.8	53.45
Ore Transportation	187.3	7.5	144.41
Process Operating Costs	308.9	12.4	238.27
General & Administration	61.8	2.5	47.64
Overall Project Operating Costs	627.3	25.1	483.77

1.16 ECONOMIC ANALYSIS

This section is a summary of Chapter 22.

The economic analysis presents the financial results of the Project over its 25-year life in the form of net present value (NPV), internal rate of return (IRR) and payback period, calculated before and after tax.

The main assumptions of the economic analysis are:

- The sales price and exchange rate proposed by Mason Graphite;
- The CAPEX and OPEX prepared by BBA, Soutex and Mason Graphite;
- No price escalation or inflation;
- No major game changer in the market.

Taxes include the Québec tax on profits, the Canadian tax on profits and the Québec mining tax.

Table 1-9 below presents the main financial results for the Project over its 25-year life.

Table 1-9 - Main financial results at 8% discount rate

	Net Present Value @ 8% (M$)	Internal Rate of Return (%)	Payback period (years)
Pre-tax	484	27.7%	3.7
Post-tax	278	21.7%	4.4

Sensitivity analyses were performed on major economic components such as CAPEX, OPEX and sales prices; the sales price variations have the highest impact on the financial results of the Project.

1.17 ADJACENT PROPERTIES

This section is a summary of Chapter 23.

With the current interest in graphite, the Lac Guéret property is completely surrounded by several new claim-holders since late 2012. The most active one is Focus Graphite Inc. with two claim blocks to the north and south of Lac Guéret Graphite; trenching and drilling has been conducted on the northern block and prospecting and geophysics on the southern group. Berkwood Resources Ltd. holds two separate claim groups to the east and south with preliminary field work. Several independent claim holders hold smaller claim blocks with little reported exploration results.

1.18 OTHER RELEVANT DATA AND INFORMATION

This section is a summary of Chapter 24.

The Project execution schedule plans for around 18 months of construction. Construction beginning in Q1-2019 would lead to commissioning in late Q2-2020 / early Q3-2020.

1.19 CONCLUSIONS AND RECOMMENDATIONS

This section is a summary of Chapters 25 and 26.

This updated Feasibility Study confirms that, with the continued advancement and de-risking of the Project since the 2015 FS, as well as with revised capital and operating costs, Project economics continue to remain robust. As such, Mason Graphite should continue with its project execution plan bringing the project to commercial production by June 2020 and prepare its Operational Readiness plan to insure a successful ramp-up.

1.19.1 GEOLOGY

The 2013-2014 drilling campaign conducted by Mason Graphite over the GC zone consists of 86 drillholes totaling 13,418 m. The integration of the new drilling data involves an update of the Lac Guéret Mineral Resources Estimate.

Mineral Resources of the Lac Guéret deposit were estimated using a cut-off grade (Cog) of 5.75% Cg as base case scenario; Measured and Indicated Mineral Resources are around 65 million tonnes at 17.19 % Cg within the Whittle (named "PIT01_COG 5.75 price 2,063$").

1.19.2 MINING

The Feasibility Study for the Lac Guéret deposit is based on a 25-year open pit which includes 4.7 million tonnes of ore at an average grade of 27.8% Cg and a stripping ratio of 0.8:1. The 25-year mine plan consumes only 7.5% of the total Mineral Reserves for the deposit.

The mine will be operated by a 100% owner-operated fleet, seven days per week and ten hours per day. The operations will generally run for ten months of the year with a two-month shutdown in April and May during the spring thaw season.

Each year, an average of 190,000 tonnes of ore will be mined from the open pit and hauled to the run of mine (ROM) pad which will be located within one km of the pit. The ore will then be transported to Baie-Comeau with a fleet of trucks (subcontracted).

1.19.3 METALLURGICAL TESTING AND RECOVERY METHODS

Metallurgical testwork achieved the desired quality of concentrate and showed that, by using the designed process and flowsheet, it is possible to economically recover the graphite in all commercial size fractions from Lac Guéret ore.

In order to reach a concentrate with the desired specification, the ore shall be processed through crushing, grinding, polishing and flotation. The concentrate will be filtered, dried, screened and then bagged.

Three pilot studies of the proposed graphite concentration flowsheet conducted by COREM yielded more than 96% carbon grades at the three product sizes +50 mesh, +100 mesh and +150 mesh and 94% Cg for the M150 mesh.

The Lac Guéret concentration plant is designed to process ore at a nominal rate of 190 ktpy in order to produce 51,9 ktpy of concentrate, at an overall weight recovery of 27.3%.

2. INTRODUCTION

2.1 ISSUER INFORMATION

The Issuer, Mason Graphite, is a Montreal based company listed on the Toronto Stock Exchange Venture under symbol TSX.V: LLG. The Company was formed in 2012 for the acquisition and then the development of the Lac Guéret graphite property.

The coordinates of Mason Graphite (head office) are:

3030 Boulevard Le Carrefour, bureau 600

Laval, Québec, Canada, H7T 2P5

Phone: +1 514 289 3570, Fax: +1 450 978 5206

More information on the Company can be found on the Company's web site at: www.masongraphite.com.

Mason Graphite is developing the Project for the construction, installation and operation of a natural graphite mine and associated processing plant (the Lac Guéret Graphite Project or the Project). The facilities of the Project would be located in two separate sites:

- The Lac Guéret site, located about 285 km north of Baie-Comeau, Québec, comprising the mine itself and a small mining camp;
- The Baie-Comeau site, located in the Jean-Noël Tessier industrial park of the city of Baie-Comeau, Québec, comprising the processing plant, the shipping facilities and the administrative office.

This Technical Report titled "NI 43-101 Technical Report – Feasibility Study Update, Lac Guéret Graphite Project", was prepared by Qualified Persons (QP) following the guidelines of the "Canadian Securities Administrators" National Instrument 43-101 (effective June 30, 2011), and in conformity with the guidelines of the Canadian Mining, Metallurgy and Petroleum (CIM) Standard on Mineral Resources and Reserves.

This report is intended to be used by Mason Graphite as a Technical Report with Canadian Securities Regulatory authorities pursuant to provincial securities legislation. Except for the purpose contemplated under provincial securities laws, any other use of this Report by any third party is at the party's sole risk.

Permission is also given to use portions of this report to prepare advertising, press releases and publicity material, provided such advertising, press release and publicity material does not impose any additional obligations upon, or create liability for BBA, GMG or Soutex.

2.2 TERMS OF REFERENCE – SCOPE OF WORK

This NI 43-101 Technical Report (Report) was prepared for Mason Graphite to support the disclosure of the Project advancement status with regards to the Mineral Resources update, engineering and procurement progress, update of the capital expenditures (CAPEX), update of the operating expenses (OPEX) and update of the economic analysis.

Changes were made to the Project since the previous version of this Report but none of these changes, taken individually or altogether, represents a material change.

Services from specialized firms were retained for the execution of the scope of work.

The effective date of the present 43-101 Technical Report for Lac Guéret Graphite Project is December 5, 2018. This report replaces all previous versions issued.

The financial results of the Study are based on market and economic conditions at the effective date.

The costs considered for the Project are limited to the Project itself (mine, concentrator and directly related administration) and exclude the costs associated with the Head Office, Marketing and Sales, Research and Development, agreement with the First Nation, etc.

All costs are based on constant dollar, with no provision for escalation.

Unless otherwise stated:

- All units of measurement in the Report are in the metric system;
- Grid coordinates for the block model are given in the UTM NAD 83 and latitude/longitude system; maps are either in UTM coordinates or latitude/longitude system;
- All costs, revenues and commodity prices are expressed in terms of Canadian dollars with exchange rate of CA$1.00 = US$0.76.

Subtotals and totals may not add up due to rounding.

2.3 NOTE REGARDING TWO PRODUCTION SITES

In its Preliminary Economic Assessment (PEA) version, all the industrial activities (mine, concentrator and services) of the Project were located at the Lac Guéret site. Since the 2015 Feasibility Study, all activities except mining were moved to a new site located in the city of Baie-Comeau. For clarity, the following chapters of this Report have been split into two sub-chapters, one for each site:

- Chapter 4 – Property Description and Location;
- Chapter 5 – Accessibility, Climate, Local Resources, Infrastructure and Physiography;
- Chapter 6 – History;
- Chapter 18 – Project Infrastructure.

2.4 SOURCES OF INFORMATION

The Qualified Persons relied on information provided by Mason Graphite, public and private reports, government databases, online security documents (SEDAR) and other sources. They believe that the information supplied is reliable but do not guarantee the accuracy of conclusions, opinions, or estimates that rely on third party sources for the information that is outside their area of technical expertise.

The information presented in this Technical Report was compiled from various internal and external reports including but not limited to the following:

- Historical data (reports, plans, logs, geological data and geochemical data) compiled by Mason Graphite;
- Analytical results from laboratories;
- Surveyors reports for drillhole locations;
- Geology prepared by Tekhne and GMG;
- Resource modeling prepared by GMG;
- Mining studies prepared by Met-Chem;
- Geotechnical assessment for the pit slope and waste dump stability prepared by SNC Lavalin;
- Testwork by COREM (metallurgical testing reports);
- Testwork and simulations by SGS for SAG dimensions (SGS is a JKTech accredited laboratory);
- Testwork by various manufacturer for graphite behaviour and equipment dimensioning;
- Environmental and Social Impact Assessment, environmental studies and technical notes by Roche, Hatch, WSP and Mason Graphite;
- Market study realized by Benchmark Mineral Intelligence and Mason Graphite.

References are provided in Chapter 27 of this Report.

2.5 QUALIFIED PERSONS AND INSPECTION OF THE PROPERTIES

The following QPs have contributed to the writing or to the auditing of this Report and its underlying information and have provided QP certificates included in this Report, indicating the chapters of this Report that they have authored or audited:

- Angelo Grandillo, P. Eng. BBA
- Jeffrey Cassoff, P. Eng. BBA
- Luciano Piciacchia, Ph.D., P. Eng. BBA
- Claude Duplessis, P. Eng. GMG
- Merouane Rachidi, Ph.D., P. Geo. GMG
- Simon Fortier, P. Eng. Soutex

The following individual(s) are not considered as QP but have assisted the listed Qualified Persons and have contributed to this Report:

- Benoit Gascon, CPA, CA Mason Graphite Graphite Price Forecast

Table 2-1 below presents the site visits by representatives from the companies involved in the Project.

Table 2-1 - Site Visits

Date	Name	Location	Event
Dec 1-2, 2014	Jeffrey Cassoff, P. Eng., BBA	Lac Guéret and Baie-Comeau	Sites inspection, mining
Aug 2-3, 2016	Claude Duplessis, P. Eng., GMG	Lac Guéret and Baie-Comeau	Sites inspection, mining and infrastructure
Jun 7, 2017	Luciano Piciacchia, P. Eng., BBA	Baie-Comeau	Sites inspection, TMF area

The visits are still considered current as there has been no material change to the properties (Lac Guéret site and Baie-Comeau site) since then.

Table 2-2 below presents the responsibilities of the QPs for each chapter of this Technical Report.

Table 2-2 - Technical Report Chapter List of Responsibility

Chapter Number	Chapter Title	QP Responsibility	Comments and Exceptions
1	Summary	BBA	Contributions by GMG and Soutex
2	Introduction	BBA	
3	Reliance on Other Experts	BBA	
4	Property Description and Location	GMG, BBA	Mason provided information on property description and ownership
5	Accessibility, Climate, Local Resources, Infrastructure and Physiography	GMG, BBA	
6	History	GMG, BBA	
7	Geological Setting and Mineralization	GMG	
8	Deposit Type	GMG	
9	Exploration	GMG	
10	Drilling	GMG	
11	Sample Preparation, Assaying and Security	GMG	
12	Data Verification	GMG	
13	Mineral Processing and Metallurgical Testing	Soutex	
14	Mineral Resource Estimate	GMG	
15	Mineral Reserve Estimate	BBA	
16	Mining Methods	BBA	
17	Recovery Methods	Soutex	
18	Project Infrastructure	BBA	
19	Market Studies and Contracts	BBA	Commodity pricing by Mason Graphite and BMI
20	Environmental Studies, Permitting and Social or Community Impact	BBA	Community relations provided by Mason

Chapter Number	Chapter Title	QP Responsibility	Comments and Exceptions
21	Capital and Operating Costs	BBA	Contribution by Soutex for concentrator OPEX Site closure costs by BBA
22	Economic Analysis	BBA	
23	Adjacent Properties	GMG	
24	Other Relevant Data and Information	BBA	
25	Interpretation and Conclusions	BBA	Contributions by GMG and Soutex
26	Recommendations	BBA	Contributions by GMG and Soutex
27	References	BBA	Contributions by GMG and Soutex

3. RELIANCE ON OTHER EXPERTS

In this Report the Qualified Persons relied on the following external inputs:

- Gestim (MERN online claims management (Chapter 4));
- Graphite pricing by BMI and Mason Graphite (Chapter 19);
- Tax information used in the after-tax financial analysis by Mason Graphite's tax consultant (Chapter 22).

4. PROPERTY DESCRIPTION AND LOCATION

4.1 LAC GUÉRET SITE

4.1.1 LOCATION

The Lac Guéret property is located in the Côte-Nord-Nouveau-Québec region in northeastern Québec on the southwestern shore of the Manicouagan Reservoir. The Property is named Lac Guéret after a large nearby lake and is centered on 51°07'N and 69°05'W. The Property consists of 162 CDC claims on NTS topographic map sheets 22K14 and 22N03. The validity period of three CDC claims (CDC 1037522, CDC 1040768 and 1040769) is currently suspended because Mason Graphite applied for a mining lease regrouping these 3 claims.

Figure 4-1, Figure 4-2 and Figure 4-3 below present the location of the Lac Guéret site.

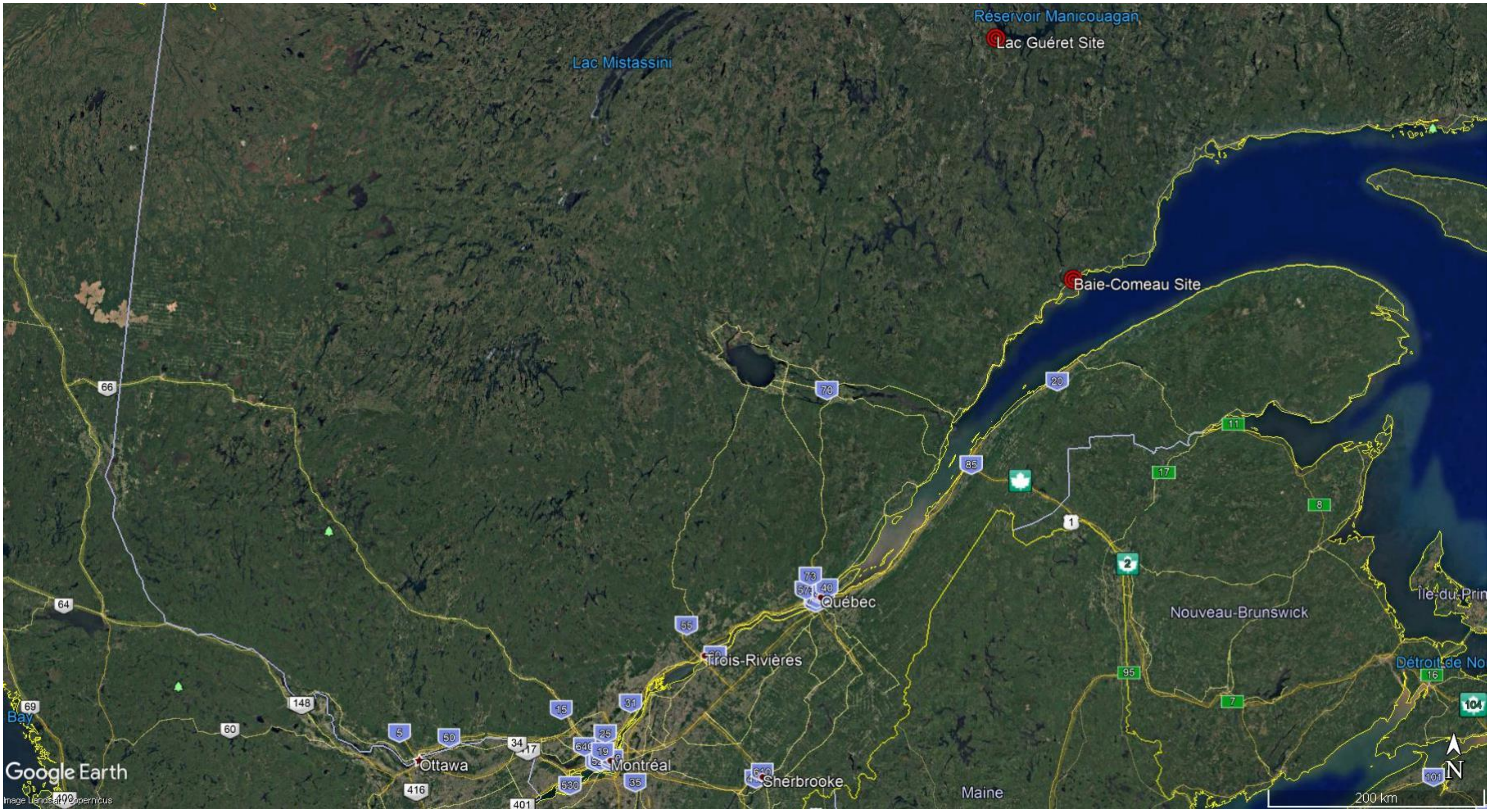


Figure 4-1 - Google Earth Image - Location of the Lac Guéret Deposit

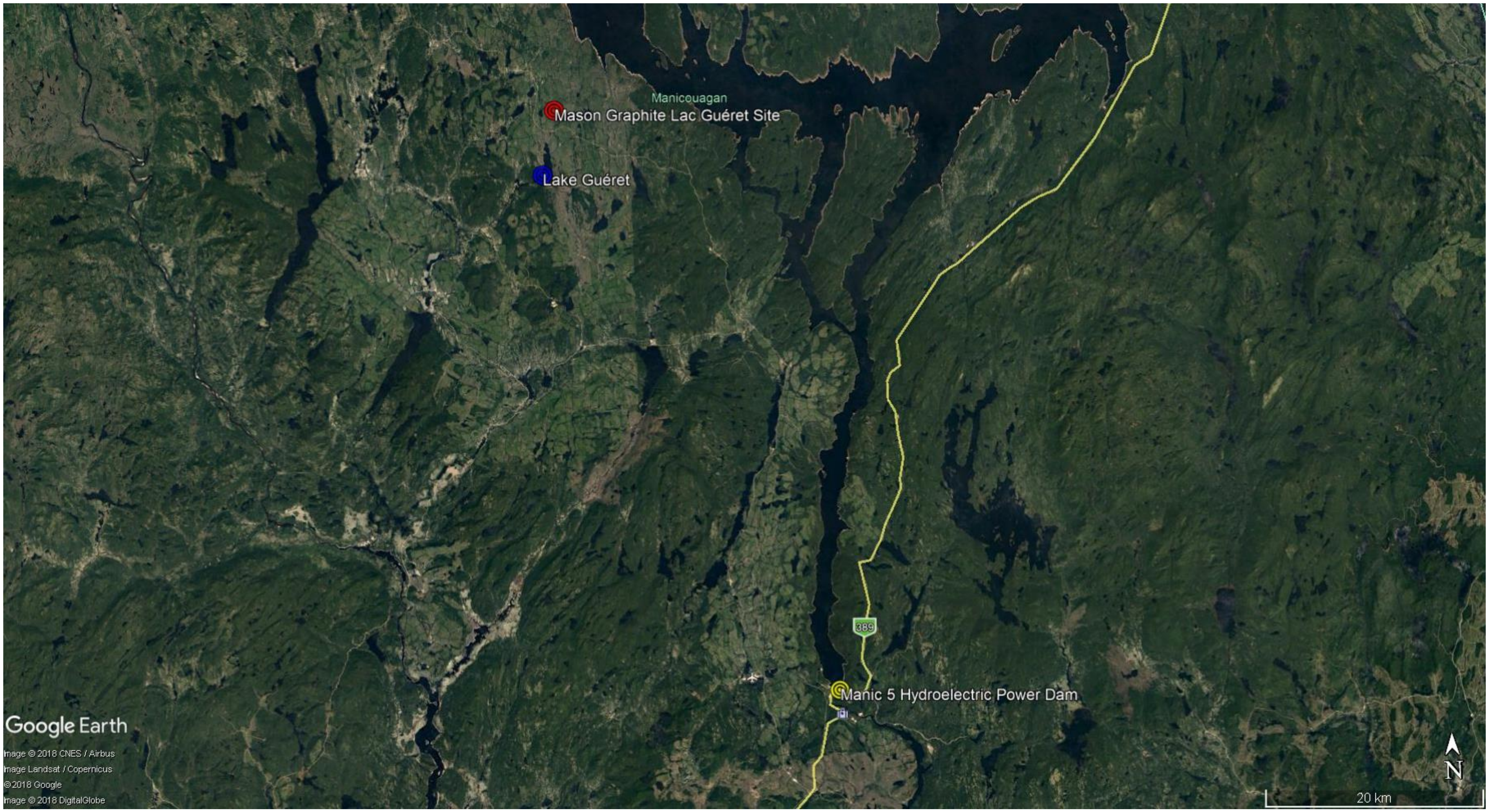


Figure 4-2 - Google Earth Image - Lac Guéret Site Area

Figure 4-3 - Google Earth Image - Lac Guéret Site Close-up

4.1.2 PROPERTY DESCRIPTION AND OWNERSHIP

The Lac Guéret property covers an area of 8,570 hectares, all of which are 100% in the interest of Mason Graphite with the claims (162 claims) in good standing until July 17, 2019 (Figure 4-4). One mining lease (21.8 ha) is currently in demand by Mason Graphite, regrouping three CDC claims (CDC 1037522, CDC 1040768 and 1040769), (Figure 4-4).

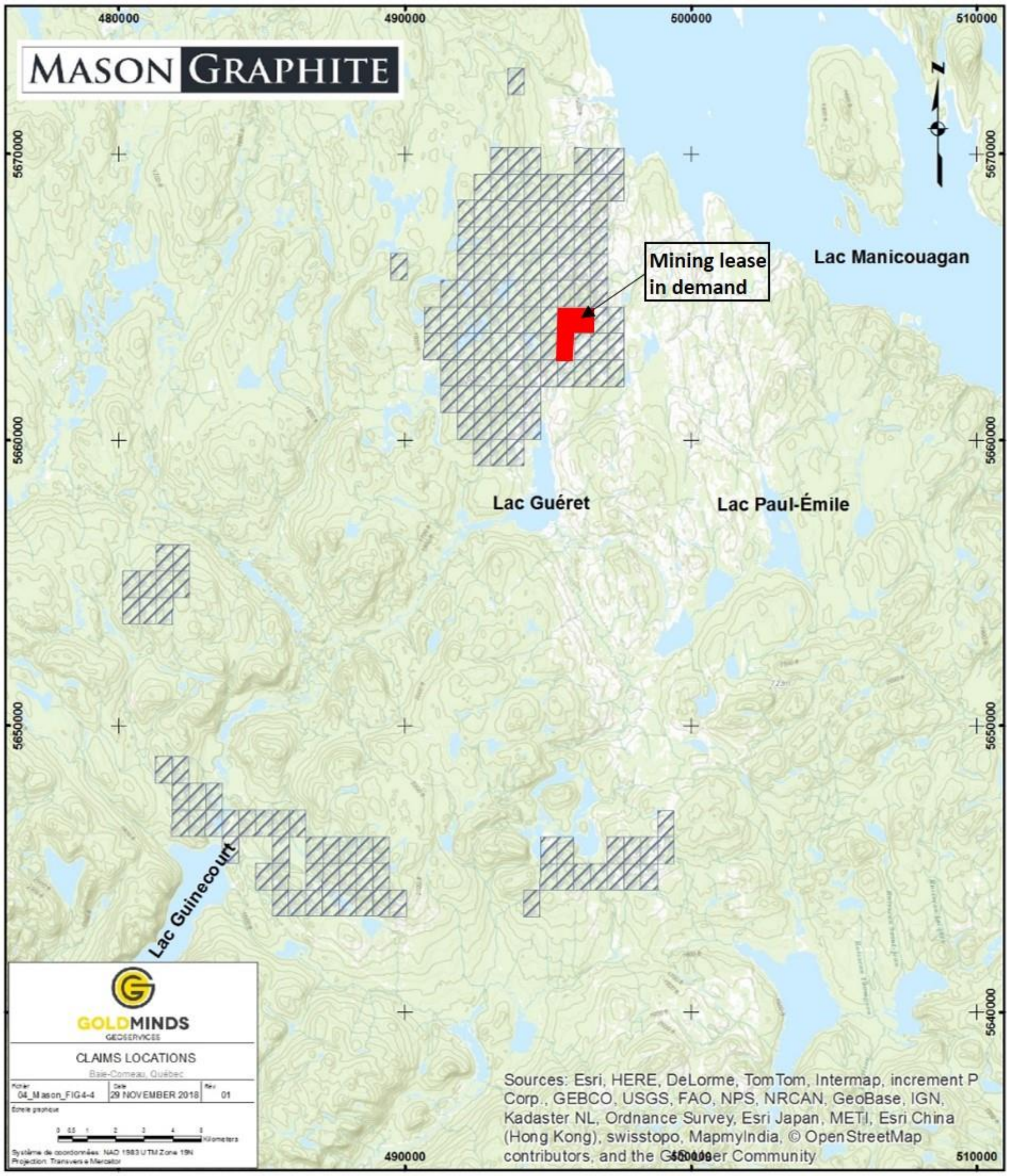


Figure 4-4 - Claims Localizations

4.1.3 CLAIM TITLES

Table 4-1 below lists the details of the registered active claims, based on information from the MERN's GESTIM website updated as of November 29, 2018. The mining lease in demand includes the 25-year open pit.

Figure 4-4 above shows the location of individual claims within the registered claim group. The claims were consolidated into groups with common anniversary dates.

At the 2017 renewal, Mason Graphite renewed 162 of the 215 claims it had when the Company was formed in 2012 and they are in good standing until next renewal of July 17, 2019 (including the three claims for which the validity is suspended and which will be converted into a mining lease).

Table 4-1 - List of Claims

	Title	Status	Registration date	Expiration date	Renewal	Area (ha)	Over ($)	Work required ($)
CDC	1037496	Active	2001-11-14	2019-07-17	8	54.06	0	1,625
CDC	1037497	Active	2001-11-14	2019-07-17	8	54.06	0	1,625
CDC	1037498	Active	2001-11-14	2019-07-17	8	54.05	0	1,625
CDC	1037499	Active	2001-11-14	2019-07-17	8	54.05	0	1,625
CDC	1037518	Active	2001-11-14	2019-07-17	8	54.06	0	1,625
CDC	1037519	Active	2001-11-14	2019-07-17	8	54.06	0	1,625
CDC	1037520	Active	2001-11-14	2019-07-17	8	54.06	0	1,625
CDC	1037521	Active	2001-11-14	2019-07-17	8	54.05	111	1,625
CDC	1037522	Active	2001-11-14	2019-07-17	8	54.05	3,025,917	1,625
CDC	1037523	Active	2001-11-14	2019-07-17	8	54.05	870,782	1,625
CDC	1040764	Active	2001-12-01	2019-07-17	9	54.06	0	1,625
CDC	1040765	Active	2001-12-01	2019-07-17	9	54.05	0	1,625
CDC	1040766	Active	2001-12-01	2019-07-17	9	54.04	0	1,625
CDC	1040767	Active	2001-12-01	2019-07-17	9	54.04	1,567	1,625
CDC	1040768	Active	2001-12-01	2019-07-17	9	54.04	1,345,028	1,625
CDC	1040769	Active	2001-12-01	2019-07-17	9	54.04	1,279,514	1,625
CDC	1040770	Active	2001-12-01	2019-07-17	9	54.04	0	1,625
CDC	1040771	Active	2001-12-01	2019-07-17	9	54.04	0	1,625
CDC	1040945	Active	2001-12-03	2019-07-17	8	54.09	693	1,625
CDC	1040946	Active	2001-12-03	2019-07-17	8	54.08	0	1,625
CDC	1040947	Active	2001-12-03	2019-07-17	8	54.08	0	1,625
CDC	1040948	Active	2001-12-03	2019-07-17	8	54.08	0	1,625
CDC	1040949	Active	2001-12-03	2019-07-17	8	54.07	0	1,625

	Title	Status	Registration date	Expiration date	Renewal	Area (ha)	Over ($)	Work required ($)
CDC	1040950	Active	2001-12-03	2019-07-17	8	54.07	0	1,625
CDC	1040951	Active	2001-12-03	2019-07-17	8	54.07	0	1,625
CDC	1040952	Active	2001-12-03	2019-07-17	8	54.07	0	1,625
CDC	1040953	Active	2001-12-03	2019-07-17	8	54.07	0	1,625
CDC	1040956	Active	2001-12-03	2019-07-17	8	54.06	0	1,625
CDC	1040957	Active	2001-12-03	2019-07-17	8	54.06	0	1,625
CDC	1040958	Active	2001-12-03	2019-07-17	8	54.06	0	1,625
CDC	1040959	Active	2001-12-03	2019-07-17	8	54.05	0	1,625
CDC	1040960	Active	2001-12-03	2019-07-17	8	54.05	0	1,625
CDC	1040965	Active	2001-12-03	2019-07-17	8	54.04	0	1,625
CDC	1040970	Active	2001-12-03	2019-07-17	8	54.03	0	1,625
CDC	1040971	Active	2001-12-03	2019-07-17	8	54.03	0	1,625
CDC	1040972	Active	2001-12-03	2019-07-17	8	54.03	0	1,625
CDC	1040973	Active	2001-12-03	2019-07-17	8	54.03	22	1,625
CDC	1040974	Active	2001-12-03	2019-07-17	8	54.03	0	1,625
CDC	1040975	Active	2001-12-03	2019-07-17	8	54.03	0	1,625
CDC	1040988	Active	2001-12-03	2019-07-17	8	54.09	0	1,625
CDC	1040989	Active	2001-12-03	2019-07-17	8	54.09	0	1,625
CDC	1040992	Active	2001-12-03	2019-07-17	8	54.08	0	1,625
CDC	1040993	Active	2001-12-03	2019-07-17	8	54.08	0	1,625
CDC	1040997	Active	2001-12-03	2019-07-17	8	54.07	0	1,625
CDC	1041002	Active	2001-12-03	2019-07-17	8	54.06	0	1,625
CDC	1041003	Active	2001-12-03	2019-07-17	8	54.06	0	1,625
CDC	1041007	Active	2001-12-03	2019-07-17	8	54.05	0	1,625
CDC	1041008	Active	2001-12-03	2019-07-17	8	54.05	0	1,625
CDC	1041009	Active	2001-12-03	2019-07-17	8	54.05	0	1,625
CDC	1041010	Active	2001-12-03	2019-07-17	8	54.04	0	1,625
CDC	1041011	Active	2001-12-03	2019-07-17	8	54.04	0	1,625
CDC	1041012	Active	2001-12-03	2019-07-17	8	54.04	0	1,625
CDC	1041013	Active	2001-12-03	2019-07-17	8	54.02	0	1,625
CDC	1041014	Active	2001-12-03	2019-07-17	8	54.02	0	1,625
CDC	1041015	Active	2001-12-03	2019-07-17	8	54.02	0	1,625
CDC	1041016	Active	2001-12-03	2019-07-17	8	54.02	0	1,625
CDC	1049511	Active	2002-02-11	2019-07-17	8	54.05	0	1,625
CDC	1049514	Active	2002-02-11	2019-07-17	8	54.04	0	1,625
CDC	1049515	Active	2002-02-11	2019-07-17	8	54.04	0	1,625

	Title	Status	Registration date	Expiration date	Rene wal	Area (ha)	Over ($)	Work required ($)
CDC	1049519	Active	2002-02-11	2019-07-17	8	54.03	0	1,625
CDC	1049520	Active	2002-02-11	2019-07-17	8	54.03	0	1,625
CDC	1049521	Active	2002-02-11	2019-07-17	8	54.03	0	1,625
CDC	1049522	Active	2002-02-11	2019-07-17	8	54.03	0	1,625
CDC	1049523	Active	2002-02-11	2019-07-17	8	54.02	7	1,625
CDC	1049527	Active	2002-02-11	2019-07-17	8	54.02	0	1,625
CDC	1049528	Active	2002-02-11	2019-07-17	8	54.02	0	1,625
CDC	1049529	Active	2002-02-11	2019-07-17	8	54.02	0	1,625
CDC	1049530	Active	2002-02-11	2019-07-17	8	54.02	0	1,625
CDC	1049531	Active	2002-02-11	2019-07-17	8	54.02	0	1,625
CDC	1081392	Active	2002-04-18	2019-07-17	7	54.24	0	1,625
CDC	1081393	Active	2002-04-18	2019-07-17	7	54.24	0	1,625
CDC	1081394	Active	2002-04-18	2019-07-17	7	54.23	0	1,625
CDC	1081395	Active	2002-04-18	2019-07-17	7	54.23	0	1,625
CDC	1100154	Active	2002-08-19	2019-07-17	7	54.23	0	1,625
CDC	1100156	Active	2002-08-19	2019-07-17	7	54.22	0	1,625
CDC	1100157	Active	2002-08-19	2019-07-17	7	54.22	0	1,625
CDC	1101018	Active	2002-09-06	2019-07-17	7	54.22	0	1,625
CDC	1101019	Active	2002-09-06	2019-07-17	7	54.22	0	1,625
CDC	1105003	Active	2002-11-12	2019-07-17	7	54.01	0	1,625
CDC	1105004	Active	2002-11-12	2019-07-17	7	54.01	0	1,625
CDC	1105005	Active	2002-11-12	2019-07-17	7	54.01	0	1,625
CDC	1105006	Active	2002-11-12	2019-07-17	7	54.01	0	1,625
CDC	1105013	Active	2002-11-12	2019-07-17	7	54.00	0	1,625
CDC	1105014	Active	2002-11-12	2019-07-17	7	54.00	0	1,625
CDC	1105015	Active	2002-11-12	2019-07-17	7	54.01	0	1,625
CDC	1105016	Active	2002-11-12	2019-07-17	7	54.01	0	1,625
CDC	1105017	Active	2002-11-12	2019-07-17	7	54.01	0	1,625
CDC	1105018	Active	2002-11-12	2019-07-17	7	54.01	0	1,625
CDC	1105019	Active	2002-11-12	2019-07-17	7	54.01	0	1,625
CDC	1105021	Active	2002-11-12	2019-07-17	7	54.00	0	1,625
CDC	1105022	Active	2002-11-12	2019-07-17	7	54.00	195	1,625
CDC	1105023	Active	2002-11-12	2019-07-17	7	54.00	0	1,625
CDC	1105024	Active	2002-11-12	2019-07-17	7	54.00	0	1,625
CDC	1105025	Active	2002-11-12	2019-07-17	7	54.00	0	1,625
CDC	1105036	Active	2002-11-12	2019-07-17	7	53.99	0	1,625

	Title	Status	Registration date	Expiration date	Renewal	Area (ha)	Over ($)	Work required ($)
CDC	1105037	Active	2002-11-12	2019-07-17	7	53.99	0	1,625
CDC	1105038	Active	2002-11-12	2019-07-17	7	53.99	472	1,625
CDC	1105039	Active	2002-11-12	2019-07-17	7	53.99	0	1,625
CDC	1105040	Active	2002-11-12	2019-07-17	7	53.99	0	1,625
CDC	1105041	Active	2002-11-12	2019-07-17	7	53.99	0	1,625
CDC	1105054	Active	2002-11-12	2019-07-17	7	53.98	0	1,625
CDC	1105243	Active	2002-11-18	2019-07-17	7	53.98	0	1,625
CDC	1105244	Active	2002-11-18	2019-07-17	7	53.98	0	1,625
CDC	1105333	Active	2002-11-20	2019-07-17	7	54.24	0	1,625
CDC	1105334	Active	2002-11-20	2019-07-17	7	54.24	0	1,625
CDC	1105335	Active	2002-11-20	2019-07-17	7	54.24	0	1,625
CDC	1105336	Active	2002-11-20	2019-07-17	7	54.24	1,249	1,625
CDC	1105337	Active	2002-11-20	2019-07-17	7	54.23	0	1,625
CDC	1105338	Active	2002-11-20	2019-07-17	7	54.23	0	1,625
CDC	1105339	Active	2002-11-20	2019-07-17	7	54.23	0	1,625
CDC	1105340	Active	2002-11-20	2019-07-17	7	54.23	0	1,625
CDC	1105595	Active	2002-11-26	2019-07-17	7	54.24	0	1,625
CDC	1105597	Active	2002-11-26	2019-07-17	7	54.22	0	1,625
CDC	1106111	Active	2002-12-04	2019-07-17	7	54.21	0	1,625
CDC	1106112	Active	2002-12-04	2019-07-17	7	54.20	9,151	1,625
CDC	1106113	Active	2002-12-04	2019-07-17	7	54.20	0	1,625
CDC	1112936	Active	2003-01-15	2019-07-17	7	54.22	0	1,625
CDC	1112937	Active	2003-01-15	2019-07-17	7	54.21	0	1,625
CDC	1112938	Active	2003-01-15	2019-07-17	7	54.21	0	1,625
CDC	1118347	Active	2003-02-19	2019-07-17	7	54.15	0	1,625
CDC	1118348	Active	2003-02-19	2019-07-17	7	54.15	9,394	1,625
CDC	1118349	Active	2003-02-19	2019-07-17	7	54.15	0	1,625
CDC	1118351	Active	2003-02-19	2019-07-17	7	54.14	0	1,625
CDC	1118352	Active	2003-02-19	2019-07-17	7	54.14	0	1,625
CDC	1118353	Active	2003-02-19	2019-07-17	7	54.14	0	1,625
CDC	1118354	Active	2003-02-19	2019-07-17	7	54.14	0	1,625
CDC	1118357	Active	2003-02-19	2019-07-17	7	54.13	0	1,625
CDC	1118358	Active	2003-02-19	2019-07-17	7	54.13	0	1,625
CDC	1118381	Active	2003-02-20	2019-07-17	7	54.25	0	1,625
CDC	1118382	Active	2003-02-20	2019-07-17	7	54.25	0	1,625
CDC	1118383	Active	2003-02-20	2019-07-17	7	54.25	0	1,625

	Title	Status	Registration date	Expiration date	Rene wal	Area (ha)	Over ($)	Work required ($)
CDC	1118384	Active	2003-02-20	2019-07-17	7	54.25	0	1,625
CDC	1118385	Active	2003-02-20	2019-07-17	7	54.25	0	1,625
CDC	1118386	Active	2003-02-20	2019-07-17	7	54.25	0	1,625
CDC	1118391	Active	2003-02-20	2019-07-17	7	54.22	0	1,625
CDC	1118392	Active	2003-02-20	2019-07-17	7	54.22	0	1,625
CDC	1118427	Active	2003-02-20	2019-07-17	7	54.25	1,428	1,625
CDC	1118435	Active	2003-02-20	2019-07-17	7	54.25	0	1,625
CDC	1118440	Active	2003-02-20	2019-07-17	7	54.24	0	1,625
CDC	1118441	Active	2003-02-20	2019-07-17	7	54.24	0	1,625
CDC	1118442	Active	2003-02-20	2019-07-17	7	54.24	0	1,625
CDC	1118443	Active	2003-02-20	2019-07-17	7	54.24	0	1,625
CDC	1118444	Active	2003-02-20	2019-07-17	7	54.24	0	1,625
CDC	1118445	Active	2003-02-20	2019-07-17	7	54.24	0	1,625
CDC	1118448	Active	2003-02-20	2019-07-17	7	54.23	0	1,625
CDC	1118449	Active	2003-02-20	2019-07-17	7	54.23	12,424	1,625
CDC	1118548	Active	2003-02-20	2019-07-17	7	54.24	14,408	1,625
CDC	1118550	Active	2003-02-20	2019-07-17	7	54.23	0	1,625
CDC	1118551	Active	2003-02-20	2019-07-17	7	54.23	0	1,625
CDC	1118553	Active	2003-02-20	2019-07-17	7	54.22	0	1,625
CDC	1120348	Active	2003-03-21	2019-07-17	7	54.25	0	1,625
CDC	1120368	Active	2003-03-21	2019-07-17	7	54.23	0	1,625
CDC	1120369	Active	2003-03-21	2019-07-17	7	54.23	0	1,625
CDC	2104402	Active	2007-07-16	2019-07-17	5	54.00	0	1,170
CDC	2104403	Active	2007-07-16	2019-07-17	5	54.00	0	1,170
CDC	2104404	Active	2007-07-16	2019-07-17	5	53.99	0	1,170
CDC	2104405	Active	2007-07-16	2019-07-17	5	53.99	0	1,170
CDC	2104406	Active	2007-07-16	2019-07-17	5	53.99	0	1,170
CDC	2104407	Active	2007-07-16	2019-07-17	5	53.98	0	1,170
CDC	2104408	Active	2007-07-16	2019-07-17	5	53.98	0	1,170
CDC	2104409	Active	2007-07-16	2019-07-17	5	53.98	0	1,170
CDC	2104417	Active	2007-07-16	2019-07-17	5	53.95	342	1,170

4.1.4 ISSUER'S INTEREST

In December 2016, Mason Graphite paid to Quinto an amount of US$4.0M to complete the acquisition of the claims. Mason Graphite has received a release of all the securities from Quinto, thus fully completing the acquisition process from Quinto. There are effectively no securities left on the claims.

The claims have not had any legal surveys. All claims are map-staked claims and are registered in the Québec GESTIM database.

4.1.5 SIGNIFICANT RISK FACTORS

The socio-economic risk which may affect access or the right or the ability to perform work on the land in the form of social acceptability of the Project by the Pessamit Innu First Nation and local users of the land is considered minimal.

In June 2017 Mason Graphite and the Pessamit Innu First Nation signed an Impact and Benefits Agreement (IBA).

During the summer of 2017, as part of the environmental evaluation process, public consultations on the Project were held by the provincial government (by the Bureau des Audiences Publiques en Environnement - BAPE) at the end of which no public hearing was requested by the population, a rare fact for a mining project in Québec.

There are no known significant factors and risks other than as disclosed herein that may affect access, title, or the right or ability to perform work on the Property.

There are no known legal or title risks which may affect access, or the right or ability to perform work on the Property.

4.2 BAIE-COMEAU SITE

4.2.1 LOCATION

The Baie-Comeau site is located in the Jean-Noël Tessier industrial park in the city of Baie-Comeau, Québec. The Jean-Noël Tessier industrial park is located between the two sectors of the city of Baie-Comeau (Mingan sector and Marquette sector) and about one km north of Highway 138. The land is approximately centered on coordinates 49°13'N and 68°14'W.

This land, considered for the building of the processing plant, the shipping facility, the TMF and the administrative office, covers an area of approximately 70 ha. The land is part of a larger land that has been surveyed as follows:

- Canton Laflèche, Bloc 135, lot 52, area of 116.556 ha;
- Canton Laflèche, Bloc 136, Lot 53, area of 17.772 ha.

Figure 4-5 and Figure 4-6 show the location of the Baie-Comeau site on Google Earth satellite pictures.

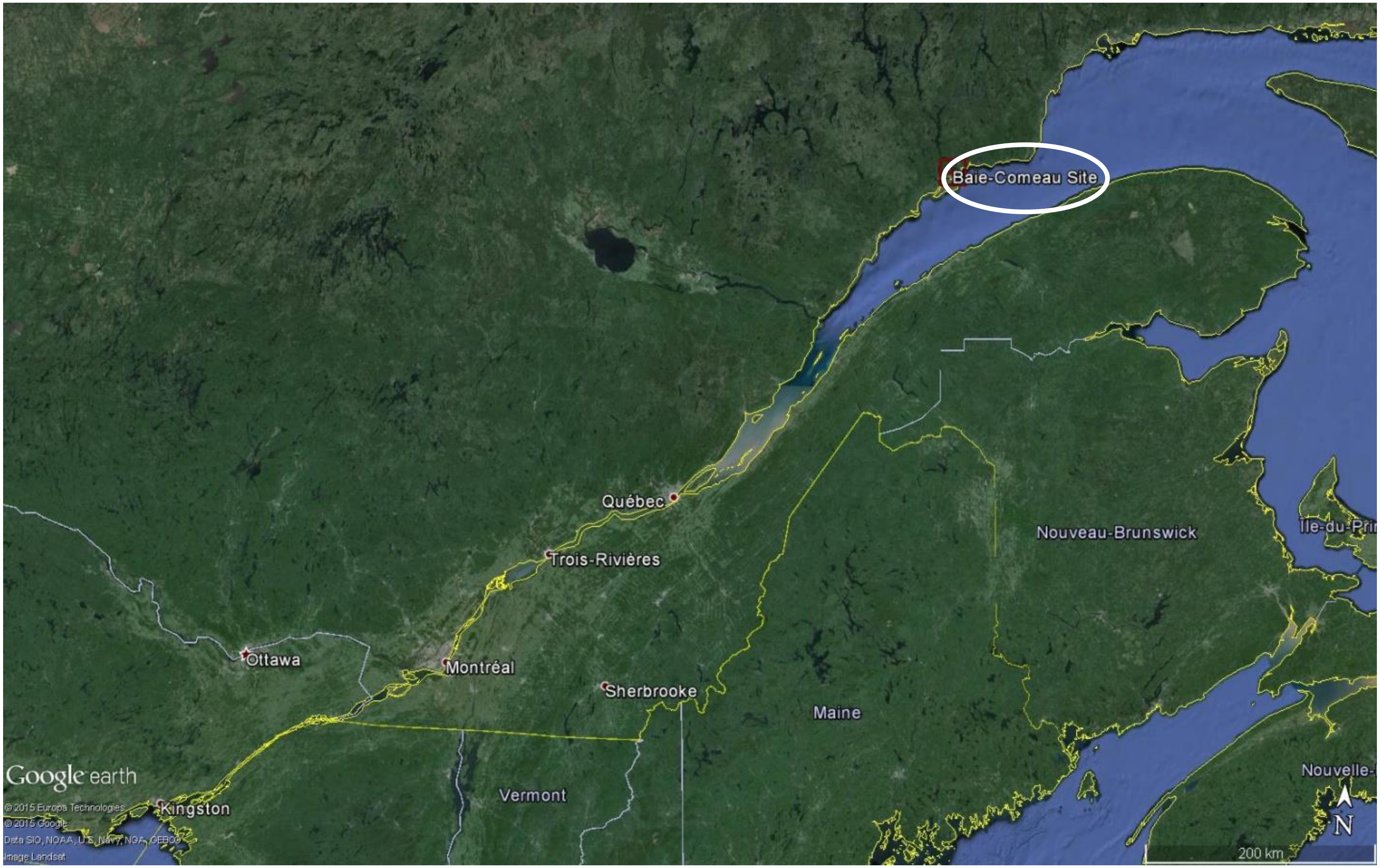


Figure 4-5 - Google Earth Image - Baie-Comeau Site Location

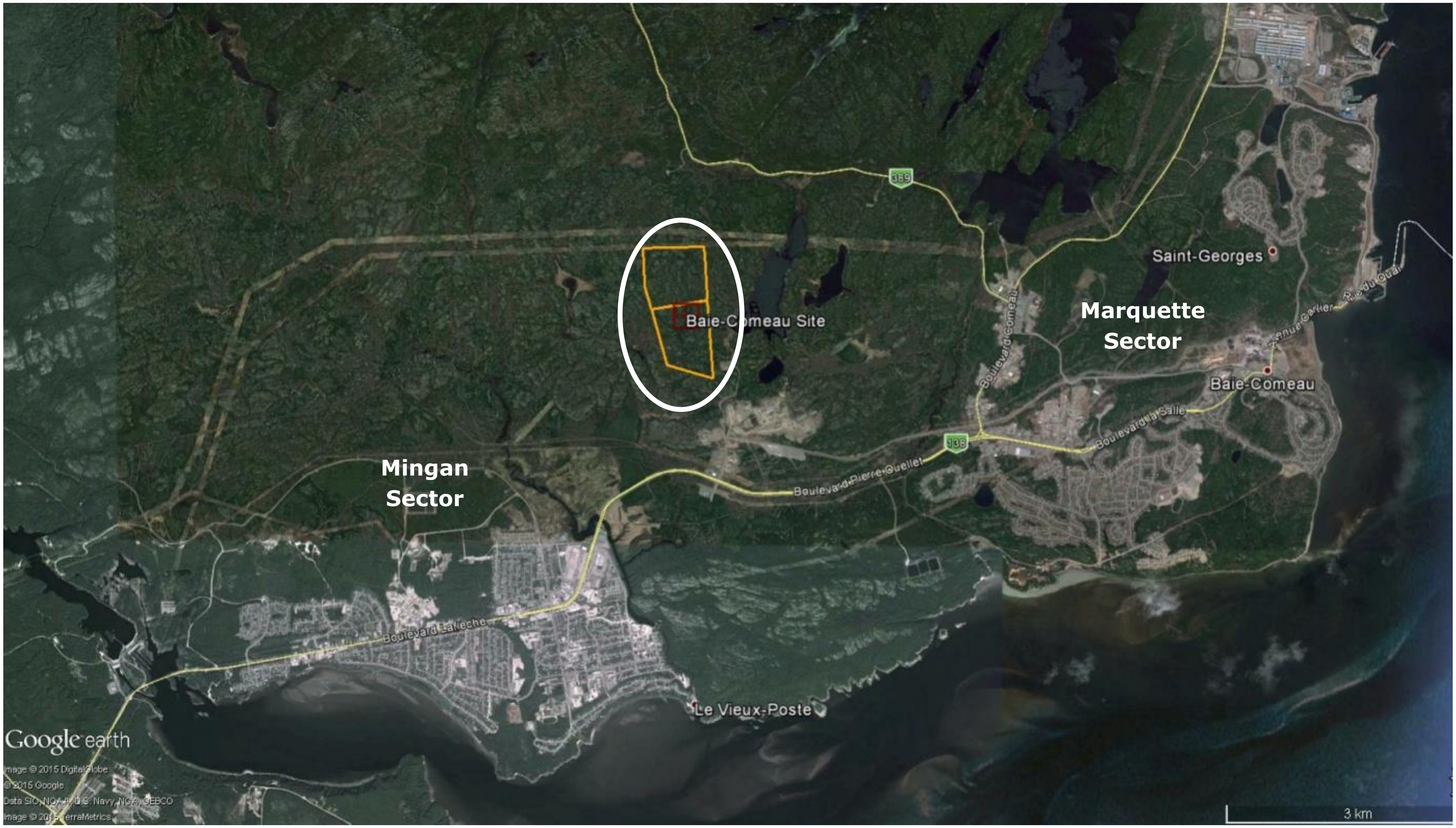


Figure 4-6 - Google Earth Image - Baie-Comeau Site Location - Local Details

4.2.2 PROPERTY DESCRIPTION AND OWNERSHIP

The land of the Baie-Comeau site is forested and currently unused except for a snowmobile trail during winter. It is included in a large industrial development Project of the city of Baie-Comeau. The land is zoned for heavy industries and is fully compatible with Mason Graphite's projected industrial activities.

The land is owned by the SEBC. A Memorandum of Understanding between Mason Graphite, the SEBC and the city of Baie-Comeau was signed by the parties on June 19, 2015. This agreement specifies the conditions and benefits under which the land would be acquired by Mason Graphite, among others the purchase price, a decreasing property tax credit over five years and the commitment of the City to conduct the necessary work to connect the future facilities to the local infrastructure, such as water network, sewage network and access to the road network. After the acquisition of the land, Mason Graphite would become its sole owner.

4.2.3 PERMITS

The authorizations required for geotechnical campaigns performed in 2015, 2016, 2017 and 2018 on the land were obtained from the city of Baie-Comeau.

4.2.4 SIGNIFICANT RISK FACTORS

The socio-economic risk which may affect access or the right or the ability to perform work on the land in the form of social acceptability of the Project by the population in the region of Baie-Comeau is considered minimal. This is discussed in Chapter 20.

There are no known environmental liabilities for this land.

There are no known legal or title risks which may affect access or the right or ability to perform work on the land.

There are no other known significant factors and risks other than as disclosed herein that may affect access, title, or the right or ability to perform work on the land.

5. ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

5.1 LAC GUÉRET SITE

5.1.1 ACCESSIBILITY

Access to the Property is via the paved all-weather Highway 389, leading from Baie-Comeau, Québec to Wabush, Labrador. At Km 202, south of the Manicouagan 5 Dam, a main haul gravel logging road turns northwest from the paved road. It continues for about 85 km north-northwest from the highway toward the southwest shore of Lac Manicouagan. The Lac Guéret property is located in a system of former logging roads that are presently maintained by Mason Graphite and were in sound condition as of 2018. Numerous logging roads run across and around the Property and give good access to the claim block.

5.1.2 CLIMATE

The northern boreal forest region receives an extreme range of weather conditions throughout the year. Summers are short, from June to September with variably dry to wet with local storms, which may give heavy rainfall. Humidity ranges from very dry to quite humid. Lightning from thunderstorms is a frequent cause of forest fires, which are a normal hazard in any 10-year period. Autumn is quite changeable with abrupt shifts from almost summery conditions to frost and back in 48 hours. As the autumn progresses, colder days are more frequent, and snow may start as early as late September, but more commonly, snow stays on the ground after mid-November. Winter is cold with very short days and temperatures to -40 °C (Table 5-1). Snow may come in storms with 30 cm snowfalls. Spring is the opposite of autumn in the variability of daily temperatures and precipitation. It lasts from April to June. However, frost may occur in any month of the year as well as above freezing temperatures. Except for the occasional heavy snow fall, mining operations are not affected by the climate.

Table 5-1 - Monthly Temperatures at Baie-Comeau (Environment Canada)

Month	1	2	3	4	5	6	7	8	9	10	11	12
Max Temp	2.4	3.1	3.4	9.6	19.4	28.4	27.7	27.2	21.7	16.7	6.9	4.4
Min Temp	-37.3	-28.0	-30.8	-10.6	-3.5	2.5	7.0	6.4	-2.6	-3.1	-15.9	-25.9
Average Temp	-13.3	-12.3	-11.1	3.0	7.0	14.8	16.7	17.0	10.9	6.0	-2.4	-6.8

5.1.3 LOCAL RESOURCES AND INFRASTRUCTURE

The Property is located about 285 km by road north-northwest of Baie-Comeau, Québec, the nearest major population and service centre. The northeast corner of the claim block lies on the southwestern shore of Reservoir Manicouagan, a large circular lake impounded by Barrage Daniel Johnson, more commonly known as the Manic 5 Dam, owned by Hydro Québec. The hydroelectric dam is about 85 km southeast of the centre of the Property.

Logging operations between 1998 and 2006 created access into the area. The resulting logging roads, designed for 100-tonne off-highway logging haul trucks, created new outcrops and give good access throughout the claims. Logging ceased in 2006 and the roads have been maintained by Mason Graphite since 2012 and remain in good condition overall.

5.1.4 PHYSIOGRAPHY

Elevations range from 1,175 m on the reservoir to just over 2,150 m on a ridge some 10.5 km southwest of the lakeshore. The topography is mainly undulating glacial landforms, which thinly cover the outcrop surface. Glacial outwash plains and kame deposits are common. The glaciers moved from the north and scoured the pre-existing north- and northeast-trending structures to create linear valleys now filled with streams, lakes, bogs, and glacial materials. Locally, linear low rounded cliffs occur.

The boreal forest covers the area. The two dominant plant communities, typified by the black spruce – fir and white birch – larch association, are common through the region. The understory plants for both communities are several rhododendron species called Labrador tea, tag alder, ash, pin cherry, and various types of berry bushes, of which blueberry is ubiquitous. Forest fire is part of the boreal forest ecology. In the early 1990s, a particularly dry summer led to numerous natural fires. About 30% of the forest on the Property was burned in various degrees.

5.2 BAIE-COMEAU SITE

5.2.1 ACCESSIBILITY

Access to the Baie-Comeau site is via Highway 138 and then Avenue du Labrador. In 2017, the City built the first section for the future rerouting of Highway 389 (see next section), giving a direct access to the Baie-Comeau site.

Daily scheduled flights from Montreal land at the Baie-Comeau airport about 20 km southwest of the City.

The City has a deep-water seaport where vehicle and rail ferries allow crossing the St-Lawrence River to the city of Matane on the south shore.

There is a short local railway network in Baie-Comeau that is connected to the major railway lines on the south shore via the regular service of a rail ferry.

5.2.1.1 HIGHWAY 389 IMPROVEMENT PROJECT

A major rerouting of Highway 389 (from Baie-Comeau to Fermont) is planned by the MTQ between 2015 and 2021. This will improve access for operation activities.

The section of the 389 starting from Highway 138 (at Km 0) up to Km 4 will be moved to follow the current route of Avenue du Labrador and continue north to connect with the current Highway 389 at Km 4 (see Figure 5-1 and Figure 5-2). This new route will follow the property on its eastern edge. This change in the course of the road will allow the travels between the Lac Guéret and Baie-Comeau sites to avoid entering the eastern part of the city of Baie-Comeau.

The first section of the new Highway 389 was constructed in 2017 by the city of Baie-Comeau, specifically to give access to Mason Graphite's future concentrator site. The rest of the construction required to link this segment to the existing Km 4 of Highway 389 should take place in the coming years.

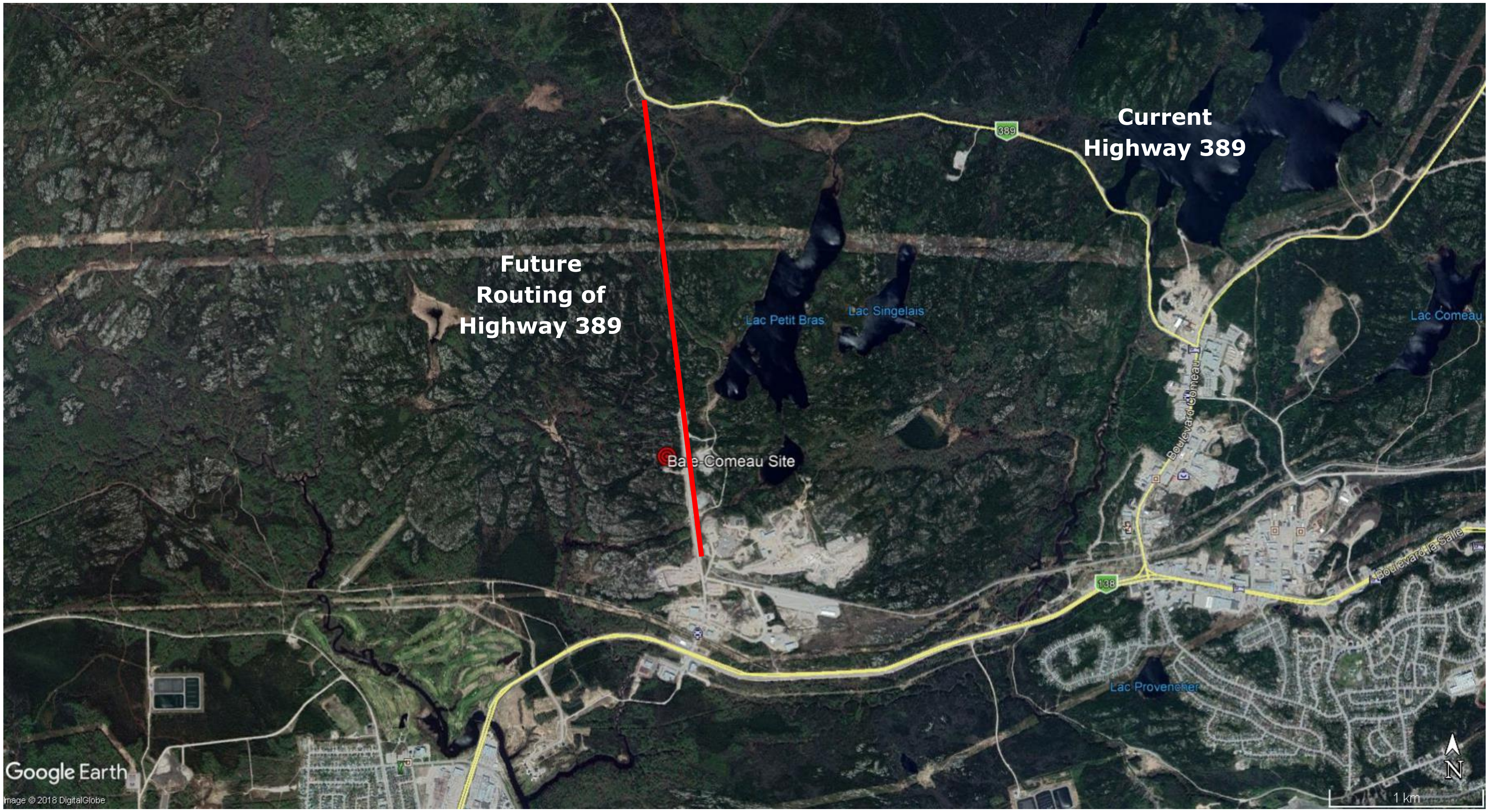


Figure 5-1 - Google Earth Image - Baie-Comeau Site

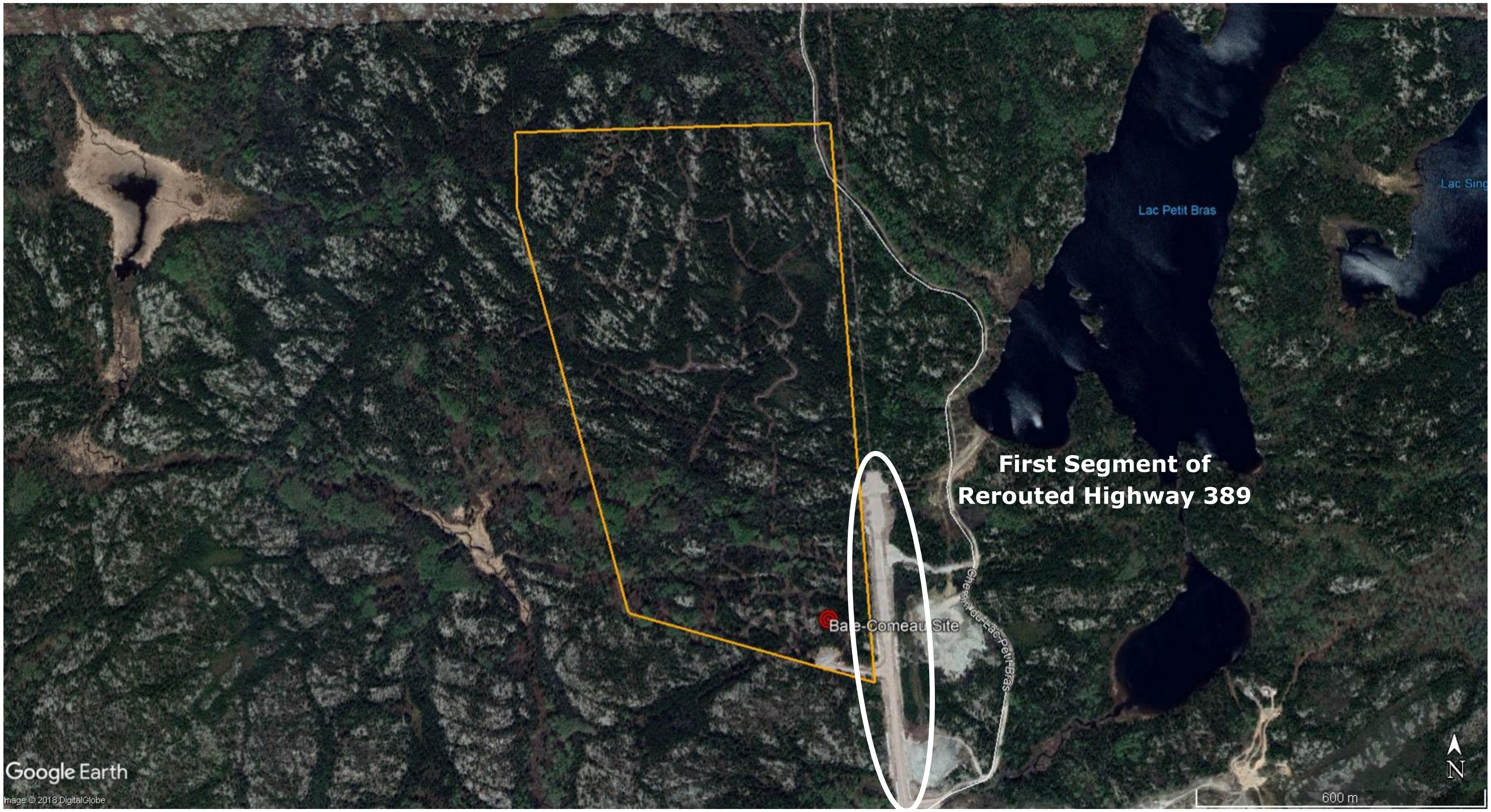


Figure 5-2 - Google Earth Image - Close-up of Highway 389 First Segment

5.2.2 CLIMATE

The climate in Baie-Comeau is roughly similar to the climate of the Lac Guéret site but somewhat milder due to the buffering effects of the St-Lawrence River. Monthly temperature averages for the region of Baie-Comeau are presented in Table 5-1 in Section 5.1.2 above.

The climate during winter (freezing temperatures and snowfalls) may slow down some construction activities, such as concrete pouring, but technical solutions exist to overcome these situations. Normal operations of the concentrator plant will not be affected by the climate.

5.2.3 LOCAL RESOURCES AND INFRASTRUCTURE

The city of Baie-Comeau is the main administrative centre for the region. With a population of 22,000 inhabitants, the City offers a wide range of resources and services: health services such as clinics and hospital, many provincial government branches (natural resources, environment...), construction contractors, machine shops, industrial supplies distributors, etc.

The City is home to some heavy industries: aluminum production (electrolysis) and forestry products (lumber and paper). There are also a number of hydroelectric dams in the region. The industrial background of the region should facilitate access to skilled labour. In addition to the access to skilled labour, locating the concentration plant in the vicinity of Baie-Comeau, where the majority of the employees will work, should improve its retention as these employees won't have to spend weeks in a mining camp in remote location, away from their family.

Hydroelectric power is readily available from the grid of Hydro-Québec. Other services like potable water and domestic waste water treatment are provided by the City.

5.2.4 PHYSIOGRAPHY

The chosen site for the concentrator is above the alluvial plain of the St-Lawrence River. The topography is characterized by low rounded hills reaching elevations of 70 to 90 m. The highest point is around 140 m. These hills, often boarded by steep cliffs, are covered by glacial deposits of variable thickness and mainly composed of undifferentiated till. The bedrock is exposed on roughly 60% of the surface and covered with moss. Organic deposits are also present at the lowest elevations and along river beds or around lake shores. Small streams and bogs are found on the land.

Two preliminary geotechnical holes were drilled at the beginning of 2015 and showed different ground conditions: the bedrock was reached under 1.5 m of top soil and till at the first borehole while it was found at a depth of 8.8 m, under layers of peat, till and clay in the second hole. More extensive geotechnical campaigns (test pits, boreholes, seismic surveys) from 2015 to 2018 to better understand geotechnical conditions of the land.

The forest covering the area is composed of balsam fir, white spruce, black spruce, white birch and aspen.

6. HISTORY

6.1 LAC GUÉRET SITE

6.1.1 GENERAL OVERVIEW

6.1.1.1 PRIOR OWNERSHIP

Prior to the access developed by logging companies in the region in the late 1990s, the geographical isolation of this area has hindered exploration. Edward (Ed) Lyons, P. Geo. From Tekhne Research Inc., (who worked on the Property for Quinto from 2002 to 2008) researched the Québec MERN website for assessment files in 2009. The only assessment reports on claims situated near or on the Lac Guéret claims were filed by Québec Cartier Mining Co. in 1962. They had two claim blocks totalling 100 quarter-mile claims in the area of the Property from 1959 until at least 1971. It is unknown when these claims expired. They were acquired based on regional airborne magnetometer mapping that picked up anomalies indicating significant iron formation in geology similar to the Mt. Reed – Mt. Wright iron deposits about 150 km to the northeast. Québec Cartier maintained their interest to at least 1971. The Lac Guéret claim group covers their former holdings. No other assessment reports filed with the MERN Québec are available for the Property area since at least 1935 until the Québec Cartier reports in 1962.

In late 2001, Phil Boudrias of Exploration Esbec (Sept-Îles, QC) located graphite in road-cut outcrops along recent logging roads at what is now the west end of the GR (Graphite Road) Zone. He staked a claim block and optioned it to Quinto of Delta, BC in 2002. Ed Lyons did the original technical site visit in August 2002 as part of the agreement completion on behalf of Quinto. Quinto conducted exploration works between 2002 and 2007, including drilling an initial resource (published in-house in 2009). In 2008, Consolidated Thompson Iron Mines Ltd. (CLM) purchased 100% of Quinto shares and continued to maintain the Company privately. In 2011, Cliffs Natural Resources Inc. bought 100% of the CLM shares and continued to maintain Quinto as a private company. Mason Graphite acquired the Lac Guéret graphite property from Quinto as described under Issuer's Interest in Section 4.1.4.

6.1.1.2 HISTORICAL EXPLORATION WORK

Québec Cartier conducted their major work in 1962 (Ferreira 1962a, 1962b). Baselines were cut on three grids-cutting with lines turned at 300 ft intervals for a total of 61 miles (98.5 km). Geological mapping and dip-needle magnetometer surveys were carried out at 1:2,400 scale on the grids. Six inclined AX-size diamond drillholes were drilled for a total of 2,301 ft. (701.3 m). Most of the footage (1,820 ft. or 554.7 m) was drilled in five holes around "Iron" and "Barrage" Lakes. Québec

Cartier reported a global average of all samples at 36% Fe. The individual samples range from 12.9% to 40.5% Fe in mainly magnetite and lesser specular hematite iron oxide facies formation. Intervals range from 138 ft. (42.1 m) to 420 ft. (128.0 m). No further work appears to have been done after 1962.

Following the discovery of graphite at the GR Zone showing on a logging road by Phil Boudrias of Sept-Îles, QC in 2001, Quinto optioned a block of claims that forms the core of the present Lac Guéret property from Exploration Esbec (Sept-Îles, QC) in 2002 and added claims on its own account to cover the favourable stratigraphy around the iron formation as well as the iron formation core itself.

Table 6-1 presents a short summary of various exploration work and reports on the Lac Guéret Property since 2002.

Table 6-1 - Summary of Exploration Work and Reports on the Lac Guéret Property [1]

Year	Works
2002	Initial evaluation: discovery of GR and GC Zones, prospecting and geological mapping, 17 line-km grid; 12 line-km VLF-mag ground survey. Seven trenches totalling 643 metres with 181 saw-cut channel samples. NI 43-101 Technical Report by E. Lyons, 12 Oct 2002 (Lyons, 2002).
2003	Trench mapping, property exploration, drilling campaign (GC Zone: 2 holes totalling 316 m and GR Zone: 8 holes totalling 890.9 m) with 421 saw-cut core samples; exploration trenches (50 trenches totalling 4,409 metres) with 1,023 saw-cut channel samples; definition of three ore types by grade and visual characteristics; initial metallurgical testwork. Joint venture with SOQUEM agreement in principle; Airborne EM-mag survey (Geotech, 2003); NI-43-101 Technical Report by E. Lyons, 28 Feb 2004 (Lyons, 2004a, 2005b).
2004	Field verification of airborne anomalies across Property; detailed ground work focused on GC Zone; detailed stripping and trenching with detailed 1:1,000 scale geological mapping; 31 trenches totalling 2,087 metres with 407 saw-cut channel samples representing 1,584 m of sampled trenches.; SOQUEM conducted trenching and drilling on four anomalies to the north and west of the Lac Guéret claims (Roy, 2004). Structural geology review (Daigneault, 2004). NI 43-101 Technical Report by E. Lyons, 15 Dec 2004 (Lyons, 2004b).
2005	Property mapping (assessment work), (Lyons, 2005a).
2006	Drilling campaign (GC Zone: 24 holes totalling 2,152.1 m), airborne geophysics.
2007	Technical studies: 2006 drill core relogged by Lyons, metallurgical testwork, resource model started; in-house studies incomplete.
2009	Drilling and Mineral Resource Estimation Report (not NI 43-101 compliant) internal report for Quinto Mining, 17 Dec 2009 by E. Lyons (Lyons, 2009).
2012	NI 43-101 Technical Report on the Lac Guéret Graphite Project: initial mineral resource estimation based on 2006 diamond drilling and Lyons 2009 report.
2012	Drilling campaign (GC Zone: 146 holes totalling 24,346.3 m and GR Zone: 17 holes totalling 2,201.1 m).

[1] Since 2002

Year	Works
2013	NI 43-101 Preliminary Economic Assessment, Lac Guéret Graphite Project (Lyons, et al., 2013; Summer relogging of 2012 drill core.
2014	NI 43-101 Mineral Resource Estimation Update 2013, Lac Guéret Graphite Project (Lyons, et al., 2014); (updates resource estimation and PEA)
2015	NI 43-101 Technical Report: Resource Update and Feasibility Study, Lac Guéret Graphite Project (Duplessis, Lyons, Cassoff, Gauthier and Roy, 2015, re-issued 2016)

After the initial Property evaluation in 2002, the major part of the exploration work was focused around the known graphite occurrences. In 2003, the first drilling campaign in that area totaling 1,206.9 metres was completed. Exploration drilling was also done on selected targets by Quinto's JV partner at the time, SOQUEM on distant targets on the Property in order to assess other anomalies and meet assessment work requirements. It was then followed in 2004 and 2005 by an exploration program targeted at airborne geophysical anomalies and other graphite occurrences as well as by extensive clearing and trenching, channel sampling, and detailed mapping of the GC Zone in order to better understand the geology of the known deposit.

The 2006 exploration program included trenching two trenches northeast of TR68, named TR69 and TR70, and a diamond drill program of 24 NQ holes totaling 2,152.1 metres. Three holes totaling 235.8 m were also drilled in the graphite stratigraphy outside of the GC-GR area for assessment purposes but are not discussed herein. The trenches were channel sampled using a concrete saw, but the original records of results appear to not have been completely transferred to Mason Graphite after Quinto was purchased by Cliffs Natural Resources in 2011. These included the number of samples, where they were taken and the analytical results. Lyons authored the NI 43-101 reports for the 2002, 2003, and 2004 exploration works for Quinto, which included almost all to the channel sampling. Lyons observed the trenches in May 2007 and noted that they extended the TR68 geology to the NE some 80 metres.

The 2003-2006, 2012 and 2013-2014 drilling campaigns are detailed in Chapters 9 and 10 of this Report.

6.1.2 HISTORICAL MINERAL RESOURCES

There are no historical mineral resources.

6.2 BAIE-COMEAU SITE

6.2.1 GENERAL OVERVIEW

The land retained for the building of the concentrator plant, the TMF and the office complex was originally owned by the MERN. It was acquired by SEBC on July 7, 2003.

A restraint on mineral exploration and exploitation was applied to the area on June 12, 1991 to reserve the land for industrial use. This constraint does not apply to the operation of a concentrator and a TMF.

No mineral exploration work was done on the land by Mason Graphite. There are no known indications of economic minerals in the Grenville gneisses locally around the Baie-Comeau area.

Geotechnical and hydrogeological work was performed on the Property by Mason Graphite from 2015 to 2018.

The land has not been used for residential, commercial or industrial purposes before.

7. GEOLOGICAL SETTING AND MINERALIZATION

7.1 REGIONAL GEOLOGY

The results of the 2004 field campaign (Lyons 2004b) and the 2006 drilling improved the understanding of the regional, as well as Property geology. In addition, the lithotectonic synthesis of the Labrador Trough by Clark and Wares (2005) revised the standard stratigraphy of the Labrador Trough, which is the protolith of the Gagnon Group on the Property. The synthesis also changes some fundamental perspectives and interpretations applicable to the subject Property.

The regional stratigraphy is shown in Figure 7-1 with the Québec Government regional mapping codes (from youngest to oldest). The regional geology is shown in compilation maps (Figure 7-2) by the Geological Survey of Canada (Davidson, 1996) and the Québec Ministry of Natural Resources (Marcoux and Avramtchev, 1990) and is summarized by Hocq (1994).

CENOZOIC		
Quaternary		
Q	Pleistocene glacial deposits, unconsolidated	
MESOZOIC		
Triassic		
Mcc	Manicouagan impact crater complex (monzonite, latite, breccia)	
MIDDLE PROTEROZOIC		
G16	Shabogamo mafic intrusives	
G15	Monzonite – granodiorite intrusives (? klippes)	
G14	Gabbro (nappe – klippes?)	
PALEOPROTEROZOIC – ARCHEAN		
Gagnon Group		
HBG_GN	Hornblende-garnet gneiss – basalt sill-dyke complex coeval with Menihek Fm (small scale)	
G12	Menihek Fm. (quartzofeldspathic gneiss) also called Upper Paragneiss (Clarke, 1977)	
G12a	Lac Guéret Member (informal) of Menihek Fm (graphite-quartz schist and graphite-quartz-feldspar-biotite-(garnet) gneiss)	
	------------------ diachronous contact ------------------------------	
G11a	Sokoman Fm. non-Fe oxide member (quartzite-rich sediments)	
G11	Sokoman Fm. (iron formation)	Age 1885 – 1878 Ma
	------------------ unconformity --	
G9	Denault Fm. (dolomitic marble with calcsilicates + quartz)	Age < 2060 Ma
	------------------ unconformity --	
G8	Katsao Fm. (granite gneiss, minor amphibolite)	Age 2170 - 2140 Ma

Figure 7-1 - Regional Stratigraphy

The Grenville Province rocks characteristically have been subjected to medium to high metamorphism and multiple periods of deformation. Metamorphism in the region is the upper amphibolite facies (kyanite subfacies).

Pre-Grenville and possibly early-Grenville deformation appears to have been destroyed by intense middle-Grenville orogenies. Dr. Réal Daigneault (Daigneault, 2004) made a structural field study on the graphite area on the Property while Edward Lyons was mapping the area. He noted that the central two periods of deformation (D_2 and D_3) control the present distribution of the lithology, but there is evidence for one prior and at least two later deformation events, as well.

The Property covers most of the most southwesterly exposures of the Ferriman Group stratigraphy related to the Sokoman iron formation in the Gagnon Terrane. The Gagnon Terrane on the Property includes most of the broad anticlinorium elongated north-northeast. The oval shaped structure is compressed generally from the southeast to its present form. The west limit of the late Grenville eclogite thrust emplacement of the Manicouagan Imbricate Zone lies about 30 km east of the Gagnon anticlinorium and trends north-northwest (Hynes and St-Jean, 1997) through what is now the Manicouagan Impact Crater and Reservoir Manicouagan, where it was affected by the 214 Ma astrobleme event.

The core of the anticlinorium is mainly Denault Fm crystalline dolomitic marble. The typical footwall to the Sokoman Fm, the Wishart Fm quartzite, appears not to be present as a mappable unit. The Sokoman Fm iron formation outcrops mainly in both the centre and edges, where they occur as linear, doubly folded (interference folds) anticlines and synclines on the scale of 0.5 to 2.5 km. Silicate facies of the Wabush were recognized in recently logged areas in the southern part of the anticlinorium but have not been mapped historically. The quartzite mapped near the graphite zones appears to be the upper, non-oxide, facies of the Sokoman Fm, not the Wishart quartzite, since it locally contains small amounts of magnetite, iron carbonates and iron silicates typical of the Sokoman Fm.

The Sokoman Fm quartzite and the overlying Menihek Fm contact can be traced around the margins of the anticlinorium by airborne EM conductors with variable magnetic signatures. Little mapping has been done in the northwest. Foliations are steep SE-dipping to vertical in the northwest, while on the southeastern margin, foliations dip from steep to more commonly moderate to shallow toward the SE. The major D_2 deformation was caused by collision from the southeast, as is common throughout the Gagnon Terrane, leading to overturned folds and thrust faults dipping SE. The anticlinorium generally occupies a low plateau delimited by steep flanks to the SE and NW in particular.

The Lac Guéret property covers most of the outlier of iron formation Gagnon Group as a plateau described above. Work by SOQUEM Inc. in 2003-2004 on the southern block of the Lac Guéret property shows folded bands of silicate-rich iron formation with minor Fe-oxide and sulphide facies probably interbedded with other non-iron formation metasediments, but not the dolomitic marble.

The graphitic horizon is present as linear bands to 10-m wide overlying the Sokoman Fm. The folds are dominantly strike E-W to WNW with steep south dips. The two zones, distinct in regional detailed aeromagnetic survey conducted in 2004 by SOQUEM, appear to be the most southwesterly outlier of Gagnon Group. It appears to be separated by erosion from the core Gagnon Group package on the Lac Guéret Nord property. The southern units mark the south limit of the Gagnon Terrane where the Allochthonous Boundary Thrust Fault (ABT) that marks the Parautochthon – Polycyclic Allochthon boundary.

Post-Grenville folding and extensional brittle faulting occurred with mainly modest vertical offsets. This pattern has been noticed by Lyons in the iron belt between Mont-Reed and Wabush as well. These are shown as thrust faults in Figure 7-2.

The Middle Proterozoic units in the region are shown by Marcoux and Avramtchev (1990) as a group of basic to intermediate intrusives. However, Hocq (1994) shows them as regional-scale (tens of kilometres) klippes transported by subhorizontal nappe folding and thrust displacement on detachment plans.

The most significant known geological event in the area since the end of the Grenville event was the impact of a large (~10-km diameter) bolide 214 ± 1 million years ago in the Triassic Period (see O'dale, 2015 for a recent review). The impact created the Manicouagan Impact Crater with a floor diameter of 55 km and final rim diameter of ~95 km (Grieve, 1983). Part of the now eroded annular shatter ring of collapsed impact crater walls is now filled by the Reservoir Manicouagan. The base of the impacted centre underlies Île René-Levasseur. The current floor is estimated at 230 m deep by 55 km diameter. The shock ring extends outside the crater about 25 km. The original impact is estimated to have been about one km higher that the present elevation and would have overlain the graphite geology. This would affect much of the rocks underlying the Lac Guéret property, including the graphite zone, although no shocked quartz has been noted in the graphite zones in thin section. This transient, high-speed event likely did not affect the graphite flake size, since the high temperature was likely active for a few thousand years, but the shock wave could have caused types of in-situ brecciation. Evidence for multiple impacts from one dismembered bolide (comet or meteorite) has been presented by John Spray (Spray et al., 1998) citing the Shoemaker-Levy comet impact on Jupiter in 1994 as a model. The seven impacts occurred on 214 Ma paleogeography where the impacts were about 10 or less crater-diameters apart. The combined impacts could have led to unknown large scale geological and proposed extinction events.

The last geological event was the Pleistocene glaciation and deglaciation. Where outcrops of softer graphite-biotite schist trend north to northeast, the glaciers cut cliffs and cross-cut the schistosity. The melting of the ice formed sandy outwash plains with isolated large erratics, kames, drumlins, and a few eskers. Moraine development in the area of the Property seems minor.

The economic geology in the Gagnon Group historically lies in the Gagnon Group metasediments. They host the Sokoman iron formation mined at Mt. Reed – Lac Jeannine – Fire Lake – Mt. Wright belt through Fermont and continuing northeast to include the deposits at Wabush. The graphite deposits occur in the basal part of the Menihek Fm pelitic schist and gneiss overlying the Sokoman Fm and can be considered as marking the final deposition in the Sokoman. This stratigraphy also hosts the Lac Knife graphite deposit as well as graphitic paragneiss units south and west of the Fire Lake iron mine; the basal graphite lenses also occur above the Kami iron deposit in Labrador City, NL, as the Mart Lake showing.

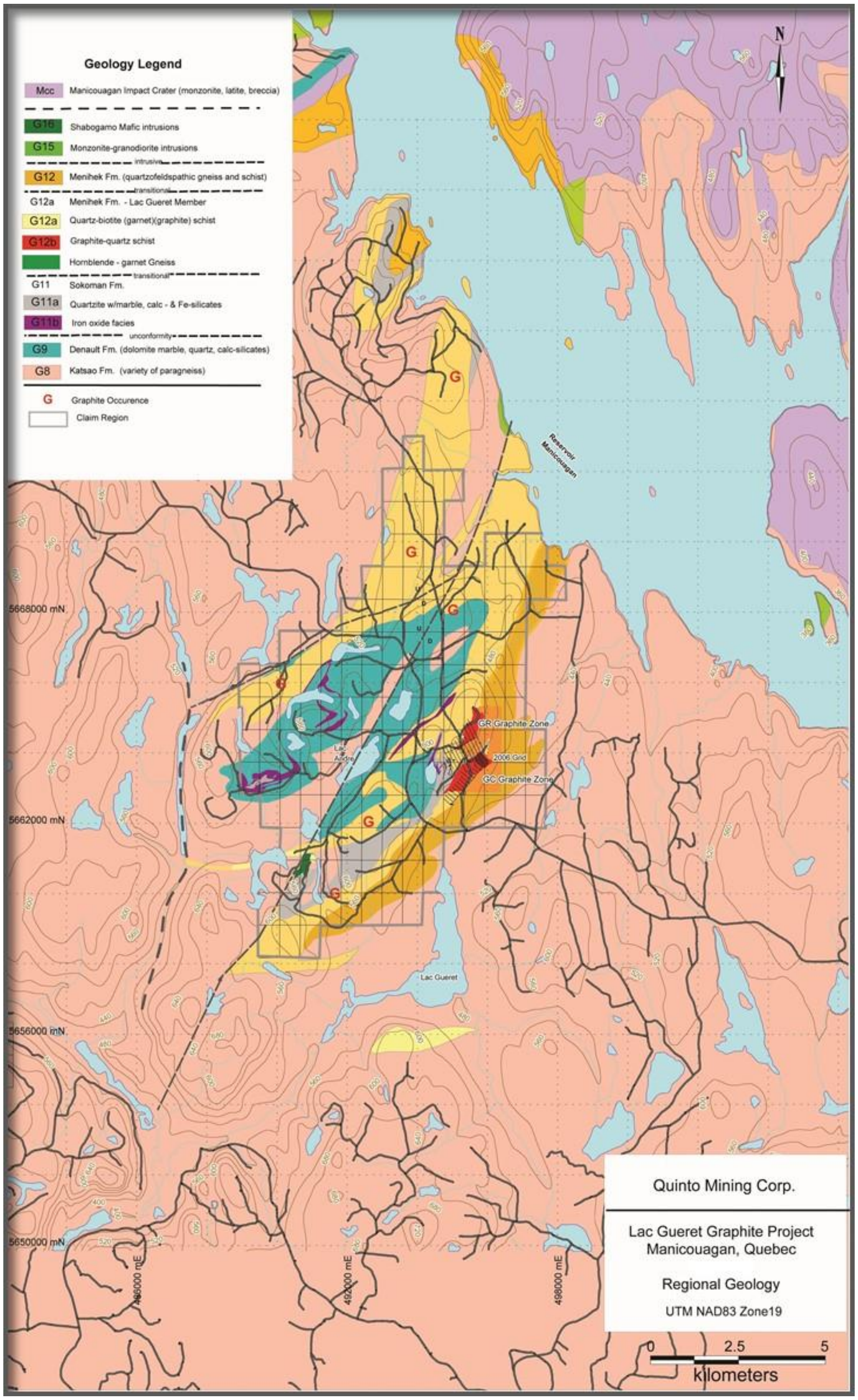


Figure 7-2 - Mason Graphite Regional Geology Map

7.2 PROPERTY GEOLOGY

7.2.1 STRATIGRAPHY

The stratigraphy of the GC and GR graphite zones is shown schematically in Figure 7-3.

