NI 43-101 Technical Report
Mineral Resource Estimation
Update 2017 – NTS 22B11
Canadian Metals Inc., Langis Property
Saint-Vianney, Québec, Canada

Submitted to: Canadian Metals Inc.
Effective Date: December 20th 2017
Issue Date: February 5th 2018
Prepared by:
GoldMinds Geoservices Inc.

Certificate of Qualified Person

I, Claude Duplessis Eng., do herby certify that:

1. I am a senior engineer and consultant with GoldMinds Geoservices Inc. with an office at 2999 Chemin Ste-Foy, Suite 200, Quebec, Quebec, Canada, G1W 3N3;

2. This technical report is to support the disclosure of mineral ressources for the Langis Property compliant to the National Instrument 43-101 compliant to the National Instrument 43-101;

3. I am a graduate from the University of Quebec in Chicoutimi, Quebec 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 Number 45523). I have worked as an engineer for a total of 29 years since my graduation. My relevant experience for the purpose of the Technical Report is: Over 25 years of consulting in the field of Mineral Resource estimation, orebody modeling, mineral resource auditing and geotechnical engineering.

4. I did the personal inspection of the Langis Property several times since September 28th, 2016 up to 2017, I have supervised the latest drilling campaign of 2017 and my latest site visit was made June 2nd 2017;

5. I am responsible for the whole report of: " NI 43-101 Technical Report, Mineral Resource Estimation Update 2017, Canadian Metals Inc., Langis Property" dated February 5th, 2018;

6. I am an independent "qualified person" within the meaning of National Instrument 43-101 – Standards of Disclosure for Mineral Projects of the Canadian Securities Administrators;

7. I have had prior involvement with the property with the preparation of the revised PEA October 4th 2016 for Canadian Metals that is the subject of this technical report. I certify that there is no circumstance that could interfere with my judgment regarding the preparation of this technical report;

8. I have read NI 43-101 and Form 43-101F1 and have prepared and read the report entitled: "NI 43-101 Technical Report, Mineral Resource Estimation Update 2017, Canadian Metals Inc., Langis Property" dated February 5th, 2018 for Canadian Metals Inc. in compliance with NI 43-101 and Form 43-101F1;

9. That, at the effective date of this technical report, to the best of my knowledge, information, and belief it contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.

Signed at Quebec this February 5th, 2018
'Signed and Sealed'

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Claude Duplessis Eng. Effective Date of report: December 20th, 2017

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1 Summary

This technical report was prepared by GoldMinds Geoservices Inc. (GMG) for Canadian Metals Inc. (CME) to support the diclosure of an updated mineral resource estimation according to the guidelines set under "Form 43-101F1 Technical Report" of National Instrument 43-101 Standards.

This technical report describes the methodology used for the modeling and estimation of the Langis property mineral resource using historical data, recent data and new diamond drillhole data of the 2017 drill campaign. The report also presents a review of the history, geology, sample preparation, QA/QC program and data verification of the Langis sandstone deposit and provides recommendations for future work.

The report is an updated resource estimation following the diamond drilling program of 2017. The property is fully permited for quarrying the mineral resources in accordance to regulations with a BEX (Exclusive Operating Lease-Quarry Lease) and a C of A obtained in 2017 (see CME press release of October 3rd 2017 and December 5th 2017). The company has its Certificate of Authorisation and all permits for the quarrying by open-pit for an average of 84,286 tpy with a maximum of 100,000 tpy targeting 70,000 tonnes per year for Ferrosilicon market.

The current Langis mineral resources of 2017 are estimated by GMG for the purpose of a future Ferro Silicon production plan identified in the 2016 PEA and being revised at the moment of writing this report.

Highlights:

- High-grade silica sandstone deposit at surface open-pit constrained resources:
  - 3,900,000 tonnes Measured @ 99.01 % SiO_2
  - 3,700,000 tonnes Indicated @ 98.92 % SiO_2
  - Total of 7,600,000 tonnes M&I @ 98.96 %SiO_2 at a cut-off grade of 97% SiO_2;
  - 14,000,000 tonnes Inferred @ 98.97 % SiO_2
- Major increase in resource estimates 217% for Langis vs. October 2016 resources.

Quarry permit in place with an average of 84,286 tpy with a maximum of 100,000 tpy with extraction of 674,000 Tonnes in the M&I at 99% SiO2 in the original quarry design based on resource update.

The updated resource calculation, accompanied by a revised interpretation and Block Model for the entire area drilled at Langis to date, is the most significant update since the Company's initial works of 2013. It underscores the continuous nature of the sedimentary rocks at Langis where recent infill drilling and extension to the north-east suggests that there could be even more sandstone with grade of interest in extension and at depth of the actual mineral resource area.

The mineral resources incorporates the new 533m of drilling in 16 holes of 2017.

Note that mineral resources are not mineral reserves and do not have demonstrated economic viability. However, the reported mineral resources are considered by the qualified persons to have reasonable prospects for economic extraction as per CIM 2014 definitions.

1. Original sample length varies from 1 to 1.5m, composites of 3m were used for the estimation of blocks.
2. The density to convert volume to tonnage is now 2.33.
3. The open-pit constrained resources were modeled on 5mE x 5mN x 3mZ block size within a 3D envelope.
4. Search ellipsoid estimation ID3 are: 60x60x1.5m, 120x120x3m, 600x600x6m to enable connection of the structure of the south west holes to the highly drilled sector. Saucers dipping south-East at 3 degrees. 5 composites maximum in estimation.
5. Classification: a minimum of 3 within 75m radius for Measured, 4 holes within 120m radius for Indicated, the remaining Inferred.

6. The database used for this estimate includes drill results obtained from drill programs in 2013, 2015, 2017 and 1984 for geological contacts.
7. The reasonable economic prospect of economic extraction is based on mining cost of 5$/t, processing cost of 10$, recovery of 95% , pit slope walls of 45 degrees and aassumed selling price of Can$44/t with a COG of 97$ SiO_2.
8. GoldMinds is not aware of any known environmental, permitting, legal, title-related, taxation, socio-political, marketing or other relevant issues that could materially affect the mineral resource estimate.

The Langis Val-Brillant sandstones with its Lower White sandstones of which is 15 to 35 metres thick is found to be fairly uniform in term of chemistry and to meet the specifications indicated to the authors for ferrosilicon plant feed. The deposit is dissected by numerous faults, the most important being NNE-SSW or NE-SW oriented thrust faults with a steep dip to the north and uprising of the northwest block relative to the southeast block with apparently not much effect on the quality of the material. Horizontal movement is also present along these faults.

Inclined holes drilled in 2017 have shown the grades not be affected by the displacement faults, however two major faults were highlighted in location and witdth of ferigineous alteration aside the plane. For that reason, these tow faults with their perimeters have been modelled as waste and excluded from the resource model.

As there are vertical displacement caused by some fault movements, followup with 3D mapping of the face will be necessary should a specific strata selection is to be made in the white material. The strata with higher iron content can easily be observed in the face visually and can therefore be set appart if required.

The new drilling has allow the transformation of inferred mineral resources to indicated and measured mineral resources in a positive manner.

In GMG opinion the actual resource appears sufficient for the contemplated project of CME. Most of the recommendations of 2016 has been realized and place the property in good position for the next step. Our suggestions are now:

1) Realize a Prefeasibility with the current Measured and Indicated resources within the crown land for an estimated budget of 350,000$ to 500,000$

2) Negociate to acquire the surface right with inferred resources to the west of the existing quarry whre there is an open face an dit is ready for quarrying technically. Once acquisition or agreement with neighbour is done and should additional resources be required for the project then drill on regular grid of 60 x 60m (250 to 350K$) The author suggest the acquisition at evaluation plus a reasonable % factor associated with a limited royalty per tonne for a fixed amount.

The author recommend to continue develop the project and extent the Langis property.

2 Introduction

2.1 Terms of Reference – Scope of Work

This technical report was prepared by GoldMinds Geoservices (GMG) for Canadian Metals (CME) to support the disclosure of mineral resources for the Langis property ("Property" or "Project") compliant to the National Instrument 43-101. This report describes a review of the history, geology, sample preparation, data verification, and previous works on the deposit and provides recommendations for future works. The report presents also the basis and methodology used for modeling and estimation of the resources of the deposit from historical and new data. The reader must be advised that the content of this technical report is a mineral resource update of the previously filed report on October 2016 by CIMA+. Some sections remain the same and the new information has been added in the respective sections.

This technical report was prepared according to the guidelines set under "Form 43-101F1 Technical Report" of National Instrument 43-101 Standards and Disclosure for Mineral Projects. The original certificate of qualification for the Qualified Persons responsible for this technical report have been supplied to Canadian Metals Inc. as separate documents and can also be found in the first pages of this report.

The scope of work as defined in the mandate of 2017 includes the supervision of the drilling campaign, identification of drilling targets, geological logging and sampling, data integration, design of the updated mineral resource model for silica mineralization.

- Site visit;
- Compilation and verification/validation/integration of the historical and recent data;
- Drilling targets identification;
- Drilling supervision, geological logging and sampling;
- Data integration and modelling of the mineralized zones;
- Pit optimization;

- The preparation of the updated mineral resource estimation and NI 43-101 compliant technical report.

2.2 Source of Information

The information presented in this technical report comes from the previous technical report of 2016 and the new information gathered during the 2017 drilling campaign. Location of historic holes from 1984 and older have been integrated in the database. Drillholes older than 2013 have been integrated in the resource estimation for geological contacts and thicknesses only. The 2017 campaign was aimed to bring higher confidence level in the resource as well as extend the sandstone geological structure.

It was decided that data regarding historical holes from 1984 drilling program carried out by Uniquartz Inc. on the Langis wouldn't be integrated into the recent database. However, the new CME 2017 drilling program covered the drilling area of 2013-2015 and portion of 1984 and much more. Information in this report is also based on critical review of the documents, information and maps provided by the personnel of CME and independent 3rd parties like commercial laboratories, Quebec Ministry of Natural Resources and surveyors.

Personnal inspection of the property by qualified person. Mr. Claude Duplessis Eng., Senior Engineer, GoldMinds Geoservices Inc. who visited the Langis property on several occasions as an independent Qualified Person as defined in the NI 43-101. Mr. Duplessis started working with CME (Canadian Metals Inc.) in 2016 and was the QP for the revised PEA of October 2016. Furthermore, Mr. Duplessis was present at the beginning of the 2017 exploration campaign and visited the site twice during the 2017 campaign. Mr. Duplessis is responsible for all sections of this report.

Claude Duplessis Eng. and Isabelle Hebert Jr. Eng., established the sampling procedure and QA/QC program. Mrs. Hebert performed the logging of drill cores and samples preparation under the direction and direct supervision of Mr. Duplessis. GMG geological employees have supervised the drilling campaign of 2017.

2.3 Units and Currency

All measurements in this report are presented in "International System of Units" (SI) metric units, including metric tonne (tonne or t) or gram (g) for weight, metre (m) or kilometre (km) for distance, hectare (ha) for area, and cubic metre (m^3) for volume. All currency amounts are Canadian Dollar ($) unless otherwise stated. Abbreviations used in this report are listed in Table 1.