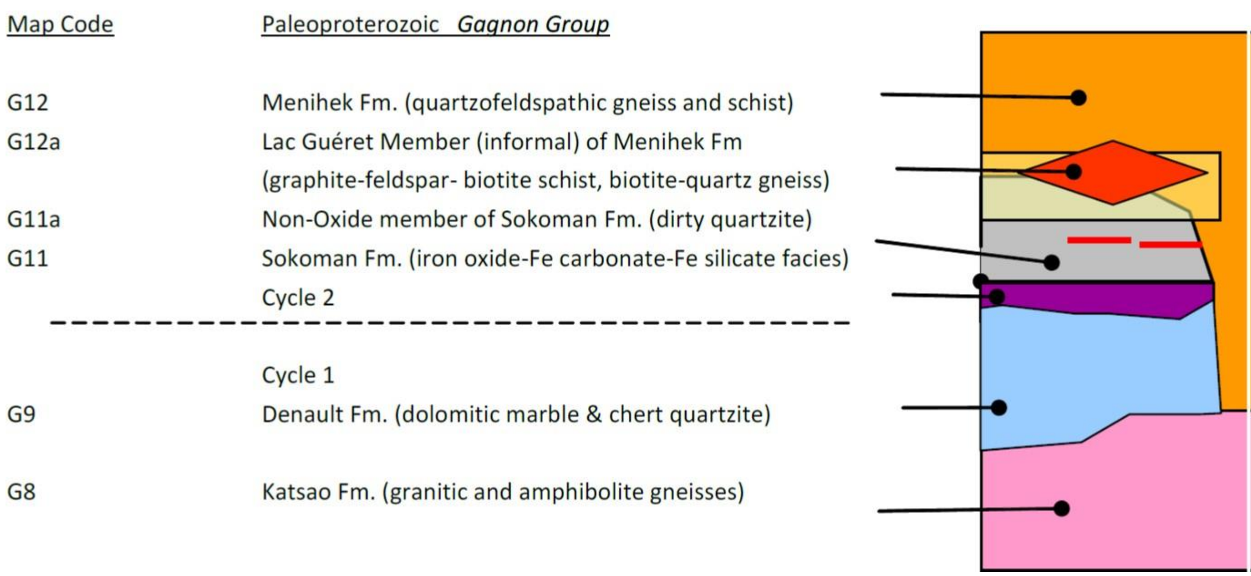


Figure 7-3 - Property Stratigraphic Column (Youngest to Oldest)

The Denault and Sokoman Formations in the core of the synclinorium are overlain by the non-oxide facies of the Sokoman noted elsewhere in the Gagnon Terrane near the iron mines. The quartzite is thin to thick bedded with locally well-preserved bedding features, including rare graded beds. Thin beds also include 1-10% magnetite crystals at a stratigraphic level only slightly below the start of the major graphite deposition. The quartzite locally has interbeds of white coarsely crystalline diopside (calc-silicate) and white tremolite as well as pale green amphibole and red-brown garnet (species unknown). Diopside, identified by MRN geologists in 2004, occurs in monomineralic lenses to 2 metres thick. Graphite occurs as rare isolated flakes and thin beds in quartzite (not in the marble) near the top of the unit. The quartzite is up to 140 m true thickness but often is less, especially with the iron formations near the core of the synclinorium. The non-oxide facies is much thicker here than is observed near the major iron deposits in the region, suggesting that the local basin may have been relatively deficient in iron and carbonate. The Sokoman quartzite complex forms the footwall of the major graphite intervals in the GC and GR zones.

The informally named Lac Guéret Member (G12a) of the Menihek Fm is the basal facies of the Menihek Fm paragneiss (the Upper Paragneiss of Clarke (1977)). The Member is quartz-rich towards the base and gradually increases in plagioclase, biotite, muscovite, and garnet up section. Clarke (1977) reported graphite occurring sporadically through the Menihek (Upper Paragneiss). On the Property, it is concentrated towards the base, although graphite also occurs in minor amounts (<1% Cg) throughout the Menihek. In the Lac Guéret Member, graphite more typically occurs as beds and bands of 4% to 54% Cg over widths of 2 to 200 metres. This is discussed in more detail under Mineralization. Graphite can also occur as isolated narrow beds in the quartzite proper. Overall, the Member appears to represent a transitional depositional environment from dominantly chemical sediment Sokoman Fm to dominantly clastic Menihek Fm sediments. The diachronous contact shows the interlayering of quartzite-rich and micaceous rocks typical of a contemporaneous change in deposition styles. Figure 7-2 shows a geological map of the Property geology.

Hornblende-garnet-amphibole coronitic gneiss is another distinct rock type that is localized in the Lac Guéret Member. Clarke (1977) noted this unit, named Hornblende-Biotite Garnet Gneiss (HBG-GN) as occurring at the base of his Upper Paragneiss unit and remarks that it appears to be formational at the transition from quartzite to paragneiss near Mont-Reed and Mt Wright iron mines. At Lac Guéret, it forms thin continuous sills in the GC graphite zone. In core, the mafic and sedimentary beds at interbanded on the decimeter scale locally; the mafic contains no graphite. The lateral extent is usually several hundred metres. Lyons interprets these as metamorphosed basalt or andesite sill-dyke complexes that intruded the metasediments. The same pattern is common over and around the Kami iron deposit at Labrador City, NL and in the Peppler and Lamêlée iron deposits near Fire Lake, QC. Clark and Wares (2005), notes the same feature near Schefferville where the mafic rocks eventually dominate to the east, deeper in the basin; age-dating yielded similar albeit slightly younger ages to those of the Sokoman Fm.

The Menihek Fm paragneiss hangingwall is variable with leucosomic and melanosomic bands that typically contain medium to coarse quartz, plagioclase, cinnamon-coloured biotite (phlogopite), muscovite, garnet, and dark green amphibole. Occasionally, sillimanite needles were noted, marking the upper amphibolite facies. The coarse banding and cinnamon biotite colour are typical in the examples shown by Clarke (1977) for his Upper Paragneiss near Gagnon, QC. The unit also includes minor bands of bright dark to medium green amphibolite with dark cinnamon garnet and/or black-brown biotite. Minor graphite + biotite-rich bands occur throughout the unit. Other units observed but not specifically mapped include light-coloured, iron-deficient quartzofeldspathic gneiss with muscovite and pale rose garnets, and hornblende-biotite amphibolite bands.

7.2.2 STRUCTURE

7.2.2.1 FOLDING

The Labrador Trough protolith had two and possibly three tectonic events before the Grenville deformation (Clark and Wares, 2005), (Figure 7-4 and Figure 7-5). These were probably destroyed or severely modified beyond recognition during the Grenville orogeny. Locally, some remnant features may persist in isolated outcrops. At least four periods of deformation during the Grenville affected the Property. The first deformation, D_1 with rare examples of preserved as tubular folds in calcsilicate-quartz bands west of the GR showing (Daigneault, 2004); this deformation does not appear to affect the main graphite geometry.

The second deformation, D_2 which resulted in the formation of the foliation F_1 is the most prominent and likely earliest folding related to the Grenville Orogeny. The regional lineation axis is oriented 055°. Plunges are variable from flat to shallow (< 40°) to the southwest. The plunges change in several domains of approximately 400-m length. From the northeast to southwest, the graphite zone plunges shallowly SW.

D_3 deformation folded the F_1 schistosity into tight sub-vertical to moderately dipping isoclinal folds striking northeast to east-northeast and dipping southeast. This is the major control of the conformation of the graphite beds. A number of late, small-scale pegmatite dykes, previously thought to be migmatite, in graphite schist have been folded and transposed by this event.

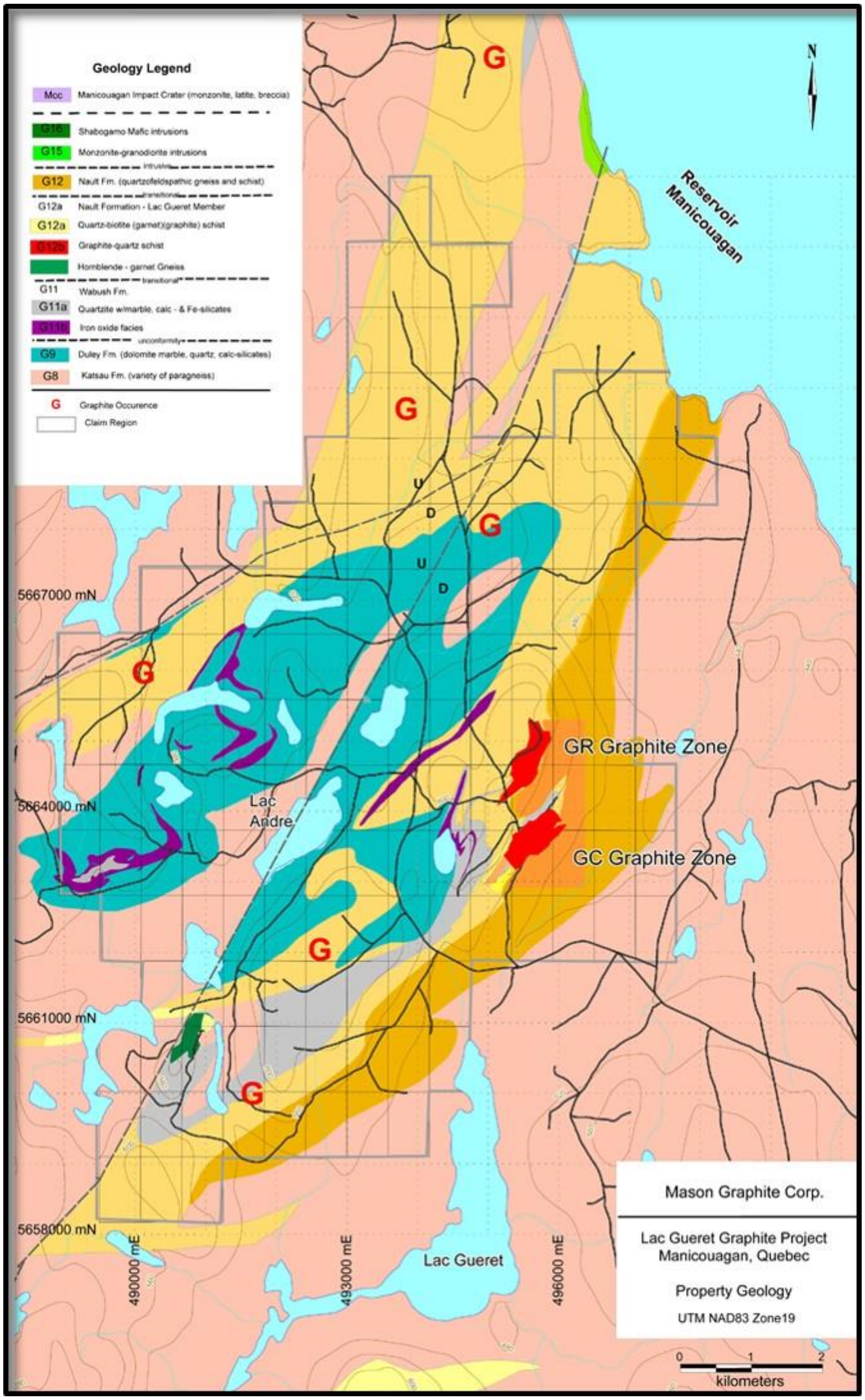


Figure 7-4 - Mason Graphite Property Geology

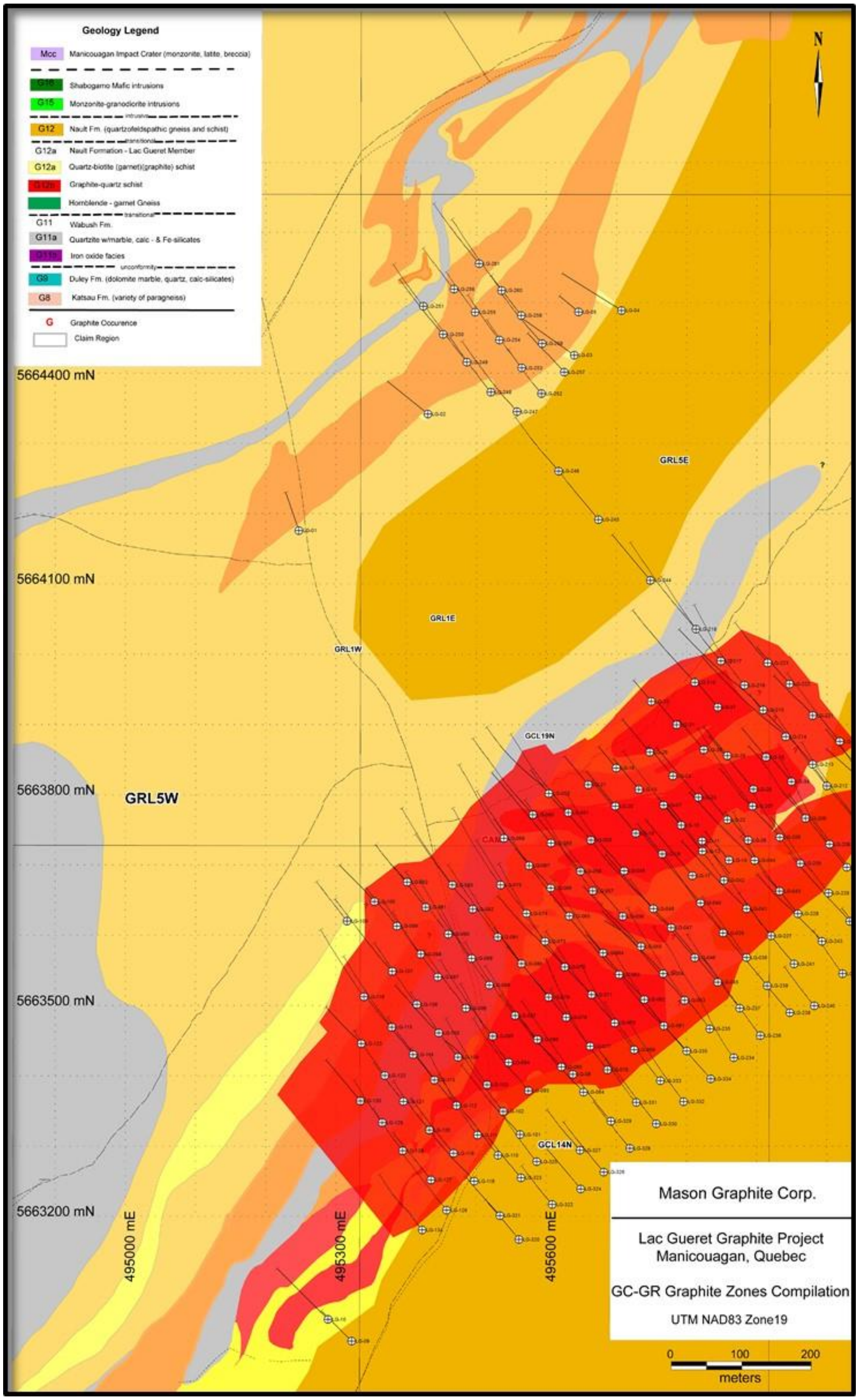


Figure 7-5 - GC-GR Graphite Zones Compilation

Within the graphite zones, the "high grade" beds (U3 type in previous reports) with >25% graphite locally appears to form crushed or cataclastic breccias in local bands in outcrops. The texture is difficult to discern in core, however. Fragments of the host generally form 80-90% of the unit with rotation of foliated clasts subparallel with the main trend. The "matrix" is recrystallized graphite flakes up to 8-mm length approximately perpendicular to the clast margins with no associated minerals. It also shows an unusual deformation, here called D_3. The foliation strikes parallel with F_1, but shows a steep plunge to the southwest. Lyons interprets this feature as the result of rheologically weak ductile high-grade graphite bands that absorbed most of the compression and transpression associated with the D_2 and D_3 events. This deformation is restricted to the U3 graphite bands in the GC and GR zones.

The fourth major deformation, D_4, folded of the D_3 structures. It is aligned around a ~308° axis with a steep southeast plunge. It is expressed as shallow crenulations on tight D_3 folds, as a kink of the quartzite-graphite contact that changes the trend of the GC graphite zone form NE to ENE across the 2006 drill grid. It also accounts for the more northerly flexure on the GR Zone. It forms the interference folds of the Sokoman Fm. package in the centre of the synclinorium on the scale of 1 km.

A key element of the anticlinorium model is that it is relatively shallow, probably less than 450 metres. The exact depth is unknown. Drilling by QCM (Ferriera 1962a) showed that the anticline tested by drillholes on both flanks changed from tight to open folding in 120-m depth. The 2012 drilling program was able to restrict the graphite beds above the interpreted anticlinorium depth. Maximum vertical depths of 200 to 220 metres were achieved from that drilling, although the information at depth is not conclusive to fully limit the extension at depth of the deposit. See Figure 7-2 showing the graphitic zones compilation.

GMG made a geological model based on drilling database. On this model we interpret several folds oriented NE-SW and NW-SE (Figure 7-6). A sketch was made by GMG that describes the chronology interpretations of the three-fold generations (Figure 7-7). Using the geological model done by GMG three phases of folding were interpreted. The fold axis of the first and the second generation are oriented NE-SW and the fold axis of the third generation is oriented NW-SE.

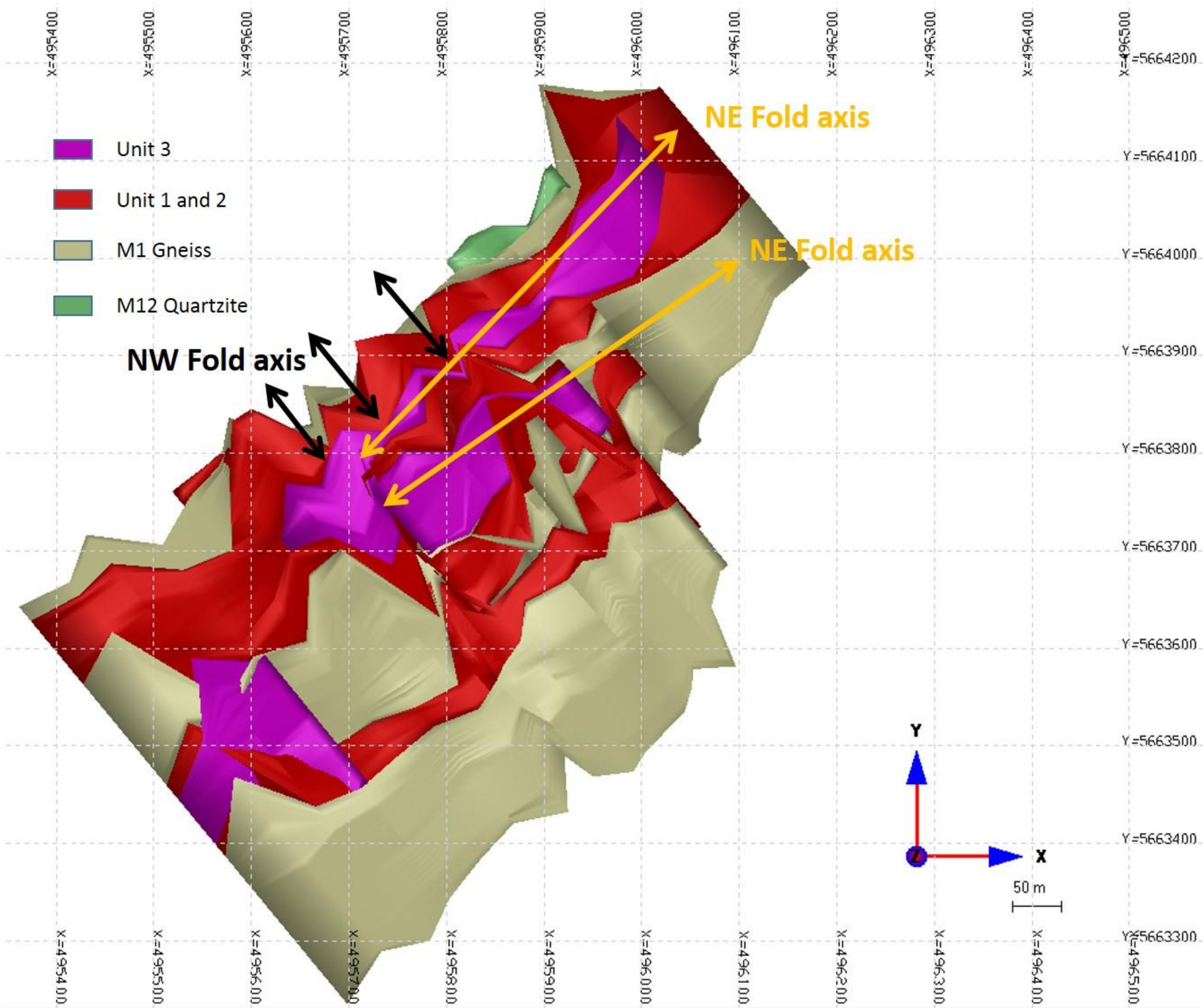


Figure 7-6 - Geological Model Made by GMG Based on the Lithology and Drillholes Data

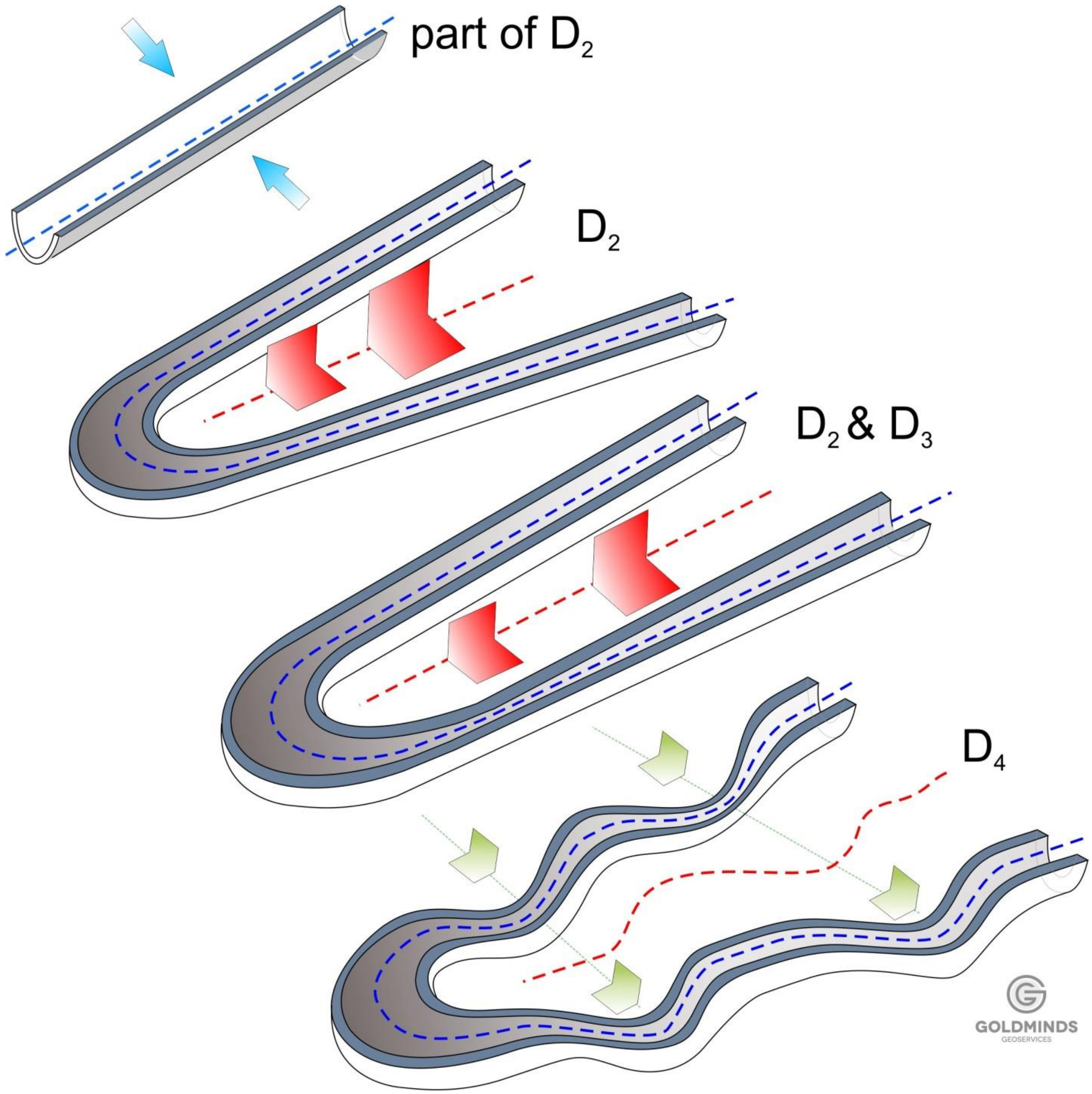


Figure 7-7 - Sketch Interpreting the Chronology of Different Generation of Folds [1]

[1] Affecting the Lac Guéret Property

7.2.2.2 FAULTS

Property-scale faulting was interpreted in 2003-04 by Lyons, based on outcrops and stratigraphy, showed several NNE-trending structures believed to be steep-angled thrust faults from the ESE (Figure 7-4). In 2007, Lyons discovered a younger, post-Grenville, brittle fault gouge in the bottom of a 2004 trench across the southwest extension of the GC Zone, near the original Graphite Cliff outcrops. The orientation is ~345° with a steep east dip and shows a crushed graphite schist gouge over 37-cm width with no oxidized weathering at the surface. The direction parallels a zone of deep overburden that lies east of the proposed open pit in this report. Recent detailed topographic plans show the possible extensions of these and several parallel zones. Subsequent work on iron formation projects northwest of Lac Guéret from the Peppler & Lamélee iron deposits (QC) to western Labrador shows the persistence of this fault group with local offsets from 20 to 125 m vertically. The fault direction parallels the direction of the drill azimuths, and thus, remains "invisible" in the data except as small offsets in the model interpretation.

7.3 DEPOSIT AND MINERALIZATION

Graphite of Unit 1 (5-10% Cg) and Unit 2 (10-25% Cg) forms fine to coarse crystal flakes (<0.01 to >4 mm diameter) in quartz and quartzofeldspathic gneiss and schist. The in-situ organic material was concentrated during late- or post-Labrador Trough deposition and re-crystallized during the Grenville orogeny. It does not appear to have been enriched by tectonics or hydrothermal remobilization was likely a local scale feature associated with later Grenville orogenic forces.

Unit 3 (+25% Cg) is characterized by a distinct pattern in flake distribution. The tendency is for clasts or non-re-crystallized centres of the original very fine to amorphous pre-metamorphic graphite schist to be enveloped by re-crystallized very coarse (2 to 8 mm length) and pure graphite flakes as a result of ductile brecciation. This texture is more easily seen in outcrop than on core surfaces. The coarse flake graphite visually forms 7-12% of the total rock. For the purpose of resource estimation, Units 1 and 2 were merged together and Unit 3 was kept differentiated at +25% Cg.

The grade limits used in this report are based on the statistical distribution of carbon presented in a study by Denis Marcotte, which suggests that the deposit comprises three distinct populations with threshold values of 5%, 10%, and 24.5% (Marcotte, 2013).

Sulphides are present mainly as pyrrhotite and less frequently as pyrite (Figure 7-8). Pyrrhotite occurs commonly with graphite, especially at grades greater than 10% Cg, as 3-5% fine-grained, disseminated to blebs and crystalline patches 0.3- to 4-mm long aligned parallel with the schistosity. It is visible in drill core, but less so in outcrop. Outcrops rarely show significant iron oxidation when trenched and show minor white ferric sulfate efflorescence on fresh surfaces. Pyrite occurs locally as coarse euhedral recrystallization associated with late northwesterly striking extensional gashes seen in several trenches and in drill core in the GC Zone, interpreted by Lyons as associated with the D_4

deformation. The coronitic mafic unit also shows a recrystallization to much coarser minerals within the GC Zone area. It is not associated with other hydrothermal minerals such as quartz or calcite in the late open-space veinlets. In core, pyrite crystals occur adjacent to finer-grained pyrrhotite blebs with sharply defined crystal margins for the pyrite and no local change in crystallinity in the pyrrhotite. Chalcopyrite, sphalerite, and molybdenite have been observed in thin section (Rioux, 2008) and in drill core in 2012. The first two occur as late and fairly clean coarse sulphide grains interstitial to pyrrhotite and pyrite. Molybdenite occurs locally within graphite flakes with the lamellae aligned with the basal planes of both minerals; the molybdenite was formed during the genesis of graphite and predates micro-folding of graphite. No other sulphide minerals have been noted. ICP chemical analyses of 120 samples in 2004 showed no geochemically significant amounts of metals associated with the graphite, including Cu, Mo, or Zn, in spite of the occasional mineral grains.

Optical observations under reflected light microscopy show that the Lac Guéret samples contain four types of graphite (Grondin et al., 2015, Figure 7-8).

- Type1: Graphite as flakes of varying sizes, automorphic, often elongated and sometimes associated with sulphides.
- Type 2: Graphite as imbricated flakes, intimately associated with sulphides.
- Type 3: Graphite with no regular form, sometimes associated with sulphides.
- Type 4: Graphite of micrometric form in inclusions within the mineral gangue associated with sulphides (pyrite and pyrrhotite, Figure 7-8).

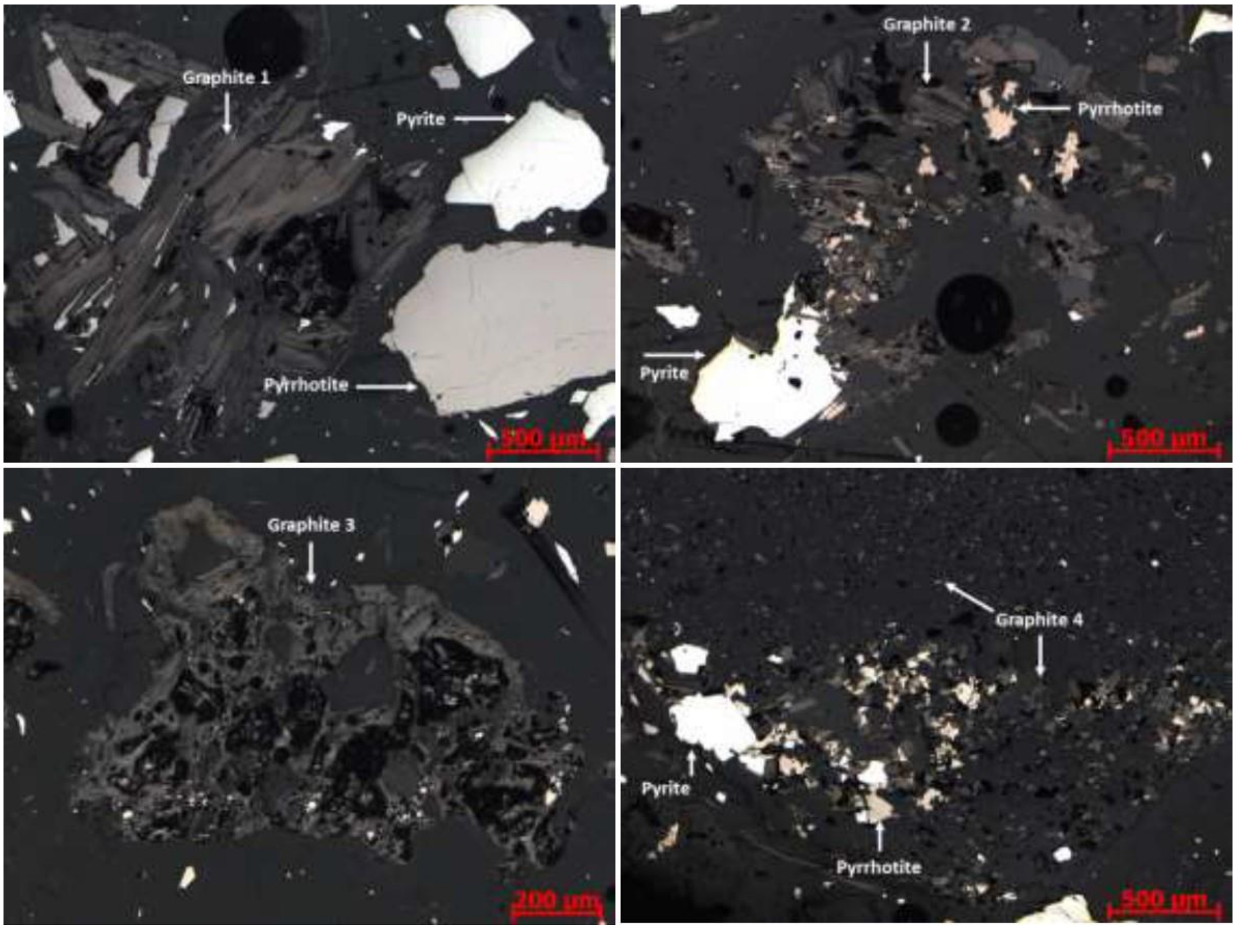


Figure 7-8 - Graphite Observed Under Optical Reflected Light Microscopy

The depth of the mineralization is uncertain and the deepest mineralized zone of the Lac Guéret Project is reached by the hole LG 455 (Z = 220 metres). It seems that the folded graphite bands are constrained within a broad vertical envelope. This envelope is the actual outline of the deposit.

Interpretation of the sections for the Mineral Resource shows the effects of structure on localizing the graphite deposits. The general trend shows the ~35° SW plunge. The continuity of the structures between 50-metre sections shows rapid changes particularly in the Unit 3. This is interpreted as the result of the focusing of compression on the higher-grade graphite bands which have a high rheology leading to ductile folding and sliding. The graphite can glide readily with little fault brecciation. The U3 Unit observed to the SW in cleaned outcrops show intense isoclinal D_3 folds at shallowly dipping plunges with amplitudes often less than 5 metres, where the adjacent lower grade graphite schist (U1 and U2) and quartz-rich sediment bands are folded in the scale of 10-100 m amplitudes. This ductility makes interpreting the higher-grade Units more difficult.

8. DEPOSIT TYPE

The graphite beds form an integral part of the sediments of the informally named Lac Guéret Member of the Menihek Formation. The graphite is believed to have originated in the basal Menihek Fm. as carbon-rich sediments in arenaceous and pelitic turbidite beds that were part of a marine basin of increasing depth relative to earlier chemical basinal deposition of the Sokoman Fm. deposition. The protolith in the Labrador Trough generally contains low levels of kerogen (sedimentary carbon) associated with a variety of lithologies, but none are nearly as high in carbon as even the medium grade graphite (U2) at Lac Guéret (T. Clark, pers comm, with Lyons, 2004). The localized graphite deposits known in the Gagnon Terrane show rapid thickening of carbon with thin lateral horizons; this is well shown at the Mart Lake graphite showing overlying the Kami iron deposit in Labrador City, NL.

Graphite is chemically stable over a wide range of pressure and temperature conditions and is only very poorly reactive with other common hydrothermal solutes. The potential for concentration of grade by plastic flow is minimal since dry minerals do not flow plastically under the metamorphic high pressures and temperatures. Remobilization of sulphides during metamorphism is facilitated by local-scale hydrothermal solution and re-deposition (Marshall, et al., 2000). Thus, the most probable carbon concentration mechanisms occurred before the first level of metamorphism sealed the rock porosity. Two possibilities may account for the graphite. One could be the result of exceptionally high initial organic deposition concurrent with sedimentation. The second model derives the carbon from the movement of hydrocarbons during diagenesis, when the rocks were being compressed and lithified. However, the origin of the beds of abnormally rich graphite (locally over 50% Cg) cannot be derived from simple bio-organic sediments, even if they are 100% biological materials. It is possible that a paleo-petroleum process during diagenesis may have upgraded the carbon content. One model that was proposed involved reduction of carbonate to graphite. Dolomite and calcite contain 13% and 12% carbon, so they could be potential carbon sources for deposits generally 12% Cg or less assuming total carbon transformation of a fixed amount to carbonate. However, most of the Lac Guéret graphite grades tend to exceed that limit and there is typically no carbonate associated with any of the known graphite deposits in the Gagnon Terrane, even at very low C grades as shown in detail at the Mart Lake graphite deposit.

The anoxic deposition conditions that controlled the carbon deposit also controlled sedimentary or diagenetic iron sulphide deposition. The original sulphide was probably unstable iron sulphide precursors to pyrrhotite deposited as fine grains with the carbon and in lenses with quartz and negligible carbon. Both occur in the same horizon but probably in a semi-independent relationship. Sulphides known to date on the Property are located within the graphite horizons, not isolated in hanging wall/footwall stratigraphy. One area on the horizon several kilometres north of the GC-GR drill grids shows pyrrhotite and pyrite >20% in high-quartz gneiss lenses with only minor graphite. Thus, the reductive sedimentary basin environment appears to show a range of sulphur-carbon relationships.

9. EXPLORATION

All the exploration works performed before 2012 are described under Chapter 6 (see Table 6-1).

10. DRILLING

10.1 2012 DRILLING CAMPAIGN

In 2012 Mason Graphite conducted a drilling campaign totaling 163 drillholes. During this campaign, 146 drillholes were drilled over the GC Zone totaling 24,346.3 m and 17 holes were drilled over the GR Zone (Caron, Y. 2015, Figure 10-1). Drillholes length varied from 101 m to 303 m. The planned orientation of the drillholes was 320 degrees at an inclination of 45 degrees to the northwest.

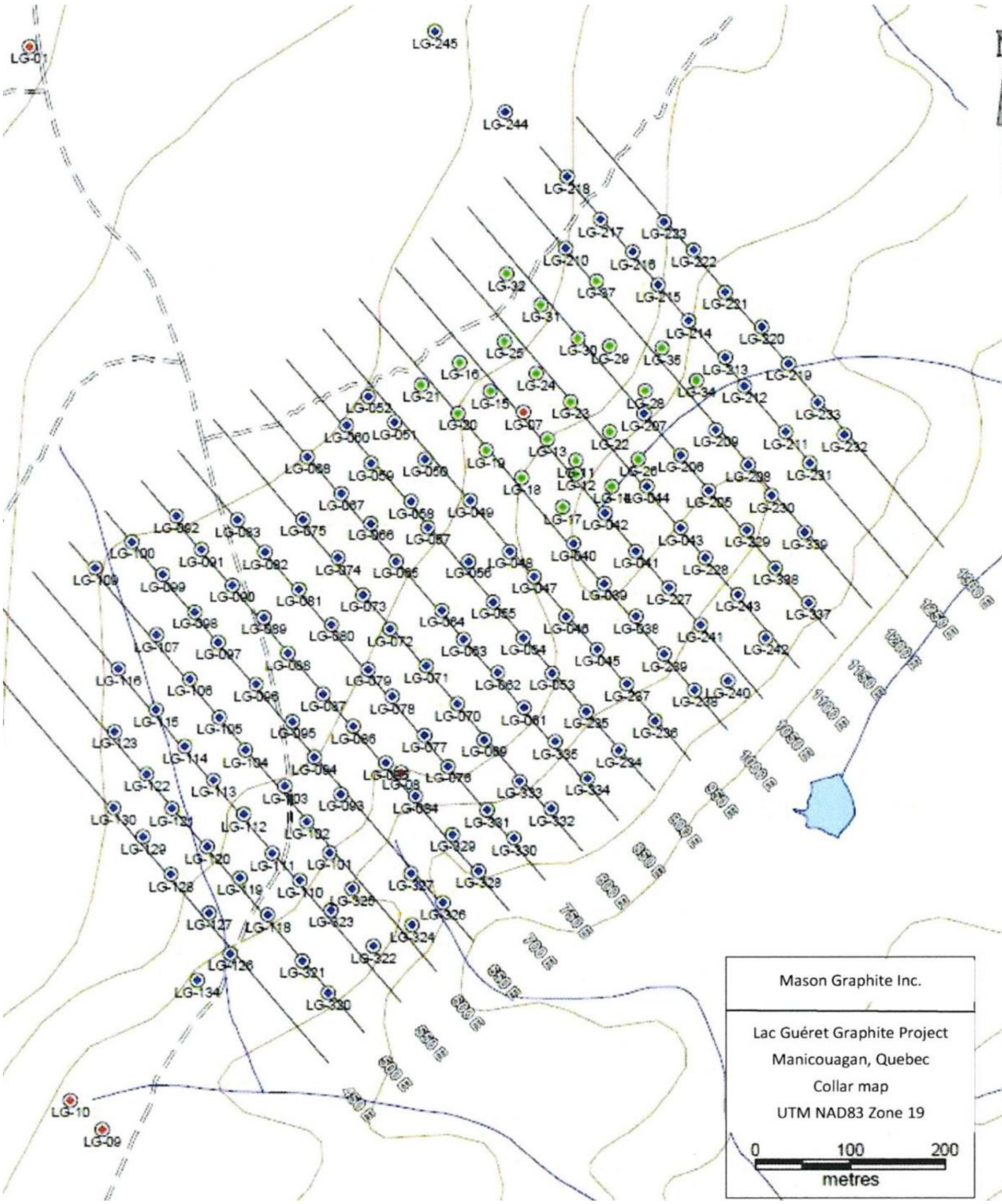


Figure 10-1 - Hole Collars Drilled between 2003 and 2012

From the 2012 drilling campaign (Figure 10-1, Table 10-1), 16,923 samples were analyzed by AGAT and from these, 6,011 samples were re-analysed by AGAT to control some erroneous graphitic carbon results noticed and reported to the lab (referred to AGAT Action Report July 4, 2013), (see Section 9.5 for details).

The drilling contractor for the 2012 drilling campaign was G4 Drilling from Val-d'Or. Two diamond drills using NQ core diameter were used during the drilling phase.

10.2 2013-2014 DRILLING CAMPAIGN

The 2013-2014 drilling campaign conducted by Mason Graphite over the GC Zone consisted of 86 drillholes totaling 13,418 m (Figure 10-2 and Table 10-1). A total of 7,567 samples were analyzed by AGAT and some samples were analyzed by COREM for external control.

The drilling contractor for the 2013-2014 drilling campaign was Foramex from Rouyn-Noranda (Foramex was bought in January 2015 by Forage Rouillier).

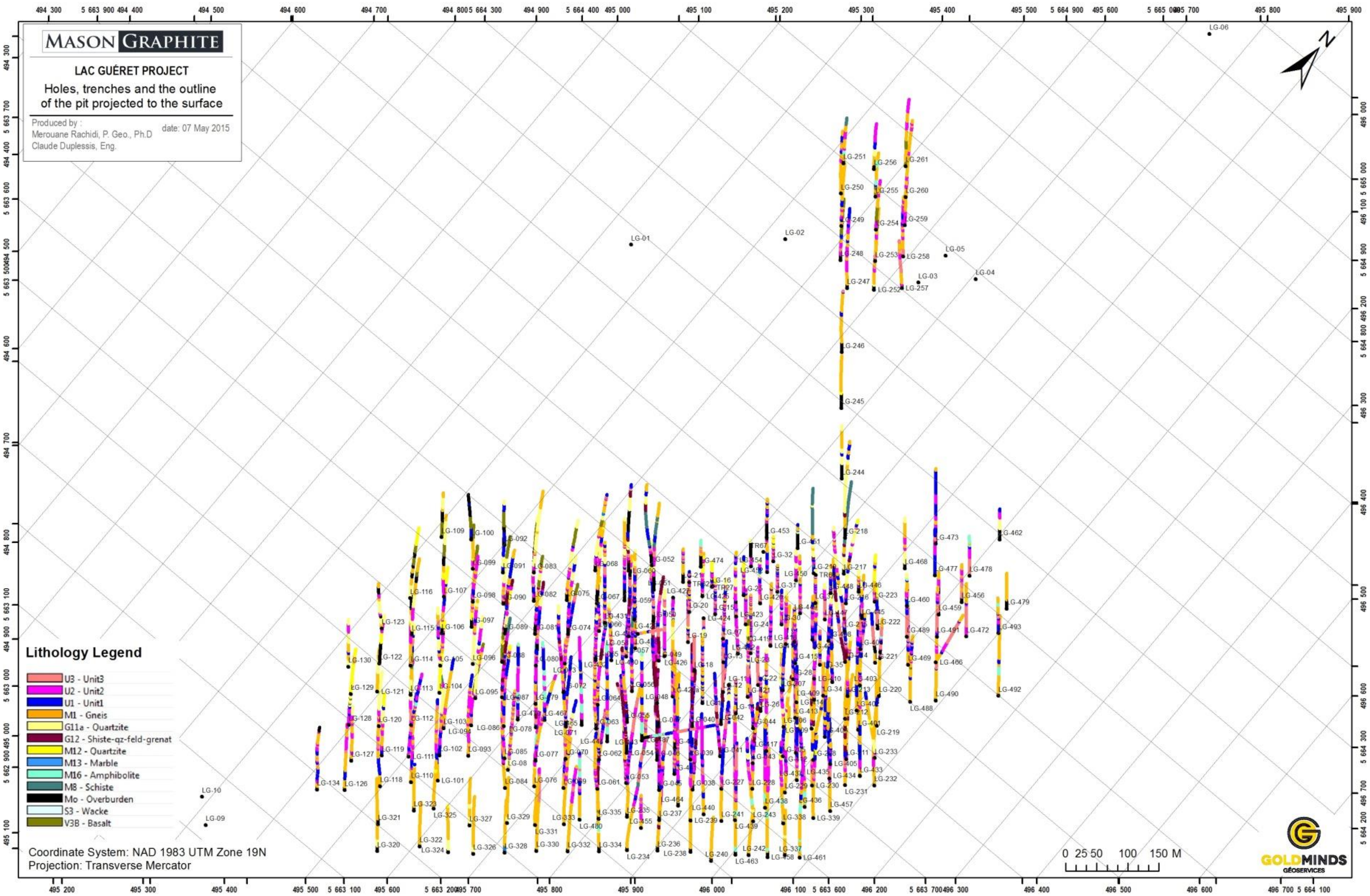


Figure 10-2 - Drillhole Collars (2003 to 2014) on the GC and GR Zones

Table 10-1 - Drillhole Details (2003 to 2014)

Zone	Hole Name	Easting	Northing	Elevation	Azimuth	Dip	Length	Year
GR Zone	LG-01	495247.10	5664176.20	580.50	341	-50	90	2003
	LG-02	495430.80	5664342.00	586.50	309	-45	105	2003
	LG-03	495639.70	5664425.80	579.20	305	-50	145	2003
	LG-04	495707.00	5664489.50	568.70	302	-45	141	2003
	LG-05	495645.60	5664487.40	583.40	310	-60	72	2003
	LG-06	495741.40	5665032.60	601.40	110	-45	108	2003
GC Zone	LG-07	495766.90	5663785.40	530.90	323	-45	136	2003
	LG-08	495637.50	5663402.40	522.60	325	-45	180	2003
GR Zone	LG-09	495322.20	5663022.50	514.80	315	-45	87	2003
	LG-10	495288.60	5663053.40	516.50	315	-44	143	2003
GC Zone	LG-11	495821.90	5663734.40	513.70	140	-60	120	2006
	LG-12	495822.00	5663720.00	512.20	320	-45	129	2006
	LG-13	495791.90	5663756.90	523.60	320	-45	75	2006
	LG-14	495860.00	5663707.00	504.80	320	-45	76	2006
	LG-15	495731.80	5663807.70	539.70	320	-45	81	2006
	LG-16	495699.60	5663838.20	543.30	320	-45	56	2006
	LG-17	495808.00	5663685.00	508.10	320	-42	141	2006
	LG-18	495765.00	5663716.00	520.00	320	-48	84	2006
	LG-19	495727.40	5663745.20	529.00	320	-46	141	2006
	LG-20	495698.00	5663784.00	537.40	320	-44	90	2006
	LG-21	495659.40	5663814.60	543.10	320	-45	75	2006
	LG-22	495857.70	5663764.60	509.20	320	-44	84	2006
	LG-23	495816.30	5663796.40	525.10	320	-45	132	2006
	LG-24	495780.20	5663826.90	534.40	320	-45	78	2006
	LG-25	495747.20	5663860.80	540.40	320	-44	85	2006
	LG-26	495887.60	5663735.50	503.70	320	-46	75	2006
	LG-28	495895.00	5663808.00	509.50	320	-45	140	2006
	LG-29	495857.80	5663855.80	526.00	320	-45	76	2006
	LG-30	495824.30	5663864.10	530.30	320	-43	75	2006
	LG-31	495785.50	5663899.80	537.30	320	-45	60	2006
	LG-32	495749.20	5663932.90	542.60	320	-46	57	2006
	LG-34	495949.00	5663819.00	504.80	320	-44	72	2006
	LG-35	495912.90	5663853.70	515.30	320	-44	75	2006
	LG-37	495844.00	5663925.00	529.00	320	-45	75	2006
GC Zone	LG-038	495885.00	5663568.60	512.00	320	-45	150	2012
	LG-039	495851.70	5663603.40	505.30	320	-45	201	2012
	LG-040	495819.40	5663646.30	505.20	320	-45	186	2012
	LG-041	495885.00	5663637.90	506.60	320	-45	186	2012

Zone	Hole Name	Easting	Northing	Elevation	Azimuth	Dip	Length	Year
	LG-042	495852.80	5663678.40	504.60	320	-45	186	2012
	LG-043	495932.30	5663663.00	513.70	320	-45	192	2012
	LG-044	495896.60	5663706.80	504.60	320	-45	189	2012
	LG-045	495844.20	5663533.50	504.90	320	-45	150	2012
	LG-046	495811.20	5663568.40	507.30	320	-45	201	2012
	LG-047	495777.90	5663611.00	509.50	320	-45	186	2012
	LG-048	495752.30	5663638.00	510.30	320	-45	186	2012
	LG-049	495710.60	5663692.00	531.00	320	-45	186	2012
	LG-050	495663.20	5663735.70	543.80	320	-45	186	2012
	LG-051	495631.10	5663774.80	548.20	320	-45	186	2012
	LG-052	495603.50	5663802.00	554.20	320	-45	186	2012
	LG-053	495796.60	5663507.70	513.60	320	-45	237	2012
	LG-054	495766.30	5663545.60	515.10	320	-45	186	2012
	LG-055	495734.70	5663584.00	514.90	320	-45	183	2012
	LG-056	495708.80	5663627.00	524.20	320	-45	195	2012
	LG-057	495666.10	5663663.40	543.90	320	-45	186	2012
	LG-058	495648.50	5663691.30	547.30	320	-45	189	2012
	LG-059	495606.30	5663731.40	554.70	320	-45	186	2012
	LG-060	495580.80	5663771.70	557.00	320	-45	189	2012
	LG-061	495767.10	5663471.50	517.10	320	-45	186	2012
	LG-062	495739.40	5663508.80	518.30	320	-45	186	2012
	LG-063	495703.60	5663544.10	518.50	320	-45	186	2012
	LG-064	495680.60	5663575.00	520.90	320	-45	186	2012
	LG-065	495632.40	5663627.50	549.10	320	-45	189	2012
	LG-066	495606.20	5663667.50	554.60	320	-45	186	2012
	LG-067	495575.20	5663699.40	556.90	320	-45	186	2012
	LG-068	495539.20	5663738.20	553.20	320	-45	183	2012
	LG-069	495724.90	5663437.30	523.50	320	-45	195	2012
	LG-070	495697.00	5663475.50	522.60	320	-45	231	2012
	LG-071	495664.20	5663515.70	521.10	320	-45	198	2012
	LG-072	495625.90	5663555.10	535.30	320	-45	186	2012
	LG-073	495597.80	5663591.50	554.20	320	-45	183	2012
	LG-074	495571.60	5663631.20	554.00	320	-45	186	2012
	LG-075	495534.70	5663671.90	551.50	320	-45	186	2012
	LG-076	495687.00	5663408.90	522.00	320	-45	189	2012
	LG-077	495662.10	5663442.10	521.90	320	-45	200	2012
	LG-078	495628.10	5663483.40	525.80	320	-45	186	2012
	LG-079	495603.10	5663512.00	536.70	320	-45	177	2012
	LG-080	495564.50	5663559.80	551.20	320	-45	198	2012

Zone	Hole Name	Easting	Northing	Elevation	Azimuth	Dip	Length	Year
	LG-081	495530.50	5663597.70	548.10	320	-45	183	2012
	LG-082	495494.90	5663637.20	550.50	320	-45	186	2012
	LG-083	495465.80	5663671.80	551.40	320	-45	186	2012
	LG-084	495652.70	5663377.00	519.20	320	-45	192	2012
	LG-085	495621.30	5663412.80	522.80	320	-45	188	2012
	LG-086	495587.20	5663451.80	530.20	320	-45	186	2012
	LG-087	495555.40	5663485.80	542.30	320	-45	186	2012
	LG-088	495518.60	5663529.30	543.20	320	-45	186	2012
	LG-089	495493.40	5663567.30	546.70	320	-45	186	2012
	LG-090	495460.20	5663601.90	548.40	320	-45	152	2012
	LG-091	495427.80	5663640.20	549.20	320	-45	102	2012
	LG-092	495401.40	5663675.80	551.10	320	-45	102	2012
	LG-093	495574.30	5663379.00	525.60	320	-45	186	2012
	LG-094	495546.20	5663419.20	534.20	320	-45	186	2012
	LG-095	495523.40	5663456.60	538.10	320	-45	191	2012
	LG-096	495485.10	5663496.30	542.60	320	-45	150	2012
	LG-097	495445.30	5663540.80	545.50	320	-45	189	2012
	LG-098	495420.70	5663573.30	546.20	320	-45	102	2012
	LG-099	495386.90	5663613.40	549.50	320	-45	102	2012
	LG-100	495354.60	5663648.10	551.10	320	-45	102	2012
	LG-101	495562.20	5663316.50	527.60	320	-45	186	2012
	LG-102	495538.40	5663349.60	526.90	320	-45	186	2012
	LG-103	495515.40	5663387.50	532.90	320	-45	156	2012
	LG-104	495473.90	5663426.70	537.60	320	-45	162	2012
	LG-105	495446.50	5663461.10	540.70	320	-45	132	2012
	LG-106	495415.30	5663501.80	543.20	320	-45	150	2012
	LG-107	495380.20	5663549.00	545.70	320	-45	186	2012
	LG-109	495315.90	5663620.40	549.10	320	-45	102	2012
	LG-110	495531.00	5663287.10	525.40	320	-45	201	2012
	LG-111	495501.90	5663315.90	526.80	320	-45	192	2012
	LG-112	495471.90	5663357.80	532.80	320	-45	150	2012
	LG-113	495440.20	5663394.30	536.50	320	-45	162	2012
	LG-114	495410.00	5663430.40	538.50	320	-45	162	2012
	LG-115	495379.60	5663469.40	540.50	320	-45	174	2012
	LG-116	495339.90	5663512.70	546.60	320	-45	162	2012
	LG-118	495497.10	5663250.20	518.90	320	-45	150	2012
	LG-119	495467.60	5663289.70	526.30	320	-45	141	2012
	LG-120	495433.30	5663322.90	532.70	320	-45	120	2012
	LG-121	495396.20	5663363.70	536.10	320	-45	102	2012

Zone	Hole Name	Easting	Northing	Elevation	Azimuth	Dip	Length	Year
	LG-122	495369.70	5663400.60	537.20	320	-45	105	2012
	LG-123	495336.00	5663446.00	545.10	320	-45	102	2012
	LG-126	495457.60	5663208.80	516.70	320	-45	142	2012
	LG-127	495435.30	5663252.10	525.40	320	-45	120	2012
	LG-128	495395.20	5663293.50	533.60	320	-45	102	2012
	LG-129	495365.80	5663333.50	538.80	320	-45	102	2012
	LG-130	495334.80	5663364.50	539.30	320	-45	108	2012
	LG-134	495422.90	5663180.70	517.00	320	-45	141	2012
	LG-205	495961.80	5663702.40	509.10	320	-45	186	2012
	LG-206	495932.60	5663739.70	506.30	320	-45	186	2012
	LG-207	495893.60	5663783.80	505.60	320	-45	182	2012
	LG-208	496003.30	5663729.70	505.40	320	-45	186	2012
	LG-209	495969.10	5663766.70	505.30	320	-45	189	2012
	LG-210	495811.30	5663960.00	535.20	320	-45	182	2012
	LG-211	496042.90	5663764.40	497.00	320	-45	185	2012
	LG-212	495999.50	5663812.90	501.80	320	-45	186	2012
	LG-213	495979.40	5663843.60	503.50	320	-45	186	2012
	LG-214	495941.00	5663882.80	512.60	320	-45	221	2012
	LG-215	495908.80	5663920.90	522.40	320	-45	223	2012
	LG-216	495882.10	5663955.90	524.20	320	-45	188	2012
	LG-217	495848.40	5663990.40	527.50	320	-45	204	2012
	LG-218	495812.90	5664035.80	533.20	320	-45	210	2012
	LG-219	496046.00	5663836.90	495.70	320	-45	102	2012
	LG-220	496018.00	5663876.10	501.20	320	-45	171	2012
	LG-221	495979.20	5663912.90	509.30	320	-45	114	2012
	LG-222	495946.30	5663957.80	518.10	320	-45	102	2012
	LG-223	495915.20	5663987.70	520.60	320	-45	105	2012
	LG-227	495919.90	5663599.30	514.90	320	-45	186	2012
	LG-228	495958.10	5663631.00	511.40	320	-45	186	2012
	LG-229	496001.90	5663660.30	509.90	320	-45	186	2012
	LG-230	496028.00	5663696.90	507.10	320	-45	186	2012
	LG-231	496068.20	5663731.40	499.00	320	-45	186	2012
	LG-232	496104.90	5663761.10	496.00	320	-45	189	2012
	LG-233	496076.90	5663795.30	492.30	320	-45	150	2012
	LG-234	495866.90	5663426.00	497.70	320	-45	303	2012
	LG-235	495832.50	5663467.10	505.00	320	-45	291	2012
	LG-236	495904.90	5663457.40	498.20	320	-45	186	2012
	LG-237	495875.30	5663496.30	507.40	320	-45	186	2012
	LG-238	495946.70	5663489.90	491.70	320	-45	102	2012

Zone	Hole Name	Easting	Northing	Elevation	Azimuth	Dip	Length	Year
	LG-239	495914.70	5663528.40	509.10	320	-45	186	2012
	LG-240	495981.50	5663499.70	491.40	320	-45	102	2012
	LG-241	495952.90	5663559.30	506.40	320	-45	186	2012
	LG-242	496021.80	5663545.50	490.40	320	-45	106	2012
	LG-243	495992.40	5663591.70	507.40	320	-45	186	2012
	LG-244	495748.10	5664105.50	545.50	320	-45	120	2012
	LG-245	495674.20	5664191.80	554.40	320	-45	120	2012
	LG-246	495617.20	5664260.90	566.20	320	-45	140	2012
	LG-247	495558.00	5664345.40	579.10	320	-45	186	2012
	LG-248	495520.70	5664373.10	584.60	320	-45	138	2012
	LG-249	495486.60	5664415.80	591.40	320	-45	141	2012
	LG-250	495452.50	5664455.50	595.20	320	-45	141	2012
	LG-251	495424.60	5664495.50	599.60	320	-45	102	2012
	LG-252	495592.80	5664371.20	580.20	320	-45	111	2012
	LG-253	495564.60	5664407.70	587.20	320	-45	120	2012
	LG-254	495533.00	5664447.50	590.00	320	-45	111	2012
	LG-255	495498.40	5664487.00	596.40	320	-45	102	2012
	LG-256	495468.10	5664519.80	602.60	320	-45	105	2012
	LG-257	495625.40	5664401.60	579.50	320	-45	111	2012
	LG-258	495593.80	5664442.40	587.60	320	-45	138	2012
	LG-259	495564.00	5664482.40	593.00	320	-45	102	2012
	LG-260	495536.00	5664518.00	598.00	320	-45	180	2012
	LG-261	495504.00	5664556.00	603.00	320	-45	153	2012
	LG-320	495560.60	5663167.30	513.80	320	-45	102	2012
	LG-321	495533.50	5663201.20	513.00	320	-45	102	2012
	LG-322	495608.20	5663216.90	515.40	320	-45	102	2012
	LG-323	495563.60	5663255.10	506.90	320	-45	102	2012
	LG-324	495648.80	5663239.20	492.40	320	-45	102	2012
	LG-325	495585.90	5663277.90	507.80	320	-45	102	2012
	LG-326	495681.70	5663263.20	490.70	320	-45	126	2012
	LG-327	495647.80	5663294.30	493.60	320	-45	102	2012
	LG-328	495718.90	5663296.90	496.80	320	-45	116	2012
	LG-329	495691.60	5663335.70	503.70	320	-45	101	2012
	LG-330	495756.40	5663331.90	496.90	320	-45	186	2012
	LG-331	495727.80	5663362.20	505.00	320	-45	101	2012
	LG-332	495795.50	5663363.50	498.90	320	-45	186	2012
	LG-333	495762.30	5663393.00	507.10	320	-45	185	2012
	LG-334	495833.80	5663395.80	501.00	320	-45	186	2012
	LG-335	495799.80	5663435.50	508.00	320	-45	186	2012

Zone	Hole Name	Easting	Northing	Elevation	Azimuth	Dip	Length	Year
	LG-337	496066.70	5663582.90	487.50	320	-45	102	2012
	LG-338	496032.00	5663620.20	499.30	320	-45	186	2012
	LG-339	496063.00	5663657.80	500.50	320	-45	189	2012
GC Zone	TR27	495700.00	5663840.00	542.10	129	-5	200	2013-2014
	TR62	495667.00	5663820.00	543.50	145	-7	176	2013-2014
	TR67	495727.00	5663934.00	543.10	140	0	231	2013-2014
	TR68	495815.00	5663960.00	532.80	141	-5	380	2013-2014
	LG-401	496027.51	5663813.32	496.63	320	-45	192	2013-2014
	LG-402	496005.35	5663834.99	501.96	320	-45	195	2013-2014
	LG-403	495983.43	5663869.32	505.65	320	-45	159	2013-2014
	LG-404	495946.53	5663914.34	513.93	320	-40	156	2013-2014
	LG-405	496028.33	5663742.33	499.16	320	-47	156	2013-2014
	LG-406	495993.93	5663770.00	502.95	320	-45	213	2013-2014
	LG-407	495945.88	5663845.11	507.77	320	-45	174	2013-2014
	LG-408	495899.06	5663892.02	521.99	320	-45	111	2013-2014
	LG-409	495942.04	5663804.70	503.90	320	-45	198	2013-2014
	LG-410	495920.52	5663830.65	509.00	320	-45	177	2013-2014
	LG-411	495878.28	5663877.04	523.85	320	-45	99	2013-2014
	LG-412	495974.87	5663720.65	508.38	320	-45	228	2013-2014
	LG-413	495937.54	5663762.68	503.55	320	-45	204	2013-2014
	LG-414	495923.13	5663782.89	503.67	320	-45	162	2013-2014
	LG-415	495880.73	5663830.23	517.88	320	-45	114	2013-2014
	LG-416	495849.65	5663843.39	525.15	320	-45	120	2013-2014
	LG-417	495936.05	5663692.53	508.88	320	-45	228	2013-2014
	LG-418	495832.79	5663826.18	527.05	320	-67	150	2013-2014
	LG-419	495832.29	5663826.58	527.61	320	-45	141	2013-2014
	LG-420	495776.11	5663867.19	539.42	320	-45	96	2013-2014
	LG-421	495857.71	5663739.54	505.11	320	-45	174	2013-2014
	LG-422	495800.78	5663782.33	525.25	320	-45	141	2013-2014
	LG-423	495760.27	5663826.93	537.13	320	-45	147	2013-2014
	LG-424	495721.93	5663790.90	540.50	140	-80	153	2013-2014
	LG-425	495698.28	5663816.50	541.36	320	-45	99	2013-2014
	LG-426	495713.02	5663703.81	529.44	320	-50	165	2013-2014
	LG-426a	495764.89	5663662.87	508.51	320	-45	180	2013-2014
	LG-427	495662.97	5663784.63	541.28	140	-75	150	2013-2014
	LG-428	495668.71	5663683.06	544.02	320	-63	174	2013-2014
	LG-429	495637.89	5663717.89	547.48	320	-45	156	2013-2014
	LG-430	495651.90	5663643.67	545.07	320	-60	186	2013-2014
	LG-431	495604.83	5663683.17	554.62	320	-45	183	2013-2014

Zone	Hole Name	Easting	Northing	Elevation	Azimuth	Dip	Length	Year
	LG-432	495630.47	5663630.02	549.60	320	-68	183	2013-2014
	LG-433	496077.47	5663757.62	495.26	320	-65	189	2013-2014
	LG-434	496076.94	5663758.21	495.19	320	-45	209	2013-2014
	LG-435	496042.12	5663723.17	502.77	320	-55	222	2013-2014
	LG-436	496041.23	5663662.96	502.91	320	-45	204	2013-2014
	LG-437	496003.84	5663687.92	511.08	320	-45	258	2013-2014
	LG-438	495993.14	5663620.67	506.69	320	-45	201	2013-2014
	LG-439	495968.94	5663574.80	507.46	320	-45	258	2013-2014
	LG-440	495924.04	5663549.49	509.08	320	-45	225	2013-2014
	LG-441	495846.68	5663568.55	505.63	320	-45	228	2013-2014
	LG-442	495820.45	5663601.62	506.09	320	-45	213	2013-2014
	LG-443	495772.17	5663576.68	510.87	320	-45	201	2013-2014
	LG-444	495730.10	5663539.67	515.01	320	-45	222	2013-2014
	LG-445	495916.88	5663954.05	521.33	320	-45	81	2013-2014
	LG-446	495885.76	5663983.61	524.65	320	-45	48	2013-2014
	LG-447	495872.09	5663914.54	526.38	320	-45	81	2013-2014
	LG-448	495852.44	5663953.04	527.36	320	-45	63	2013-2014
	LG-449	495835.61	5663896.26	530.00	320	-45	132	2013-2014
	LG-450	495796.35	5663932.76	536.89	320	-45	69	2013-2014
	LG-451	495765.68	5663974.25	541.93	320	-45	54	2013-2014
	LG-452	495752.55	5663913.07	541.32	320	-45	99	2013-2014
	LG-453	495716.07	5663955.39	545.40	320	-45	87	2013-2014
	LG-454	495726.78	5663903.51	543.36	320	-45	60	2013-2014
	LG-455	495861.62	5663468.11	500.05	320	-80	300	2013-2014
	LG-456	496023.25	5664077.26	517.62	320	-45	84	2013-2014
	LG-457	496076.45	5663683.98	497.95	320	-54	186	2013-2014
	LG-458	496047.04	5663562.49	490.87	320	-45	252	2013-2014
	LG-459	496007.30	5664038.26	517.12	320	-45	96	2013-2014
	LG-460	495959.69	5664015.90	522.48	320	-45	75	2013-2014
	LG-461	496087.01	5663595.31	484.77	320	-45	237	2013-2014
	LG-462	496004.98	5664193.14	519.12	320	-45	69	2013-2014
	LG-463	496005.45	5663532.27	491.15	320	-45	255	2013-2014
	LG-464	495884.16	5663533.56	509.37	320	-45	300	2013-2014
	LG-465	495682.12	5663533.62	519.06	320	-45	195	2013-2014
	LG-466	496053.18	5663976.44	510.04	350	-50	135	2013-2014
	LG-467	495631.31	5663501.63	526.27	320	-45	183	2013-2014
	LG-468	495918.32	5664060.01	521.97	320	-45	114	2013-2014
	LG-469	496021.66	5663944.79	508.31	320	-45	147	2013-2014
	LG-470	495598.05	5663474.19	530.93	320	-45	177	2013-2014

Zone	Hole Name	Easting	Northing	Elevation	Azimuth	Dip	Length	Year
	LG-471	495656.88	5663703.66	545.22	40	-45	54	2013-2014
	LG-472	496064.25	5664039.62	515.22	320	-45	120	2013-2014
	LG-473	495930.93	5664122.24	523.44	320	-45	171	2013-2014
	LG-474	495665.19	5663851.09	545.76	320	-45	60	2013-2014
	LG-477	495962.31	5664082.08	523.02	320	-45	105	2013-2014
	LG-478	496005.17	5664117.44	519.05	320	-45	90	2013-2014
	LG-479	496085.07	5664115.05	515.23	320	-45	81	2013-2014
	LG-480	495777.13	5663414.71	507.96	320	-55	189	2013-2014
	LG-487	495770.88	5663580.67	511.30	40	-50	180	2013-2014
	LG-488	496062.37	5663900.84	500.42	320	-45	150	2013-2014
	LG-489	495991.13	5663977.50	516.88	320	-45	120	2013-2014
	LG-490	496092.77	5663929.22	497.30	320	-45	150	2013-2014
	LG-491	496028.31	5664009.03	515.62	320	-45	114	2013-2014
	LG-492	496164.98	5663999.46	494.21	320	-45	180	2013-2014
	LG-493	496100.16	5664076.56	516.27	320	-45	81	2013-2014

10.3 EXPLORATION DRILLING CAMPAIGN OUTSIDE THE ESTIMATION RESOURCE STUDY AREA

In November 2013 an exploration drilling campaign started to test anomalies along the extensive Lac Guéret Member horizon on the Property. Eleven holes totaling 1,700 metres were drilled outside the development area (Figure 10-3 and Table 10-2). The average depth of the drillholes was 150 metres, with a maximum depth of 171 metres. The diameter size of the cores was NQ and 312 samples were sent to AGAT.

Table 10-2 - 2013 Exploration Drillholes Details

Hole name	Easting	Northing	Elevation	Azimuth	Dip	Length
LG-13-01 N	493 801.00	5 672 366.00	469.00	275.00°	-45.00°	153.00
LG-13-02 N	495 583.00	5 668 770.00	499.00	310.00°	-45.00°	166.00
LG-13-03 N	495 113.00	5 668 288.00	540.00	350.00°	-45.00°	156.00
LG-13-04 N	489 939.00	5 666 044.00	589.00	300.00°	-45.00°	150.00
LG-13-05 N	492 587.00	5 659 977.00	550.00	40.00°	-45.00°	171.00
LG-13-06 S	481 190.00	5 654 340.00	675.00	40.00°	-45.00°	153.00
LG-13-07 S	481 730.00	5 648 242.00	509.00	225.00°	-45.00°	144.00
LG-13-08 S	489 002.00	5 644 938.00	687.00	20.00°	-45.00°	159.00
LG-13-09 S	489 834.00	5 643 902.00	696.00	15.00°	15.00°	147.00
LG-13-10 S	498 426.00	5 644 813.00	582.00	350.00°	-45.00°	150.00
LG-13-11 S	497 862.00	5 645 627.00	630.00	5.00°	-45.00°	150.00

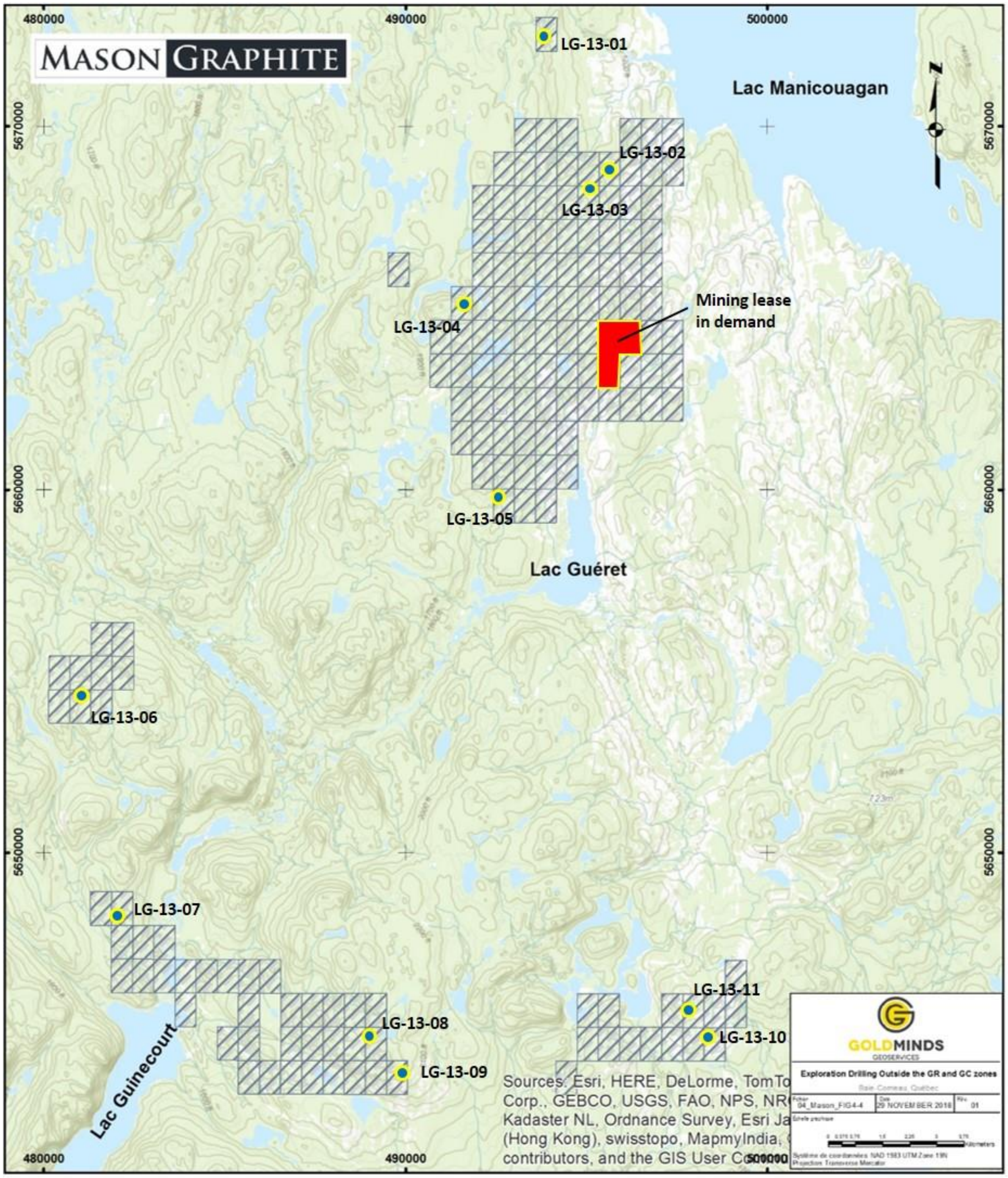


Figure 10-3 - 2013 Exploration Drilling Outside the GR & GC Zones

10.4 GEOTECHNICAL DRILLING

Mason Graphite commissioned Groupe Qualitas Inc. (Qualitas) to conduct a geotechnical investigation campaign to collect geological and geomechanical data for the adequate designing and construction of an open pit mine, and to conduct a preliminary investigation for the projected storage areas.

A total of 11 boreholes were drilled (Table 10-3). Nine boreholes (BH-14-01i, BH-14-02, BH-14-02B, BH-14-03i, BH-14-04, BH-14-05i BH-14-06 BH-14-07i and BH-14-08) along the open pit area were drilled to provide geomechanical information for design and engineering purpose of the open pit. Two boreholes (BH-14-09 and BH-14-10) were drilled to provide geotechnical information on the overburden and surface bedrock.

The fieldwork has been carried out from October 11 to December 18, 2014 and includes:

- Diamond drilling of 11 boreholes;
- Acoustical and optical televiewer surveys of eight boreholes;
- Shear wave velocities (Vs and Vp) measurements in eight boreholes;
- Petrographic and geomechanical core descriptions;
- Four multi-level vibrating wire piezometers installations (vibrating wire in each of the four boreholes);
- Four monitoring well installations;
- Determination of the hydraulic conductivity of the rockmass in eight boreholes (packer tests);
- Soil and groundwater sampling;
- Selection of core samples for laboratory tests;
- Selection of soil samples for laboratory tests;

After the drilling, the core logging was carried out to determine the geomechanical characteristics. Simultaneously the televiewer survey was performed to determine the number and orientation of the main set of structures.

Table 10-3 - Location of Geotechnical Drillholes

Borehole No.	Coordinates UTM NAD 83		Azimuth (°)	Dip (°)	Type of borehole	Drilling date(s)	Elevation [1] of surface (m)	Elevation of bedrock (m)	End of borehole length [2] (m)
	Eastern	Northing							
BH-14-01i	495786.0	5663925.0	320	45	Inclined	2014-10-22	537.97	536.31	75.00
BH-14-02	495882.0	5663987.0	000	90	Vertical	2014-10-27 to 2014-10-28	524.35	517.30	158.4
BH-14-02B	495882.5	5663987.9	000	90	Vertical	2014-11-06	524.35	517.35	7.00
BH-14-03i	496000.0	5664082.0	040	45	Inclined	2014-10-29	518.69	515.65	79.45
BH-14-04	496028.0	5663916.0	000	90	Vertical	2014-10-30 to 2014-10-31	504.08	500.07	155.55
BH-14-05i	495959.0	5663770.0	130	45	Inclined	2014-10-31	504.51	503.91	77.25
BH-14-06	495837.0	5663689.0	000	90	Vertical	2014-11-01 to 2014-11-02	504.66	499.06	155.60
BH-14-07i	495682.0	5663690.0	205	45	Inclined	2014-10-25 to 2014-10-27	539.34	538.95	215.26
BH-14-08	495666.0	5663821.0	000	90	Vertical	2014-10-23 to 2014-10-25	542.76	537.96	155.30
BH-14-09	496205.0 [3]	5663820.0 [3]	000	90	Geotechnical	2014-11-02	479.00 [4]	474.95	11.30
BH-14-10	495333.0 [3]	5663982.0 [3]	000	90	Geotechnical	2014-11-04 to 2014-11-05	566.00 [4]	557.60	21.00

[1] Elevation provided by a surveyor prior to the drilling. Afterwards the ground surface of the drilling locations has been leveled to prepare the work areas. A difference of a few decimeters is possible from the original survey.

[2] All "depths" are measured along the borehole axis and correspond to "lengths".

[3] Coordinates surveyed with a Garmin GPS.

[4] Elevation estimated from a LIDAR survey provided by Hatch.

10.5 DRILL MANAGEMENT

Drill collar sites were located using a hand-held GPS by Mason Graphite technicians. The orientation of front and back posts for each drillhole were put in place. The drill site preparation was verified by a geologist. The alignment of the drill was done by a technician. Drillholes inclination was set by geologist and driller with an inclinometer on the drill casing.

A geologist visited the drill site daily to check the drillhole. Drillholes were stopped once the planned depth was reached. The drillholes were continued when deemed relevant by Mason Graphite personnel in the field.

For the 2012 drillholes, when a drillhole was completed, a wooden post with a flag including the name on it was left to identify the drillholes location. Groupe Cadoret (Cadoret) surveyor from Baie-Comeau used this data to identify the drillhole during the surveying. Afterwards, PVC tubes were placed in the drill collars with identification information on a metal tag.

For the 2013-2014 drillholes, the casings were left in place and caps, with the hole numbers stamped on them, were screwed on the casings.

10.6 DOWN HOLE SURVEY

Down hole dip and magnetic tests were taken every 3 metres using a Reflex multi-shot instrument. The instrument was used and manipulated by the drillers. Reflex measurements were given at every end of the holes to the geologist by using a program for automatic uploading of the data from the Reflex instrument to a computer. A magnetic deviation correction of 19.3° west was set in the Reflex instrument.

The following observations should be taken into consideration (but do not affect the accuracy or the quality of the Mineral Resources Estimate):

- Two drillholes have no Reflex values. One was forgotten (LG-045) and the instrument was broken on LG-040.
- Only measured Reflex values with an "OK" comment were kept (totaling 2,737 values kept out of 8,739 values measured). Essentially, erroneous values were probably due to magnetism from pyrrhotite in the host rock, but the exact cause has not been established. Related to this problem, two drillholes (LG-078 and LG-244) had no down holes survey values with "OK" comments.
- Two drillholes (LG-059 and LG-130) had depth data recorded that exceeded the maximum depth of the holes. Therefore, all Reflex values were discarded.

10.7 DRILL CORE MANAGEMENT

Drillers put the drill core in wooden core boxes (1.5 m long with three rows). Drillers added a wooden block to identify the depth for each three-metre drill runs. Drillers put a wooden lid on each core box and identified the drill core boxes with LG- and holes number using a black permanent marker. Each core box and lid was tied together with iron wire to hold the two parts together. Drillers transported the drill core to the core shack.

A geologist opened the boxes and sorted them by depth, did a quick log to see where the mineralization was located and stored the core boxes in covered steel core racks located outside the core shack for later description.

10.8 SURVEYING

Cadoret was contracted in November 2012 to survey the 2012 drillholes collars. A DGPS instrument was used to survey 170 drillholes of which nine were planned drill sites. Two drillholes were not surveyed (LG-260 and LG-261) during that survey. The coordinates from these two drillholes were taken using a hand-held GPS. Drillholes coordinates were reported in UTM NAD 83 zone 19 (Cadoret 2013).

Cadoret was also contracted in June 2013 to survey the 2006 drill collars which had not been surveyed previously. Out of 24 drillhole collars, 15 collar posts were found and surveyed. The remaining nine drillholes post were not found mainly because of road construction or post destruction. Surveyed values in 2013 were only a few metres different from handheld GPS values. LG-07 was also surveyed as a reference; the difference from 2003 survey measurements was on the order of centimeters (Cadoret, 2013b).

In June 2014, 86 drillhole collars of the 2013-2014 program were surveyed by Cadoret. Supervision of the surveyor's works was made by Yves Caron, P.Geo., Director of Exploration for Mason Graphite. The locations were surveyed by differential GPS (Trimble equipment) and post-process of the data took place at their office in UTM coordinate system NAD83 SCRS. The report was provided to Mason Graphite on July 7, 2014.

10.9 GEOTECHNICAL DATA COLLECTION

When ready for logging, drill core was placed in the core shack for description. Technicians and the geologist checked the wooden blocks (three-metre drill runs) for length consistency. Technicians measured the core length drilled for each box to find the total drill length for each drillhole. For each drilled intervals, the geologist measured the drill core length recovered to calculate the percentage of recovery.

For the same drill interval, the rock quality (RQD) length was measured to calculate the RQD value. The total length of core fragments greater than 10 centimeters was to calculate the RQD. The number of fractures was also noted for each drill interval. Faults were noted in the geotechnical description.

10.10 GEOLOGICAL LOGGING

In June 2013, the entire 2012 drill core was reviewed under the supervision of Daniel Turcotte, P. Geo. The purpose of the re-logging was to verify the database uniformity on the geological descriptions. This resulted in the conversion of some intervals described as Unit 3 being reassigned as Unit 2 (the changes are estimated to be around or less than 20%). About 10% of the intervals described as Unit 2 were reassigned to Unit 1 while few intervals described as Unit 1 were renamed undifferentiated gneiss (less than 10%).

For the 2013-2014 drilling campaign, Mason Graphite geologists logged the geological description of the drill cores. These elements were then noted in Geotic Log software. Geological Units used were the same as the ones described in the NI 43-101 Technical report on the Lac Guéret Project issued in July 2012 based on visual values (Unit 1 = 4-10% Cg, Unit 2 = 10-27% Cg, Unit 3 = >27% Cg). Following the statistical study made by Marcotte in 2013, new thresholds are 5% to 10% for Unit 1, 10% to 25% for Unit 2 and greater than 25% for Unit 3.

The main mineralized lithological Units were essentially based on the visual estimates in graphite content. They were also described for non-mineralized drill segment. A more detailed lithological description (secondary lithology) was described for some sections of some drillholes.

Each geologist logging a hole was responsible for entering the data into Geotic Log. A complete database of all the drillholes was done by compiling them into one master Geotic Log database.

Photographs of each drillhole (wet and dry) were taken after geotechnical and geological description and included in Appendix of the drillhole logs. Each photo was identified by drillholes number, drill boxes interval and depth From-To.

(For reference, see Figure 7-3 - Property Stratigraphic Column).

11. SAMPLE PREPARATION, ANALYSES AND SECURITY

11.1 SAMPLING APPROACH AND METHODOLOGY

Samples (including duplicate samples and blanks) were taken for a total of 43,324 metres (including 987 metres of trenches) and sent to the laboratory for analysis. These numbers include 2003, 2006, 2012 and 2013/2014 drill campaigns.

Drilling collar coordinates of each drillhole are reported as x,y,z values in UTM NAD 83 Z19. Drill samples were initially taken as 2 to 3-metre lengths within homogeneous rocks for a few drillholes. Afterwards the sample length was generally of 1.5 metres. The sample lengths were also defined by abrupt changes in geology and visual graphite grades.

Sample FROM-TO intervals were defined using wax pencils on drill cores by the geologists. Sample booklets were filled using the measured FROM-TO sample definition. Paper sample tags with 3 identification parts were used: part 1 stayed in the booklet, part 2 was placed in the sample bag for the lab, and part 3 was stapled in the core box at the beginning of each sample.

Technicians would then cut the drill cores with an electrical diamond saw in half along the drill core axis and perpendicular to the mineral banding. One half was left in the box and the other half was put in a plastic bag with the sample tag inside the bag. The sample number was also marked with a permanent black marker on the plastic bag.

A technician filled a chain of custody (COC) form given by AGAT to describe the sample batch, including the FROM-TO, sample numbers, the total number of samples to be analyzed and the type of analysis to be performed. A geologist would then verify that this form is correctly filled by comparing with the physical sample number and the number of samples to be sent.

Approximately five samples were grouped in a larger rice bag. Normally, samples for a full drillhole were sent as a group at the lab and would correspond to a laboratory batch. The bags were organized on pallets.

Before storing the drill core boxes in steel core racks, the core boxes were labelled with metal tags describing drillhole number, box number and length From-To.

Boxes are stored outside in fenced, covered steel racks next to the core shack. The exploration camp where the cores are stored was never left unoccupied since the beginning of the drilling campaign so the cores from the 2012 and 2013-2014 campaigns were never left without surveillance from the drilling through sampling. The Lac Guéret camp was under continual occupation from 2012 until its closure in August 2014.

11.2 SAMPLES PREPARATION

11.2.1 RELATION OF ISSUER TO SAMPLE ANALYSIS

Mason Graphite used its employees for the field operations and drilling supervision, field data collection, sample preparation, and shipping of samples to AGAT.

Mason Graphite has no relationship with PRA, IPS, ALS Chemex, AGAT, COREM or Assayers Canada Ltd and is totally independent of these companies.

11.2.2 SAMPLE PREPARATION, ASSAYING, AND ANALYTICAL PROCEDURES

Analytical methods at AGAT:

Preparation

- Drill core samples weight were recorded as received;
- Samples were dried at 60 °C;
- Drill core samples were crushed and split to give a 250 g split sample;
- Split samples were pulverized to 75% passing through 200 mesh.

Total Carbon Analysis

- All the operations involved for the total carbon analyses were performed directly at the instrument. The original analyses were performed on a LECO model CHSDR 600. The total carbon re-assays were performed on a LECO model CS 844 (induction furnace - which was used originally for the graphite analyses).
- 0.2 g of pulp samples or less (if necessary when carbon content is too high and sample saturates the equipment) were placed in LECO crucibles;
- Crucibles with samples were put in a LECO furnace at 1,350 °C for 90 to 360 seconds (until all the carbon has been oxidized);
- Ct results were measured and reported in percent (%).

Graphitic Carbon Analysis

- The operations for graphite analyses were performed at three different stations: weighing, digestion and analysis. The re-assays were performed on a LECO model SC 432. The first analyses were performed on the CS 844.
- Around 0.25 g of pulp samples were placed in porcelain crucibles;

- 5 ml of 50% HCl was added to the pulp sample in the porcelain crucible;
- Crucibles were put on a hot plate (at approx. 100 °C) for approximately 10 minutes;
- Samples were filtered using a fiberglass filter (1 micron openings) and rinsed with 50% HCl and then water (Initial analyses performed in 2012 did not use filters);
- Samples with filters were put in boat crucibles and then on a hot plate for drying;
- Boat crucibles with samples were put in a LECO furnace at 1,350 °C for 90 to 360 seconds (until all the Carbon has been oxidized);
- Cg results were measured and reported in percent (%).

Specific Gravity Measurements

Specific gravity measurements by gas pycnometry were also taken every five samples for a total of some 3,478 analyses performed. A Quantachrome Pentapyc 5200e instrument was used for the analysis. Prepared 5 g pulp samples were placed into a sample holder cup where ultrahigh purity Helium (He) was used as a displacing fluid. Density was determined using Boyle's Law from the displacement of He from each sample.

Mason Graphite requested GMG to prepare an independent sampling program for the Lac Guéret property. For the same mandate, GMG did a rock density measurement (weight in air and weight in water) for six samples (4132, 4133, 4134, 4135, 4146 and 4147) at the GMG office in Québec City.

Sample replicates, duplicates, blanks (determined from an empty sample holder cup) and reference materials (an object with a known volume) were routinely used as part of AGAT Quality Assurance Program.

11.3 QUALITY ASSURANCE AND QUALITY CONTROL

Quality Assurance and Quality Control (QA/QC) samples were inserted along the sample definition of the drill core. Generally, for each sample number ending with a 10, a duplicate sample was inserted, for each sample number ending with 35 and 85, a standard sample was inserted and for each sample number ending with 60, a blank sample was inserted.

Standard Reference Material for graphitic mineralization is not common. During the 2012 drill campaign a graphite standard (GCL 003) from Mongolia Central Geological Laboratory was used. This standard has a certified value of 14.43% ± 0.64 for Total Carbon (Figure 11-1) and an information value of 12.0% for Graphitic Carbon (Figure 11-2). The Total Carbon value from this standard was obtained from analyses performed by gravimetric method.

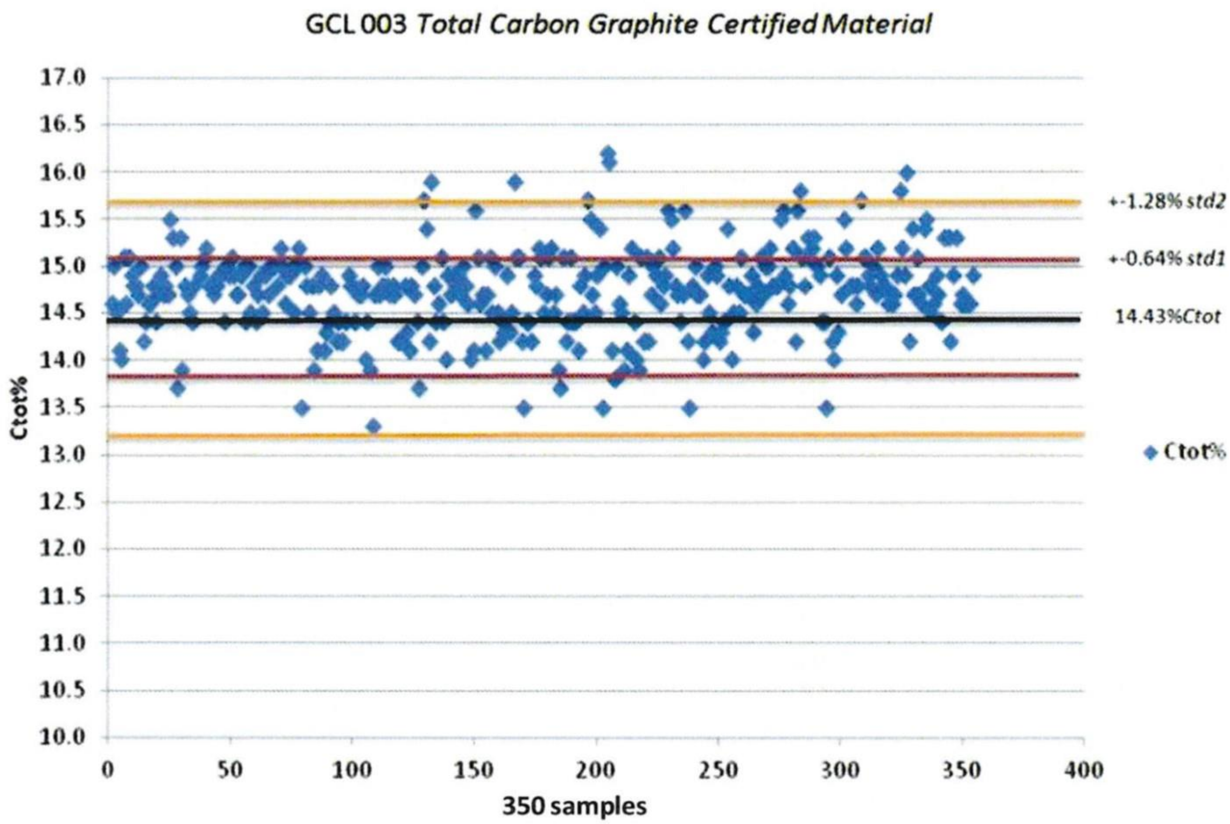


Figure 11-1 - Total Carbon from Assays Certified Material (GCL 003)

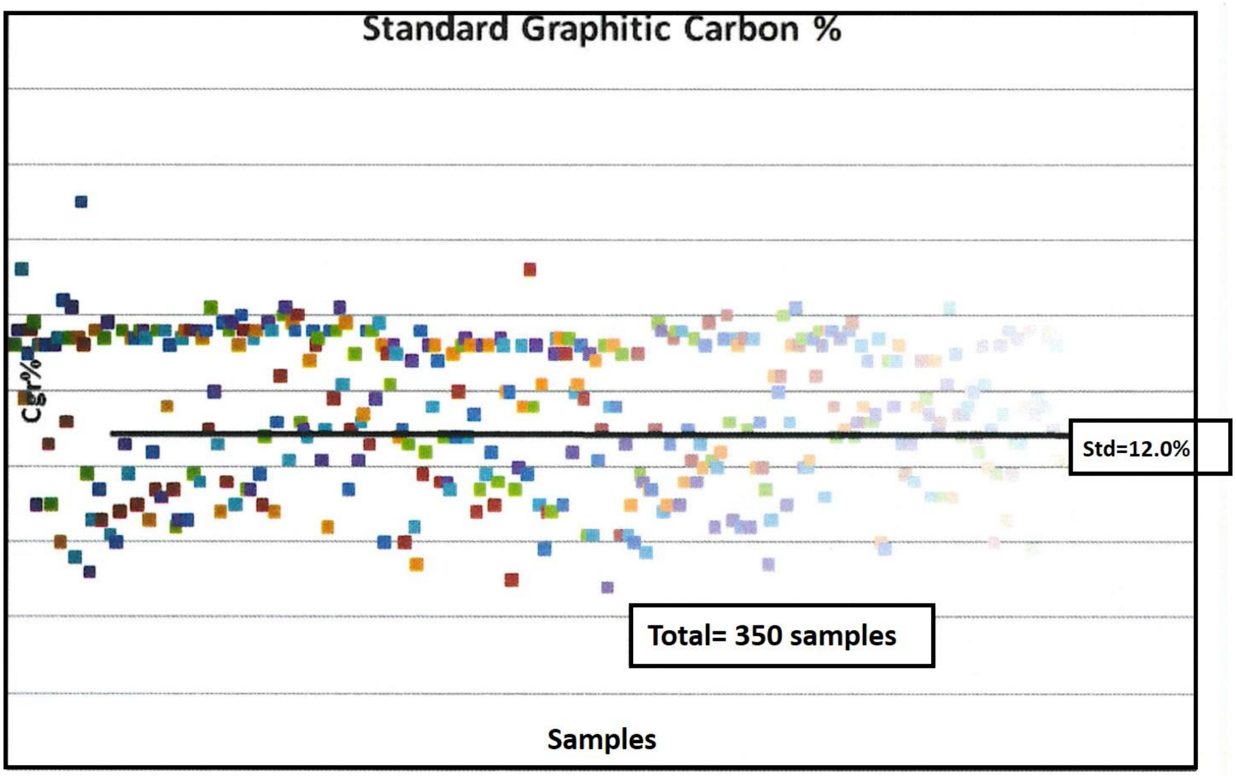


Figure 11-2 - Graphitic Carbon from Assays Certified Material (GCL 003)

During the 2013-2014 drilling campaign another standard (total of 163 standards) was used from COREM (MRI-1 and MRI-2). COREM standard (Std LG) with low graphitic Carbon concentration (Std LG with total Carbon between 7.95% and 8.68%; Graphitic Carbon between 7.4% and 8.52%; Figure 11-3). This standard shows one invalid value of 13.4% Cg (Figure 11-3). COREM standard (Std HG) with high graphitic Carbon concentration (Std HG with total Carbon between 24.1% and 25.9%; Graphitic Carbon between 22.1% and 25%; Figure 11-3 and Figure 11-4).

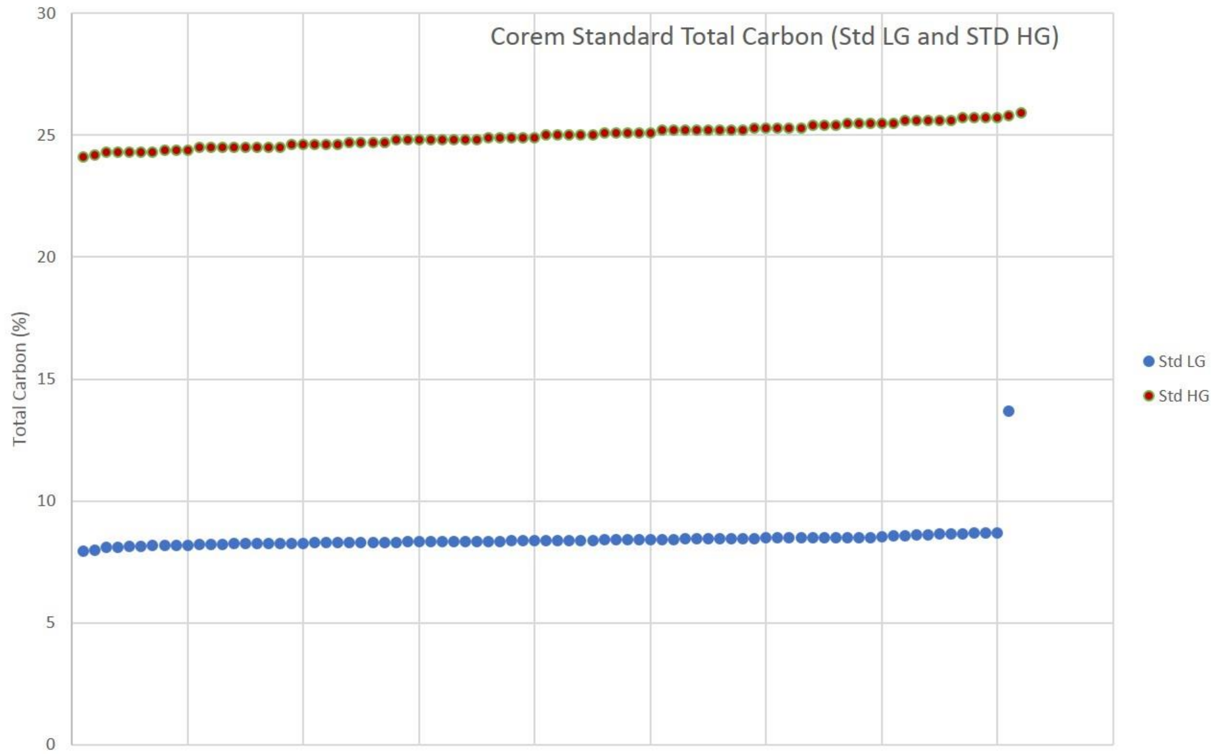


Figure 11-3 - Total Carbon Values (%) of COREM Standards

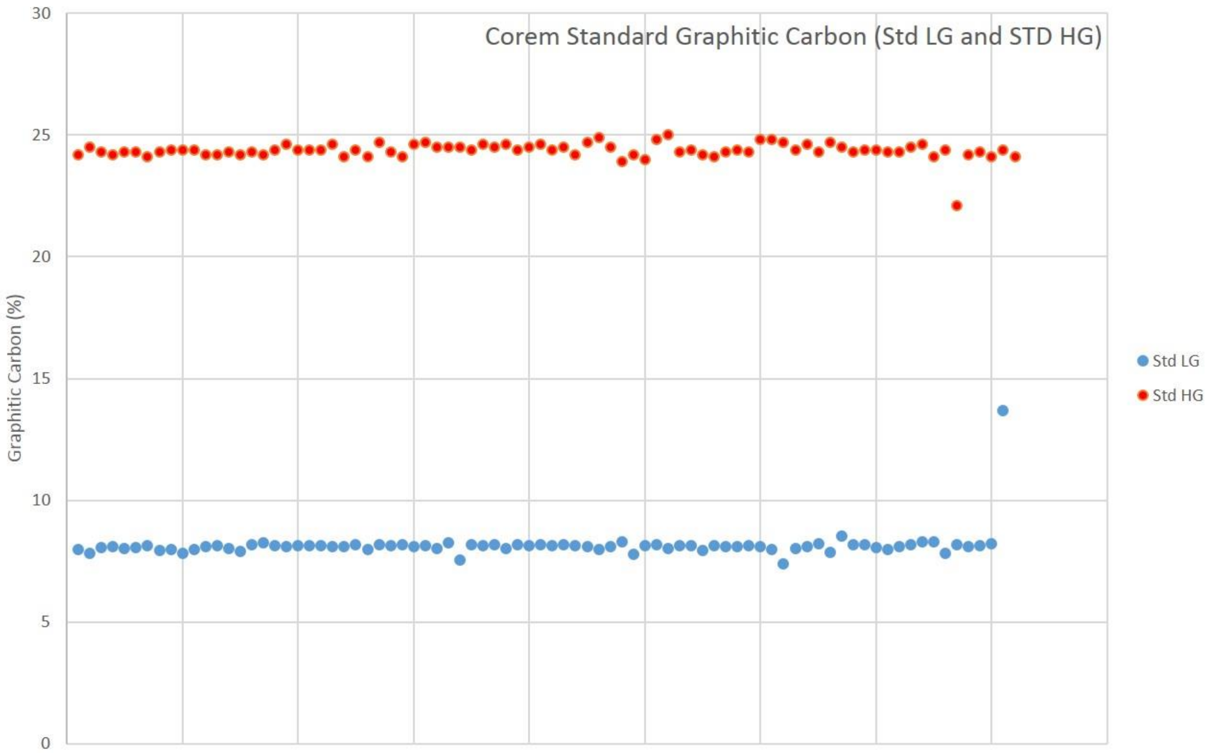


Figure 11-4 - Graphitic Carbon Values (%) of COREM Standards

A total of 307 blank samples were inserted and consisted of coarse white quartz sand from large bags purchased at a hardware store in Baie-Comeau (Figure 11-5).

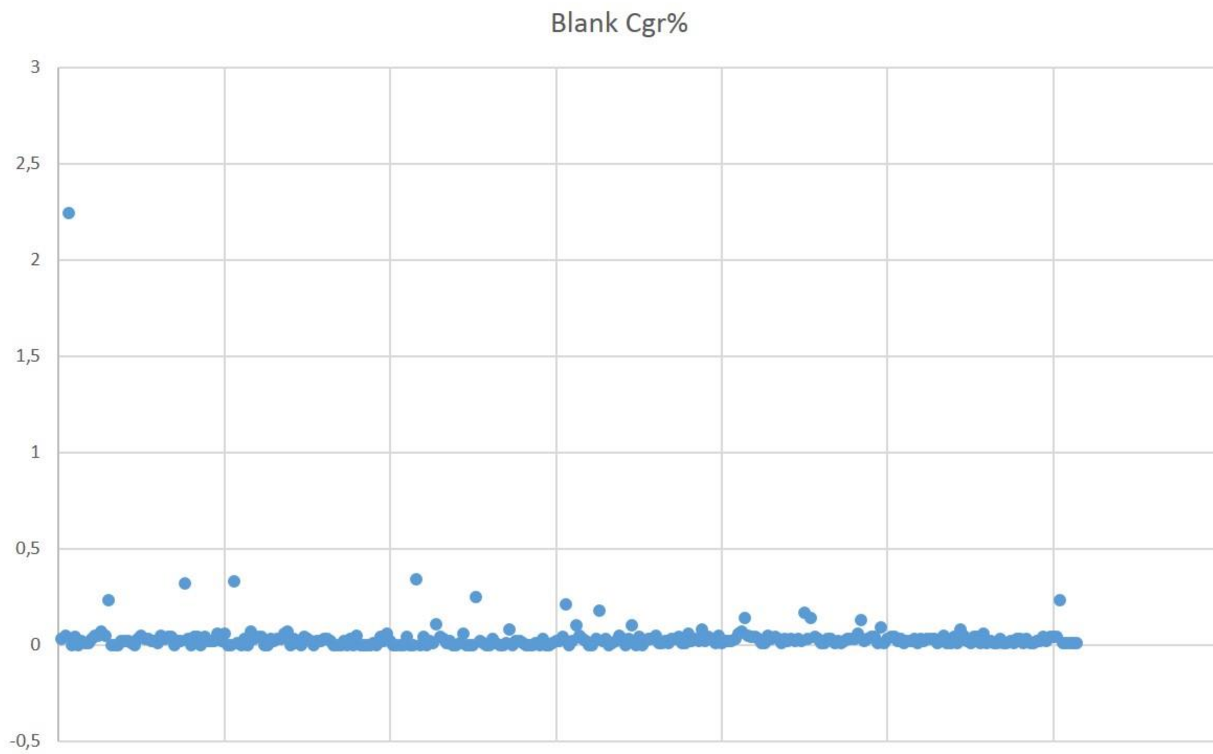


Figure 11-5 - Graphitic Carbon Values of Blank Samples (%)

Duplicate samples consisted of the second half of a particular drill core interval using the next sample number (for example, sample number 110 is the duplicate of drill core sample number 109). A total of 300 duplicate samples were inserted along the drill core sample definition during the drilling campaign from 2013 to 2014 (Figure 11-6 and Figure 11-7).

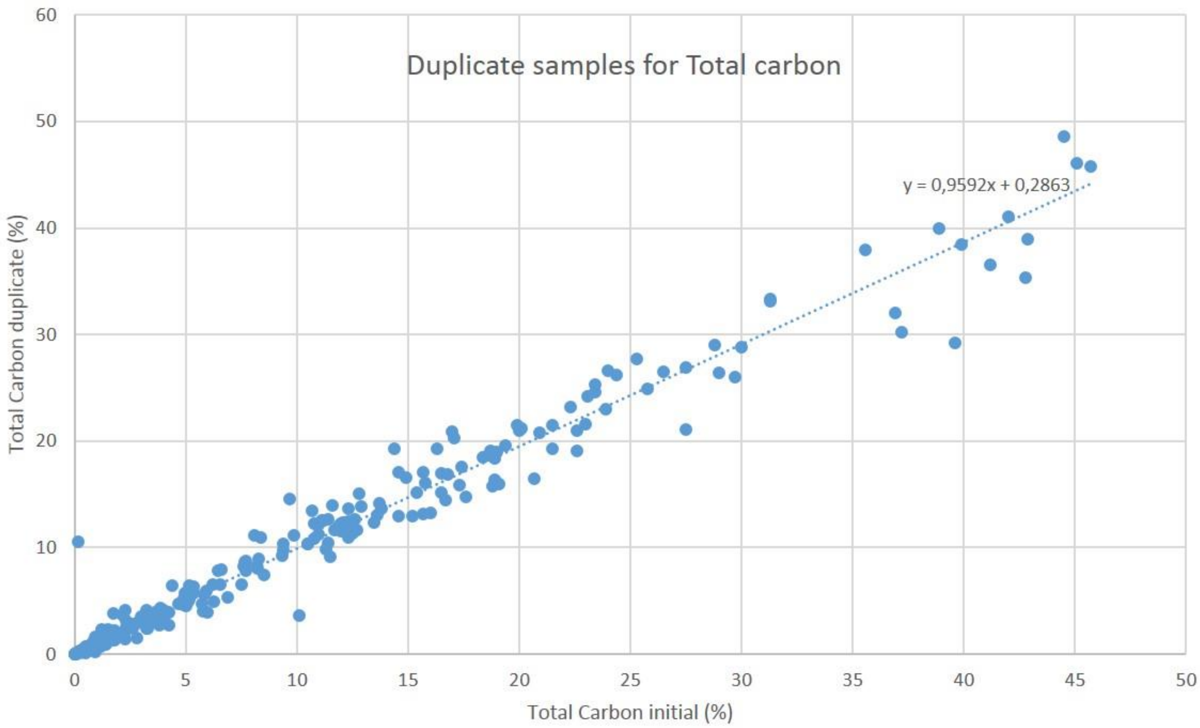


Figure 11-6 - Duplicate Samples, Total Carbon (%)

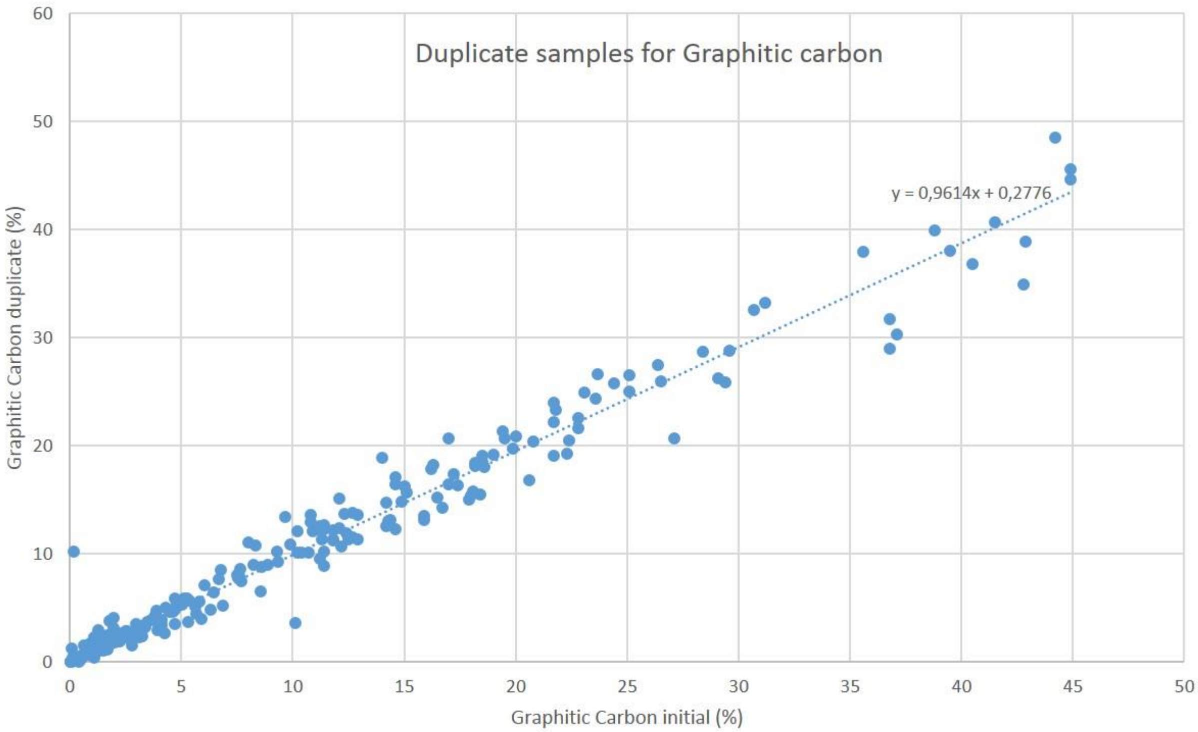


Figure 11-7 - Duplicate Samples, Graphitic Carbon (%)

Figure 11-6 and Figure 11-7 show that sample and duplicate values are quite similar, and no abnormal values were detected. The slope of the regression lines and the correlation coefficient is very close to unity which indicates a good reproducibility.

11.4 REFEREE ANALYSES

COREM laboratory located in Québec City was chosen as the referee laboratory to reanalyze 536 coarse reject samples as a standard QA/QC procedure. Sample selection made sure to have some samples from each drillhole. In addition, samples were chosen to be representative of the grade histogram variation, focusing on samples with total carbon (Ct) values greater than 4% for a total of 447 samples analyzed. This represents approximately 6% of the samples with Total Carbon values >4% analyzed during the 2012 drill campaign. Fifty-two samples with Total Carbon less than 4% were also analyzed. One standard sample or one blank sample were inserted every 15 samples for a total of 33 samples. Four field duplicates were also included in the list of samples to be analyzed.

Total Carbon Analysis

The sample is placed in a LECO capsule and then introduced into the furnace (1,380 °C) under an atmosphere of oxygen. Carbon is oxidized to CO_2. After the removal of moisture, gas (CO_2) is measured by an infrared detector. A computerized system calculates and displays the concentration of the total carbon present in the sample.

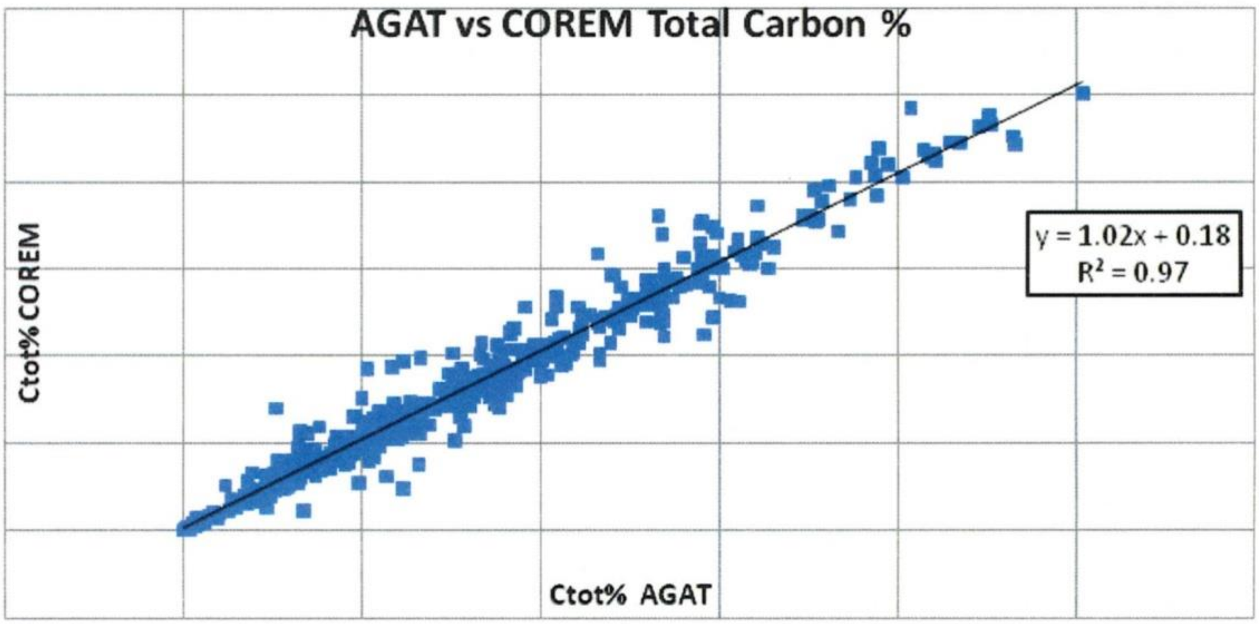


Figure 11-8 - Correlation AGAT – COREM for Total Carbon

Graphitic Carbon Analysis

The sample is pre-treated with nitric acid, rinsed and filtered. Then the sample is placed in a LECO capsule and then introduced into the furnace (1,380°C) under an atmosphere of oxygen. Carbon is oxidized to CO_2. After the removal of moisture, gas (CO_2) is measured by an infrared detector. A computerized system calculates and displays the concentration of the graphitic carbon present in the sample.

The slope of the regression line and the correlation coefficient is very close to unity which indicates a high reproducibility between the AGAT and COREM analyses.

11.5 RE-ANALYSIS OF GRAPHITIC RESULTS

In March 2013, a field visit by Mason Graphite with the objective of validating 11 randomly selected drillholes with their assays resulted in the questioning of some graphitic carbon results. At Lac Guéret, some rare carbonates are observed. Percentages of inorganic carbon (obtained by the subtraction of total carbon – graphitic carbon) above 2% should thus be occasional and cannot be above 12% (pure calcite contains 12% carbon). It was thus decided to reanalyze all the samples with total graphite ≥ 4% and with values of inorganic carbon ≥ 1%. Blank, standard and duplicate samples were also included in the process of reanalyzing some 6,211 pulp samples at AGAT.

These new results were imported into the Geotic Log assay database. Whenever a new analysis was performed (either for graphitic carbon or total carbon), the latest value was used in the final database. The graphitic carbon and total carbon values seen in the assay database reflect this procedure.

11.6 SECURITY

GMG believe that the sampling procedures and handling in the field, sample preparation, sample and data security, and the analytical procedures were sufficient to maintain the integrity of the samples as representative of the material sampled.

12. DATA VERIFICATION

12.1 DATABASE

Geotic Log software was used to create individual log databases. Geology, sampling, coordinates, and geotechnical data were entered in individual Geotic log database tables by the geologist logging a specific drillhole.

The database used for this work was done by Mason Graphite. This database was delivered by Roche as Access database named 'GD_PH2_LacGueret' as well as another file named "DB-FINAL-N43101-V2.xlsx" (197 holes totaling 29,906 metres, and four trenches totaling 987 metres).

The new drilling data from the 2013 and 2014 drilling campaign was compiled by Mason Graphite geologists (86 holes, totaling 13,418 metres) and verified by GMG.

12.2 FIELD VERIFICATION

Lyons directed the Lac Guéret exploration work in the field from 2002 through mid-2006 and helped establish the 2006 drill program executed by Daniel Lapointe, P.Geo. for Quinto. He relogged the 2006 core in May 2007 in the secure storage site at Baie-Comeau, QC following which he visited the drill grid site. He also consulted with Quinto during 2006 and 2007 related to metallurgical issues and the initial efforts to make a geological model in 2007. The 2006 drill sites are marked with wooden stakes and the casing has been pulled out. Locations were made with a hand-held GPS unit. Surveying by Cadoret in summer 2013 located most of the sites as described above.

During the 2012 drill campaign, field verifications were being done on a hole by hole basis. Refer to Chapter 7 for details. Lyons knows of no known limitations regarding the field data besides the normal data ranges inherent in the methods described.

In Accordance with the National Instrument 43-101 guidelines, Claude Duplessis P. Eng., has visited the Lac Guéret property on August 2, 2016, accompanied by Jean L'Heureux, P. Eng., M. Eng. During the site visit Mr. Duplessis inspected the location of several borehole collars in the main zone. The collars are clearly marked and the borehole casing is capped and marked with the borehole number. No discrepancies were found between the location, numbering, or orientation of the collars verified in the field, on plans and in the database verified by GMG. Mr. Duplessis, P. Eng., has also reviewed the core at the site and visited the mill site as well. Mr. Duplessis, P. Eng., and M. Rachidi P. Geo., took independent samples (core samples) previously in 2014 with Yves Caron, P. Geo.

The purpose of the site visit was to ascertain the geological setting of the project, exploration works, and consider logistical aspects. The visit is still current as no material change on exploration work has occurred since this last visit.

12.3 DATABASE VERIFICATION

12.3.1 2013-2014 DRILL CAMPAIGN DATABASE

The last verification/correction of the new database (2013-2014 campaign) took place at the GMG office on October 22, 2014.

12.3.2 INDEPENDENT SAMPLING PROGRAM BY GMG 2015

Mason Graphite commissioned GMG to prepare an independent sampling program for the Lac Guéret property. Claude Duplessis, P. Eng., Senior Engineer, a Qualified Person as defined by the NI 43-101 and Merouane Rachidi, P. Geo., Ph.D., organized the preparation and sampling protocol.

12.3.2.1 SAMPLING

For the purpose of this program, three diamond drillholes (DDH) LG-19, LG-207 and LG-422 were selected to represent the three main diamond drill campaigns occurred on the GC deposit in 2003, 2012 and 2014. Fourteen core boxes containing the remaining half cores of selected sections from these DDH were prepared and sent directly from Mason Graphite's core shack by their geologist, Yves Caron, P.Geo., and received in Québec City by GMG on October 31, 2014. Forty-seven samples (including blanks and standards) were prepared at the GMG office in Québec and then sent to the Accurassay Laboratories (Accurassay) for analyses (Table 12-1).

Table 12-1 - Independent Half-Core Samples from Diamond Drillholes [1]

Hole	From	To	Interval	Sample ID GMG	Sample ID Mason Graphite
Blank				4101	
LG-19	68.30	71.00	2.70	4102	81419
LG-19	71.00	73.50	2.50	4103	81420
LG-19	73.50	75.00	1.50	4104	81421
LG-19	75.00	76.90	1.90	4105	81422
LG-19	76.90	78.70	1.80	4106	81423
LG-19	78.70	81.00	2.30	4107	81424
LG-19	81.00	83.40	2.40	4108	81425
LG-19	83.40	85.15	1.75	4109	81426
LG-19	85.15	87.90	2.75	4110	81427
LG-19	87.90	89.90	2.00	4111	81428
Blank				4112	

[1] LG19, LG207 and LG422

Hole	From	To	Interval	Sample ID GMG	Sample ID Mason Graphite
Std1-J				4113	
Std2-R				4114	
LG-19	89.90	92.10	2.20	4115	81429
LG-19	92.10	94.50	2.40	4116	81430
LG-207	45.00	46.50	1.50	4117	5600720
LG-207	46.50	48.00	1.50	4118	5600721
LG-207	48.00	49.50	1.50	4119	5600722
LG-207	49.50	51.00	1.50	4120	5600723
LG-207	51.00	52.50	1.50	4121	5600724
LG-207	52.50	54.00	1.50	4122	5600725
LG-207	54.00	55.50	1.50	4123	5600726
LG-207	55.50	56.20	0.70	4124	5600727
Blank				4125	
Std1-J				4126	
Std2-R				4127	
LG-207	56.20	57.00	0.80	4128	5600728
LG-207	57.00	58.50	1.50	4129	5600729
LG-207	58.50	60.00	1.50	4130	5600730
LG-207	60.00	61.50	1.50	4131	5600731
LG-422	15.5	17	1.50	4132	E5615308
LG-422	17	18.2	1.20	4133	E5615309
LG-422	18.2	19.2	1.00	4134	E5615310
LG-422	19.2	21	1.80	4135	E5615311
LG-422	21	22.5	1.50	4136	E5615312
LG-422	22.5	23.1	0.60	4137	E5615313
LG-422	23.1	24.4	1.30	4138	E5615314
LG-422	24.4	26.15	1.75	4139	E5615315
Blank				4140	
Std1-J				4141	
Std2-R				4142	
LG-422	26.15	27.00	0.85	4143	E5615316
LG-422	27	28.5	1.50	4144	E5615317
LG-422	28.5	30	1.50	4145	E5615318
LG-422	30	31.45	1.45	4146	E5615319
LG-422	31.45	32.4	0.95	4147	E5615321

The core boxes were photographed (dry and wet) before the sampling. To properly compare the laboratory results, each sample was taken from the same intervals defined by Mason Graphite. Blanks and two different standards (low grade and high grade) were inserted along the samples for the quality assurance and the quality control program (QA/QC).

12.3.2.2 SAMPLING APPROACH AND METHODOLOGY

Forty-seven samples were prepared at the GMG office in Québec (including blanks and standards). Samples were placed in plastic bags with the GMG sample tag inside. The sample number of each sample was also marked with a permanent black marker on the plastic bag. Samples were then sent to the Accurassay laboratory for analyses.

After samples reception and registration, the samples were crushed (size between 0 and 2 mm), pulverized and split in two pulps (pulp 1 and pulp 2). All the pulp 1 samples (47 samples) and half of the pulp 2 samples (19 samples) were analysed. Eight duplicate samples of the pulp 1 were also analysed for the QA/QC program (Figure 12-1).

Samples were analysed for total sulphur by LECO (ALTS1), total carbon by LECO (ALTC1), major element concentrations by XRF (ALXRF1), and graphitic carbon by LECO (Cg) (Figure 12-1).

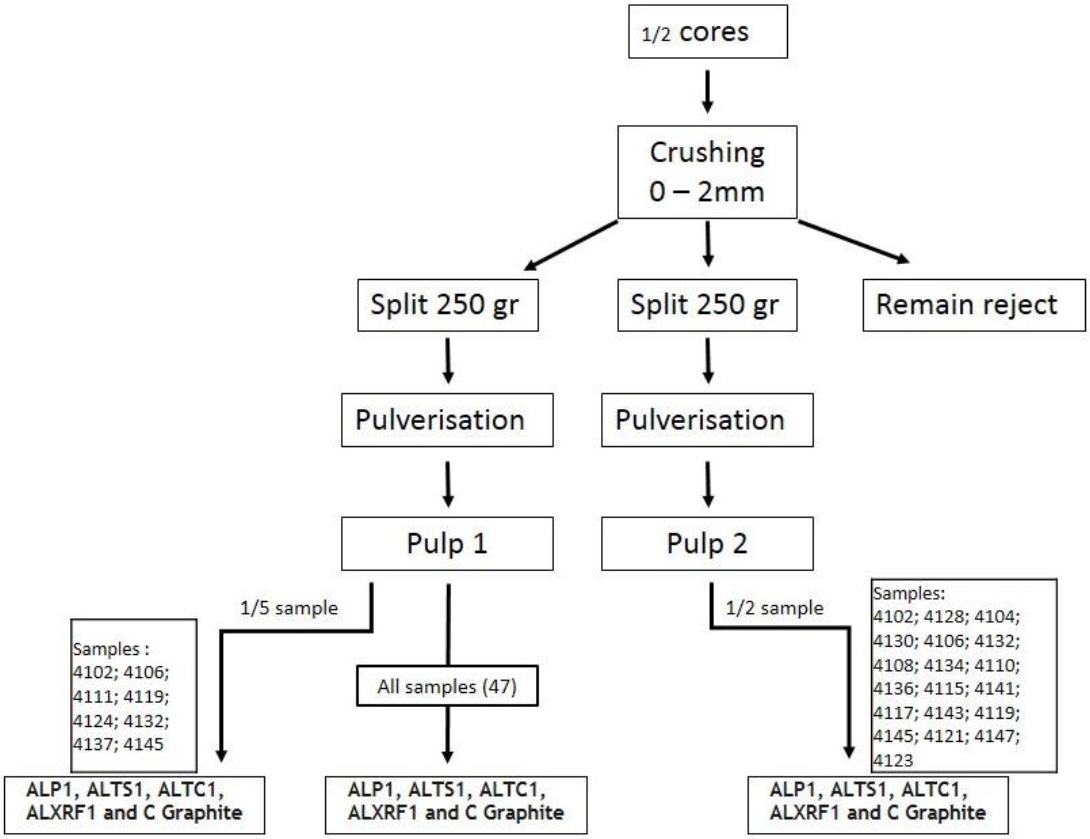


Figure 12-1 - Sample Preparation at Accurassay [1]

12.3.2.3 QA/QC PROGRAM

Two standards were used for the QA/QC program (Figure 12-2); STD I correspond to the standard with low graphitic carbon concentration (Cg between 7.96% and 8.05%); STD II correspond to the standard with high graphitic carbon concentration (Cg between 23.6% and 24.5%). The blank samples inserted are from a retailed swimming pool filter consisting in coarse white silicate sand.

Duplicate samples consisted of eight samples (pulp 1) reanalyzed to compare the laboratory analysis precision. Figure 12-3, shows that sample and duplicate values are quite similar, and no abnormal values were detected. The slope of the regression lines and the correlation coefficient is very close to unity which indicates a good reproducibility (Figure 12-3).

[1] ALP1= sample preparation and crushing; ALTS1= total sulphur by LECO; ALTC1= total carbon by LECO; ALXRF1 = major element concentrations by XRF; and graphitic carbon.

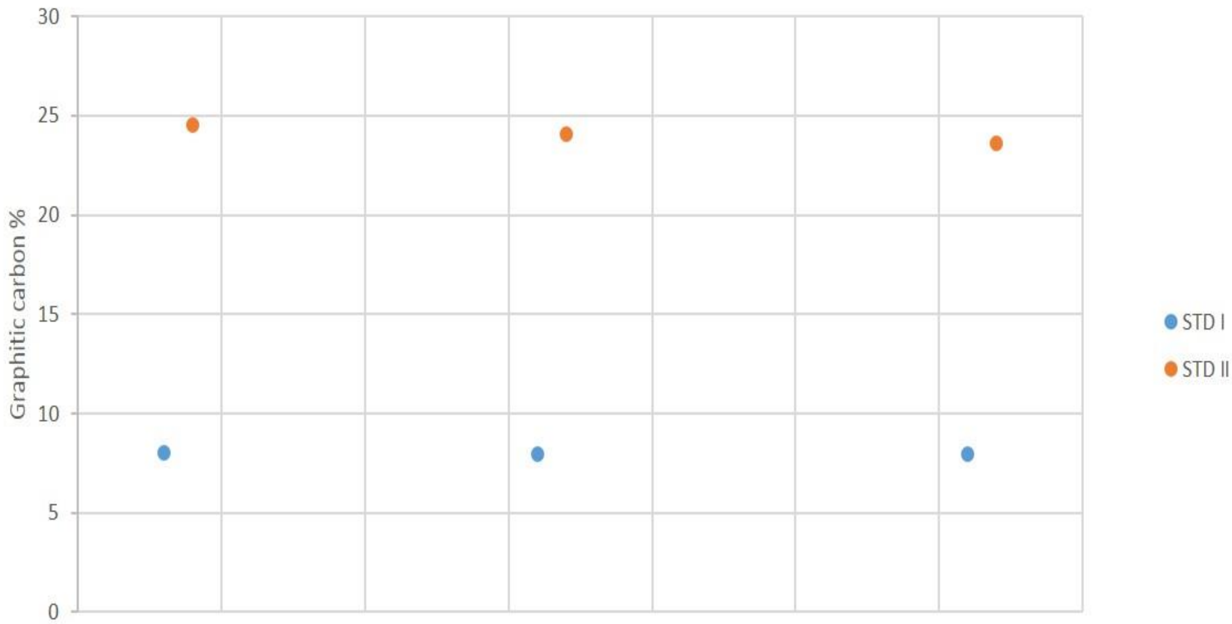


Figure 12-2 - Standards STD I and STD II

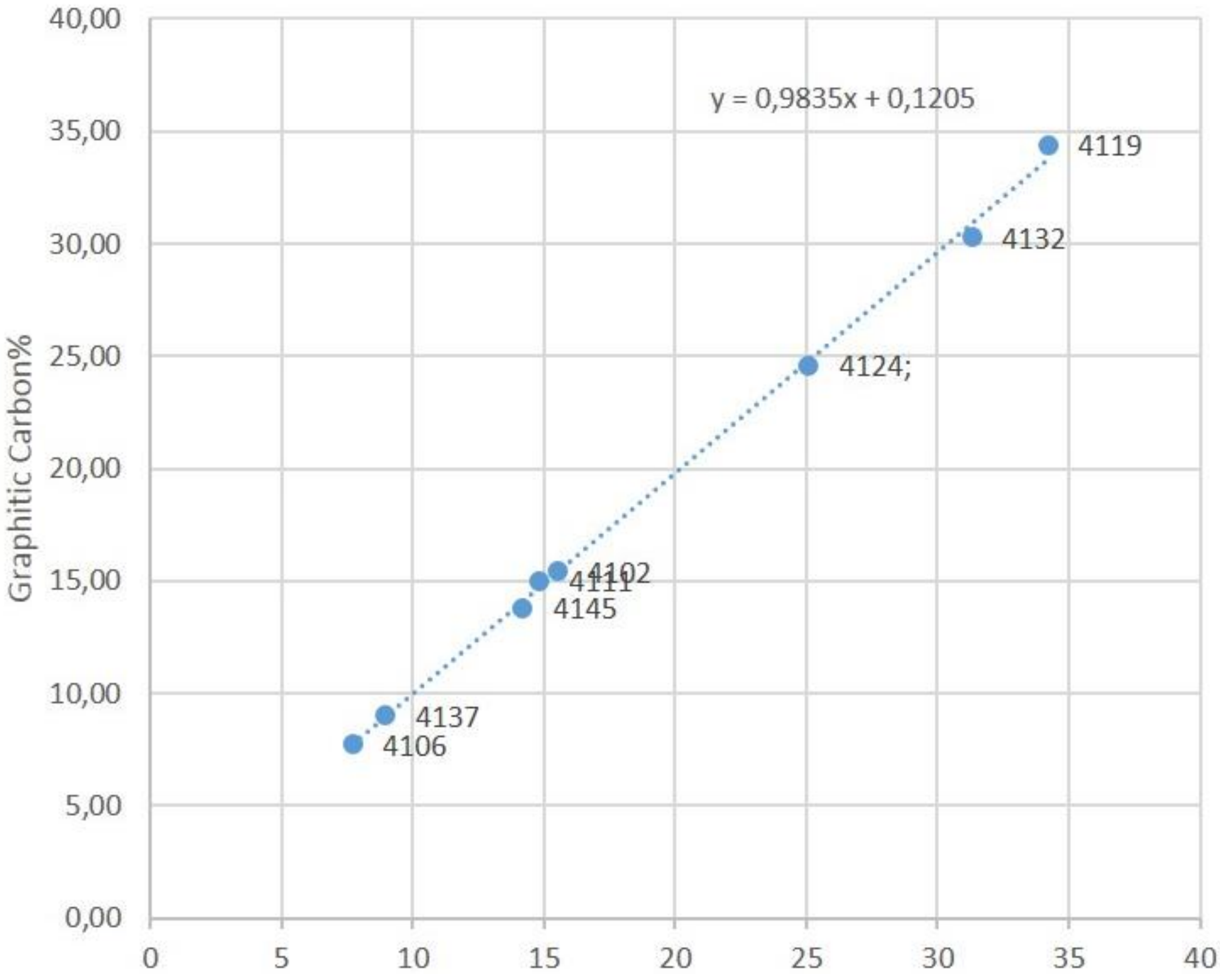


Figure 12-3 - Duplicate Samples, Graphitic Carbon (%)

The graphitic carbon values of pulp 1 and pulp 2 are similar with a maximum difference of 1.9% for sample 4132 (Figure 12-4). This correlation may indicate a good sample preparation method (riffle splitting method) of the Accurassay laboratory.

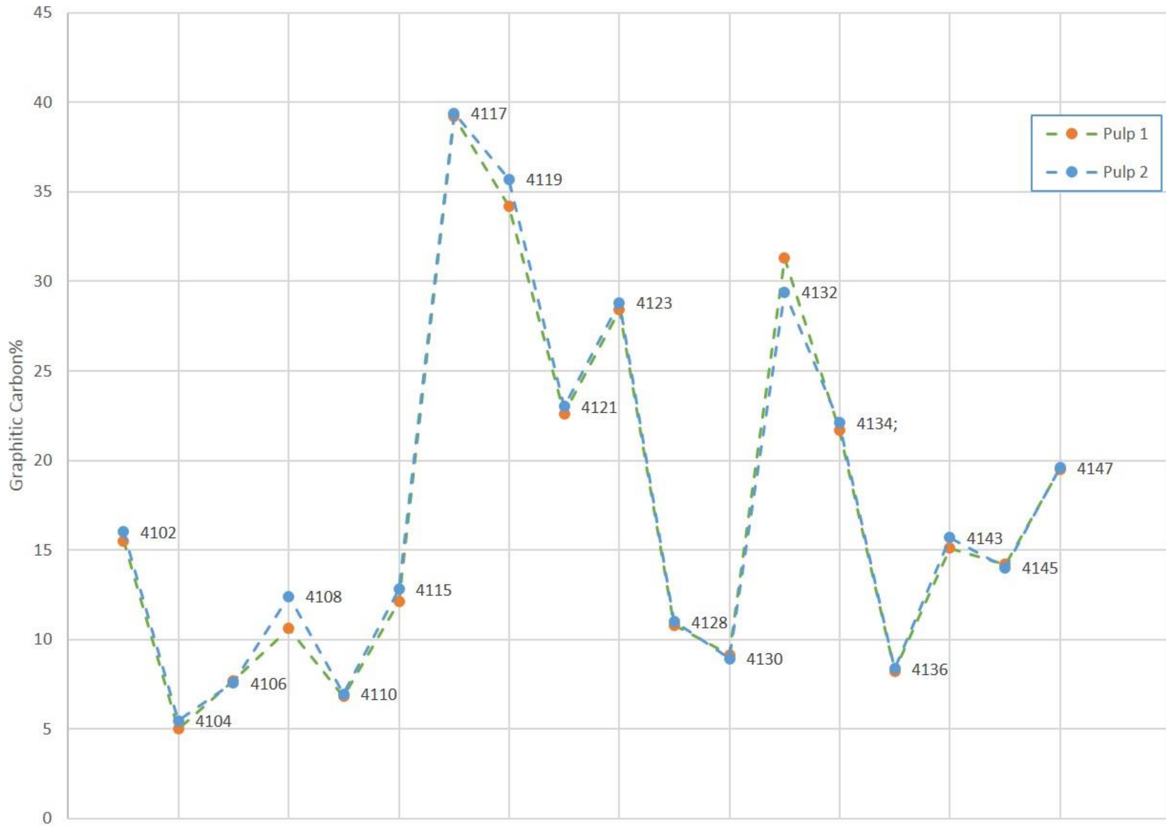


Figure 12-4 - Graphitic Carbon% Values of Pulp 1 versus Pulp 2

12.3.2.4 RESULTS AND INTERPRETATION

Thirty-seven samples previously analyzed by International Plasma Laboratory Ltd. (IPS) (LG-19, 2006) and AGAT (LG-207, 2012 and LG-422, 2014) were submitted to Accurassay for graphitic carbon, total carbon, total sulphur and major elements XRF analyses. Table 12-2 shows the Accurassay results on the pulp 1 (graphitic carbon %, total carbon % and total sulphur %) and Mason Graphite's values obtained from previous laboratories (graphitic carbon and total carbon).

The results of the major elements don't show anomalies (Table 12-3). The concentrations of Ti, Mn, P_2O_5, K, Mg and Ca are very low for the majority of samples and there is no correlation between these elements and the graphitic carbon concentrations.

Table 12-2 - Results from Accurassay (pulp 1) versus Mason Graphite's Results [1]

					Mason Graphite			Accurassay			
Hole	From	To	Inter vals	ID GMG	ID	Graphitic C (%)	C (%)	ID	Graphitic C (%)	C (%)	Sulphur (%)
LG-19	68.30	71.00	2.70	4102	81419	14.79	-1	28034	15.50	16.66	10.82
LG-19	71.00	73.50	2.50	4103	81420	33.51	-1	28037	30.90	33.27	9.38
LG-19	73.50	75.00	1.50	4104	81421	4.45	-1	28038	5.01	4.41	2.80
LG-19	75.00	76.90	1.90	4105	81422	25.80	-1	28040	20.20	21.46	8.39
LG-19	76.90	78.70	1.80	4106	81423	7.86	-1	28041	7.70	7.14	3.12
LG-19	78.70	81.00	2.30	4107	81424	27.28	-1	28044	27.40	29.92	6.64
LG-19	81.00	83.40	2.40	4108	81425	12.75	-1	28045	10.60	11.29	4.35
LG-19	83.40	85.15	1.75	4109	81426	2.06	-1	28047	3.14	3.36	2.05
LG-19	85.15	87.90	2.75	4110	81427	7.09	-1	28048	6.82	7.06	3.17
LG-19	87.90	89.90	2.00	4111	81428	20.62	-1	28050	14.80	14.69	5.62
LG-19	89.90	92.10	2.20	4115	81429	9.77	-1	28055	12.10	11.06	3.30
LG-19	92.10	94.50	2.40	4116	81430	23.11	-1	28057	19.00	20.64	6.25
LG-207	45.00	46.50	1.50	4117	5600720	40.2	40.6	28058	39.20	40.56	11.94
LG-207	46.50	48.00	1.50	4118	5600721	42.5	43.7	28060	42.20	42.04	6.90
LG-207	48.00	49.50	1.50	4119	5600722	36.3	36.1	28061	34.20	38.34	12.82
LG-207	49.50	51.00	1.50	4120	5600723	34.8	36.5	28064	33.10	33.85	15.43
LG-207	51.00	52.50	1.50	4121	5600724	23.5	25	28065	22.60	23.39	12.72
LG-207	52.50	54.00	1.50	4122	5600725	9.37	10.4	28067	8.22	8.38	12.18
LG-207	54.00	55.50	1.50	4123	5600726	27	27.3	28068	28.40	28.84	12.11
LG-207	55.50	56.20	0.70	4124	5600727	27.2	27.3	28070	25.10	28.40	14.95
LG-207	56.20	57.00	0.80	4128	5600728	10.3	10.5	28075	10.80	11.36	16.40
LG-207	57.00	58.50	1.50	4129	5600729	8.46	8.47	28077	8.30	8.80	16.60
LG-207	58.50	60.00	1.50	4130	5600730	9.75	10.7	28078	9.15	9.76	14.00
LG-207	60.00	61.50	1.50	4131	5600731	8.82	9.24	28080	9.44	8.91	11.45
LG-422	15.5	17	1.50	4132	E5615308	32.7	32.7	28081	31.30	32.08	13.55
LG-422	17	18.2	1.20	4133	E5615309	23.5	23.9	28084	27.80	27.67	13.09
LG-422	18.2	19.2	1.00	4134	E5615310	20.9	21.2	28085	21.70	24.42	11.78
LG-422	19.2	21	1.80	4135	E5615311	2.31	2.32	28087	2.89	3.00	10.10
LG-422	21	22.5	1.50	4136	E5615312	8.39	8.4	28088	8.23	8.55	11.41
LG-422	22.5	23.1	0.60	4137	E5615313	8.64	8.71	28090	8.96	9.05	11.19

[1] Obtained from previous laboratories

					Mason Graphite			Accurassay			
Hole	**From**	**To**	**Inter vals**	**ID GMG**	**ID**	**Graphitic C (%)**	**C (%)**	**ID**	**Graphitic C (%)**	**C (%)**	**Sulphur (%)**
LG-422	23.1	24.4	1.30	4138	E5615314	8.67	8.71	28092	10.83	9.31	8.70
LG-422	24.4	26.15	1.75	4139	E5615315	11.2	11.6	28093	12.29	13.02	12.40
LG-422	26.15	27	0.85	4143	E5615316	16.4	16.4	28098	15.10	16.63	12.83
LG-422	27	28.5	1.50	4144	E5615317	15.5	15.7	28100	14.50	15.63	7.99
LG-422	28.5	30	1.50	4145	E5615318	13.8	14	28101	14.20	14.70	12.62
LG-422	30	31.45	1.45	4146	E5615319	11.8	12.4	28104	8.54	8.75	11.76
LG-422	31.45	32.4	0.95	4147	E5615321	20.4	20.8	28105	19.50	21.42	6.92

Table 12-3 - Results of XRF for Major Elements

Hole	Tag GMG	Mason Graphite Sample n°	Tag Accurassay	Fe_2O_3 %	SiO_2 %	Al_2O_3 %	Na_2O %	MgO %	K_2O %	CaO %	P_2O_5 %	MnO %	TiO_2 %	Cr_2O_3 %	V_2O_5 %	LOI %
LG-19	4102	81419	28034	23.81	36.58	4.75	0.29	2.19	2.21	1.79	0.41	0.26	0.20	-0.06	0.09	27.48
LG-19	4103	81420	28037	20.57	25.65	4.46	0.47	1.85	1.39	1.91	0.34	0.28	0.35	-0.06	0.13	42.65
LG-19	4104	81421	28038	9.89	55.83	15.06	1.49	3.29	4.78	1.43	0.24	0.17	0.75	-0.09	-0.06	7.22
LG-19	4105	81422	28040	17.91	38.85	6.65	0.89	1.66	1.82	1.46	0.38	0.19	0.36	-0.08	0.06	29.85
LG-19	4106	81423	28041	10.46	55.07	12.96	1.68	2.99	4.00	1.68	0.24	0.18	0.60	-0.08	-0.04	10.26
LG-19	4107	81424	28044	16.12	33.91	6.38	0.79	1.89	1.74	1.67	0.37	0.18	0.38	-0.07	0.07	36.56
LG-19	4108	81425	28045	10.44	46.59	8.88	0.83	6.12	2.61	7.94	0.24	0.37	0.44	-0.09	-0.01	15.64
LG-19	4109	81426	28047	7.26	61.34	13.37	2.14	3.19	3.83	2.18	0.20	0.19	0.58	0.39	-0.08	5.41
LG-19	4110	81427	28048	8.77	58.56	10.15	1.09	3.82	3.02	3.56	0.23	0.21	0.46	-0.08	-0.03	10.23
LG-19	4111	81428	28050	16.51	47.26	7.89	0.93	2.04	2.86	1.41	0.30	0.11	0.43	-0.07	0.03	20.31
LG-19	4115	81429	28055	11.04	54.64	8.63	0.87	3.60	2.66	3.45	0.26	0.12	0.44	-0.09	0.00	14.36
LG-19	4116	81430	28057	15.35	42.51	7.29	0.53	2.08	2.80	1.71	0.32	0.09	0.44	-0.08	0.07	26.90
LG-207	4117	5600720	28058	25.84	13.63	2.44	0.07	1.39	0.68	2.55	0.31	0.20	0.26	-0.03	0.16	52.50
LG-207	4118	5600721	28060	25.48	17.04	3.21	0.06	1.20	0.95	2.17	0.41	0.16	0.29	-0.06	0.14	48.94
LG-207	4119	5600722	28061	25.87	17.15	2.23	0.07	0.82	0.65	1.40	0.26	0.18	0.15	-0.04	0.11	51.16
LG-207	4120	5600723	28064	33.12	12.07	2.13	0.15	0.68	0.63	1.26	0.21	0.23	0.15	-0.03	0.12	49.28
LG-207	4121	5600724	28065	26.38	27.27	3.69	0.12	1.98	1.41	2.11	0.37	0.37	0.20	-0.06	0.03	36.12
LG-207	4122	5600725	28067	26.64	41.55	3.99	0.10	2.88	1.19	2.31	0.42	0.28	0.17	-0.06	0.00	20.56
LG-207	4123	5600726	28068	27.15	23.71	3.25	0.23	1.23	1.41	1.18	0.33	0.30	0.28	-0.07	0.06	40.95
LG-207	4124	5600727	28070	31.70	18.07	3.04	0.23	0.95	1.17	0.88	0.28	0.14	0.18	-0.07	0.08	43.34
LG-207	4128	5600728	28075	32.82	30.60	3.85	0.16	1.40	1.77	0.95	0.24	0.27	0.20	-0.08	0.04	27.77
LG-207	4129	5600729	28077	34.54	31.04	3.89	0.30	1.44	1.65	0.93	0.22	0.49	0.17	-0.08	0.02	25.40

Hole	Tag GMG	Mason Graphite Sample n°	Tag Accurassay	Fe_2O_3 %	SiO_2 %	Al_2O_3 %	Na_2O %	MgO %	K_2O %	CaO %	P_2O_5 %	MnO %	TiO_2 %	Cr_2O_3 %	V_2O_5 %	LOI %
LG-207	4130	5600730	28078	32.67	33.60	4.42	0.27	1.85	1.71	0.96	0.24	0.40	0.17	-0.08	0.02	23.76
LG-207	4131	5600731	28080	32.90	36.90	4.07	0.23	2.23	1.11	1.32	0.35	0.42	0.17	-0.08	0.01	20.36
LG-422	4132	E5615308	28081	32.11	16.47	2.15	0.08	0.90	0.59	1.27	0.28	0.32	0.16	-0.06	0.09	45.63
LG-422	4133	E5615309	28084	43.35	11.34	1.57	0.07	0.60	0.24	1.29	0.17	0.49	0.12	-0.07	0.09	40.76
LG-422	4134	E5615310	28085	45.28	13.66	1.74	0.00	0.77	0.41	1.21	0.21	0.40	0.11	-0.07	0.07	36.20
LG-422	4135	E5615311	28087	21.99	48.79	4.67	0.03	5.59	1.05	3.76	0.40	0.53	0.19	-0.06	-0.04	13.10
LG-422	4136	E5615312	28088	25.56	42.57	4.33	0.10	2.97	1.47	2.23	0.43	0.28	0.19	-0.09	-0.01	19.96
LG-422	4137	E5615313	28090	25.24	43.09	4.63	0.07	2.53	1.78	1.70	0.43	0.21	0.18	-0.09	-0.01	20.24
LG-422	4138	E5615314	28092	31.09	37.00	4.09	0.08	2.88	1.23	2.36	0.37	0.67	0.17	-0.08	0.01	20.14
LG-422	4139	E5615315	28093	27.05	34.87	4.68	0.05	2.56	2.13	2.56	0.36	0.30	0.21	-0.09	0.01	25.31
LG-422	4143	E5615316	28098	26.57	33.23	3.28	0.09	3.06	0.50	2.83	0.47	0.43	0.14	-0.08	0.01	29.46
LG-422	4144	E5615317	28100	33.12	33.01	3.59	0.02	2.17	1.43	2.23	0.38	0.34	0.15	-0.08	0.02	23.63
LG-422	4145	E5615318	28101	25.23	36.65	3.55	0.03	2.64	1.36	2.49	0.43	0.21	0.15	-0.05	0.00	27.32
LG-422	4146	E5615319	28104	26.32	41.22	4.21	0.12	2.98	1.20	2.16	0.38	0.79	0.17	-0.08	0.02	20.51
LG-422	4147	E5615321	28105	39.25	23.46	3.90	0.13	0.75	2.05	1.31	0.29	0.41	0.16	-0.07	0.03	28.34

Graphitic Carbon

The graphitic carbon comparison between the Accurassay results of the pulp 1 (37 samples, witness cores) and the values obtained from the previous laboratories (samples taken from the original cores) show a quite good correlation except for two samples (4105 and 4111) that display a difference of around 5% Cg (Figure 12-5). For the pulp 2 (18 samples) taken also from the witness cores the values of Accurassay show a good correlation and the maximum difference is about 3.3% Cg for sample 4132 (Figure 12-6). The difference between samples taken from the original cores and those taken from the witness cores (for the same intervals) can be explained by the heterogeneity and the orientation of the mineral banding within the cores. These differences can also be induced by the core cutting when the mineralized zones are not cut equally.

The sign test (Figure 12-7) on the graphitic carbon values obtained from Accurassay (pulp 1) and previous laboratories shows that there is a good correlation between the two sets of analyses and no bias was detected.

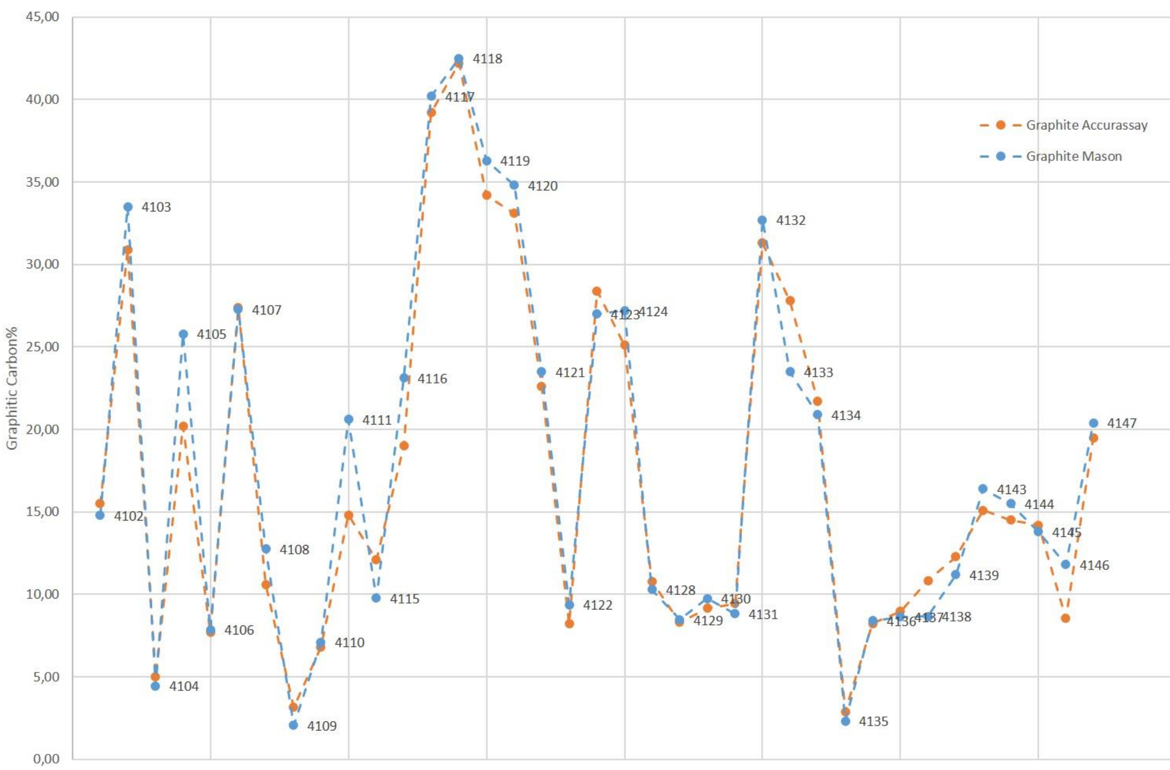


Figure 12-5 - % Cg Comparison between Accurassay (pulp 1) and Previous Laboratories

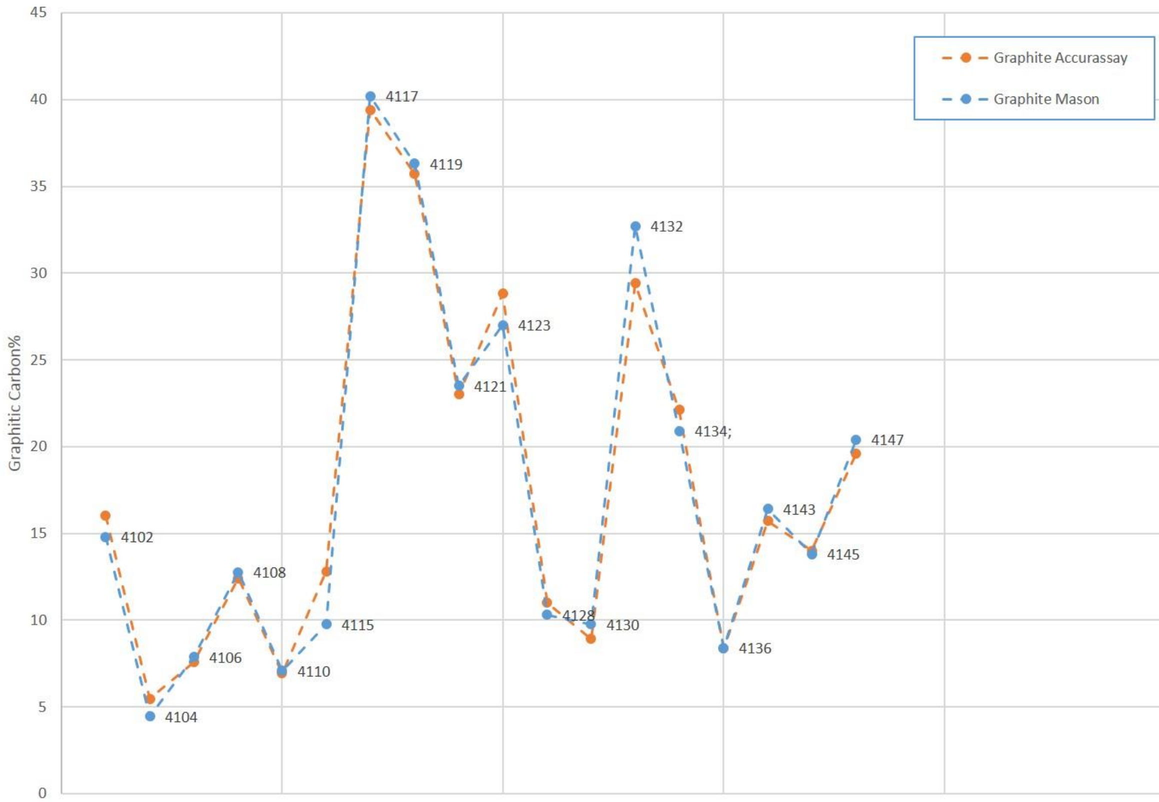


Figure 12-6 - % Cg Correlation between Accurassay (pulp 2) and Previous Laboratories

15	number of negative values	15	somme of indicators signs
22	number of positive values		
0	null		
37	pairs number	37	pairs number
		18,5	pairs number/2
		0,335601	inferior limit
		0,664399	superior limit
		0,405405	sign test value

Figure 12-7 - Sign Test of % Cg from Accurassay (Pulp 1) and Previous Laboratories

Total Carbon

The total carbon results obtained from the Accurassay laboratory are quite similar to the values obtained from previous laboratories with a maximum difference of 3.65% for sample 4146 (Figure 12-8). The Correlation between total carbon and the graphitic carbon is quite linear (Figure 12-9) with a correlation coefficient of 0.94 (Y (graphitic carbon) = 0.94 X (total carbon) + 0.328). This correlation allows us to conclude that the total carbon analysis can be used by Mason Graphite as an indicator for graphitic carbon concentrations at the property of Lac Guéret.

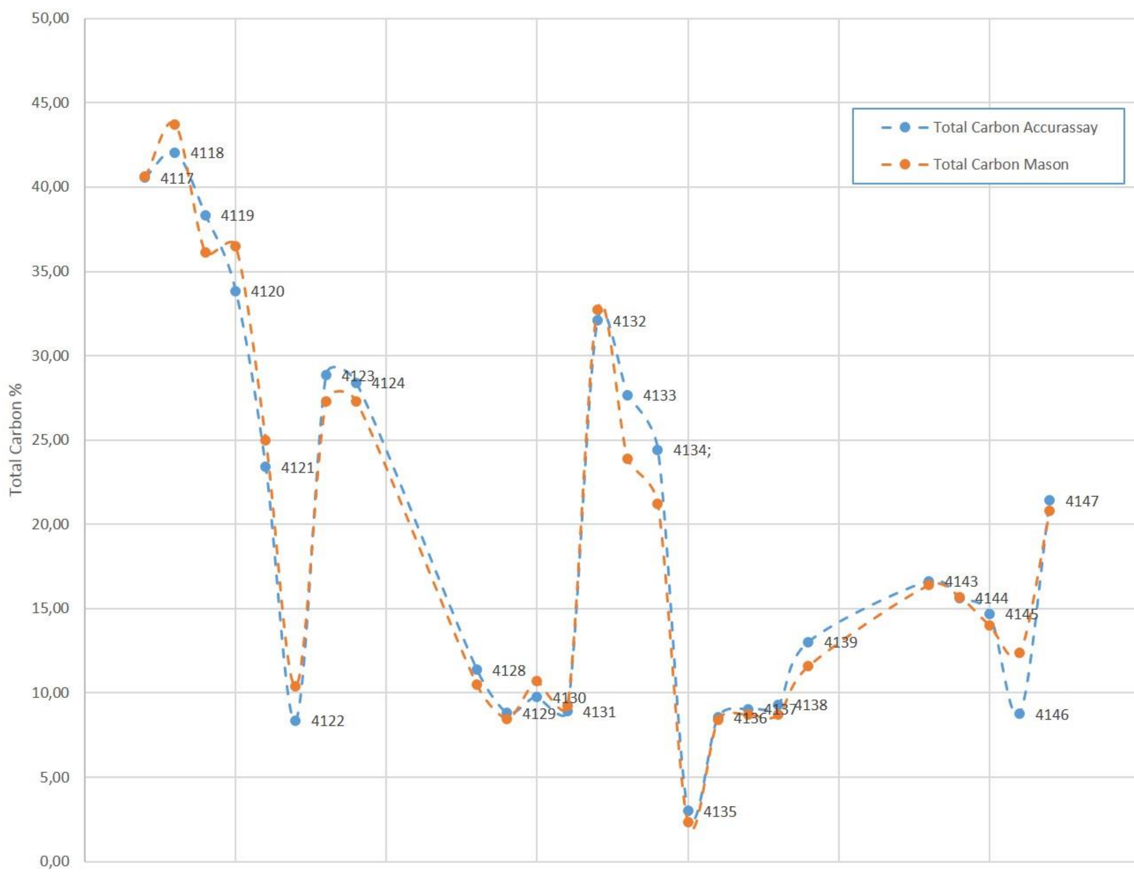


Figure 12-8 - Correlation between % Ct from Accurassay and Previous Laboratories

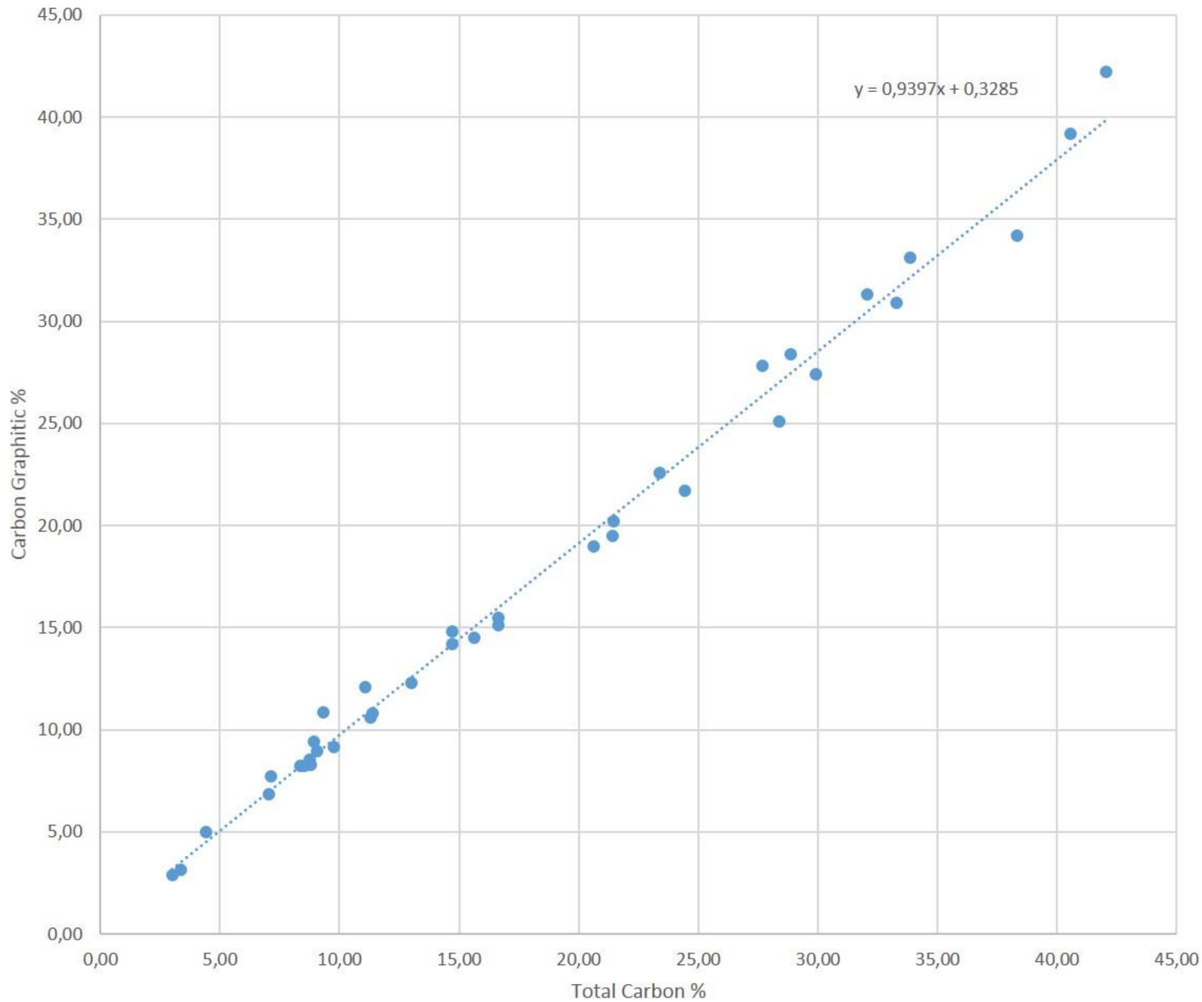


Figure 12-9 - Graphitic Carbon % versus Total Carbon % Results from Accurassay

Total Sulphur

The total sulphur results obtained from samples show a minimum of 2.05% and a maximum of 16.6% with a weighted average of 9.24% (see Table 12-2). No clear correlation between the carbon content and the sulphur content could be established.

GMG is satisfied with the results of the independent sampling program and no anomalous values were detected.

13. MINERAL PROCESSING AND METALLURGICAL TESTING

13.1 HISTORICAL TESTWORK

This testwork historical overview originates from the 2013 NI 43-101 Technical Report. This report summarizes the results presented in the report issued by SGS on May 21, 2013.

13.1.1 TESTWORK BEFORE PEA

PRA reported to Quinto in 2005 on the Lac Guéret deposit, that there was an "absence of deleterious non-flake graphite" and that the testwork "demonstrated the ease of production of a high value material".

13.1.2 PEA STUDY TESTWORK

A metallurgical testwork program was developed by Met-Chem in the early stages of the PEA study, designed to characterize the Lac Guéret Graphite Project deposit. The objective of the testwork was to evaluate the ore's amenability to processing via flotation, in order to produce a saleable graphite concentrate that would allow for the economic development of the Lac Guéret Graphite Project.

The testwork results were then used in defining a conceptual process flowsheet for the PEA study. The SGS Mineral Services facility in Lakefield, Ontario conducted mineralogical characterization and preliminary metallurgical tests, including comminution, magnetic separation, heavy liquid separation, flash and conventional flotation tests, in order to develop the optimal flowsheet.

The sample used for testing at SGS consisted of four channel samples taken from rocky outcrops. It was concluded that the Lac Guéret mineralization does not require complex processing for successful concentration and that polishing grinding would ensure that the final concentrate grade is maximized. Overall, the test program was successful in demonstrating that a good graphite grade can be achieved while maximizing graphite recovery and graphite flake size.

Table 13-1 lists the preliminary testwork results, classified according to the saleable concentrate four basic size classes: +50 mesh (300 µm), -50+80 mesh (180 µm), +150 mesh (105 µm) and -150 mesh (-105 µm). The sample used for testing had a head carbon grade of 22.7% and the total weight recovery for the tested flowsheet was of 22.8%.

Table 13-1 - Preliminary Testwork Results

Concentrate Particle Size	Weight (%)	Assay (% Ct)	Distribution (% Ct)
+50 mesh	18.6	96.9	19.0
-50 to +80 mesh	14.1	96.2	14.4
-80 to +150 mesh	13.1	96.2	13.3
-150 mesh	54.2	91.7	53.3
Total Concentrate	**100.0**	**93.7**	**100.0**

13.2 FEASIBILITY STUDY METALLURGICAL TESTWORK

A comprehensive metallurgical testing program was defined and supervised by a team composed of Soutex and Mason Graphite personnel. The program started at the beginning of 2014 and continued until the middle of 2015. The results were analyzed and reviewed in continuous by the team and the test program was oriented accordingly.

The tests were conducted by COREM; additional testing was performed at URSTM and SGS as part of this Feasibility Study.

Testing involved comminution, graphite recovery and sulphur removal characterization sufficient to provide a process flowsheet and criteria required for detailed plant design. Testing was conducted according to the best industry practice.

Several drill core samples as well as two blast samples were selected throughout the Lac Guéret mineralization zone and tested at COREM in Québec City, Québec. The channel samples used in the PEA work were also reused.

The testwork program consisted of the following:

- Log and sort samples to provide test composites;
- Perform bench-scale comminution testwork:
    - JK Drop Weight Tests and SMC Tests;
    - SAGDesign tests;
    - Bond ball mill grindability tests;
    - UCS tests;
    - Bond abrasion tests.
- Perform bench-scale concentration testwork;
- Perform pilot-scale concentration testwork.

13.2.1 SAMPLE SELECTION AND PREPARATION

13.2.1.1 GENERAL

The Lac Guéret deposit was classified according to the average graphitic carbon grade throughout the ore body. Three ore Units were defined (U1, U2 and U3), as described in Table 13-2.

Table 13-2 - Ore Units Definition

Ore Unit	Graphite Grade
U1	5% < Cg < 10%
U2	10% < Cg < 25%
U3	Cg > 25%

13.2.1.2 SAMPLE SELECTION

13.2.1.2.1 BENCH-SCALE COMMINUTION TESTWORK

A grindability study was performed by SGS on 11 samples from the Lac Guéret deposit.

Two bulk samples were selected for testing (see Table 13-3). These samples originated from two surface blasts taken mid-July 2014. The samples were classified as belonging to ore Units U12 (U1 and U2 mix) and U3, according to their average graphite grade. A portion of these samples was also sent to COREM for independent grindability testing.

Moreover, 12 variability samples were collected from four drillholes (see Table 13-3) located as shown in Figure 13-1. Each sample was classified as ore Unit U1, U2 or U3 according to its average graphite grade. The 12 samples were selected to try to quantify the variability of the mechanical behaviour according to varying graphite grades and location across the deposit; they are not necessarily representative of the ore units. The details of each variability sample are shown in Table 13-4. Soutex selected nine of the 12 variability samples to be sent to SGS for grindability testing. The selected samples are highlighted in grey in Table 13-4. The three remaining samples were stored at SGS.

Table 13-3 - Bench-Scale Comminution Sample Definition (Grindability Tests)

Sample ID – Unit	Testwork Sample ID	Type	Origin	Test Facility
B1 – U12	LLG-SGS-DWT-U12 / Lot 2	Blast sample	Geolocation southwest	SGS / COREM
B2 – U3	LLG-SGS-DWT-U3 / Lot 1	Blast sample	Geolocation northeast	SGS / COREM
D1 – U1	SMC 1	Drill Core Sample	Drillhole LG-413	SGS
D2 – U1	SMC 2	Drill Core Sample	Drillhole LG-414	SGS
D3 – U1	SMC 3	Drill Core Sample	Drillhole LG-421	SGS
D4 – U1	SMC 4	Drill Core Sample	Drillhole LG-426	SGS
D5 – U2	SMC 5	Drill Core Sample	Drillhole LG-413	SGS
D6 – U2	SMC 6	Drill Core Sample	Drillhole LG-414	SGS
D7 – U2	SMC 7	Drill Core Sample	Drillhole LG-421	SGS
D8 – U2	SMC 8	Drill Core Sample	Drillhole LG-426	SGS
D9 – U3	SMC 9	Drill Core Sample	Drillhole LG-413	SGS
D10 – U3	SMC 10	Drill Core Sample	Drillhole LG-414	SGS
D11 – U3	SMC 11	Drill Core Sample	Drillhole LG-421	SGS
D12 – U3	SMC 12	Drill Core Sample	Drillhole LG-426	SGS

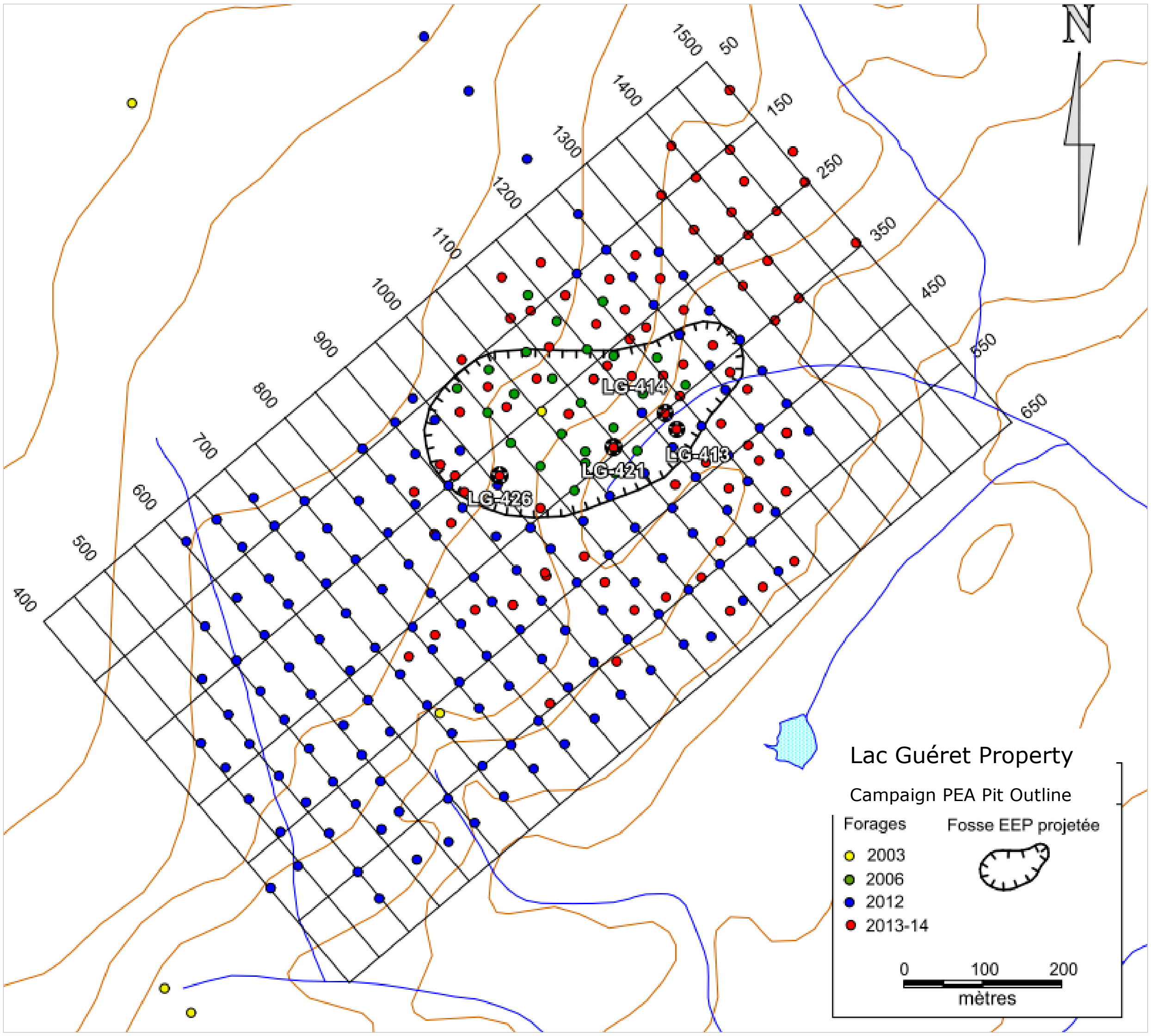


Figure 13-1 - Location of Selected Sample Drill Cores – Comminution Testwork

Table 13-4 - Bench-scale Comminution Drill Core Samples Details [1]

Drillhole	LG-413		
Sample ID - Unit	**D1 – U1**	**D5 – U2**	**D9 – U3**
Depth Interval (m)	72.8 – 73.3	29.0 – 29.5	34.3 – 34.8
	74.0 – 74.5	30.4 – 30.9	36.0 – 36.5
	91.5 – 92.0	31.8 – 32.3	37.5 – 38.0
	93.0 – 93.5	33.0 – 33.5	39.0 – 39.5
	94.5 – 95.0	54.0 – 54.5	40.5 – 41.0
	95.5 – 96.0	55.5 – 56.0	41.8 – 72.3
Drillhole	**LG-414**		
Sample ID - Unit	**D2 – U1**	**D6 – U2**	**D10 – U3**
Depth Interval (m)	47.6 – 48.1	9.7 – 10.2	22.0 – 22.5
	50.7 – 51.2	11.0 – 11.5	23.5 – 24.0
	52.5 – 53.0	12.7 – 13.2	25.0 – 25.5
	55.8 – 56.3	40.0 – 40.5	27.0 – 27.5
	57.0 – 57.5	41.5 – 42.0	28.5 – 29.0
	58.5 – 59.0	42.5 – 43.0	30.0 – 30.5
Drillhole	**LG-421**		
Sample ID - Unit	**D3 – U1**	**D7 – U2**	**D12 – U3**
Depth Interval (m)	22.0 – 23.0	35.5 – 36.0	49.5 – 50.0
	24.0 – 25.0	37.0 – 37.5	51.0 – 51.5
	30.0 – 30.5	38.5 – 39.0	52.5 – 53.0
	31.5 – 32.0	39.9 – 40.4	54.0 – 54.5
		41.0 – 41.5	55.5 – 56.0
		43.1 – 43.6	57.0 – 57.5
Drillhole	**LG-426**		
Sample ID - Unit	**D4 – U1**	**D8 – U2**	**D12 – U3**
Depth Interval (m)	50.9 – 51.4	33.5 – 34.0	64.4 – 64.9
	52.4 – 52.9	35.0 – 35.5	65.9 – 66.4
	53.9 – 54.4	36.5 – 37.0	67.4 – 67.9
	55.2 – 55.7	38.0 – 38.5	68.9 – 69.4
	56.7 – 57.2	39.5 – 40.0	70.4 - 70.9
	58.2 – 58.7	41.0 – 41.5	71.9 – 72.4

[1] Highlighted samples were selected by Soutex for testing.

Crushability and abrasion tests were performed by SGS on rocks selected from the two surface blasts taken mid-July 2014 (details on samples provided in Section 13.2.1.2.3). Twelve rock pieces, classified as ore Units U1, U2 or U3 (four rocks per ore Unit), were selected for testing because they were readily available at the appropriate dimension (see Table 13-5).

Table 13-5 - Bench-Scale Comminution Sample Definition (Crushability & Abrasion Tests)

Sample ID Unit	Testwork Sample ID	Type	Origin
B3 – U1	LLG-SGS-U1	Rocks (4) from Blast Sample B1	Geolocation southwest
B4 – U2	LLG-SGS-U2	Rocks (4) from Blast Sample B1	Geolocation southwest
B5 – U3	LLG-SGS-U3	Rocks (4) from Blast Sample B2	Geolocation northeast

13.2.1.2.2 BENCH-SCALE CONCENTRATION TESTWORK

COREM was commissioned to perform a two-phase bench-scale concentration study. The objectives of each phase are described in Section 13.2.4. The study was performed with five samples from the Lac Guéret deposit.

Two channel samples were selected for testing (see Table 13-6). These samples were taken from Batch #1 and Batch #2 of the 2012 sample sent to SGS during the PEA study (see Section 13.1.2).

Three variability samples were also collected from nine drillholes (see Table 13-7), located as shown in Figure 13-2. These core samples were classified as ore Unit U1, U2 or U3, according to their average graphite grade. The core samples were selected across the deposit to be representative of each ore unit. The details of each variability sample are shown in Figure 13-2.