Table 1: List of abbreviations

Al_2O_3	Aluminum oxide, Alumina
cm	Centimetre
CME	Canadian Metals Inc.
FA	Fire Assay
Fe_2O_3	Ferric oxide, Iron Ore
FeSi	Ferrosilicon
GMG	GoldMinds Geoservices Inc.
g	Gram
g/t	Gram per metric tonne
Ga	Billion years
ha	Hectare
kg	Kilogram
km	Kilometre
km/h	Kilometre per hour
µm	Micrometre
m	Metre
m^3	Cubic metre
mm	Millimetre
Ma	Million years
NAD	North America Datum
NQ	Drill core size (4.8 cm in diameter)
NSR	Net smelter return
NTS	National Topographic System
ppb	Parts per billion
ppm	Parts per million
SG	Specific Gravity
UTM	Universal Transverse Mercator
t or tonne	Metric tonne
t/m^3	Tonne per cubic metre
%	Percent sign
$	Canadian Dollar
°	Degree
°C	Degree Celsius
SiO_2	Silicon dioxide, Silica

3 Reliance on Other Experts

The authors of this technical report are not qualified to comment on issues related to legal agreements, royalties, permitting, taxation and environmental matters. The authors have relied upon the representations and documentations supplied by Canadian Metals Inc. The authors have reviewed the mining titles, their status, the legal agreements and technical data supplied by Canadian Metals, and public sources of relevant technical information.

This report was prepared by GoldMinds Geoservices Inc. using the validated database of 2016 and also the new database from the drilling campaign of 2017 created, compiled and validated by GMG. Information, conclusions, opinions and estimates contained in this document are based on the information available to GoldMinds Geoservices at the time of writing this report.

This report is to be used by Canadian Metals as a technical report in conformity with the Canadian Securities Regulatory System. Use in whole or of any part of this document by a third party for purposes other than those of the Canadian Provincial Securities Act Legislation will be at the risk of the user.

The author relies on a recognized commercial laboratory (SGS Lakefield) contracted for the preparation and assays results.

4 Property Description and Location

Portions of this section were summarized from previous reports after validation for accuracy.

4.1 Property Description and Ownership

The property is located within NTS map sheet 22B11, in the Matapedia Region of the Gaspé Peninsula of Québec, within the Regional Municipality (MRC) of Matapedia. Geographic center of the property is at approximately latitude 48º37'30" N and longitude 67º20'00" W or 5 387 200 N and 622,800 E in UTM aone 19. The property covers part of Ranges VI and VII Langis Township.

Figure 1: Langis Property location map

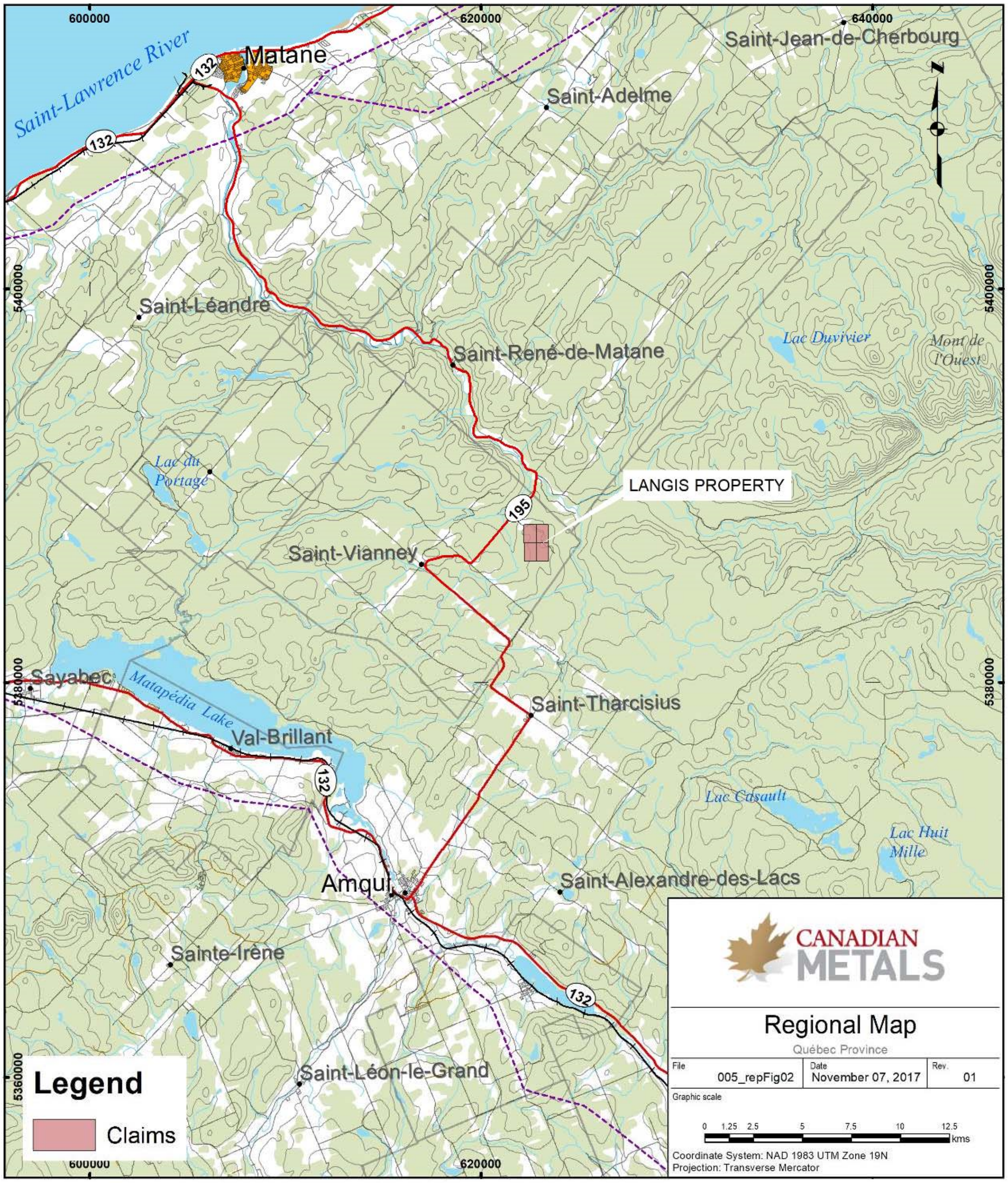


Figure 2: Langis Property surroundings

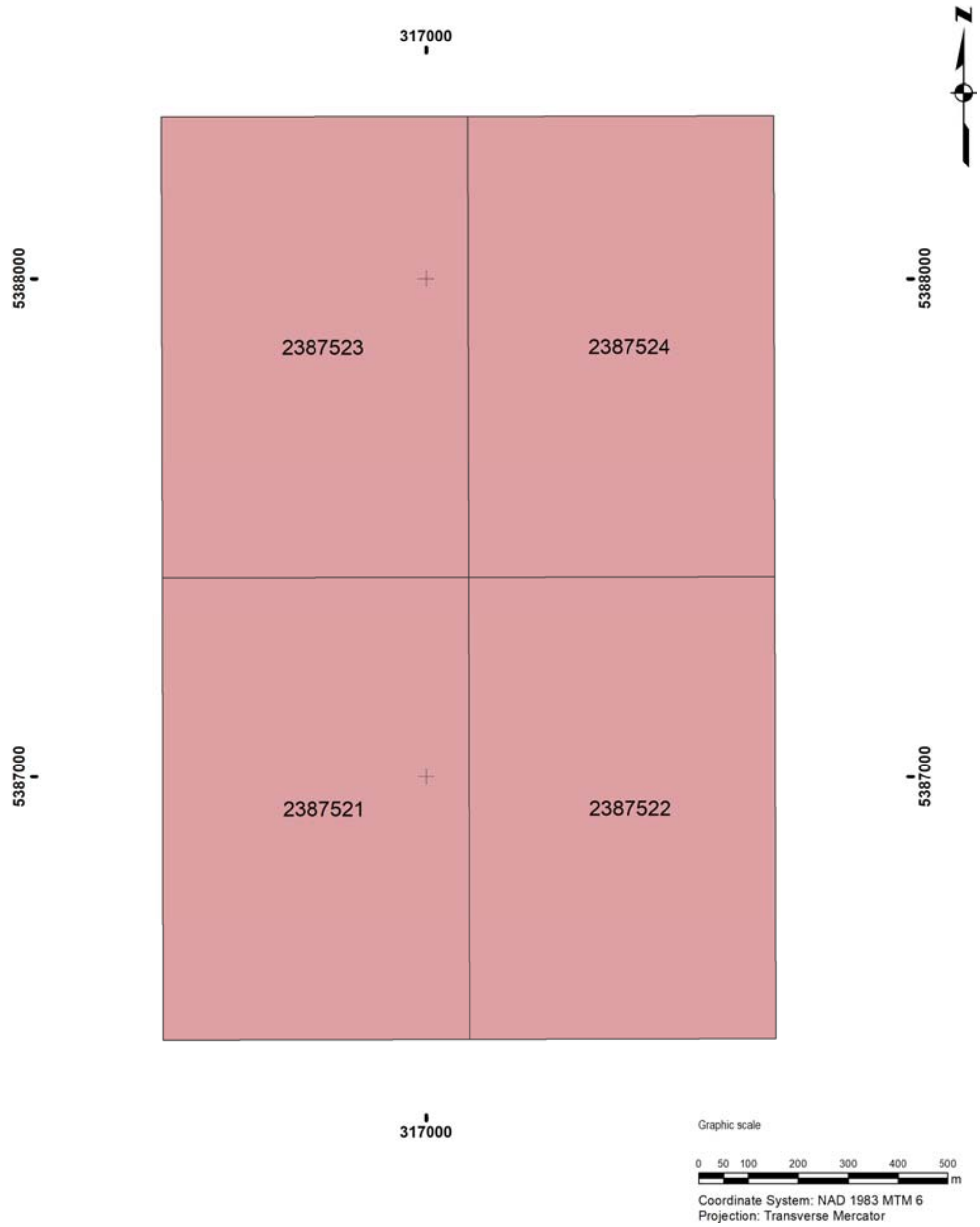


Figure 3: Langis property CDC Claims (designated)

The Langis Property is made up of four regular map designated claims, or MDC, totalling a surface area of 227.62 ha.

Table 2: Claims information of the Langis property

Sheet	Type	Title No.	Area (Ha)	Required work ($)	Required Fee ($)	Expiry date
22B11	CDC	2387521	56.91	780	64.09	2019-07-11
22B11	CDC	2387522	56.91	780	64.09	2019-07-11
22B11	CDC	2385723	56.90	780	64.09	2019-07-11
22B11	CDC	2385724	56.90	780	64.09	2019-07-11

Table 2 was modified after GESTIM (Gestion des titres minier – Gouvernement du Québec) download: November 7, 2017.

4.2 Royalty Obligations

Production from the property is subject to a 3% net smelter return (NSR) according to Canadian Metals Inc. This is a 3% surcharge on smelter in proportion to the Langis silica supply relative to the overall silica consumption. This contractual obligation by Canadian Metals Inc. is payable to 9285-3696 Québec Inc.

4.3 Permits and Environmental Liabilities

To the knowledge of the author, there are no environmental liabilities pertaining to the Langis property, as reported by Canadian Metals Inc.

4.3.1.1 BEX

Canadian Metals has received its operating lease from the Quebec Ministry of Energy and Natural Resources. This lease is one of the two main regulatory approvals required to begin the operation of the Langis project and it was issued by the Quebec authorities after more than two years of official studies, community engagement and public consultation. (Anounced in Press Release of October 3rd 2017). The BEX 1710 covers a portion of the 4 claims of the property not the whole property. The BEX area is 9.34 hectares and is in force up to September 18th 2025.

4.3.1.2 Cerificate of Authorization

Canadian Metals has received the Certificate of Authorization (CA) for the Langis Silica Project from the Québec Ministère du Développement Durable, de l'Environnement et de la lutte contre les changements climatiques ("MDDELCC"). The Certificate of Authorization represents the principal regulatory approval required to start the operation of the Langis quarry, and has been issued by the Québec regulators. (Anounced in Press Release of December 5th 2017) Document number **Nº 401645327** .

4.3.1.3 Other

In order to have access to the whole updated resources identified in this Technical report, the company will have to increase its permits area as well as reach agreement with surface land owners to the west. The exploration activities completed to date by CME are on crown lands.

5 Accessibility, Climate, Local Resources, Infrastructure and Physiography

Portions of this section were summarized from previous reports after validation for accuracy.

5.1 Accessibility

The Langis property is easily road accessible via paved provincial Route 195 and a gravel road in good condition (Range VII road). The Property is 20 km by road (Route 195) from the town of Amqui which is on Route 132 and is the administrative center of the Matapedia Regional County Municipality (RCM). It is also accessible via Route 195 from Route 132 at the town of Matane, a distance of 40 km. The Langis gravel access road runs southeast from Route 195, half a kilometer to the east of the Saint-Vianney village. From this intersection it is 2.5 km to the existing quarry on the Langis Property. Amqui is served by the CNR and has a train station with passenger services. Access to the Property may be hampered by winter snow accumulation; but the property can be accessed year-round if required.

5.2 Topography and Physiography

The Langis Property is located in the gently rolling Appalachian terrain. A set of elongate hills oriented NNE dominates the topography. These are transected along the northeast by the Matane River valley. In the Property area and immediate surroundings elevations range from a high of 279 meters to a low of 90 meters along the river. In the area of interest around the quarry there is a gentle incline from the access road at 240 meters up to just over 250 meters proceeding across the hill toward the northwest. The Property is mostly forest covered. It is a mixed forest of hardwoods such as maple, poplar, and birch mixed with conifers such as white spruce, white pine, and cedar. Locally there are areas of second or third growth dominated by alders and other low bushes.

In 2017 the company has awarded the mandate to WSP to prepare an accurate topographic model to the meter precision in the quarry sector based on existing airborne topography. This new digital terrain model is used in the mineral resource update.

5.3 Climate

The closest climate data collection site is the Mont-Joli airport, which is located 64 km straight west of the Property. Mont-Joli's climate is somewhat modified due to its seashore location, the most obvious difference being stronger winds.

Table 3: Temperature (ºC)

	J	F	M	A	M	J	J	A	S	O	N	D
Average temperature	-12.3	-10.9	-5	1.6	8.5	14.4	17.5	16.2	11.4	5.3	-0.7	-8.3
Record high	13	12.4	20	29.1	31.4	33.3	35.9	33.3	32.2	26.7	21.8	16.7
Date	Jan 19 1996	Feb 27 2000	Mar 30 1962	Apr 21 1987	May 24 1977	Jun 28 1965	Jul 04 1983	Aug 14 1947	Sep 04 1949	Oct 03 1968	Nov 03 1999	Dec 12 1950
Record low	-33.3	-31.1	-29.4	-19.9	-12.2	-1.1	0.8	1.8	-5	-8.4	-18.3	-30.6
Date	Jan 04 1947	Feb 11 1973	Mar 03 1950	Apr 02 1994	May 01 1947	Jun 18 1956	Jul 16 1982	Aug 28 1990	Sep 27 1947	Oct 26 1993	Nov 30 1947	Dec 30 1972

Table 4: Precipitations historical

	J	F	M	A	M	J	J	A	S	O	N	D
Rain (mm)	9	6	15	34	82	73	85	89	78	80	41	14
	Total annual : 606											
Snow (cm)	78	59	58	30	2	0	0	0	0	5	38	80
	Total annual : 350											
Monthly precipitations (mm)	80	59	69	63	84	73	85	89	78	84	78	87
	Total annual : 928											
Rain record (mm)	35	19	64	41	50	41	60	74	77	74	52	36
Date	Jan 05 1992	Feb 22 1974	Mar 11 1955	Apr 22 1992	May 18 1948	Jun 09 1981	Jul 19 1996	Aug 28 1971	Sep 10 1999	Oct 03 1952	Nov 07 1953	Dec 16 1960
Snow record (cm)	34	60	38	35	12	0	0	0	0	18	35	51
Date	Jan 12 1995	Feb 05 1995	Mar 14 1993	Apr 11 1973	May 07 1970	Jun 01 1943	Jul 01 1943	Aug 01 1943	Sep 01 1943	Oct 30 1964	Nov 26 1974	Dec 12 1944
Precipitation record for 1 day (mm)	36	60	64	41	50	41	60	74	77	74	52	51
Date	Jan 05 1992	Feb 05 1995	Mar 11 1955	Apr 22 1992	May 18 1948	Jun 09 1981	Jul 19 1996	Aug 28 1971	Sep 10 1999	Oct 03 1952	Nov 07 1953	Dec 12 1944

Figure 4: Existing site conditions

5.4 Local Resources and Infrastructures

The Langis property is 20 km by paved road from Amqui. CN Rail passes through Amqui connecting it to the ports of Rimouski, Matane and Campbellton, New Brunswick. A rail siding would need to be permitted and built at Amqui in order to ship silica product by rail if required.

The Property is 40 km by paved road from the port of Matane. Matane is presently considered to be the most likely trans-shipment point for the potential silica product. These transportation alternatives will require research in the next phase of work. The road to the existing quarry area from the paved road appears to be in good condition and may be capable of handling heavy truck traffic, although upgrading may be required.

The town of Amqui has a population of approximately 6,300, while the town of Matane has a population of approximately 14,500. There are several smaller villages in the area of the Property such as Saint-Vianney, Saint-Tharcisius, Saint-Rene-de-Matane, Lac-au-Saumon and Val-Brillant. There is an adequate skill set locally available for the operation of a silica quarry.

The nearest source of a continuous substantial flow of fresh water is a stream called Tamagodi River 1.8 km to the east-southeast of the present Langis quarry. This stream flows northeastward into the Matane River. The Matane River flows northward into the Saint Lawrence estuary. The Tamagodi River can potentially be used as a source of raw water for activities such as pit wetting, car and equipment washing, workshops and fuel station washing, and for the processing plant, but this is a topic to be addressed in later project stages and the Environmental Impact Analysis (EIA). Since water from Tamagodi River and the Matane River cannot be considered as potable for human consumption, the water demand for this purpose can be supplied by water trucks from the nearest water treatment company.

High voltage transmission lines cross the Property 300 meters south of the existing quarry. A transformer substation is already installed 400 meters southwest of the existing quarry.

At the southwest corner of the existing quarry, foundations for a loading and crushing facility, installed by an earlier operator, appear to be in good condition (concrete quality assessment is required prior to use these). About 400 meters southwest of the existing quarry there is a 25 meters X 12 meters finished concrete floor that might be suitable for a new building. There is adequate flat area for storage of waste rock from a quarrying operation stand point.

Figure 5: View of former quarry looking South-West

6 History

Portions of this section were summarized from previous reports after validation for accuracy.

6.1 General Geological Survey

Geological mapping and exploration of the Langis area of the Matapedia Region by governmental institutions began with the investigations of Logan in 1844 and his assistant Murray in 1846. A.P. Low visited the area in 1884, followed by Ells in 1885, and by L. W. Bailey and W. McInnes in 1884-85, the latter work resulting in the first geological map of the region (1888). Later, during the period 1928-31 F. J Alcock and G. W. Crickney surveyed the area as part of a larger regional mapping effort. Following up on that work, J. W. Laverdière and L. G. Morin concentrated specifically on the Langis area. A general geological map of the Matapedia-Matane region was completed by E. Aubert de la Rue in 1941 (RG 009). Still later, H. W. McGerrigle completed geological work in the area as part of his compilation of the Geological Map of the Gaspé Peninsula (1953).

Mapping the Region Rimouski-Matapedia, J. Beland touched on the area in 1960 (RP 430). Subsequently detailed geological mapping of the Cuoq-Langis Area of Matane and Matapedia Counties was completed by N. C. Ollerenshaw in 1961 and 1967 (RG121). This is the most comprehensive geological mapping of the Property area. Synthesis of the area into Gaspe regional geology was completed by Slivitsky et al (1991). Stratigraphy was reinterpreted and integrated into the Appalachian geology by Brisebois and Morin (2003).

6.2 Exploration Geological Work

The first known examination and comprehensive report on the sandstones of Langis and Tessier Townships was done by R. A. Marleau (1979) for Placement Appalaches Inc. (GM 36008). This work on the Val-Brillant Sandstone was entitled a "Comparative study in regard to other commercial silica/sands of north-eastern America". At the time, the sandstone was seen as a possible source for high purity sands.

Uniquartz Inc. took over the project from Placement Appalaches Inc. in 1982. Between August and October of 1982 an extensive diamond drilling program was completed on Langis and neighbouring Tessier sandstone occurrences. A total of 4,102.5 feet (1,243.1 meters) was drilled in twenty-five drill holes, eight of which, totalling 1,568 feet (475.1 meters), were completed on the Langis Property. The drilling was supervised by R. A. Marleau of Services Geotechniques Shickshocks Inc (SGS) for Uniquartz Inc. (GM 40477).

Subsequently (1983) extensive physical and geochemical testing was completed on the drill core in order to determine the physical and geochemical characteristics of the sandstones of the Langis and Tessier deposits. This testing comprised over 3,000 feet (914.4 meters) of drill core in sample lengths of 10 feet (3.05 meters). Additionally, two (2) bulk samples were taken, each weighing more than 2.5 tons.

In 1984, historical tonnages published in the environmental study of the project (GM 42387) stood at 25.0 million tons at average grades of 0.11% Fe2O3 and 0.41% Al2O3, including 9.0 million tons at 0.11 Fe2O3 and 0.26 Al2O3 or 5.7 million tons at 0.05 Fe2O3 and 0.183 Al2O3. SiO_2 grade calculated from 750 feet (228.6 meters) of core is reported to be 99.25% but no details are given about this result. This was classified as an Indicated Reserve. This resource is historic in nature and does not meet the requirements for Resource categorization as set out in NI 43-101.

In 1985, Uniquartz obtained ~~the~~ Mining Lease no 741. In December 1985 and May 1986, a total of some 22,000 tons of lump silica was sent to Norway and Iceland for testing into existing ferrosilicon facilities. The results were positive and 150,000 tons per year supply contract was signed. In 1988, start-up of the project was estimated at CAD 8.4 million. There are no records about difficulties encountered but the project never went into production.

In 1991, the site was visited by a geologist of the Québec ministry of Natural Resources during a quarries inventory. No activities were noted at the time but the owner of the site was identified as Aristide Brousseau & Fils. Apparently, material was extracted intermittently after 1991 for construction purposes. Several elongated piles of crushed waste rock remain to the west of the quarry. From the actual size of the quarry, it is estimated that around 400,000 tons have been extracted from the site over the years.