Table 13-6 - Bench-Scale Concentration Sample Definition

Sample ID Unit [1]	Testwork Sample ID	Type	Origin
C1	SGS 1	Channel Sample	SGS PEA Test Sample Batch #1
C2	SGS 2	Channel Sample	SGS PEA Test Sample Batch #2
D13 – U1	U1	Drill Core Sample	Drillhole Composite
D14 – U2	U2	Drill Core Sample	Drillhole Composite
D15 – U3	U3	Drill Core Sample	Drillhole Composite

[1] Nomenclature used in COREM testwork report T1552

Table 13-7 - Bench-Scale Concentration Drill Core Samples Details

Drillhole	Depth Interval (m)		
Sample ID - Unit	**D13 – U1**	**D14 – U2**	**D15 – U3**
LG-044	13.5 – 189.0	10.0 – 178.5	61.5 – 160.5
LG-046	16.7 – 192.9	29.8 – 141.1	32.3 – 139.0
LG-058	35.1 – 134.4	20.9 – 141.0	48.3 – 132.0
LG-079	47.8 – 140.5	22.9 – 118.0	9.0 – 164.0
LG-112	33.0 – 150.0	3.9 – 142.5	12.0 – 38.3
LG-207	12.0 – 139.0	13.5 – 138.0	33.0 – 112.5
LG-215	5.0 – 212.0	9.5 – 213.5	11.0 – 215.0
LG-235	75.0 – 160.5	74.3 – 145.1	94.5 – 220.0
LG-339	108.0 – 181.5	88.3 – 135.0	94.0 – 120.0

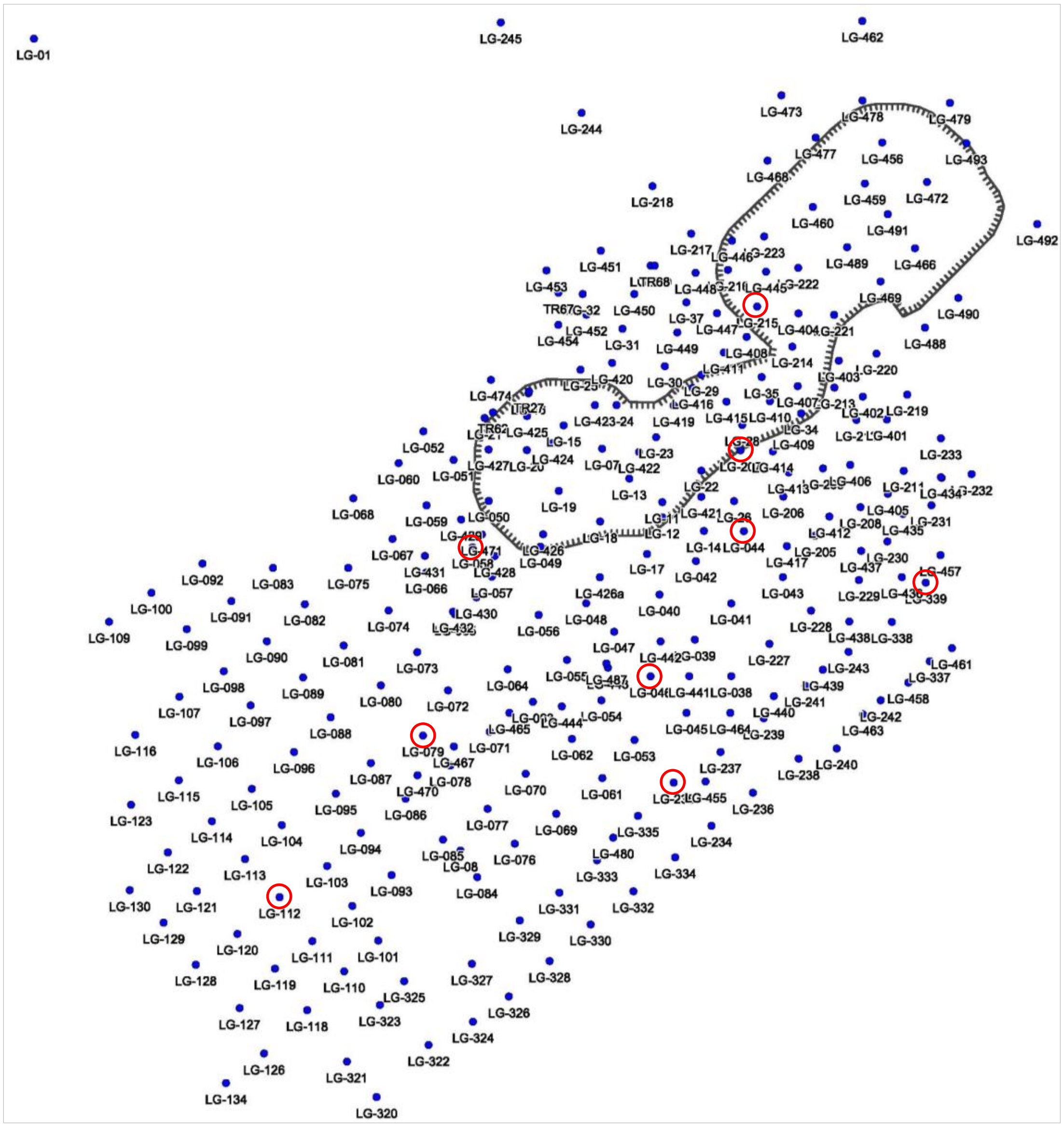


Figure 13-2 - Location of Selected Sample Drill Cores – Concentration Testwork

13.2.1.2.3 PILOT-SCALE CONCENTRATION TESTWORK

Pilot testing was performed by COREM on two bulk samples from the Lac Guéret deposit (see Table 13-8). These samples originated from two surface blasts taken mid-July 2014, from the locations depicted in Figure 13-3. The bulk samples were classified as ore Units U12 and U3, according to their average graphite grade.

Bench-scale comminution testwork was also performed on these samples by SGS and COREM (see Section 13.2.1.2).

Table 13-8 - Pilot-Scale Concentration Sample Definition

Sample ID Unit	Type	Origin
B1 – U12	Blast Sample	Geolocation southwest
B2 – U3	Blast Sample	Geolocation northeast

Figure 13-3 - Location of Selected Samples – Pilot Testwork

13.2.1.3 SAMPLE PREPARATION

13.2.1.3.1 BENCH-SCALE COMMINUTION TESTWORK

The two blast bulk samples B1-U12 and B2-U3 were subjected to the JK drop-weight test (DWT), the SAG mill comminution (SMC) test, and the Bond ball mill grindability test at SGS. Sample preparation was as follows (see left side of Figure 13-4):

- Crush 90 kg to 2-½" for DWT and SMC tests;
- Crush 50 kg of 2-½" material to ½";
- Stage crush 8 kg of 2-½" material to minus 6 mesh for BWI tests.

The nine drill core variability samples D3-U1 and D5-U2 to D12-U3 were subjected to the SMC test and the Bond ball mill grindability test at SGS. Sample preparation was as follows (see right side of Figure 13-4):

- Prepare using the cut core method for SMC testing;
- Stage-crush remaining SMC material and unused material to minus 6 mesh for Bond ball mill grindability tests.

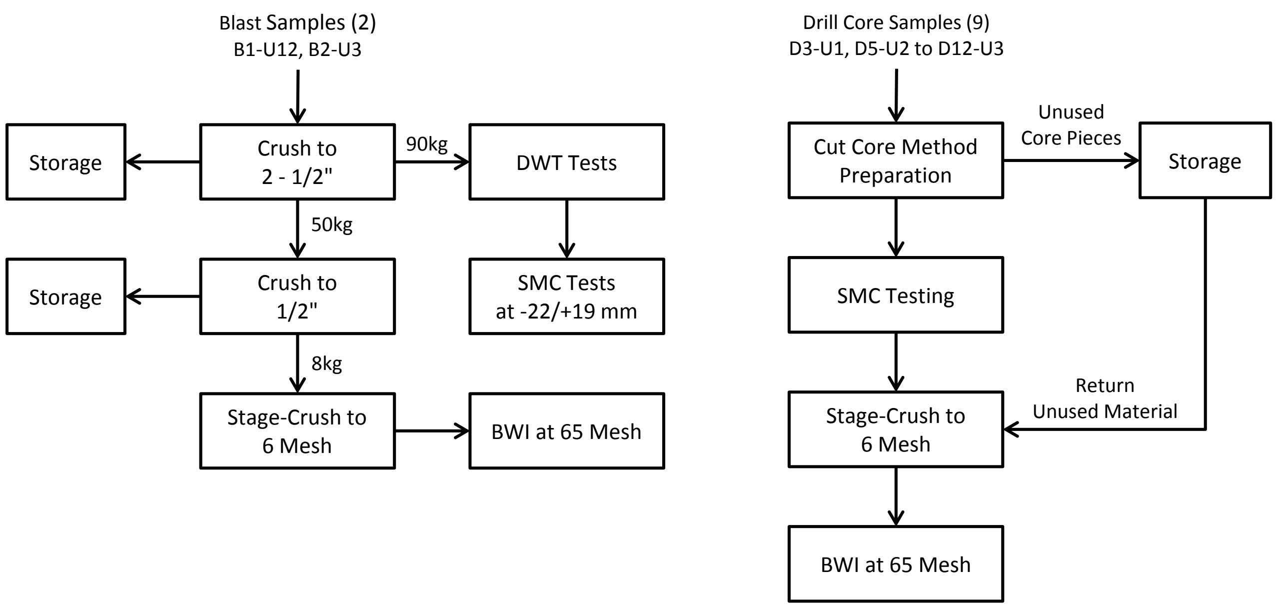


Figure 13-4 - Sample Preparation for Grindability Tests at SGS

The two blast bulk samples B1-U12 and B2-U3 were also subjected to the SAGDesign grindability test at COREM. Sample preparation was as follows (see Figure 13-5):

- Crush 4.5 L to 1” for SAGDesign tests;
- Stage-crush SAG ground ore (screen oversize material) to minus 6 mesh for Bond tests.

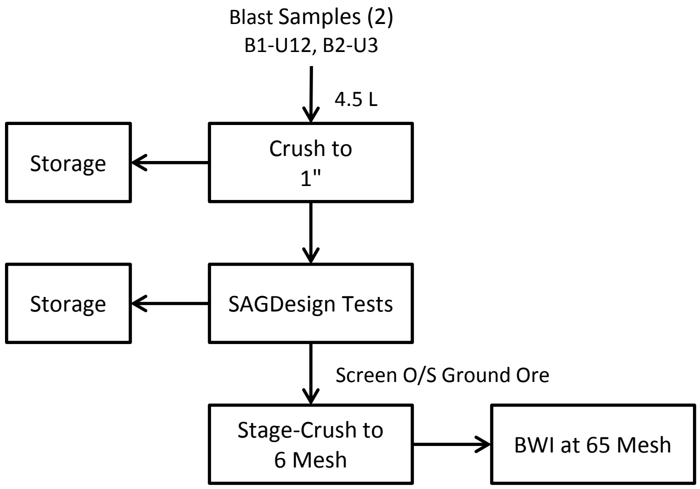


Figure 13-5 - Sample Preparation for Grindability Tests at COREM

Finally, rock samples B3-U1, B4-U2 and B5-U3 from blast bulk samples B1-U12 and B2-U3 were subjected to the unconfined compression strength (UCS) test and Bond abrasion test at SGS. Sample preparation was as follows (see Figure 13-6):

- Drill a cylindrical sample from each rock, with a 2.75 length-diameter ratio, for UCS testing;
- When the UCS test is completed, blend rocks of the same ore unit to form three composites;
- Crush each composite to the appropriate grind size for Bond abrasion testing.

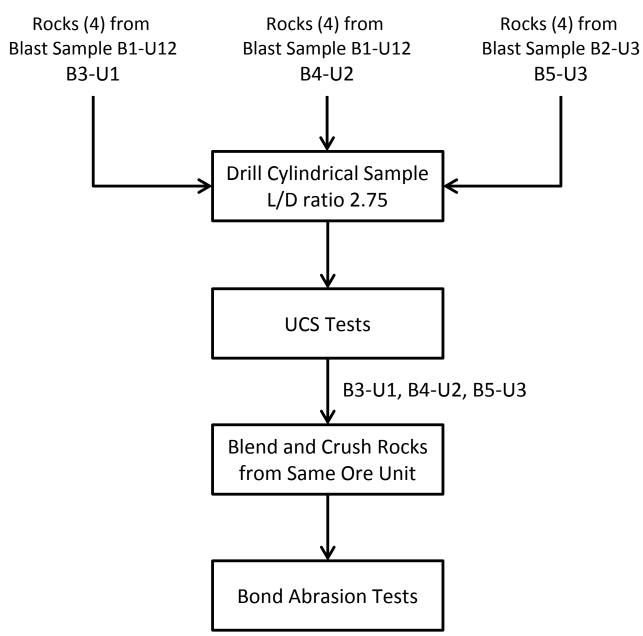


Figure 13-6 - Sample Preparation for Crushability and Abrasion Tests at SGS

13.2.1.3.2 BENCH-SCALE CONCENTRATION TESTWORK

The two channel samples C1-U1 and C2-U2 served during Phase 1 concentration tests at COREM. Sample preparation was as follows (see left side of Figure 13-7):

- Stage crush C1 U1 and C2 U2 to minus 3.35 mm, independently;
- Mix both samples in 50/50 proportions and homogenize: yields sample C-U12;
- Split C-U12 material into 2 kg charges for concentration tests;
- Send 50 kg of C-U12 sample for independent testing at URSTM.

The three drill core variability samples' D13-U1, D14-U2 and D15-U3 served during Phases 1 and 2 of testing at COREM. Sample preparation was as follows (see right side of Figure 13-7):

- Stage crush each sample to minus 3.35 mm;
- Homogenize samples and create a composite from D13-U1, D14-U2 and D15-U3 for Phase 2 testing: yields composite D-U123 in the proportions 65% U3, 25% U2 and 10% U1;
- Split remaining samples into 2 kg charges for Phase 1 and Phase 2 concentration tests;
- Send 50 kg of each sample for independent testing at URSTM.

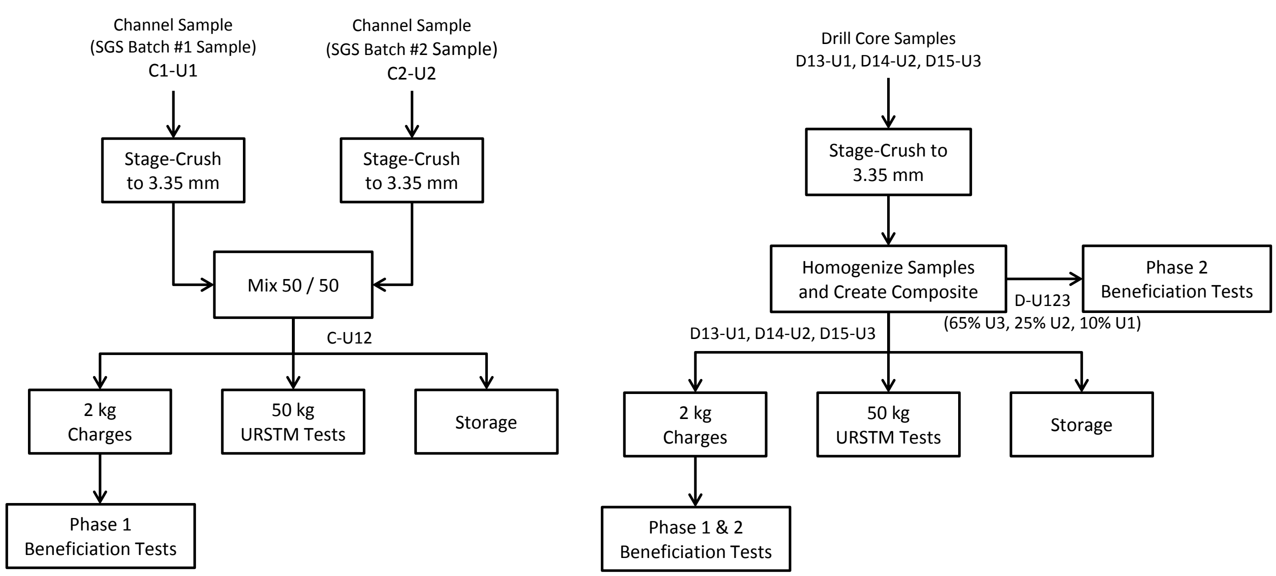


Figure 13-7 - Sample Preparation for Concentration Tests at COREM

13.2.1.3.3 PILOT-SCALE CONCENTRATION TESTWORK

A portion of the two blast bulk samples B1-U12 and B2-U3 served as a test sample for the pilot plant at COREM. Sample preparation was as follows (see Figure 13-8):

- Prepare 10 bags each of uncrushed samples B1-U12 and B2-U3 on-site and store at COREM;
- Mix samples B1-U12 and B2-U3, then crush to minus 3/8" on-site: yields 58 bags of sample B-U123 and 4 bags of crusher rejects;
- Crush the 58 B-U123 bags to minus 1.5 mm at COREM;
- Extract 2 kg from 10 bags for carbon grade chemical analyses;
- Mix and homogenize the 28 bags with P_{80} smaller than 1mm or larger than 2.1 mm in order to target a 1.5 mm grind size.

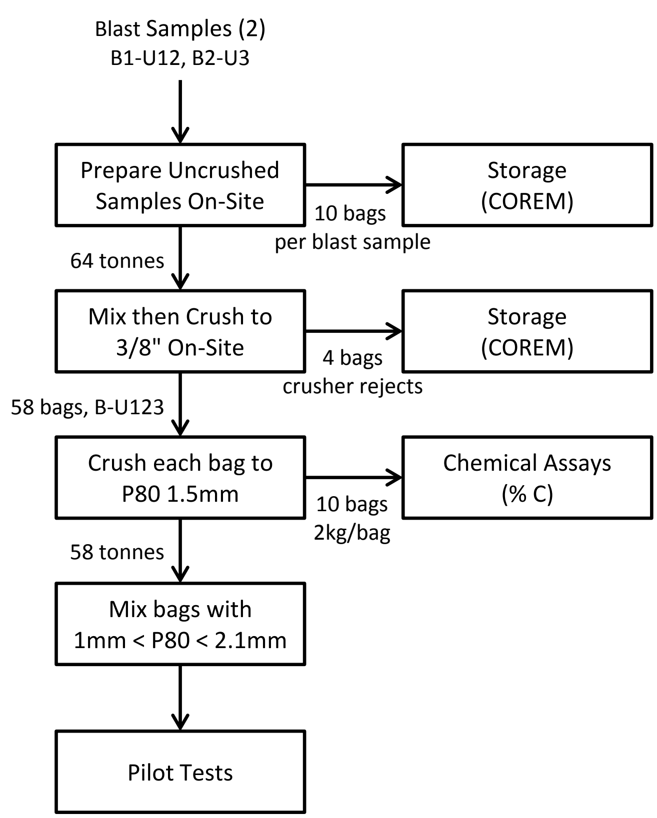


Figure 13-8 - Sample Preparation for Pilot Tests

13.2.2 HEAD ASSAY ANALYSES

All chemical analyses were carried out at either COREM, SGS or AGAT.

Three analysis methods were employed to measure the carbon grades during pilot testing. The methods utilized are summarized in Table 13-9. Carbon grades are underestimated when the loss on ignition method (LOI) is utilized.

Table 13-9 - Carbon Analysis Method Selected Based on Total Carbon Grades

Criteria	Analysis
Ct ≤ 1%	Graphitic carbon analysis
1% ≤ Ct ≤ 40%	LECO total carbon analysis
Ct > 40%	LOI total carbon analysis [1]

All other analyses were performed via x-ray fluorescence (XRF). Mineral Liberation Analysis (MLA) was also used to identify the mineral species present in the samples.

The head assays for all samples tested are summarized in Table 13-10 and Table 13-11. The mineralogical size fraction analyses for the samples which served during bench-scale and pilot-scale concentration testwork are shown in Table 13-12 and

Table 13-13, respectively.

[1] Method underestimates carbon as graphite grade

Table 13-10 - Graphite Analyses – Bench-Scale Comminution Testwork

Sample ID – Unit	% Cg
D1 – U1	6.8
D2 – U1	8.5
D3 – U1	6.6
D4 – U1	8.5
D5 – U2	14.0
D6 – U2	15.3
D7 – U2	15.1
D8 – U2	15.0
D9 – U3	35.2
D10 – U3	33.2
D11 – U3	41.9
D12 – U3	39.0
B1 – U12	23.9
B2 – U3	39.4
B3 – U1	2.8
B4 – U2	28.4
B5 – U3	39.2

Table 13-11 - Head Samples Chemical Analyses – Bench-Scale and Pilot-Scale Testwork

Sample ID - Unit	Assays (%)													
	SiO_2	Al_2O_3	MgO	CaO	K_2O	TiO_2	MnO	P_2O_5	Cr	Fe	Ni	Zn	S tot.	Cg	Ct
C – U12	41.0	5.80	1.78	2.10	1.75	0.40	0.12	0.34	0.01	12.5	0.02	0.13	9.44	22.0	22.7
D13 – U1	49.6	8.39	3.28	3.32	2.21	0.54	0.15	0.28	0.04	15.3	0.02	0.11	8.86	7.91	8.10
D14 – U2	41.7	7.06	2.82	3.75	1.87	0.55	0.11	0.32	0.07	15.5	0.03	0.18	8.95	17.1	17.6
D15 – U3	26.8	4.60	1.52	2.34	1.23	0.42	0.14	0.39	0.03	17.3	0.03	0.17	10.5	34.5	34.9
B – U123	29.3	4.42	1.46	1.90	1.37	0.34	0.24	0.33	0.00	19.4	0.00	0.26	11.8	N/A	29.2

Table 13-12 - Head Sample Mineralogical Size Fraction Analysis - Bench-Scale Testwork

PSD (mesh)	Weight (%)	Cg (%)	Silicates (%)							Minor Minerals (%)		Sulphurs (%)	
			Quartz	Plagioclase	Orthoclase	Pyroxene	Biotite	Muscovite	Chlorite	Apatite	Calcite	Pyrite	Pyrrhotite
Sample D13 - U1													
+35	41.2	6.7	34.0	13.5	14.6	3.1	5.7	2.3	2.0	0.3	0.3	1.5	15.4
-35 to +50	14.6	10.9	32.4	14.5	7.5	4.5	9.6	1.3	0.5	0.3	1.2	2.6	14.2
-50 to +80	12.8	10.6	32.0	12.5	8.1	3.6	11.3	1.5	0.8	0.4	0.7	2.1	15.4
-80 to +100	6.3	9.6	30.9	11.7	8.6	4.5	11.0	1.7	0.9	0.5	0.6	1.4	17.1
-100 to +150	6.3	8.8	29.1	11.3	8.8	5.0	8.6	1.6	1.1	1.0	0.8	1.7	20.4
-150 to +200	5.7	7.7	26.7	11.6	8.7	5.9	8.9	1.5	1.3	1.4	0.8	1.8	21.4
-200	13.1	4.6	21.0	12.3	9.5	6.2	7.7	2.2	1.4	1.2	1.4	2.3	27.8
Head Sample (Measured)	-	8.2	26.9	13.2	7.8	4.5	8.2	2.5	1.2	0.7	0.7	2.0	22.8
Head Sample (Calculated)	100.0	7.9	30.9	13.0	11.0	4.1	7.9	1.9	1.4	0.6	0.7	1.9	17.6

PSD (mesh)	Weight (%)	Cg (%)	Silicates (%)							Minor Minerals (%)		Sulphurs (%)	
			Quartz	Plagioclase	Orthoclase	Pyroxene	Biotite	Muscovite	Chlorite	Apatite	Calcite	Pyrite	Pyrrhotite
Sample D14 - U2													
+35	46.6	16.8	28.0	12.0	8.2	6.3	5.2	2.8	0.6	0.5	1.3	2.6	14.8
-35 to +50	12.6	21.7	23.2	10.4	8.6	4.0	5.9	1.7	0.4	0.2	0.8	3.5	17.8
-50 to +80	12.6	20.0	26.0	9.5	8.1	5.8	7.4	1.6	0.4	0.2	0.6	3.1	16.2
-80 to +100	5.3	18.6	26.1	9.9	8.6	5.5	7.9	1.7	0.5	0.4	0.7	2.4	16.1
-100 to +150	6.3	17.3	23.1	10.5	8.0	6.7	7.0	1.7	0.7	1.2	0.6	2.0	19.3
-150 to +200	4.7	16.5	21.6	10.2	8.5	7.9	8.3	2.4	0.9	1.1	1.0	2.1	17.6
-200	11.8	10.0	16.5	12.1	9.3	8.5	7.1	3.0	1.0	1.5	0.9	2.6	25.0
Head Sample - Measured	-	17.5	21.5	9.5	9.2	5.9	6.4	1.6	0.8	0.9	0.7	3.9	20.6
Head Sample - Calculated	99.9	17.1	25.0	11.2	8.4	6.3	6.2	2.4	0.6	0.6	1.0	2.7	17.0
Sample D15 - U3													
+35	59.1	33.9	12.7	5.4	3.6	3.9	4.4	1.1	0.4	0.8	0.2	3.9	28.9
-35 to +50	11.1	41.9	14.7	6.0	4.7	2.3	4.1	2.5	0.4	0.5	0.0	2.2	19.4
-50 to +80	8.0	38.3	14.5	5.4	5.4	3.0	4.9	2.3	0.4	0.5	0.1	2.8	21.2
-80 to +100	3.9	38.4	15.3	5.3	4.8	4.1	5.0	1.8	0.3	0.5	0.1	2.3	20.6
-100 to +150	4.0	34.7	16.0	5.9	4.4	4.2	5.5	2.4	0.4	0.9	0.2	2.9	20.7
-150 to +200	3.8	32.9	16.1	5.8	5.2	4.7	5.7	2.4	0.6	1.1	0.2	2.3	20.9
-200	10.1	26.3	12.3	7.0	4.4	4.6	4.9	2.9	0.5	1.3	0.2	2.8	30.6
Head Sample - Measured	-	34.2	16.8	5.4	6.3	3.4	4.2	2.4	0.4	0.7	0.1	2.6	22.1
Head Sample - Calculated	100.0	34.5	13.4	5.7	4.1	3.8	4.6	1.7	0.4	0.8	0.2	3.3	26.4

Table 13-13 - Head Sample Mineralogical Size Fraction Analysis - Pilot-Scale Testwork

PSD	Weight (%)	Cg (%)	S (%)	Silicates (%)								Minor Minerals (%)			Sulphurs (%)				Oxides (%)	
				Quartz	Plagioclase	Orthoclase	Muscovite	Chlorite	Biotite	Hornblende	Other	Apatite	Titanite	Zircon	Pyrite	Pyrrhotite	Pyrrhotite-S	Sphalerite	Chalcopyrite	Iron Hydroxide
Sample B - U123																				
+16	38.3	28.4	0.1	18.7	2.1	9.8	1.3	0.5	2.4	2.6	0.7	1.2	0.6	0.4	1.7	26.1	0.5	0.4	0.2	2.5
-16 to +35	22.6	29.2	0.2	16.5	2.9	7.8	1.9	0.4	2.9	1.3	1.0	0.9	0.6	0.5	3.6	25.6	0.6	0.4	0.0	3.4
-35 to +65	18.7	34.1	0.1	16.8	2.7	4.9	1.5	0.6	2.5	1.6	1.0	1.6	0.2	0.5	6.4	20.9	0.4	0.5	0.1	3.2
-65 to +150	10.4	29.8	0.1	20.3	2.7	5.2	1.6	0.7	3.3	2.1	1.4	2.0	0.6	1.1	5.3	18.4	0.3	0.6	0.1	4.3
-150 to +270	5.3	23.9	0.1	17.3	2.4	4.7	1.8	1.4	3.8	2.8	1.5	7.3	1.0	1.1	4.0	18.1	0.2	0.7	0.2	7.6
-270	4.7	20.0	0.0	13.2	2.0	3.9	1.9	2.2	4.3	3.5	1.5	13.1	1.4	1.0	2.4	17.2	0.2	0.7	0.3	11.1
Head Sample - Calculated	100.0	29.2	0.1	17.7	2.5	7.4	1.6	0.7	2.8	2.1	1.0	2.2	0.6	0.6	3.6	23.4	0.5	0.5	0.2	3.7

13.2.3 COMMINUTION TESTWORK

13.2.3.1 JK DROP-WEIGHT AND SMC TESTS

The JK drop-weight test (DWT) was performed on the two blast samples B1-U12 and B2-U3. The results are summarized in Table 13-14.

The SMC test was performed on the two blast samples (B1-U12, B2-U3) using the crushed rock method, and on the nine selected drill core samples (D3-U1, D5-U2 to D12-U3) using the cut core method from the provided half core pieces. Results are also presented in Table 13-14.

Table 13-14 - JK Drop-Weight Test and SMC Test Results

		JK Impact Breakage [1]				JK Abrasion Breakage [2]		SMC Comminution Parameters				
Sample ID - Unit	Test	A	b	A x b	Hardness Percentile	t_a (kWh/t)	Hardness Percentile	DWi (kWh/m^3)	M_{ia} (kWh/t)	M_{ih} (kWh/t)	M_{ic} (kWh/t)	SG
B1 - U12	DWT	61.1	1.70	103.9	12	0.87	18	-	-	-	-	2.82
B1 - U12	SMC	62.4	1.72	107.3	15	0.99	-	2.7	8.9	5.5	2.8	2.81
B2 - U3	DWT	66.0	1.81	119.5	9	0.19	95	-	-	-	-	2.99
B2 - U3	SMC	68.0	1.45	98.6	16	0.90	-	3.1	10.1	6.4	3.3	2.83
D3 - U1	SMC	76.2	1.51	115.1	14	0.95	-	2.9	8.5	5.3	2.7	3.14
D5 - U2	SMC	75.6	1.89	142.9	11	1.26	-	2.2	7.2	4.3	2.2	2.93
D6 - U2	SMC	77.8	1.70	132.3	12	1.11	-	2.5	7.6	4.6	2.4	3.08
D7 - U2	SMC	82.0	2.07	169.7	9	1.58	-	1.7	6.4	3.6	1.9	2.79
D8 - U2	SMC	75.0	1.21	90.8	18	0.77	-	3.5	10.3	6.7	3.5	3.03
D9 - U3	SMC	66.7	1.11	74.0	24	0.67	-	4.1	12.2	8.2	4.2	2.89
D10 - U3	SMC	69.8	1.87	130.5	12	1.15	-	2.4	7.8	4.7	2.4	2.96
D11 - U3	SMC	73.0	0.87	63.5	31	0.59	-	4.6	14.0	9.6	5.0	2.80
D12 - U3	SMC	69.2	1.62	112.1	14	1.07	-	2.6	8.9	5.4	2.8	2.72

[1] The JK resistance to impact breakage parameters, reported as part of the SMC procedure, are estimates from the DWI.

[2] The JK resistance to abrasion parameter, reported as part of the SMC procedure, is an estimate.

13.2.3.2 SAGDESIGN TESTS

The SAGDesign test was performed on the two blast samples B1-U12 and B2-U13 by COREM. The results are summarized in Table 13-15.

Table 13-15 - SAGDesign Test Results

Sample ID – Unit	SAGDesign (kWh/t)	RWi (kWh/t)	BWi (kWh/t)
B1 – U12	4.1	9.0	15.0
B2 – U3	3.1	9.2	16.6

13.2.3.3 BOND BALL MILL GRINDABILITY TESTS

A total of 11 samples were submitted to the Bond ball mill grindability test. The tests were performed by SGS. A summary of the results is shown in Table 13-16.

Table 13-16 - Bond Ball Mill Grindability Test Results

Sample ID - Unit	Grind Mesh	Sizing (µm)		Grams per Revolution	BWi (kWh/t)	Hardness Percentile
		F_{80}	P_{80}			
B1 - U12	65	2 443	172	1.99	14.60	52
B2 - U3	65	2 352	166	1.36	19.60	91
D3 - U1	65	2 086	189	2.70	12.40	29
D5 - U2	65	2 144	180	3.06	10.80	15
D6 - U2	65	2 257	181	2.58	12.30	28
D7 - U2	65	2 019	189	2.93	11.70	22
D8 - U2	65	2 361	175	3.35	9.60	8
D9 - U3	65	2 311	163	1.74	15.80	66
D10 - U3	65	2 201	168	2.21	13.30	39
D11 - U3	65	2 369	155	1.30	19.30	90
D12 - U3	65	2 283	161	1.61	16.80	75

The Bond ball mill work indices (BWi) obtained for the Lac Guéret samples were compared with a population of values from the JKTech SMI Technology Transfer database. A low hardness percentile indicates a soft ore sample and vice versa. With respect to ore hardness, the five samples from Unit U3 were classified as medium to very hard whereas samples from Units U1 and U2 were classified as very soft to medium.

13.2.3.4 UCS TESTS

Unconfined compression strength (UCS) tests were performed on four rock pieces per ore Unit from the blast bulk samples B1-U12 and B2-U3. The tests were performed by SGS and the results are summarized in Table 13-17.

Table 13-17 - UCS Test Results

Sample ID - Unit	Rock Number	Bulk Density (kg/m^3)	Comp. Strength (MPa)	Poisson's Ratio	Young's Modulus (GPa)
B3 - U1	1	3.01	69.6	0.29	16.03
B3 - U1	2	2.95	57.4	0.19	10.11
B3 - U1	3	2.83	53.2	0.18	12.64
B3 - U1	4	2.87	46.9	0.22	8.66
B3 - U1 Average	-	2.92	56.8	0.22	11.86
B4 - U2	1	3.09	16.7	0.25	5.04
B4 - U2	2	3.00	56.3	0.25	15.07
B4 - U2	3	2.68	10.3	0.25	3.40
B4 - U2	4	2.88	27.8	0.24	5.90
B4 - U2 Average	-	2.91	27.8	0.25	7.35
B5 - U3	1	2.62	10.5	0.19	3.04
B5 - U3	2	2.59	17.3	0.22	4.11
B5 - U3	3	2.67	13.5	0.10	2.66
B5 - U3	4	2.57	16.4	0.18	2.39
B5 - U3 Average	-	2.61	14.4	0.17	3.05

13.2.3.5 BOND ABRASION TESTS

Bond abrasion tests were performed on blast bulk samples B1-U12 and B2-U3 at COREM and on three composites created from the four rock pieces per ore Unit utilized for the SMC test (B3-U1, B4-U2 and B5-U3) at SGS. The results are summarized in Table 13-18.

Table 13-18 - Bond Abrasion Test Results

Sample ID - Unit	Ai (g)	Abrasion Percentile	Test Facility
B1 - U12	0.045	-	COREM
B2 - U3	0.039	-	COREM
B3 - U1 Composite	0.208	43	SGS
B4 - U2 Composite	0.131	27	SGS
B5 - U3 Composite	0.126	26	SGS

With respect to abrasion, all samples were characterized as mildly abrasive. Of all ore Units, U1 (sample B3-U1) is the most abrasive.

13.2.3.6 GENERAL CONCLUSION FROM COMMINUTION TESTS

The general conclusion on comminution tests is that the Lac Guéret ore is soft in macro (impact) grinding, and generally soft in micro (attrition) grinding, with the exception of ore Unit U3 which is classified as medium to very hard in attrition grinding.

13.2.4 BENCH-SCALE CONCENTRATION TESTWORK

The bench-scale concentration testwork was divided into two phases. Phase 1 was initiated in January 2014 with COREM and URSTM, and phase 2 started in May 2014 at COREM.

13.2.4.1 PHASE 1 TESTS

The first trials were conducted with the same channel sample that was used at SGS for the PEA flowsheet development (C-U12). The objectives of the first phase were to:

- Test the repeatability of the PEA flowsheet;
- Test the metallurgical performances variability between the ore Units.

The flotation flowsheet developed during the PEA study was repeated at COREM (16 tests) and URSTM (6 tests) for comparison purposes. The performances previously obtained at SGS were not exactly reproduced at COREM or at URSTM, probably because of the aging of the samples (see Section 13.2.4.2.4).

Using the same flowsheet, variability tests were conducted on samples D13-U1, D14-U2 and D15-U3 and on the composite sample D-U123. The tests revealed a finer carbon distribution with the increasing carbon content of the samples; for the sample from U3, the largest proportion of the graphite was recovered as -150 mesh concentrate, compared to U2 and U1.

The test conducted on the composite sample D-U123 revealed that there was no interaction between the different Units when treated together. The results obtained were a weighted average of the individual samples results.

13.2.4.2 PHASE 2 TESTS

The second phase of concentration tests was conducted at COREM with the drill core composites D13-U1, D14-U2, D15-U3 and D-U123. The phase 2 tests had the following objectives:

- Explore potential new technologies for the treatment of the graphite ore;
- Develop and optimize the process flowsheet in preparation for piloting;
- Test the metallurgical performances variability between the mineralogical Units with the final flowsheet;
- Determine the impact of material aging on metallurgical performances.

13.2.4.2.1 TECHNOLOGY VALIDATION

Several separation technologies were explored at the rougher and scavenger stages. The tested technologies included gravimetric equipment (Wilfley table, spirals) and flotation equipment (column and Hydrofloat). It was established that regular flotation (cell and column) had the best performances in terms of graphite grade and recovery, compared to any other tested technology. Standard tumbling mills were selected for all polishing steps.

13.2.4.2.2 FLOWSHEET DEVELOPMENT AND OPTIMIZATION

Following the technology exploration, a new flowsheet was developed, tested and compared to the PEA flowsheet. The grinding and polishing were tested to refine the liberation sizes and methods. The primary grinding liberation size was determined at 1,800 μm and the secondary grinding P_{80} was established at 180 μm, based on mineralogical observation. Several tests were then conducted to optimize the frother, collector and dispersant dosages, determine the pH impact, flotation kinetics and polishing times in preparation for the piloting of a sample from the deposit. The optimized parameters yielded the results presented in Table 13-19.

Each individual ore type was tested to quantify the metallurgical performances variability between the ore types. The blast sample used for piloting was also tested. The results are presented in Table 13-20.

As observed during the phase 1 tests, it was confirmed that an ore with higher graphite content yields finer concentrate graphite distributions. The blast sample B-U123 presented fewer fines than the D15-U3 sample, and the D14-U2 sample yielded good grades with very little fines.

Table 13-19 - Optimized Conditions Tests Results

	D-U123 Composite Sample (Test E75)			D-U123 Composite Sample (Test E77)		
Stream	**Solids Recovery (%)**	**Carbon Recovery (%)**	**Carbon Grade (%)**	**Solids Recovery (%)**	**Carbon Recovery (%)**	**Carbon Grade (%)**
Rougher Feed	100.0	100.0	25.5	100.0	100.0	25.5
All Tails	74.3	5.8	2.0	74.3	5.9	2.0
All Concentrates	25.7	94.2	93.2	25.7	94.1	93.2
Concentrate Distribution						
+50 mesh	*14.2*	-	*95.6*	*12.9*	-	*95.1*
-50 to +80 mesh	*13.2*	-	*96.4*	*13.3*	-	*96.3*
-80 to +150 mesh	*14.5*	-	*95.8*	*14.9*	-	*95.5*
-150 mesh	*58.0*	-	*91.2*	*58.9*	-	*91.5*
All Concentrates	**100.0**	**-**	**93.2**	**100.0**	**-**	**93.2**

Table 13-20 - Bench Scale Variability Tests Results Summary

	D14-U2 Sample (Test E113)			D15-U3 Sample (Test E114)			B-U123 Pilot Sample (Test E119)		
Stream	**Solids Recovery (%)**	**Carbon Recovery (%)**	**Carbon Grade (%)**	**Solids Recovery (%)**	**Carbon Recovery (%)**	**Carbon Grade (%)**	**Solids Recovery (%)**	**Carbon Recovery (%)**	**Carbon Grade (%)**
Rougher Feed	100.0	100.0	16.3	100.0	100.0	31.4	100.0	100.0	29.3
All Tails	85.6	14.2	2.7	69.5	10.7	4.8	74.3	19.1	7.5
All Concentrates	14.4	85.8	97.0	30.5	89.3	92.0	25.7	80.9	92.1
Concentrate Distribution									
+50 mesh	*18.2*	-	*96.1*	*13.6*	-	*94.5*	*19.1*	-	*95.8*
-50 to +80 mesh	*22.6*	-	*97.4*	*11.5*	-	*95.6*	*14.9*	-	*95.3*
-80 to +150 mesh	*19.3*	-	*97.7*	*12.6*	-	*95.2*	*14.6*	-	*94.8*
-150 mesh	*39.9*	-	*96.9*	*62.3*	-	*90.1*	*51.4*	-	*89.0*
All Concentrates	**100.0**	**-**	**97.0**	**100.0**	**-**	**92.0**	**100.0**	**-**	**92.1**

13.2.4.2.3 THREE AND FOUR POLISHING LINES COMPARISON

In a rationalization effort, a three polishing lines flowsheet was tested and compared to the four polishing lines flowsheet. The test was done on composite sample D-U123. The comparative results are presented in Table 13-21. The three polishing lines flowsheet yielded a loss of 6.3% of +150 mesh concentrate. Most of the losses were recovered as -150 mesh concentrate. Based on these results, a trade-off study revealed that the four-line flowsheet increases the value of the Project, and the number of polishing steps was confirmed as four to allow a better recovery of the coarse graphite flakes.

Table 13-21 - Three and Four Polishing Lines Test Results

	3-Line Process (Test E117)			4-Line process (Test E77)		
Stream	**Solids Recovery (%)**	**Carbon Recovery (%)**	**Carbon Grade (%)**	**Solids Recovery (%)**	**Carbon Recovery (%)**	**Carbon Grade (%)**
Rougher Feed	100.0	100.0	25.8	100.0	100.0	25.5
All Tails	73.7	5.0	1.7	74.3	5.9	2.0
All Concentrates	26.3	95.0	93.1	25.7	94.1	93.2
Concentrate Distributions						
+50 mesh	*14.2*	-	*94.9*	*12.9*		*95.1*
-50 to +80 mesh	*11.9*	-	*95.7*	*13.3*		*96.3*
-80 to +150 mesh	*8.5*	-	*95.3*	*14.9*		*95.5*
-150 mesh	*65.4*	-	*96.5*	*58.9*		*91.5*
All Concentrates	**100.0**	**-**	**93.1**	**100.0**		**93.2**

13.2.4.2.4 IMPACT OF MATERIAL AGING

The impact of material aging was assessed for the rougher and scavenger flotation. D-U123 samples were exposed to air and sprayed with water for varying periods of time prior to being subjected to rougher and scavenger flotation. Results are shown in Figure 13-9. The impact of aging is a reduction in carbon recovery at the scavenger stage that begins after eight weeks.

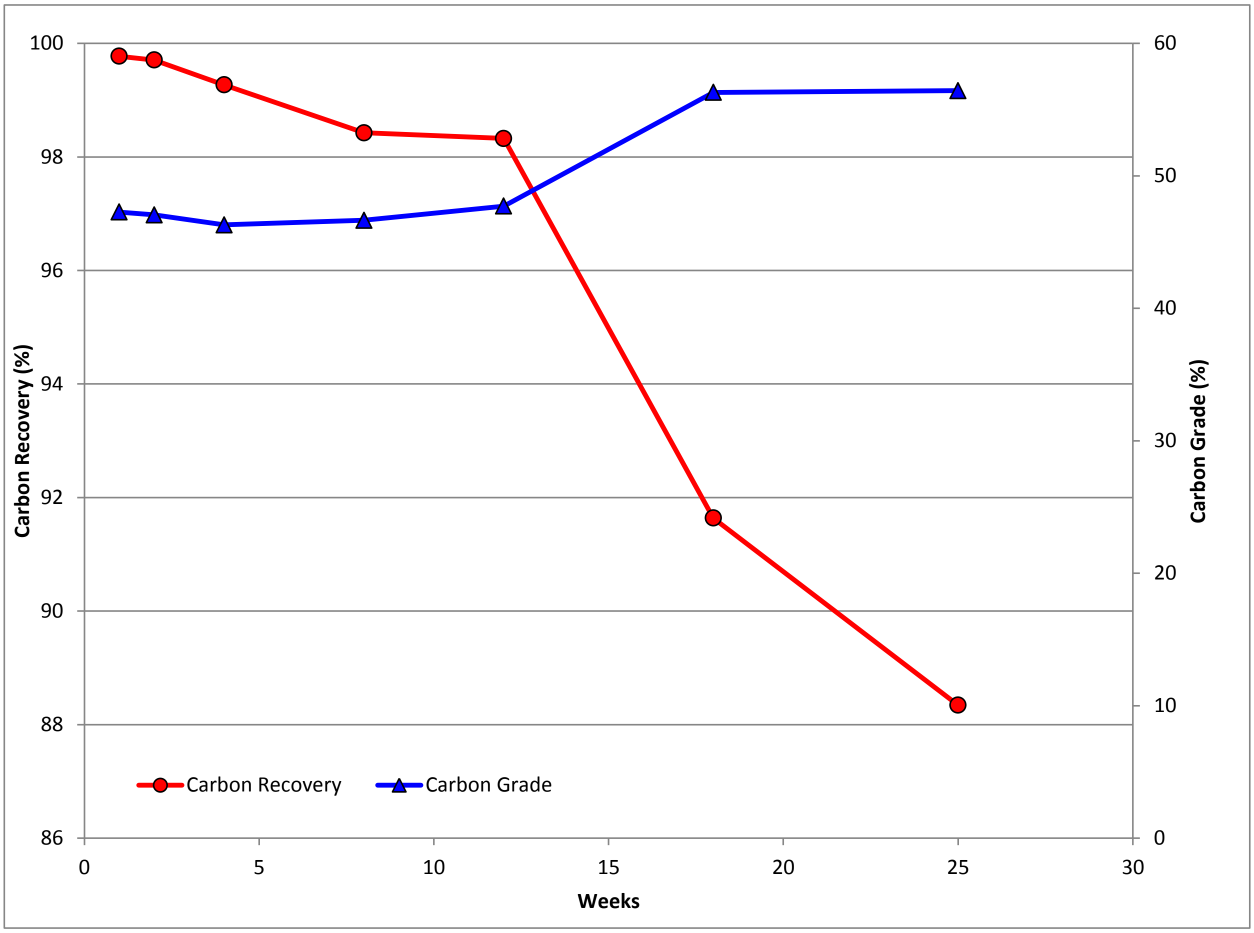


Figure 13-9 - Rougher and Scavenger Concentrates Grade and Recovery [1]

13.2.5 PILOT-SCALE CONCENTRATION TESTWORK

A pilot study was conducted by COREM for the purpose of generating graphite concentrate for testing (by customers, equipment manufacturers and for a value-added processing study) and validating the metallurgical performances obtained during bench-scale testing of the proposed graphite concentration flowsheet.

[1] With Respect to Weeks of Aging

The sample selection and sample preparation methodologies are described in Sections 13.2.1.2.3 and 13.2.1.3.3 respectively. The test sample, specifically selected for the pilot study, consisted of two surface blasts. Due to aging and weathering (samples were taken close to the surface), the metallurgical behavior was found to be slightly different from the representative cores composite samples, especially for the fine graphite fraction. Therefore, some of the piloting test results had to be discarded to account for this discrepancy.

Pilot testing of the proposed flowsheet, which occurred from October 14 to December 18, 2014, was conducted in three stages:

- Stage #1: Rougher and scavenger flotation sector;
- Stage #2: Polishing #1 and polishing #2 cleaner flotation sector;
- Stage #3: Polishing #3 and polishing #4 cleaner flotation sector.

For each stage piloted, two sample sets were collected at regular intervals during the production phase. The first sample set consisted of selected streams sampled every four hours in order to maintain operation performances. Head carbon analyses and particle size analyses were conducted on these samples. The second sample set consisted of selected streams sampled every two hours in order to form representative shift composites (two shifts per day), which were later reconciled in order to create the stage mass balance. Head carbon and sulphur assays, and particle size analyses were conducted on these shift composites. Size-by-size carbon and sulphur assays were also conducted on selected shift composites.

As the targeted 96% concentrate carbon grades were not achieved on stages 2 and 3, selected +50 mesh, +100 mesh and +150 mesh concentrates were rerun from March 2 to 10, 2015 through their respective polishing stages and purities up to 97.5% were reached.

13.3 ADDITIONAL METALLURGICAL TESTWORK

After the Feasibility Study, two pilot scale tests were conducted. The first pilot scale test was carried out in 2016 at COREM on the remaining material from the 2014 bulk samples to validate the reproducibility of the previous testwork results and to generate graphite concentrate for commercial sampling and added-value products development work.

The second pilot scale test was also carried out at COREM in 2018. The objective of this testwork was to validate the flowsheet with "unweathered" (or unaltered) ore sampled in 2018 and to produce concentrate, again for commercial sampling and added-value products development work, and tailings for the tailings valorization research program.

The testwork involved mainly graphite recovery characterization to validate the process flowsheet and criteria used for the plant design. Testing was conducted according to the best industry practices.

13.3.1 2016 PILOT SCALE TESTWORK

13.3.1.1 MATERIAL SELECTION

The material used for this pilot scale testwork was generated during the preparation of the material used for the 2014 pilot scale testwork (refer to Section 13.2.1.2.3 - Pilot-Scale Concentration Testwork).

The material from each blast (U12 and U3) was transported and stored separately in two piles at Baie-Comeau. Prior to crushing of the bulk samples, performed on September 17, 2014, ten big bags of uncrushed material from each pile were collected, identified and set aside. The two piles were then mixed with a shovel before crushing. During crushing, because of the slippery nature of the material, four big bags of crusher rejects were collected at the end of the operations.

The 20 bags of uncrushed ore, the four bags of crusher rejects and one bag from the 2014 pilot scale testwork are the materials used for the 2016 Pilot scale testwork. These bags were stored in an unheated shelter from 2014 to 2016.

13.3.1.2 MATERIAL PREPARATION

The material preparation for the 24 bags was as follows:

- Crushing to minus 19 mm (¾ inch);
- Mixing and homogenization of the crushed material.

The material preparation for the one bag of crusher rejects was as follows:

- Crushing of the material to minus 6.35 mm (¼ inch);
- Mixing and homogenization of the crushed material;
- Sampling of the crushed material for carbon and sulphur chemical analysis.

13.3.1.3 HEAD ASSAY ANALYSIS

The sample taken from one of the crusher reject bags had a carbon grade of 30.8% and a sulphur grade of 7.0%.

13.3.1.4 PILOT SCALE TESTWORK

Pilot testing of the proposed flowsheet, which occurred in November 2016, was conducted in five stages:

- Stage #1: Rougher and scavenger flotation sector;
- Stage #2: Polishing #1 cleaner flotation sector;
- Stage #3: Polishing #2 cleaner flotation sector;
- Stage #4: Polishing #3 cleaner flotation sector;
- Stage #5: Polishing #4 cleaner flotation sector.

Bench scale flotation tests were conducted before each stage to validate the operating conditions.

Crushed material to minus 19 mm was used during the first two days of the pilot plant operation, but due to operating problems (large size of the particles), the material was crushed to minus 6.35 mm for the rest of the pilot scale testwork.

For each stage piloted, two sample sets were collected at regular intervals during the production phase. The first sample set consisted of punctual samples of selected streams in order to maintain operation performances. Head carbon analyses and particle size analyses were conducted on these samples. The second sample set consisted of selected streams sampled every three hours in order to form representative shift composites (two shifts per day), which were later reconciled in order to create the stage mass balance. Head carbon and sulphur assays, and particle size analyses were conducted on these shift composites. Size-by-size carbon and sulphur assays were also conducted on selected shift composites.

Concentrate carbon grades for the different fractions before dry screening are shown in Table 13-22. The pilot plant feed carbon grade was 29.4% and the overall carbon recovery achieved was 79.0%. Weight recoveries were low for the +48M and +100M fractions. This is possibly due to the operating problems in the grinding circuit at the Rougher stage which has potentially caused overgrinding of the coarse particles. Lower recovery results are also due to factors such as oxidation and aging of the material between the processing stages and because the material used for this piloting was sampled in 2014 and kept outside for two years, which led to weathering over time.

Table 13-22 - Concentrate Carbon Grade – 2016 Pilot Scale Testwork

Fraction	Carbon Grade (%)	Carbon Recovery (%)
+48M	96.6	2.5
+100M	96.9	8.7
+150M	96.4	8.3
-150M	91.1	59.5

13.3.2 2018 PILOT SCALE TESTWORK

13.3.2.1 SAMPLE SELECTION

Pilot testing was performed at COREM on a bulk sample from the Lac Guéret deposit. The sample originated from a surface blast taken mid-March 2018 from the location depicted in Figure 13-10. This sample was taken deeper in the deposit and the sampling was overseen by a geologist to ensure that it would be unaltered ("unweathered").

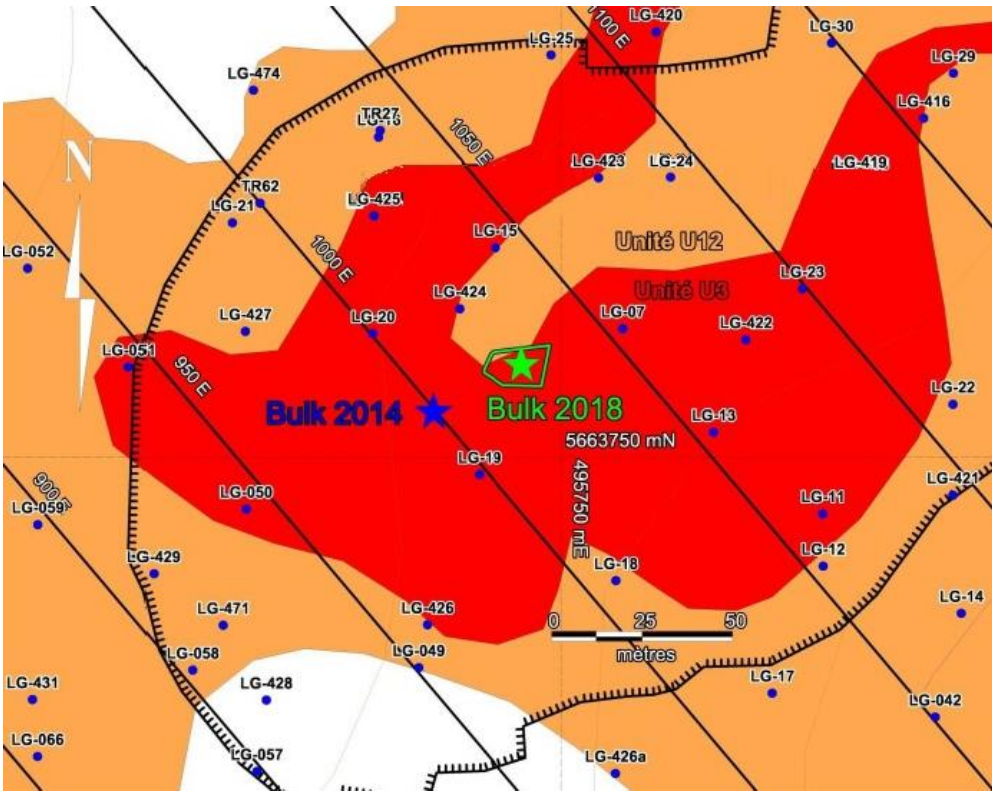


Figure 13-10 - Location of the 2018 Bulk Sample – Pilot Testwork

13.3.2.2 2018 SAMPLE PREPARATION

The blast bulk sample served as the test sample for the pilot plant at COREM. Sample preparation was as follows:

- Crush sample to minus 12.7 mm (1/2 inch) at Carrières St-Ubalde in St-Ubalde, Québec;
- Divide the crushed bulk sample into four different sub-samples (A, B C and D) at COREM;
- Mix each sub-samples, homogenize and place into big bags;
- Sample every big bag for carbon grade chemical analysis.

13.3.2.3 HEAD ASSAY ANALYSIS

The head assays for each sub-sample tested are summarized in Table 13-23.

Table 13-23 - Carbon Analysis – 2018 Pilot Scale Testwork

Sub-sample	Weight (kg)	Carbon Grade (%)	Sulphur Grade (%)
A	19,540	21.5	16.7
B	23,480	25.6	13
C	22,438	24.8	14.2
D	24,188	26.2	13.4

13.3.2.4 PILOT SCALE TESTWORK

Pilot testing of the proposed flowsheet, which occurred from April 9 to May 18, 2018, was conducted in five stages:

- Stage #1: Rougher and scavenger flotation sector;
- Stage #2: Polishing #1 cleaner flotation sector;
- Stage #3: Polishing #2 cleaner flotation sector;
- Stage #4: Polishing #3 cleaner flotation sector;
- Stage #5: Polishing #4 cleaner flotation sector.

Bench scale flotation tests were realized before each stage to confirm the operating conditions.

For each stage piloted, two sample sets were collected at regular intervals during the production phase. The first sample set consisted of punctual samples of selected streams in order to maintain operation performances. Head carbon analyses and particle size analyses were conducted on these samples. The second sample set consisted of selected streams sampled every four hours in order to form representative shift composites (two shifts per day), which were later reconciled in order to create the stage mass balance. Head carbon and sulphur assays, and particle size analyses were conducted on these shift composites. Size-by-size carbon and sulphur assays were also conducted on selected shift composites.

Concentrate carbon grades for the different fractions before dry screening are shown in Table 13-24. The pilot plant feed carbon grade was 25.8% and the overall carbon recovery achieved was 94.3%.

Table 13-24 - Concentrate Carbon Grade – 2018 Pilot Scale Testwork

Fraction	Carbon Grade (%)	Carbon Recovery (%)
+48M	94.5	7.1
+100M	96.2	31.2
+150M	98.1	11.5
-150M	94.2	44.6

13.4 FINAL METALLURGICAL RESULTS USED FOR THE FEASIBILITY STUDY

The mass balance was constructed from the concentrate carbon grades and carbon recoveries achieved at flotation stages during the first pilot testing. A 96% carbon grade was selected for the +50 mesh, +100 mesh and +150 mesh for plant design. The corresponding carbon recoveries were interpolated from carbon recovery curves generated from piloting data. The losses in carbon relating to the interpolation are assumed to be recovered in the -150 mesh concentrate with the same recovery as experienced.

It was demonstrated during bench scale tests that aging of the material causes recovery losses. An equivalent global carbon recovery of 92.5% was obtained by comparing laboratory scale tests with a pilot feed sample, when accounting for aging. Lower grades and recoveries were obtained in the finer fraction during the first and second piloting, but these results are due to factors such as oxidation and aging of the material between the processing stages, which was proven by additional testing. The results of testing at the laboratory scale of the whole process without interruption, thus preventing aging, are considered more representative of the industrial process. The results used for the plant process design are presented in Table 13-25 below.

The third piloting, carried out in 2018, shows that these values are achievable when processing unweathered ore.

Table 13-25 - Final Results Used for Feasibility Study and Plant Design

Stream	Weight Recovery (%)	Carbon Recovery (%)	Carbon Grade (%)
Feed	100.0	100.0	27.8
+50 mesh	*3.3*	*11.4*	*96.0*
-50 to +100 mesh	*4.9*	*17.0*	*96.0*
-100 to +150 mesh	*1.8*	*6.2*	*96.0*
-150 mesh	*17.4*	*57.7*	*92.2*
All Concentrates	*27.4*	*92.5*	*93.7*
Tails	72.6	7.5	2.9

13.5 MANUFACTURERS' TESTWORK

The following tests were performed at manufacturers' installation or laboratory:

- Dewatering cyclones, pilot-scale;
- Wet screening, pilot-scale;
- Thickening of concentrate and tailings, bench-scale;
- Filtration of concentrate and tailings, bench-scale;
- Drying of concentrate, pilot-scale;
- Dry screening, bench-scale.

The test results were used to determine the dimensions of the processing equipment described in Chapter 17.

14. MINERAL RESOURCE ESTIMATES

14.1 INTRODUCTION

This section reports the results of the NI 43-101 mineral resource estimates for the Lac Guéret Project based on the Mason Graphite drilling campaign (2012, 2013/2014) and Quinto exploration data (2003 and 2006 drilling campaign data). The geological interpretation was worked out collaboratively among several geologists working with Mason Graphite and Roche in the first resource estimation.

Mineral intervals and geological interpretation on sections and plans of the mineralized bodies of the Lac Guéret Graphite deposits were done by Merouane Rachidi, P.Geo., Ph.D., and Claude Duplessis, P. Eng.

The interpretation of the zones is mainly based on the percentage of carbon graphite and follows structural tendencies of the deposit. The drilled area of the broader graphite deposit shows a single graphitic bed or narrow cluster of beds deformed into overturned nappe style folds compressed from the southeast as the effect of the D_2 deformation. This style of folding is common in the Gagnon Terrane from the Property for about 350 km to the northeast and indeed throughout the Grenville Orogeny. The grades within the graphite bands are quite variable and likely thicken and thin due to slide deformation in the folds. The lateral continuity of the graphite bands is demonstrated in the extensive stripping done in 2003 and 2004 on the drilled area and along trend.

14.2 PREVIOUS MINERAL RESOURCES ESTIMATES

14.2.1 2012 MINERAL RESOURCES ESTIMATE

In 2012, Mason Graphite commissioned Roche to produce a Technical Report on the Lac Guéret Graphite Project. The 2012 Mineral Resources Estimate is presented in Table 14-1 below.

Table 14-1 - Lac Guéret - 2012 Resource Estimate

Lac Guéret - 2012 Mineral Resources Estimate (4% Cg Cut-Off)			
Categories	**Unit**	**kt**	**Grade (% Cg)**
Measured (M)	Unit 1 (4 to 10% Cg)	31	7.82
	Unit 2 (10 to 27% Cg)	123	14.85
	Unit 3 (> 27% Cg)	145	36.72
	All Units	**299**	**24.39**
Indicated (I)	Unit 1 (4 to 10% Cg)	2,673	8.09
	Unit 2 (10 to 27% Cg)	2,089	16.83
	Unit 3 (> 27% Cg)	2,535	36.2
	All Units	**7,297**	**20.24**
Measured + Indicated	Unit 1 (4 to 10% Cg)	2,704	8.67
	Unit 2 (10 to 27% Cg)	2,212	18.30
	Unit 3 (> 27% Cg)	2,680	36.96
	All Units	**7,596**	**20.40**
Inferred	*Unit 1 (4 to 10% Cg)*	*1,273*	*7.56*
	Unit 2 (10 to 27% Cg)	*714*	*17.54*
	Unit 3 (> 27% Cg)	*772*	*33.1*
	All Units	***2,758***	***17.29***

14.2.2 2013 MINERAL RESOURCES ESTIMATE UPDATE

Following Mason Graphite's first infill drilling campaign, the revised Mineral Resources Estimate was issued on November 12, 2013.

The Mineral Resources Estimate for the GC Zone graphite drill grid on the Lac Guéret property is summarized in the table below (Table 14-2). The lower cut-off grade of 5% Cg was used to start the Unit 1; upper grade cap cut-off was not applied. Internal waste is defined as % Cg below 5% and is calculated only for blocks internal to the block model. Units 1 and 2 appear similar in texture and have been deemed statistically similar. Unit 3 is a distinctive type with bimodal graphite flake size.

The geological interpretation and model included three Unit 2 zones and twelve Unit 3 zones, with seventeen narrow internal waste zones: Unit 2 has 5-25% Cg, while Unit 3 contains 25% Cg or more. Waste has less than 5% Cg.

The blocks were kept small (3 x 3 x 3 m) to constrain the model to the geological interpretation as much as possible. The search ellipsoid was defined in a plane that parallels the average bedding trend. The search ellipse has a principal azimuth of 45 degrees, a principal dip of -40 degrees and intermediate azimuth of 135 degrees. Anisotropy was interpreted with the semi-variogram and set to 60 metres along the x axis, 40 metres along the y and 50 metres along the z axis.

Table 14-2 - 2013 Mineral Resources Estimate

Mineral Resources Estimate Lac Guéret – 2013 (cut-off 5%Cg constrained inside Whittle Pit #71)			
Categories	**Unit**	**kt**	**Grade (%Cg)**
Measured (M)	Unit 2 (5% to < 25% Cg)	4,052	13.36
	Unit 3 (25% Cg +)	465	33.77
	All	**4,517**	**15.46**
Indicated (I)	Unit 2 (5% to < 25% Cg)	39,300	13.01
	Unit 3 (25% Cg +)	6,207	32.32
	All	**45,507**	**15.64**
Measured + Indicated	Unit 2 (5% to < 25% Cg)	43,352	13.04
	Unit 3 (25% Cg +)	6,672	32.42
	All	**50,024**	**15.63**
Inferred (Inf)	*Unit 2 (5% to < 25% Cg)*	*9,224*	*13.27*
	Unit 3 (25% Cg +)	*2,637*	*30.53*
	All	***11,861***	***17.11***

14.3 EXPLORATION DATABASE

On August 2, 2013, Roche received the final version of the 2013 database used for the previous Mineral Resources Estimate update. The Excel database was dated August 1, 2013. Roche performed checks over the analysis results in order to verify the accuracy of the assay results. No errors were found in those checks (Mineral Resources update report, January 2014).

For the current resources update, the database containing information up to the 2012 drilling campaign was delivered to GMG by Roche as Access database named 'GD_PH2_LacGuéret' as well as another file named "DB-FINAL-N43101-V2.xlsx. The database of the 2013-2014 drilling campaign was delivered to GMG by Yves Caron, P.Geo. For the new database 2013-2014 drilling campaign, the last verifications and corrections were done by Merouane Rachidi, P.Geo., Ph.D. (GMG) and Yves Caron, P.Geo. at the GMG office on October 22, 2014. After verification and error correction, both databases were merged into a single database for this mineral resources estimate.

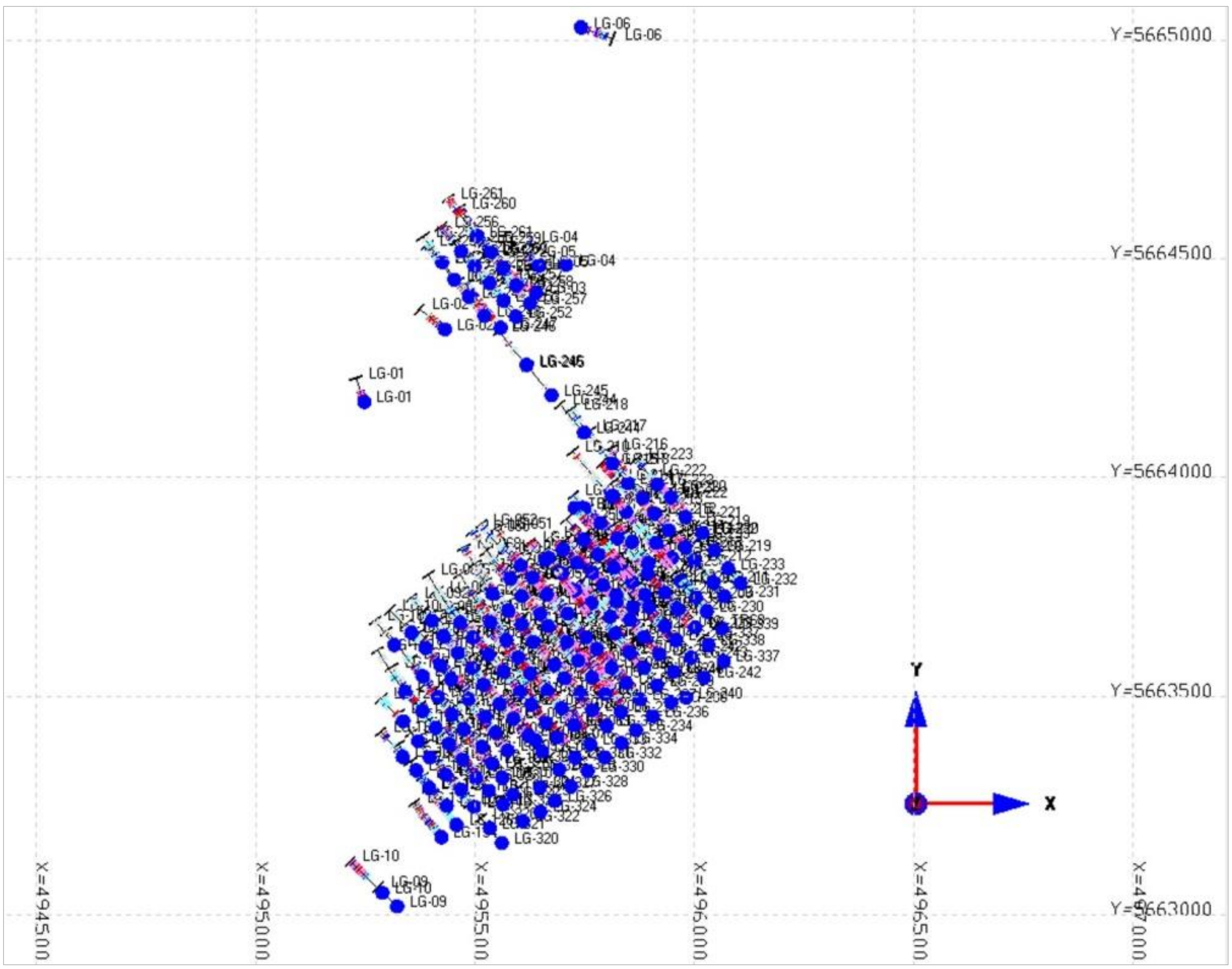


Figure 14-1 - 2003, 2006 and 2012 Drillholes Location on the Lac Guéret Property

The database up to the 2012 drilling campaign (drilling campaigns of 2003, 2006 and 2012) includes:

- 197 drillholes and 4 trenches (Figure 14-1);
- Total drilled length 29,906 metres with 987 metres of the trenches;
- 18,389 assays for carbon graphite (% Cg);
- 2,877 deviation data;
- 2,573 lithological descriptions.

The 2013-2014 database (2013-2014 drilling campaign; Figure 14-2) includes:

- 86 drillholes;
- Total drilled length is 13,418 metres;
- 7,567 assay results for carbon graphite (% Cg);
- 415 deviation data;
- 1,128 lithological description records;
- A digital contour map made in 2006 by GPR International (Montréal, QC).

All coordinates are given in UTM (NAD83).

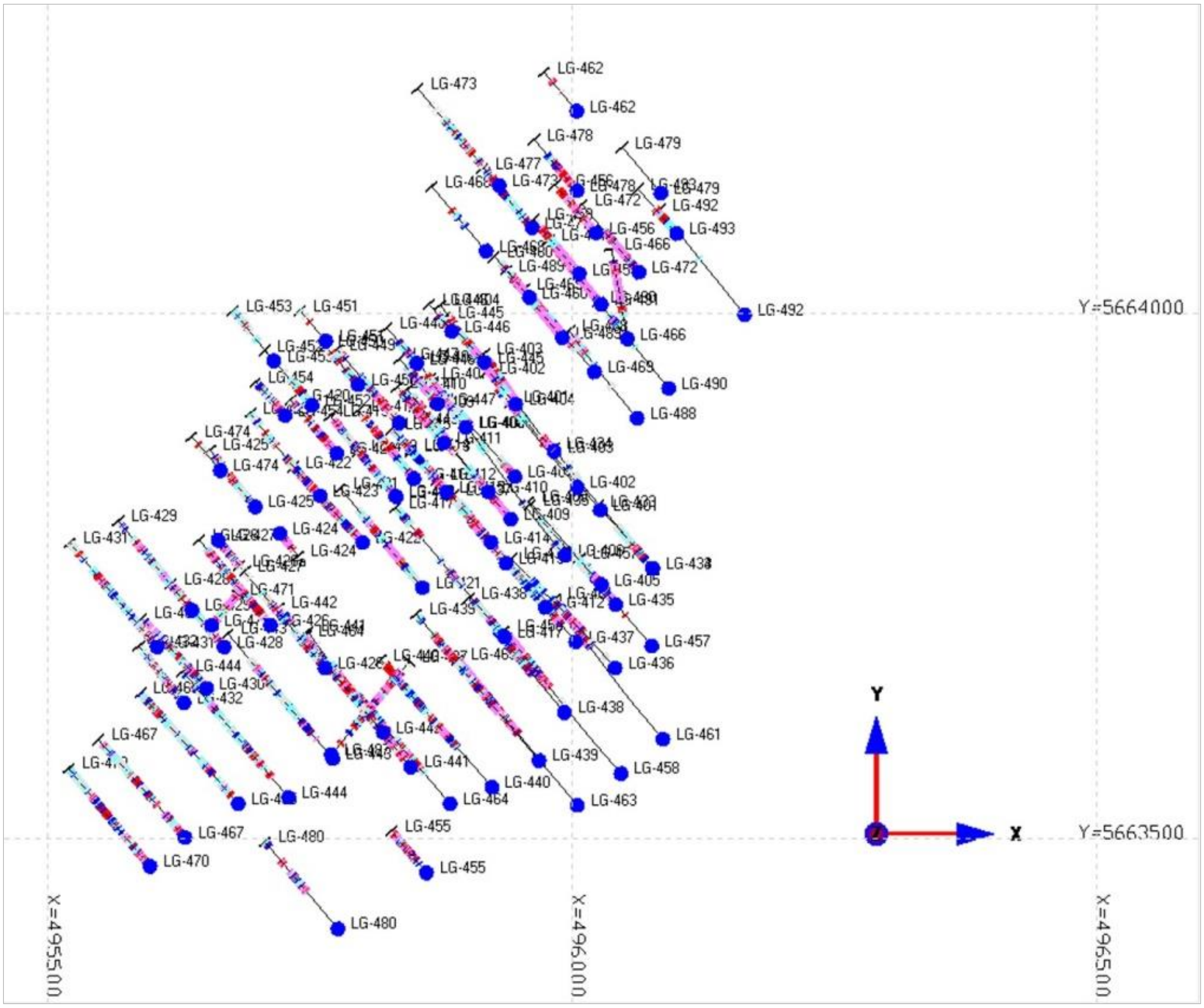


Figure 14-2 - 2013 and 2014 Drillholes on the Lac Guéret Property

14.3.1 SPECIFIC GRAVITY DATA

The specific gravity measurements were taken from the NI 43-101 report published on January 17, 2014 on the Lac Guéret property. The specific gravity measurements were performed on drill cores during 2013-2014 drilling campaigns. These measurements were made on different rock types by AGAT using gas pycnometry on pulp samples of 5 grams.

For the Mineral Resources Estimate update by GMG (issued February 19, 2015), the two Units (Unit 1 and Unit 2) were combined based on the type of graphite and the lithological host, which are the same, the only difference appearing in the carbon graphite content. GMG used a fixed specific gravity of 2.9 t/m^3 to convert volume into tonnage for the Lac Guéret property (Table 14-3).

Table 14-3 - Specific Gravity Measurements [1]

	Unit 2 (5% < Cg < 25%)	Unit 3 (Cg ≥ 25%)	Waste (0% < Cg < 5%)
Average	2.94	2.88	2.92
Min	2.05	2.61	2.18
Max	4.59	3.97	4.01
Number of samples	*1,014*	*275*	*2,189*

On January 2015, Mason Graphite commissioned GMG to prepare an independent sampling program for the Lac Guéret property. For the same project GMG, made rock density measurements (weight in air and weight in water) for six samples (4132, 4133, 4134, 4135, 4146 and 4147) taken from the Hole LG-422 (Table 14-4).

Table 14-4 - Rock Density Measurements

<table>
<tr><th>Sample ID GMG LG-422</th><th>Intervals</th><th>Length</th><th>Dry Weight (g)</th><th>Weight in Water (g)</th><th>Density (ρ)</th><th>Average Length-Weighted Density (ρ)</th><th>Specific gravity (g/cm³)</th></tr>
<tr><td rowspan="6">4132</td><td rowspan="6">15.5 - 17</td><td>14</td><td>268.00</td><td>164.40</td><td>2.59</td><td rowspan="6">2.88</td><td rowspan="15">3.69</td></tr>
<tr><td>17</td><td>389.30</td><td>252.80</td><td>2.85</td></tr>
<tr><td>24</td><td>595.00</td><td>391.20</td><td>2.92</td></tr>
<tr><td>15</td><td>334.60</td><td>209.80</td><td>2.68</td></tr>
<tr><td>23</td><td>635.10</td><td>408.40</td><td>2.80</td></tr>
<tr><td>24</td><td>659.20</td><td>454.10</td><td>3.21</td></tr>
<tr><td rowspan="6">4133</td><td rowspan="6">17 - 18.2</td><td>10</td><td>295.90</td><td>191.80</td><td>2.84</td><td rowspan="6">3.18</td></tr>
<tr><td>21</td><td>735.60</td><td>517.60</td><td>3.37</td></tr>
<tr><td>25</td><td>733.10</td><td>505.80</td><td>3.23</td></tr>
<tr><td>19</td><td>468.50</td><td>333.00</td><td>3.46</td></tr>
<tr><td>15</td><td>390.60</td><td>259.40</td><td>2.98</td></tr>
<tr><td>32</td><td>804.30</td><td>539.40</td><td>3.04</td></tr>
<tr><td rowspan="3">4134</td><td rowspan="3">18.2 - 19.2</td><td>20</td><td>597.60</td><td>415.80</td><td>3.29</td><td rowspan="3">3.27</td></tr>
<tr><td>32</td><td>1,022.00</td><td>707.00</td><td>3.24</td></tr>
<tr><td>31</td><td>834.00</td><td>579.40</td><td>3.28</td></tr>
</table>

[1] Source: Mineral resource update report, January 2014

Sample ID GMG LG-422	Intervals	Length	Dry Weight (g)	Weight in Water (g)	Density (ρ)	Average Length-Weighted Density (ρ)	Specific gravity (g/cm³)
4135	19.2 - 21	9	251.30	159.10	2.73	2.92	
		29	610.00	392.80	2.81		
		18	396.70	255.00	2.80		
		30	691.30	455.20	2.93		
		46	1,100.00	717.30	2.87		
		17	408.10	266.00	2.87		
		36	857.70	573.10	3.01		
		24	645.90	443.70	3.19		
4146	30 - 31.45	19	487.80	328.00	3.05	2.94	3.35
		30	801.00	637.00	4.88		
		54	1,287.60	580.00	1.82		
		20	415.60	273.00	2.91		
4147	31.45 - 32.4	29	757.10	517.38	3.16	3.12	
		20	589.90	404.10	3.17		
		21	541.00	360.70	3.00		

The densities of the intervals were between 2.88 and 3.27 with a length-weighted average calculated of 3.05. For the updated Mineral Resources Estimate (issued on February 19, 2015), GMG considered that using a fix specific gravity of 2.9 t/m^3 was conservative.

14.3.2 GEOLOGICAL SECTION AND GEOLOGICAL INTERPRETATION

For the first Mineral Resources update in 2013, the geological interpretation of Unit 2 and Unit 3 were provided to Roche by Nathalie Guillemette, P.Geo. of Geo Habilis Consulting. After review, the interpretation of Unit 2 and Unit 3 were modified and drawn on paper sections by Martin Perron, P. Eng. (Roche), including internal waste zones. Nathalie Guillemette, P. Geo. and Ed Lyons, P. Geo., validated the modifications of the interpretations.

For the current Mineral Resources Estimate, Roche sent the geological interpretations of Units to GMG in dxf. GMG followed the same geological interpretations done by Roche in 2013. Three envelopes were produced by connecting directly the defined mineralized prisms on each section. The waste envelopes were then created and subtracted from the model.

14.3.2.1 SECTION DEFINITIONS

The geological interpretation was done on a set of sections oriented N50°E. The figure below (Figure 14-3) shows a plan view of the drillholes pattern and local coordinate system.

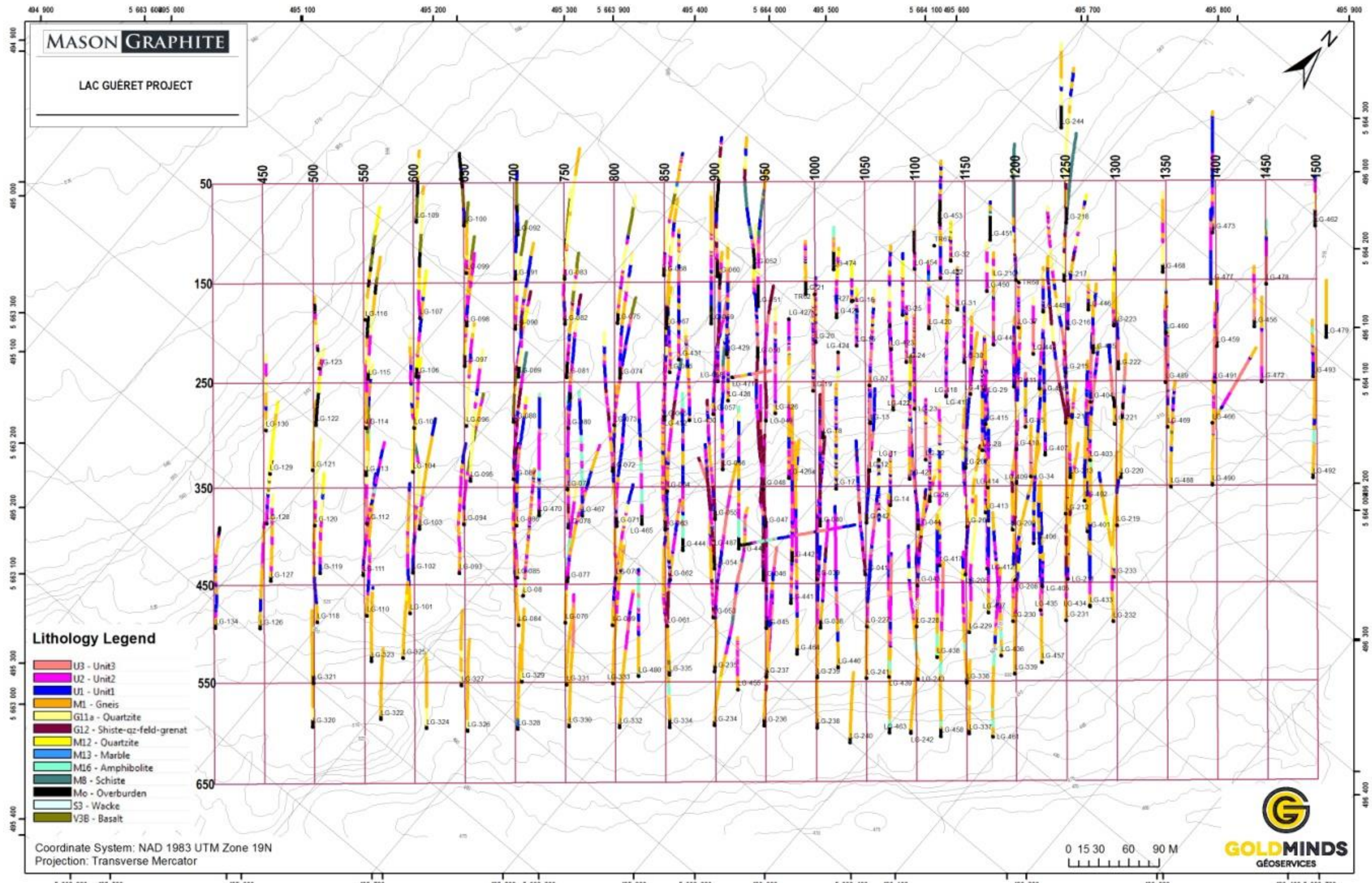


Figure 14-3 - Drillholes Pattern and Local Coordinate System

14.3.2.2 GEOLOGICAL INTERPRETATION

The boundaries of the geological and mineralized Units were interpreted manually by Nathalie Guillemette, P.Geo., and Ed Lyons, P.Geo., on vertical sections spaced 50 m apart with a corridor limit of 25 m on each side.

The host rock gives good limits to the general graphite stratigraphy, but does not have the internal geological detail sufficient to resolve potential folds and/or fault displacements external to the graphite layers. The graphite lithologies tend to show more folding than neighbouring rocks, but there are few controls in the neighbouring rocks to demonstrate folding in them, either, except at the centimeter to metre-scale. Thus, the interpretation depended mainly on correlation of graphite-rich Units (Table 14-5) with interspersed internal waste bands (% Cg <5%). These turned out to be relatively continuous and internally consistent in thickness and extent as has been validated in the several infill drilling campaigns by Mason Graphite.

Experience from extensive trenching supports the confidence in the lateral continuity along strike. However, grades perpendicular to the bedding planes change abruptly and the Units can change rapidly in the dip-plane. Roche encountered this phenomenon on the Lac Knife graphite Mineral Resource Estimate and Lyons has observed the same in the Mart Lake graphite deposits in western Labrador, both of which lie in the same regional geology as Lac Guéret.

Table 14-5 - Geological Units Definition

Unit Name	% Cg Range	Flake characteristic (visual)	Lithologic Host
Unit 1	5-10	Mainly coarse >200µ	Qzt, QFB gneiss
Unit 2	>10-25	Significant coarse >200µ	Qzt, QFB gneiss
Unit 3	>25	Very coarse in bands/veinlets; most Gr is very fine	QFB gneiss
Waste	<5	Isolated medium to coarse	Qzt, QFB gneiss
FW-QZT	variable	Generally medium to coarse	Qzt+/-marble, calcsilicate, gneiss
HW-QFB_GN	variable	Generally medium to coarse	Variable gneiss w/cinnamon phlogopite

The statistical distribution study of carbon suggests that the deposit comprises three distinct populations with threshold values of 5%, 10% and 24.5% (Marcotte, 2013, Table 14-5). However, it was decided to combine Unit 1 and 2 together. The two Units were combined based on the type of graphite and the lithological host, which are the same. The Unit 3 was classed separately due to its difference in the type of graphite and higher grade.

14.4 STATISTICS

The geostatistical analysis was done in 2013 using GEMS and described in the Technical Report on the Mineral Resources Estimate published on January 2014. The variography was run by Roche in all directions with GEMS using all composite data. The search orientation of the ellipse was characterized by an azimuth of 150° and a dip of 40°. Anisotropy was interpreted with the semivariogram and set to 60 metres along the x axis, 40 metres along the y and 50 metres along the z axis.

In this report the Mineral Resources Estimate was done using a variable search ellipsoid direction that follows the geological interpretation trends. For this reason, it was not necessary to run variography to search the ellipse orientation.

14.5 MODELING

After the verification/validation of the Lac Guéret database, GMG conducted a mineralization interpretation and a 3D wireframe envelopes modeling of the graphite mineralization. Several sections (66 sections) were created using all drilling results. The interpretation was first completed on sections to define mineralized vertical projection contours called prisms (polygon interpretation) in Genesis© using assays results (Figure 14-4). Three envelopes were produced by connecting directly the defined mineralized prisms on each section (Figure 14-5 and Figure 14-6). GMG followed the same geological interpretation done by Roche in 2013.

The aerial Digital Elevation Model topographic model, commissioned by Quinto in 2006, was used to limit the top of the model. This topographic model was large enough to cover all the graphite solids but is not large enough to cover a hypothetical open pit that encompasses the bulk of the mineralization. The overburden thickness has been taken into account while doing the modeling of blocks.

Three envelopes have been modeled using drilling data. The principal envelope named Body 1 extends over 1,290 metres. The other two envelopes (Body 2 and Body 3) are smaller and are located on the south part of the Property (Figure 14-5 and Figure 14-6).

The waste zones were modeled based on several sections as waste envelopes and then subtracted from the ore body (Figure 14-7). Only the envelope named Body 1 is concerned by this subtraction, the other envelopes do not contain waste zones.