Figure 6: Aerial view of the site looking North (GMG)

6.3 Historical Resources Not NI 43-101 compliant

Historical resources were calculated for the first time at the end of 1982, following a drilling program carried out by Uniquartz Inc. on the Langis Property and its northeastern extension in Tessier as both were part of the same property at the time. From early 1983, historical resources on the Langis portion of the Property were established (GM 42388) by Uniquartz at:

Millions short tons	% SiO_2	% Fe_2O3	% Al_2O_3	
25.5	Not specified	0.12	0.41	including
9.0	Not specified	0.11	0.26	including
5.7	Not specified	0.05	0.183	

In the public documents made available by Uniquartz, the only reference to the SiO2% is from GM 42387 where an average grade of 99.25% has been calculated from 750 feet (228.6 meters) of core. Authors have not done sufficient work to classify the historical estimates as current resources and the owner of the property is not treating the historical estimate as current mineral resources. The historical resources were calculated with the following parameters (from GM 42387 pp 20-26): Tonnages (short tons) were estimated using interpreted vertical cross-sections. The silica was interpreted on one section from the drill results giving a surface in square feet. These surfaces were divided by the density which has been established at 13.3 cubic feet per short ton (2.46 g/cm3); there is no record of how the density was calculated. This generated a tonnage per horizontal foot. Finally, the horizontal tonnage was multiplied by a width of 900 feet (274.3 meters) to produce the final tonnages for the deposit.

The notion of tonnage per vertical or horizontal foot is no longer in use to calculate resources. Moreover, in this particular case the limits of the deposit in a plane view from an elongate polygon that thins out gradually at both ends. The 900 feet (274.3 meters) width appears to correspond to the widest part of the deposit.

For all the categories of sandstone estimated and reported above, the thickness of the sandstone includes the overburden. Some tonnage must therefore be removed to account for this. For the

25.5Mt categories, 8% of the tonnage was removed from the estimate to take into consideration the worst parts of the sandstone, namely those showing a deep red hematization, as their distinctive colour would permit this material to be discarded in a selective mining approach. Comparing the database, the Uniquartz resources calculation looks to be overestimated.

6.4 Past Production

Some 22,000 short tons are known to have been extracted in 1985-86 and sent to Europe to test the conformity of the material in ferrosilicon processes. Additional tonnages estimated at some 400,000 short tons were extracted from the site to produce aggregates for construction and concrete.

6.5 Historical Drillings

Historical drilling has been described in Section 6.2. The Uniquartz drilling program of 1982 was located on the actual Langis Property and its extension to the east. Table 5 presents the complete data about the 1982 program. Only the holes highlighted in green are located on the current Langis Property.

Table 5: Historical drilling

Hole	UTM zone 19			MTM zone 6		Hole data		
	North	East		North	East	Direction	Dip	Length (ft)
L-1	5 387 235	623 094		5 387 519	317 367	0	-80	410
L-2	5 387 411	623 078		5 387 695	317 355		-90	210
L-3	5 387 580	623 476		5 387 856	317 756		-90	178
L-4	5 387 801	624 143		5 388 064	318 427		-90	104
L-5	5 387 080	622 847		5 387 369	317 118		-90	118
L-6	5 387 024	622 514		5 387 319	316 783		-90	148
L-7	5 387 242	622 804		5 387 531	317 077		-90	151
L-8	5 387 628	623 200		5 387 910	317 481		-90	190
L-9	5 387 930	624 274		5 388 190	318 561		-90	188
L-10	5 388 018	624 396		5 388 276	318 684		-90	211,5
L-11	5 388 125	624 530		5 388 380	318 821		-90	230
L-12	5 388 239	624 651		5 388 492	318 944		-90	251
L-13	5 388 231	624 519		5 388 487	318 812	0	-75	127
L-14	5 388 142	624 415		5 388 400	318 706		-90	82
L-15	5 388 057	624 289		5 388 317	318 578	0	-75	199
L-16	5 387 348	623 275		5 387 628	317 550		-90	120
L-17	5 387 498	623 264		5 387 778	317 542		-90	230
L-18 A	5 387 454	623 445		5 387 731	317 722	0	-75	112
L-18 B	5 387 468	623 452		5 387 745	317 730		nd	24
L-18 C	5 387 478	623 457		5 387 755	317 735		nd	52
L-19	5 387 723	622 425		5 388 000	317 708		-90	233
L-20	5 387 803	623 657		5 388 076	317 941		-90	229
L-21	5 387 842	623 881		5 388 110	318 166		-90	87
L-22 A	5 388 416	624 881		5 388 664	319 177	293	-44	50
L-22 B	5 388 416	624 881		5 388 664	319 177	293	-44	253
Station A	5 387 247	622 946		5 387 534	317 219			

Holes located on the actual Langis Property

Source: Uniquartz

7 Geological Setting and Mineralization

Portions of this section were summarized from previous reports after validation for accuracy.

7.1 Regional Geology

The Matapedia Region forms part of the Appalachian Geological Province, which stretches from Alabama, in the southeast USA, to Newfoundland. The portion of this Province that hosts the rocks pertinent to this Report is known as the Connecticut Valley – Gaspe Synclinorium (CVGS). These rocks were folded, faulted, intruded and weakly metamorphosed during what is generally known as the Appalachian Orogeny. In Matapedia, the Appalachian Orogeny is comprised of three main episodes of deformation:

- The Taconic Orogeny in late Ordovician time, when a volcanic island arc collided with the pre-existing Laurentia landmass as the Iapetus Ocean closed;
- The Acadian Orogeny of mid-Devonian time, whence the micro-continents Avalonia and Baltica abutted the accreted margins of the Laurentian continental mass;
- The Alleghenian Orogeny in the Permo-Carboniferous, when the continent of Gondwana accreted onto and joined with Laurentia to form Pangea.

The latter phase is of minor importance in Matapedia and Gaspe. However, a fourth phase, known as the Salinian (Silurian in age) is interpreted to have been a significant tectonic event in this region.

The CVGS rocks of Matapedia-Gaspe are of Ordovician-Silurian-Devonian ages (see Figure 7). They are comprised of wackes and conglomerates of the Cabano Group (Ordovician to Silurian in age), overlain by the Siluro-Devonian rocks of the Chaleurs Group, which are overlain concordantly to locally discordantly by Devonian limestones and sandstones of the Gaspe Group.

The north contact of the CVGS is a discordant, tectonic contact with Cambro-Ordovician rocks to the north. Dominant structural features are kilometric, northeast-trending fold axes and major thrust faults.

The stratigraphy of the Chaleurs Group is, from bottom to top, the green shales of the Awantjish Formation, the white to pink quartz arenites of the Val-Brillant Formation, the limestones of the Sayabec Formation, and the mudstones and siltstones of the Saint-Leon Formation.

The Val-Brillant Formation forms two distinct north and south arms. The north arm, in which the Langis Property is located, extends 97 km from Mont Comi, just south of Mont-Joli, to Lac Matane. It is affected by thrust faulting and lateral faulting. The south arm is exposed along a 40 km strike length from Esprit-Saint and Grand Lac Neigette. NE-SW oriented synclines and anticlines characterize this area.

The quartz arenites of the Val-Brillant Formation are highly siliceous. It appears as thick (up to several meters) white layers, and locally, pink to purple layers which result from hematite discoloration. The grains are medium-fine, well-rounded, and welded together with silica cement (GM 57849). Total thickness is usually 40 to 60 meters. These highly siliceous sandstones constitute the exploration target at the Langis Project.

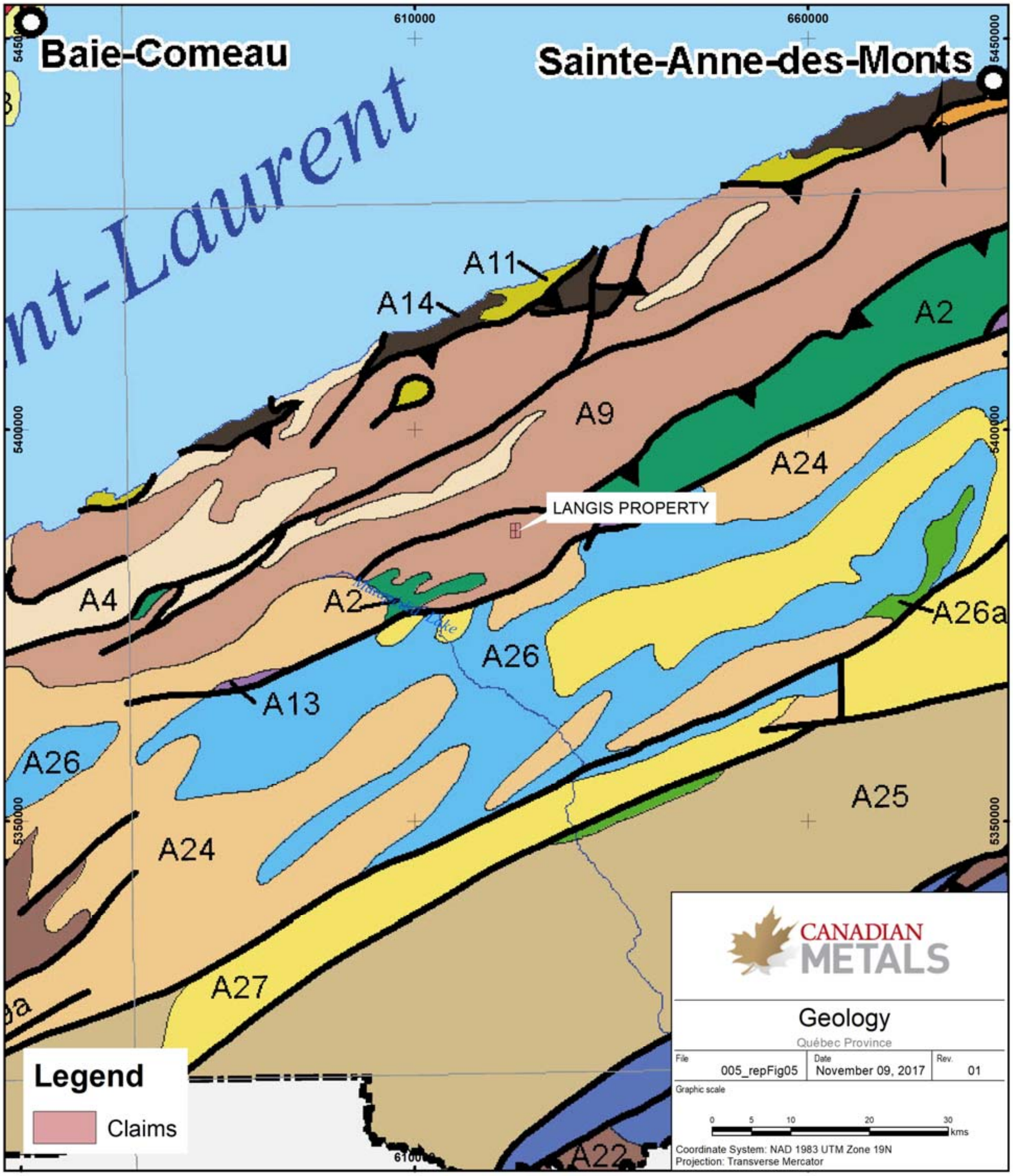


Figure 7: Regional geology map showing the position of the Property

7.2 Local geology

In the area of the Property, the Siluro-Devonian Val-Brillant sandstones form a prominent remnant of a formerly more extensive sandstones cover. They average approximately 60 meters in thickness and sit conformably upon green shales of the Awantjish Formation, themselves overlying unconformably dolomitic claystones and calcilutites of the Ordovician Romieu Formation.

The Val-Brillant sandstone is conformably overlain by a 10 meters thick layer of arenaceous dolomites which transition into true dolomites at the top. These formations are interpreted to form the core of a shallow syncline that extends southeast to Lac Matapedia and is truncated to the northeast by the Shickshock Fault at the Matane River (ET 2003-01). The Val-Brillant sandstones are of multi-cyclic origins, having been derived from older sandstones situated to the north. They formed in a marine, well-oxygenated environment along an active but stable Silurian seashore.

Drilling by Uniquartz in 1982 and by Canadian Metals Inc. in 2013-15 defined a local stratigraphy of the Val-Brillant sandstones Formation in the Langis-Tessier area. Upper, Intermediate and Lower sandstones are the most attractive units for industrial uses as they are all white to pale grey highly siliceous horizons with obviously low impurities. Descriptions from various Uniquartz and Canadian Metals drill logs and observations by Forbes, É. and Charlton, J. are as follows:

Upper Sandstone: is pale greyish-white with local pink patches. It is fine grained and forms thin beds (maximum 0.6 meter) that are characterized by laminae and cross-bedding. The grey colour signifies higher clay content than that of the Intermediate Sandstone. It is 10 – 15 meters thick, absent in the Langis area.

Intermediate Sandstone: is medium-grained, with well-rounded to sub-rounded grains and has a white sugary appearance. Finer grained layers are interstratified. Individual beds are up to 2 meters in thickness. Sporadic pink colouration is not necessarily indicative of an abundance of iron, but is normally caused by occurrences of particles of hematite. Bedding planes and fractures are commonly marked by paper-thin layers of hematite. It is a 12 – 20 meters thick unit that is locally present in the upper parts of the Langis area.

Lower White Sandstone: is generally fine-grained and exhibits less pink discolouration than the Intermediate Sandstone. It is comprised of sandstone beds from a few centimetres up to 0.5 meters in thickness. It is more compacted than the Upper and Intermediate Sandstones. In the Langis area, the Lower Sandstone is up generally around 20-22 meters but it is reported that locally, it may reach 60 meters in thickness where it abuts the east-west fault along the southern sandstone limit.

7.3 Geology of the Deposit

The Langis deposit is exposed in the contiguous Uniquartz quarry to the southwest. The quarry exposes a 20 to 30 meters thickness of Val-Brillant sandstones on its northeast wall forming a gently (-5° to -10°) south-dipping monocline. Sub-vertical faults cutting the sandstone strata oriented N-S and NE-SW, the latter exhibiting near-horizontal slickensides (strike-slip faults) were observed by Forbes, É. and Charlton, J. in 2013.

Drilling in 2013, 2015 and 2017 by Canadian Metal enabled the construction of a geological model for the Langis deposits (Figure 8 2013 & 2015 holes).

Holes 13-01, 13-07, 15-12, 15-18 and 15-21 reached the underlying Awantjish shales which constitute a good marker horizon.

From the Awantjish shales, the first Val-Brillant units are composed of impure, gray sandstones that grade into reddish sandstones. These impure units usually form a transition zone some 5-10 meters thick. Above that transition zone begin the Lower White Sandstones, mostly white, with minor amount of pink to red horizons.

Bedding observed in all holes indicate horizontal to gently dipping (3-10^0) units to the south. However, along any northwest-southeast section, one can see that the location or elevation of the Awantjish Formation shales is not coherent with a regular 5-100 dip to the south. Irregularities observed in the trace of this marker horizon from the northwest to the southeast are explained by vertical displacement along thrust faults. These interpreted structural zones have been traced from one section to another and appear to be consistent. They are either single faults or closely spaced faults systems striking NNE and dipping steeply to the south. Movement along these fault zones is west block up relative to east block.

The thickness of the Lower White Sandstone gradually increases from around 15 meters to the northwest to 30-35 meters to the southeast, a combination of the topography with the fact that dip of the unit is 5-10° to the south. In the southeast part of the deposit, the Lower White Sandstone becomes overlain by two younger sandstone units. First, the Red Bedded Sandstone forming a horizon between the Lower and Intermediate sandstones start to outcrop. Farther southeast, after gradually reaching some 15 meters thick, the Red Bedded Sandstone itself becomes overlain by the Intermediate Sandstone. Currrently, the Langis deposit is considered to be the part of the Lower Sandstone, which either outcrops or is covered by a relatively thin, removable Red Bedded Sandstone cover that is considered as waste material.

7.4 Mineralization

Mineralization at Langis is defined as sandstones that meet the chemical and physical specifications to produce lump silica suitable for a ferrosilicon plant or smelter grade silicon. Physical tests done earlier by Uniquartz and more recently by Canadian Metals have confirmed that the Langis sandstones have the characteristics of an acceptable feed for a ferrosilicon plant.

In 2016, preliminary specifications were given by Viridis.IQ for the study, a consultant specialized in ferrosilicon and silicon projects. The term "mineralization" at Langis will therefore be applicable to sandstone material whose chemical characteristics are within the specifications in the following table.

Table 6: Premilinary Raw Material Specification

Preliminary Raw Material Specification

Quartz for FeSi

Parameter	Units	Typical	Range
Chemical Analysis (Dry Basis)			
SiO_2	wt%	98.4	> 97.7
Al_2O_3	wt%	0.45	< 1.00
Fe_2O_3	wt%	0.13	< 0.20
CaO	wt%	0.03	< 0.25
MgO	wt%	0.11	< 0.25
TiO_2	wt%	0.06	< 0.10
K_2O	wt%	0.10	< 0.40
Na_2O	wt%	< 0.01	< 0.20
MnO	wt%	< 0.01	< 0.02
P	wt%	< 0.01	< 0.02
LOI	wt%		< 0.25
Moisture	wt%	1	< 3
Physical Properties			
Specific Density	mt/m^3	2.6	
Bulk Density	mt/m^3		1.5 - 1.7
Angle of Repose	°		30 - 40
Particle Size Distribution			
Overall	mm	25 - 100 (> 98%)	
-25	%	Not determined	
+100	%	Not determined	
Stability			
Basic Mechanical	Must pass one of the commonly used test methods		
Thermal Shock	Must pass one of the commonly used test methods		

Source: Viridis.iQ GmbH estimates

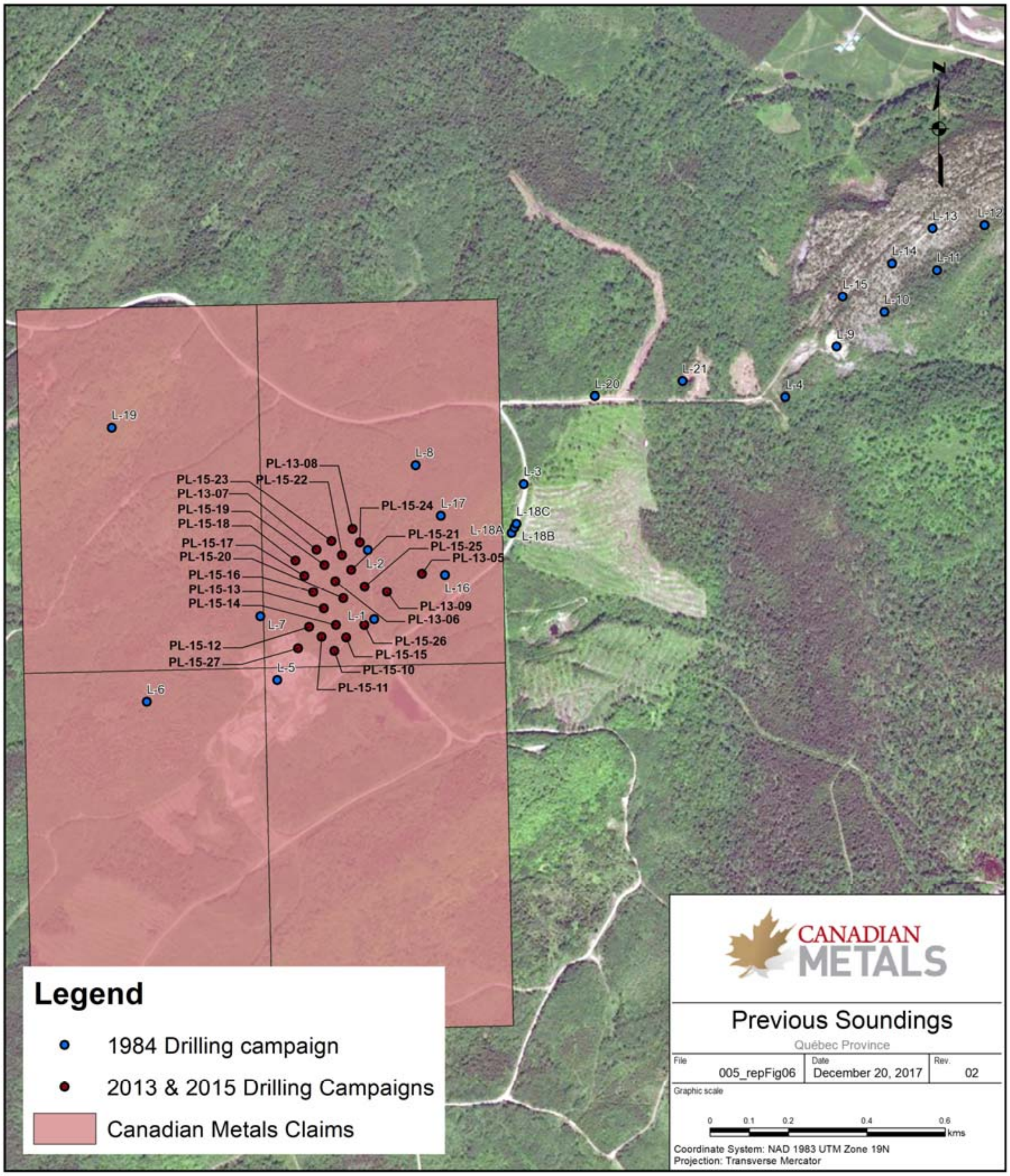


Figure 8: Location of 1984, 2013 and 2015 Drilling campaigns

The sandstone present iron spots in irregular shape and size with variable distribution, 3 of the typical facies are shown in the picture below with a high purity piece (see following picture). Even if the rock looks to have a high iron content, these iron oxide spots do not reprepresent a high weight in the sample.

The author believes these iron oxydes spots and stains are associated with the formation of the sandstone and represent agglomeration of iron and replacement of organic matters and also oxidation of the original iron rich minerals within the sandstone.

Figure 9: Typical sandstone mineraliztion of Langis

8 Deposit Types

Portions of this section were summarized from previous reports after validation for accuracy.

8.1 General

Siliceous sediments form on the shallow continental shelf and in inland seas or large lacustrine basins with a relatively low energy environment and a steady supply of well-sorted silica sand.

The source area has to be rich in siliceous sedimentary, igneous or metamorphic rocks to provide a steady supply of well-sorted and weathered clastic material to estuaries along the shoreline. Weathering conditions before and during transportation should be able to separate resistant silica from less stable feldspars, hornblende and pyroxenes, and transportation will separate the clay minerals and mica with heavy minerals from the silica particles. Silica-rich sediments typically have uniform grain size, may be well lithified or friable, and can be layered, cross bedded or massive beds. After deposition, the accumulated sediment will be cemented by compaction, a minor clay component, or introduced secondary silica. The siliceous sediments occur as meters thick beds that can extend more than tens of kilometers.