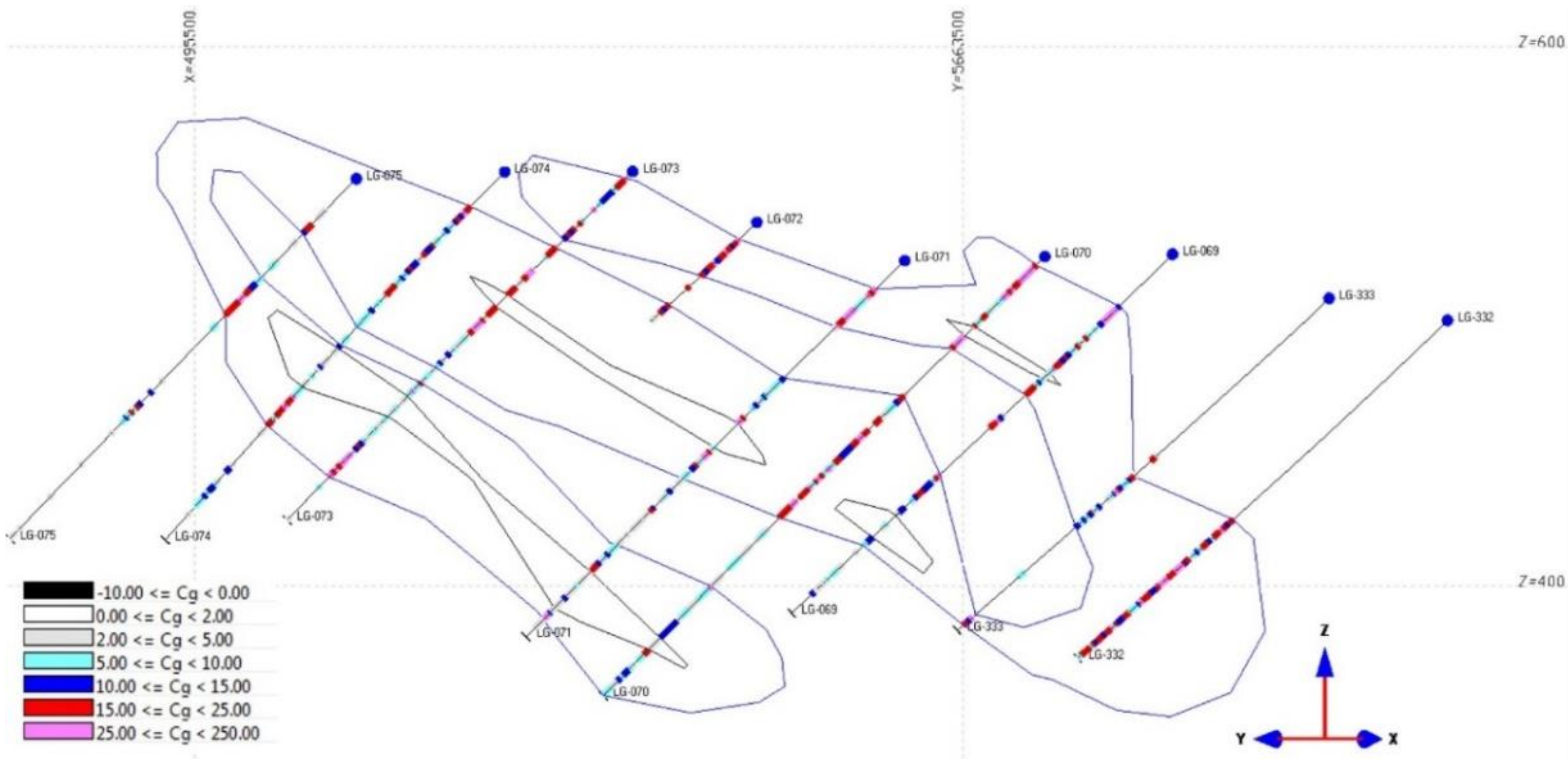


Figure 14-4 - Section 800 Looking Northeast

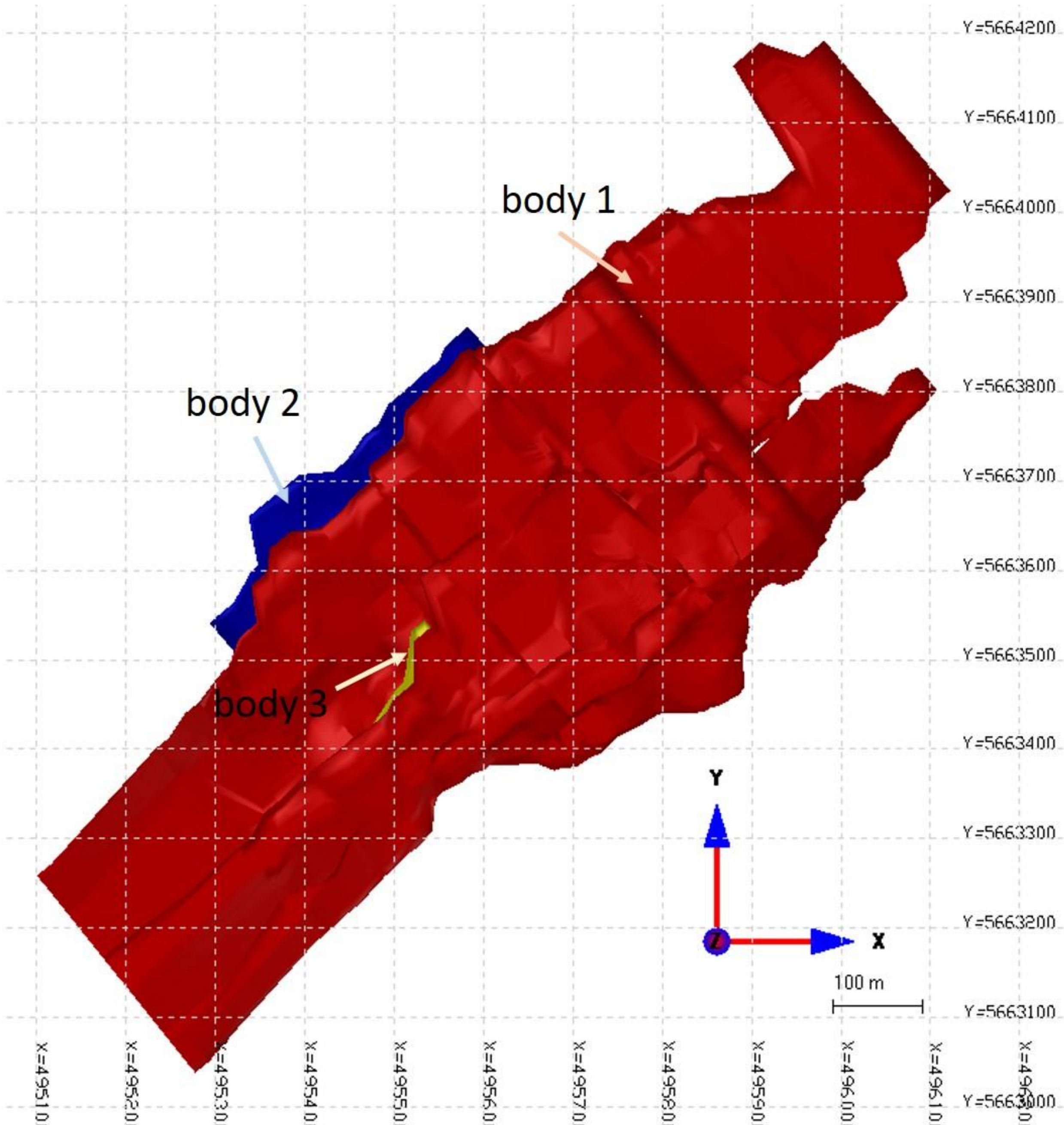


Figure 14-5 - Plan View of Lac Guéret Deposit Showing Three Mineralized Envelopes [1]

[1] Body 1, 2 and 3.

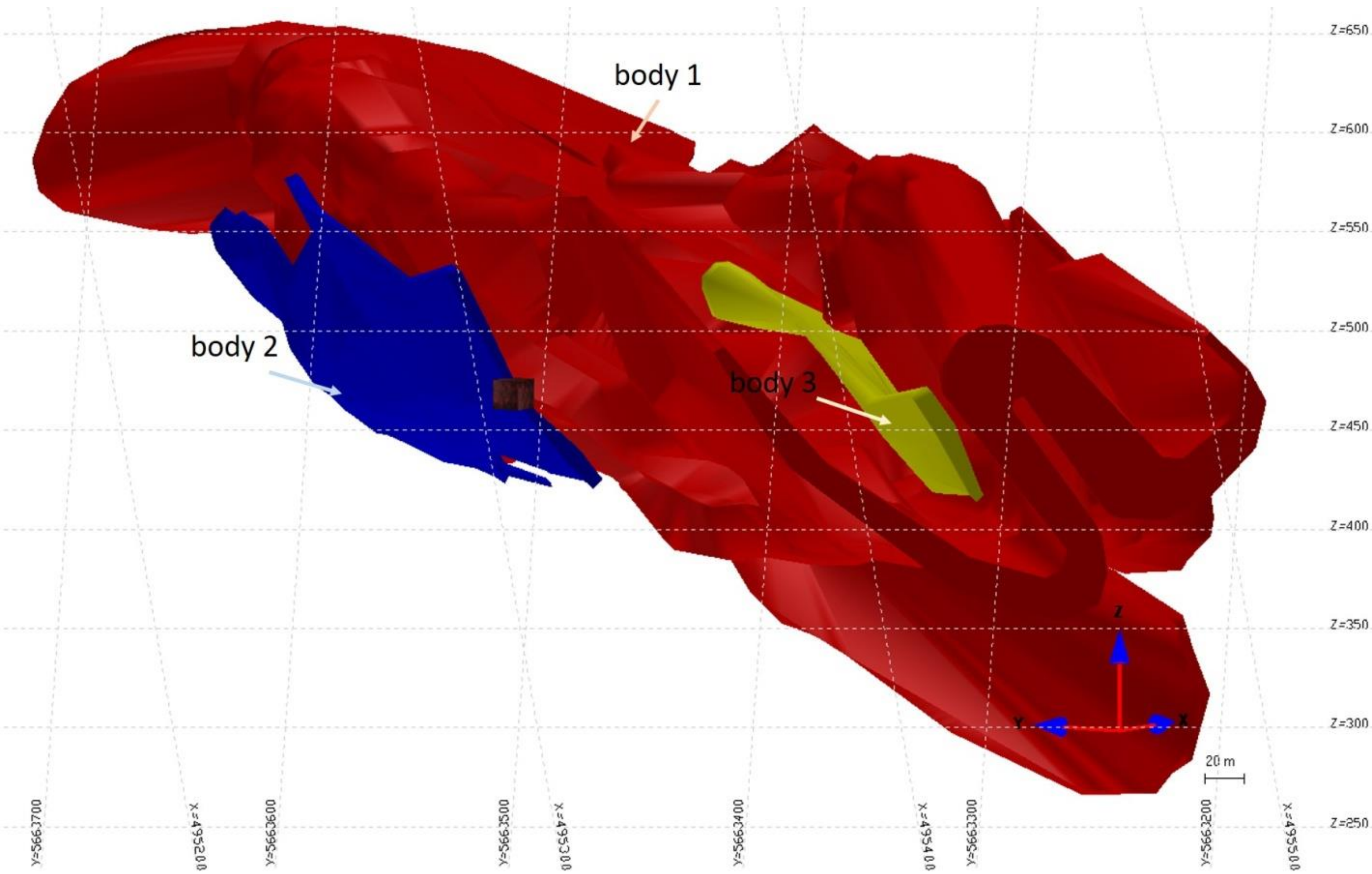


Figure 14-6 - View Looking Northeast Showing the Three Mineralized Envelopes [1]

[1] Body 1, 2 and 3.

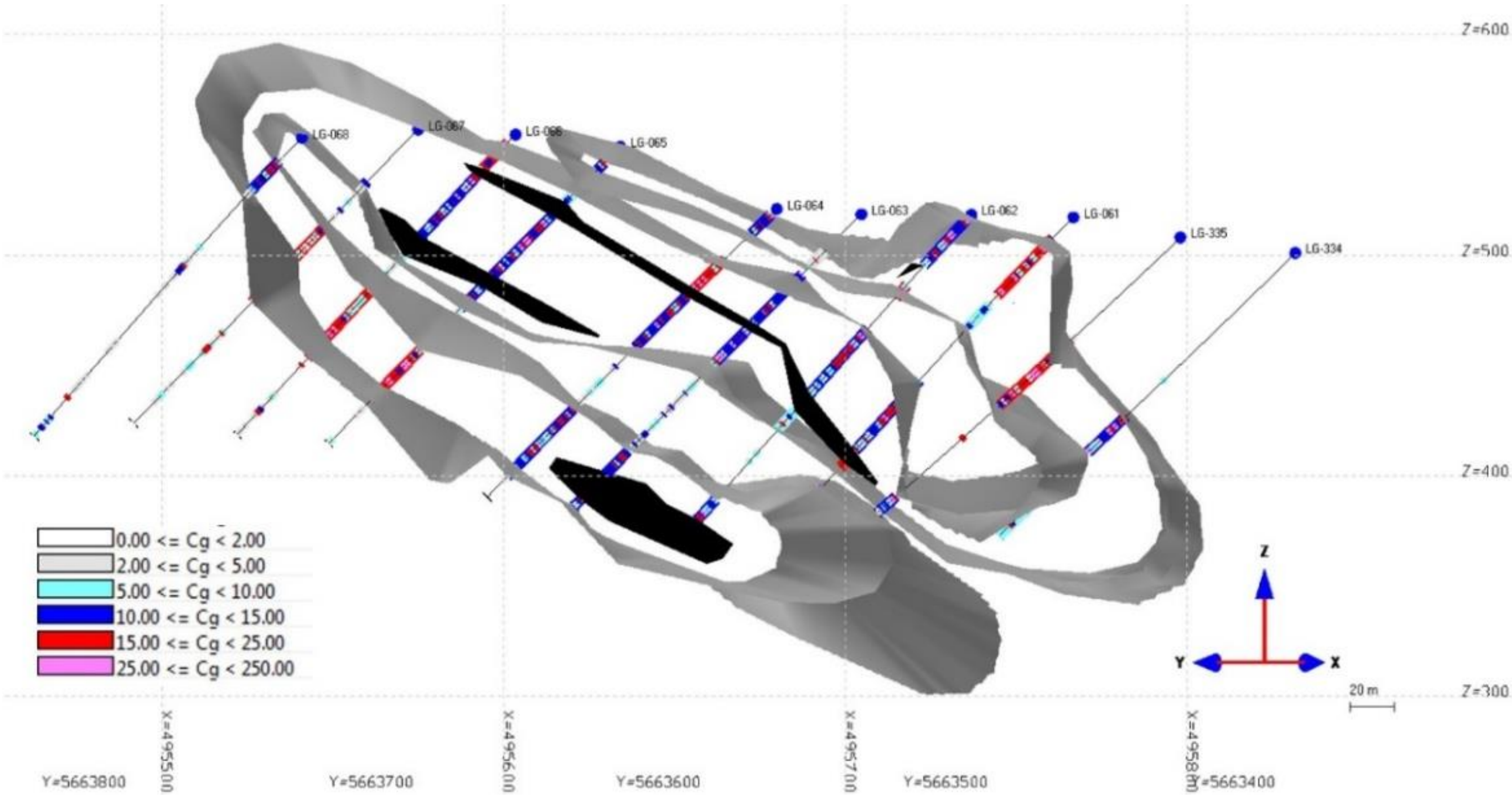


Figure 14-7 - Section 850 Looking Northeast Showing the Mineralized Envelope [1]

[1] Body 1, grey and the waste zones in black.

14.5.1 COMPOSITING OF ASSAY INTERVALS

Before assigning grades to dimensionless “points” in the 3D space (the composite centres) in the block grade interpolation, it is necessary uniformize the length of the grade “support” through numerical compositing. Each composite has a length of 3 metres, created from the beginning of each mineralized interval (Figure 14-8).

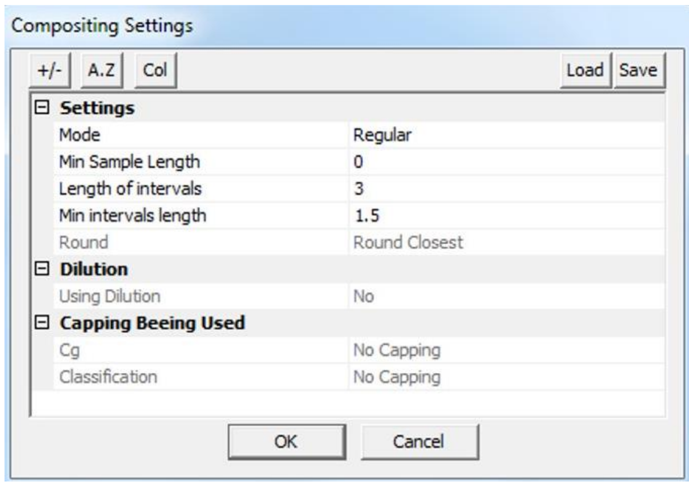


Figure 14-8 - Compositing Parameters

Compositing is done downhole from the start of the mineralized intersection. Missing assays and unsampled length are assumed to be zero grade. At the end of the mineralized intersection, the last retained composite is the last with a minimum length of 1.5 metres. It is important to mention that only composites within the mineralized envelopes have been used to estimate the Mineral Resources.

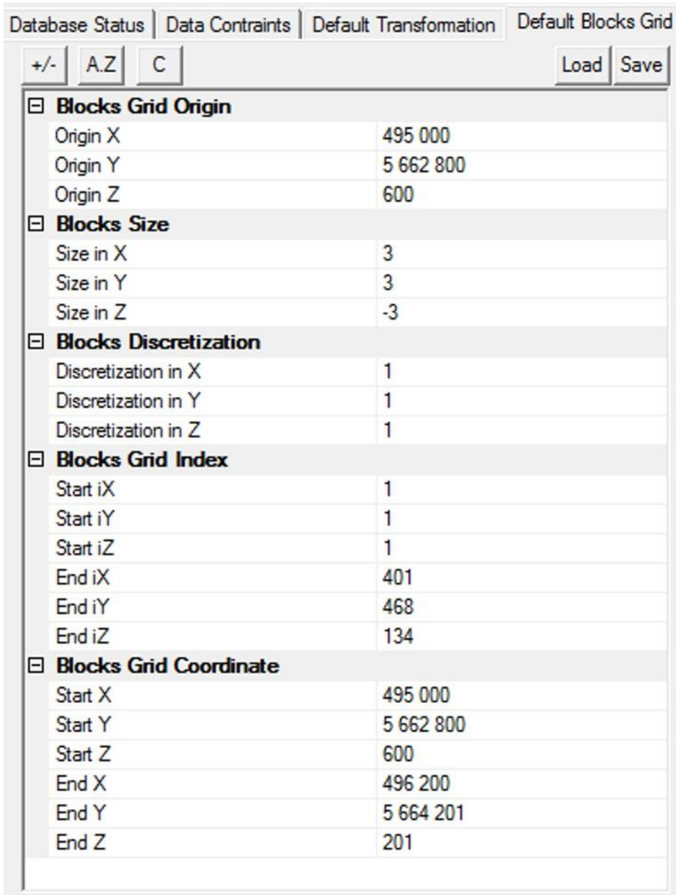
No grade capping was applied to Lac Guéret assays results since the highest grades were spatially and statistically coherent in space.

14.5.2 THE BLOCK MODEL

14.5.2.1 BLOCK MODEL DEFINITION

Mineral Resources Estimates of the Lac Guéret property were done with Genesis software for modeling and Mineral Resources Estimate.

The origin of the block model (Figure 14-9) is the lower left corner of the Lac Guéret property (495000E, 5662800N, 600Z). The block size has been defined to respect complex geometry of the envelopes. The Mineral Resources Estimate was carried out with a block size of 3 m (EW) x 3 m (NS) x 3 m (Z).


Database Status | Data Contraints | Default Transformation | Default Blocks Grid

+/- A.Z C Load Save

Blocks Grid Origin	
Origin X	495 000
Origin Y	5 662 800
Origin Z	600
Blocks Size	
Size in X	3
Size in Y	3
Size in Z	-3
Blocks Discretization	
Discretization in X	1
Discretization in Y	1
Discretization in Z	1
Blocks Grid Index	
Start iX	1
Start iY	1
Start iZ	1
End iX	401
End iY	468
End iZ	134
Blocks Grid Coordinate	
Start X	495 000
Start Y	5 662 800
Start Z	600
End X	496 200
End Y	5 664 201
End Z	201

Figure 14-9 - Block Model Parameters

Three block models were produced (Body 1, 2 and 3; Figure 14-10). The envelopes have been filled by regular blocks and only composites within the envelopes were used to estimate the block grades. This represents a total of 5,725 composites (5,591 composites were used for Body 1; 87 composites for Body 2 and 47 composites for Body 3).

The average % Cg grade was calculated for each block using interpolation according to the inverse of the distance from the nearest composites. Interpolation parameters were based on drill spacing, envelope extension and orientation.

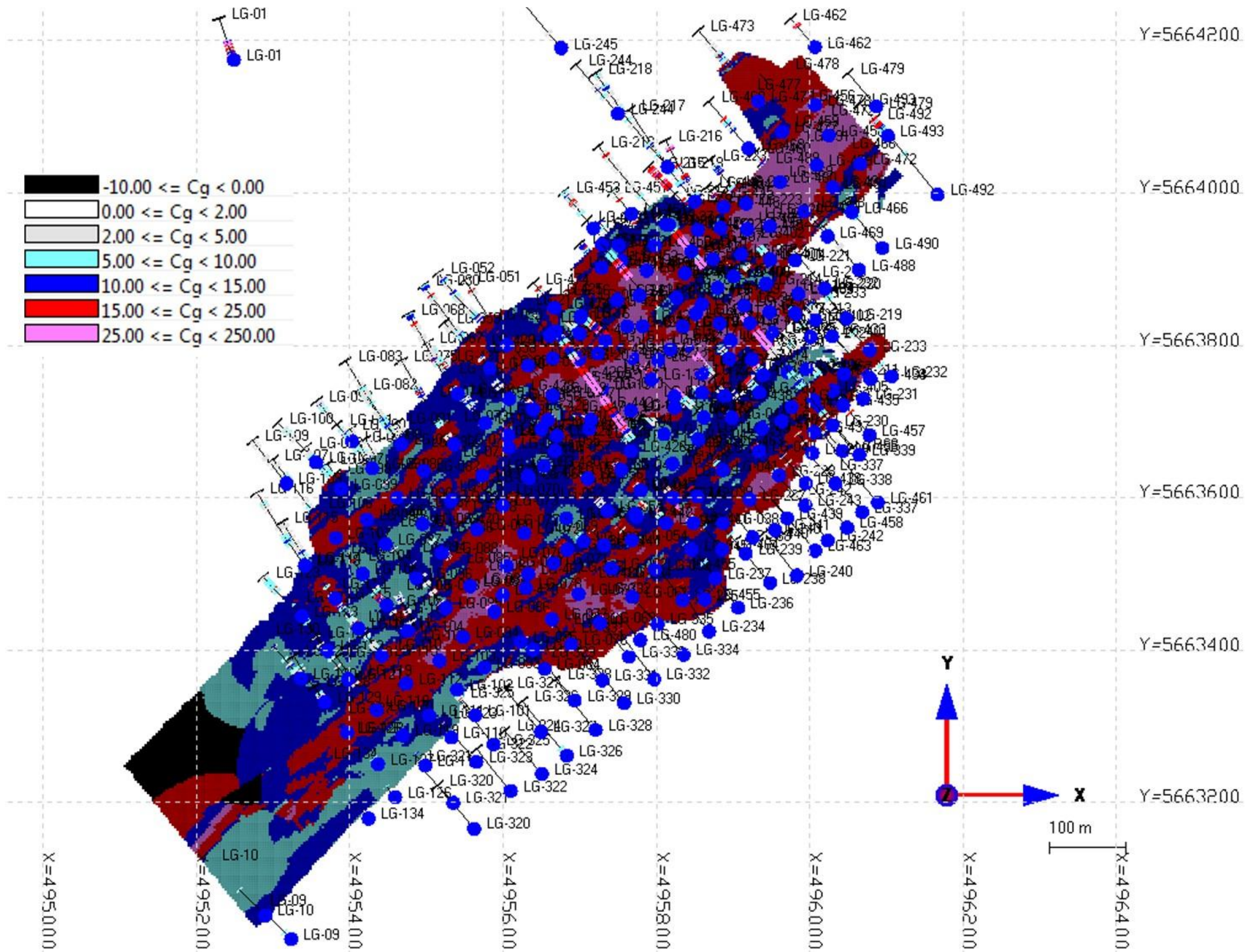


Figure 14-10 - Plan View of the Block Models Colour Coded by %Cg

14.5.2.2 ELLIPSOID PARAMETERS AND INTERPOLATION

Three runs were used for the Mineral Resources Estimate of the Lac Guéret property (Table 14-6). For run one, the number of composites was limited to ten with a maximum of two composites from the same drillhole. For runs two and three the number of composites was limited to ten with a maximum of one composite from the same drillhole.

Table 14-6 - Variable Search Ellipsoid Parameters for Mineral Resources Estimate

Ellipsoid name	Run_01	Run_02	Run_03
Azimuth	05	05	05
Dip	40	40	40
Spin	0	0	0
Major axis	40	60	120
Median axis	60	80	120
Minor axis	15	15	120

A variable direction search ellipsoid was used for the grade estimation and follows the geological interpretation trends. Table 14-6, show the size of the variable ellipsoid used for the Mineral Resources Estimate.

14.5.2.3 MINERAL RESOURCES CLASSIFICATION

The Lac Guéret Mineral Resources were automatically classified using variable search ellipsoids for each category (Table 14-7).

The classification parameters used for Lac Guéret are:

- Measured Mineral Resources used at least eight composites per block, with a maximum of ten composites and two composites per drillhole were used.
- Indicated Mineral Resources used at least four composites per block, with a maximum of ten composites and two composites per drillhole were used.
- Inferred Mineral Resources used at least two composites per block, with a maximum of ten composites and two composites per drillhole were used.

Table 14-7 - Search Ellipsoid Parameters for Mineral Resources Classification

Ellipsoid Parameter	Measured	Indicated	Inferred
Azimuth	05	05	05
Dip	40	40	40
Spin	0	0	0
Azimuth2	0	0	0
Major Axis	40	50	160
Median Axis	40	50	120
Minor Axis	15	20	120

Each mineralized body (meshed envelopes) was validated visually to ensure that grade and classification distributions were geologically reasonable (Figure 14-11, Figure 14-12, Figure 14-13 and Figure 14-14).

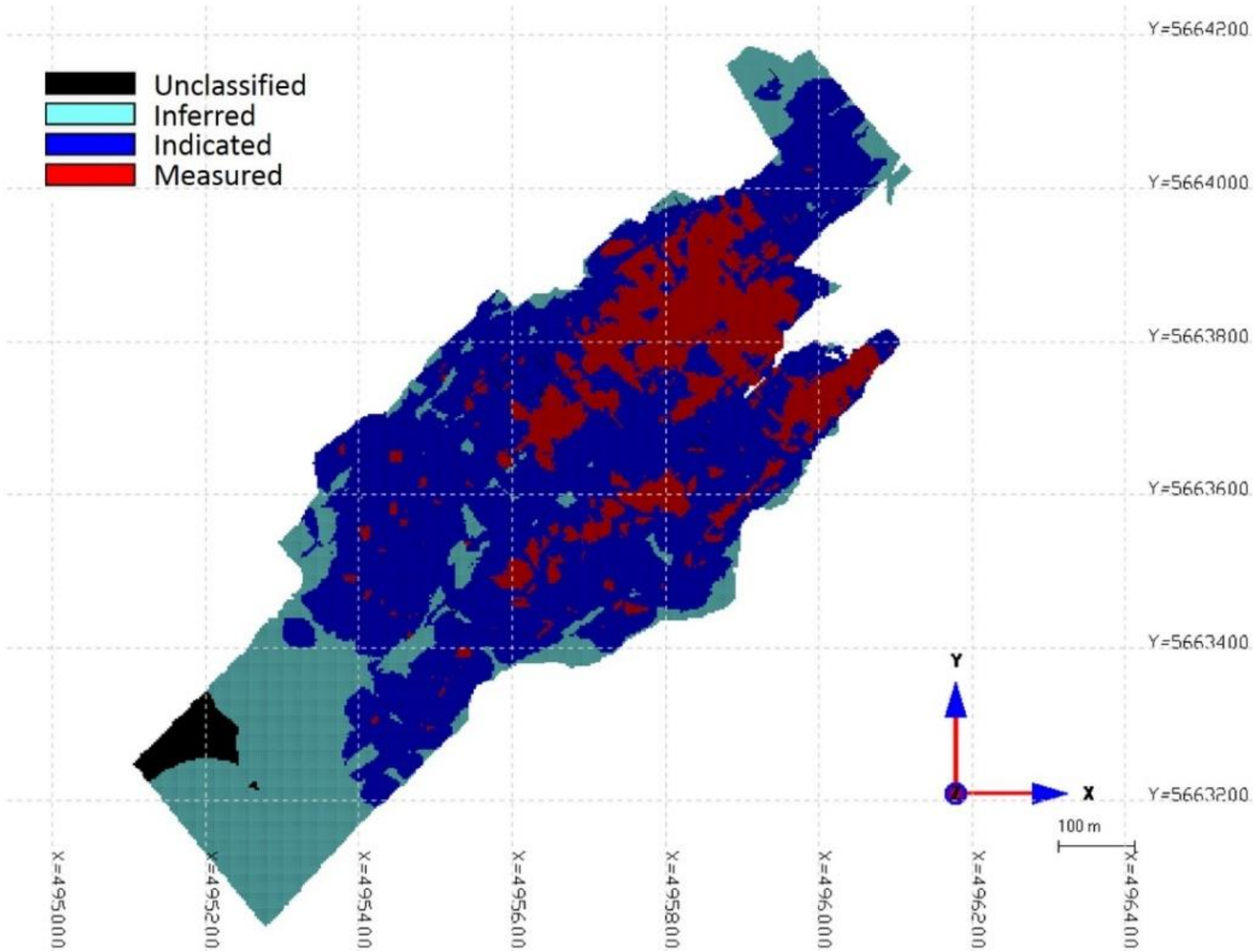


Figure 14-11 - Plan View Showing the Block Model Colour Coded by Classification[1]

[1] Overburden extracted.

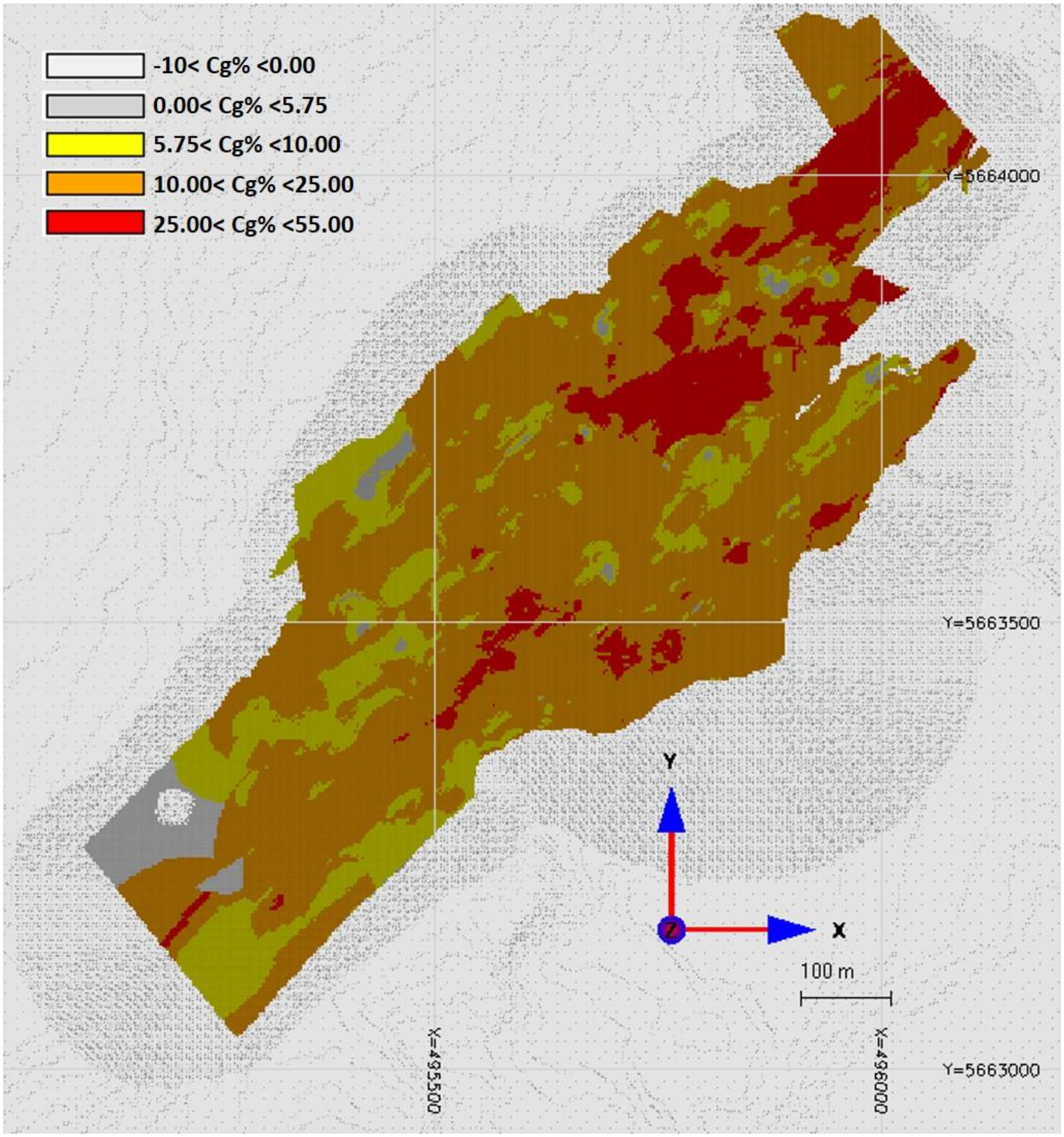


Figure 14-12 - Plan View of Mineral Resources Colour Coded by Classification [1]

[1] In Whittle Modeled by GMG in January 2014.

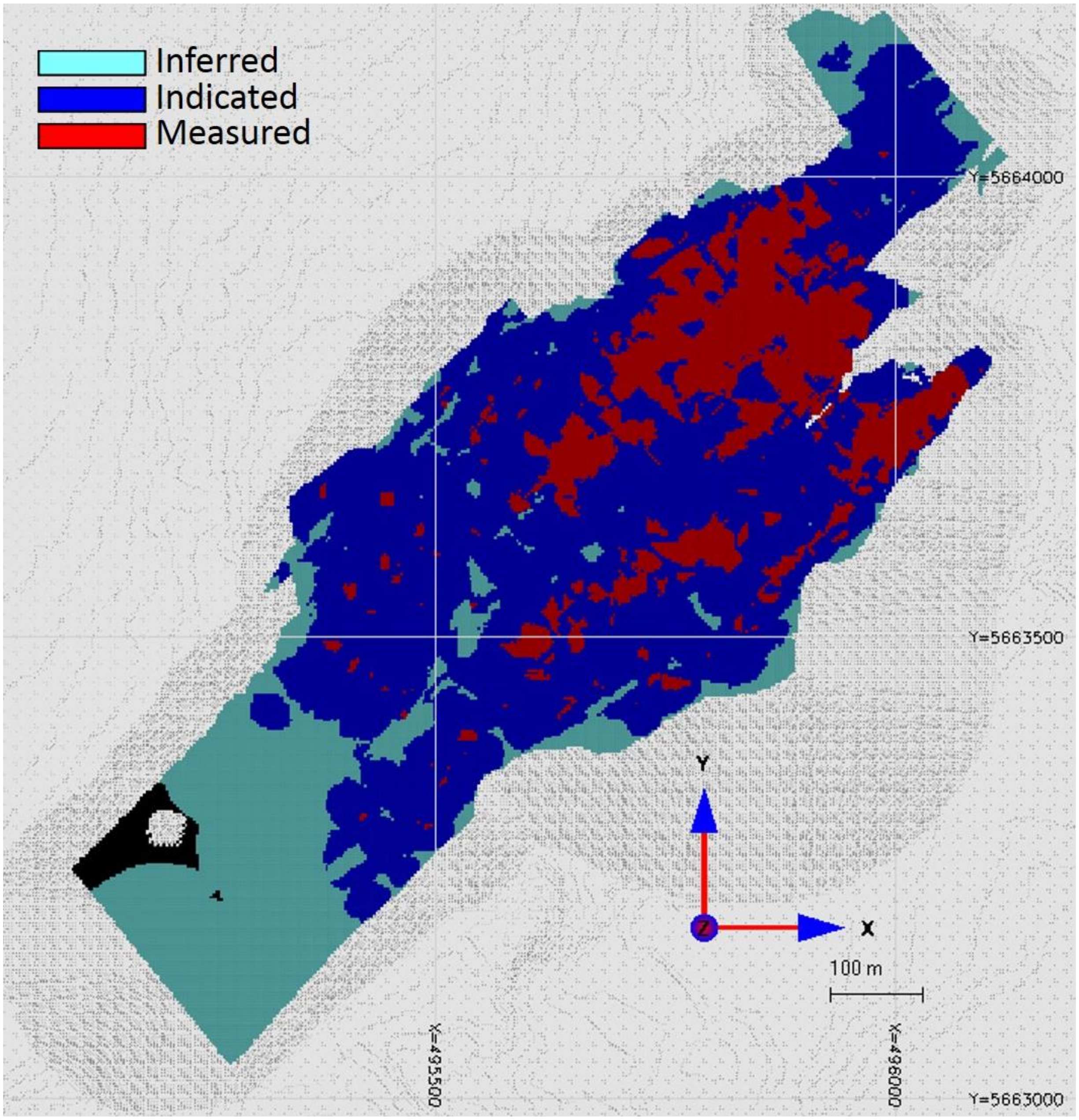


Figure 14-13 - Plan View of Mineral Resources with Colour Coded by Classification [1]

[1] In Whittle, Modeled by GMG in December 2014.

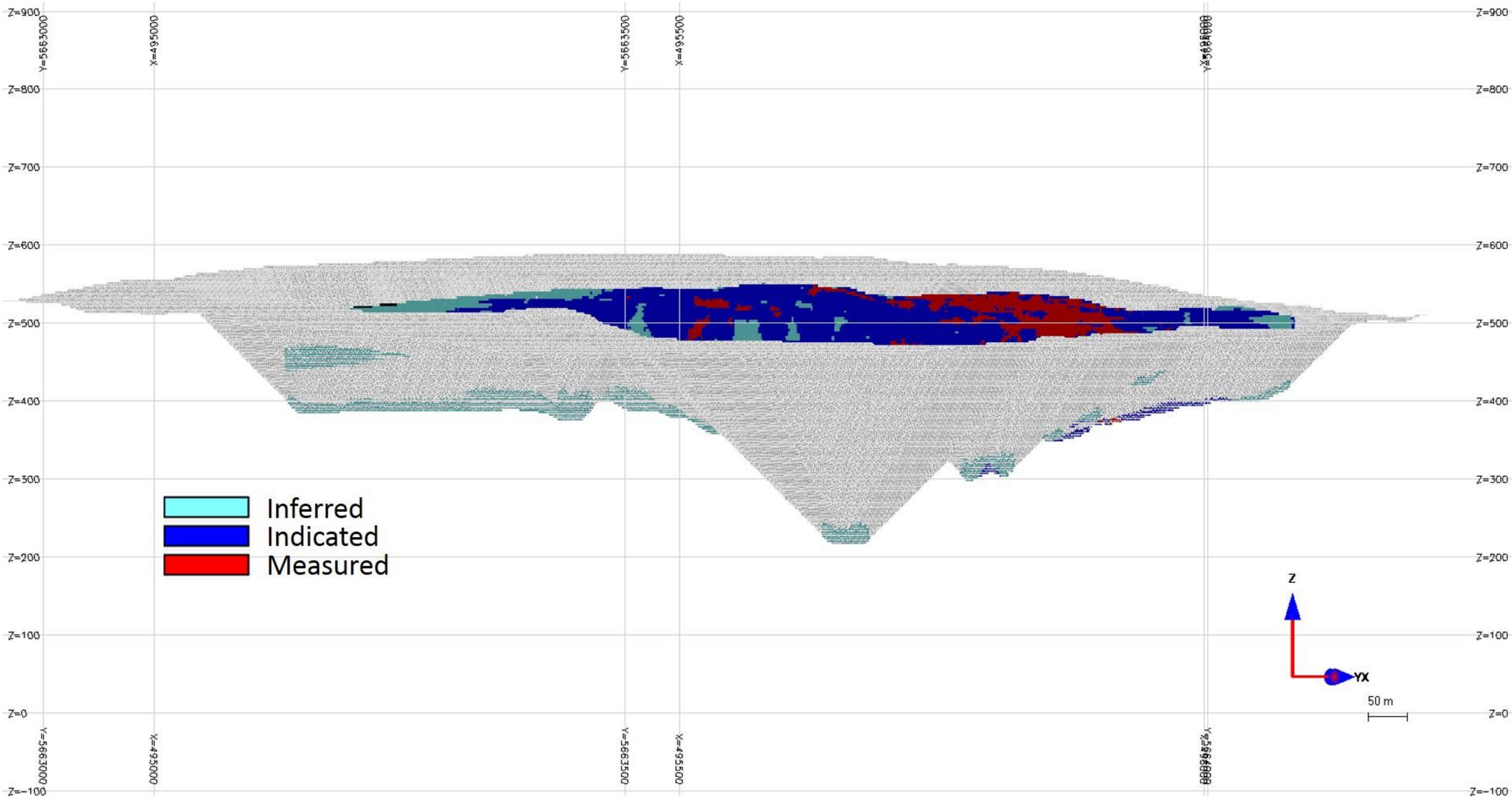


Figure 14-14 - Section Looking Northwest Showing Block Models in-pit.

14.6 MINERAL RESOURCES ESTIMATE RESULTS

The Mineral Resources of the Lac Guéret were estimated in 2016 by GoldMinds Geoservices (GMG) using a cut-off grade (COG) of 5% Cg as base case scenario. In 2018, we used a new cut-off grade of 5.75% Cg as the result of the revised economic parameters and a new pit optimization was designed using the same block model done by GMG in 2016.

The Measured and Indicated Mineral Resources are around 65.9 million tonnes at 17.22% Cg within the Whittle (named 'PIT01 COG 5.75'), (Table 14-8, Table 14-9, Table 14-10, Table 14-11, Table 14-12, Table 14-13, Table 14-14 and Table 14-15).

Mineral Reserves and Mineral Resources are as defined by CIM Definition Standards on Mineral Resources and Mineral Reserves. Mineral Resources which are not Mineral Reserves do not have demonstrated economic viability.

Table 14-8 - Mineral Resources Estimate for Lac Guéret [1]

Constrained Mineral Resources	Density	% Cg	Tonnes
Measured 5.75% < Cg < 25%	2.9	15.2	15,646,000
Measured Cg > 25%	2.9	30.6	3,375,000
Total Measured	**2.9**	**17.9**	**19,021,000**
Indicated 5.75% < Cg < 25%	2.9	14.5	40,194,000
Indicated Cg > 25%	2.9	31.6	6,325,000
Total Indicated	**2.9**	**16.9**	**46,519,000**
Indicated + Measured 5.75% < Cg < 25%	2.9	14.7	58,840,000
Indicated + Measured Cg > 25%	2.9	31.2	9,700,000
Total Measured + Indicated	**2.9**	**17.2**	**65,540,000**
Inferred 5.75% < Cg < 25%	*2.9*	*14.9*	*15,145,000*
Inferred Cg > 25%	*2.9*	*31.8*	*2,468,000*
Total Inferred	***2.9***	***17.3***	***17,613,000***

[1] Body 1 + 2 + 3, using a 5.75 < Cg < 25% and Cg > 25% in-pit, rounded numbers.

Table 14-9 - Mineral Resources Estimate for Lac Guéret [1]

Classification 5.75% < Cg < 25%	Density	% Cg	Tonnes
Inferred	2.90	14.9	15,145,000
Indicated	2.90	14.5	40,194,000
Measured	2.90	15.2	15,646,000
Measured + Indicated	**2.90**	**14.7**	**55,840,000**

Table 14-10 - Mineral Resources Estimate for Lac Guéret (Body 1) [2]

Classification 5.75% < Cg < 25%	Density	% Cg	Tonnes
Inferred	2.90	14.9	14,852,000
Indicated	2.90	14.8	38,977,000
Measured	2.90	15.2	15,624,000
Measured + Indicated	**2.90**	**14.9**	**54,601,000**

Table 14-11 - Mineral Resources Estimate for Lac Guéret (Body 2) [3]

Classification 5.75% < Cg < 25%	Density	% Cg	Tonnes
Inferred	2.90	12.5	96,000
Indicated	2.90	9.6	762,000
Measured	2.90	9.8	20,000
Measured + Indicated	**2.90**	**9.6**	**782,000**

Table 14-12 - Mineral Resources Estimate for Lac Guéret (Body 3) [4]

Classification 5.75% < Cg < 25%	Density	%Cg	Tonnes
Inferred	2.90	9.7	197,000
Indicated	2.90	11.2	455,000
Measured	2.90	11.2	2,000
Measured + Indicated	**2.90**	**11.2**	**457,000**

---

[1] Body 1 + 2 + 3, using a 5.75 < Cg < 25% in Whittle, rounded numbers.

[2] Using a 5.75 < Cg < 25% in Whittle (rounded numbers).

[3] Using a 5.75 < Cg < 25% in Whittle (rounded numbers).

[4] Using a 5.75 < Cg < 25% in Whittle (rounded numbers).

Table 14-13 - Mineral Resources Estimate for Lac Guéret (Body 1+2+3) [1]

Classification Cg > 25%	Density	% Cg	Tonnes
Inferred	2.90	31. 8	2,468,000
Indicated	2.90	31.6	6,325,000
Measured	2.90	30.6	3,375,000
Measured + Indicated	**2.90**	**31.2**	**9,700,000**

Table 14-14 - Mineral Resources Estimate for Lac Guéret (Body 1) [2]

Classification Cg > 25%	Density	% Cg	Tonnes
Inferred	2.90	31.8	2,468,000
Indicated	2.90	31.6	6,278,000
Measured	2.90	30.6	3,375,000
Measured + Indicated	**2.90**	**31.2**	**9,653,000**

Table 14-15 - Mineral Resources Estimate for Lac Guéret (Body 2) [3]

Classification Cog > 25%Cg	Density	%Cg	Tonnes
Inferred	2.90	29.2	313
Indicated	2.90	29.0	47,000
Measured	2.90	n/a	0
Measured + Indicated	**2.90**	**29.0**	**47,000**

There is a very small difference between the use of a cut-off grade of 5% Cg and 5.75% Cg. The table below shows the difference in term of the pit constrained Mineral Resources.

The graphite mineralization at Lac Guéret property is extensive in terms of size and grade. There is a significant amount of resource and the graphite mineralization extends to the northeast as well as the southeast around the iron formation anticlinorium core.

[1] Using a Cg > 25% in Whittle (rounded numbers)

[2] Using a Cg > 25% in Whittle (rounded numbers)

[3] Using a Cg > 25% in Whittle (rounded numbers)

Table 14-16 - Comparison of 2014 and 2018 Mineral Resources Estimates

Mineral Resources Estimates Lac Guéret	Mineral Resources Estimate Updated, December 2014 by GMG (In Whittle 40 COG 5% Cg)		Mineral Resource Estimates November 2018 by GMG (In Pit, COG 5.75% Cg)	
	% Cg	Tonnes	%Cg	Tonnes
Indicated	16.9	46,589,000	16.9	46,519,000
Measured	17.9	19,105,000	17.9	19,021,000
Measured + Indicated	**17.2**	**65,693,000**	**17.2**	**65,540,000**
Inferred	*17.2*	*17,651,000*	*17.3*	*17,613,000*

15. MINERAL RESERVE ESTIMATES

The Mineral Reserves for the Lac Guéret deposit were prepared by Jeffrey Cassoff, P. Eng., Senior Mining Engineer with BBA Inc. and Qualified Person. The Mineral Reserves have been developed using best practices in accordance with CIM guidelines and National Instrument 43-101 reporting. The effective date of the Mineral Reserve estimate is September 25, 2015. BBA has validated that the Mineral Reserves are current for this Feasibility Study Update, based on the updated economic parameters of the Project.

The Mineral Reserves were derived from the Mineral Resources Block Model that was presented in Chapter 14. The Mineral Reserves are the Measured and Indicated Mineral Resources that have been identified as being economically extractable and which incorporate mining losses and the addition of waste dilution.

15.1 GEOLOGICAL INFORMATION

The following section discusses the geological information that was used for the mine design and Mineral Reserve estimate. This information includes the topographic surface, the geological block model and the material properties for ore, waste and overburden. Overburden is the till deposit that overlies the bedrock. The overburden at Lac Guéret is composed of sand and silt to silty sand, with some traces of gravel and traces of clay.

The mine planning work carried out for the Feasibility Study was done using MineSight® Version 13. MineSight® is a commercially available mine planning software that has been used by BBA for over 10 years.

15.1.1 TOPOGRAPHIC SURFACE

The mine design for the Feasibility Study was carried out using a topographic surface that originated from a Laser Imaging Detection and Ranging Survey (LiDAR). The topographic surface was supplied by Hatch as 2 m elevation contours.

15.1.2 RESOURCE BLOCK MODEL

The mine design for the Feasibility Study is based on the 3-dimensional geological block model that was prepared by GMG and Roche and presented in Chapter 14. Each block in the model is 3 m wide, 3 m long and 3 m high and there is no rotation to the model. Only blocks that contain mineralization are included in the 3-dimensional geological block model.

Each block in the model contains the Cg grade and the resource classification (Measured, Indicated and Inferred). Using the overburden surface provided by Roche, it was possible to differentiate the non-mineralized material as either overburden or waste rock.

15.1.3 MATERIAL PROPERTIES

The material properties for the different rock types are outlined below. These properties are important in estimating the Mineral Reserves, the equipment fleet requirements as well as the dump and stockpile design capacities.

15.1.3.1 DENSITY

As was presented in Chapter 14 of this report, the average in-situ dry density of the mineralized material was estimated to be 2.90 t/m^3.

A density of 2.75 t/m^3 was used for the waste rock and 2.1 t/m^3 for the overburden which are consistent with the values used in the Preliminary Economic Assessment.

15.1.3.2 SWELL FACTOR

The swell factor reflects the increase in volume of material from its in-situ state to after it is blasted and loaded into the haul trucks. A swell factor of 45% was used for the Feasibility Study, which is a typical value used for open pit hard rock mines. Once the rock is placed in the waste dumps and stockpiles, the swell factor is reduced to 30% due to compaction. A swell factor of 30% was used for the overburden, 15% following compaction.

15.1.3.3 MOISTURE CONTENT

The moisture content reflects the amount of water that is present within the rock formation. It affects the estimation of haul truck requirements and must be considered during the payload calculations. The moisture content is also an important factor for the process water balance. A moisture content of 5% was used for the Feasibility Study, which is typical for similar projects in the region.

15.2 OPEN PIT OPTIMIZATION

The first step in the Mineral Reserves Estimate is to carry out a pit optimization analysis. The pit optimization analysis uses economic criteria to determine the cut-off grade and to what extent the deposit can be mined profitably.

The pit optimization analysis was done using the MS-Economic Planner module of MineSight®. The optimizer uses the 3D Lerchs-Grossmann algorithm to determine the economic pit limits based on input of mining and processing costs and revenue per block. In order to comply with NI 43-101 guidelines regarding the Standards of Disclosure for Mineral Projects, only blocks classified in the Measured and Indicated categories are allowed to drive the pit optimizer. Inferred resource blocks are treated as waste, bearing no economic value.

Table 15-1 presents the parameters that were used for the pit optimization analysis. All figures are in Canadian Dollars. The cost and operating parameters that were used are preliminary estimates that were developed at the start of the Study and should not be confused with those presented in Chapter 21. Upon completion of this Feasibility Study Update, it was confirmed that the pit optimization exercise was still valid using the updated cost estimate developed in this current study. As was the case in the Feasibility Study, the Mineral Reserves are limited to the 25-year life of the project rather than the economic parameters.

Table 15-1 - Pit Optimization Parameters

Item	Units	Value
Mining Cost (Ore) [1]	$/t (mined)	41.00
Mining Cost (Waste)	$/t (mined)	6.00
Processing Cost	$/t (milled)	40.20
Administration Cost	$/t (milled)	75.51
Sales Price (FCA Baie-Comeau)	$/t (conc.)	1,500
Mill Recovery	%	90
Concentrate Grade	%	95
Pit Slope	degree	30

Using the cost and operating parameters, a series of 20 pit shells was generated by varying the selling price (revenue factor) from 320 to $1,750/t.

Figure 15-1 presents a longitudinal section through the deposit with several of the important pit shells. The tonnages and grades associated with each of the pit shells are presented in Table 15-2. The Net Present Value (NPV) of each shell was calculated assuming a selling price of $1,500/t of concentrate (FCA Baie-Comeau), a discount rate of 10% and an annual production of 50,000 tonnes of concentrate. Figure 15-2 presents the results in a graphical format.

Table 15-2 - Pit Optimization Results

Pit	Revenue Factor	Ore (Mt)	Cg (%)	Waste (Mt)	Strip Ratio	NPV [2] (M$)	Mine Life (y)
PIT21	0.213	0.2	38.2	0.2	0.74	92	2
PIT22	0.227	0.7	36.4	0.4	0.64	210	5

[1] The mining cost for ore includes transportation to the plant site in Baie-Comeau.

[2] The NPV's presented here should not be confused with those presented in Chapter 22 since they were calculated at the start of the Study and do not consider the capital investment for the Project.

Pit	Revenue Factor	Ore (Mt)	Cg (%)	Waste (Mt)	Strip Ratio	NPV [2] (M$)	Mine Life (y)
PIT23	0.249	1.4	34.0	0.8	0.56	342	10
PIT24	0.270	2.3	32.2	1.4	0.61	425	15
PIT25	0.287	3.3	30.6	2.2	0.65	474	20
PIT26	**0.298**	**4.5**	**29.2**	**3.0**	**0.67**	**507**	**25**
PIT27	0.307	5.5	28.4	3.8	0.70	520	30
PIT28	0.317	6.5	27.6	4.5	0.69	528	35
PIT29	0.321	7.8	27.0	5.7	0.73	533	40
PIT30	**0.332**	**8.8**	**26.5**	**6.6**	**0.74**	**534**	**45**
PIT31	0.350	10.2	25.9	7.9	0.77	533	50
PIT32	0.432	17.1	23.0	15.4	0.90	513	75
PIT33	0.450	18.6	22.5	17.6	0.95	509	80
PIT34	0.467	26.6	20.5	27.5	1.04	487	104
PIT35	0.500	48.9	18.1	58.0	1.18	454	168
PIT36	0.533	53.1	17.8	67.0	1.26	450	180
PIT37	0.600	59.1	17.6	84.8	1.44	442	197
PIT38	0.667	60.4	17.5	91.8	1.52	440	201
PIT39	1.000	64.2	17.3	116.4	1.81	432	211
PIT40	1.167	64.7	17.3	123.5	1.91	429	212

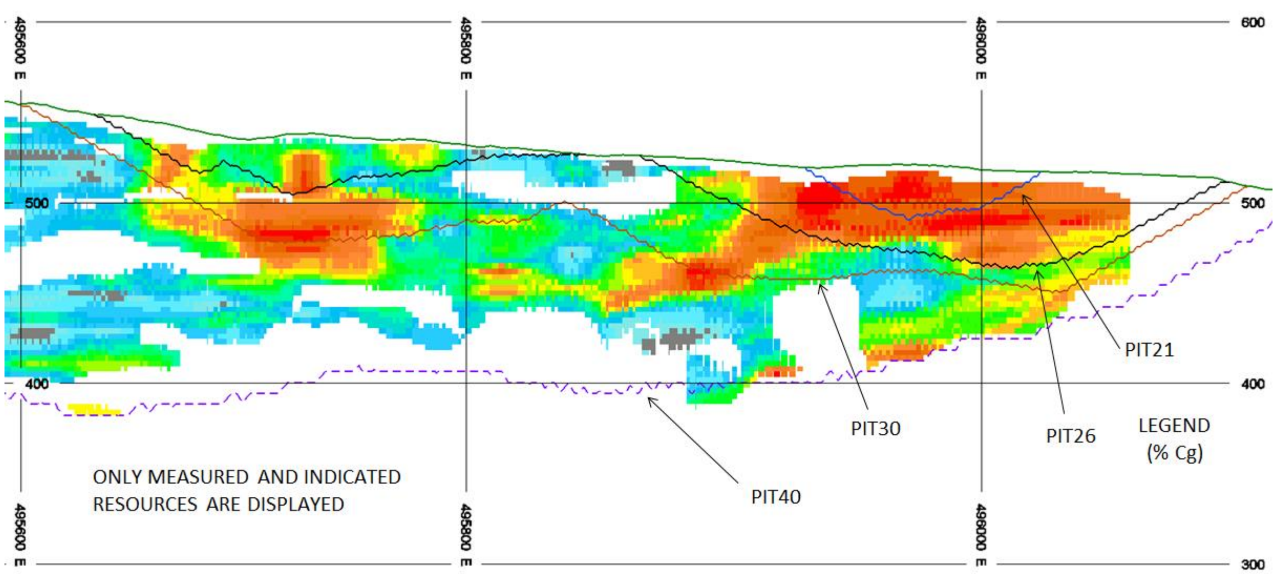


Figure 15-1 - Pit Optimization Shells

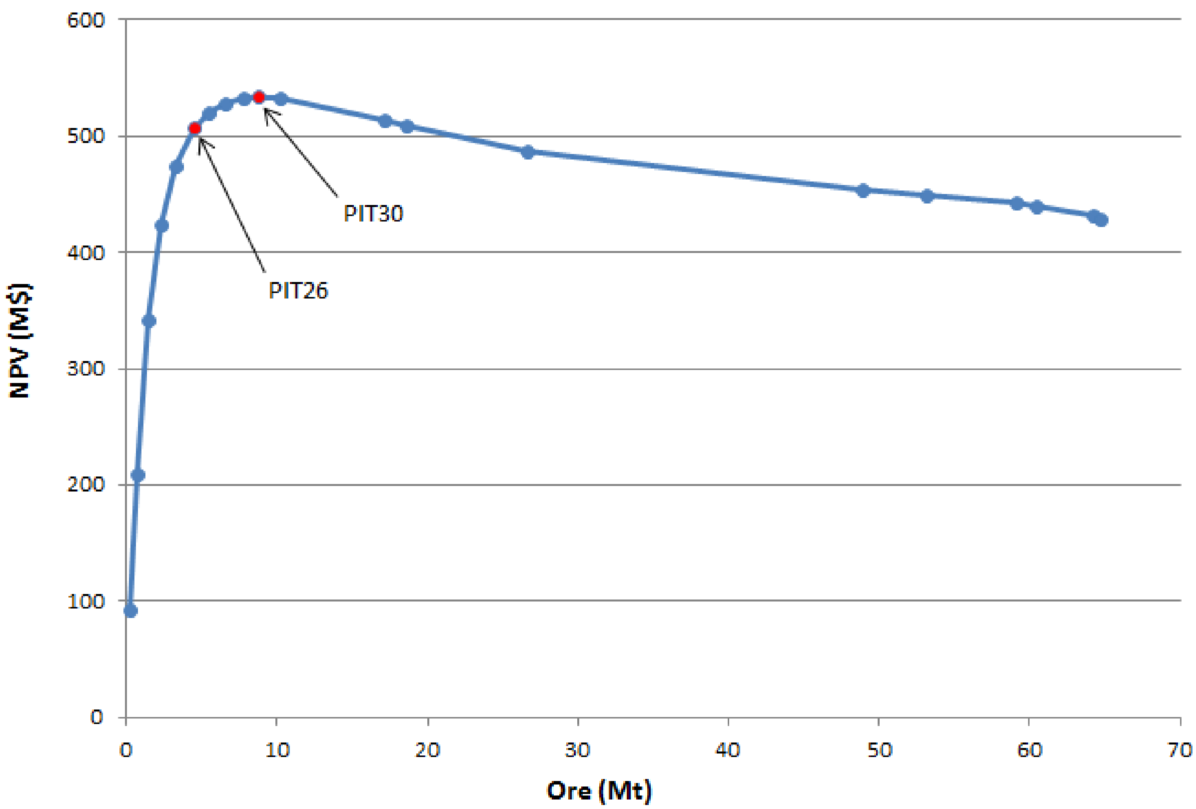


Figure 15-2 - Pit Optimization Results

The pit optimization analysis shows that the pit that provides the maximum NPV is PIT30 (Revenue Factor - 0.332). This pit shell contains 8.8 Mt of Measured and Indicated Mineral Resources at a strip ratio of 0.74 to 1 and has a mine life of 45 years at the planned production rate. Mining additional resources beyond the limits of this pit results in a lowering of the average grade and an increase in the strip ratio, both of which have a negative effect on the NPV.

Since at the start of the Feasibility Study it was obvious that there were enough Mineral Resources for a very long mine life and it was clear that the pit optimization may result in an optimum pit with a very long mine life, it was decided to limit the horizon of the Feasibility Study to 25 years. The purpose of this limitation is because a financial study cannot be reliably conducted for an extended period of time and because the cash flows generated beyond 25 years have little impact on the internal rate of return (IRR) and payback period of a project.

The pit shell that provides a 25-year mine life is PIT26 (Revenue Factor – 0.298). This pit shell contains 4.5 Mt of Measured and Indicated Mineral Resources at a strip ratio of 0.67 to 1. This pit shell was used as a guideline for the detailed pit design which is presented in the next chapter of this report.

15.2.1 CUT-OFF GRADE

Using the economic parameters presented in Table 15-1, the open pit cut-off grade was calculated to be 6% Cg. The cut-off grade is used to determine whether the material being mined will generate a profit after paying for the mining, processing, transportation and G&A costs. Material that is mined below the cut-off grade is sent to the waste rock pile.

Figure 15-3 presents a histogram of the grades and tonnage of the Measured and Indicated Mineral Resources. The histogram shows that the Lac Guéret deposit contains very little tonnage below the cut-off grade.

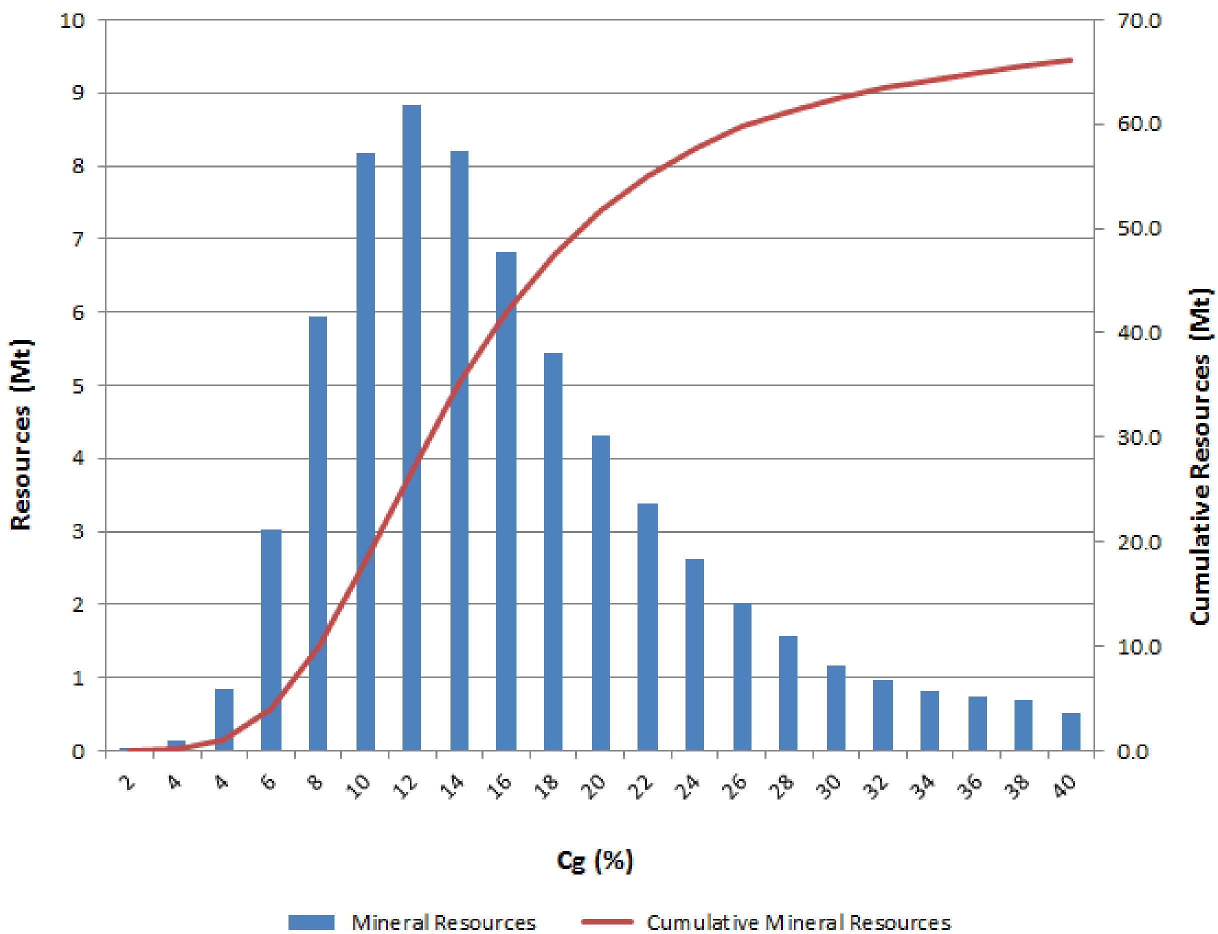


Figure 15-3 - Grade Tonnage Curve

15.3 OPEN PIT DESIGN

The following section presents the design criteria and results of the 25-year open pit that was used as the basis for the production plan. The pit design uses the optimized pit shell as a guideline and includes smoothing the pit wall, adding ramps to access the pit bottom and ensuring that the pit can be mined using the selected equipment.

15.3.1 GEOTECHNICAL PIT SLOPE PARAMETERS

The geotechnical pit slope parameters were provided by SNC Lavalin in a report titled "Lac Guéret Project Open Pit Slope Recommendations", April 2015.

Due to the highly fractured nature of the deposit and the presence of many faults, the report recommends an inter-ramp angle 30°. This slope is achieved with 10 m bench heights, a bench face angle of 47° and an 8 m wide catch bench, which are presented in Figure 15-4.

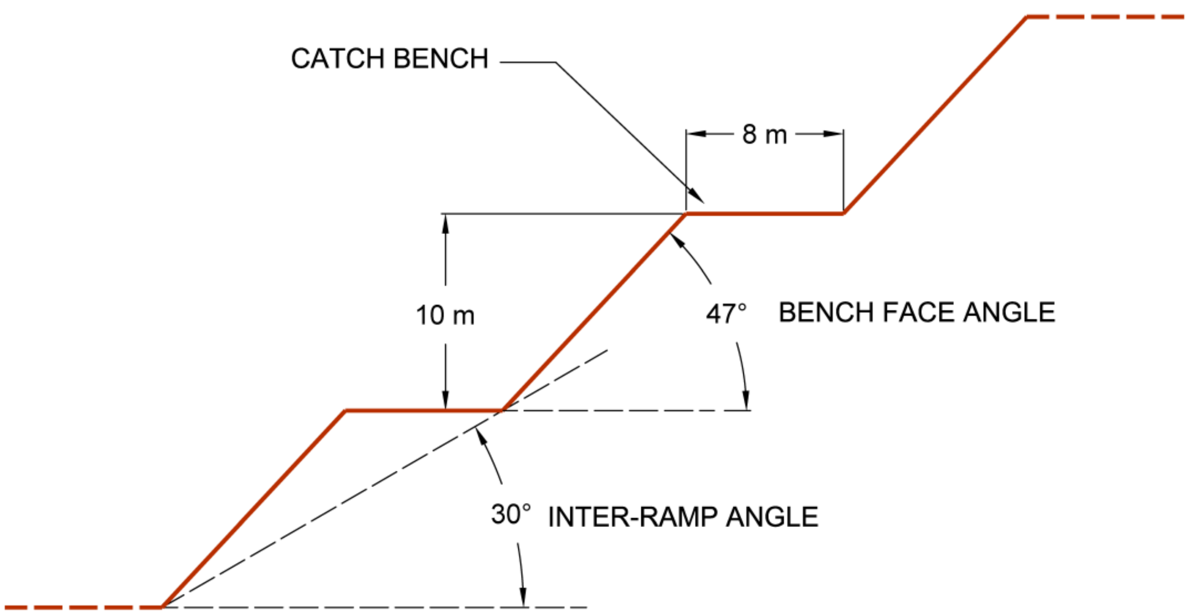


Figure 15-4 - Pit Wall Configuration

15.3.2 HAUL ROAD DESIGN

The ramps and haul roads were designed for haulage with 23.6-tonne sized articulated mining trucks, with an overall width of 15 m. For double lane traffic, industry practice indicates the running surface width to be a minimum of three times the width of the largest truck. The overall width of a 23.6-tonne articulated mining truck is 3.5 m which results in a running surface of 10.5 m. The allowance for berms and ditches increases the overall haul road width to 15 m. A maximum ramp grade of 8% was used. Figure 15-5 presents a typical section of the in-pit ramp design.

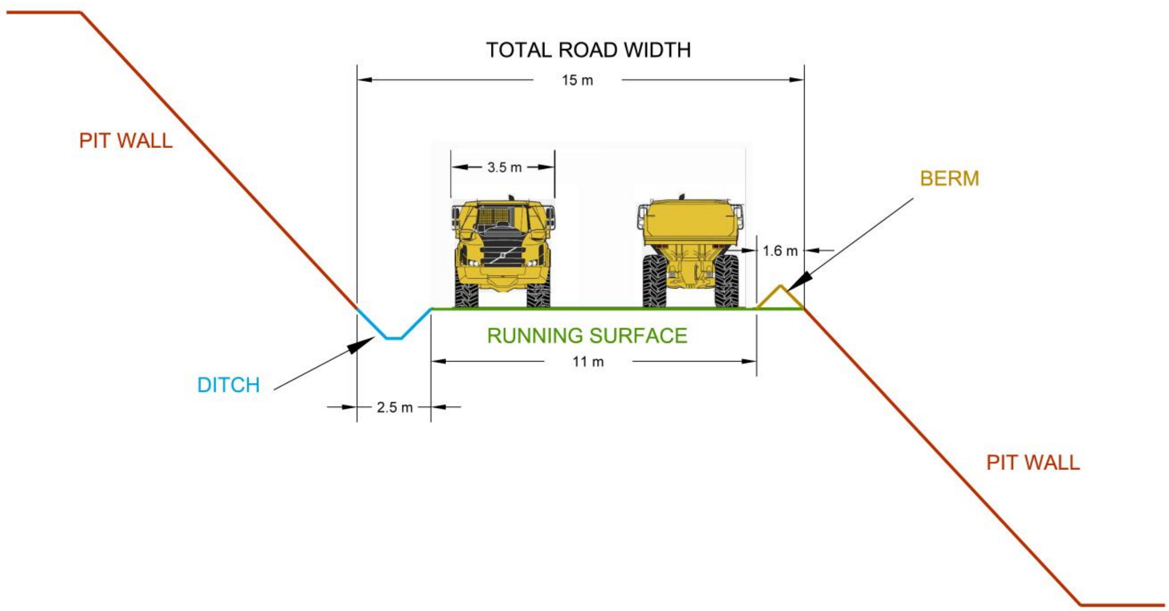


Figure 15-5 - Ramp Design

15.3.3 MINE DILUTION AND ORE LOSS

In every mining operation, it is impossible to perfectly separate the ore and waste as a result of the large scale of the mining equipment and the use of drilling and blasting. In order to account for mining dilution, a diluted Cg grade value has been assigned for each block of ore that neighbours a waste block.

The mining dilution was estimated at 10%, meaning that for each 3 m wide block of ore, 0.3 m of the neighbouring waste block was included as dilution. A Cg grade of 0% was used for the waste. Since the deposit is massive and contains very few bands of waste rock within the graphite formation, the addition of mining dilution resulted in lowering the Cg grade within the 25-year open pit from 28.3% to 27.8%.

It is assumed that the ore losses for the Lac Guéret deposit will be equal to the tonnage of waste that will be diluted with the ore and sent to the crusher. This assumption results in a zero loss/gain of ore tonnage.

15.3.4 MINIMUM MINING WIDTH

A minimum mining width of 15 m was considered for the open pit design. This is based on a 9 m turning radius for a 23.6-tonne haul truck plus several metres on each side for safety.

15.3.5 MINERAL RESERVES

The pit that has been designed for the Lac Guéret deposit is approximately 650 m long and 250 m wide at surface with a maximum pit depth from surface of 65 m as presented in Figure 15-6. The total surface area of the pit is roughly 130,000 m^2. The overburden thickness averages 5 m and ranges from 1 to 18 m.

The pit ramp enters in the southeast corner at the 500 m elevation. The ramp heads west down the south wall of the pit to the 490 m elevation where it splits into two ramps. The first ramp accesses the eastern part of the pit, where the deepest elevation is 460 m, and the second ramp accesses the western part of the pit, where the deepest elevation is 480 m. A secondary access ramp on the north wall remains from the original Feasibility Study when the ROM pad was located on the north side of the pit. This ramp may be used as an alternate access to the pit however its need will be re-evaluated prior to the start of operations and may be removed from the design.

The open pit design includes 2,003 kt of Proven Mineral Reserves and 2,738 kt of Probable Mineral Reserves for a total of 4,741 kt at a grade of 27.77% Cg. The Mineral Reserves are included in the Mineral Resources (Chapter 14) and the reference point for the Mineral Reserves is the mill feed.

In order to access these reserves, 1,361 kt of overburden, 2,305 kt of waste rock, 181 kt of Inferred Mineral Resources and 23 kt of low-grade material below the cut-off of 6% Cg must be mined. This total waste quantity of 3,870 kt results in a stripping ratio of 0.82 to 1. Table 15-3 presents the Mineral Reserves for the Lac Guéret deposit.

Table 15-3 - Lac Guéret Mineral Reserves

Ore Category	Tonnage (t)	Grade (% Cg)	Graphite In-situ (t)
Proven	2,003,000	25.05	502,000
Probable	2,738,000	29.77	815,000
Proven & Probable	**4,741,000**	**27.77**	**1,317,000**

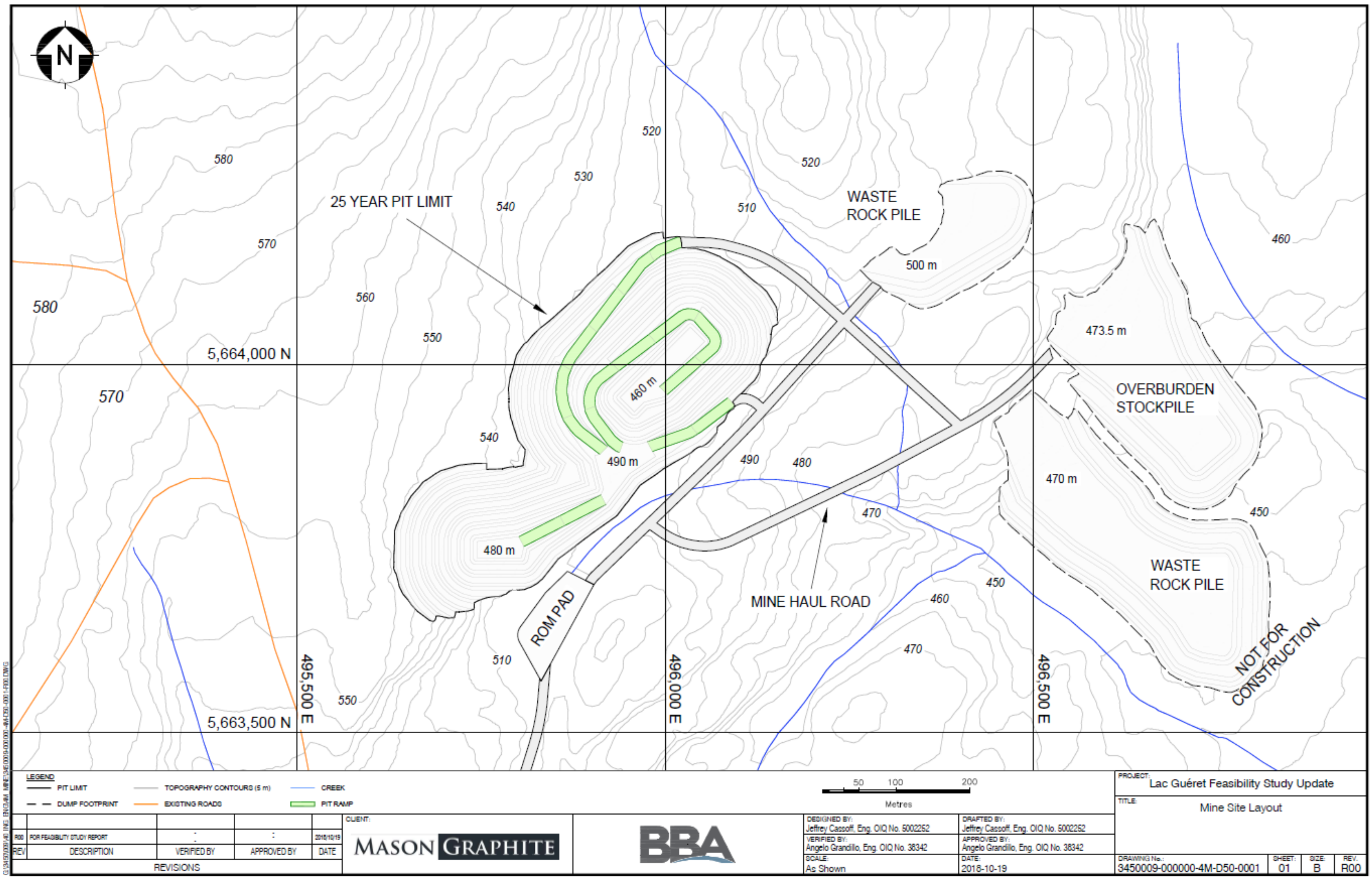


Figure 15-6 - Mine Site General Layout for Mineral Reserves

15.3.6 IN-PIT MINERAL RESOURCES BEYOND PROJECT LIFE OF 25 YEARS

Since the pit optimization analysis showed positive results beyond the 25-year open pit, a detailed pit design was completed following PIT39 (Revenue Factor – 1.00). The only change in the design criteria from the 25-year open pit is the slope of the final pit wall that considers an inter ramp angle of 45°. The reason for steepening the angle is because the final wall for the ultimate pit will be in waste rock formations which are considerably more competent than the graphite formations.

Once the 25-year open pit is mined out, the remaining Mineral Resources that are contained within the larger pit include 16.8 Mt of Measured Resources and 41.1 Mt of Indicated Resources for a total of 58.0 Mt at a grade of 16.30% Cg. The remaining waste tonnages include 6.9 Mt of overburden, 70.1 Mt of waste rock, 4.8 Mt of Inferred Mineral Resources and 1.1 Mt of low-grade material below the cut-off of 6% Cg. This total quantity of waste results in a stripping ratio of 1.43 to 1.

Table 15-4 presents the incremental tonnages and grades that are contained within the pit beyond the 25-year Project Life.

Table 15-4 - In-Pit Mineral Resources Beyond Project Life of 25 Years

Resources Category	Tonnage (t)	Grade (% Cg)	Graphite In-situ (t)
Measured	16,845,000	16.98	2,860,000
Indicated	41,135,000	16.03	6,594,000
Measured & Indicated	**57,980,000**	**16.30**	**9,454,000**

Figure 15-7 presents the mine site general layout for the in-pit Mineral Resources beyond the Project Life of 25 years, which includes a conceptual design of the waste rock and overburden stockpiles (no optimization or environmental constraints have been applied). The ROM pad will need to be relocated since its current location is within the ultimate pit limit.

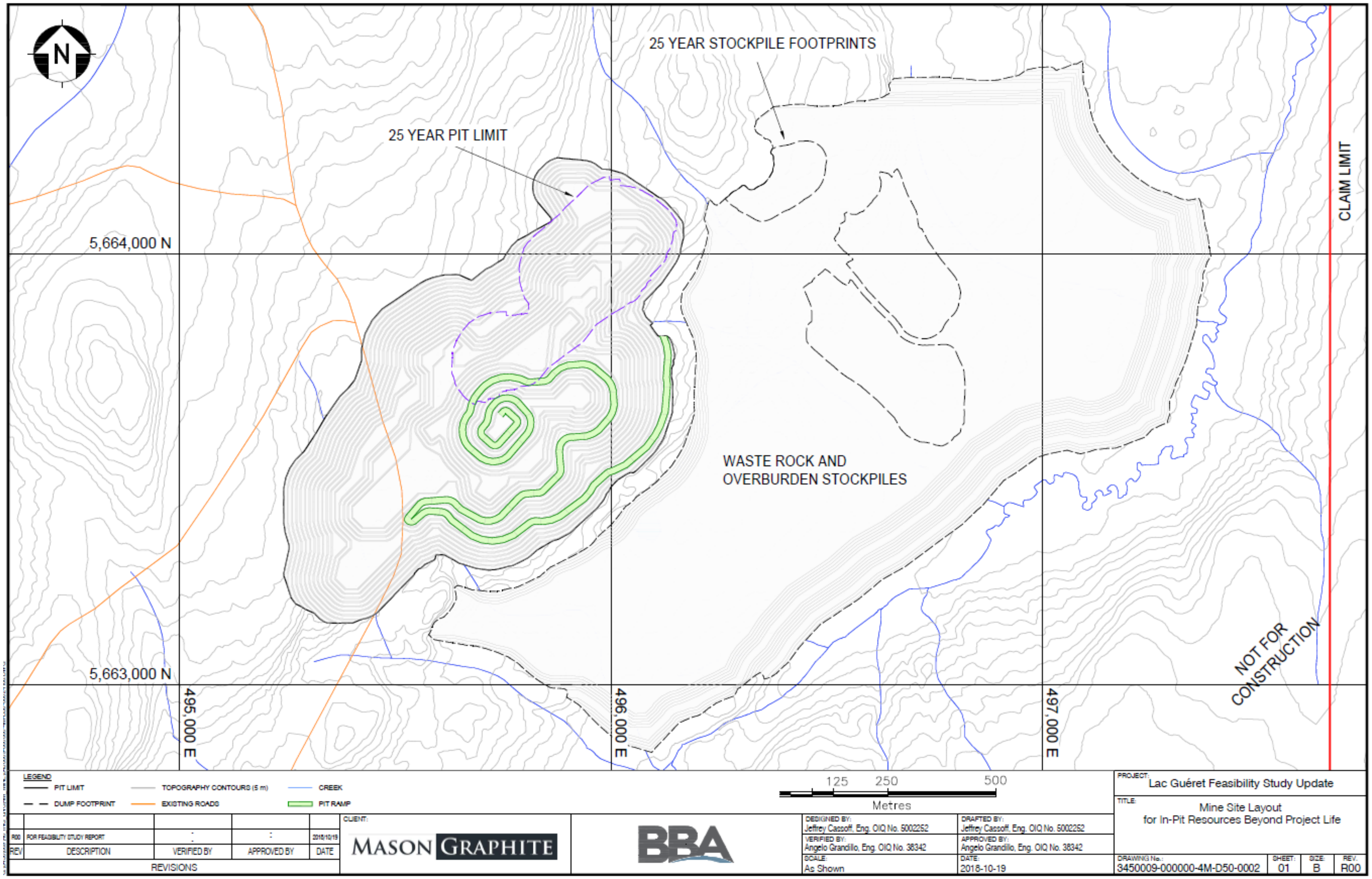


Figure 15-7 - General Layout for In-Pit Mineral Resources Beyond Project Life of 25 Years

16. MINING METHODS

The mining method selected for the Project is a conventional open pit, truck and shovel, drill and blast operation. Vegetation, topsoil and overburden will be stripped and stockpiled for future reclamation use. The ore and waste rock will be mined with 10 metres high benches, drilled, blasted and loaded into articulated haul trucks with a hydraulic excavator.

16.1 OPERATING PHILOSOPHY

The mine will be operated by an owner fleet, ten months of the year with a two-month shutdown in April to May during the spring thaw season (because ore transport will be stopped during this period - see below). Major repairs and preventative maintenance will be performed on the mining equipment during this period. However, mining activities and ore transport will be possible during this period if required.

The mine will operate seven days per week, ten hours per day and be comprised of two crews that will work on an eight-day on, six-day off rotation. Each crew will travel to site from Baie-Comeau on Monday mornings and return on the following Monday evening. For each rotation, eight hours will be allocated to travel time and 72 hours for operational time.

Since the mine is a relatively small operation with low quantities of material that will be excavated, it is not necessary to operate all of the equipment on both crews. Crew A will therefore operate the excavator and haul trucks, while Crew B will carry out the drilling and blasting. However, due to the higher quantities of overburden and waste rock that will be excavated from Year six to ten, the excavator and trucks will be operated by Crew B as well, for half of the year.

The ore will be hauled from the pit and temporarily stockpiled on the run of mine (ROM) pad which is located to the southwest of the pit.

A front-end wheel loader will load the ore haulage (on-road) trucks which will transport the ore from the mine site to the plant site in Baie-Comeau. The transportation of the ore from the mine to Baie-Comeau is planned to be done during ten months, stopping during the spring period (roughly April and May) to prevent damaging the forest road rendered soft by melting snow. If however required for operational reasons, ore transport during these two months will be possible.

Due to the nature of the work schedule, the crew that excavates and hauls the ore from the pit will ensure that a full two-week supply of ore is stockpiled during their eight-day rotation.

The camp site, which is discussed in more detail in Chapter 18 of this report, will be located about 2 km to the northwest of the open pit, on the same site as the exploration camp. The mine garage, warehousing, fuel tanks and offices will be located at the mine site. Figure 16-1 presents the mine site general layout, including the camp site.

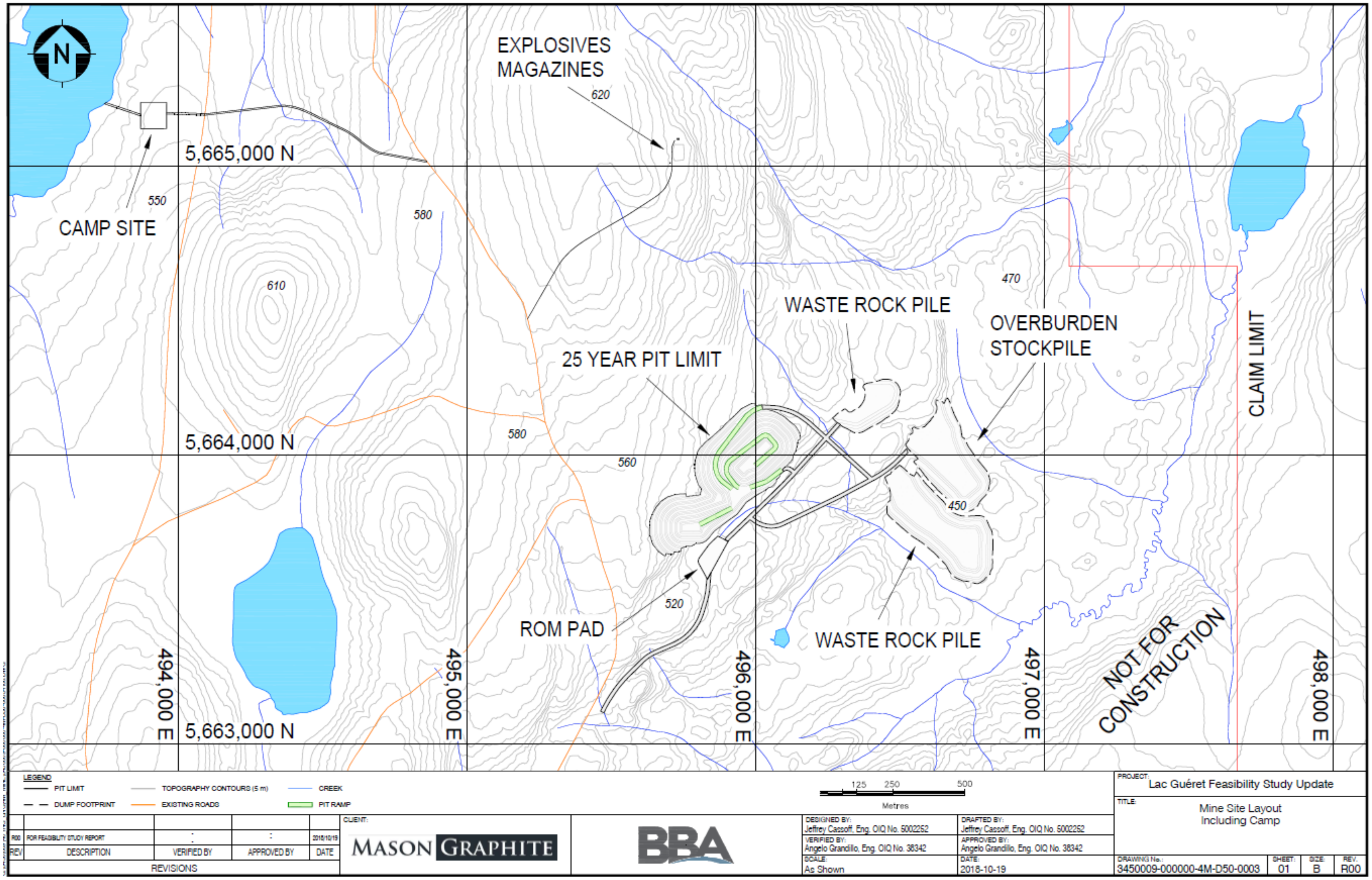


Figure 16-1 - Mine Site General Layout including Camp Site

16.2 WASTE ROCK AND OVERBURDEN STOCKPILES

The overburden and waste rock that will be mined during the 25-year operation will be placed in three stockpiles. The piles will be located to the southeast of the open pit, outside of areas that have the potential to contain mineralization and a minimum distance of 50 m from any water bodies. The stockpiles are presented on Figure 16-1, with the overburden stockpile being the one to the right of the waste rock piles. The piles have been designed on the side of the hill in order to minimize fuel consumption and haulage time since the trucks will not have to haul uphill loaded once leaving the open pit.

The waste rock piles and overburden stockpile designs have been slightly modified since the Feasibility Study from 2015 to incorporate the design changes that took place during the detailed engineering from 2017 and 2018.

Prior to dumping in the piles, trees will be cleared, and organic and loose materials will be removed within the footprint area to increase the stability of the stockpiles.

The overburden stockpile will be built from pre-production until Year ten, when the overburden will be completely stripped from the open pit. Since the layer of topsoil that covers the overburden within the pit area is quite thin, it will not be separated and stockpiled separately. The overburden stockpile will be built in two, 10 metres high lifts, being the 473.5 m, 463.5 m elevations[1]. There will be a 17.2 m wide berm on each lift in order to achieve an overall slope of 3H:1V (18.4°), which was recommended by SNC Lavalin in the report titled "Waste Rock Pile and Overburden Stockpile Preliminary Stability Analysis and Recommendation", February 2015. The trucks will dump the overburden and the loader will push the load over the edge to level the lift. An angle of repose of 38° was used for the design of the overburden stockpile. The footprint of the overburden stockpile is 60,000 m^2 and the capacity is 750,000 m^3.

The waste rock pile will be built from Year 1 until the end of the 25-year operation. A first waste rock pile will be built at the 500 m elevation and will be used during the first five years of the operation. This first waste pile will require a membrane at its base to collect contact water for characterization as well as water balance calculations. Following Year 5, a second waste rock pile will be built starting at the 470 m elevation. This waste rock pile will be built in two 10 m high lifts, being the 470 m and the 460 m elevations. There will be a 14.3 m wide berm between the two lifts in order to achieve an overall slope of 2H:1V (26.6°), which was included in SNC's report. The necessity for a membrane at the base of this second pile will be determined by the water quality and water balance results of the first pile. Should a membrane be required, the exact location of this second pile could change to take into account the technical requirements of installing the membrane.

[1] A certain amount of overburden will be used for the construction of infrastructure. Since the exact quantity is not yet defined, the design of the overburden stockpile assumes that none of the overburden will be used for construction.

The trucks will dump the waste rock and the loader will push the load over the edge to level the lift. An angle of repose of 38° was used for the design of the waste rock pile. The two waste rock piles have a combined footprint of 100,000 m^2 and the capacity is 1,200,000 m^3.

An opportunity for in-pit dumping on the mined out pit floor which would reduce the haul distances and minimize the size of the stockpiles was evaluated but was deemed not possible for this Project since the ore body continues well below the floor of the 25-year open pit.

The waste rock pile that was designed for the ultimate pit for the in-pit mineral resources beyond the Project Life that was presented in Figure 15-7 follows the same criteria as discussed above. The overburden stockpile was combined with the waste rock pile since the overburden storage requirement of 4.3 Mm^3 represents only 10% of the total waste rock and overburden storage requirement of 41.4 Mm^3. The purpose of this simulation is only to demonstrate the potential size of such a waste pile to mine all the mineral resources; it was not optimized in any way nor were any environmental constraints considered.

Figure 16-2 presents a 3D image of the mine site general layout which includes the waste rock piles and overburden stockpile.

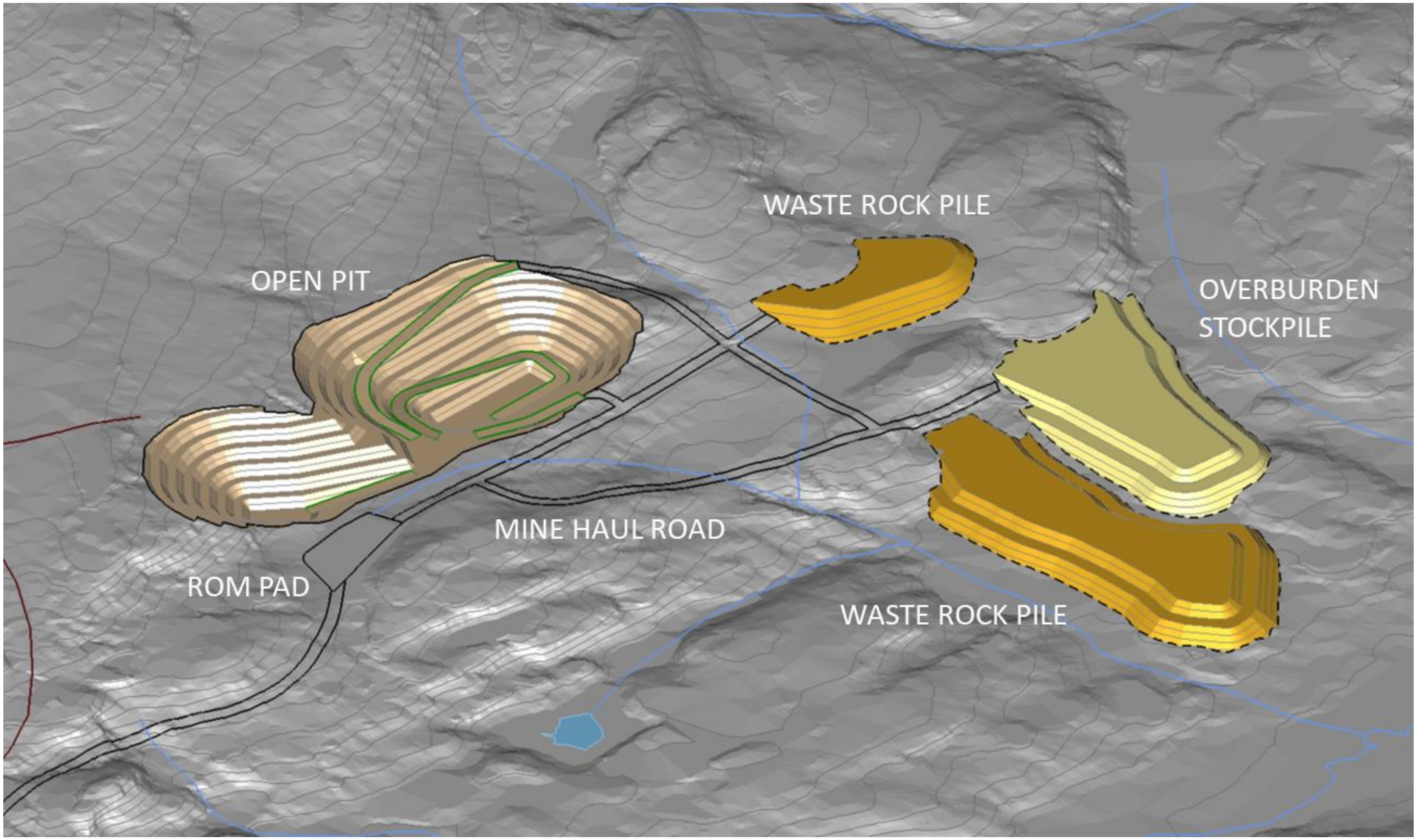


Figure 16-2 - 3D Image of Mine Site General Layout

16.3 MINE PLANNING

The following section discusses the mine plan that was prepared for the Feasibility Study and which was used as the basis for the mine capital and operating cost estimate presented in Chapter 21. The mine plan was established annually for the first ten years of production, followed by three, five-year periods for the remaining 15 years.

The mine plan is based on the initial parameters below (which were later refined following metallurgical tests, but the mine plan was not modified):

- Annual production of 50,000 tonnes of graphite concentrate;
- Mill recovery of 90%;
- Graphite concentrate grade of 95%.

The following calculation is used to determine the amount of concentrate that will be produced from the run of mine ore. The ore production rate therefore varies depending on the Cg grade to ensure a constant concentrate production of 50,000 tonnes per year.

$$\text{Concentrate Tonnage} = \frac{\text{Run of Mine Ore (t) x Cg Grade (\%) x Mill Recovery (\%)}}{\text{Concentrate Grade (\%)}}$$

Table 16-1 presents the mine production schedule. This schedule includes a pre-production phase of one year which is required to strip 476,000 tonnes of overburden, construct 2.5 km of mine haul roads and to prepare the pit for operations.

The mine development will start in the western part of the pit since this area has a lower stripping ratio and is closer to the ROM pad. In order to offset the relatively lower grades in the first few benches, a small high grade pit will be developed in the eastern part of the 25-year open pit. This smaller pit will be used to facilitate the blending of ore and to provide a secondary source of production in case there are operational issues in the main pit. The mine will progress in the manner until Year 7, when full development will begin in the eastern part of the pit.

The total material mined per year during the 25-year period averages 300 kt and ranges from 200 kt in Year 5 to a maximum of 456 kt in Year 9. Figure 16-3 presents a chart showing the tonnages mined each year as well as the average grade. The tonnages shown are annualized for the five year periods between Years 11 and 25. The average annual grade remains fairly close to the 25-year average of 27.8% during the first ten years of operation. The grade declines to an average of 25.4% from Years 11 to 15 and rises to an average of 31.2% from Years 21 to 25.

Figure 16-4, Figure 16-5 and Figure 16-6 show the status of the pit, waste rock piles and overburden stockpile as of Year 1, 5 and 10 respectively.

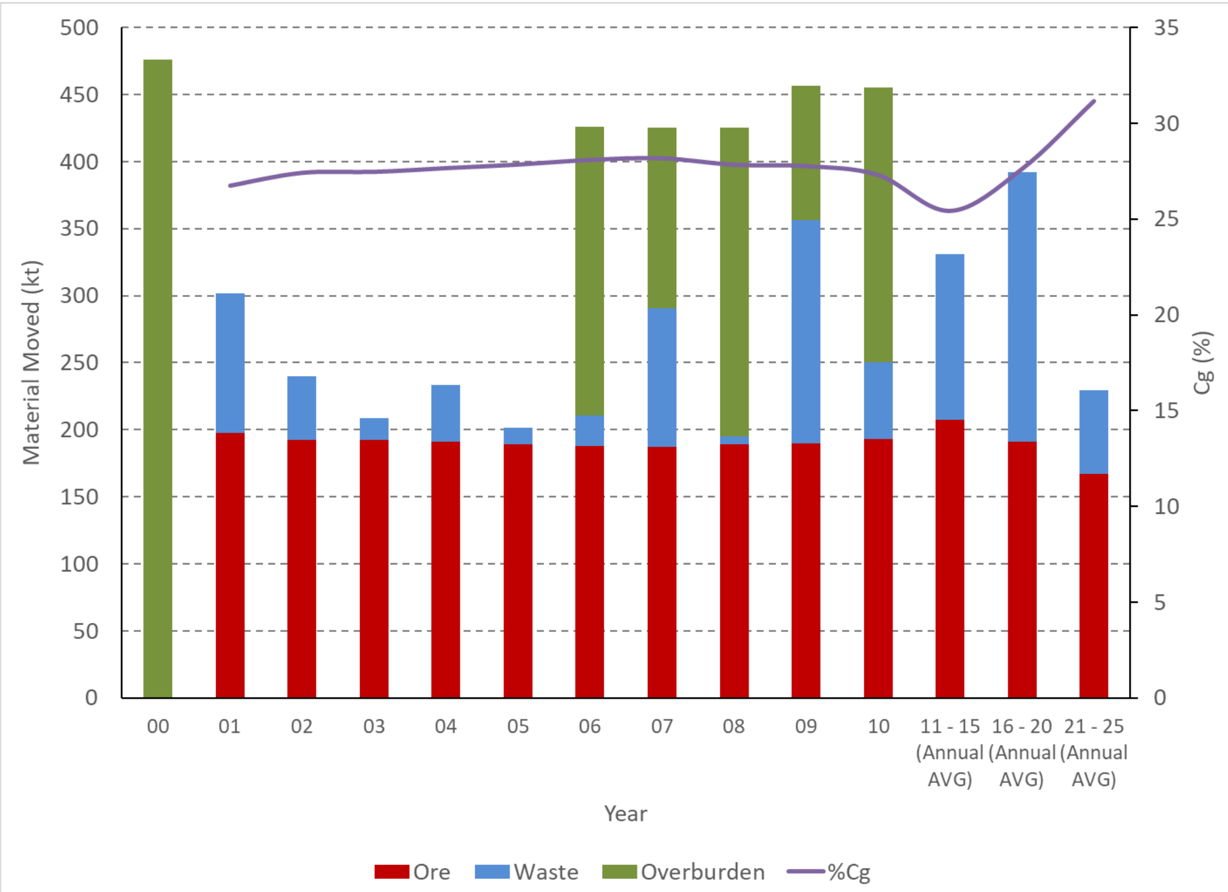


Figure 16-3 - Mine Production Schedule

Table 16-1 - Mine Production Schedule [1]

Description	Unit	Pre-Prod	Year 01	Year 02	Year 03	Year 04	Year 05	Year 06	Year 07	Year 08	Year 09	Year 10	Years 11 - 15	Years 16 - 20	Years 21 – 25	Total
Ore	kt	0	197	192	192	191	189	188	187	189	190	193	1,038	956	836	**4,741**
Cg	%	n/a	26.7	27.4	27.5	27.7	27.8	28.1	28.2	27.8	27.8	27.3	25.4	27.6	31.2	**27.8**
Total Waste	kt	476	104	47	17	43	12	238	238	236	266	262	616	1,004	311	**3,870**
Overburden	kt	476	0	0	0	0	0	215	135	230	100	205	0	0	0	**1,361**
Waste Rock	kt	0	104	47	17	43	12	23	103	6	166	57	616	1,004	311	**2,509**
Total Material	kt	476	302	240	209	233	201	426	425	425	456	456	1,654	1,960	1,147	**8,611**
Stripping Ratio		n/a	0.5	0.2	0.1	0.2	0.1	1.3	1.3	1.2	1.4	1.4	0.6	1.1	0.4	**0.8**

[1] Note: Run of mine tonnages are on a dry basis.

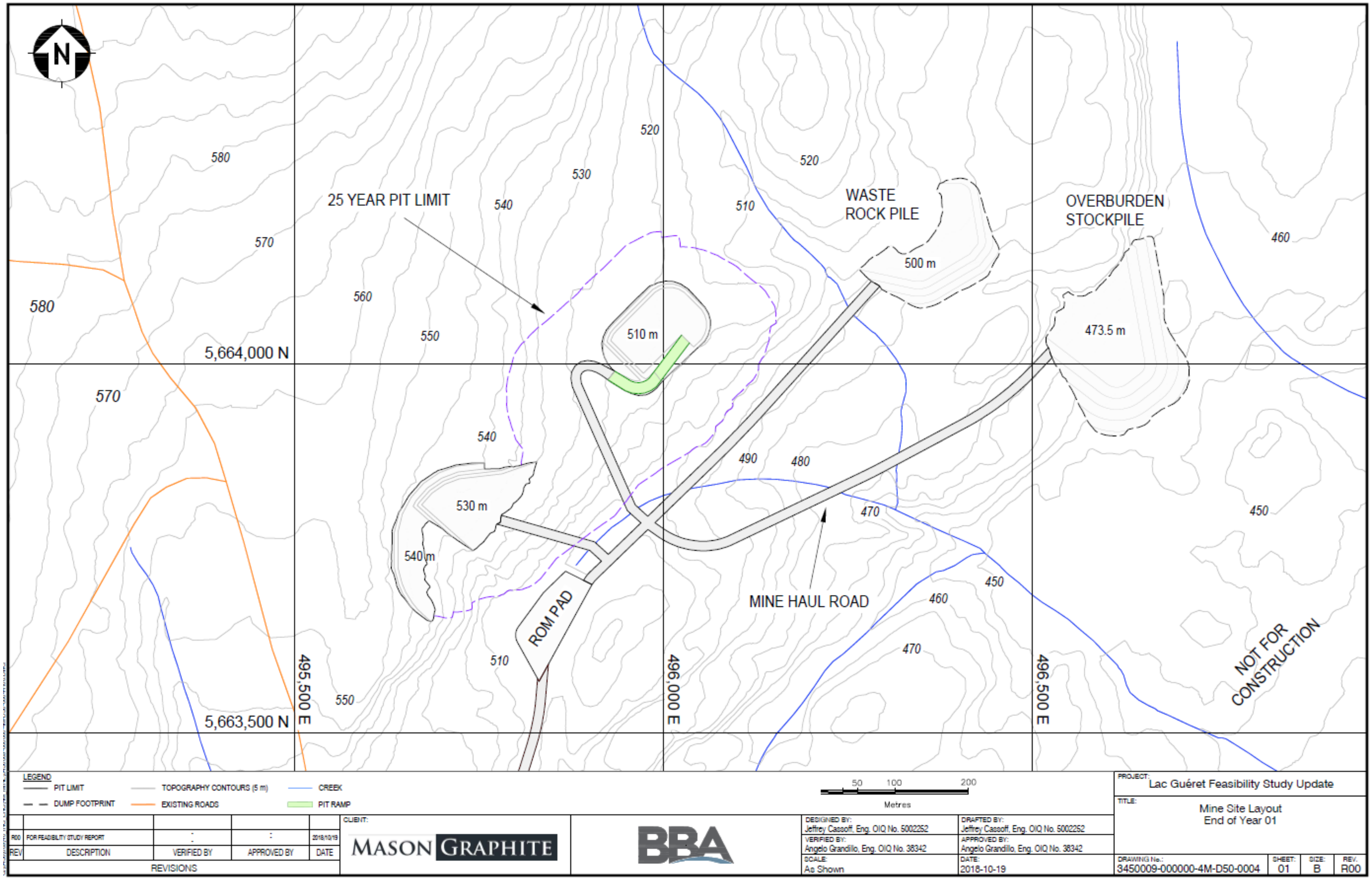


Figure 16-4 - End of Year 1

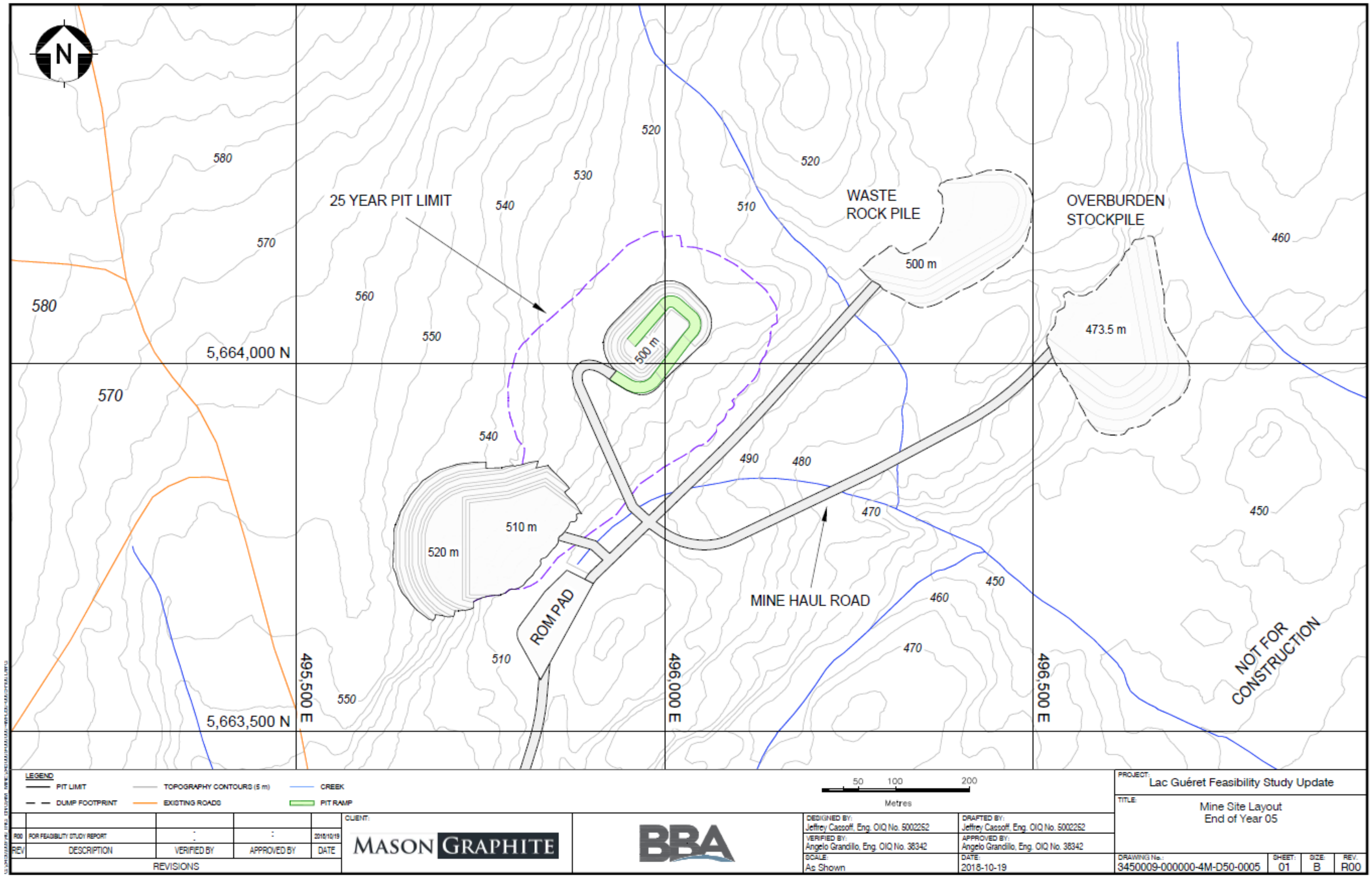


Figure 16-5 - End of Year 5

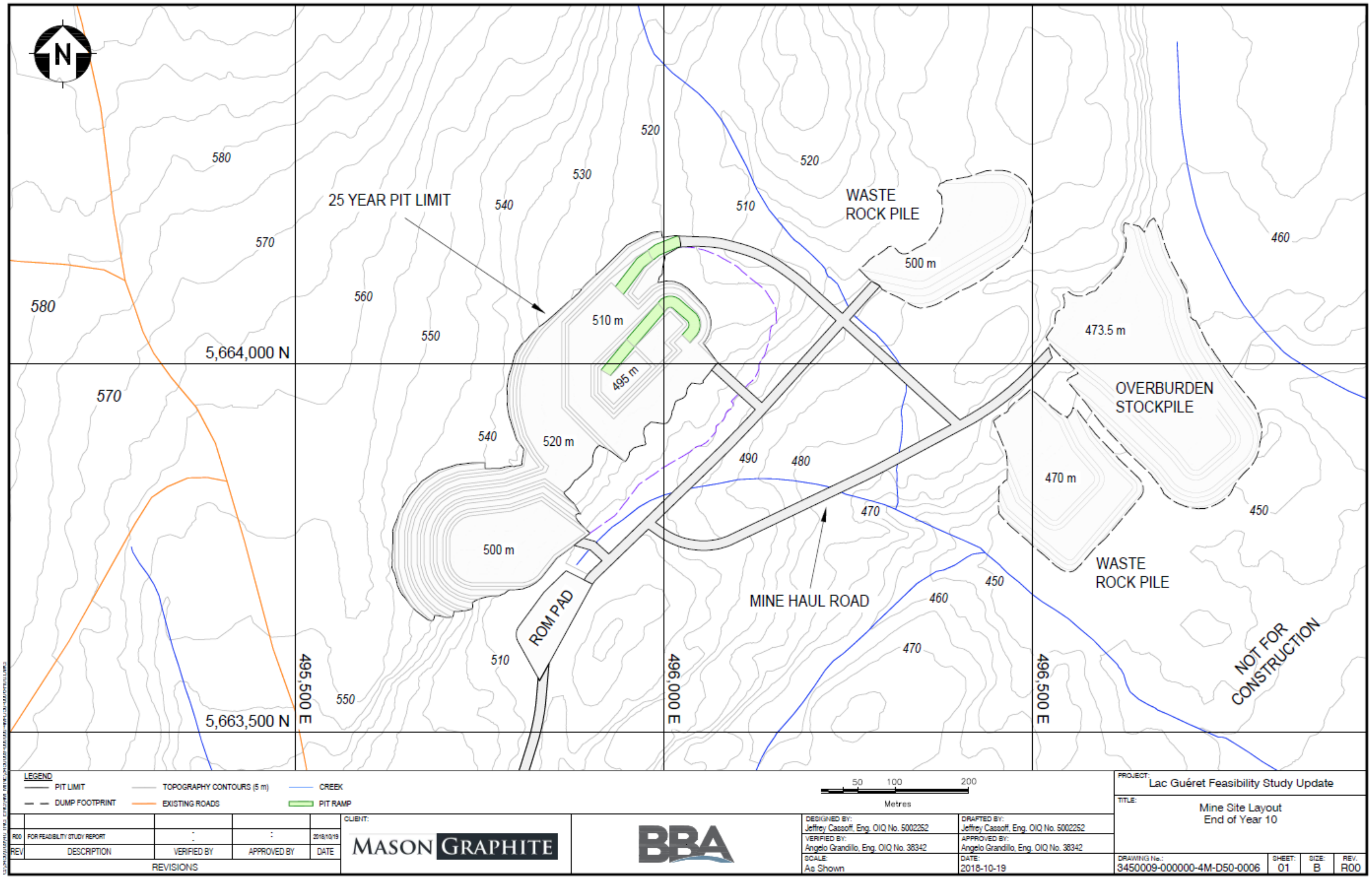


Figure 16-6 - End of Year 10

16.4 MINE EQUIPMENT

The following section discusses equipment selection and fleet requirements in order to carry out the mine plan. Table 16-2 identifies the Caterpillar equivalent to give the reader an appreciation for the size of each machine although the specific equipment selection will be done during the procurement phase of the Project.

Table 16-2 - Mining Equipment Fleet

Equipment	Typical Model	Description	Units
Haul Truck	725C	Payload – 23.6 t	2
Hydraulic Excavator	349E	Operating Weight – 50 t	1
Production Drill	MD 5050	114 mm hole (4.5”)	1
Wheel Loader	980K	Operating Weight – 34 t	1
Tractor Truck [1]	International 5900	300 kW (400 hp)	1
Light Plant	n/a	6 kW (8 hp)	3
Pickup Truck	Ford F250	Crew cab	3

At the end of each shift, the equipment on tires (haul trucks and wheel loader) will return and be parked at the garage while the tracked equipment (excavator and drill) will remain in the pit. During the winter months, the equipment parked at the garage will be plugged in to keep the engine warm and the tracked equipment will be equipped with onboard heaters for the same purpose.

16.4.1 HAUL TRUCKS

The haul truck selected for the Project is an articulated mining truck with a payload of 23.6 tonnes. A larger truck is not required since the haul distances are short and the quantity of material that will be hauled is relatively small. This articulated truck offers the smallest payload for a truck that will be robust enough to work in a mining environment. The advantage of articulated trucks over rigid frames trucks is that they will perform better on rough terrain and in muddy conditions which are expected during the first few years of the operation and during the overburden stripping.

[1] The tractor truck will be equipped to operate as the water truck, sand truck, boom truck, snow plow and lowboy.

A fleet of two trucks is required to carry out the mine plan which was estimated using the following parameters which result in 1,089 net operating hours (noh) per year for each truck as is presented in Table 16-3.

- Mechanical Availability: 90%;
- Utilization: 90% (non-utilized time is accrued when the truck is not operating due to poor weather or when the excavator is relocating);
- Nominal Payload: 23.6 tonnes (14.3 m^3 heaped);
- Shift Schedule: ten hours per shift, eight shifts per rotation, 21 rotations per year (minus 8 hours per rotation for travel time to site);
- Operational Delays: 60 min/shift (this accounts for coffee and lunch breaks, no time has been allocated for shift change and re-fuelling will be carried out at the end of the shift);
- Rolling Resistance: 3%.

Table 16-3 - Truck Hours (h/y)

Description	Hours	Details
Total Hours	1,512	21 rotations per year (72 hours/rotation)
Down Mechanically	151	10% of total hours
Available	1,361	Total hours minus hours down mechanically
Standby	136	10% of available hours (represents 90% utilization)
Operating	1,225	Available hours minus standby hours
Operating Delays	136	60 min/shift
Net Operating Hours	1,089	Operating hours minus operating delays

Haul routes were generated for each period of the mine plan to calculate the truck requirements. These haul routes were imported in Talpac©, a commercially available truck simulation software package that BBA Inc. has validated with mining operations. Talpac© calculated the travel time required for a 23.6-tonne haul truck to complete each route. Table 16-4 shows the various components of a truck's cycle time. The load time is calculated using a hydraulic excavator with a 2.4 m^3 (5-tonne) bucket as the loading unit. This size of excavator which is discussed in the following section loads ore and waste rock in a 23.6-tonne haul truck in five passes, six for overburden.

Table 16-4 - Truck Cycle Time

Activity	Duration (sec)
Spot @ Excavator	30
Load Time [1]	125
Travel Time	Calculated by Talpac©
Spot @ Dump	30
Dump Time	30

Haul productivities (t/noh) were calculated for each haul route using the truck payload and cycle time. Table 16-5 shows the cycle time and productivity for the ore and waste haul routes in Year 5 as an example.

Table 16-5 - Truck Productivities (Year 5)

Material	Cycle Times (min)					Productivity	
	Travel	Spot	Load	Dump	Total	Loads/h	t/h
Ore	5.94	0.50	2.08	1.00	9.02	6.65	157
Waste	3.61	0.50	2.08	1.00	6.69	8.96	212

Truck hour requirements were then calculated by applying the tonnages hauled to the productivity for each haul route.

As was discussed in Section 16.1 of this report, during Years 6 to 10 when there will be higher quantities of overburden and waste rock, the excavator and trucks will be operated by Crew B as well. This negates the need to purchase or rent additional units for only a few years of the operation.

16.4.2 HYDRAULIC EXCAVATOR

The loading machine selected for the Project is a hydraulic excavator with an operating weight of 50,000 kg and equipped with a 2.4 m^3 bucket. To maximize loading productivity, the excavator will be setup in a backhoe configuration, with the truck sitting at the bottom of the muck pile. Using a 90% mechanical availability and 60 minutes per shift in operating delays, it was estimated that one excavator can manage the tonnages or ore, waste rock and overburden in the mine plan. Since the average cycle time during the 25-year operation is around ten minutes and there will be two trucks, loaded in 2.1 minutes each, the excavator's utilization will average just below 50%. The excavator

[1] Five passes @ 25 sec/pass.

will take advantage of this non-utilized time between trucks to prepare the muck pile and cleanup the advancing face.

A smaller excavator was not selected in order to ensure that the machine would be robust enough to work in a mining environment.

16.4.3 WHEEL LOADER

A wheel loader with an operating weight of 31,000 kg and a bucket of 5 m^3 will be used to load the ore haulage trucks that will transport the ore from the mine site to Baie-Comeau.

The wheel loader will be able to load the ore and waste rock from the pit and the excavator will be able to load the ore haulage trucks on the ROM pad if either machine has an extended breakdown.

16.4.4 DRILLING AND BLASTING

Production drilling will be carried out with a diesel-powered track mounted down-the-hole (DTH) drill that will drill 114 mm (4.5”) holes. Using a 90% mechanical availability, 60 minutes per shift in operating delays and a penetration rate of 25 m/h, it was estimated that one drill can manage the requirements for the mine plan. The utilization of the drill averages 70% during Crew B’s rotations for the 25-year life of the mine. Table 16-6 presents the drilling and blasting parameters that have been designed for the Feasibility Study. The table shows one value for both ore and waste rock since the two rock types have similar densities. It should be noted that the blast pattern has been designed with the intention of preserving the large graphite flake size as much as possible.

Ammonium nitrate fuel oil (ANFO) will be used when the drillholes are dry and packaged emulsion will be used when there is water in the drillholes. In order to estimate the cost for explosives for the Feasibility Study it has been assumed that 40% of the explosives will be ANFO and 60% will be emulsion.

There will be one blast at the end of each rotation, producing 10,000 - 15,000 tonnes of rock (55 to 85 drillholes). The amount of explosives required for each blast is approximately 3,500 kg (72,000 kg per year).

The explosives will be purchased from a manufacturer who will transport them to the site when required.

The blast holes will be loaded by the drill operator who will have the appropriate training and qualifications of a blaster.

The crushed rock required for the stemming is estimated to be 16 m^3 per year. This material will be purchased from a supplier in Baie-Comeau and delivered to site in one of the ore haulage trucks.

Table 16-6 - Drilling and Blasting Parameters

Parameter	Units	ANFO	Packaged Emulsion
Bench Height	m	10	10
Blast hole Diameter	mm	114	114
Burden	m	2.4	2.5
Spacing	m	2.4	2.5
Subdrilling	m	1.2	0.9
Stemming	m	2.1	2.1
Explosives Density	g/cm^3	0.95	1.24
Powder Factor	kg/t	0.33	0.30

16.4.5 AUXILIARY EQUIPMENT

A tractor truck has been included in the fleet which will be used as the water truck, sand truck, boom truck, snowplough and lowboy. These different components will be set up on trailers which will hook up to the tractor truck.

The list of equipment includes three diesel powered lights plants which will be set up in the pit and on the dumps.

Three crew cab pick-up trucks are included in the fleet and will be designated to the utility operator, the drill operator and the mining engineer.

16.5 MAINTENANCE PHILOSOPHY

The equipment maintenance will be carried out under contract with the equipment supplier. The mine will provide the garage facility which will be used for preventative maintenances and minor repairs, while major repairs and component rebuilds will be done at the suppliers' facility in Baie-Comeau. More details on the garage are presented in Chapter 18 of this report.

The equipment suppliers' mechanic will come to site to perform the scheduled preventative maintenances and the oil and filter changes. The mine will not employ a dedicated mechanic, but the equipment operators will be provided with adequate training to carry out minor repairs such as tire and hydraulic hose changes.

16.6 MINE DEWATERING

16.6.1 DESIGN BASIS

The water management plan was designed by Hatch (2015) using the GoldSim software package to estimate the water quantities for the mine site. The design basis for the water management plan is summarized below:

- Water management structures (retention and diversion) are designed to accommodate a 1:100 year 24-hour annual rain storm;
- Non-contact water is diverted back into the natural environment;
- The water balance simulations include the following infrastructure:
  - ROM pad;
  - Open pit;
  - Waste rock stockpile;
  - Overburden stockpile;
  - The control basin.
- The control basin is set up to pump water to the Effluent Treatment Plant (ETP) for 12 months per year.

16.6.2 CONTACT WATER INFLOW ESTIMATES

The annual precipitations average of 999 mm (in water equivalent) for the area was estimated using data from nearby meteorological stations.

The average runoff water flows due to precipitation on the ROM pad, the open pit, the waste rock stockpile, the overburden stockpile and the control basin were estimated using the average annual precipitations and the surface area of each infrastructure. Losses due to evaporation were considered in the estimate. The ground water inflow into the pit was estimated based on a hydrogeological study conducted on site during the fall of 2014.

The total water balance for the mining site is presented in Table 16-7 below.

Table 16-7 - Average Contact Water Balance for the Mine Site

Natural water inputs to the mining site [1]	Water quantities	
	m^3 / day	m^3 / year
Runoff from the ROM pad	101	37,000
Runoff and ground water from the pit	346	126,500
Runoff from the waste rock pile	422	154,000
Runoff from the overburden stockpile	Negligible	Around 5
Precipitations on the control basin	104	33,000
Total contact water collected	**975**	**355,500**
Total processed at the ETP	950 to 1,000	355,000
Total released in the receiving stream	950 to 1,000	355,000

The pumping capacity from the pit to the control basin is 6.3 m^3/h while the pumping capacity from the control basin to the ETP is 140 m^3/h.

16.6.3 WATER MANAGEMENT PLAN

Before the beginning of the mining activities, a ditch network will be dug north of the pit, main haul road and dumps to intercept runoff water flowing down the hill and to prevent it from entering in contact with the ore or with the waste rock. The water intercepted in these ditches will be diverted towards existing streams and will resume its natural course.

Water that accumulates in the ROM pad area will be collected in a sump. From there, the water will be pumped into the western part of the open pit.

Since the pit will be dug on the side of a hill, it is only after the third year that the southern wall will start to appear; before that, the pit floor will open directly onto the hill side. During those first years of operation, a ditch dug on the southern edge will intercept the water from the pit. During the fourth year, the southern pit wall will start retaining water inside the pit and the water will be collected in sumps. The water collected first by the temporary ditch then by the sumps will be pumped to a control basin. In the case of extreme rainfall, water will be allowed to collect in the pit.

The waste rock piles and overburden stockpile will also be built on the side of a hill and runoff water will naturally flow downhill towards the control basin where it will be collected.

[1] Net quantities of water, including all precipitations on site but minus natural evaporation and ground infiltration.

The control basin will store the water that has been in contact with ore or waste rock to allow its characterization (pH, solids in suspension or eventually metals concentrations) and eventual treatment before release. The control basin will also allow the settling of the solids in suspension as well as the regulation of the discharge flow rate.

The water discharged from the control basin into a nearby stream will conform to the environmental regulations as the proper treatment (neutralization, settling, etc.) will be applied before the water is released. Simulations, taking into account the mining plan, the geochemical properties of the ore and the waste rock, the evolution of the open pit and the evolution of the dumps, predict that the quality of the water collected should conform naturally to the regulations for the first eight years of operation. During this period, water will be fully characterized to determine future treatment requirements with better precision. The water treatment station will be designed according to these requirements and, to ensure that the water meets the quality requirements at all time, will be installed from the beginning of the operations, even if not expected to be needed for the first years.

16.7 MINE MANPOWER REQUIREMENTS

The mine workforce which is presented in Table 16-8 will include nine employees. The mining engineer will be responsible for the mine planning as well as the mining operations and will split his time between the mine site and Baie-Comeau. The five members on Crew A include: two truck drivers, an excavator operator, a utility operator and a cook who will be responsible for the camp. The utility operator will run the loader, as well as the utility truck. The three members of Crew B include: a drill operator, a utility operator and a cook.

Additional operators will be added during Years 6 to 10 of the operation when the trucks and excavator will be operated on Crew B.

Table 16-8 - Mine Manpower Requirements

Description	Number
Mining Engineer	1
Excavator Operator	1
Truck Driver	2
Drill Operator / Blaster	1
Utility Operator	2
Cook	2
Total Mine Workforce	**9**

17. RECOVERY METHODS

Using the metallurgical testing results presented in Chapter 13 and the proposed flowsheet, a team composed of Soutex and Mason Graphite personnel developed an industrial concentration process designed to treat on average 190 ktpy of ore and produce 52 ktpy of graphite concentrate.

In this section, an assessment of the appropriate methodology for graphite recovery from the Lac Guéret ore is described in detail. Moreover, utility requirements, plant services and descriptions of the various sectors within the concentration plant are presented in this section. This information, in conjunction with the developed plant general arrangement (GA) drawings and plant 3D models, establish the basis of the capital expenditure (CAPEX) and operating expenditure (OPEX) cost estimates.

All the figures referred to in this chapter are extracted from the 3D engineering model and are presented at the end of the chapter.

17.1 OVERALL PROCESS DESIGN BASIS

The Lac Guéret concentration plant was designed to process ore at a nominal rate of 189,620 tpy, in order to produce 51,865 tpy of concentrate, at an overall weight recovery of 27.4%.

The overall process and plant design criteria for the Lac Guéret concentration plant are established on the following bases:

- The process is engineered as inherently safe, which complies with the standard industry practices to maintain a sustainable operation and minimize the risk to the environment, employees, health and safety, and the community;
- Safety features included in the plant design are:
  - Fire protection system;
  - Safety shower and eyewash stations where appropriate;
  - Adequate and safe access for maintenance operations;
  - Overhead crane and other hoisting devices;
  - Enclosed dry circuits with dust collecting;
  - Sump pumps;
  - Ventilation system.
- Fresh water usage has been minimized by designing a water distribution system that maximizes water recovery and recirculation;
- The design is based on a 25-year Project Life at nominal capacity;

- Equipment selection is based on achieving consistent concentrate quality at low capital and operating costs;
- The concentration plant is designed as follows:
  - Major equipment is sized by applying an additional 10% to their maximum calculated feed tonnages. Additional safety margins are applied whenever maintenance issues for given equipment impact downstream operations;
  - Pumps and conveyors are sized by applying an additional 10% to their maximum calculated flow rates. Piping is sized in order to respect critical settling velocities at the minimum calculated flowrates.
- Only proven and modern technology for processing graphite ore is considered in the process design. Pilot testing has been performed;
- The concentration plant operating schedule is based on 90% utilization (7,884 h/y). The mine should be operated 10 months per year and a run of mine stockpile at the mill site will allow operation during the mine shut down period;
- The plant is designed as a single production line from the concentrator crushed ore stockpile to the tailings and to the concentrate dryer. The final product screening allows for two production lines operated simultaneously;
- The design allows for out-of-spec products retreatment in the processing plant.

17.1.1 PROCESS DESIGN CRITERIA

Table 17-1 summarizes the original general parameters upon which the concentration plant design has been based for the Lac Guéret Project. Sizing of the selected equipment is based on these parameters.

Table 17-1 - General Process Design Criteria

Parameter	Units	Value
General Design Criteria		
Concentrate production	tpy	51,865
Ore throughput	tpy	189,620
Process facility service life	y	25
Plant operating time	%	90.0
Primary crusher operating time	%	11.7

Parameter	Units	Value
ROM Ore Characteristics		
Grade		
Total carbon (average)	% Cg	27.8
Total carbon (annual maximum)	% Cg	31.2
Total carbon (annual minimum)	% Cg	25.4
Sulphur (average)	%S	9.4
Specific gravity		2.9
Moisture	% w/w	5.0
Maximum particle size (F100)	mm	630
Final Concentrate		
Carbon as graphite grade		
+50 mesh	% Cg	96.0
-50 to +80 mesh	% Cg	96.0
-80 to +150 mesh	% Cg	96.0
-150 mesh	% Cg	92.2
Average	% Cg	93.7
Carbon global recovery	%	92.3 [1]

17.2 PROCESS FLOW DIAGRAM AND MASS AND WATER BALANCE

17.2.1 OVERALL PFD AND MATERIAL BALANCE

The process flow diagrams for the processing plant were derived from the metallurgical testwork (bench-scale and pilot-scale) and manufacturers' test results to meet the design criteria. The material balance for the major process inputs and outputs at plant nominal capacity is presented in Table 17-2 below (the concentrates and grades presented in the table below are final commercial products and include the effect of dry commercial sieving – they are slightly different from the metallurgical recoveries and grades).

[1] The 92.3% recovery represents the average over 25 years of operation and takes into account a lower recovery of 87.5% for the ramp-up during production Year 1; from production Year 2, the recovery will be 92.5%.

Table 17-2 - Major Process Inputs and Outputs

Description	Solids		Graphite	
	tpy	tph	Grade	Recovery
Feed	**189,620**	**24.1**	**27.8**	**100.0**
+50 mesh concentrate	*6,857*	*0.9*	*96.0*	*12.5*
-50 to +80 mesh concentrate	*8,438*	*1.1*	*96.0*	*15.4*
-80 to +150 mesh concentrate	*7,243*	*0.9*	*96.0*	*13.2*
-150 mesh concentrate	*29,359*	*3.7*	*91.9*	*51.2*
All Concentrates	**51,865**	**6.6**	**93.7**	**92.3** [1]
Tailings	**137,738**	**17.5**	**2.9**	**7.7**

USIMPAC software has been used to model the process. Test results have been input into the model, in order to produce the process material and water balances.

On the process side, the source of water will be coming from the precipitation falling on the concentrator site and the tailings management area. There will be a low flowrate of potable water that will be used for some reagents that require high quality water. Since there will be more precipitation than evaporation, the water balance will be positive and a regular reject of excess water to the environment, through a water treatment station, will be required.

17.2.2 PROCESS DESCRIPTION

The following process description outlines the upgrading circuit on the basis of the ore characterization testwork results, design criteria and the assumptions presented in this report.

The graphite concentration plant consists of crushing, grinding and flotation, occurring in a series of polishing circuits. The concentrate is filtered, dried, screened and then bagged. The concentrator is divided into the following sectors, located at the specified sites.

Table 17-3 - Process Area Numbering System

#	Sector Description	Site Location
01	Mine	Lac Guéret
02	Process Equipment - Crushing	Baie-Comeau
03	Process Equipment – Primary Grinding and Flotation	Baie-Comeau
04	Process Equipment - Polishing and Cleaning Flotation	Baie-Comeau
05	Process Equipment - Filtration and Drying	Baie-Comeau
06	Process Equipment – Dry Screening	Baie-Comeau
07	Process Equipment - Bagging and Storage	Baie-Comeau
08	Process Equipment - Tailings Filtration	Baie-Comeau
09	Process Equipment - Reagents	Baie-Comeau
10	Utilities (Water and Air to process)	Baie-Comeau
11	Water Treatment Plant Unit	Baie-Comeau

17.2.3 LAC GUÉRET SITE

Only mining will be performed at the Lac Guéret site. Once loaded in the trucks, the ore will be sent to Baie-Comeau where the trucks will be discharged on a run-of-mine ore stockpile area.

17.2.4 ORE TRANSPORTATION

The ore will be transported from the Lac Guéret site to the Baie-Comeau site by road trucks. The ore transportation should operate seven days a week and ten months per year – ore transportation is planned to be stopped during the spring (generally April and May) when the forest road is softer and more fragile due to the presence of water from melting snow. However, if needed transport may be maintained (but at a reduced tonnage since this will also coincide with thaw period on the public roads).

The trucks considered for the transportation will have a nominal capacity of 40 tonnes of ore and between 14 and 16 shipments will be required each day.

Ore transportation will be contracted.

17.2.5 BAIE-COMEAU SITE

The concentrator located at the Baie-Comeau site is designed to extract the commercial graphite concentrate from the run of mine ore which is transported from the Lac Guéret site. The concentrator operates 7,884 h/y (90% utilization) and processes crushed ore at a rate of 24.1 tph.

17.2.5.1 AREA 02 CRUSHING

The crushing area consists of:

- One raw ore stockpile with a capacity of 40,000 t;
- One primary crusher with an apron feeder;
- One crushed ore bin (about 8.5 h retention time).

The truck coming from the mine will be discharged on the raw ore stockpile. A loader will bring the ROM ore to the primary crusher where the ore will be loaded into the crusher's apron feeder. The crusher will operate on average 1,268 h/y (11.7% utilization) and will process ROM ore having a top size of around 600 mm, at a nominal rate of 150.0 tph. The single primary crusher will reduce the ore to P_{80} ~75 mm in size. This product will be discharged on a conveyor and sent to the crushed ore bin. The ore will be extracted from the bin by feeders that will discharge the crushed ore onto the mill feed conveyor with a control loop that will regulate the throughput.

Figure 17-1 depicts the Baie-Comeau concentration plant ore handling area layout.

17.2.5.2 AREA 03 – PRIMARY GRINDING AND FLOTATION

The primary grinding and flotation area consists of:

- One primary grinding semi-autogenous (SAG) mill;
- One SAG mill classification screen;
- One bank of rougher flotation cells;
- One secondary grinding rod mill;
- One rod mill classification screen;
- One bank of scavenger flotation cells;

The crushed ore feeds the semi-autogenous (SAG) mill via a conveyor. The SAG mill discharge is sent to the SAG mill classification screen. The screen oversize is recirculated to the SAG mill while the screen undersize feeds the rougher flotation cells.

The rougher flotation cells concentrates are collected and sent to the first polishing circuit. The rougher flotation tails (last flotation cell tailings) are sent to the secondary grinding circuit.

The rougher flotation tails are sent to the rod mill. The rod mill discharge feeds the rod mill classification screen. The screen oversize is recirculated to the rod mill, while the screen undersize feeds the scavenger flotation circuit. The scavenger flotation cells concentrates are collected and sent to the first polishing circuit. The scavenger flotation cells tails (last flotation cell tailings) are sent to the tailings' thickener. Figure 17-2 depicts the Baie-Comeau concentration plant grinding area layout.

17.2.5.3 AREA 04 – POLISHING AND CLEANING FLOTATION

The polishing area consists of:

- Four polishing mills;
- Two banks of cleaning flotation cells;
- Eight flotation columns;
- Four concentrate wet screens.

The rougher and scavenger flotation concentrates are combined and then this concentrate undergoes a sequence of polishing and cleaning flotation. Tailings from each flotation stage are pumped to the tailings thickener. The concentrates are collected in a thickener before filtration. The thickener overflow water is recycled to the process water tank for reuse in the process.

Water from several dewatering steps during the polishing and cleaning flotation stages is pumped to the fine pre-concentrate thickener; the overflow water is sent to the process water tank.

Figure 17-3 depicts the Baie-Comeau concentration plant polishing and cleaning flotation area layout.

17.2.5.4 AREAS 05 – CONCENTRATE FILTRATION AND DRYING

The concentrate filtration, drying and screening area consists of:

- One concentrate filter;
- One concentrate dryer;
- One wet scrubber.

The concentrate from the concentrate thickener underflow is sent to the concentrate filter feed tank, before being directed to the concentrate filter. The filter feed tank has a residence time of eight hours to allow for maintenance. The concentrate is then pumped to the filter before being directed to the dryer. The dried concentrate is stored in a silo to feed the commercial sieving.

The gas from the dryer may contain elemental sulphur that must be recovered. A quench box and a venturi scrubber are used to precipitate the sulphur that will be in the form of a powder suspension in the water of the scrubber. This suspension will be pumped to a filtering unit to recover a sulphur cake that will be disposed. The gas may also contain sulphur dioxide that will be neutralized in a packed bed scrubber with caustic soda.

Figure 17-4 depicts the Baie-Comeau concentration plant concentrate filtration and Figure 17-5 depicts the drying and scrubbing area layout.

17.2.5.5 AREA 06 – CONCENTRATE COMMERCIAL SCREENING

The concentrate commercial screening area consists of:

- Four concentrate screens;
- Various bins and concentrate transport systems.

The dried concentrate feeds the concentrate dry screening circuit to classify the concentrate by commercial products. Two lines of screens, each line producing up to five sieved products, are directed to ten finished products bins before bagging. In total, up to ten different commercial products can be generated from the screening circuit, according to size specifications.

Figure 17-6 depicts the Baie-Comeau concentration plant commercial screening and product bagging area layout.

17.2.5.6 AREA 07 – COMMERCIAL PRODUCT BAGGING AND STORAGE

The commercial bagging area consists of:

- Three bulk bags packaging stations;
- One small bags packaging station;
- One wrapping station.

The finished products are bagged before being sent to the shipping hall. The pallets of finished products will remain in the quarantine area pending quality control approval by the laboratory.

Figure 17-6 depicts the Baie-Comeau concentration plant commercial screening and product bagging area layout.

17.2.5.7 AREA 08 – TAILINGS

The tailings from all the flotation stages are collected in a pump box and pumped to the tailings thickener to reach a density of 62% solids. The decanted water is sent to the raw water pond. The thickened pulp is sent to the tailings filter feed tank. This tank acts as a buffer between the extraction process and the filtration allowing maintenance on the filtration circuit without mill shut down. A pressure filter is used to dewater the tailings and produce a filter cake that contains 15% humidity. This cake is discharged on a stockpile and is reclaimed with a loader to be trucked to the tailings management facility. Once there, the cake is discharged, and a bulldozer is used to spread and compact the tailings. The filtered water as well as cloth wash water are sent back to the tailings' thickener.

Figure 17-7 depicts the tailings filtration layout.

17.3 GENERAL PLANT UTILITIES AND SERVICES

The plant utilities and services have been specifically quantified, based on:

- Developed mass and water balances;
- Quotations from equipment vendors.

17.3.1 REAGENTS STORAGE AND HANDLING

The reagents storage and mixing facilities are located close to the flotation cells. The concentration plant uses the following reagents:

- Collector;
- Frother;
- Dispersant;
- Flocculent;
- Hydrated lime;
- Caustic soda.

17.3.1.1 COLLECTOR

The collector used in the flotation process is expected to be delivered in liquid form to the site, via tanker trucks. The contents of the trucks will be unloaded into the storage tank, and the collector distribution to the relevant points within the flotation process will be controlled by adjusting the various metering pump speeds.

17.3.1.2 FROTHER

Another reagent used in the flotation process is frother. It is expected to be delivered in 1,000-litre tote containers to the site. Two tote containers are to supply the frother to the relevant points within the flotation process. The frother distribution to the relevant points will be controlled by adjusting the various metering pump speeds.

17.3.1.3 DISPERSANT

The dispersant is used to improve selectivity in separating the gangue from the concentrate flotation process. It is expected to be delivered to the site in big bags. The dispersant is diluted with potable water prior to being transferred to the flotation process. The dispersant distribution will be regulated by adjusting the metering pumps speeds.

17.3.1.4 FLOCCULENT

Flocculent is used to aid the settling of material in the concentrate thickener and the fine pre-concentrate thickener. It is expected to be delivered to the site in big bags. The flocculent is diluted with potable water prior to being transferred to the thickeners.

17.3.1.5 HYDRATED LIME

Hydrated lime is added to the plant feed in order to neutralize the ore's acidic nature caused by sulphur. This will also prolong equipment life. It is expected to be delivered to the site in big bags. The content of the big bags will be added in the SAG Mill feed chute via a feed hopper and screw feeder. The hydrated lime distribution rate will be controlled by adjusting the screw feeder rotation speed.

17.3.1.6 CAUSTIC SODA

Caustic soda is used in the concentrate dryer wet scrubber in order to neutralize the sulphur dioxide emanating from the concentrate dryer. It is expected to be delivered to the site in 1,000-litre tote containers. Raw water is added at the scrubber to produce a solution of the desired concentration. The caustic soda distribution within the scrubber is regulated by adjusting the scrubber metering pump speed.

17.3.2 WATER MANAGEMENT SYSTEM

17.3.2.1 RAW WATER

The raw water primarily serves as make-up water within the concentrate dryer wet scrubber and any place that requires water with low suspended solids like filter wash water and gland seal.

The raw water is sourced from the clarified water of the raw water pond; additional potable water can also be added as required.

17.3.2.2 PROCESS WATER

The process water at the concentration plant is used in grinding mills, flotation cells and columns and on wet screens.

The process water consists of a mixture of recycled and make-up water from several sources. The clarified water coming from the raw water tank overflow, the concentrate thickener and the fine pre-concentrate thickener is recycled to the process water tank. These sources are the major contributors to the process water balance.

17.3.2.3 GLAND SEAL WATER

Gland seal water serves as coolant and lubrication of the pumps shaft packing. Water from the raw water tank is the source for the gland seal water distribution network.

17.3.2.4 POTABLE WATER

Potable water is used for human consumption, fire suppression purposes, eye wash and safety shower stations at the concentration plant. It also serves to prepare the dispersant and flocculent solutions that require water quality that is not reached with other sources.

17.3.3 AIR DISTRIBUTION

Compressed air with different pressure and quality is required in the mill. Where low pressure is required, blowers will be used. High pressure will be delivered by compressors with a different moisture content, dry or wet, depending on the end user. The air dryer will be used to produce dry air. The compressors used are:

- Two blowers:
  - Air for flotation cells.
- Five compressors:
  - One for feeding the air dryer and dry air distribution network;
  - One for the flotation column;
  - One for the concentrate filtration system;
  - One on standby;
  - One for the tailings filtration system.

The standby air compressor is connected in such a way that it can replace any of the other compressors except the one for tailings filtration. The air compressor for the tailings system feed and the air dryer are dedicated to the tailings filtration building. The air required for the process itself in flotation and filtration is not dried but all the instrumentation of such a system will be connected to the dry air network for instrument protection.

17.3.4 FIRE PROTECTION

A plant-wide pressurized fire-water protection system is included in the design of the concentration plant. Fire hydrants and hose cabinets will be installed inside the concentrator building. Fire protection will also be installed in the maintenance building. Potable water is used as emergency water for firefighting. This fire-suppression system is in compliance with local regulations and insurance requirements.

17.3.5 POWER REQUIREMENTS

The total power load is evaluated at 11.3 MW. This includes all the electrical power to the site. The process power requirement is estimated at 7.2 MW; it includes the power required for drying the concentrate, estimated at 2.0 MW.

The power estimation values were derived from the Project mechanical equipment list and the electrical load list.

Should a power failure happen, an emergency generator will provide power to critical equipment such as thickeners and water pumps needed to keep the water flowing in outside pipes during winter.

17.3.6 PLANT INSTRUMENTATION AND PROCESS CONTROL

The Process Control System (PCS) selected for the Project is an industry standard and allows for smooth expansion either in Input / Output (I/O) count or for new areas if need arises. For the concentrator plant, there will be a main Supervisory Control and Data Acquisition (SCADA) control system installed on servers. There will be no dedicated control room; operators will run the plant from operating interfaces placed in strategic locations in the plant. Wireless control of the plant will also be possible.

Figure 17-1 - Area 02 – Ore Stockpile, Crusher and Ore Bins

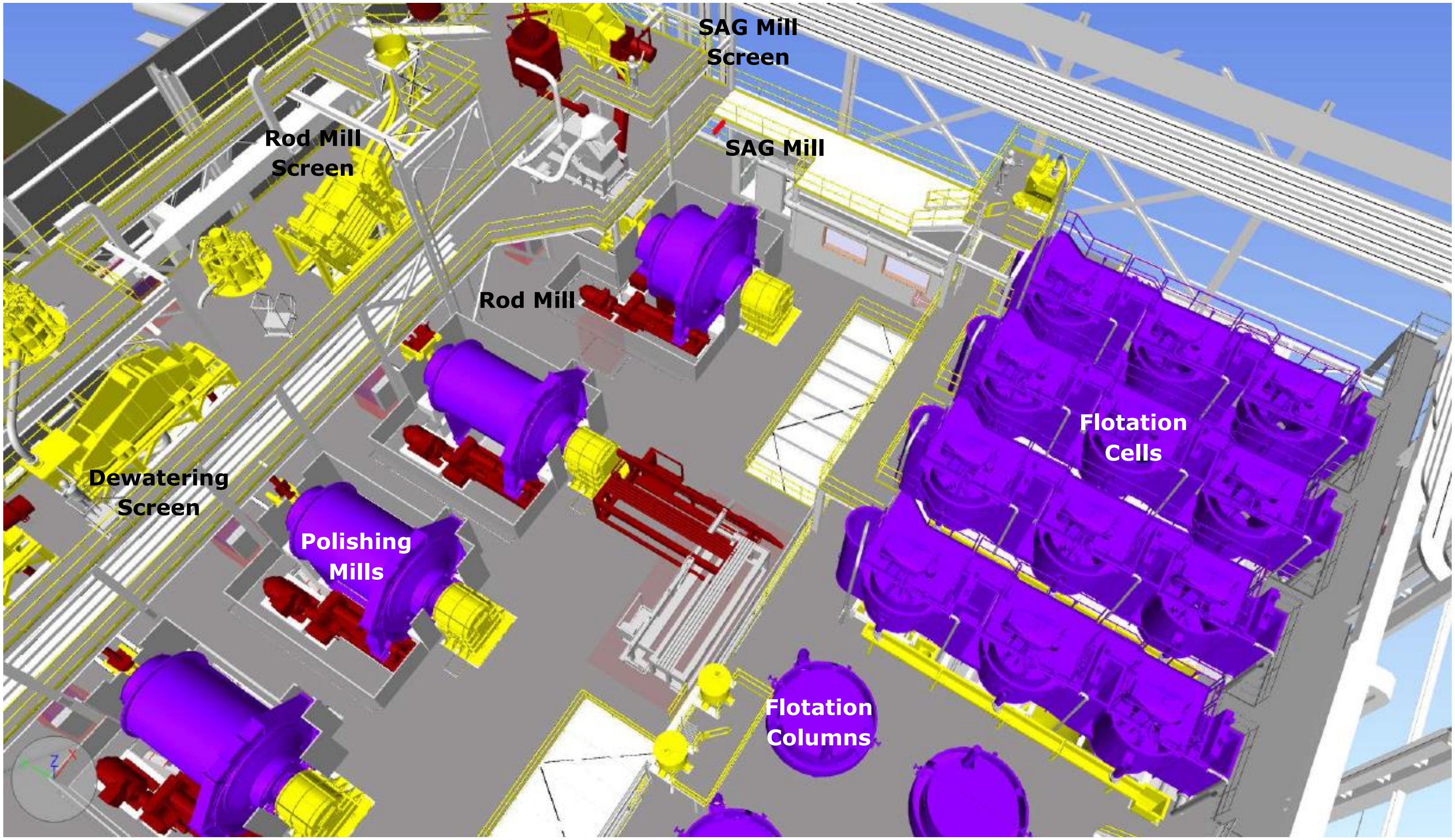


Figure 17-2 - Area 03 – Primary Grinding and Flotation

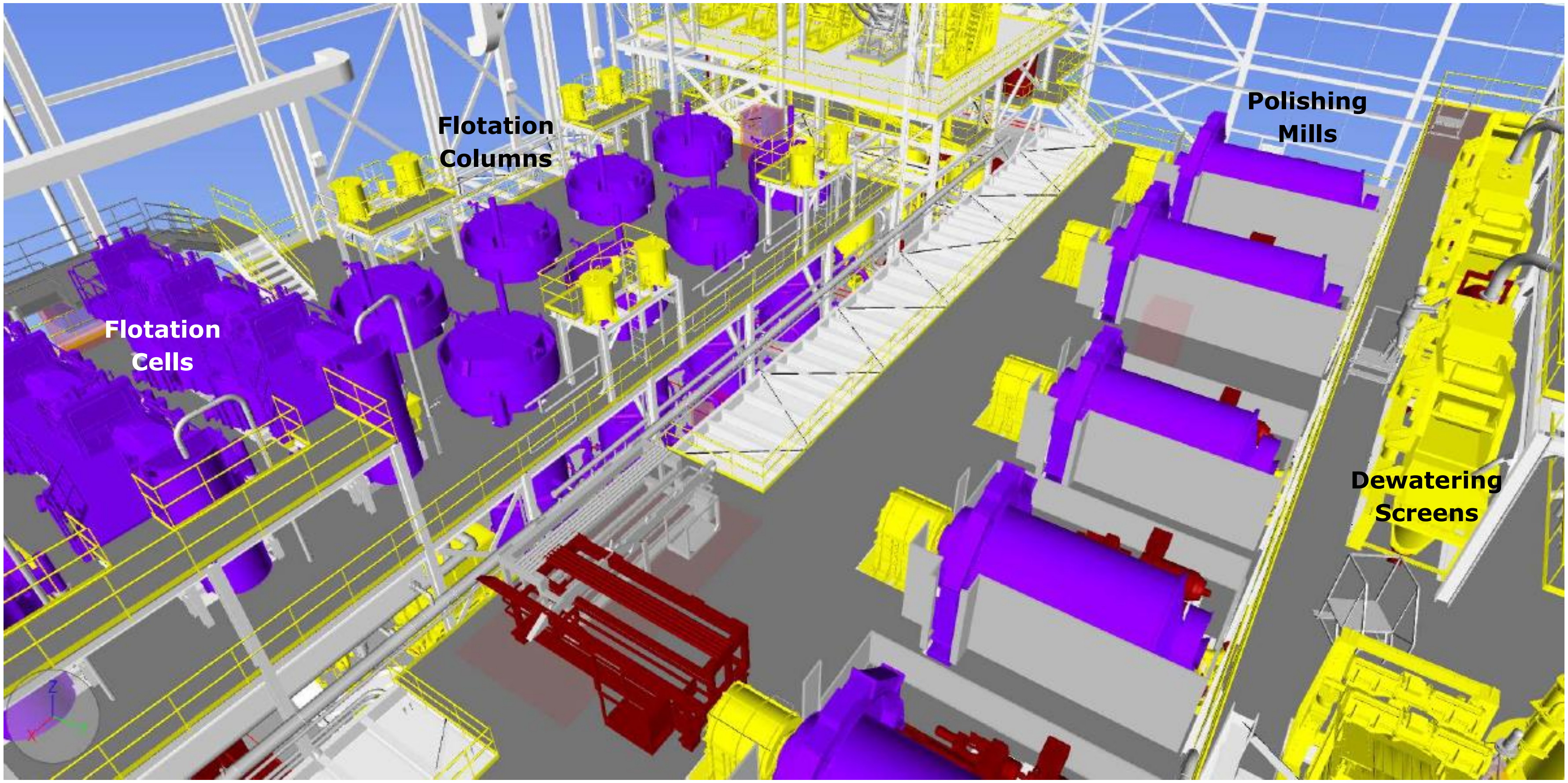


Figure 17-3 - Area 04 – Polishing Grinding and Cleaning Flotation

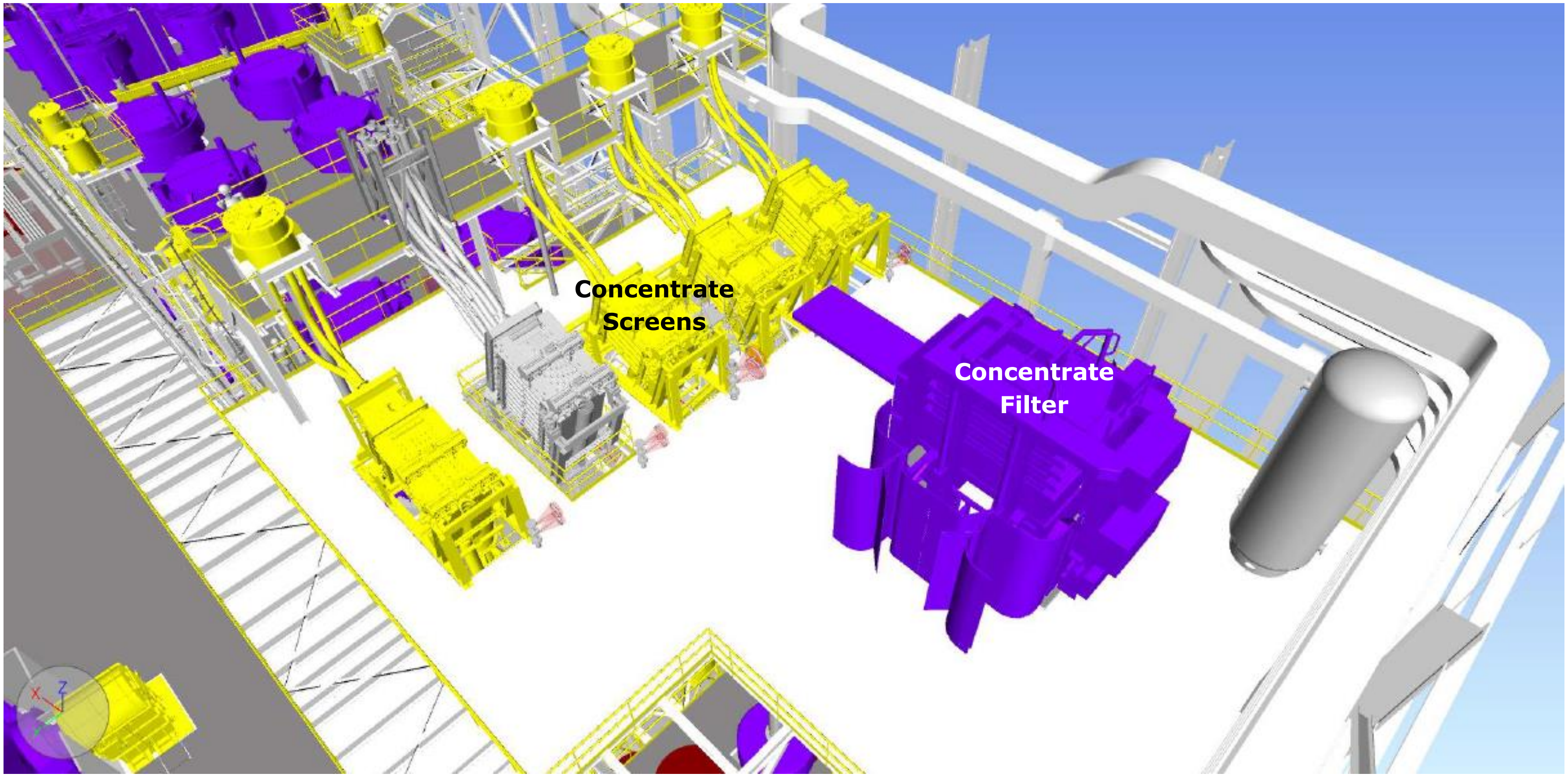


Figure 17-4 - Area 05 – Concentrate Filtration

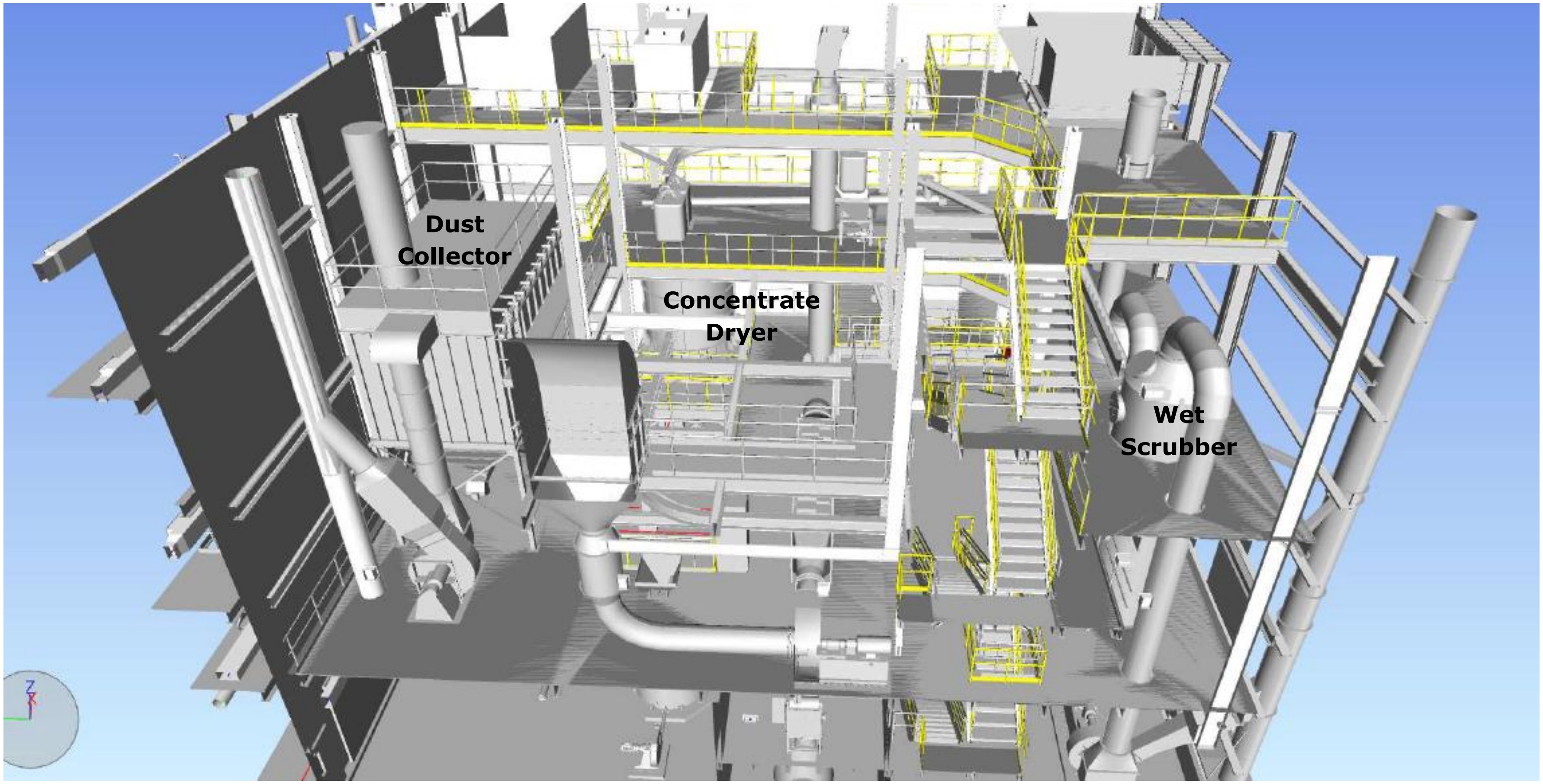


Figure 17-5 - Area 05 – Cut-out of the Dryer and Scrubber

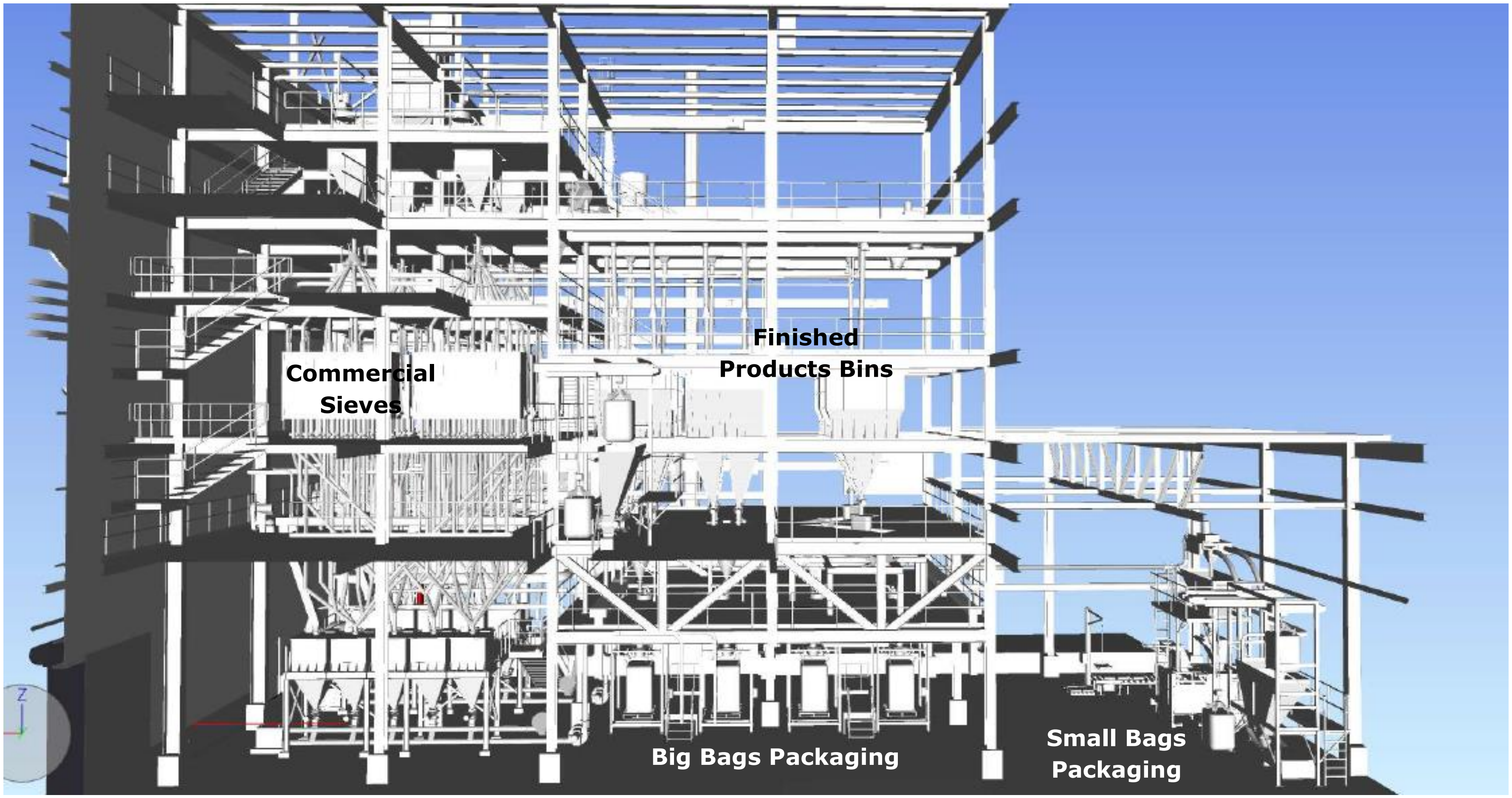


Figure 17-6 - Area 06 – Commercial Sieving and Area 07 – Concentrate Bagging

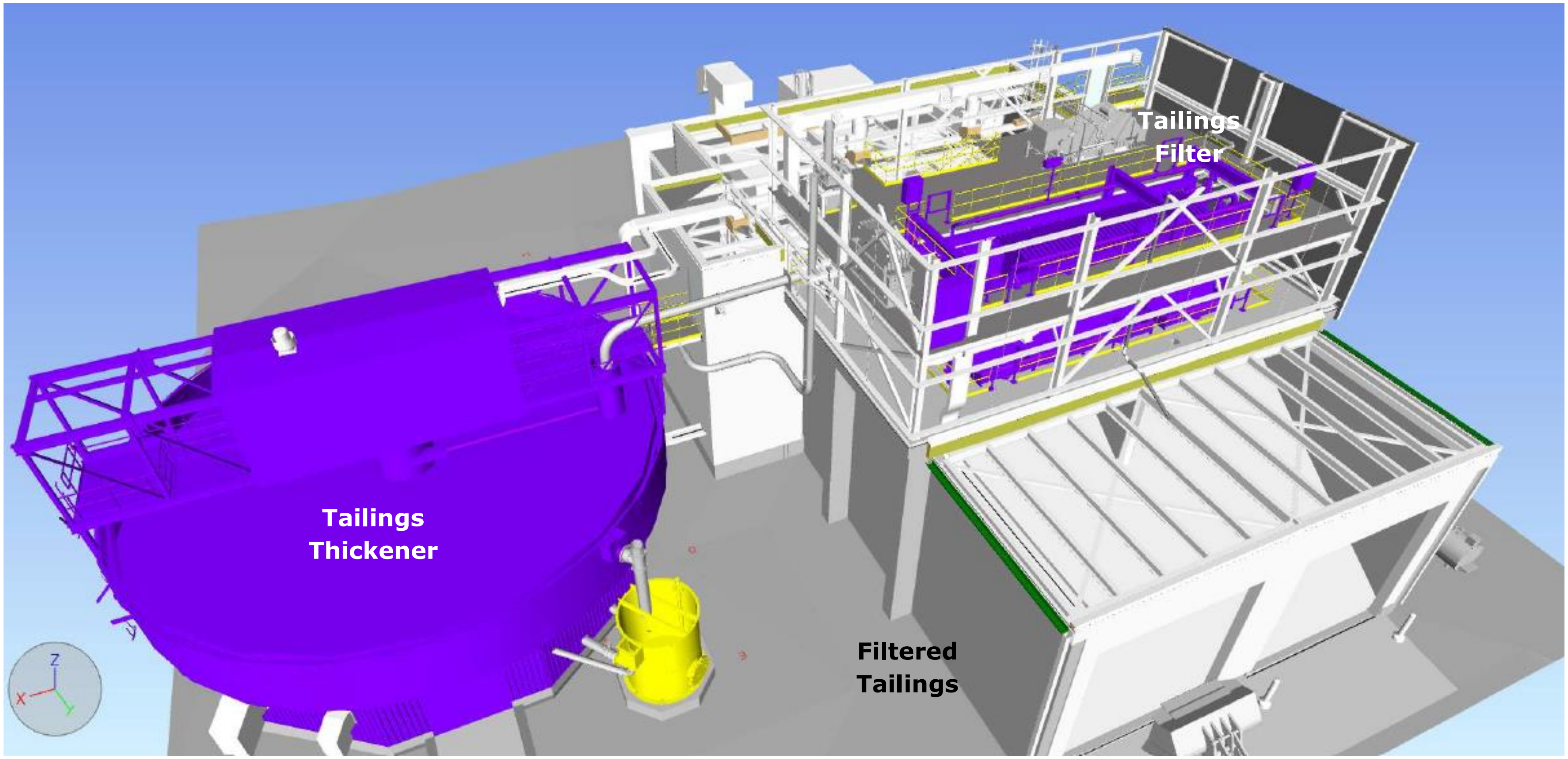


Figure 17-7 - Area 08 - Tailings Filtration

18. PROJECT INFRASTRUCTURE

18.1 LAC GUÉRET SITE

18.1.1 ACCESS AND SITE ROADS

Access to the Lac Guéret site is via the paved all-weather Highway 389 from Baie-Comeau up to km 202, then via forest road #202 for 85 km to the mining site. More details about the access to the site can be found in Section 5.1 of this Report.

On-site roads to access the mining site either from camp or forest road 202 already exist and will be improved for industrial activities.

Provisions have been made to improve some sections of the forest road and of the mining site access road.

18.1.2 POWER

The Lac Guéret site is located about 85 km from the nearest power grid which is near the Manic 5 power dam. Therefore, off-grid power generation will be necessary. There are two separate power generation areas: the camp and the mine. Power requirement for each area was calculated from the installed equipment. Thus, two diesel generators are planned for the Project, one for each area:

- A 150-kW generator for the mining camp;
- A 200-kW generator for the dewatering pumps, garage, water treatment station and ROM pad lighting;
- A third generator will act as a backup for either area.

18.1.3 CAMP SITE ACCOMMODATIONS AND SERVICES

The mining camp will be located on the eastern shore of Lac Galette, at the same location where Mason Graphite has operated its exploration camp from 2012 to 2014. The distance between the camp site and the mine is about 2.5 km.

Mason Graphite holds a lease with the MERN for the land. The lease covers an area of approximately 7.3 ha; the area required for the camp and its ancillary buildings will cover approximately 1.0 ha.

The camp site will comprise the following installations:

- One camp building with ten bedrooms, one kitchen, one dining room, one recreational room, one infirmary room and two offices;
- One core shack and associated core racks (from 2012 – 2014 exploration);
- One diesel power generator;
- One fuel tank; and
- One domestic waste water treatment station (septic tank + infiltration field).

Fresh water will be supplied from a well or the nearby lake and the water will be treated as needed to meet the potable water quality requirements.

The camp site will be lighted by low consumption LED projectors on poles.

Workers will travel from and to Baie-Comeau by a minibus. They will travel between the camp and the mine by pick-up trucks.

18.1.4 MINE SITE SERVICES

The mine site will host the following infrastructure:

- One modular garage to perform light maintenance work on the mobile equipment, like oil changes and minor repairs;
- One fuel tank with associated pump to fuel the mobile equipment;
- One mine water treatment station to treat contact water;
- Dewatering installations, including dewatering pumps;
- One generator to power the garage, dewatering pumps, lighting and mine water treatment station.

See Figure 18-1 for the mine site layout (first five years of operations).

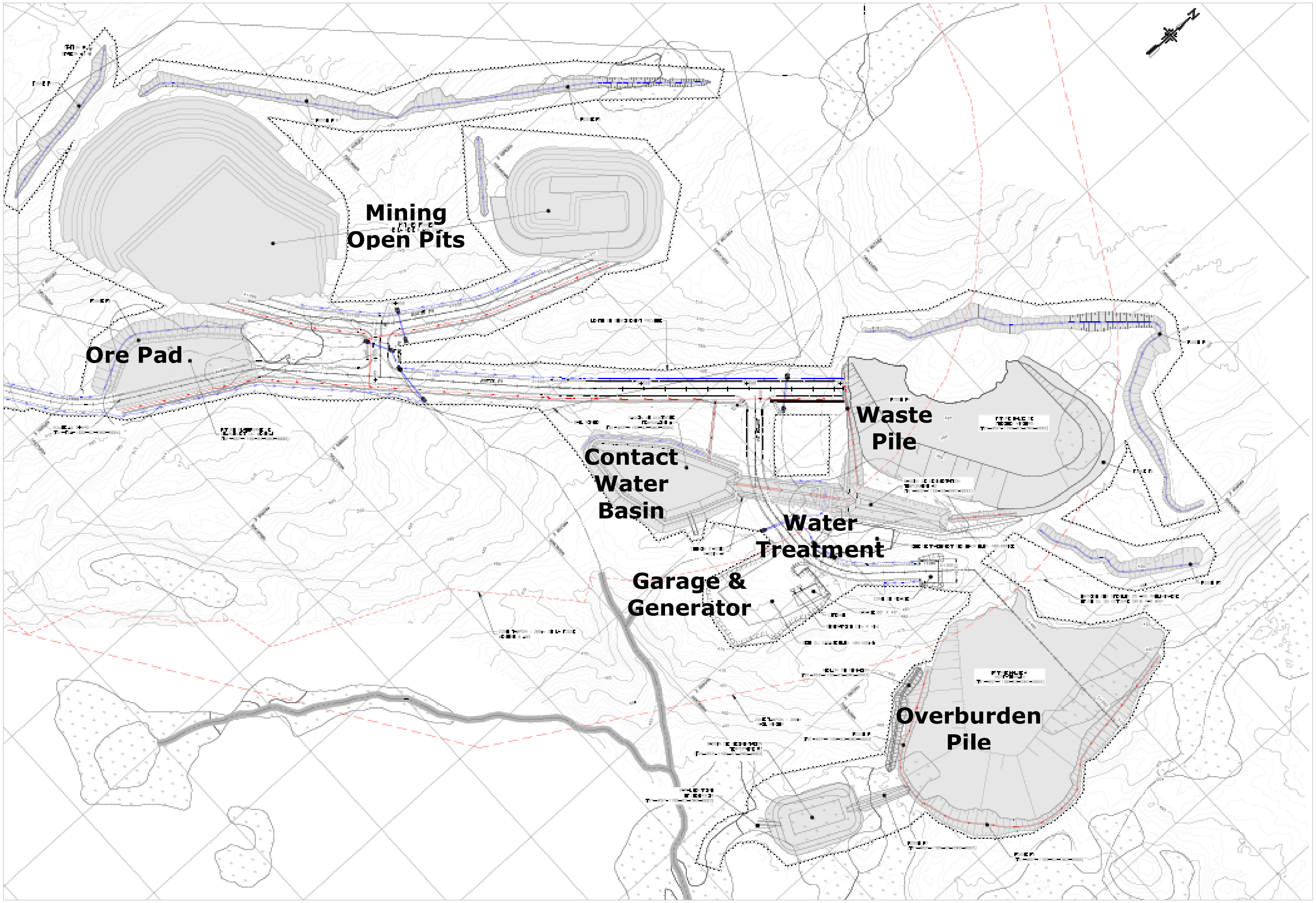


Figure 18-1 - Mine Site Layout (First 5 Years)

18.1.4.1 WASTE ROCK PILE DESIGN

The waste rock pile will be constructed with two levels at 475 m and 500 m, with a berm of 14.3 m in between. Trucks will discharge the waste rock next to the stockpile and a wheel loader will push the material to flatten the pile level. A repose angle of 38° was used for the design. The pile will be built in ascending lifts and adequate bench heights and widths will be maintained to achieve the overall design slope. The overall slope is estimated at 26.6° (2H:1V) as recommended by geotechnical studies. The estimated surface area of the waste rock pile is 8 ha after 25 years of operation.

In order to provide additional protection of the groundwater, the bottom of the waste rock pile will be lined with a geomembrane and the runoff water collected.

Progressive revegetation will take place during the operation. Overburden will be added to the surface of the waste rock pile (0.3 m thickness) to facilitate the revegetation process. Reclamation will start when final levels are completed.

During the first two years of operation, Mason Graphite will construct and monitor test cells in order to identify opportunities to prevent and control oxidation of the waste rock and validate the need of geomembranes to protect ground water.

18.1.4.2 OVERBURDEN STOCKPILE DESIGN

The overburden stockpile will receive material during pre-production and during the 6th to 10th operating years. On the 10th production year, the overburden removal will be completed.

The overburden stockpile will be constructed on three levels: 470 m, 480 m and 490 m. The overall slope is estimated at 18.4° (3H:1V) as recommended by geotechnical studies. Trucks will discharge the overburden next to the pile and a wheel loader will push the material to flatten the pile level. A repose angle of 25° was used for the design. The estimated surface area of the overburden pile is 6 ha.

It is planned to do progressive revegetation of the pile at the 7th year of operation and to complete revegetation after the 10th year. A portion of the overburden will be used for infrastructure construction (roads, platforms…) and for the site reclamation at the end of the Project.

18.1.4.3 WATER MANAGEMENT

Runoff water to the north of the mine pit (upstream flows) and upstream of the waste and overburden stockpiles will be intercepted by a ditch that will be dug during the construction phase. The intercepted water will be diverted to the natural watercourses to the south of the installations (downstream flows). No treatment is required for the intercepted water as it should not be in contact with any contaminant.

During the construction phase, runoff water from the ROM pad, the open pit and the waste rock pile will be collected and directed to a temporary control basin located to the south of the stockpile. A water treatment plant will assure that the water quality respects the concentration determined by the Ministry of Environment in terms of suspended solids mainly. The runoff of the overburden stockpile will be collected into a settling pond designed to allow sufficient retention time for the settlement of suspended solids. The temporary basins design will allow the containment of a 24-hour, 1 in 100 years recurrence rainwater event associated with a 30-day snowmelt. Figure 18-2 shows the water management during the construction and beginning of the operation.

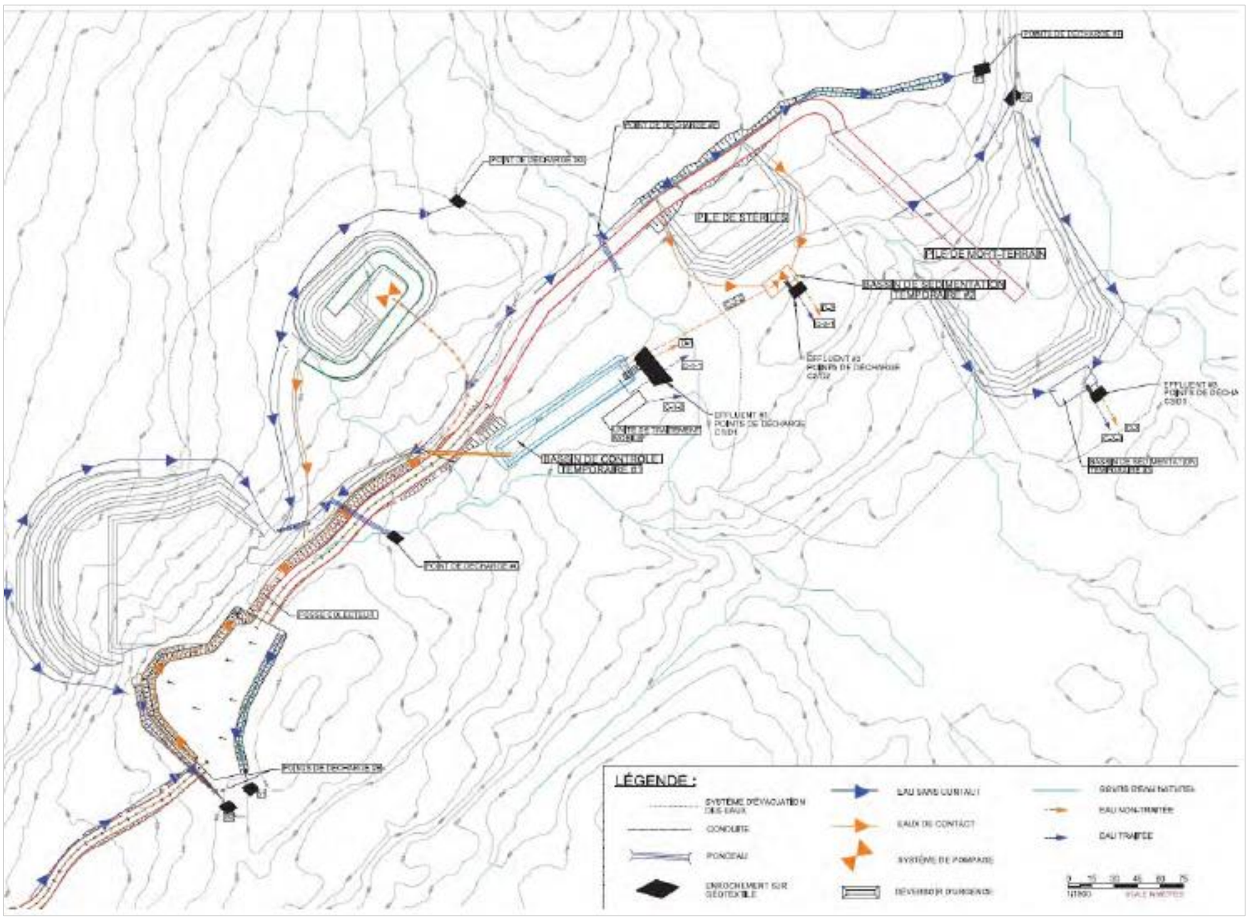


Figure 18-2 - Water Management (Construction and Beginning of the Operations)

A permanent basin will be installed after the 3rd or 4th year of operations, when the pit water and drainage water reach significant volumes. This basin will be constructed downstream of the waste pile and designed to contain a 24-hour, 1 in 2,000 years rainfall event and a 30-day snowmelt of a 1 in 100 years event. The capacity of the basin will be 91,902 m^3 and will cover 4.3 ha at maximum capacity and 0.5 ha at its minimal level. Both the bottom of the pond and the dam (height of 8 m) will be impervious to water.