Each use has its very specific requirement for the particle size and shape, physical strength and permissible amounts of different impurities. For lump silica the concerns are purity, sizing of crushed rock (fracture and bedding density), thermal shock resistance and contamination by Ca, Fe, Mn, Ti, Al, Na and K minerals or graphite. Generally, worlwide, silica contents have to be 98% with significant impurities removable by processing.

8.2 Québec Deposits

In the province of Québec, silica deposits can be grouped in three categories; the sandstones, the quartzites and quartz veins. The Langis deposit belongs to the first category.

Four different sandstones formations have been recognized in Québec to meet the requirements for different uses in the silica industry.

8.2.1 The Cairnside Formation

The Cairnside Formation is a sandstone unit located in the upper part of the Cambrian Potsdam Group at the base of the St-Lawrence Lowlands formations. It outcrops both on the south and north shore of Montreal. It is composed of medium-sized quartz grains accumulated as massive beds totalling up to 30 meters thick. This pure quartzitic sandstone unit has been the source material particularly for the glass industry. A typical analysis of this formation gives 98.5-99.2% SiO_2, 0.30% Al_2O_3 and 0.10 Fe_2O_3 (ET 99-04).

Because of its proximity to the Montreal industry and markets, many quarries have been opened within the Cairnside Formation; Unimin and St-Scholastique on the north shore; Chromasco (ferrosilicon), Schink, Arcoite, E. Montpetit, Radius, Ste-Chlothilde and En-Ola on the south shore.

8.2.2 The Guigue Formation

The Guigue Formation is Ordovician sandstone located in western Québec and Ontario in the lake Temiscamingue area where it outcrops along the shore. The formation lies unconformably on the Precambrian rocks. It is composed of a 30 meters thick sequence that includes a conglomeratic unit at the base, fairly pure sandstone in the middle and calcitic-to- dolomitic sandstone at the top.

The median sandstone is a poorly consolidated unit composed of fine to large and rounded quartz grains with an argillaceous to dolomitic cement.

Two quarries have extracted material; the St-Bruno-de-Guigue quarry with a sandstone analysis of 97.0% SiO_2, 1.75% Al_2O_3 and 0.18 Fe_2O_3, and used in filtration, sandblasting and horticulture; and the Joannes quarry, with material analysed at 96.1% SiO_2, 2.67% Al_2O_3 and 0.34 Fe_2O_3, and used as flux for the Noranda foundry during the seventies.

8.2.3 The Kamourasaka Formation

The Kamouraska Formation is an early Ordovician formation of the Trois-Pistoles Group that can be traced from Montmagny (east of Québec City) up to the Gaspe Peninsula. This pale grey quartzitic sandstone forms northeast-trending ridges that are well exposed, particularly east of Rimouski.

The sandstone is composed of mostly fine rounded quartz grains and silica cement. Layers are some five meters thick and the unit can reach a total thickness of some 60 meters. Sampling by Tifane (1975) indicated that the average composition of the formation was 95.5-98.5% SiO_2, 0.46-1.44% Al_2O_3 and 0.56 Fe_2O_3.

Quarries are known to have been developed in the Kamouraska Formation to extract material for aggregates and rock fill. The most important was the Grande-Vallee quarry in the Murdochville area, where the sandstone was used as flux for the Noranda smelter.

8.2.4 The Val-Brillant Formation

The Val-Brillant Formation has been described in Section 7 since it hosts the Langis Property. Over the years, exploration on the Val-Brillant Formation led to the discovery of many favorable areas for pure sandstones. These are referred as the Tessier, Colline de la Tortue, St-Tharcisius, Awantjish and Fleuriau deposits. No production is reported from these sites.

From the above, we can see that several of the province's deposits have the characteristics needed for uses in the silica industry. Substantial production has resulted when the quarry is directly linked to a major industrial project (e.g., flux agent for a foundry). The absence of a major industrial project in the Rimouski area is the main reason that the Val-Brillant deposits have never been mined.

9 Exploration

In the last decade, Canadian Metals Inc. has completed prospecting, mapping and sampling along with three drilling programs on the Langis Property. The first drilling program in 2013 (see Section 10) was a reconnaissance program designed to validate the Uniquartz global interpretation of the deposit and to collect material for metallurgical testing.

Nine whole core samples from the drill holes and three block samples collected from the wall of the quarry were provided for the thermal shock testing. The three block samples for thermal shock tests were located some 180 meters south-southwest from diamond drill hole PL-13-01. More details on the sampling and test results are available in the 2013 report for the Langis property. The conclusions of these tests are presented in Section 24 of the PEA 2016 report and prove the material at Langis to have low decrepitation under thermal shock.

The second drilling program took place in June 2015. The objective of the 2015 drilling program was to increase the level of confidence in the deposit with infill holes in order to estimate the resources. A total of 18 holes totaling 701.6 meters were drilled.

Finally, a third drilling program took place in June and July 2017. During this recent drilling campaign, 16 holes were drilled for a total of 526.64 meters.

10 Drilling

Portions of this section were summarized from previous reports after validation for accuracy and the 2017 drilling information was added afterward.

Since the historical drilling completed in 1982 by Uniquartz and described in Section 6 (History), three additional drilling programs were carried out by Canadian Metals Inc. in 2013, 2015 and 2017. In the figure 11 are presented the image of the refereed drill holes.

10.1 The 2013 Drilling Program

The first drilling program by Canadian Metals Inc. conducted on the Property had one principal objective: to obtain a representative bulk sample of quartzitic sandstone for petrological and metallurgical characterization. Les Forages Dibar Inc./ André Roy from Ste-Anne-des-Monts, Québec, was commissioned to drill nine NQ diamond drill holes. This program was performed from September 16 to 20, 2013. Drilling sites were first located with a handheld GPS with ± 5m accuracy and were more precisely surveyed at the end of the program. A total of nine diamond drill holes were drilled for 456 meters. The drill pattern consisted of three sections with three holes per section. The lines and holes were spaced at approximately 100 me. The area tested consisted of a 200 x 200 m^2, or four hectares.

All holes were drilled vertically to allow intersection of the geological units at a high angle and thus obtaining sample length very close or equal to true thickness. The 2013 holes locations are shown in Figure 11. The program successfully recovered core from the entire local stratigraphy. As discussed in Section 7.2, the local geology was found to be constituted, from bottom to top, by argillite/mudstone, followed by a 15-meter thick transitional zone comprising impure gray and pink to red sandstones. This is overlain by the pure white Lower Sandstones which ranges from 15 to 35 meters thick. This formation outcrops in some parts of the drilling area, for example around holes 13-06, 07 and 08. East of that area, a pinkish to red sandstone some 15 meters thick and the first layers of the Intermediate sandstone overlay the Lower Sandstone. Only parts of the core were analyzed. Table 7 and Table 8 summarize the 2013 drilling program and the core sections analyzed.

Table 7: Summary of the 2013 drilling program

Hole number	UTM North (m)	UTM East (m)	Elevation (m)	Length (m)	Overburden (m)
PL-13-01	5.387.246.08	623.045.1	251.78	75.00	8.30
PL-13-02	5,387,384.72	623,083.7	244.29	56.08	3.26
PL-13-03	5,387,523.75	623,120.3	237.24	45.00	3.00
PL-13-04	5,387,434.02	623,160.3	238.58	53.65	3.90
PL-13-05	5,387,350.95	623,216.2	249.16	57.00	1.94
PL-13-06	5,387,331.62	622,994.8	251.50	39.00	1.84
PL-13-07	5,387,412.18	622,947.0	249.97	41.60	1.40
PL-13-08	5,387,464.86	623,039.2	243.58	30.00	2.23
PL-13-09	5,387,304.94	623,127.1	247.29	59.64	1.50
9 holes				456.97	

Source: Consultations Géo-Logic

Table 8: Core sections analyzed in the 2013 drilling program

Hole number	From (m)	To (m)	Length (m)	SiO_2 (%)	Fe_2O_3 (%)	Al_2O_3 (%)
PL-13-01	12.10	41.05	28.95	98.69	0.15	0.42
incl.	14.30	32.00	17.70	99.05	0.12	0.28
Incl.	14.30	23.00	8.70	99.22	0.11	0.23
PL-13-02	10.80	51.00	40.20	98.72	0.13	0.48
incl.	10.80	33.00	22.20	99.15	0.08	0.29
PL-13-05	2.00	9.00	7.00	99.10	0.07	0.37
	32.00	53.30	21.30	99.09	0.08	0.32
incl.	32.00	44.00	12.00	99.33	0.06	0.24

Source:Consultations Géo-Logic

10.2 The 2015 Drilling Program

The second drilling program was completed between June 1 and 22, 2015. The drilling contract was again awarded to Forage Dibar-André Roy. This time the objective was to reduce the drilling pattern and to concentrate on a promising part of the deposit in order to estimate the resources for at least a part of the drilling area. NQ vertical holes were drilled on an approximately 50-meters grid. A total of 18 holes totaling 701.6 meters were drilled, adding to the nine previous 2013 nine holes (see following Table 9). Holes were located with a handheld GPS with ± 5 m accuracy. The total area investigated is 350 meters by 400 meters and covers approximately 8.5 ha.

Table 9: Summary of the 2015 drilling program

Hole number	UTM North (m)	UTM East (m)	Elevation (m)	Length (m)	Overburden (m)
PL-15-10	5,387,154	622,993	256	37.5	0.40
PL-15-11	5,387,190	622,960	258	41.5	1.30
PL-15-12	5.387.215	622,928	258	41.5	1.20
PL-15-13	5,387,262	622,966	258	38.5	1.50
PL-15-14	5,387,220	622,997	257	39.0	1.50
PL-15-15	5,387,188	623,023	254	42.0	0.75
PL-15-16	5,387,304	622,939	256	30.0	1.50
PL-15-17	5,387,345	622,916	252	24.0	2.25
PL-15-18	5,387,384	622,893	251	27.0	2.05
PL-15-19	5,387,373	622,967	251	33.0	1.20
PL-15-20	5,387,288	623,015	254	42.0	1.50
PL-15-21	5,387,361	623,036	248	51.0	1.40
PL-15-22	5,387,398	623,012	249	42.0	1.80
PL-15-23	5,387,434	622,985	248	26.0	1.80
PL-15-24	5,387,431	623,058	244	44.6	2.70
PL-15-25	5,387,318	623,070	247	54.0	2.30
PL-15-26	5,387,220	623,069	250	49.0	1.55
PL-15-27	5,387,161	622,900	260	39.0	1.15
18 holes				701.6	

Source Consultations Géo-Logic

10.3 The 2017 Drilling Program

The 2017 drilling program was completed by GMG between June and July 30th, 2017. The drilling was executed by Forage André Roy inc. and supervised by GMG qualified personal.

This time the program had 3 objectives

a) Convert the inferred to measured and indicated to enable preparation of a PFS

b) Extend the resources of the deposit and increase knowledge of deposit geology.

c) One specific aspect was the determination of the extent of iron migration along modelled faults and measure the impregnation extent along them.

The objectives were met with increase in confidence and grade continuity, the model was extended and impregnation along along these faults is very limited as proven by drill holes drilled at 45 degrees across.

Hole location was surveyed initially with hand held GPS and holes were surveyed with a total station afterward.

NQ vertical and inclined holes were drilled on an irregular pattern. A total of 16 holes totaling 526.64 meters were drilled, adding to the previous 27 holes. Following the drilling campaign of June and July, holes were located with a total station in August of 2017.

The following map present drill hole collar location.

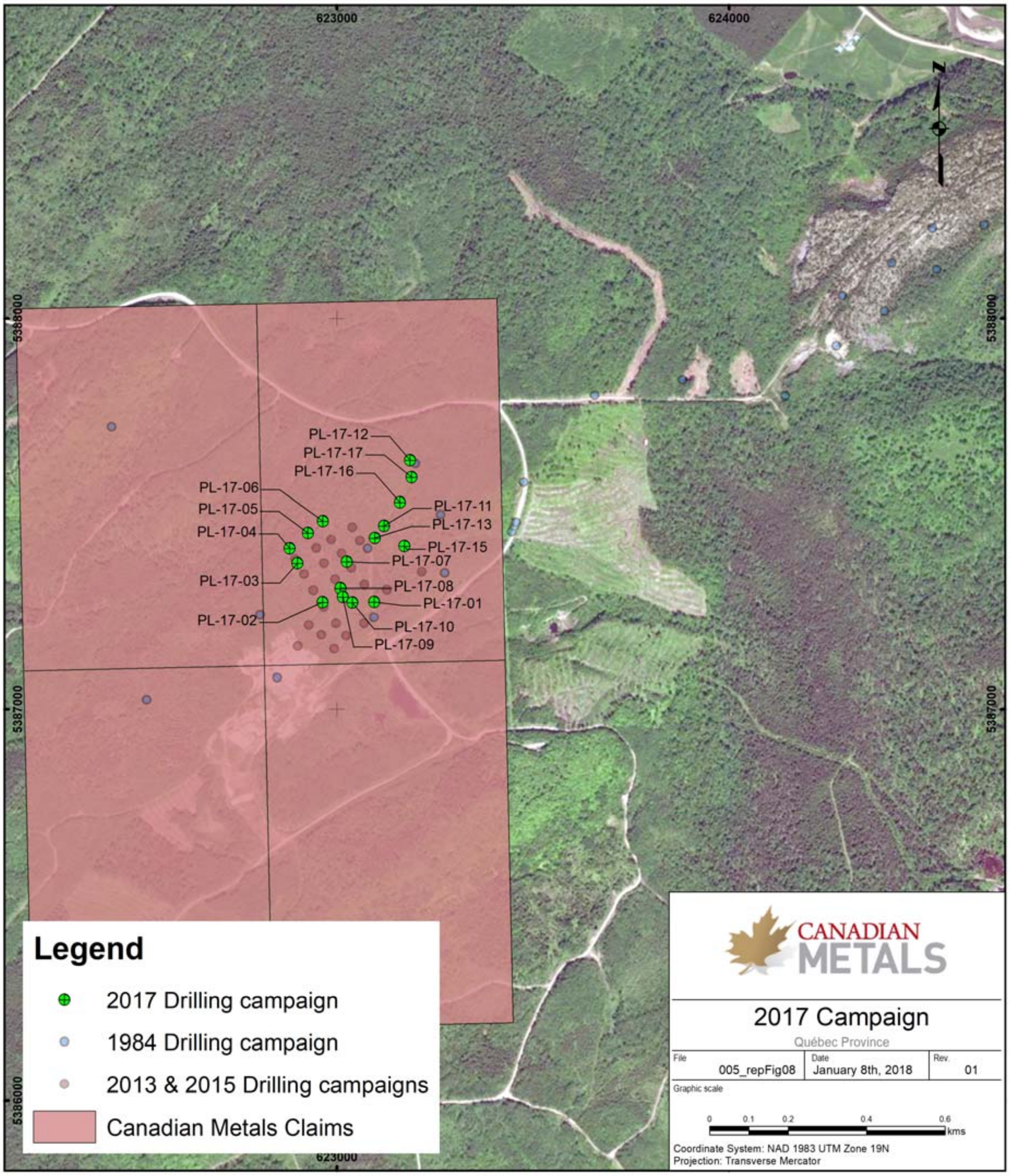


Figure 10: Drill hole position 2017

Table 10: Summary of the 2017 program

Name	UTM North (m)	UTM East (m)	Elevation (m)	Azimuth (°)	Dip (°)	Length (m)
PL-17-01	623090.7	5387270	247.45	313.88	-81.13	45
PL-17-02	622961	5387272	257.63	130.48	-59.97	24.53
PL-17-03	622892.2	5387375	251.05	103.33	-65.79	24
PL-17-04	622877.9	5387410	249.93	-	-90	30
PL-17-05	622925.2	5387444	248.4	-	-90	28.5
PL-17-06	622967	5387478	244.32	-	-90	30
PL-17-07	623024.5	5387374	247.84	118.16	-53.99	20
PL-17-08	623012.7	5387292	253.58	-	-90	23.2
PL-17-09	623013.3	5387288	253.81	325.09	-57.23	24
PL-17-10	623033	5387276	252.43	-	-90	33
PL-17-11	623126.4	5387472	238.29	129.28	-43.86	42
PL-17-12	623190.7	5387641	225.81	-	-90	30
PL-17-13	623093.7	5387434	241.5	-	-90	45
PL-17-15	623171.4	5387415	239.04	-	-90	38.11
PL-17-16	623163.2	5387528	232.79	-	-90	45.03
PL-17-17	623190	5387593		290	-45	44.27
16 holes						526.64

11 Sample Preparation, Analyses and Security

11.1 Sample Preparation, Analysis and Security

The sampling approach was discussed with Claude Duplessis, Eng., during the as part of the evolution of the drilling program. All core logging was performed by Isabelle Hébert, Jr. Eng., at the temporary core shack located at the office (2999, Ste-Foy road, Québec City) following procedures further described herein.

At reception, all core boxes were stored at the office. Prior to drilling on site of Langis Property, an authorisation for storage and set up of a core shack has been officially requested to the Ministère de l'Énergie et des Ressources naturelles (MERN), but not received on time. As the project was moving forward, it was decided that a temporary core shack would be erected in the parking lot of the GMG office. A 14-ft. cube truck was secured and used as a core shack for the duration of the logging. For this purpose, all core boxes were progressively opened and placed in order on the logging table. All meterage wood blocks were verified to control core box numbers and any possible mistakes made during drilling procedures.

Then, start and end intervals of core inside each core box were measured and recorded on a Microsoft Excel® sheet for future reference. All core boxes were tagged with an aluminum tape marked with the hole and box numbers with start and end intervals.

Logging procedures included a mineral description of geological units and sub-units in terms of color, grain size, bedding angle to core axis, alteration, accessory minerals and fracture angle to core axis. The recovery and Rock Quality Designation (RQD) were measured. These descriptive data were entered Microsoft Excel® sheet at the temporary core shack.

Finally, pictures of each individual core boxes were taken, one with dry core and the second slightly damp.

As the entire materiel drilled during the 2017 campaign would be analyzed, it was decided that sample length would be 1 meter. Samples were started after the overburden or noticeable low-grade silica material, that is to say 3 meters measured from the beginning of every hole for casing installation. Rock in casing were recovered but not assayed. Very little overburden is present at Langis.

Numbered sample tags were placed at the beginning of each sample, together with distinctive arrows on the core marking the beginning and end intervals. Marks were made to divide the core in two distinctive but representative half along an axis as an indication for where to cut.

No aspect of sample preparation was conducted by an employee, officer, director or associate of Canadian Metals.

11.2 Sample Presentation

All core samples received from 2017 drilling program were cut in half along the long axis by a hydraulic-powered core splitter. Half of the core sample was retained and placed back in the core box, respecting the original orientation and position. Sample tags were stapled to the bottom of the core tray at the start of each sample, so that each sample could be relocated following future handling, transportation and storage (Figure 11).

A total of 517 samples totalling 478 meters of core were prepared. Unfortunately 7 samples were lost in shipping due to damaged wood crate and 5 were ripped off (at reception of SGS Lakefield laboratory), further inquiry did not allow to retrieve them and hole was not resampled. These samples were from the bottom of one hole. The 517 samples includes 39 Standards and 466 core samples. This length represents 90.8% of the total core length, which reach 526.64 meters.

All samples were securely bagged and closed with plastic zip-ties in translucent bags before being placed, by group of six or seven, in larger Fabrene bags (rice bags, see Figure 12). These second bags were also secured with plastic zip-ties prior to shipment. All the shipment data, including sample numbers, hole names attached to it and Fabrene bag numbers, were entered in Microsoft Excel® sheet.

All rice bags were dispatched in two shipments and shipped by Groupe Guilbault directly from the office located in Québec City to the SGS Minerals Services geochemistry laboratory (SGS laboratory) in Lakefield, Ontario, Canada.

The Sample submittal forms were included in email informing the laboratory of the date and method of expedition of both shipments.

First shipment arrived damaged at SGS laboratory. One of the Fabrene bags has been ripped open and five of the six samples included in that bag couldn't be analysed due to this incident. In Québec City, the core boxes of that specific hole were reopened and core were split again to ship a quarter as new samples in a third shipment to SGS laboratory in Lakefield, Ontario.

All other samples were received in good standing by the laboratory.

Figure 11. Sample cutted and placed in plastic bag with tag

Figure 12. Rice bags filled with samples and placed in larger handmade wood box in order to be transported to the laboratory

11.3 Analyses

Upon receipt of our samples, SGS laboratory employees proceeded with the following preparations procedures:

Bar code labels were attached to every sample bag. This bar code is used to compile information, from sample preparation to storage;

Samples were dried at a temperature of 105°C (DRY11) in gas-heated forced air furnaces. According to the laboratory, this method of drying does not affect the sample because volatile elements are not lost at this temperature;

Samples were crushed in a jaw crusher to obtain 75% of passing 2 mm particles (CRU22). The jaw crusher is cleaned after every sample;

A fraction of the sample (up to 250 g) was split by a riffle splitter and pulverized to obtain 85% passing 75 µm particles (PRP89). At first, crushed samples were added to a standard mild steel bowl and subjected to centrifugal force by mechanical action. The sample is subject to considerable grinding action by a puck and/or ring(s) that are free to move inside the bowl, resulting in a very fine sample. This first standard ferrochromium bowl was used regardless of GMG's instruction for analysis of the samples for high purity silica (there was a misunderstanding with the lab and administration of the lab). In order to supress the iron contamination during laboratory sample preparation, all the process of pulverization was repeated with a tungsten carbide bowl from the rejects. Main contamination of this second bowl selection can result in addition of mainly tungsten. As the tungsten is absent from the primary rock sample, it is easy to demonstrate possible laboratory contamination. This has caused delays in preparation of the mineral resource update.

Assays were performed by X-ray fluorescence (GO XRF76V). Fusion is the industry-standard sample preparation technique employed and involves melting the sample with flux and casting it into a glass disc. The XRF has been used to analyse thirteen elements in sample: Al_2O_3, CaO, Cr_2O_3, K_2O, MgO, MnO, Na_2O, P_2O_5, Fe_2O_3, SiO_2, TiO_2 and V_2O_5.

GMG inserted a custom made standard between intervals of approximately 10 samples. The custom standards were prepared using approximately 500g of pool filter sand in translucid bags identified per their own sample tags.