Overflow of the control basin will be directed to the creek located south of the mining site after proper treatment; this final effluent will comply with Directive 019 criteria and the environmental permits. Anticipated treatment should consist of pH adjustments and suspended solids decantation. The effluent will be discharged all year long to the Sans Nom Creek, which is a tributary to the Lac Sans Nom.

Monitoring of the drainage water after site closure will ensure the effluent quality. After closure of the mine site, the open pit water will no longer be dewatered and the water will accumulate in the pit with precipitations. After a certain period, the water level in the pit will become stable and a spillway will allow an overflow. Monitoring will be conducted to determine when pit water will not require treatment prior to its release into the environment. The water treatment plant will be maintained at closure until demonstration that the reclamation work and effluent quality meet regulatory criteria.

18.1.4.4 EFFLUENT WATER TREATMENT

To ensure that the effluent meets the governmental quality criteria, a water treatment plant (WTP) will be built on site and will be operated during the operations and after closure until the effluent naturally meets the quality requirements.

The WTP will perform the following functions, as needed by the water characteristics:

- Suspended matters decantation (with flocculation if needed);
- Adjustment of the pH;
- Precipitation of any dissolved metals;
- Decantation and/or filtration of the precipitated metals.

The decanted matters will be recovered and moved to the waste or overburden pile. Any hazardous material not suitable for storage on site will be taken off site and managed by a specialized contractor.

18.1.5 COMMUNICATIONS

Communications between the Lac Guéret site and the regular communication networks (phone, internet) will be through a microwave communication network. Local communications between the camp, the mine site and the effluent treatment plant will be through cabled and wireless towers. A wireless network at the camp site will be available for employees and visitors.

Long range FM radios will be used for communications between mine workers, truck drivers transporting the ore from the mine to Baie-Comeau and the minivan transporting the workers to and from the camp.

A satellite phone will act as back up for emergency communications in case of satellite internet access failure.

18.2 BAIE-COMEAU SITE

18.2.1 ACCESS AND SITE ROADS

As mentioned previously, access to the Baie-Comeau site will be through the public road network (Highways 138 and 389). See Section 5.2.1 for more details.

Roads on site will be built as necessary to access the various areas of the land such as:

- The filtered tailings pile;
- The pumping station at the raw water reserve (RWR);
- The finished products storage areas.

18.2.2 BUILDINGS, OTHER INSTALLATIONS AND SITE LAYOUT

There will be the following buildings and infrastructure on the Baie-Comeau site:

- An ore storage area;
- A concentrator building, divided into a wet process sector, a drying sector and a dry process sector;
- A shelter for thickeners, attached to the wet process part of the concentrator building;
- A tailings filtration building;
- An shipping warehouse, attached to the dry process sector of the concentrator building;
- A multifunctional service building housing the workshops, the spare parts store and the laboratory;

- An office building, housing the administrative offices, server room, lunch room and changing room;
- A dry stack for the filtered tailings;
- A raw water reserve and a water basin for the ore storage area;
- A storage area for finished products.

The general layout of the site is presented in Figure 18-3; 3D renditions of the site, extracted from the engineering model, are presented in Figure 18-5 to Figure 18-9 below.

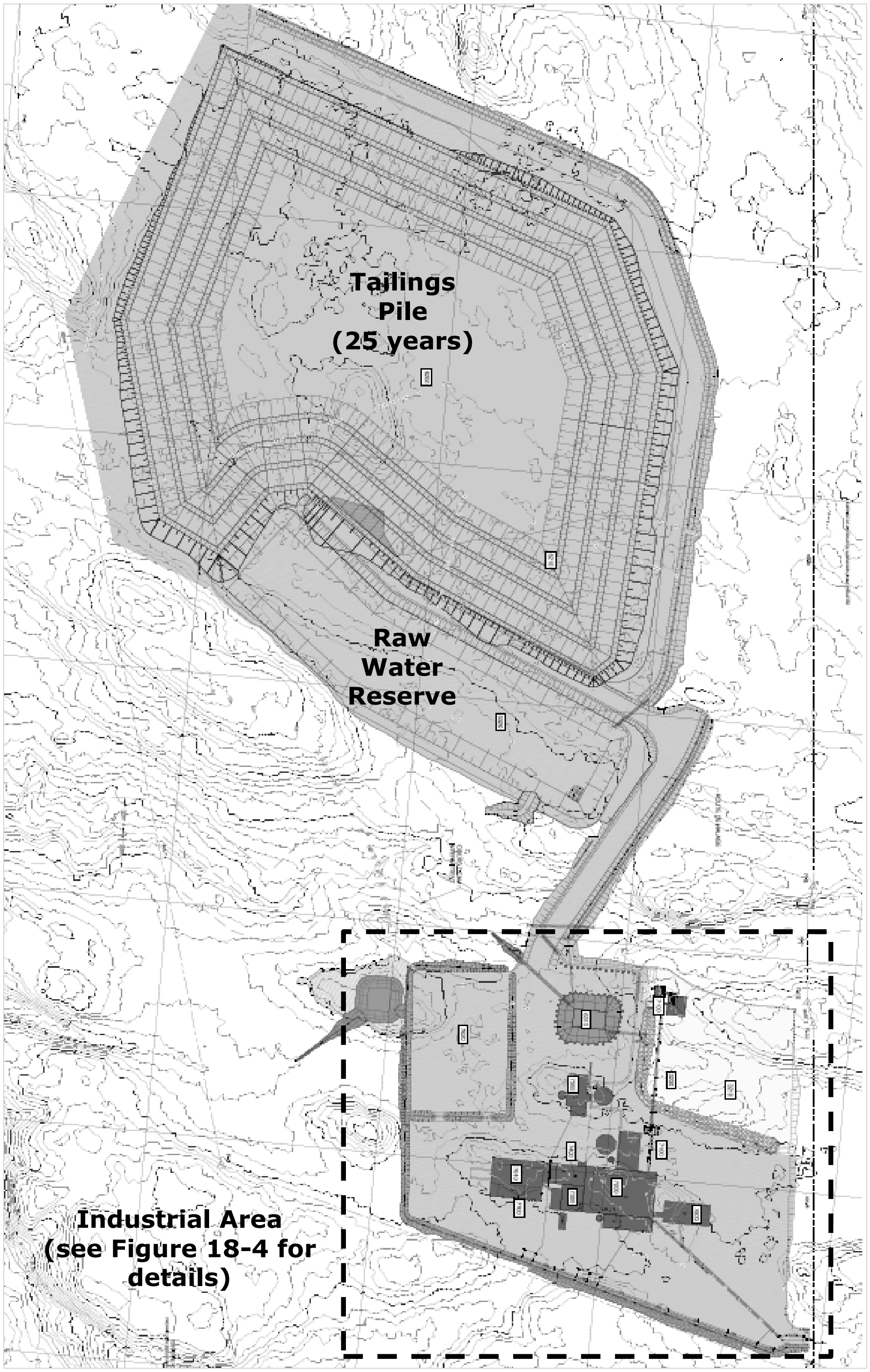


Figure 18-3 - Baie-Comeau Site Plot Plan - General

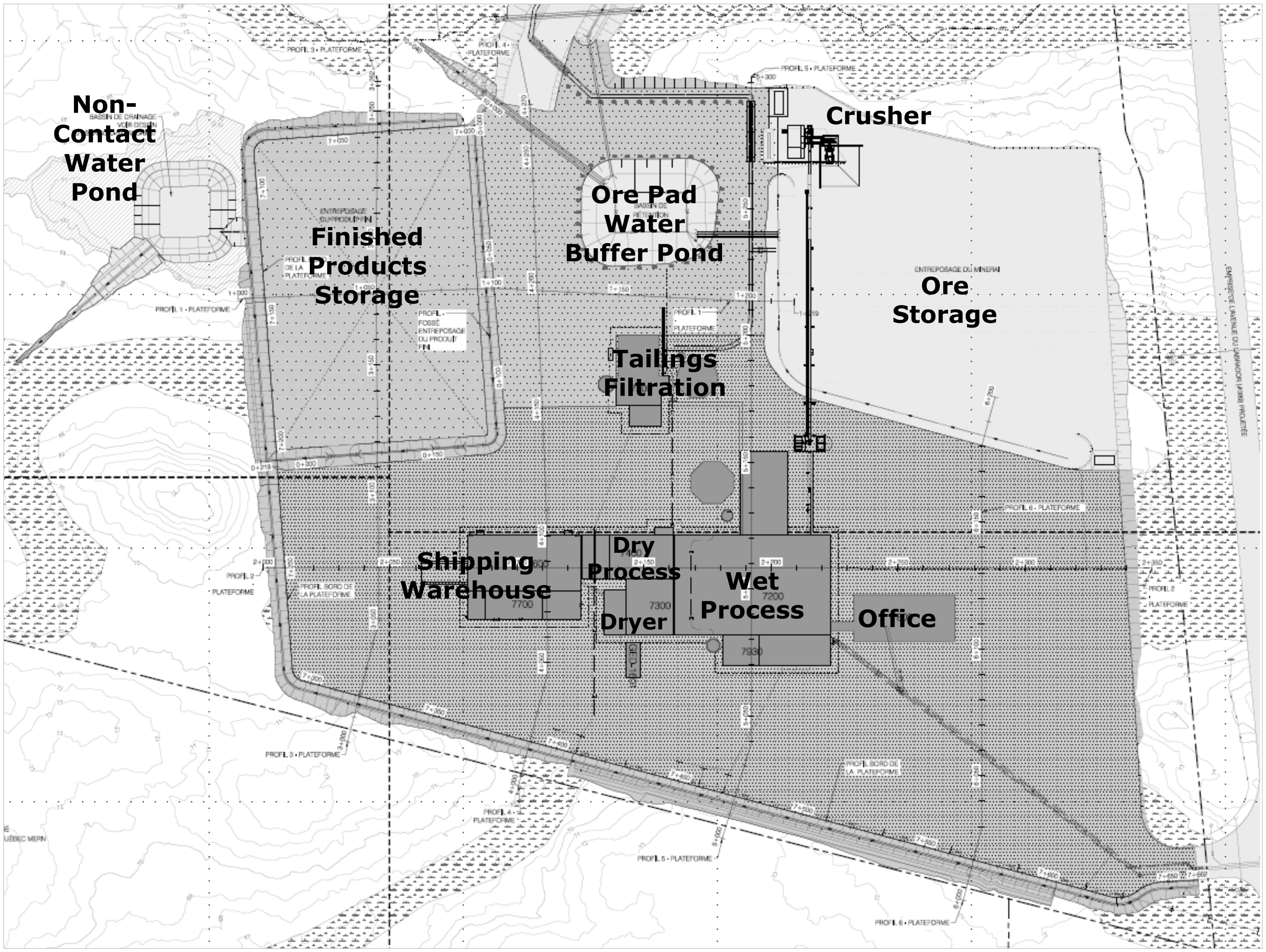


Figure 18-4 - Baie-Comeau Site Plot Plan – Industrial Area

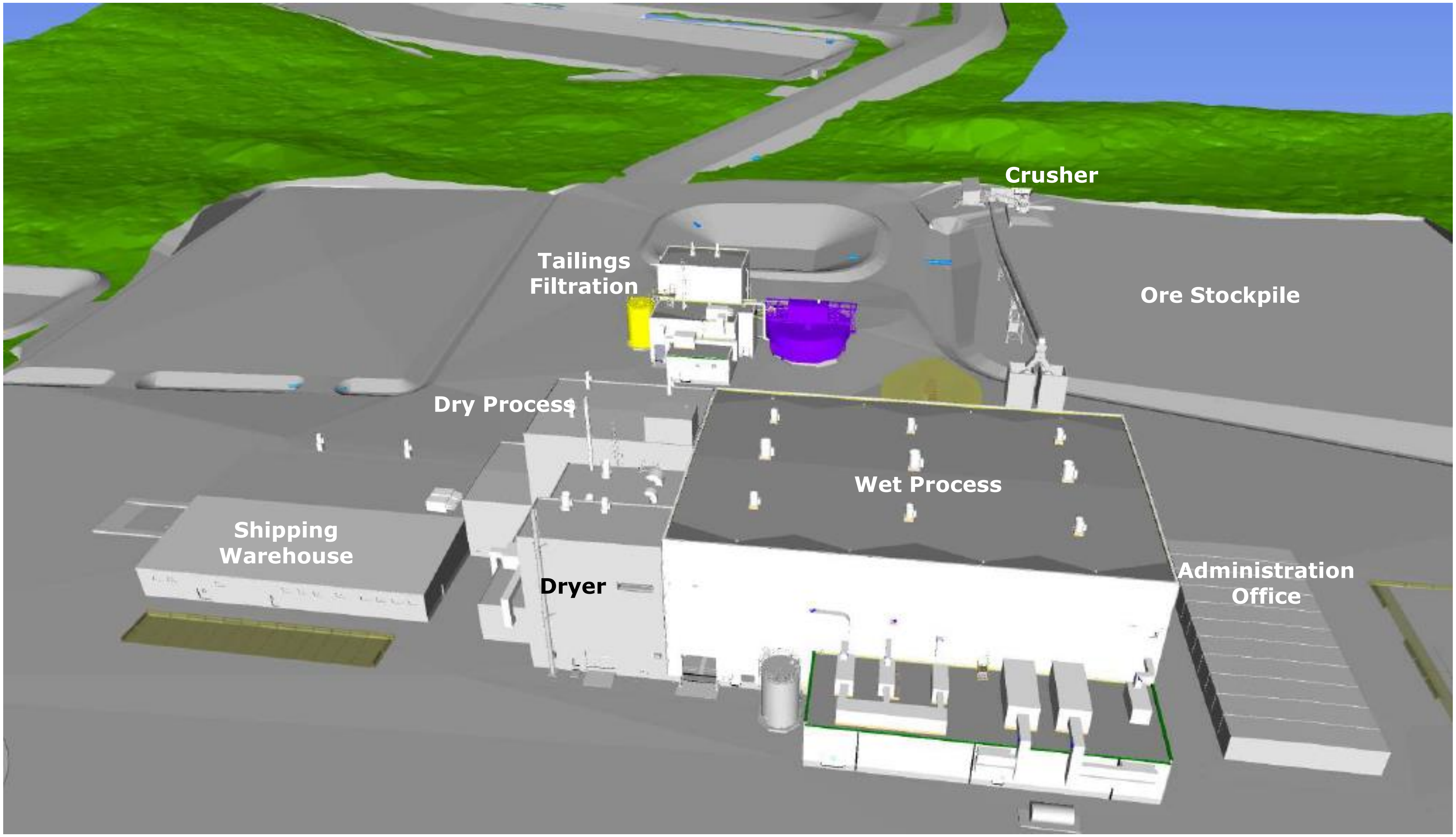


Figure 18-5 - General View of the Site, Looking North

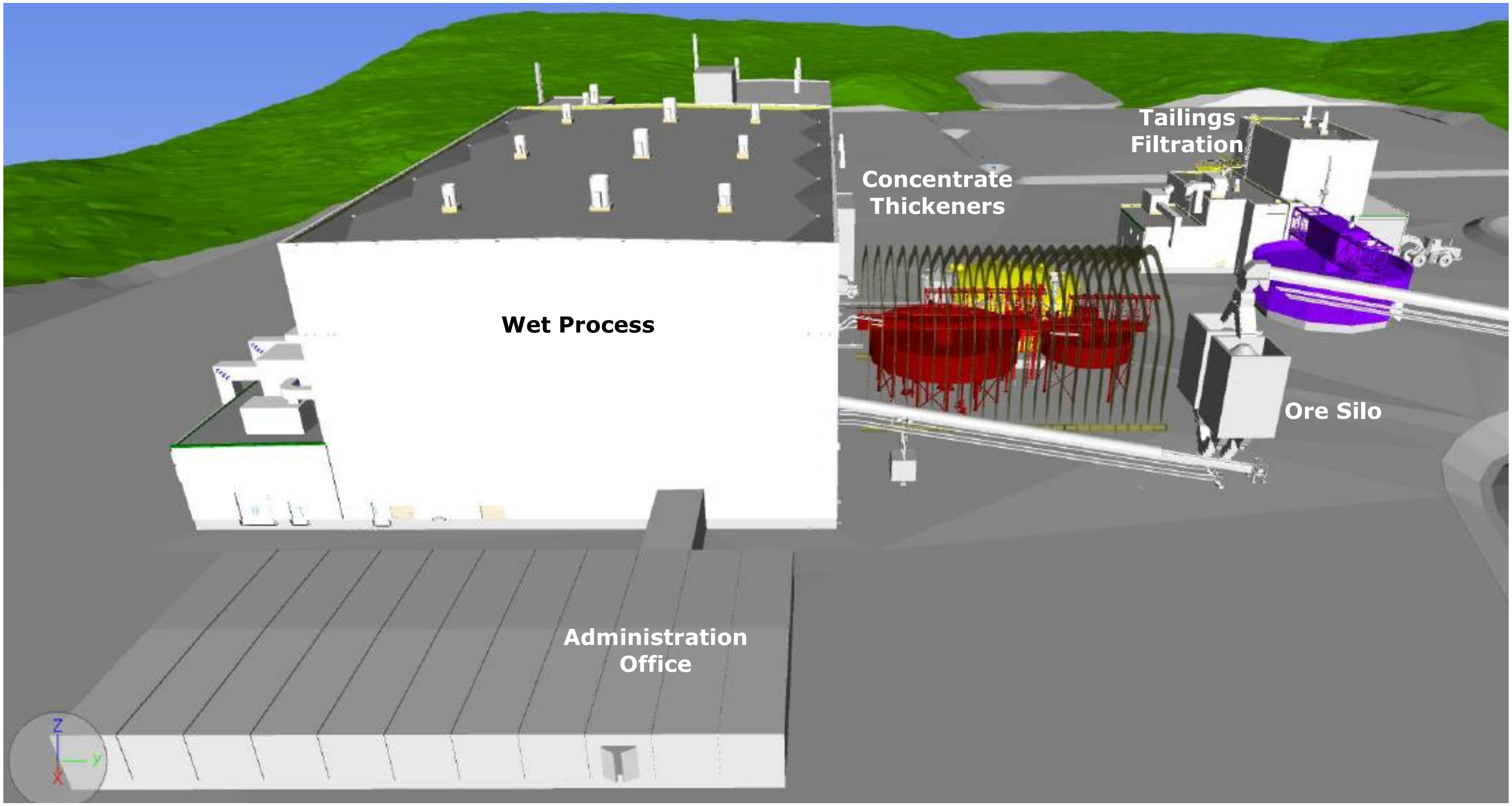


Figure 18-6 - Buildings View, Looking Generally West

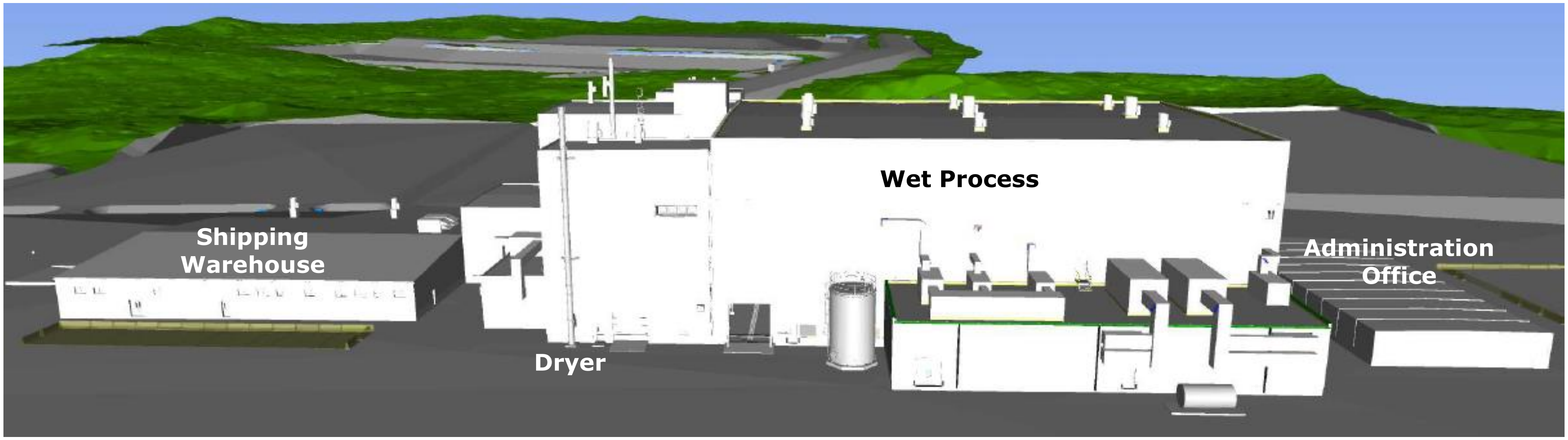


Figure 18-7 - Buildings View, Looking Generally North

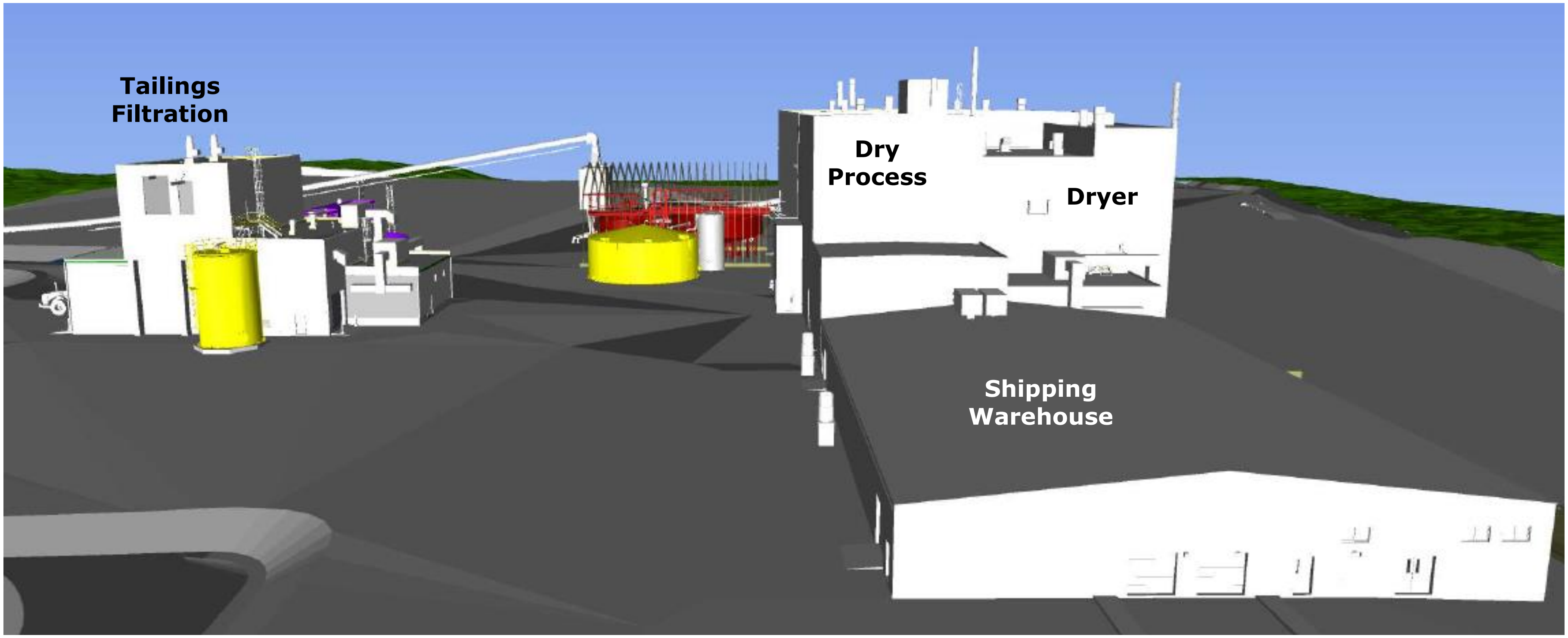


Figure 18-8 - Buildings View, Looking Generally East

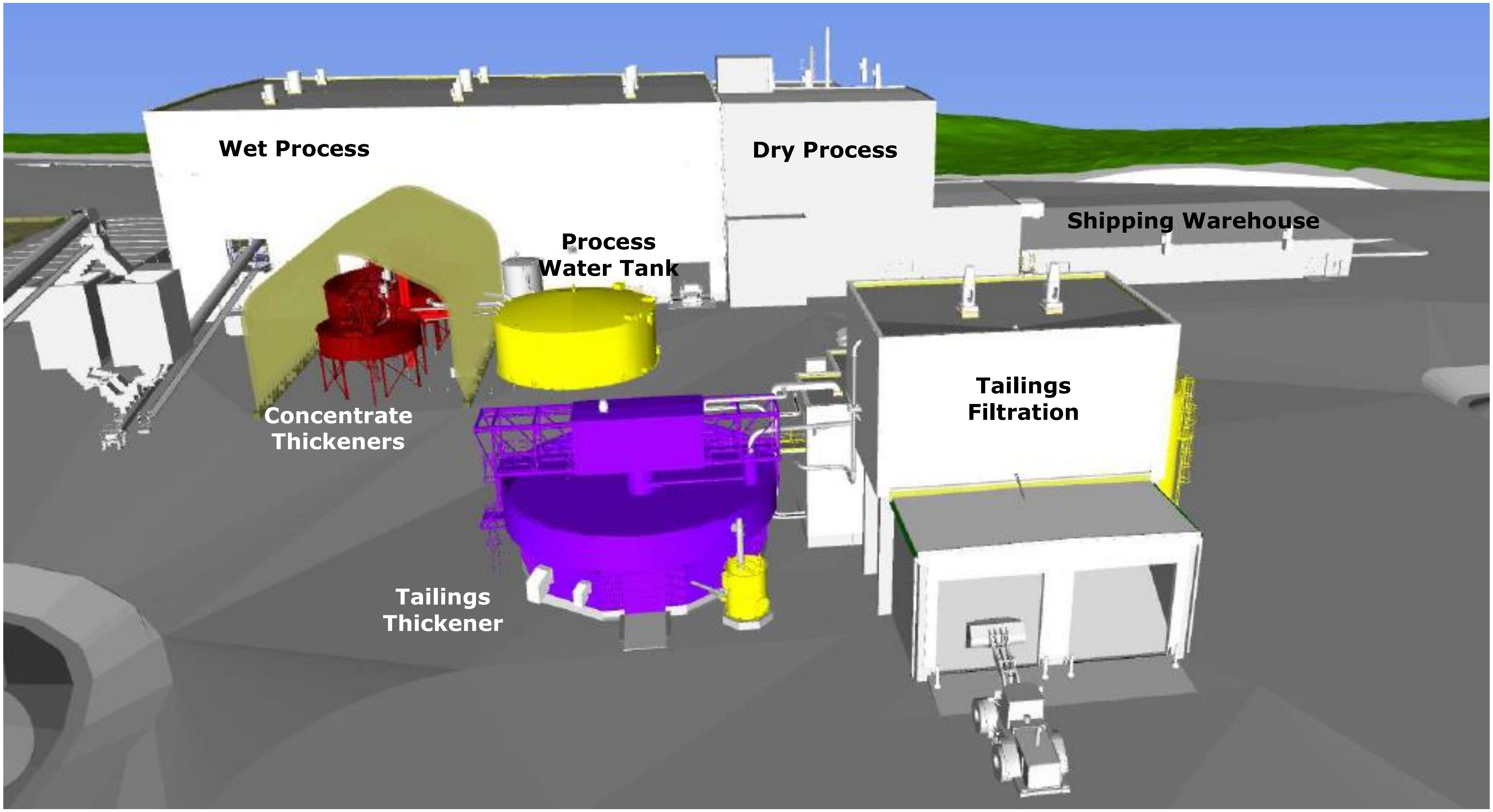


Figure 18-9 - Buildings and Ore Stockpile View, Looking Generally South

The ore arriving from the mine by road trucks will be stored in the ore storage stockpile. The capacity of the storage area will be 40,000 tons, enough to feed the plant for two months.

The ore crusher will be adjacent to the ore stockpile and will be linked to the ore silo by a belt conveyor. Another belt conveyor will feed the SAG mill in the wet area of the plant, the first step of the concentration process. Runoff water from the ore storage stockpile will be collected as it may have been in contact with the ore and will be pumped to the raw water reserve.

The wet process area will house the grinding, flotation, screening and concentrate filtration equipment. It will be serviced by a 15-tonne overhead crane. The dryer area will house the concentrate dryer and the dryer exhaust gas scrubber. The dry process area will house the commercial sieves and the finished product packaging lines. Although the equipment in the drying and dry process sectors will be designed to be dust tight, thus preventing the emission of graphite dust in the air, physical separations between the sectors will prevent transmission of dust in case of a containment failure.

A dome-type, lightly heated shelter will protect the fine pre-concentrate and final concentrate thickeners from contamination and freezing. Free space inside the shelter will be used as a warehouse to store the larger spare parts and consumables such as mill liners, grinding media and empty packaging.

The product shipping warehouse will be connected to the dry section of the concentrator for finished product movement. It will have loading docks for the trucks. The size of the building will be sufficient to house about one day of production and one day of shipments.

A multifunctional building, housing a shipping office, the spare parts store, the workshops and the laboratory will be adjacent to the shipping warehouse for easy access to the concentrator buildings. All the buildings will be connected, and forklifts will be able to travel in all areas to facilitate maintenance.

The office building will be fully serviced (independent from the plant building) with HVAC system, fire protection piping, plumbing, network, lighting and electrical distribution.

As natural graphite is inert and hydrophobic, when properly packaged, it can be stored outside without risk of degradation. Therefore, the inventory of finished products will be stored outside in a properly graded and drained area in well identified storage spaces, close to the shipping building.

18.2.3 POWER

Electrical power will be supplied from the Hydro-Québec grid. An existing 25 kV line already used for the industrial development of the city of Baie-Comeau is available in the vicinity of the Project. A new overhead 25 kV power line will be installed from the existing line to bring power to the site. This new power line will be connected to the concentrator main electrical room and will be distributed to the various site areas.

The primary distribution to substations will be supplied at 25 kV. Secondary distribution for large motors will be done at 4.16 kV. Low voltage (LV) distribution will be done at 600 V. The electrical rooms will be insulated for the site climate conditions and positive pressure will be maintained to prevent graphite infiltration.

LED lighting fixtures will generally be used to reduce power consumption and maintenance requirements.

18.2.4 COMMUNICATIONS

With the concentrator located within an urban area, wired public communication networks will be accessible. IP telephony (VoIP) will be used for voice communications. Communications within the plant, ancillary building and administrative offices will be through Ethernet links, both wired and wireless.

18.2.5 SITE SERVICES

Sanitary, potable and fire water will be provided by the city of Baie-Comeau. Domestic waste water will be directed to the city sewage system for treatment.

Most of the water for the concentration process will be recycled from the RWR. Small quantities of makeup water / fresh water will be required and will be supplied by the city fresh water network. Provisions will be in place to install a pump house with its pipeline at a nearby lake should the city water network be insufficient for the production needs.

A truck weighing scale will be installed at the entrance of the concentrator site to weigh the ore trucks coming in from the mine and the finished products delivery trucks leaving for the customers.

Access to the site will be controlled by an automated gate system using magnetic access cards and intercom system. Surveillance cameras will monitor access to the site from the main road.

18.2.6 TAILINGS AND STORAGE FACILITY

The tailings management facility (TMF) method has been changed since the 2015 Feasibility Study. In 2015, the storage method selected was submerged deposition in artificial ponds. The tailings will now be filtered, transported by truck and dry stacked on a pile (at the location that had been selected for the tailings ponds).

The design operational parameters of the TMF are summarized in Table 18-1.

Table 18-1 - Summary of Key Operating Parameters

Parameters	Value
Project Life (Years)	25
Total Tailings Production (tons over Project Life)	3,450,000
Average Annual Tailings Production (tpy)	138,000
Average Hourly Tailings Production (tph)	17.5

The tailings from the concentration process will be pumped to the tailings filtration plant. The tailings will first be thickened and then filtered. The filtered tailings, with about 15% moisture content, will be accumulated in a shelter in the filtration building. This shelter will have enough capacity for up to three days of filtered tailings but will normally be emptied daily.

A wheel loader will load the filtered tailings to an articulated truck which will haul the tailings to the pile. The tailings will be spread on the pile by layers of 1 metre and compacted with a bulldozer.

To accumulate contact water for recycling to the plant or treatment before release to the environment, a large pond, the raw water reserve (RWR), will be dug next to the tailings pile.

Figure 18-10 below presents the tailings filtration building with filtered tailings shelter and Figure 18-11 presents the RWR and tailings pile.

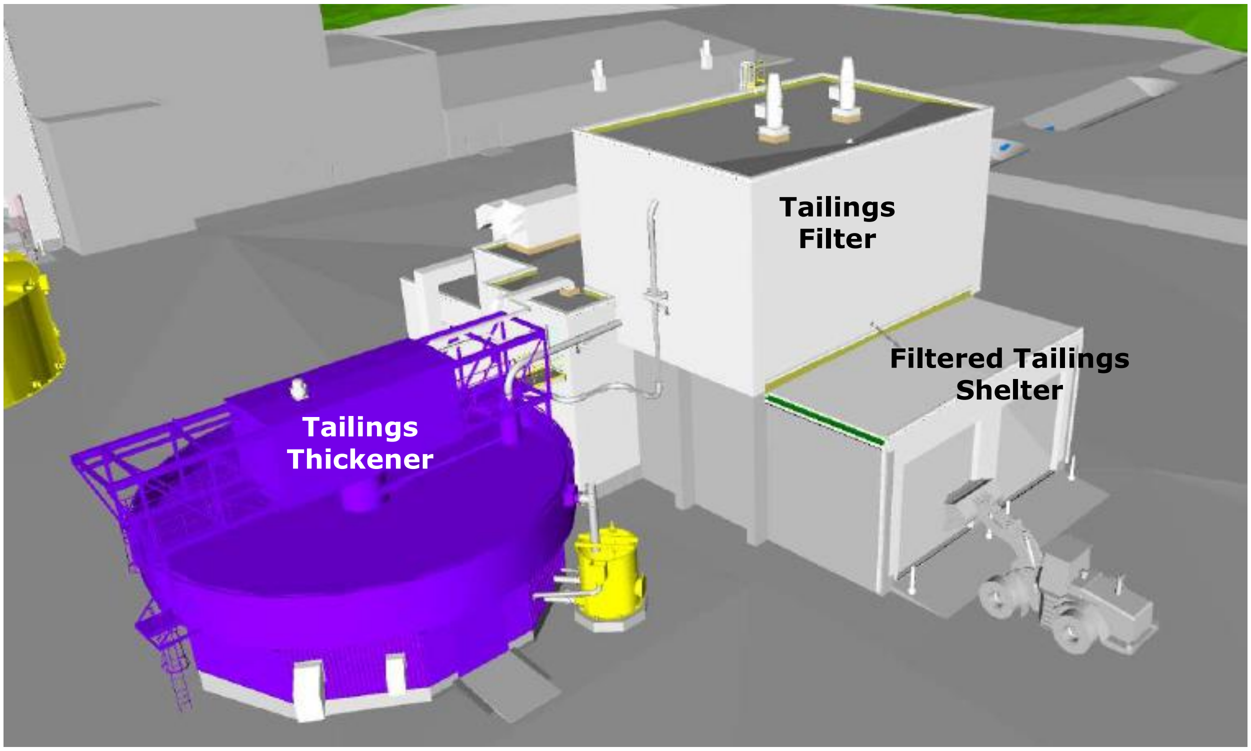


Figure 18-10 - Tailings Filtration Building and Thickener

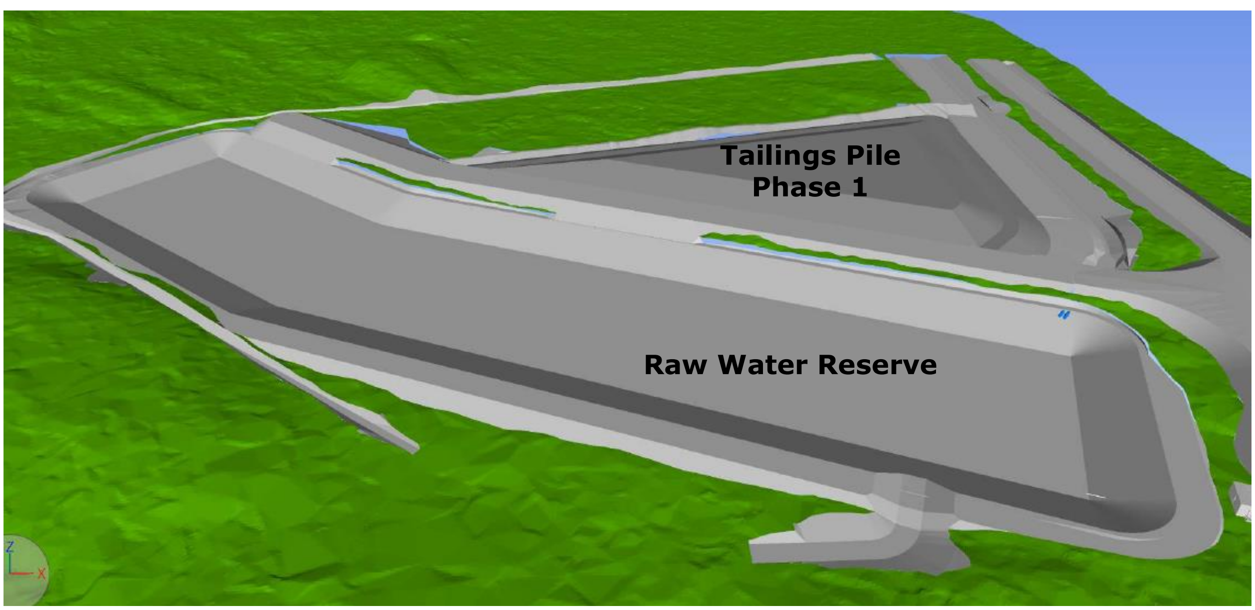


Figure 18-11 - Raw Water Reserve and Phase 1 of the Tailings Pile

18.2.6.1.1 TAILINGS PILE STORAGE CAPACITY

The tailings pile is designed for a total storage capacity of approximately 2.3 Mm^3 (3.45 Mt). The pile will be built in five phases. Preliminary engineering of the pile (five phases) was done by Hatch in 2016/2017 and detailed engineering for the first phase is being done by BBA. The design for phase 1 includes a membrane under the entire surface area of the initial footprint.

During the first two years of operations, Mason Graphite will construct and monitor test cells in order to:

- Collect water and measure quantity and quality;
- Study tailings pile stability;
- Evaluate methods to control and prevent oxidation of the tailings.

Table 18-2 presents the planned tailings storage phases and duration of deposition for each phase of the pile.

Table 18-2 - Tailings Storage Capacity and Duration of Deposition for Each Phase

Phase	Year	Operation years	Height of the pile (m)	Volume available (m^3)	Cumulative volume (m^3)	Drainage area (m^2)	Restored area (m^2)	Active area (m^2)
1	0	3	15	279,000	279,000	50,100	0	50,100
2	3	5	20	465,000	744,000	45,500	24,416	63,127
3	8	5	24	465,000	1,209,000	25,100	46,438	65,677
4	13	6	24	465,000	1,674,000	26,600	60,578	77,655
5	16	7	24	650,000	2,324,000	45,400	90,597	91,916
TOTAL		**25**	**24**	**2,324,000**			**222,029**	

18.2.6.2 WATER MANAGEMENT STRATEGY

All contact water, which includes runoff from ore storage facility, runoff from the tailings pile and process water, will be collected and either recycled to the plant or treated before being released to the environment.

A water pond will be constructed during the construction phase to collect and decant runoff water from the whole site. If the water quality meets the environmental requirements, the water will be returned to the environment. A water treatment plant will be installed and ready to process the water should its quality be inadequate for release to the environment. During the operations, this pond will still be used to collect non-contact runoff water; the water will be returned to the environment (with prior treatment to quality requirements if needed).

Specific measures will be taken to collect water that will be in contact with ore and tailings. The ore pad and its surrounding collection ditch will be lined and runoff water will flow by gravity into a buffer pond. This pond, also lined, is designed to contain a rainfall event of 1 in 100 years, combined with an average 30-day snowmelt. The capacity of the pond will be of 3,000 m^3 and it will have an emergency spillway.

An impervious drainage system at the base and periphery of the tailings pile will be constructed to capture runoff and seepage waters and direct them by gravity into a water pond (raw water reserve or "RWR"). The water from the ore buffer pond will be pumped into the RWR. Since the RWR will contain contact water, it will be lined with an impervious membrane to prevent ground water contamination. Most of the contact water accumulated in the RWR will be recycled to the concentrator; the excess water (from precipitations) will be treated to meet quality requirements before being returned to the environment.

The RWR is designed to contain runoff resulting from an Environmental Design Flood (EDF) with no discharge to the environment. The capacity was established based on the highest active area of the tailings pile (years 17 to 25) from which contact water will be collected. The RWR will have a total capacity of 115,000 m^3: 40,000 m^3 for the normal operations and 75,000 m^3 for the maximum EDF. Following an EDF event, the elevated water level in the RWR will be brought back to normal operating level by returning water to the environment through the water treatment station.

The raw water reserve will mostly be dug in the ground, with a low dam (2.5 m above ground) closing one end. Except for the extreme EDF, the water level in the RWR will always be below ground level, thus eliminating any risk of dam breach.

At the closure of the concentrator facilities, the raw water reserve will be left in place. The overflow will be treated, if required, and the effluent will be discharged into the environment. A follow-up will be done on the water treatment unit to assess its efficiency and to determine if the effluent still requires treatment after the site closure, as the quality water is expected to improve gradually after the shutdown of the plant.

18.2.6.3 EFFLUENT WATER TREATMENT

As a general rule, water will be recycled and reused as much as possible in the concentration process. However, due to the precipitations, excess water will have to be returned to the environment (effluent). To ensure that the effluent meets the governmental quality criteria, a water treatment plant (WTP) will be built on site and will be operated during construction, operations and after closure until the effluent naturally meets the quality requirements.

The WTP will perform the following functions, as needed by the water characteristics:

- Suspended matters decantation (with flocculation if needed);
- Adjustment of the pH;
- Precipitation of any dissolved metals;
- Decantation and/or filtration of the precipitated metals.

The decanted matters will be recovered and moved to the tailings pile. Any hazardous material not suitable for storage in the tailings pile will be taken off site and managed by a specialized contractor.

18.2.6.4 PERFORMANCE MONITORING

Inspection and monitoring will be performed during construction and operation of the pile.

Groundwater monitoring wells will be installed upstream and downstream of the TMF and RWR. In addition to groundwater monitoring, surface water quality monitoring will be conducted in the creeks downstream of TMF.

18.2.6.5 CLOSURE CONCEPT

The TMF will remain as a permanent landform beyond the end of operations and thus conceptual closure considerations are provided in this section.

The tailings pile site will be progressively reclaimed whenever possible. Completed area of the tailings pile will be covered with an impervious cover (clay, membrane or other), top soil and vegetation. Some re-grading of the downstream slope may be necessary to facilitate the placement of vegetation cover. The water collection network will be modified to divert non-contact water from the contact water collection network.

At the end of the operations, the final active area (phase 5) will be rehabilitated like the previous phases. The low dam of the RWR will be breached and the pond will be allowed to fill with water until it overflows.

It is anticipated that following closure, a transition period (five years) will be required during which effluent treatment plant will be operated to treat and discharge excess accumulation of runoff in the TMF. Once water quality in the TMF has reached a suitable level, it will be released directly into the environment and the treatment plant can be decommissioned.

19. MARKET STUDIES AND CONTRACTS

19.1 INTRODUCTION

Graphite is a natural form of carbon characterized by its hexagonal crystalline structure, occurring naturally in metamorphic rocks such as marble, schist and gneiss and when subjected to high pressure and temperature became diamond. Graphite has a black lustre, moderately split with a hardness of 1 to 2 on the Moh's scale.

Graphite has unique chemical, electrical and thermal properties, such as:

- Electrical capacity (1,000 x Cu);
- Stronger than steel (200 times);
- Heat conductivity (10 x Cu);
- Resistance to chemicals;
- High melting point (3,500°C);
- Stable and strong in excess of 3,000°C;
- Chemically neutral;
- Low expansion coefficient;
- Low friction coefficient;
- Low absorption of X rays and electrons;
- Highly refractory;
- Resistant to corrosion and thermal shocks; and
- Light reinforcing elements.

Natural graphite is in demand in a wide range of industries around the world because of these unique properties and, depending on its occurrence, is available in three different forms:

- Amorphous (60-85% Cg): Less than 200 mesh in size;
- Flake (>85% Cg): From large flakes (+50 mesh) to fine flake (Minus 150 mesh); and
- Vein (> 90% Cg): Produced only in Sri Lanka.

The Lac Guéret graphite belongs to the second form.

Mason Graphite has mandated Benchmark Mineral Intelligence (BMI) to prepare a market study on the graphite markets. As such, BMI provided a report dated September 2018. Market statistics, estimates and forecasts on supply/demand and commodity pricing from this market study are often referred to in this Report.

19.2 USES

Because of its unique properties, graphite can be used in a variety of domains, including:

- **Metallurgy** (40% of worldwide demand)
  - Refractories, bricks and crucibles;
  - Carbon raisers;
  - Moulds and castings;
  - Molten metal protection;
  - High temperature lubricants; and
  - Powder metallurgy and alloys.
- **Electrical Applications** (25% of worldwide demand)
  - Alkaline, Li-ion and Lithium batteries: electrical vehicles (EV) and hybrid EV, buses, trains, energy grid storage, electronics (smartphones, computers, and tablets);
  - Fuel cells; and
  - Carbon brushes: electrical contacts.
- **Technical Applications** (25% of worldwide demand)
  - Automotive industry (brake linings/pads, carbon brushes, motor parts, gaskets, bearings, friction material);
  - Expanded graphite and foils;
  - Component polymer and rubber;
  - Fireproof products, flame retardants, insulation;
  - High tech industry: (in nuclear reactors);
  - Thermal management applications;
  - Lubricants and catalysts: carbon additives, fibers, nuclear reactors;
  - Material technology: clothes, paints (anti-adhesive and anti-static), plastic, resins and rubbers; and
  - Catalysts.
- Others
  - Oil drilling additives;
  - Lubricants; and
  - Pencils.

Graphene, also called the ‘’Wonder material”, is made of natural graphite and shows great potential for the future because of its unique properties.

Mason Graphite, through its shareholding position in NanoXplore, is well positioned to participate in the future of graphene as Mason Graphite is NanoXplore's exclusive natural graphite supplier and a sales & marketing agent. With its planned capacity increase, NanoXplore could require, in the future, large quantities of natural graphite.

Table 19-1 below shows the main fields of application of the different types of graphite.

Table 19-1 - Types, Specifications and Uses of Graphite

Graphite Type	Specifications	Main Uses
Natural flake graphite	>75 µm 80 to +99% Cg	In all the above-mentioned applications
Expandable natural graphite	Expansion rate 60 to 300 cc/g	Additive metallurgical industry Materials flexible graphite Batteries Flame Retardants Heat Management, foils Carbon additives
Micronized natural graphite	< 75 µm > 95% Cg	Powder metallurgy Batteries Carbon brushes Fuel cells Automotive industry Pencils Chemical fertilizers High temperature lubricant Packing or catalysts Polymers
Spherical natural graphite	99.9 - 99.99% Cg D50 from 8-25µm	Lithium electricity producing devices Lithium-ion battery

19.3 SUPPLY

World production of natural flake graphite was estimated at approximately 706,000 tonnes in 2018. On the production of flake graphite, China is the dominant producer, with an estimated 67% share of production, followed by Africa at 11%, South America (primarily Brazil) at 11%, others in Asia (mainly North Korea and India) at 4%, Europe at 5% and Canada at 1%.

Even if China has large mineral resources and could continue to grow its production, Chinese production has been flat in recent years for the following reasons:

- The introduction of a new environmental tax on polluting Chinese operations starting in January 2018;
- The desire of China to reduce the exports of graphite concentrates outside China;
- New restricting regulatory and environmental measures, closure of uneconomic and polluting mines;
- Increased domestic consumption of graphite, notably in batteries for electric vehicles;
- Chinese government policies currently discourage the export of raw materials in favour of added value products;
- Labour/power/transportation cost inflation;
- Currency appreciation; and
- Strategic stockpiling: by 2020, quantity of graphite set aside in these stockpiles must exceed 80% of China's domestic capacity.

These limitations of Chinese production and exports, as well as an ongoing increase in domestic consumption at the same time, are likely to increase graphite prices in the years to come.

According to BMI, in response to this forecasted price increase, the majority of new supply is expected to come from Canada and Africa. Under its base forecast, BMI expects supply to reach 910,000 tonnes by 2020 for a 29% increase. BMI's long-term supply forecasts to 2030 expect an additional 1,464,000 tonnes of supply, 770,000 tonnes coming from an increase in production of existing mines and 694,000 tonnes from new mines.

The natural graphite industry is going through a corrective phase following over two decades of no new supply coming on-stream, in conjunction with an anticipated large increase in demand driven by the ongoing increase in the market acceptance of electric vehicles.

19.4 DEMAND

Metallurgy applications represent approximately 40% of the world demand. This depends on steel and metal production. With the ongoing urbanization of India, Africa as well as China, BMI expects the demand for refractories to maintain and increase its volume requirements in the near future. It is expected that steel production will increase in the future and, consequently, demand for natural graphite will follow. Refractories sector requires large, medium and fine flake graphite with carbon content above +85% Cg, which will correspond to the major portion of the Mason Graphite products.

Increased use of graphite in brake linings, foundries, lubricants, friction materials, packings and gaskets is driven by the automotive industry growth and the reduced use of asbestos globally.

Electrical applications are the fastest growing market for graphite, mainly Li-ion batteries, with growth of 15-25% per year. The main reasons for this growth are:

- Requirements for portable electronics (mobile phones, smartphones and tablets) as natural graphite anodes are favoured across all mainstream battery technologies; and
- Continued increase in the adoption of electric vehicles will create a significant impact in the near future, especially vehicles requiring batteries of 10 kWh and above.

As previously mentioned, BMI's projected increase in natural graphite flake demand for 2020 and 2025 is expected to be mainly driven by applications in electric vehicles and energy storage. The three major applications of graphite in batteries are:

- Alkaline batteries: (electrical conductivity, reactivity, ease of processing and handling);
- Li-ion batteries: (intercalation capacity, first cycle efficiency-reactivity, packed density, ease of processing, impurities); and
- Vanadium REDOX: (conductivity, structural integrity, reactivity, etc.) are under development.

Batteries market is not yet mature and continues to grow at a fast pace.

A mineral can be deemed critical only if an assessment also indicates a high probability that its supply may become restricted, leading either to physical unavailability or to significantly higher prices for that mineral in key applications. The European Union and the United States declared that natural graphite was deemed a critical mineral as they are dependent mainly on imports and that recycling is limited.

19.4.1 THE CASE OF LI-ION BATTERIES

Natural graphite and synthetic graphite are the only materials for the anode and there is no substitute. It takes between 8 to 20 times more graphite than lithium to produce Li-ion batteries.

BMI's base case scenario forecasts battery demand to grow from 82,000 MWh in 2018, reaching 619,000 MWh by 2025 and 1.9 million MWh by 2030. Consequent to their forecast, BMI anticipates graphite demand to grow from 150,000 tonnes to 2.6 M tonnes by 2030 (while current global market for natural flake graphite is estimated to 706,000 tonnes per year).

Steady growth of hybrid electric vehicles, fully electric vehicles and mobile electronics is fueling the demand for natural flake graphite; the annual demand has grown from almost nothing to approximately 200,000 tonnes of graphite today. And this demand has been growing at 15 to 25% per year.

19.4.2 THE "GIGAFACTORIES"

The industry is preparing itself for the explosion in demand of electric vehicles. BMI forecasts that "Megafactory" production capacity will increase from 64 GWh in 2016 to 726 GWh in 2028.

Many initiatives are underway and will shape the future of electric vehicles of tomorrow and the list below presents a few of them:

- Tesla Motors' gigafactory (Nevada, US): US$5B for a 35 GWh/year battery plant to be fully online in 2020;
- Volkswagen announced a $78 billion plan to build 15 million electric vehicles;
- BMW plans to deliver 12 fully electric vehicles by 2025;
- Billions of euros are invested in initiatives to support the European battery development;
- Apple wants to start producing electric cars (iCar) as soon as 2020.

19.4.3 GRAPHITE AND DEVELOPING WORLD

While stable during the 1990s, the demand grew at 4-6% per year since 2000. This growth was explained by increased consumption of graphite in both the traditional use of graphite mainly due to accelerated development in the BRIC countries (Brazil, Russia, India, and China) and from advances in the use of graphite in high technology.

Thermal management is an example of a new application that started to use natural flake graphite in the 2000's. As indicated before, demand will grow at a much faster pace with the increased production of EV's.

19.5 MARKET STRATEGY AND NEGOTIATION

Graphite is a specialty product and is not an openly traded commodity. It is predominantly freely traded around the world by the producers to the end-users. The way it is priced is not transparent as it is not an exchange listed commodity.

Graphite is an additive in the formulations of the end-users and while it is a key mineral ingredient, it does not, usually, represent a major cost component. There are usually no long-term supply contracts "off-take agreements" between the producers and the end-users mainly because of different specifications that will evolve and varying volumes required of different products from the various end-users.

The two most common sea freight contracts are FOB (Free on Board) and CIF (Costs, Insurance and Freight). The first was historically favoured by the industry. Today CIF is more common. Some producers prefer another shipping method, FCA (Free Carrier). Mason Graphite will opt for the latter.

The graphite product selling price is normally determined by two main parameters: chemical composition (carbon content and trace element presence) and physical properties (size and shape of the grain). The pricing bargaining power increases as more stringent specifications are requested by the end-users. Other parameters having an influence are:

- Other technical specifications;
- Packaging;
- Just-in-time deliveries;
- Volume;
- Geography and logistics;
- Quality, consistency and reliability; and
- Existing supply relationship.

19.6 PRICE FORECAST

19.6.1 GRAPHITE PRICE HISTORY

Graphite prices can fluctuate significantly, mainly in the metallurgy applications where specifications are usually less stringent. Since late 2010 there has been a rapid run-up in prices, followed by a consolidation period and a more recent upward trend since the beginning of 2017. Expectations are that prices will continue to increase as the global economy gradually recovers and growth continues in the battery industry. Thereafter, prices are anticipated to increase to accommodate the entry of new producers required to meet the forecasted increase in demand.

Graphite prices are published by BMI, as an indication of market position with a value for the particle size distribution and carbon content of the products. These price benchmarks are generally based on products destined for Metallurgy applications which are on the lower end of the pricing spectrum as the demand volume is large so there is more competition among producers in this application and specifications are less stringent. Higher end products with more stringent specifications can attract significant premiums over their benchmark counterparts.

19.6.2 GRAPHITE PRICE FORECASTS

The selling prices assumed in the economic analysis of this Technical Report are based on the 12-month average graphite prices published by BMI for benchmark products for the 12-month period ending in October 2018. This period is deemed to be representative as it reflects the current trends which are expected to prevail going forward. According to BMI, prices have been experiencing an upward trend since 2016 and BMI expects this will continue.

To calculate the FCA Baie-Comeau weighted average sales prices, Mason Graphite integrated the exchange rate, the transportation costs, the size distribution and carbon content of the finished products. Furthermore, a pricing premium was applied on a proportion of the sales for those markets with more stringent requirements. Determination of the selling price is discussed in more detail in Chapter 22 of this Report.

19.6.3 MASON GRAPHITE FORECASTS

Considering the aforementioned elements that are expected to impact benchmark prices (as forecasted by BMI) as well as premiums, Mason Graphite believes that benchmark flake graphite prices will continue their upward trend and premiums will be applicable for specialty products with stringent specifications. This is supported by Mason's private market intelligence acquired from the continuous engagement of potential customers for its end products.

With the commercial products coming from the Lac Guéret Project, Mason Graphite will service directly the end-users in the following applications:

- Refractories;
- Carbon additives;
- Thermal management;
- Foils;
- Expanded graphite;
- Flame retardants;
- Fuel cells
- Friction Materials;
- Lubricant;
- Rubbers and polymers;
- Oil Drilling Additives;
- Processors; and
- Graphene producers.

Commercial products will also be used as feed material for the value-added products production.

As the Project continues to advance with detailed engineering and some construction activities, the initial commercial work undertaken by Mason Graphite continues with ongoing discussions with a number of potential customers on their required specifications in the applications mentioned above. Samples of finished products obtained through the pilot plant tests are available to these potential customers for evaluation. Since each customer has specific technical requirements, Mason Graphite commercial team is working closely with them to adapt the products to meet these requirements.

It is Mason Graphite's intention to work directly with its customers in order to continuously improve its offer of products and services and develop a mutually beneficial long-term partnership.

19.6.3.1 COATED SPHERICAL NATURAL GRAPHITE (CSNG)

Since 2015, Mason Graphite has undertaken a detailed work program in order to develop coated spherical natural graphite grades for Li-ion batteries from its Lac Guéret concentrates. This work program is being conducted in partnership with the National Research Council of Canada (NRC), Soutex and COREM.

The work related to the coated spherical natural graphite grades development, which covers the purification, the micronization, the classification, the spheronization and the coating processes, has been completed, with success, in the fall of 2018. The end results are CSNG grades that fully meet the performance required by Li-ion battery makers. CSNG grades were developed for, and specifically meet, the requirements for batteries aimed at electric vehicles; grades were also developed for other applications such as power tools and cellular phones.

The CSNG grades were developed using Mason Graphite's own fine natural graphite concentrate (<106 μm, produced through pilot production of the Lac Guéret ore) as feed material.

As of fall 2018, pilot plant production was underway, with pouch cells battery tests planned in 2019.

Grants from the Canadian government were received to fund part of the study.

The results of the value-added graphite study are not included in this Technical Report.

Other technical and market studies, such as the usage of graphite and graphene in polymer applications, are ongoing with potential end-users.

19.7 SIGNED CONTRACTS

Mason Graphite has an agreement with NanoXplore through which Mason Graphite has the first right to source and or supply all graphite to be used by NanoXplore. The agreement has been signed in February 2014 and is renewed every year.

The conditions for the acquisition of the land in Baie-Comeau for the construction of the concentrators have been agreed upon with the SEBC and the city of Baie-Comeau; a memorandum of understanding to that effect was signed in June 2015 and is still valid to date.

In December 2017, Mason Graphite placed a purchase order with Outotec for the supply of all the grinding mills, flotation cells, flotation columns, thickeners and filters for the concentrator. As of December 5, 2018, the mills were ready to be shipped and factory acceptance tests were planned in December 2018 for the filters. Fabrication of the other equipment is planned for 2019.

An agreement is in place with the engineering firm BBA of Montreal to perform the major part of the detailed engineering for the Project. Completion is planned for the first quarter of 2019.

A contract for the ore transportation between the Lac Guéret site and Baie-Comeau site will be required for the operations. That contract will be negotiated during the procurement phase of the Project.

20. ENVIRONMENTAL STUDIES, PERMITTING AND SOCIAL OR COMMUNITY IMPACT

20.1 ENVIRONMENTAL STUDIES

20.1.1 BASELINE ENVIRONMENTAL STUDIES

The analysis of the Project environmental and social baseline and the assessment of its potential impacts were based on a study of the biophysical and socio-economic valued ecosystem components (VECs) of pre-defined geographic areas relevant to the different types of components or their impacts.

The regional study area for the assessment of the Project's impacts is the territory of the MRC Manicouagan (39,246 km^2), which includes all project installations and represents a cohesive administrative, economic and social unit, which is described in greater detail in Section 20.4. Two local study areas were defined, the mine site at Lac Guéret and the concentrator site located in a new industrial park within Baie-Comeau city limits.

A restricted study area and an extended area were also defined for each of the local sectors. For the mine site, the extended study area covers potential impacts to water quality from the mine's ultimate output to the Manicouagan Reservoir (43.5 km^2), whereas the restricted study area (11.5 km^2) represents the limits of the mine site's sub-watershed, and includes the components most likely to be affected by the Project's impacts, namely two small lakes immediately adjacent to the site. For the concentrator sector, the extended area (119 km^2) was defined according to potential impacts from air contaminant dispersion, noise and the area's hydrological profile, whereas the restricted study area (8.4 km^2) covers the components most susceptible to Project impacts, namely the concentrator and tailings pond footprints.

Environmental and social baseline studies have been carried out between 2012 and 2013 by Roche for the Lac Guéret site and between 2015 and 2017 by Hatch and WSP for the Baie-Comeau site. The environmental components taken into consideration for the impacts assessment were the following:

Physical Components

1. Air quality;
2. Surface water and sediment quality;
3. Groundwater quality and flow regime;
4. Hydrological and sedimentary regime;
5. Soil quality;
6. Noise and vibrations.

Biological Components

1. Vegetation and forests;
2. Protected plant species;
3. Wetlands;
4. Protected habitats;
5. Mammals and habitat;
6. Ichthyofauna and habitat;
7. Avifauna and habitat;
8. Herpetofauna and habitat
9. Chiroptera and habitat;
10. Protected animal species.

Social Components

1. Public health and safety;
2. Worker health and safety
3. Local and regional economy;
4. Land-use planning;
5. Recreational land use – non-aboriginal hunting, trapping and leisure;
6. Commercial land use – forestry;
7. Socio-demographic characteristics;
8. Infrastructure and public equipment;
9. Public services;
10. Aboriginal community;
11. Archaeology and heritage;
12. Landscape.

The following sections will provide an overview of the environmental studies developed for both study areas of the Lac Guéret Project.

20.1.1.1 LAC GUÉRET SITE

20.1.1.1.1 PHYSICAL COMPONENTS

Data for insolation, precipitations, temperature, humidity and winds have been derived from four meteorological stations located within 250 km of the mine site, spanning 1981-2010. The air quality in the area is considered very good, as it is located far from any source of potential contamination. Noise levels are low (30 dBA), with the main source of noise being the wind.

Geotechnical tests performed during drilling activities have not revealed areas susceptible to landslides or seismic activity.

Ground water are weakly acidic with moderate hardness and low conductivity. All measured metal concentrations were below the analytical detection limit, except for iron and manganese. Groundwater levels are between 530 m and 500 m below the surface in the area, and their behaviour is essentially hydrostatic. Aquifers in the area were observed to be of good quality and abundant quantity.

Surface waters are weakly alkaline to weakly acidic, clear, well oxygenated and have low hardness. Most metals showed concentrations below aquatic life protection criteria, except for iron in 2 of 11 sampling stations. Calcium and magnesium are the most abundant cations, and sulfates and nitrates are the most abundant anions. Hydrogen sulfide levels exceeded the MELCC criteria for the protection of aquatic life.

Sampling of sediments showed that they generally consist of an average of 75% sand, 12% silt, 9% gravel and 5% clay and colloid. Most abundant metals were iron, aluminum and magnesium. Four measured parameters were over the probable impact threshold: cadmium, chromium, mercury and zinc.

Metals contents in soils were lower than background levels for the Grenville geological Province, except for one sample showing higher content for chromium, manganese, barium, molybdenum, lead and arsenic.

Soils analysis showed that few metals exceeded the MELCC criteria for soils quality, and that the most abundant minerals were iron and manganese.

20.1.1.1.2 BIOLOGICAL COMPONENTS

In terms of biological studies, large and small mammal surveys in the mine sector, covering 26 km^2, have been carried out in winter 2013 and avifauna surveys have been carried out in spring and summer 2013.

The flora is dominated by evergreen forests (93%, including 74% black spruce forest types and 22% spruce-moss forest). A large forest fire in 1996 and extensive forestry activity between 2000 and 2004 have resulted in regeneration forests in 90% of the study area. Many small wetlands are present locally, covering 5.5% of the restricted study area, more than half of which are peat bogs. They show low species richness, and no rare or endangered species were observed.

No protected plant species have been identified.

Concerning herpetofauna, the low proportion of deciduous forests, the high altitude and the degradation of the original forest can explain the low abundance of species.

Concerning avifauna, a total of 64 species of birds were identified during the surveys carried out in 2013 in the Lac Guéret Project study area. Three species of endangered birds (Common nighthawk, Olive-sided flycatcher, Rusty blackbird) were observed during the surveys.

Large mammal species present in the study area includes black bear, although the population could not be estimated, moose and woodland caribou. The woodland caribou is considered a threatened species by Canada's Species at Risk Act and a vulnerable species by Québec's Act respecting threatened or vulnerable species. According to the winter track survey, habitats present on the Property (mostly cutover and regenerating habitats) particularly favour moose. The habitats present on the Property are of low potential for caribou.

The most abundant small mammal species found on the Lac Guéret property, according to the winter track survey, are the American hare and the red squirrel. Riparian and closed forest habitats presented a higher abundance and diversity species in comparison to cutover and regenerating habitats.

Concerning the ichthyofauna and habitats, the three lakes present in the study area (5 stations) and 13 streams (15 stations) were characterized by fish populations and fish habitat potential. Ten of the streams were fair to good feeding and spawning areas. A total of 242 fishes were caught from four species: brook trout, pearl dace, white sucker and long nose sucker. All lakes and ten streams showed fish habitat potential. No rare or endangered species were caught. Arsenic, lead and selenium contents measured in flesh samples were below analytical detection limit. Some studied fishes showed mercury levels in the flesh higher than the Canadian Food Inspection Agency thresholds.

The study did not identify any known protected habitat.

20.1.1.1.3 SOCIAL COMPONENTS

Communications and consultations with local stakeholders, including the Pessamit Innu First Nation, have been constant since the beginning of the Project in 2012. The concerns were noted and integrated in the design of the operations and in the Environmental and Social Impact Assessment.

20.1.1.2 BAIE-COMEAU SITE

20.1.1.2.1 PHYSICAL COMPONENTS

Data for insolation, precipitations, temperature, humidity and winds have been derived from the meteorological station located at the Baie-Comeau airport, spanning 1981-2010. Although air quality is not monitored systematically in Baie-Comeau, there are six sources emitting contaminants beyond the National Pollutant Release Inventory thresholds, which are all located 3.5 km from the concentrator site. Circulation on Highway 138 was audible (<55 dBA) at three of the four noise sampling locations around the concentrator site.

The area's topography is characterized by rolling hills, generally reaching 70 m to 90 m with a peak at 140 m, interrupted by abrupt cliffs. The area is seismically active, with over 60 events a year. Of the 83 earthquakes recorded during the period 2014-2015. Two geotechnical boreholes show strong and very strong resistance of the underlying rock, and the immediate area is not susceptible to landslides.

There is evidence that the underground water flows to Lac Petit-Bras, and that it is close to the surface in some areas of the site. Aquifers show good water quality and quantity.

The area is located between the Manicouagan River watershed and the Outardes River watershed, within sub-basin F, covering 146 km^2, in the Amédée River sub-watershed. The permanent water courses present in the restricted study area are tributaries and emissaries of the Nord and Petit Bras Lakes. Their width varies from 10 cm to 4 m, with a maximal depth of 1 m. None of them are navigable, and an intermittent stream crosses the concentrator site. Monitoring of the Amédée River performed by the MELCC and a local watershed protection organization shows good water quality.

20.1.1.2.2 BIOLOGICAL COMPONENTS

Recent studies performed in the vicinity of the proposed site for the Highway 389 upgrade project and for the Jean-Noël Tessier industrial park development project provided data on the biophysical environment at the concentrator site.

The concentrator is located in the Baie-Comeau-Sept-Îles High Hills, characteristic of continuous boreal forest and the balsam fir-yellow birch bioclimatic domain. The main species found in the area are the balsam fir, white spruce, black spruce, white birch and trembling aspen. The elevated dry areas of exposed rock located in the immediate area around the concentrator, are characterized by jack pine and lichen. The valleys and depressions are characterized by black spruce and sphagnum.

A characterization of wetlands in the concentrator area was performed in 2015. Previous studies have identified two wetlands adjacent to the concentrator site that are considered to be of medium ecological value. The banks of the Petit-Bras River are dominated by shrubby wetlands. Generally, wetlands cover 7.5% of the restricted study area.

Studies performed for other projects have found three protected or endangered plant species in the concentrator sector, two of which are likely to be present in the restricted study area, *Grimmia trichophylla* and *Utricularia geminiscapa*.

Nine water courses cross the Project area, three of which are permanent, and six were characterized for ichthyofauna, as the others were not considered to offer suitable conditions for fish. Brook trout was found in the Amédée River. Studies also revealed the presence of the American eel, white sucker, pearl dace, and emerald shiner. The Petit-Bras River, which exhibited excellent habitat potential, was found to have the greatest species diversity in the area, with 46% of species collected in all the four lakes and nine water courses that were analyzed for the study. Of all the species collected, only the American eel has a protected status.

A study of the local avifauna has indicated that at least 132 bird species can be found in the Baie-Comeau area. The study also showed that habitat for three protected species were also found in the general concentrator area, the Canada warbler, the olive-sided flycatcher and the rusty blackbird. Another protected species, the common nighthawk, was also spotted 700 m south of the concentrator site during fieldwork for another project.

20.1.1.2.3 SOCIAL COMPONENTS

Communications and consultations with local stakeholders, including the Pessamit Innu First Nation, have been constant since the beginning of the Project in 2012. The concerns were noted and integrated in the design of the operations and in the Environmental and Social Impact Assessment.

20.1.2 ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

A detailed Environmental and Social Impact Assessment (EISA) was carried out by Hatch with the close collaboration of Mason Graphite personnel. The EISA was launched at the end of 2014, and the report was filed with the MELCC early November 2015.

The ESIA evaluated the impacts of the Project on the environmental and social components of the Lac Guéret and Baie-Comeau sites. Generally, Project impacts on the physical and biological components will be low, given the several mitigation measures that are planned to limit or avoid them. These include the implementation of dust abatement technology, the adoption of strict protocols for the loading and unloading of material and fuel and the management of waste, the reuse of process water, and locating material piles at least 30 m from riparian areas.

Mine operations could potentially have an impact on groundwater quality and the local flow regime, as the aquifers are close to the surface. Ore extraction will modify a portion of the aquifer water flow. Rainwater percolation through the waste rock pile could also potentially contaminate these aquifers. To minimize these impacts, Mason Graphite will implement a detailed site water management plan and ensure that the final discharge respects MELCC requirements.

The concentrator operations could have an impact on groundwater, particularly its flow regime, mostly related to the implementation of the TMF and management of site surface water runoff. All contact waters will be directed to the TMF and the clarified water will be recycled back to the plant to be used as process water. Excess water into the TMF will be discharged into the existing natural watershed, following treatment to meet MELCC requirements.

Construction of the concentrator will also have an impact on some local wetlands, mostly from land clearing and earthwork, construction of the dykes, and use of machinery. Some 0.01 km^2 of marshes of medium ecological value will be destroyed. Mason Graphite will compensate this loss. The construction of the concentrator will also have an impact on the local avifauna, mostly due to land clearing, which will destroy habitat, including nesting areas, as well as disrupt reproduction and nesting.

The stakeholder consultation, process design and impact assessment processes for the Lac Guéret Project have allowed Mason Graphite to identify an extensive set of mitigation measures to limit Project repercussions on physical and biological components of its host environment. Measures such as a strict cleaning and maintenance program for mine equipment, the implementation of extensive dust abatement measures, as well as strict protocols for erosion control, spill control, hydrocarbon manipulation safety and water management optimization will provide effective measures to minimize the projects' impacts. Measures will also be taken to minimize impacts on regional flora and fauna, such as minimizing the mine installations' footprint on wetlands and riparian areas. With the proposed mitigation measures in place, most of the residual impacts on the physical and biological components will be low.

For the ESIA, a preliminary emergency response plan was defined. This plan will be finalized before the beginning of the activities.

Following the filing of the ESIA with the MELCC, Mason Graphite held consultation meetings with the populations of the Pessamit Innu First Nation and Baie-Comeau to present the ESIA results, answer their questions and receive their comments and concerns.

As part of the environmental evaluation process described in Section 20.3.1.1, Mason Graphite answered all questions about the ESIA that the analysts of the MELCC had. After the public presentation of the project, public hearings were not requested. The MELCC continued to conduct their evaluation of the Project and the Government Decree 608-2018 was signed on May 16, 2018 and published in the Gazette Officielle du Québec on June 6, 2018.

20.2 WASTE AND TAILINGS DISPOSAL AND WATER MANAGEMENT

20.2.1 LAC GUÉRET SECTOR

20.2.1.1 WASTE CHARACTERIZATION

An environmental characterization of the waste rock was carried out in 2013. A total of 15 representative waste rock samples were selected by Mason Graphite geologists for characterization.

The following tests were performed:

- Element contents by partial acid digestion (aqua regia) for Al, Ag, As, B, Ba, Be, Bi, C, Ca, Cd, Co, Cr, Cu, Fe, K, Mg, Mn, Mo, Na, Ni, Pb, Sb, Se, Ti, U, V, Zn and graphitic carbon;
- Acid Generation Potential (AP) according to the ASTM D2492-02 procedure;
- Acid Neutralization Potential (NP) according to the Modified Acid Base Accounting procedure;
- Static leaching tests (TCLP-USEPA1311, SPLP-USEPA1312, Environment Canada CTEU-9) and characterization of leachates for Al, Ag, As, B, Ba, Be, Bi, Ca, Cd, Co, Cr, Cu, Fe, Hg, K, Mg, Mn, Mo, Na, Ni, Pb, Sb, Se, Sn, Ti, U, V and Zn.

According to Directive 019, a sample is classified as "low risk" if, for a given parameter, the content is lower than Criteria A of the Politique de protection des sols et de réhabilitation des terrains contaminés (PPSRTC), or if the Toxic Characteristic Leaching Procedure (TCLP) leachate shows concentrations lower than the Québec groundwater quality protection criteria (acute toxicity criteria for the protection of aquatic life). If the TCLP leachate shows concentrations higher than the groundwater quality protection criteria and the content is higher than Criteria A of the PPSRTC, the sample is classified as "leachable." A sample would be classified as "potentially acid generating" according to Directive 019's criteria if NP/AP ratio <3. Price (2009) criteria (NP/AP>2) has also been considered to evaluate the classification of waste rock, since it is based on new science and is used in the rest of Canada, especially in British Columbia, Ontario and Yukon.

The main results from the geochemical characterization are:

- No waste rock would be classified as «High Risk» as per Directive 019 classification;
- Waste rock would be classified as «leachable» for aluminum, manganese and zinc;
- Sulphur contents varied from 0.01% to 1.32%, with an average of 0.23%. Six of the 15 samples would be classified as «potentially acid generating» according to the Directive 019 criteria for NP/AP ratio. However, the average NP/AP ratio (3.0) is equal to Directive 019 criteria (3.0) but larger than Price (2009) criteria (2.0).

20.2.1.2 WASTE DISPOSAL

The waste rock will be disposed at the mine site to the east of the open pit. An approximate volume of 1,100,000 m^3 of waste rock will be stockpiled over the life of the mine as well as 680,000 m^3 of overburden will be stockpiled separately.

20.2.1.2.1 WASTE ROCK PILE DESIGN

During the first two years of operation, Mason Graphite will construct and monitor test cells for the waste rock pile in order to identify opportunities to prevent and control oxidation of the waste rock and validate the need of geomembranes to protect ground water.

Progressive revegetation will take place during the operation. Overburden will be added to the surface of the waste rock pile to facilitate the revegetation process.

A series of ditches are diverting fresh water from entering the mine site. Mine dewatering water and road runoff are collected in ditches and ponds.

The seepage and runoff of the overburden stockpile are collected into a settling pond which offers sufficient time of decantation of the suspended solids prior discharge into the environment. The seepage and runoff of the ore stockpile and waste rock stockpile are collected int a series of settling ponds and a water treatment assures compliance of water quality, mainly in terms of pH and suspended solids.

20.2.2 BAIE-COMEAU CONCENTRATOR SECTOR

20.2.2.1 TAILINGS CHARACTERIZATION

An environmental characterization for the tailings was carried out in 2015 by Golder and SGS (see Chapter 18 for details).

According to the test results:

- Tailings would be classified as «leachable» for cadmium, copper, lead, nickel, and zinc. The tailings samples showed no neutralization potential (NP). Tailings would therefore be classified as "potentially acid generating" according to Directive 019.
- Kinetic tests which assess the medium term (12 months) behaviour of the tailings and which are more representative of real field conditions are being carried out at URSTM in order to confirm the results of the static tests and provide better indication of the metal leaching potential.

20.2.2.2 TAILINGS DISPOSAL

In the 2015 Feasibility Study, Mason Graphite had planned to store the tailings into a series of artificial tailings ponds. During consultations with the local populations, people expressed their concerns regarding the presence of a dam in the Jean-Noël-Tessier industrial park, close to residential areas. Mason Graphite therefore proceeded with a review of alternative tailings storage methods and selected the filtration and dry stacking method.

Tailings produced at the concentrator facilities will be directed to the filtration plant to be thickened and then filtered to reach a moisture content of between 14 and 16%. Tailings will consist of small particles (80% less than 100 microns), with a small void fraction (0.79 to 1.01) and low hydraulic conductivity (K20 = 1.8×10^{-8} to 5×10^{-7} cm/s).

Filtered tailings will be transported by truck between the concentrator and the tailings accumulation area via a service road located at the concentrator site. The road will be covered with granular material to maximize road traction on the tailings pile and to prevent rutting. The tailings will be deposited and compacted with a bulldozer in successive layers to minimize their exposure to air and water.

If necessary, additional sealing layers of clay or other impervious materials will be added to assure proper hydraulic conditions.

During the first two years of operations, Mason Graphite will construct and monitor test cells in order to evaluate methods to control and prevent oxidation of the tailings.

The Company is currently conducting a technical study to determine if the tailings can be processed into saleable co-products. Laboratory-scale tests have demonstrated that the iron sulphides can be separated and transformed into sulphuric acid and iron oxide. Other components can be separated as well. As of December 5, 2018, pilot-scale tests were underway.

20.2.2.3 WATER MANAGEMENT

Runoff ditches will be constructed to divert water from entering the Property as recommended by Directive 019 to avoid dilution. Around the tailings pile, the water will be intercepted and directed to the natural drainage system by gravity. No treatment is required for the runoff water that does not come into contact with any product or material.

Runoff from the plant and tailings area are collected by ditches and ponds and stored and recycled into the raw water reserve. Runoff from the site must comply with Directive 019 criteria and environmental permits from the Ministry of Environment. There is only one effluent at the site and the water quality will be controlled by a water treatment plant.

At the closure of the concentrator facilities, the raw water reserve will be left in place. The overflow will be treated, if required, and the effluent will be discharged into the environment. A follow-up will be done on the water treatment unit to assess its efficiency and to determine if the effluent still requires treatment after the site closure, as the quality water is expected to improve gradually after the shutdown of the plant.

20.3 PROJECT PERMITTING

This section presents the environmental laws and regulations applicable to the Lac Guéret Project.

20.3.1 PROVINCIAL GOVERNMENT (QUÉBEC)

20.3.1.1 ENVIRONMENTAL ASSESSMENT & REVIEW

In the Province of Québec, the environmental requirements are defined in the Environment Quality Act (Q-2), which is under the responsibility of the MELCC.

Section 2 of the Regulation respecting environmental impact assessment and review (Q-2, r.9) lists the types of projects that are subjected to the environmental impact assessment and review procedure (BAPE procedure) in order to obtain an authorization issued by the government in accordance with Section 31.5 of the Act.

Under the Regulation respecting environmental impact and review (r23), graphite (classified as 'other ore') processing plants of 500 tonnes/day capacity (article 2 n.8) and mines producing 500 tonnes/day (article 2p) have to produce an ESIA. As the production of the mine is expected to average 190,000 tonnes/year (520 tonnes/day), with an equivalent treatment capacity at the plant, the Project is presently undergoing provincial impact assessment process.

The ESIA was initiated in 2015 and after several exchanges the Study received an acceptability notice from the MELCC in May 2017. Public consultations were held in June 2017 and no public hearing was requested. During the MELCC analysis, commitments in terms of monitoring and surveillance programs were agreed and on May 16, 2018, the Québec Government issued a decree for the Project. The decree 608-2018 contains ten conditions, some of which are related to the construction of test cells to study the oxidation process, monitoring and water quality of the effluent. The required actions are already included in the Project construction and operation.

As of December 5, 2018, two authorizations were expected shortly, one for the wood cutting (MFFP and MELCC) at the mine site and the others for the wood cutting (MFFP and MELCC), site preparation and construction (MELCC) of the concentrator in Baie-Comeau

Included in the Baie-Comeau authorization is the commitment to perform a wetland compensation plan in 2020-2021.

Before the end of 2018, all the requests for authorization for the construction of the project facilities at the mine and the concentrator should be submitted to the MELCC. Finally, the request for authorization of the operation of the mine and concentrator should be submitted by June 2019 latest.

20.3.1.2 OTHER LEGISLATION

As per the Act to amend the Mining Act (Bill 70) adopted in December 2013, Article 101 of the Mining Act, the MERN shall grant a mining lease in respect of all or part of a parcel of land that is subject to one or more claims if the claim holder establishes the existence of indicators of the presence of a workable deposit, meets the conditions and pays the annual rental prescribed by regulation. Mason Graphite has submitted a request for a mining lease; the request has been evaluated by MERN and found receivable and will be processed.

The lease cannot be granted before the rehabilitation and restoration plan is approved in accordance with the Mining Act, and the certificate of authorization has been issued by MELCC. The Minister shall make public the rehabilitation and restoration plan as submitted to the Minister for approval and register it in the public register of real and immovable mining rights for public information and consultation purposes as part of the environmental impact assessment and review procedure provided for in the EQA.

Since the Lac Guéret site is located on public lands, MERN leases are to be obtained for the industrial facilities and mine waste storage areas. As of December 5, 2018, all the requests for leases had been submitted to the MERN. The Ministry process includes First Nations consultations. A letter of support from the Pessamit Innu First Nation was provided along with these requests.

In order to allow the construction of the main infrastructure of the Project at the mine and at the concentrator, the MERN will accept rehabilitation plan specific to the construction. As of December 5, 2018, the Baie-Comeau construction rehabilitation plan had been accepted by MERN. The construction rehabilitation plan at the mine site should be submitted in November 2018. The approval of the plan will have to be obtained prior to the construction work, planned during the summer of 2019. A financial guarantee to support the rehabilitation costs is also necessary for each site before construction can begin.

The global rehabilitation plans (one per site) must include a description of the financial guarantee that will serve to ensure completion of the work required by the plan. As per the Act to amend the Mining Act, Article 232.4 of the Mining Act now specifies that the guarantee must cover the anticipated cost of completing the work required under the rehabilitation and restoration plan to the extent provided for in this Act and in accordance with the standards established by regulation.

Such work must include:

1. The dismantling and removal of all buildings and infrastructure;
2. The rehabilitation and restoration of most areas;
3. The securing of mine openings;
4. Soil characterization and decontamination as needed;
5. Activities to ensure stable and secure conditions and proper water quality.

Also, as per the Regulation respecting mineral substances other than petroleum, natural gas and brine (M 13.1, r2), the guarantee must typically respect the following rules:

- The guarantee must be submitted in 3 payments;
- The first payment must be made within 90 days following receipt of approval of the plan;
- Each subsequent payment must be made on the anniversary date of approval of the plan;
- The first payment represents 50% of the total amount of the guarantee and the second and third payments, 25% each.

Other means of financial guarantees are also permitted and Mason Graphite has decided to use bonds to guarantee the rehabilitation costs for both sites.

The global closure plans of the mine and the concentrator shall be submitted in the first quarter of 2019. Acceptance of these plans by MERN and MELCC is needed to obtain the mining lease and initiate mining operations. The mining lease is expected in early 2020.

Condemnation studies have been carried out to ensure that no mineral resource will be negatively affected by the presence of a mill, overburden dumps, waste dumps and tailings area. Condemnation studies have been submitted for each of the mining infrastructure in accordance with the Mining Act and the Regulation respecting mineral substances other than petroleum, natural gas and brine. MERN has reviewed studies and authorizations are expected by the end of 2018.

Furthermore, in accordance with the Sustainable Forest Development Act (A-18.1), a Forest Intervention Permit issued by the MFFP is required for Crown forests, prior to any forest development activity, which implies wood or tree cutting. Forest development includes, among other activities, cutting and harvesting work and the implementation and maintenance of infrastructure. The permit for wood cutting has been issued and the work is scheduled before the end of the year 2018.

Several permits will also be required with municipalities such as construction permits in Baie-Comeau and for the camp site. Authorizations will be required for the water intake as process water at the beginning of the operation and for potable water and the camp.

20.3.2 FEDERAL GOVERNMENT

20.3.2.1 ENVIRONMENTAL ASSESSMENT & REVIEW

Since August 19, 2012, the Canadian Environmental Assessment Act, 2012 (CEAA 2012) and its accompanying regulations provide a new legislative framework for federal environmental assessment. Environmental assessments under the CEAA 2012 are conducted on proposed projects that are “designated,” either through regulation or by the Minister of the Environment.

The Regulations Designating Physical Activities (SOR/2012-147) prescribe the physical activities that constitute a "designated project" which may require an environmental assessment under the CEAA 2012. The regulations amending the Regulations Designating Physical Activities have been adopted in November 2013. As per these new regulations, graphite mines are not subjected to an environmental assessment under the CEAA 2012. Confirmation of this exclusion was received on June 12, 2015.

20.3.2.2 OTHER LEGISLATION

The Metal Mining Effluent Regulations (SOR/2002-222) does not apply to graphite mines. Therefore, it is impossible to ask for inclusion in Appendix 2 of the Regulations for disposal of mining waste in a fish habitat. Planning of the mine infrastructure made sure to avoid fish habitat. A licence may also be required for the stocking of explosives under the Explosives Act, however, at the beginning of the mine operation no storage will be involved. The amount of chemical and or petroleum products requires under the Canadian Environmental Protection Act an emergency response plan, which will be established before the mining activities start.

20.4 SOCIAL ASPECTS

All Mason Graphite installations will be located in the Côte-Nord administrative region (Region 09), which covers the north shore of the lower St-Lawrence River, in the MRC Manicouagan. This territory includes eight municipalities, as well as one unorganized territory (UOT), Rivière-aux-Outardes, which covers 95% of the MRC's area (39,246 km^2). The territory also comprises one First Nations community, the Innu First Nation of Pessamit. The city of Baie-Comeau, located along the shore of the St-Lawrence, is the main economic and demographic pole in the region, with 70% of the MRC's population (pop 22,113), while the community of Pessamit, the second largest in importance after Baie-Comeau, has 2,862 inhabitants. The Rivière-aux Outardes UOT has fewer than a hundred permanent residents but hosts 18 outfitters and over 2,500 summer homes. This territory also comprises three large scale hydroelectric dams (Manic-5, Manic-5PA and Manic 3), as well as the McCormick private dam, co-owned by Alcoa (40%) and Hydro-Québec (60%), accounting for 40% of all electricity produced in Québec.

The MRC has known a steady population decline over recent decades, with a 3% decline over 2006-2011, with a 2% decrease in the Baie-Comeau and a 3% increase in Pessamit. This tendency is expected to be maintained in the coming decades, with a population expected to decrease by 7% in the 2011-2031 period. Education levels are lower in the MRC (29.1% of the population over 15 years without a diploma; 12.8% of the population over 15 with a university certificate or degree) than in the rest of the province (22.2%; 23.3%). Property values were 60% of the provincial average, with a 4.4% un-occupancy rate, higher than the 3.7% provincial average.

The activity and employment rates for Baie-Comeau (64.9% / 61.9%) and the MRC (62.1% / 57.9%) are comparable to the provincial rate (64.6% / 59.9%). The economic structure of the MRC is based on forest products, metals transformation, energy production and port activities. The region also shows significant mining development potential, with recent exploration activities showing significant potential deposits of graphite, copper, nickel, iron and granite. There are no operating mines on the MRC territory. The tertiary sector accounts for 74.5% of jobs, the secondary sector 23.8% and the primary sector 1.4%. A few projects will have important economic implications for the region, especially the La Romaine hydroelectric complex, which is expected to bring $1.3 B in economic benefits for the Côte-Nord and create 975 jobs. The refection of Highway 389, located in the immediate vicinity of the concentrator site, will also bring $489M in economic spin-offs.

This Project is also located inside the area of RMBMU, an area identified by UNESCO as fertile grounds to implement sustainable regional development through stakeholder cooperation and integrated social, environmental management and economic development planning. An agreement between Mason Graphite and RMBMU relating to the Project is described in Chapter 24.

20.4.1 PESSAMIT INNU FIRST NATION

The Project is located on the traditional territory of the Pessamit Innu First Nation, the Nitassinan. On their traditional territory (Nitassinan), the Innu claims Uashaunnuat Indian title: aboriginal and treaty rights to the land and all its natural resources.

The Pessamit Innu First Nation reserve is located 54 km southwest of the concentrator site. Total Nation membership is close to 4,000 individuals, with 2,862 members residing within the reserve. 95% of community members cite the Innu language (innu aimun) as their first language. Governance of the community and town is assured by a seven-member Council, with the current council elected in August 2014.

The Pessamit population is very young, with 44.5% of the population under 24 years of age, compared to 30% in Québec as a whole. Community population has increased 17% between 2000 and 2010, with this increase seen particularly in the population living off reserve. The proportion of community members 15 years old and up with no diploma is 54% more than twice the aforementioned provincial average. The main employment streams for the community are public services, forestry, retail and outfitting, with 20 Innu-owned businesses operating throughout the region. The Nation has joined several business development partnerships, including the Lac Guéret Project.

Mason Graphite has implemented a communication and consultation plan throughout the Project development and has maintained a relationship of trust and collaboration with the Pessamit Innu leadership. Mason Graphite provided a steady stream of information regarding the Project process to community members. Mason Graphite has, among other measures, validated the content of the ESIA with Pessamit Nation leadership throughout the study, adapted the Project to Innu preoccupations and priorities, and held public consultations and workshops with community land and users to ensure social acceptability for the Project.

On June 16, 2017, the Pessamit Innu First Nation and Mason Graphite signed the Mushalakan Agreement, an Impact Benefit Agreement (IBA) resulting from the 2014 Cooperation Agreement. This Agreements states the conditions under which the Pessamit community will contribute to the Project and benefit from it in the form of business opportunities and employment. The specific terms of the Agreement are confidential.

20.4.2 COMMUNITY STAKEHOLDER PREOCCUPATIONS

The public consultation and community engagement efforts deployed throughout Project development have allowed Mason Graphite to outline the main preoccupations and expectations of its community stakeholders, both in Baie-Comeau and in the Pessamit community. These perspectives have already led to Project design modifications. These considerations have affected, among other Project aspects, the location of the concentrator and the choice of suppliers.

The key preoccupations expressed in Baie-Comeau are the following:

1. The prioritization of regional hiring;
2. The maximization of business opportunities for local and regional suppliers;
3. The increase in regional traffic;
4. Project timeline;
5. The possibility of having regional 2nd transformation of graphite;
6. The potential for valorizing tailings and waste rock from mine operations.

Main preoccupations expressed by the Pessamit Innu during consultation events were:

1. The acknowledgement of the Innu's attachment to the land and culture;
2. The importance of realistically assessing the business and employment opportunities related to the Project;
3. The increase in traffic on Highway 389 and forestry roads;
4. The financial compensation of impacts on the Pessamit Nitassinan;
5. The availability of long-term employment for community members;
6. The facilitation of access to training and education for community members.

20.4.3 LAC GUÉRET MINE SECTOR

Sport fishing and hunting are practiced in the Rivière-aux-Outardes UOT, with several salmon fishing rivers as well as eight hydroelectric reservoirs, which offer distinctive char and pike fishing experiences. Moose hunting is a popular tourism activity, with the total number of hunts averaging

670 in the 2000-2010 period. Hunting and fishing bring some $22M to the Côte-Nord administrative region annually. Three outfitters are located within 60 km of the mine site, but there has been a moratorium on the establishment of new outfitting organizations since 2000. There are seven resort leases within 10 km of the mine site, two of which have cottages on them. Snowmobiling is often practised in the area, although it has no official trails. There is one restaurant and hotel in the area, the Motel de l'Énergie, located at the Manic 5 dam site.

A desktop study of the sector's prehistoric and historic archeological potential by Roche during the baseline environmental study has revealed 25 potential sites in the vicinity of the mine where eurocanadian or aboriginal artifacts could possibly be found, based on available databases and geological characteristics of the area. No potential for archeological site was identified on Project facilities sites. The landscape would not likely be significantly affected by the construction of the installations, as the overburden and waste rock piles would not reach higher elevations than the surroundings hills.

The Project will have positive impacts on the economic development of the Pessamit Innu First Nation, who is currently negotiating an Impact Benefit Agreement (IBA) with Mason Graphite. Construction of the mine could affect Innu traditional practices and lifestyle, as the Property straddles two trapping territories that, despite not being used systematically for subsistence harvesting of traditional foods, are still used for hunting and trapping, and are still of high cultural significance.

20.4.4 BAIE-COMEAU CONCENTRATOR SECTOR

Recreational activities are practiced in the restricted study area around the concentrator, with two snowmobile trails, two quad trails, three hunting camps, one un-localized hunting cache and one boat ramp. There is also infrastructure in the area of the concentrator site, including the Lac Petit-Bras road, which connects to Highway 389 to the north and to Highway 138 to the south, four east-west electrical lines, grouped in two parallel corridors, one electrical line running along the 138 to the south, and one explosive storage facility.

There are three residential areas in the enlarged study area around the concentrator site: two located east and west of the site, 5 km apart, connected by Highway 138, and one located 2 km south of the restricted study area. Four residential development projects are currently under way, including one in the area just south of the industrial park where the concentrator is located.

The landscape in the concentrator area is hilly, with industrial and commercial infrastructure jotting the landscape, and the concentrator installations will only be visible from a few viewpoints that offer a limited close overview of the proposed plant site. Although a study of the Project's restricted study area by Ethnoscop in 2015 has not revealed sites of potential eurocanadian archaeological importance, six sites of potential prehistoric and aboriginal importance have been identified, although none of them are, however, located directly on the proposed concentrator site.

Impacts from the construction, operation and closure of the concentrator will generally be low, due in part to the application of several effective mitigation measures, the use of low-noise equipment and noise-reducing mechanisms, installation of safety equipment near the tailings pond, the implementation of a strict health and safety policy and risk awareness program for employees and service providers, and the reuse of excavated materials as filling material for construction.

Construction of the concentrator installations will also have an impact on recreational uses of the territory, as portions of local quad and snowmobile trails will have to be relocated. Increased local circulation will also create additional risks of accidents, as several trails are located along Highway 138. Considering the importance of these leisure activities for the local community, mitigation measures will be implemented to reduce these impacts, including installing adequate signage and maintaining an ongoing dialogue with the regional quad and snowmobiling associations.

The construction and operation of the concentrator will also have a positive impact on regional socio-demographic characteristics, mainly by attracting youth to Baie-Comeau and maintaining local employment. Mason Graphite will also prioritize local and regional sourcing and employees whenever feasible. The construction process will attract between 100 and 250 workers at peak time, with any worker not residing in the region finding accommodation in Baie-Comeau (occupancy averages 41%). Approximately 70 employees will be required for the 25 years of operations of the mine, with 60 workers active at the concentrator site and 10 and the mine site. An additional 30 jobs will also be created for the transportation of the ore by truck between the mine and the concentrator.

20.4.5 RMBMU

In 2015, Mason Graphite entered into a partnership with RMBMU in respect of the development of its Lac Guéret Project. Since then, Mason Graphite and the Project have greatly benefited from the expertise of the Reference Center in sustainable development of RMBMU in all aspects of community relations. This continuing partnership allowed Mason Graphite to plan and optimize its Project taking into account the concerns, aspirations and expectations of the community and helped to harmonize land uses, maximize social and economic benefits and minimize its environmental impact.

With its extensive knowledge in Sustainable Development best practices, RMBMU continues to be a valuable partner to Mason Graphite and will continue to support the Company in the implementation of its Sustainable Development Policy. Audits by RMBMU are also planned to ensure that the Policy remains current and that it is properly followed by the Company.

20.5 MINE CLOSURE

Provisions were made in the economic analysis of the Project for the disbursement of 100% of the estimated cost of rehabilitation. The disbursement schedule used reflects the requirements of the Section 113 of the Regulation respecting mineral substances other than petroleum, natural gas and brine and the time life of the Project.

Mason Graphite is committed to ensuring the effective restoration of the mine site at Lac Guéret and its installations at the concentrator site in Baie-Comeau, as per the requirements stated in Article 232.1 of the Mining Act. Key objectives of Mason Graphite's preliminary restoration plan, which is outlined in both sectors in the following two sections, will be to ensure public safety and avoid health risks related to the end of operations, limiting the dispersion of environmental contaminants and eventually eliminating the need for monitoring and management, restoring the site's appearance to a level that is acceptable to the community, and ensuring that it is fit for future uses. Equipment used for dismantling buildings and infrastructure will include bulldozers, hydraulic excavators (with hammers, magnets and buckets), concrete crushers, cranes and bucket trucks.

The process of dismantling the installations at the Lac Guéret mine site and at the concentrator site in Baie-Comeau will follow MELCC best practices guidelines for managing dismantling materials.

20.5.1 LAC GUÉRET MINE SECTOR

The stripping and piling of the overburden will be completed by Year 10, with progressive revegetation beginning at Year 7. Part of the overburden will be used to cover the waste rock pile, for which revegetation of the lower slopes will begin at Year 15 and completed at the end of the mine life. The revegetation of the waste rock pile will prevent runoff from contacting the waste material and acidifying.

The overburden pile will cover 6 ha and reach an elevation of 490 m, comparable to the immediate topography. Its slope will average 18.4° (3H:1V) and it will consist of three 10 m banks along the side of a ridge, with 17.2 m berms. The waste rock pile will cover 8 ha and reach an elevation of 500 m, with an average slope of 26.6° (2H:1V) and be formed of two 25 m banks with 14.3 m berms flanking a ridge. The waste rock will be covered with about 30 cm of overburden and revegetated.

All surfaces, including the control basin, will be scarified if need be and revegetated. All roads will be restored to the original state. Efforts will be made to find further uses for all buildings and equipment present on site, including generators, the crusher, the conveyor stacker, the control basin, the water treatment units, the explosive's magazines, the camp and offices, the garage as well as the diesel station.

At the end of operations, all buildings will be dismantled, and all unusable waste from the infrastructure will be sold or disposed of as per regulatory requirements. The underground parts of the water treatment systems will be emptied and will remain in place.

At the end of the mine life, the drainage infrastructure for the open pit will no longer be necessary and will be dismantled. A spillway will be built at the low point to allow drainage to the southwest as per natural drainage. The pit will be progressively filled by precipitations and infiltration, eventually spilling over to the south and flowing into the recovery basin with the runoff from the waste rock and overburden piles. This water depth in the pit will eventually reach 50 m. Post-restoration environmental monitoring will confirm the effectiveness of the remediation approach and ensure the quality of the receiving environment. The water treatment plant will be maintained until proven that the long-term water quality is respected. The monitoring and surveillance program will be maintained five years after remediation works.

To maintain site safety all accesses to the pit will be blocked to limit entry. Long-term structural stability of the accumulation zones for waste rock and overburden as well as the pit walls has been confirmed by studies. Restoration costs for the Lac Guéret site (mine, camp and effluent treatment plant) are estimated at $3.3M as per MERN guidelines for calculation of rehabilitation costs. The closure plan is presently under revision and will be submitted to MERN in the beginning of 2019.

20.5.2 BAIE-COMEAU CONCENTRATOR SECTOR

As the concentrator will be located in the Jean-Noël-Tessier industrial park, some installations could be maintained or modified for future industrial use, including the access road and sewer and electrical systems. Efforts will be made to find further uses for the buildings and infrastructure present on site, either by Mason Graphite for other projects, or by sales in the used equipment and material's market. The main elements to be reused or dismantled will be the concentrator and other equipment used in the factory, the multifunctional building, the offices, the water treatment unit, the runoff sedimentation pond, the storage units and underground piping. The cleared areas will be left available for future industrial usage.

The Closure plan will, however, include the cost of the entire dismantling of the buildings and infrastructure, the removal of all membranes of the impervious areas (where possible), along with a soil characterization and decontamination in areas at risk. The tailings area will be restored progressively, therefore the reclamation work after the 25-year operation will cover only phase 5.

The only release to the environment to remain after the end of operations will be the seepage collected from the tailings area, which will be treated before discharge into the environment. The impervious membrane which will cover the tailings will block the recharge of this surface and with time, the amount of seepage will reduce. The water treatment system will continue to be operated as long as required by MELCC requirements.

The Closure plan is presently under revision and will be submitted in early 2019. Rehabilitation costs for the Baie-Comeau site are estimated at $7.6M as per MERN guidelines for calculation of rehabilitation costs.

21. CAPITAL AND OPERATING COSTS

21.1 CONTEXT

In Q3-2018, Mason Graphite has updated its estimates for construction capital expenditures (CAPEX), sustaining capital expenditures over the Project Life (Sustaining CAPEX) and operating expenses (OPEX) to take into account escalation, market changes and scope changes applied to the Project since its Updated 2015 Feasibility Study. As was previously indicated in this Report, since that time, Mason Graphite has advanced the Project into detailed engineering and has also undertaken some important procurement activities.

These estimates were performed by Mason Graphite's execution team and audited by external partners:

Table 21-1 - Validation Responsibilities per Sector

Sector	Initial CAPEX	Sustaining CAPEX	OPEX
Lac Guéret site – mine and camp	BBA	BBA	BBA
Ore transportation	N/A	N/A	BBA
Baie-Comeau site – concentrator	BBA	BBA	BBA Soutex
Baie-Comeau site – administration	BBA	BBA	BBA

21.2 PROJECT ADVANCEMENT TO DATE

Based on the project advancement to the effective date of this Report, the initial CAPEX for the Project has been estimated at CA $258.2M. Of this amount, approximately $19M have so far been spent on detailed engineering, procurement, indirects and owner's costs. These activities and related spending are still ongoing.

Table 21-1, Table 21-2 and Table 21-3 present the advancement status of the detailed engineering and the procurement activities for the Project.

Table 21-2 - Status for Detailed Engineering

Area	Progress
Mine and mining camp	80%
Concentrator – process	95%
Concentrator – civil, architecture, concrete and structure	80% to 95%
Concentrator – mechanical, piping, electrical and services	50%
Overall Project	**60%**

Table 21-3 - Progress Status for Main Equipment Procurement

Main Equipment	Manufacturer Engineering	Fabrication and Delivery
Crusher	30%	Planned for 2019
Grinding mills	100%	Fabrication completed, delivery planned mid-January 2019
Flotation cells	100%	To begin before end of 2018
Flotation columns	100%	To begin before end of 2018
Concentrate press filter	100%	FAT planned for mid-December 2018
Tailings press filter	100%	FAT planned for mid-December 2018
Thickeners	90%	Fabrication to begin first quarter 2019
Wet screens	100%	Planned for 2019
Cyclones	100%	Planned for 2019
Dryer	90%	Planned for 2019
Scrubber	90%	Planned for 2019
Dry screens	100%	Planned for 2019
Packaging equipment	40%	Planned for 2019
Pumps	90%	Planned for 2019
Air systems	90%	Planned for 2019
Overhead crane	100%	Planned for 2019
Electrical transformers	75%	Planned for 2019
Switchgears	75%	Planned for 2019

21.3 BASIS OF ESTIMATE

The CAPEX estimate has an accuracy of -10%/+15% and was based on quotes from engineering material take offs (MTO's), suppliers and contractors, prices from engineering databases and typical construction labour rates or allowances when none were available.

The OPEX estimate was based on the mine plan, metallurgical test results, equipment technical datasheets, quotes from suppliers, prices from engineering databases, calculated quantities and the organizational structure proposed by Mason Graphite.

Unless otherwise specified, all costs are reported in Canadian Dollars (CA$).

Although the size of the mineral deposit would allow for a significantly longer operation, the Mineral Reserve calculation, hence the economic performance of the Project, was limited to the first 25 years of the projected mine life.

21.4 CAPITAL EXPENDITURES (CAPEX)

21.4.1 SUMMARY OF THE ESTIMATE

The CAPEX is based on the construction of a greenfield open pit mine located 285 km north of Baie-Comeau and a concentrator facility located in the Jean-Noël-Tessier industrial park in Baie-Comeau. The nominal production capacity is 52,000 tons per year of dry concentrate. The CAPEX estimate related to the open pit mine, concentrator and site infrastructure was developed by Mason Graphite. A distinct external estimate audit was performed by BBA to validate the Mason Graphite estimate.

The objective of this CAPEX estimate is to serve as the cost baseline for the execution of the Lac Guéret project where construction is scheduled to start in the fall of 2018. The entire project was re-estimated internally by Mason Graphite personnel and all aspects of the scope were updated to reflect the latest design status and execution strategy. The Feasibility Study (FS) estimate of 2015 was developed under an EPCM execution model whilst this estimate is based on a self-perform / owner managed strategy.

Total CAPEX for the Lac Guéret project developed as part of this exercise is estimated at $258.2M, inclusive of pre-production expenses and contingency but exclusive of sustaining capital ($16.8M), closure and rehabilitation costs ($10.9M), working capital ($6.25) as well as of all applicable taxes. The CAPEX covers all costs incurred up to the time the plant production reaches 60% of the nominal nameplate capacity for one month. This is scheduled to take place on June 30, 2020. Table 21-4 presents the CAPEX subdivided into four items.

Table 21-4 - Summary of Project CAPEX over Project Life

Item	Initial CAPEX (k$)	Sustaining CAPEX (k$)
Project Direct Costs	141,857	16,773
Project Indirect Costs	61,502	
Contingency	34,706	
Owner's Costs	20,104	
Total	**258,170**	**16,773**

Due to the change in execution strategy from the 2015 Feasibility Study (EPCM) to Owner's Built model, typical contractor indirects such as site facilities, temporary power, lifting equipment, surveying, fuel and site maintenance will be managed by the Mason Graphite construction team acting as general contractor for the entire work site. This provides justification for the construction indirect costs to be higher than what is usually observed on other projects where such charges are normally included in direct costs and borne by contractors.

21.4.2 ASSUMPTIONS

The CAPEX estimate was conducted on the following assumptions:

- Open pit mine pre-development will be executed by Mason Graphite employees;
- Production Mobile Equipment, Lac Guéret and Baie-Comeau, will be rented rather than purchased and related costs are included in OPEX;
- The mine camp and mine garage will be rented rather than purchased;
- No explosives magazine is included in the estimate. Explosives will be delivered from Baie-Comeau by supplier;
- The administration building in Baie-Comeau will be a prefabricated building and will be installed and used during construction;
- The Lac Guéret and Baie-Comeau effluent treatment equipment will be rented rather than purchased;
- Site vehicles (pick-up trucks) will be purchased used rather than new;
- The use of overburden and waste rock generated during the pre-stripping will be maximized for sourcing backfill material;
- Other required backfill materials will be available from the nearby borrow pits;
- Soil conditions will not require special foundation designs such as piling;

- Costs will be capitalized until commercial production is achieved (30 days at an average of 60% of production capacity);
- All excavated material will be disposed on-site;
- The project will adhere to the established Master Schedule (July 1, 2018 to June 30, 2020);
- Québec Construction Commission (CCQ) decree industrial trade (not heavy) rates apply for the overall concentrator site;
- Mining (non-decree) rates apply for the Baie-Comeau tailings management facility, ore pad, water pond and access road;
- Mining (non-decree) rates apply for the Lac Guéret site;
- Work schedule is 50 hours per week (5 days at 10 hours per day) or 60 hours per week (6 days at 10 hours per day) for civil work, common services, electrical services and for local contracts;
- Work schedule is 70 hours per week (14 days in – 7 days out at 10 hours per day) for rock blasting, aggregate production, major contracts (mechanical, piping, electrical and automation) and external contracts;
- Labour force origin for structural steel, architectural, building and electromechanical considered 50% local;
- Labour force origin for piping, electrical and instrumentation considered 15% local;
- All costs are expressed in constant Q3 2018 Canadian Dollars (CA$); exchange rates used are as follows (Table 21-5):

Table 21-5 - Exchange rates

Currency Code	Currency Description	Exchange Rate to CA$	Source of Exchange Rate
CA$	Canadian dollar	1.0000	Bank of Canada, 2018-07
US$	United States dollar	0.7634	Bank of Canada, 2018-07
EUR	European euro	0.6494	Bank of Canada, 2018-07

21.4.3 EXCLUSIONS

The following items are specifically excluded from the CAPEX estimate. The estimate is based on the current information available and does not include assumptions for unknown future impacts to the project.

- Scope change;
- Taxes assumed to be recoverable that are found not to be;
- Duties assigned to the equipment where an exemption has been assumed to be received;
- Changes in laws or regulations;
- Currency fluctuations;
- Unforeseen tariff on steel or other commodities;
- Work stoppage resulting from labour disruption;
- Work stoppage resulting from community relations;
- All costs expended beyond June 30, 2020;
- Pre and post mitigation risk monies;
- Risk mitigation plans;
- Sunk costs prior to July 1, 2018, including studies and early works, but excluding Engineering and Procurement professional services from 2017 onwards;
- Corporate headquarters office rental, executives' salaries and expenses;
- Community relations salaries, expenses or any Impact Benefit Agreement (IBA) payments;
- Legal fees;
- Accelerated schedule;
- Hydrological issues over and above what is anticipated in the estimate;
- Fish habitat compensation work or compensation payments;
- Environmental issues that may happen during the project, such as a natural disaster (forest fire, flood, earthquake, etc.);
- Hazardous waste issues;
- Salvage value for construction equipment and materials.

21.4.4 WORK BREAKDOWN STRUCTURE (WBS)

The project is divided into main areas using the first digit of a 4-numerical character coding system. Areas are further developed into sub-areas using the second digit. The third and fourth digits enable the definition of the facility and sub-facility also known as the WBS number. The total cost by area is presented in Table 21-6.

Table 21-6 - WBS Areas and Initial CAPEX

Area (WBS)	Description	Initial CAPEX (M$)
1000	Mine and Mining Camp	13.3
5000	Concentrator Infrastructure and Utilities	9.0
6000	Tailings and Water Management	11.9
7000	Concentrator	107.7
8000	Owner's Costs	20.1
9000	Indirect Costs	61.5
9900	Contingency	34.7
	Total	**258.2**

The details of the CAPEX presented hereafter follow the WBS.

21.4.5 DIRECT CAPEX

21.4.5.1 DIRECT CAPEX BY MAIN AREAS

The direct CAPEX covers the costs that can be directly related to a specific project area and is divided into three types:

- Equipment: machines, instruments, prefabricated building, computers, etc.;
- Materials: crushed rocks, lumber, concrete, steel, piping, electrical supplies, etc.;
- Labour: carpenters, truck drivers, mechanics, electricians, etc.

The initial direct CAPEX for the Project Life was estimated at $141.9M. The sustaining CAPEX required to maintain the operations over the Project Life was estimated to $16.8M. Both CAPEX categories were divided into four items:

- Mine and mining camp;
- Concentrator infrastructure and utilities;
- Tailings and water management;
- Concentrator.

The summary of initial and sustaining direct CAPEX is presented in Table 21-7 below.

Table 21-7 - Summary of Project Direct CAPEX

WBS / Item	Initial CAPEX (M$)	Sustaining CAPEX (M$)	Total CAPEX (M$)
Mine and mining camp	13.3	6.0	19.3
Concentrator infrastructure and utilities	9.0	0.3	9.3
Tailings and water management	11.9	9.5	21.4
Concentrator	107.7	1.0	108.7
Total	**141.9**	**16.8**	**158.7**

The overall direct costs, initial and sustaining, for the Project are estimated at $158.7M over the Life of the Project.

The sustaining CAPEX are presented in the direct CAPEX but include indirects and contingencies.

21.4.5.1.1 MINING DIRECT CAPEX

The mining initial direct CAPEX are estimated at $13.3M and cover mine construction (roads, overburden stockpile, waste rocks stockpile, ore storage pad and overburden removal for the first 6 years of mining), light vehicles acquisition and mine infrastructure (camp, garage generators, water management and mine water treatment).

Sustaining CAPEX are estimated at $6.0M and cover the overburden removal from years 6 to 10, future water management infrastructure construction and replacement of the light vehicles.

21.4.5.1.2 CONCENTRATOR INFRASTRUCTURE AND UTILITIES

Direct cost for the concentrator control, services and utilities is estimated at $9.0M. They cover the land preparation, construction of roads and accesses, electrical distribution, communications and acquisition of light vehicles.

Sustaining CAPEX are estimated at $0.3M and cover the replacement of the light vehicles.

21.4.5.1.3 TAILINGS AND WATER MANAGEMENT

Direct costs for the tailings and water management include the first phase of the filtered tailings stockpile, water ponds, earthwork, tools and building for the water treatment unit. They are estimated at $11.9M.

Sustaining CAPEX cover the four successive extensions to the filtered tailings stockpile and are estimated at $9.5M.

21.4.5.1.4 CONCENTRATOR

Direct costs for the concentrator include the ore stockpile, the crusher, the wet process (grinding, flotation, and concentrate filtration), the concentrate drying process (drying and scrubbing), the dry process (screening and packaging of the concentrate), tailings filtration, support and offices. These CAPEX are estimated at $107.7M.

Sustaining CAPEX, estimated at $1.0M cover improvements to the process during the first years of the start-up.

The summary of tailings and water management CAPEX is indicated in Table 21-8.

Table 21-8 - Summary of Concentrator Direct CAPEX

Item	Initial CAPEX (k$)
Crushing and ore storage (WBS 7100)	7,736
Wet process (WBS 7200)	60,018
Dryer and scrubber (WBS 7300)	11,473
Dry process and packaging (WBS 7400)	12,854
Tailings filtration (WBS 7500)	10,091
Warehouse and shipping (WBS 7600)	2,786
Support (WBS 7700)	2,289
Main office (WBS 7800)	428
Subtotal	**107,676**

21.4.5.2 DIRECT INITIAL CAPEX BY DISCIPLINES

For every area defined in the WBS, discipline codes were used to further breakdown the cost details into manageable control accounts. These accounts comprise of both the WBS area and discipline code and will be used to control budget and costs, as well as to measure construction progress in the field. The disciplines are divided into a 4-digit numerical character coding system.

The total initial CAPEX by discipline are shown in Table 21-9 below:

Table 21-9 - Initial CAPEX by Discipline

Discipline	Description	CAPEX (M$)
0400	Mobile Equipment	1.6
0500	Tooling	1.7
1000	Civil	24.8
2000	Concrete	10.0
3000	Structural Steel	15.1
4000	Architecture	9.8
5000	Mechanical	14.1
5001	Mechanical Equipment	37.2
6000	Piping	6.9
7000	Electrical	16.3
8000	Automation	4.4
	TOTAL	**141.9**

21.4.6 OWNER'S COSTS AND INDIRECT CAPEX

The owner's costs and indirect CAPEX are directly affected by the execution strategy. Since Mason Graphite follows the "Owner's Built" model and will also supply most of the shared services, a good portion of the contractors' indirect costs, usually included in the direct costs, are included in the Owner's Costs and indirect CAPEX.

21.4.6.1 OWNER'S COSTS AND INDIRECT CAPEX BY WBS

The total Owner's Costs and indirect CAPEX by WBS are shown in Table 21-10 below:

Table 21-10 - Owner's Costs and Indirect CAPEX by WBS

WBS	Description	M$
8100	Mine Pre-Production & Development	1.7
8200	Concentrator Pre-Production	5.3
8300	Owner's Costs	13.1
8000	**TOTAL OWNER'S COSTS**	**20.1**
9100	Engineering and procurement services	21.8
9200	Freight, handling & duties	5.5
9400	Construction indirects – Lac Guéret	6.0
9500	Construction indirects – Baie-Comeau	23.7
9600	Pre-operational verifications & commissioning	2.4
9700	First fill, spares & consumables	2.1
9000	**TOTAL INDIRECT CAPEX**	**61.5**
	TOTAL OWNER'S COSTS AND INDIRECT CAPEX	**81.6**

Engineering & construction cost reflects the decision by Mason Graphite to directly manage the project by increasing the owner team.

The following are excluded from the estimate and are considered corporate costs:

- Any owner's costs in the above table prior to July 1, 2018;
- Community relations personnel and any Impact Benefit Agreement (IBA) payments;
- Fish habitat compensation work or compensation payments;
- Executives' salaries and expenses (CEO, CFO…);
- Rehabilitation costs bond;
- Any legal fees.

21.4.7 CONTINGENCY

Contingency calculations were performed based on the expected level of precision for every line item in the estimate. Knowledge of actual status of engineering and procurement served as the basis to establish contingency percentages, following industry guidelines. The outcome of the contingency calculation yields an overall percentage of 13.2% on the total direct and indirect costs. Typically, contingency for AACE Class 3 estimates range between 10% and 15% of direct and indirect costs.

Although escalation is not typically included in costs estimates, Mason Graphite included a contingency for escalation over the duration of the construction. Escalation calculations were performed based on a management call to use the OECD Canadian inflation forecast value of 2.3%.

The contingency and escalation for the project scope (Lac Guéret and Baie-Comeau) are presented in Table 21-11 below.

Table 21-11 - Contingency and Escalation

WBS	Description	k$
9910	Contingency	29,567
9920	Escalation	5,140
	TOTAL	**34,706**

21.4.8 CLOSURE AND REHABILITATION

Closure and rehabilitation costs for the mine were estimated by Mason Graphite and BBA; these costs are estimated at $3.3M.

Closure and rehabilitation costs of the Baie-Comeau site were estimated by Mason Graphite and BBA; these costs are estimated at $7.6M.

The overall closure, rehabilitation and environmental monitoring costs for the Lac Guéret and Baie-Comeau sites are then estimated at $10.9M.

As per Québec mining act M-13.1 a financial guarantee must be in place to ensure that funds will be available for rehabilitation work at the end of mine life, no matter the financial situation of the mining company.

Based on a recent, similar project in Québec, the financial guarantee for the rehabilitation costs will be through a bond and the annual costs has been estimated to 2% of the amount guaranteed.

21.5 OPERATING COSTS (OPEX)

The operating costs (OPEX) over the Project Life are estimated at $627M, for an average of $483.77/t of concentrate. It is divided into four items: mining, ore transportation, processing, and general and administration (G&A). They are summarized in Table 21-12.

Table 21-12 - Summary of Project Operating Costs

Item	Total Over Project Life (M$)	Annual Average (M$)	Per Tonne of Concentrate ($)	Proportion
Mining	69.3	2.8	53.45	11.0%
Ore transportation	187.3	7.5	144.41	29.9%
Processing	308.9	12.4	238.27	49.3%
General & administration	61.8	2.5	47.64	9.8%
Overall project operating costs	**627.3**	**25.1**	**483.77**	**100%**

21.5.1 MINING OPERATING COSTS

The mining operating costs includes manpower (seven employees), consumables, fuel and energy, maintenance, camp, environment and rentals. They are estimated at $69.3M over Project Life, $2.8M per year on average or $53.45/t of concentrate. The overall mining OPEX is summarized in Table 21-13.

Table 21-13 - Mining OPEX, over Project Life

Item	Total Over Project Life (k$)	Annual Average (k$)	Per Tonne of Concentrate ($)	Description
Manpower	17,152	686	13.23	• Staff and workers' salaries.
Consumables	5,405	216	4.17	• Explosives and accessories.
Fuel - Energy	12,824	513	9.89	• Fuel for mobile equipment; • Fuel for camp and mine generators.
Maintenance	11,133	445	8.59	• Labour, tires, spare parts, repairs; • Camp maintenance; • Road maintenance and snow clearing; • Pumps maintenance.
Camp	2,268	91	1.75	• Food and supplies; • Workers transportation.
Environment	1,080	43	0.83	• Environmental monitoring; • Effluent treatment station supplies.
Rentals	19,442	778	14.99	• Mobile equipment; • Camp and garage; • Water treatment station.
Total	**69,311**	**2,772**	**53.45**	

21.5.2 ORE TRANSPORTATION OPERATING COSTS

The run of mine (ROM) will be trucked to the processing facilities in Baie-Comeau. Mason Graphite requested quotations from local companies in 2015. A revised quote for 2018 was requested from the lowest bidder and the OPEX is estimated at $187.3M over Project Life, $7.5M on average per year or $144.41/t of concentrate.

21.5.3 PROCESSING OPERATING COSTS

The processing OPEX includes manpower, fuel and energy, consumables, reagents, packaging, laboratory, environment and rentals. It is estimated at $308.9M over Project Life, $12.4M on average per year or $238.27/t of concentrate, as detailed in Table 21-14.

Table 21-14 - Processing OPEX, over Project Life

ITEM	Total Over Project Life (k$)	Annual Average (k$)	Per Tonne of concentrate ($)	Description
Manpower	96,861	3,874	74.70	▪ Staff and workers' salaries.
Fuel - Energy	87,534	3,501	67.51	▪ Fuel for mobile equipment; ▪ Electricity for production equipment; ▪ Electric power at $0.068/kWh
Consumables	31,863	1,275	24.57	▪ Grinding media (steel and ceramic); ▪ Mill liners ▪ Wet and dry screens; ▪ Filter cloth.
Reagents	18,889	756	14.57	▪ Frother, collector and depressant; ▪ Lime, flocculent and caustic soda.
Packaging	29,021	1,161	22.38	▪ Bulk bags and small bags; ▪ Pallets and shrink-wraps.
Laboratory	2,072	83	1.60	▪ Laboratory consumables.
Environment	596	24	0.46	▪ Environmental monitoring; ▪ Effluent treatment plant supplies (from year 17).
Maintenance	28,150	1,126	21,71	▪ Parts for production equipment; ▪ Parts for mobile equipment.
Rentals	13,963	559	10.77	▪ Mobile equipment; ▪ Water treatment station.
Total	**308,949**	**12,358**	**238.27**	

21.5.4 GENERAL & ADMINISTRATION COSTS

The General and Administration OPEX includes manpower, supplies, fees and heating and lighting energy. These exclude all costs related to corporate office.

The overall OPEX for General and Administration is estimated at $61.8M over Project Life, $2.5M per year on average or $47.64/t of concentrate, as detailed in Table 21-15 bellow.

Table 21-15 - General and Administration OPEX

ITEM	Total Over Project Life (k$)	Annual Average (k$)	Per Tonne of concentrate ($)	Description
Manpower	26,412	1,057	20.37	▪ Staff salaries.
Fees, taxes, insurances and supplies	23,070	923	17.79	▪ Local taxes; ▪ Insurances; ▪ IT supplies and maintenance; ▪ Telecoms; ▪ Office supplies and courier services; ▪ Training; ▪ Safety equipment and supplies; ▪ Consulting fees (legal, technical...); ▪ Infrastructure maintenance (buildings, site, snow clearing).
Energy	12,283	491	9.47	▪ Electricity for heating, lighting and services of all the buildings.
Total	**61,766**	**2,470**	**47.64**	

22. ECONOMIC ANALYSIS

22.1 METHODOLOGY

This economic analysis is based on the Net Present Value (NPV) and the Internal Rate of Return (IRR) of all the Project cash flows and is presented in constant Q3-2018 currency, based on 100% equity financing.

After construction, a 1-month cold commissioning (no ore processed) period and a 3-month hot commissioning and ramp-up (with ore) period have been considered and related costs have been included in the capital cost estimate. Commercial production (60% of the plant capacity, sustained for one month) is expected after commissioning, on the first day of production of year one. All installations and equipment will then be operating. Saleable concentrate should be produced during commissioning and ramp-up but revenues from potential sales of these products have not been considered in the economic analysis.

This chapter presents a summary of all elements of the financial model, including graphite production and revenues, initial and sustaining capital expenditures (CAPEX) and operating costs (OPEX). The results are presented before and after taxation.

The sensitivity analysis was performed in two ways. The first used one variable (grade, graphite prices, etc.) at a time while the second evaluated the impact resulting from the simultaneous changes of two variables.

22.2 MAIN ASSUMPTIONS

22.2.1 PRICES

Like many industrial minerals, natural graphite is not traded on any commodity exchange. It is freely traded around the world. The prices used for this study are based on the market study developed in Chapter 19. Price forecasts where provided by Mason Graphite and represent a 12-month average of the prices published by Benchmark Mineral Intelligence (12-month period ending in June 2018).

The Lac Guéret Project is expected to produce four main categories of saleable products. The projected saleable prices for these categories are presented in Table 22-1. The Benchmark Mineral Intelligence prices, in $US/t FOB China, were converted into CA$/t FCA Baie-Comeau prices by:

- Applying the exchange rate of US$0.76 for CA$1.00;
- Calculating the delivered prices to CIF main port East Coast United States (transport costs estimated to $US200/t); and
- Deducting transportation costs from Baie-Comeau to main port USA (estimated to $CA66/t).

The FCA prices are presented in Table 22-1.

Table 22-1 - Saleable Products and Price Forecasts (from Mason Graphite)

Saleable Product Categories	Proportion (%)	Price ($US/t) FOB China	Price ($CA/t) FCA Baie-Comeau
+50 mesh	13%	1,926	2,720
-50 to +80 mesh	16%	1,354	1,970
-80 to +150 mesh	12%	1,110	1,651
-150 mesh	59%	1,000	1,507
Average		**1,190**	**1,756**

Some applications for graphite have more stringent technical requirements, thus commanding higher sales prices. Mason Graphite therefore expects that portions of the saleable products will be sold in these applications, at premium prices, as detailed in Table 22-2.

Table 22-2 - Sales Prices Premiums Breakdown

Marketable Products	Percent tonnage sold with primes	Percent Price sales increase	Final Average Price FCA Baie-Comeau
+50 mesh	40%	35%	3,100
-50 to +80 mesh	40%	35%	2,246
-80 to +150 mesh	40%	35%	1,882
-150 mesh	25%	25%	1,601
Average	**-**	**-**	**1,933**

22.2.2 TECHNICAL ASSUMPTIONS

This section is based on the following technical assumptions, derived from Chapter 16.

- The mine will operate ten months per year, seven days per week, and ten hours per day. Two crews will work on an eight-day on, six-day off rotation.
- Ore will be trucked to the processing plant located in Baie-Comeau, about 285 km away.
- The processing plant will operate twelve months per year, seven days per week, and 24 hours per day.
- An inventory stockpile of 40,000 tons of ore will be kept at the concentrator to feed production during spring months when ore transportation on the road is stopped.

- Even though the Project Life is estimated to last beyond 25 years, the Project Economic Analysis is limited to 25 years. During that period the mine will produce 4,741 kt of ore grading 27.8% Cg, 2,509 kt of waste rock and 1,361 kt of overburden.
- Metallurgical pilot tests performed in the previous Feasibility Study (campaigns 1 and 2) indicated a mill recovery of 92.5%. In 2018, a confirmatory pilot test (campaign 3) was performed and indicated better recovery and purity results (see Chapter 13). These results however have not been incorporated into this updated study and can be considered as an upside to the metallurgical performance used.
- The total graphite concentrate production is estimated at 1,297 kt at 93.5% Cg, over the Project Life.

Table 22-3 summarizes the main technical assumptions.

Table 22-3 - Main Technical Assumptions

Element		Value
Total Ore Mined (kt)		4,741
Average Ore Mined (ktpy)		190
Average Stripping Ratio (W/O) Excluding Overburden		0.8
Life of Project (years)		25
Average Mill Feed Grade (% Cg)		27.8%
Average Concentrate Grade (% Cg)		93.7%
Average Mill Recovery (%)		92.5%
Average concentrate production (ktpy)		51.9
Mine schedule (Rotation)	months/year	10
	days/week	7
	shifts/day	1
	hours/shift	10
Mill schedule	months/year	12
	days/week	7
	shifts/day	2
	hours/shift	12

Commercial production is expected to start after commissioning. The average mill recovery is expected to be lower the first year (87.5%) to account for the losses during the ramp-up period. From the second year of production, the recovery will be at the nominal 92.5%.

22.2.3 ECONOMIC ASSUMPTIONS

This section summarizes the main economic assumptions. Table 22-4 presents these assumptions.

Table 22-4 - Main Economic Assumptions

Element	Value
Exchange rate ($US/$CA) as of Q3-2018	0.76
Discount rate (%/year)	8% & 10%
Benchmark Mineral Intelligence average graphite price ($US/t, FOB China)	1,190
Average graphite price used in Economic Analysis ($CA/t, FCA Baie-Comeau)	1,933
Equity (%)	100
Inflation (%)	0
Currency	$CA

22.3 TAXES

The federal and provincial corporate tax rates currently applicable over the Project's operating life are 15% and 11.5% of taxable income, respectively.

The rate applicable for the purposes of assessing Québec mining taxes varies depending on the annual Gross Margin (GM): 16% if GM < 35%, 22% if GM is between 35-50% and 28% if GM > 50%. The Québec mining tax is also subject to a minimum mining tax.

The applicable taxes for this Project were calculated by PricewaterhouseCoopers, following hypothesis and assumptions provided by Mason Graphite.

22.4 MINERAL ROYALTIES

There are no mineral royalties applicable to the Project.

22.5 FINANCIAL MODEL RESULTS

The financial model results, including production, revenues, capital expenditures, operating costs, and taxes for the base case scenario are summarized in Table 22-5.

Table 22-5 - Financial Analysis Results

Years	C01	OP01	OP02	OP03	OP04	OP05	OP06	OP07	OP08	OP09	OP10	OP11	OP12	OP13	OP14	OP15	OP16	OP17	OP18	OP19	OP20	OP21	OP22	OP23	OP24	OP25	RH1	RH2	Total
Mine Production (kt)	**476**	**302**	**240**	**209**	**233**	**201**	**426**	**425**	**425**	**456**	**456**	**331**	**331**	**331**	**331**	**1,692**	**392**	**392**	**392**	**392**	**392**	**229**	**229**	**229**	**229**	**229**	**0**	**0**	**9,972**
Total Ore (kt)		197	192	192	191	189	188	187	189	190	193	208	208	208	208	208	191	191	191	191	191	167	167	167	167	167			4,741
Ore Grade (%)		26.7%	27.4%	27.5%	27.7%	27.8%	28.1%	28.2%	27.8%	27.8%	27.3%	25.4%	25.4%	25.4%	25.4%	25.4%	27.6%	27.6%	27.6%	27.6%	27.6%	31.2%	31.2%	31.2%	31.2%	31.2%			27.8%
Waste (kt)		104	47	17	43	12	23	103	6	166	57	123	123	123	123	123	201	201	201	201	201	62	62	62	62	62			2,509
Overburden (kt)	476						215	135	230	100	205																		1,361
Stripping Ratio		0.53	0.25	0.09	0.22	0.06	1.27	1.27	1.24	1.40	1.36	0.59	0.59	0.59	0.59	0.59	1.05	1.05	1.05	1.05	1.05	0.37	0.37	0.37	0.37	0.37			0.82
Concentrate Production (kt)	**0**	**49.3**	**52.1**	**52.2**	**52.1**	**52.1**	**52.1**	**52.1**	**52.1**	**52.1**	**52.1**	**52.1**	**52.1**	**52.1**	**52.1**	**52.1**	**52.1**	**52.1**	**52.1**	**52.1**	**52.1**	**51.5**	**51.5**	**51.5**	**51.5**	**51.5**	**0.0**	**0.0**	**1,296.6**
Sales (M$)	**Price**	**95.3**	**100.6**	**100.8**	**100.8**	**100.7**	**100.7**	**100.7**	**100.6**	**100.7**	**100.6**	**100.7**	**100.7**	**100.7**	**100.7**	**100.7**	**100.7**	**100.7**	**100.7**	**100.7**	**100.7**	**99.5**	**99.5**	**99.5**	**99.5**	**99.5**	**0.0**	**0.0**	**2,505.9**
+50 mesh (13%)	3,100	19.9	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	20.7	20.7	20.7	20.7	20.7			525.7
-50 to +80 mesh (16%)	2,246	17.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.5	18.5	18.5	18.5	18.5			468.2
-80 to +150 mesh (12%)	1,885	11.1	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.6	11.6	11.6	11.6	11.6			294.7
-150 mesh (59%)	1,601	46.6	49.2	49.3	49.2	49.2	49.2	49.2	49.2	49.2	49.2	49.2	49.2	49.2	49.2	49.2	49.2	49.2	49.2	49.2	49.2	48.6	48.6	48.6	48.6	48.6			1,226.1
OPEX (M$)		**24.9**	**24.9**	**25.2**	**25.4**	**25.5**	**25.1**	**25.5**	**25.2**	**25.8**	**25.3**	**25.8**	**25.8**	**25.8**	**25.8**	**25.8**	**25.3**	**25.3**	**25.3**	**25.3**	**25.3**	**23.9**	**23.9**	**23.9**	**23.9**	**23.9**	**0.0**	**0.0**	**627.3**
Mining		2.9	2.9	3.0	3.0	3.0	2.6	3.0	2.7	3.1	2.7	2.7	2.7	2.7	2.7	2.7	2.9	2.9	2.9	2.9	2.9	2.5	2.5	2.5	2.5	2.5			69.3
Ore Transportation		7.8	7.6	7.6	7.5	7.5	7.4	7.4	7.5	7.5	7.6	8.2	8.2	8.2	8.2	8.2	7.5	7.5	7.5	7.5	7.5	6.6	6.6	6.6	6.6	6.6			187.3
Process		12.1	12.2	12.4	12.6	12.6	12.6	12.6	12.6	12.6	12.5	12.4	12.4	12.4	12.4	12.4	12.3	12.3	12.3	12.3	12.3	12.2	12.2	12.2	12.2	12.2			308.9
G&A		2.1	2.1	2.2	2.3	2.4	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5			61.8
Operating Profit (M$)		**70.3**	**75.8**	**75.6**	**75.3**	**75.2**	**75.6**	**75.2**	**75.4**	**74.9**	**75.3**	**74.9**	**74.9**	**74.9**	**74.9**	**74.9**	**75.5**	**75.5**	**75.5**	**75.5**	**75.4**	**75.6**	**75.6**	**75.6**	**75.6**	**75.6**	**0.0**	**0.0**	**1,878.6**
TOTAL CAPEX (M$)	**258.2**	**0.3**	**0.3**	**3.1**	**0.3**	**2.1**	**0.7**	**0.5**	**2.3**	**0.3**	**0.7**	**1.7**	**0.0**	**1.7**	**0.0**	**0.1**	**0.0**	**0.0**	**2.8**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**	**0.0**	**274.9**
Direct CAPEX (M$)	**141.9**	**0.3**	**0.3**	**3.1**	**0.3**	**2.1**	**0.7**	**0.5**	**2.3**	**0.3**	**0.7**	**1.7**	**0.0**	**1.7**	**0.0**	**0.1**	**0.0**	**0.0**	**2.8**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**	**0.0**	**158.6**
Mine and Mining Camp	13.3					2.1	0.7	0.5	0.7	0.3	0.7	1.1									0.1								19.3
Concentrator Infra…	9.0																												9.0
Tailings and Water Mgt	11.9			2.8					1.6			0.6		1.7					2.8										21.4
Concentrator	107.7	0.3	0.3	0.3	0.3	0.1					0.1					0.1					0.1					0.1			108.9
Indirect CAPEX (M$)	**61.5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**61.5**
Professional services	21.8																												21.8
Freight, Handling	5.5																												5.5
Construction Indirects	29.7																												29.7
Commissionning	4.5																												4.5
Owner's Costs (M$)	**20.1**																												**20.1**
Mine Pre-prod.	1.7																												1.7
Concentrator Pre-prod.	5.3																												5.3
Owner's Costs	13.1																												13.1
Contingency (M$)	**34.7**																												**34.7**
Rehabilitation (M$)		**0.2**	**0.2**	**0.3**	**0.7**	**0.2**	**0.2**	**0.2**	**0.2**	**0.7**	**0.5**	**0.2**	**0.2**	**0.2**	**0.5**	**0.2**	**0.2**	**0.2**	**0.2**	**0.8**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**4.4**	**4.3**	**15.8**
Working Capital (M$)		**6.3**																								**-6.3**			**0.0**
TOTAL CAPEX + REHAB (M$)	**258.2**	**6.7**	**0.5**	**3.3**	**1.0**	**2.3**	**0.9**	**0.7**	**2.5**	**1.0**	**1.2**	**1.8**	**0.2**	**1.9**	**0.5**	**0.3**	**0.2**	**0.2**	**3.0**	**0.8**	**0.3**	**0.2**	**0.2**	**0.2**	**0.2**	**-6.0**	**4.4**	**4.3**	**290.7**
Taxes (M$)	**-1**	**1**	**8**	**13**	**17**	**20**	**22**	**24**	**25**	**26**	**27**	**27**	**28**	**28**	**28**	**29**	**29**	**29**	**29**	**29**	**29**	**29**	**29**	**29**	**29**	**28**	**-1**	**0**	**613**
Federal Corporate Tax	0	1	4	5	6	7	7	8	8	8	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	-1	0	200
Provincial Corporate Tax	0	1	3	4	5	5	6	6	6	6	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	-1	0	153
Quebec Mining Tax	-1	0	2	4	6	8	9	10	11	11	12	12	12	12	12	13	13	13	12	13	13	13	13	13	13	12	0	0	259
Pre-tax Cash Flow (M$)	**(258.2)**	**63.6**	**75.3**	**72.3**	**74.4**	**72.8**	**74.7**	**74.5**	**72.9**	**74.0**	**74.1**	**73.1**	**74.7**	**73.1**	**74.4**	**74.6**	**75.3**	**75.3**	**72.4**	**74.7**	**75.2**	**75.4**	**75.4**	**75.4**	**75.4**	**81.6**	**(4.4)**	**(4.3)**	**1,587.9**
Cumul	(258.2)	(194.6)	(119.2)	(47.0)	27.4	100.2	175.0	249.5	322.4	396.3	470.5	543.6	618.3	691.4	765.8	840.4	915.7	991.0	1,063.4	1,138.1	1,213.2	1,288.7	1,364.1	1,439.5	1,515.0	1,596.6	1,592.2	1,587.9	
Post-tax Cash Flow(M$)	**(256.8)**	**62.2**	**67.1**	**59.2**	**57.5**	**53.0**	**52.6**	**50.6**	**48.0**	**47.9**	**47.1**	**45.6**	**46.8**	**45.1**	**46.1**	**46.0**	**46.3**	**46.1**	**43.8**	**45.7**	**46.0**	**46.1**	**46.0**	**46.0**	**45.9**	**54.1**	**(3.2)**	**(4.2)**	**976.7**
Cumul	(256.8)	(194.6)	(127.6)	(68.4)	(10.9)	42.1	94.7	145.3	193.3	241.2	288.4	334.0	380.8	425.9	472.0	518.0	564.3	610.5	654.2	699.9	745.9	792.0	838.0	884.0	930.0	984.1	980.8	976.7	

	Discount Rate	Before taxes	After taxes
Payback period (years)		3.72	4.35
NPV (M $)	6%	641	378
NPV (M$)	8%	484	278
NPV (M$)	10%	368	203
IRR (%)		27.7%	21.7%

22.6 SENSITIVITY ANALYSIS

All through this document, estimations have been made based on various elements like graphite grade, sales prices, quotations, calculations with rounding, etc.

A sensitivity analysis has been performed to evaluate the impact of changing the variables below on the NPV, the IRR and the payback period:

- Initial CAPEX;
- OPEX (mining, ore transportation, processing and G&A); and
- Graphite sales prices.

The graphite sales prices being originally in US$, they were converted to CA$ for the financial analysis. As such, any variation of the exchange rate has the exact same effects on the project financial results (for example, a 20% increase of the US$ to CA$ exchange rate is the same as a 20% increase of the sales prices).

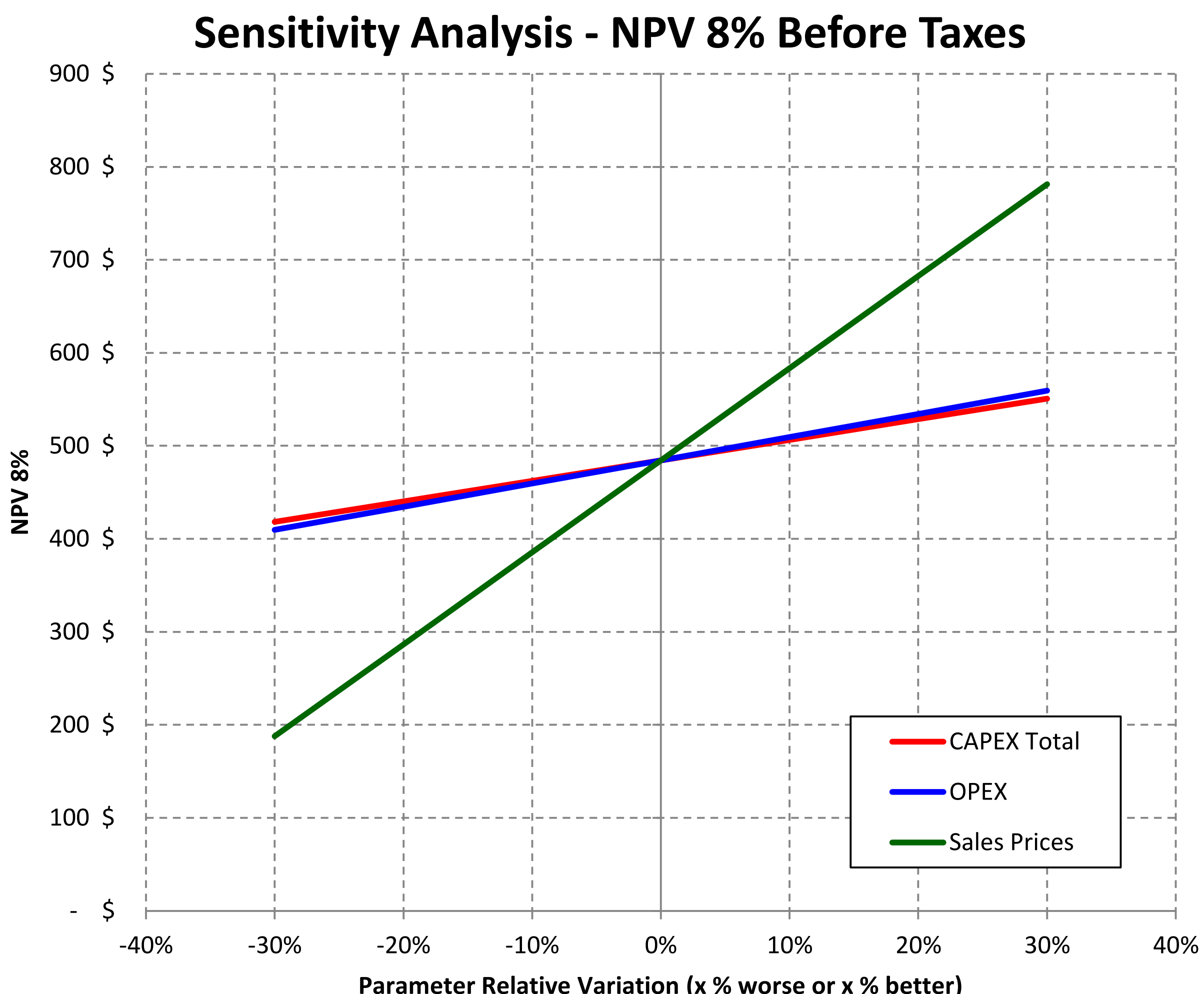
The sensitivity analysis was carried out on the base case scenario and two approaches were followed: each of the variables above was changed one at a time and a two-variable analysis was also done by changing both the CAPEX and the graphite price at the same time.

The results for the one variable analysis are presented in Table 22-6, Figure 22-1, Figure 22-2 and Figure 22-3. The results for the two-variable analysis are presented in Table 22-7, Table 22-8 and Table 22-9.

Theses analyses demonstrate that the Project is more sensitive to variations of graphite price (and therefore the exchange rate) and less sensitive to the CAPEX and OPEX variations.

Table 22-6 - Pre-Tax Sensitivity Analysis with One Variable

Percent Change	CAPEX			OPEX			Sales Price		
	NPV M$	IRR	Pay Back	NPV M$	IRR	Pay Back	NPV M$	IRR	Pay Back
-30%	551	38.1%	2.66	559	30.6%	3.37	188	16.1%	6.25
-20%	529	33.9%	3.02	534	29.6%	3.48	287	20.0%	5.10
-10%	507	30.5%	3.37	509	28.7%	3.59	385	23.9%	4.30
0%	484	27.7%	3.72	484	27.7%	3.72	484	27.7%	3.72
+10%	462	25.4%	4.06	460	26.8%	3.85	583	31.5%	3.28
+20%	440	23.4%	4.42	435	25.8%	3.98	682	35.3%	2.93
+30%	418	21.7%	4.77	410	24.8%	4.14	781	39.0%	2.65



Notes:
Negative parameter variations indicate a degradation of the parameter such as higher CAPEX, higher OPEX or

Figure 22-1 - Pre-tax Sensitivity of NPV

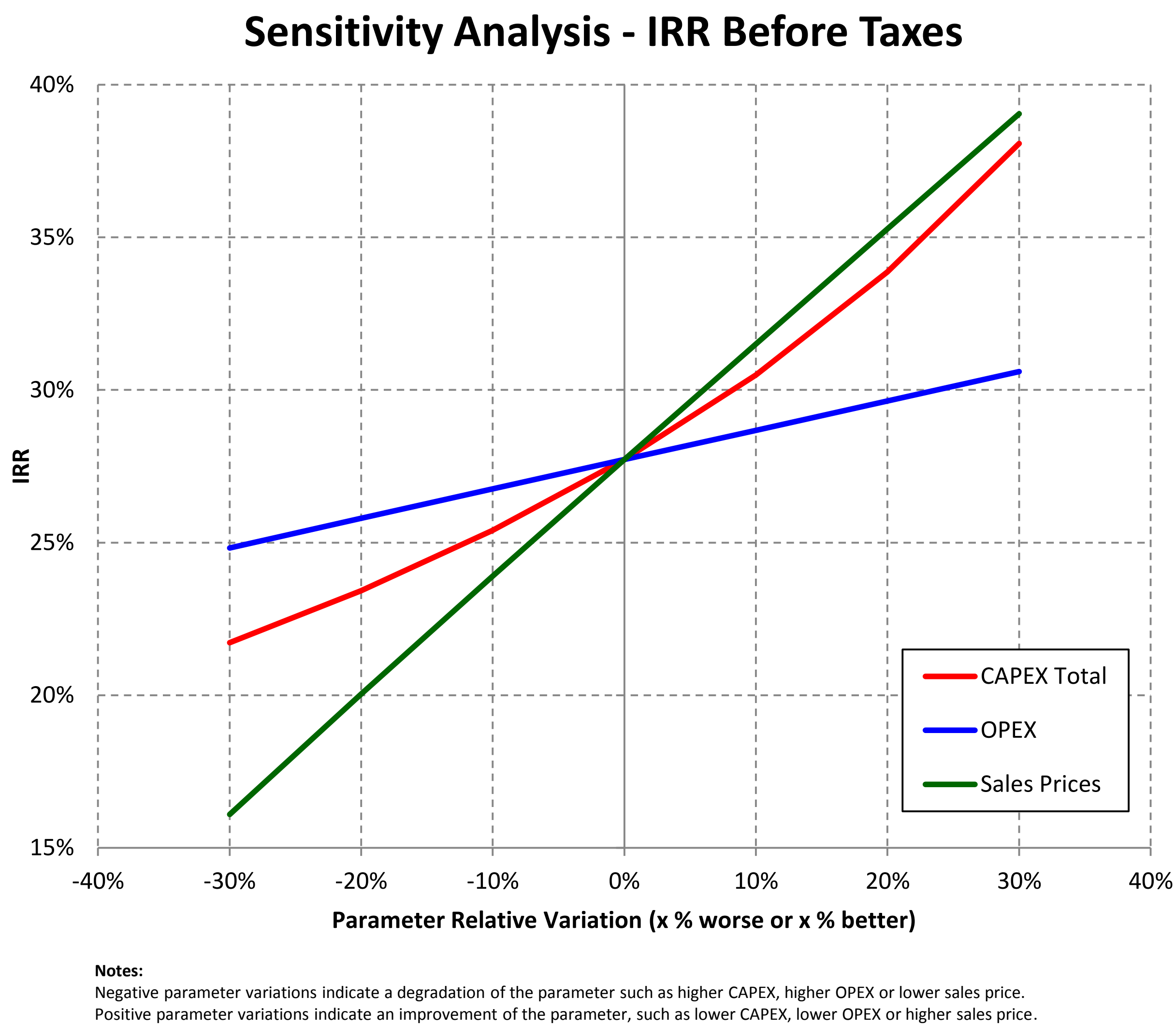
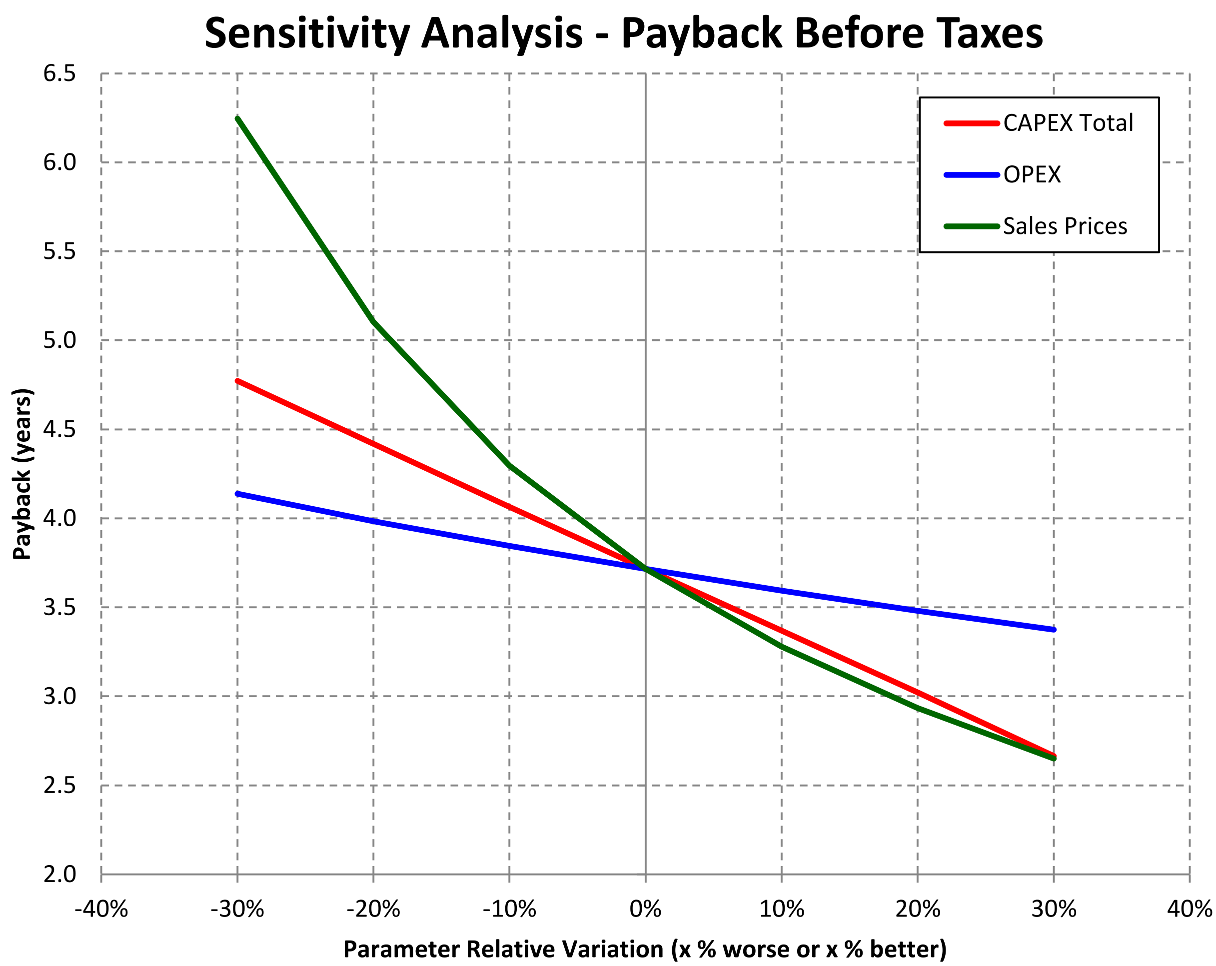


Figure 22-2 - Pre-tax Sensitivity of IRR



Notes:
Negative parameter variations indicate a degradation of the parameter such as higher CAPEX, higher OPEX or lower sales price.
Positive parameter variations indicate an improvement of the parameter, such as lower CAPEX, lower OPEX or higher sales price.

Figure 22-3 - Pre-tax Sensitivity of Payback Period

Table 22-7 - Sensitivity of NPV (8%) to Changes in CAPEX and Graphite Price, Pre-tax

NPV @ 8% (M$)		Changes in Graphite Prices						
		70%	80%	90%	**100%**	110%	120%	130%
Changes in CAPEX	70%	254	353	452	551	650	749	847
	80%	232	331	430	529	628	726	825
	90%	210	309	408	507	605	704	803
	100%	188	287	385	484	583	682	781
	110%	166	264	363	462	561	660	759
	120%	143	242	341	440	539	638	737
	130%	121	220	319	418	517	616	715

Table 22-8 - Sensitivity of IRR to Changes in CAPEX and Graphite Price, Pre-tax

IRR (%)		Changes in Graphite Prices						
		70%	80%	90%	**100%**	110%	120%	130%
Changes in CAPEX	70%	22.4%	27.7%	32.9%	38.1%	43.2%	48.4%	53.6%
	80%	19.9%	24.6%	29.2%	33.9%	38.5%	43.1%	47.7%
	90%	17.8%	22.1%	26.3%	30.5%	34.6%	38.8%	42.9%
	100%	16.1%	20.0%	23.9%	27.7%	31.5%	35.3%	39.0%
	110%	14.6%	18.3%	21.9%	25.4%	28.9%	32.4%	35.8%
	120%	13.4%	16.8%	20.2%	23.4%	26.7%	29.9%	33.1%
	130%	12.3%	15.5%	18.7%	21.7%	24.7%	27.7%	30.7%

Table 22-9 - Sensitivity of Payback to Changes in CAPEX and Graphite Price, Pre-tax

Payback (years)		Changes in Graphite Prices						
		70%	80%	90%	**100%**	110%	120%	130%
Changes in CAPEX	70%	4.48	3.65	3.08	2.66	2.35	2.10	1.90
	80%	5.09	4.13	3.49	3.02	2.66	2.38	2.15
	90%	5.67	4.62	3.89	3.37	2.97	2.65	2.40
	100%	6.25	5.10	4.30	3.72	3.28	2.93	2.65
	110%	6.83	5.58	4.71	4.06	3.58	3.21	2.90
	120%	7.43	6.05	5.12	4.42	3.89	3.48	3.15
	130%	8.03	6.52	5.51	4.77	4.20	3.75	3.40

23. ADJACENT PROPERTIES

With the current interest in graphite, the Lac Guéret property is completely surrounded by claim-holders (Figure 23-1). The main ones are: Focus Graphite Inc. to the north and south and Berkwood Resources Ltd. to the east. Various independent claims-owners are also nearby but have not reported significant exploration work to date.

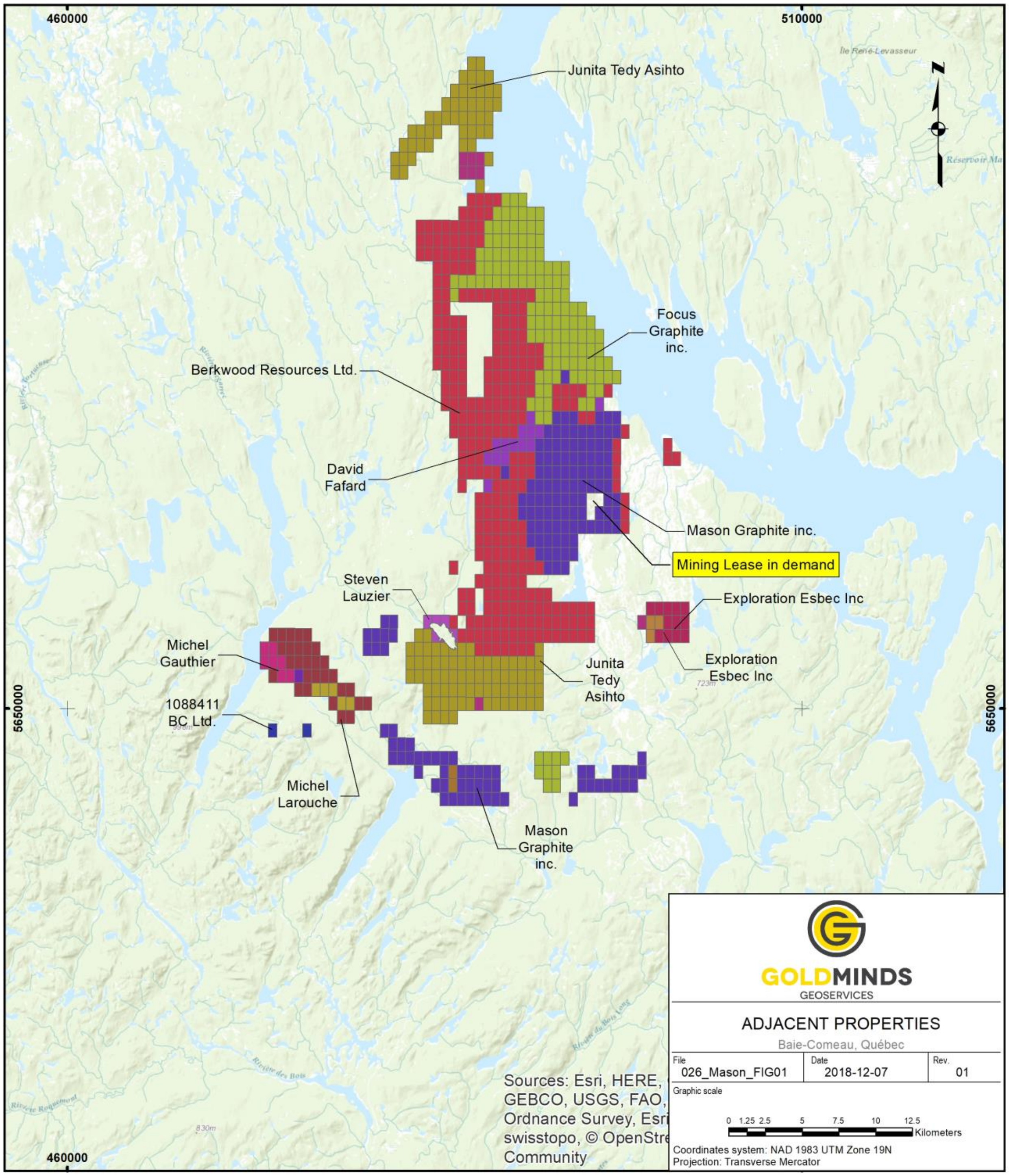


Figure 23-1 - Adjacent Properties

24. OTHER RELEVANT DATA AND INFORMATION

24.1 PLAN NORD

In May 2011, the Québec Government launched an economic development program called Plan Nord, the purpose of which is to promote the development of natural resources exploitation north of the 49th parallel. This program intends to support the development of the territory through improved access and financial support. La Société du Plan Nord, the organization in charge of the program, has opened an office in Baie-Comeau in October 2015. Both sites of the Project, Lac Guéret and Baie-Comeau, are located in the territory covered by Plan Nord and could benefit from the program.

24.2 OPTIMIZATION OPPORTUNITIES

Opportunities to further optimize the Project exist, like:

- Contracting the mining operations, including camp management;
- Reducing the costs of the ore transportation (the usage of trucks with a higher payload on the forest road could be possible for instance);
- Reducing the construction costs: the construction team has acquired significant experience on a recent mining project construction that could benefit the Project.

24.3 SCHEDULING

As part of its detailed engineering development, Mason Graphite has developed a detailed project execution schedule which is maintained and used to plan and to measure progress. A high-level summary of this schedule for the Project execution (engineering, procurement, construction, cold and hot commissioning and ramp-up) is presented in Figure 24-1.

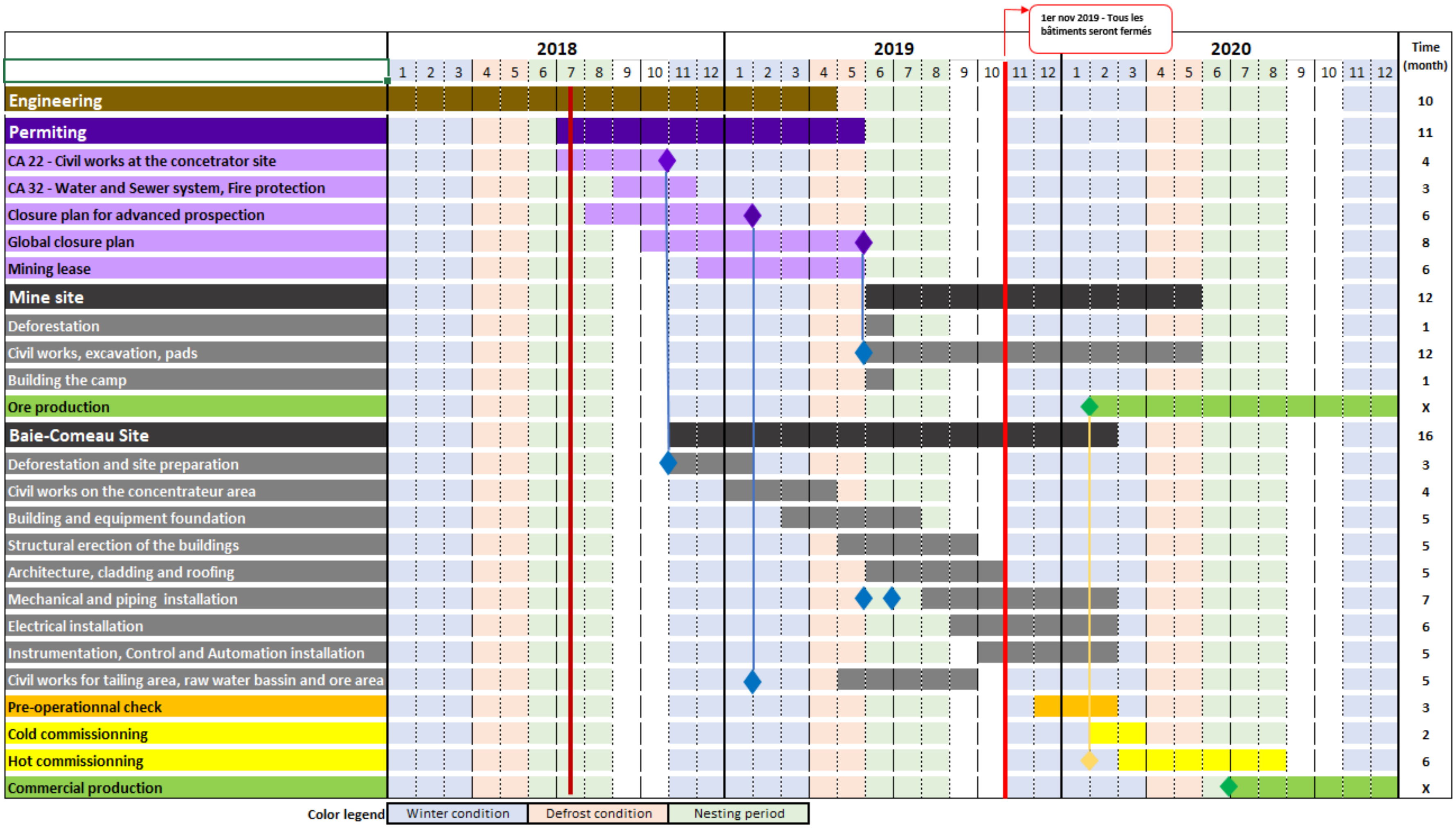


Figure 24-1 - High Level Execution Schedule

25. INTERPRETATION AND CONCLUSIONS

25.1 GEOLOGY (GMG)

The geological data and model supports Mineral Resources Estimate. Besides the volume quantified herein, the graphitic Lac Guéret Member of the Menihek Fm extends as an elliptical ring around the Sokoman Fm iron formation anticlinorial core with potential for developing future resources.

While much is known about the broad distribution of the graphite, there are some details, including the location and effects of post-Grenville brittle faults that may crosscut the anticlinorium. Based on Lyons' experience elsewhere along the iron formation belt since 2007, these can affect the geometry of deposits at the mining scale. However, GMG believes this should not affect the mining operations considering the amount of Mineral Resources available in the deposit and the low amount of ore required to feed the concentrator. Surveying and geological cartography of the deposit as the mine is exploited will bring additional information that will be used to adjust the mining plan if required.

25.2 MINING (BBA)

The mining plan for the Lac Guéret deposit is based on a 25-year open pit which includes 4.7 million tonnes of ore at an average grade of 27.8% Cg and a stripping ratio of 0.8:1. The 25-year mine plan consumes only 7.5% of the total Mineral Resources for the deposit.

The mine will be operated by a 100% owner-operated fleet, seven days per week and ten hours per day. The operations will generally run for ten months of the year with a two-month shutdown in April and May during the spring thaw season.

Each year, an average of 190,000 tonnes of ore will be mined from the open pit and hauled to the run of mine (ROM) pad which will be located besides the pit. The ore will then be transported to Baie-Comeau with a fleet of trucks (contracted).

The fleet of mining equipment includes two articulated haul trucks with 23.6-tonne payloads, one hydraulic excavator, one production drill and one wheel loader. A total of eight employees, working on two teams, are required to operate the mine: six mine workers and two cooks / janitors. A mining engineer will manage the technical and operational aspects of the mining operations.

25.3 METALLURGY AND ORE PROCESSING (SOUTEX)

Metallurgical testwork, defined and supervised by Soutex and Mason Graphite, achieved the desired quality of concentrate and showed that, by using the designed process and flowsheet, it is possible to economically recover the graphite in all commercial size fractions from the Lac Guéret ore.

In order to reach a concentrate with the desired specification, the ore shall be processed through crushing, grinding, polishing and flotation. The concentrate will be filtered, dried, screened and then bagged.

During the metallurgical studies, the recovery was optimized by considering several process options, such as a four-line flowsheet and various liberation and separation technologies. Flotation was determined to be the most efficient separation technology, as is usually the case in the graphite industry. The resulting Project NPV for the retained option represented the best case going forward and the concentration process was designed on this basis.

Three pilot tests of the proposed graphite concentration flowsheet yielded more than 96% carbon grades at the three product sizes +50 mesh, +100 mesh and +150 mesh and 94% for the M150 mesh. The third pilot test (2018) demonstrated that unaltered ore (from deeper within the deposit) gave better purities and metallurgical recovery.

The Lac Guéret concentration plant is designed to process ore having an average graphite grade of 27.8%, at a nominal rate of 190 ktpy, in order to produce 51,9 ktpy of concentrate, with a graphite recovery of 92.5% and an overall weight recovery of 27.4%.

25.4 ENVIRONMENT AND SOCIAL ASPECTS (BBA)

Several environmental studies (baseline, various inventories, sampling, characterisation…) were carried out at the Lac Guéret and Baie-Comeau sites between 2012 and 2018. The results of the studies were used as inputs for the Environmental and Social Impact assessment conducted in 2015. The results of the ESIA demonstrated that the Project will not have any strong negative impact on any environmental or social component. The ESIA report was filed with the MELCC in November 2015. The Project was presented to the population in June 2017 under the BAPE and no public hearing was requested by the population. The Government Decree 608-2018 for the Lac Guéret Project was signed on May 16, 2018 and officialised in the Gazette Officielle du Québec on June 6, 2018.

Information meetings were held repeatedly since 2014 with the populations of the Innu First Nation of Pessamit and of Baie-Comeau to present the Project. Concerns and suggestions of the population were taken into account in the Project's designs.

On June 16, 2017, an Impact and Benefit Agreement, the "Mushalakan Agreement", was signed by the Pessamit Council and Mason Graphite, a direct result from a cooperation agreement signed with the Pessamit Innu in July 2014.

25.5 CAPEX, OPEX AND ECONOMICAL ANALYSIS (BBA)

The CAPEX and OPEX estimated by Mason Graphite were based on detailed engineering, purchase orders, firm and budget quotes and allowances. Estimations have been made with constant dollar and no inflation.

The initial CAPEX for the Project is estimated at $258.2M, representing and is composed of the following items:

- Initial Direct CAPEX: $141.9M;
- Indirect CAPEX: $61.5M;
- Owner's Costs: $20.1M;
- Contingency: $34.7M.

Sustaining CAPEX of $16.8M will be necessary over the Project Life of 25 years to maintain the equipment and installations.

The overall OPEX over the life of the project is estimated at $627M, an average of $25.1M/year and $484/t of concentrate.

Closure, rehabilitation and environmental monitoring costs for both sites have been estimated at $15.8M. No residual value has been taken into account. After closure of both sites, equipment and installations will be dismantled and if possible, sold.

At an average graphite sales price of $1,933/t of concentrate, FCA Baie-Comeau (converted from a 12-month average FOB China price of US$1,190/t of concentrate), the forecasted average annual sales are $100.2M. The Net Present Values (NPV) at 8% discount rate, pre- and post-tax, are respectively $484M and $278M. The Internal Rates of Return, pre- and post-tax, are respectively 27.7% and 21.7%. The payback periods, pre- and post-tax, are respectively 3.7 years and 4.4 years.

According to the assumptions taken into account throughout this study, the economic analysis has demonstrated the viability of the Project. Since the decree has been obtained, the Project advancement is now mostly conditional to the construction financing.

25.6 RISKS SPECIFIC TO THE PROJECT

For this Project update, best efforts were made by all the partners to cover all the aspects of the Project. In certain cases, assumptions were made, based on the information available at the time. Detailed and thorough risk analyses were performed and revised since the 2015 Feasibility Study and many important risks identified were mitigated after the Study and during the detailed engineering phase.

This section presents a summary of the main remaining risks to the Project (some of them were presented in previous sections of this report). Recommendations from the partners to further mitigate some of these remaining risks are also presented in Chapter 26.

25.6.1 HEALTH & SAFETY

25.6.1.1 PERSONNEL HEALTH & SAFETY

In all stages of engineering design and operational readiness, the health and safety for the workers and the general population is being given a top priority. All applicable regulations were followed and the best engineering practices were used to design safe processes and installations.

25.6.1.2 TAILINGS DAM WALL BREACH

A tailings dam wall breach was one of the risks identified in the 2015 Feasibility Study that was eliminated by the change of the tailings storage method. The new storage method, dry stacking, effectively removed any dam thus eliminating the risk altogether.

25.6.2 ENVIRONMENT

With the completion of the ESIA process and the award of permits, environmental risks to the project have been significantly mitigated and addressed. Engineering design addresses risks related to tailings and water management, including acid drainage issues.

25.6.2.1 NEW ENVIRONMENTAL SITUATION

Baseline environmental studies and an Environmental and Social Impact Assessment (ESIA) covering both the Lac Guéret and Baie-Comeau sites were completed. These studies did not identify any significant risk to the environment caused by the Project. However unlikely, new unforeseen finding or change in the environment (for example a new protected species) could require changes to the Project, which could affect the schedule and/or the costs.

25.6.2.2 TAILINGS DRY STORAGE

As the tailings will be filtered and dry stacked instead of submerged, they will be more exposed to the oxygen and therefore to potential oxidation of the sulphides. Under extreme conditions, this could lead to self-heating of the tailings. To reduce this risk, the tailings will be compacted to prevent air and water infiltration, both necessary for the oxidation to take place. The tailings pile will also be under constant monitoring to detect any abnormal behaviour and proper measures will be in place to stop any oxidation reaction. Dedicated tailings pile test cells will also be constructed, instrumented and closely monitored to better understand tailings behaviour and improve the storage method.

25.6.2.3 ACID DRAINAGE AND WATER TREATMENT (BAIE-COMEAU)

With the change from a tailings dam to tailings dry stacking, the need for water treatment was moved from operation year 17 to the beginning of the operations. The contact water from the tailings pile will be collected and either reused in the concentrator plant or released to the environment after proper treatment. The water treatment station process is based on analyses of water samples obtained through various tests but the real-life operation could be different, and the process might have to be modified, thus requiring additional investments and higher operating costs.

25.6.2.4 CLIMATE CHANGES

The design capacities of the water ponds and basins take into account extreme meteorological events such as 1:2,000 years rainfalls to ensure total containment of contact water. However, climate changes are unpredictable and future trends could require increased storage capacities. The risk is mitigated for the short and medium terms as the highest capacity requirements will happen around 17 years after the operations have started.

25.6.3 TECHNICAL & OPERATIONAL

25.6.3.1 GEOLOGICAL UNCERTAINTY

The geological understanding and definition of the GC Zone graphite deposit have been based on extensive exploration work by Mason Graphite from 2012 to 2014. Combined with previous knowledge from Quinto Mining, the deposit covered by this report is well-known with respect to geometry and grade. No foreseeable risks for a significant reduction of the deposit are expected and the extensive Mineral Resources available would compensate any such reduction.

25.6.3.2 METALLURGICAL PERFORMANCES

Using ball mills as polishing mills is not a common application and up-scaling from the pilot plant polishing mills could represent a risk as no specific technical reference exists. Although the plant has the flexibility to re-introduce out-of-specification products, this could impact the economics of the Project.

25.6.3.3 GRAPHITE PRODUCTION EXPERTISE

In North-America, production of natural flake graphite is limited to only one active operation. Therefore, graphite production know-how and expertise are almost nonexistent among the potential future employees of Mason Graphite. The current management of the Company has more than five decades of direct experience in production of graphite, which will help mitigate this risk to the Project; this experience will be integrated in the training programs that will be developed for the future employees. External technical support will also be provided during the start-up and ramp-up periods.

25.6.4 COMMERCIAL ASPECTS, COMPETITION & DEMAND

25.6.4.1 SALES VOLUMES & NUMBER OF CUSTOMERS

The sales volume contemplated for the Project represents a little less than 10% of what is generally considered to be the current world's natural flake graphite market. Furthermore, since natural graphite is mostly sold through agreements between the producer and its customers and annual consumption by customers can vary from several thousand tons down to a few kilograms, an important number of customers will be required for the sales volumes considered.

25.6.4.2 MARKET CHANGES

A strong growth in the natural graphite market is expected following the current trend of using Li-ion batteries in energy storage, for fixed and mobile applications. However, research continues on alternatives to the Li-ion batteries, either on other battery chemistries or totally different storage and energy production methods. New unexpected technological developments or trends could lead to reduced graphite demand and negatively affect prices or lead to a change in graphite requirements. As with the competitive graphite projects risk, having low production costs should grant some commercial flexibility to adapt to potentially changing market conditions.

25.6.5 SOCIAL ASPECTS

Mason Graphite has worked long and diligently to establish long lasting relationships with all stakeholders. An Impact and Benefits Agreement has been reached with the Pessamit Innu First Nation. As such, risks associated with social acceptance of the project are deemed minimal.

26. RECOMMENDATIONS

This updated Feasibility Study confirms that, with the continued advancement and de-risking of the Project since the 2015 FS, as well as with revised capital and operating costs, Project economics continue to remain robust. As such, Mason should continue with its project execution plan bringing the project to commercial production by June 2020 and prepare its Operational Readiness plan to insure a successful ramp-up.

26.1 GMG

GMG recommends:

- Density determinations should be continued for both mineralized and non-mineralized rock types.
- To carry all necessary work to maintain the claims in good standing during the development process;
- To map the geology of the deposit during mining operations in order to detect any discrepancy in the deposit geometry thus allowing ongoing adjustment of the mining plan;
- That Mason Graphite maintains continuous information exchange and community meetings on a regular basis with all the stakeholders in the region, especially with the Pessamit Innu First Nation in order to avoid any conflict and consolidate its relations with the parties and a share benefit agreement;
- To aim as being on top of the prescribed environmental requirements;
- To pursue the development work already started on neutralization and valorization of the tailings.

26.2 SOUTEX

Soutex recommends:

- To determine if the fines grade could be improved through further column flotation testing.

26.3 BBA

BBA recommends:

- To complete a detailed analysis to evaluate the merits of contract mining.

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