Lakefield SGS laboratory is accredited to the ISO/IEC 17025:2005 standard for this in-house methods. Also, SGS Lakefield laboratory participate in SGS's internal PT program which holds accreditation to the conformity assessment standard ISO 17043: General requirements for proficiency testing. Every month sub samples of reference materials and various mineral product, prepared and packaged by LQSi, are submitted to laboratories. The results of analyses are collected and reported to the program. To ensure compliance with this system, laboratories that perform poorly are subjected to a rigorous internal audit to undertake corrective actions.

11.4 Laboratory QA/QC

SGS's analysis protocol includes inserting its own check samples at a frequency of 14% in the assay batch. The check samples for exploration grade samples include sample reduction blanks and re-assays (duplicates), method blanks, weighed pulp replicates and reference materials.

11.5 Re-Assays (Duplicates)

SGS's protocols include reanalyzing samples at a regular interval to confirm that the samples are homogeneous, preparation process is performed properly and that there is no sample cross contamination. A total of 11 samples were thus analyzed twice. Figure 13 and Figure 14 indicate very weak variation of two different oxides in each sample (blue dot) versus the duplicate one (orange dot). The percentage of SiO2 is the oxide that seems to be most variable, but it generally maintains the same pattern. These results show there are some variations but stays within an acceptable range as high grade is still high grade and are considered reliable.

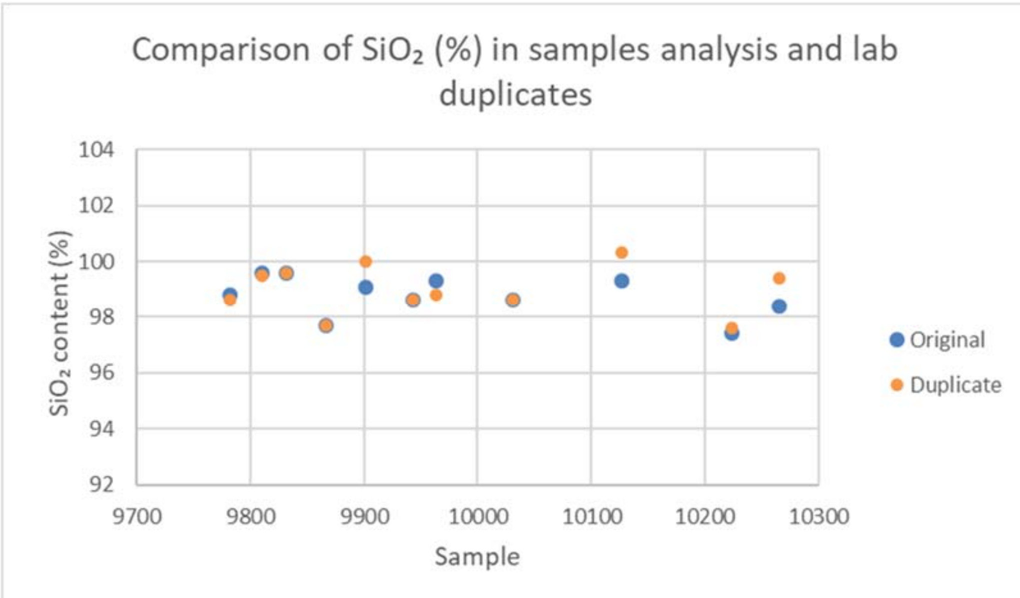


Figure 13. Comparison of SiO_2 (%) in samples analysis and lab duplicates

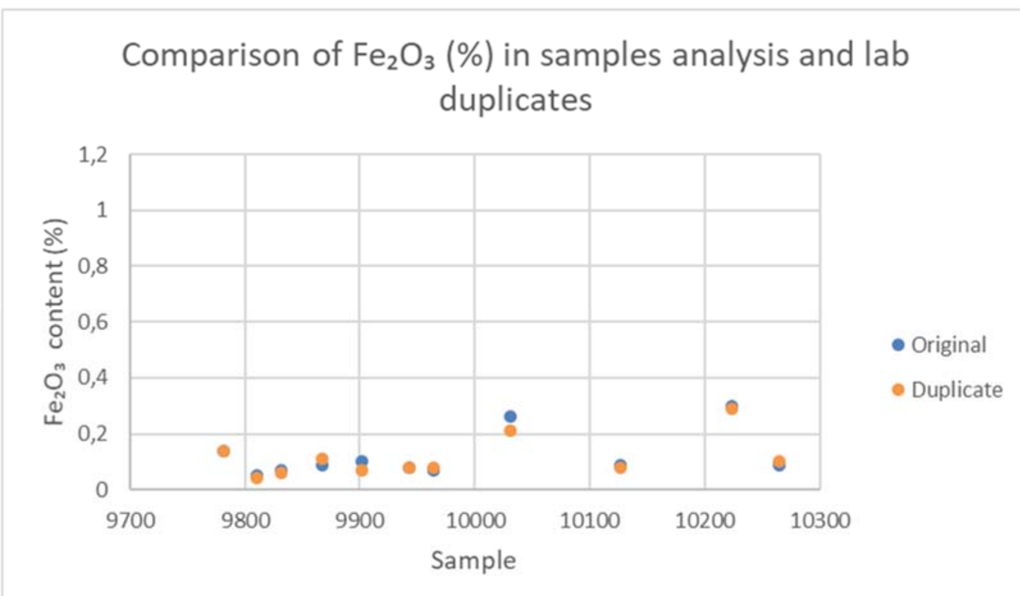


Figure 14. Comparison of Fe_2O_3 (%) in samples analysis and lab duplicates

11.5.1 Laboratory Replicates

SGS's protocols include analyzing of weighed replicates that are added randomly to each sample batch. A total of 16 replicate samples were analyzed. The replicate is used to confirm that the pulverized sample is homogeneous and that there is no sample cross contamination. Figure 15 and Figure 16 indicate very weak variation of two different oxides in each sample (blue dot) versus in the duplicate one (orange dot). These results clearly confirm that samples are homogeneous and no contamination occurred during any of the steps, from sample preparation to analysis, from the laboratory point of view.

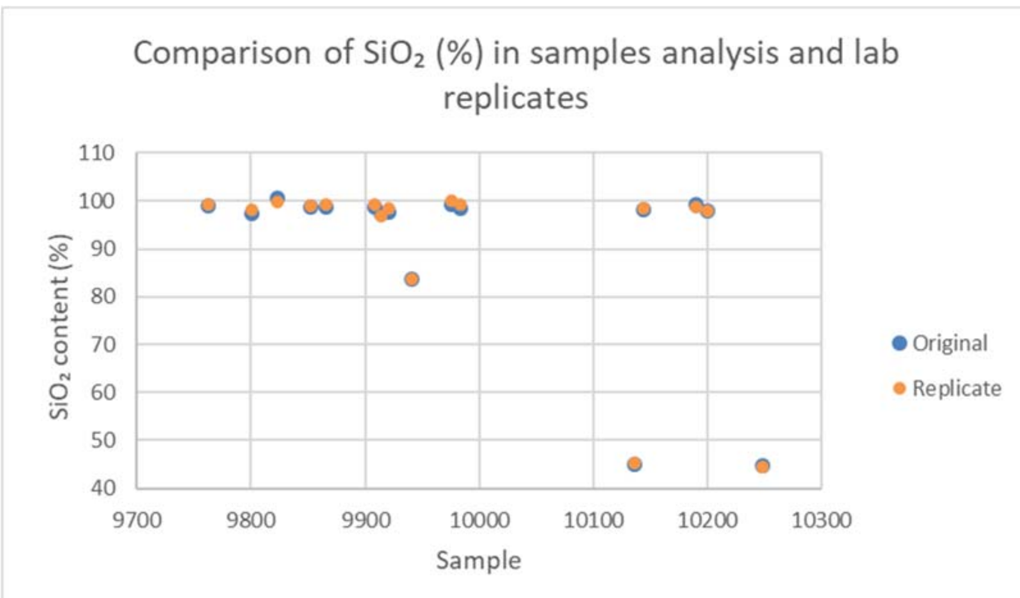


Figure 15. Comparison of SiO_2 (%) in samples analysis and lab replicates

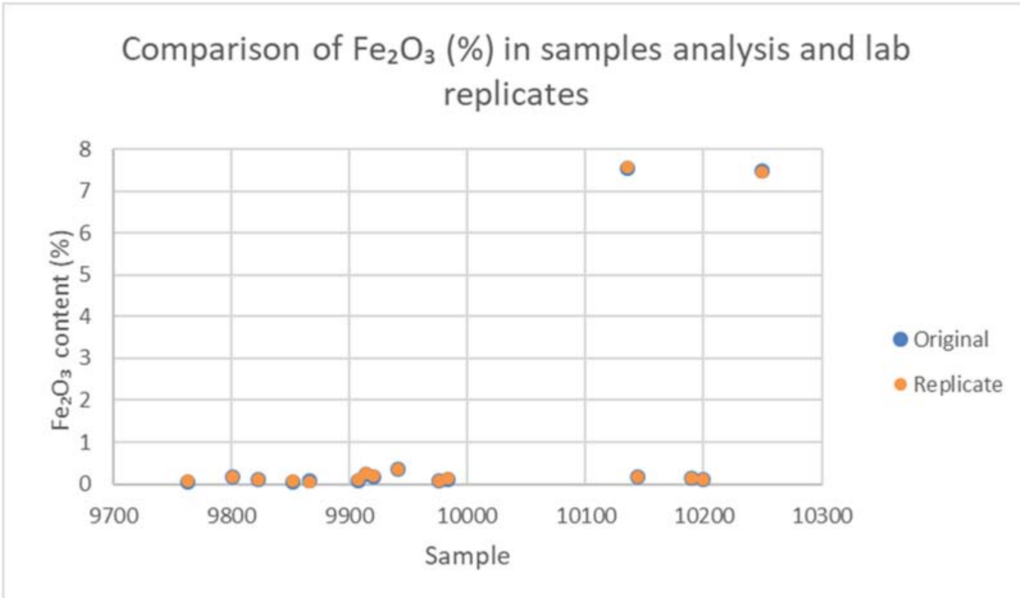


Figure 16. Comparison of Fe_2O_3 (%) in samples analysis and lab replicates

11.6 Independent QA/QC

In addition to laboratory check samples, GMG inserted one type of independent check samples. The following describes the results obtained from these standards.

11.6.1 **Standard Samples**

A total of 39 standard samples were inserted into the sample batch during core sampling and preparation. Standard samples consisted of fine-grained pool filter sand which is dry silica sand. Approximately 500g of pool filter sand was poured in translucent bag closed by plastic zip-tie.

Figure 17 below reports the percentage of SiO_2 variation in the 39 samples. It can be observed on the chart that most of the samples are inside the second standard deviation, except three samples (9796, 10011 and 10063), which are nevertheless very close to the second standard deviation. This standard was not certified and homogeneous and was basically inserted to validate gardes and possble mixup at the lab which did not happen.

Based on these results, it can be considered that SGS's assay method was accurate from the beginning of the second analyses using the right method to avoid any form of iron contamination until the the end of the project.

11.7 Adequacy

According to what was done at all stages of the program, Mr. Claude Duplessis Eng., GMG, firmly believes that sampling preparation, security and analytical procedures meet industry standard and are therefore reliable.

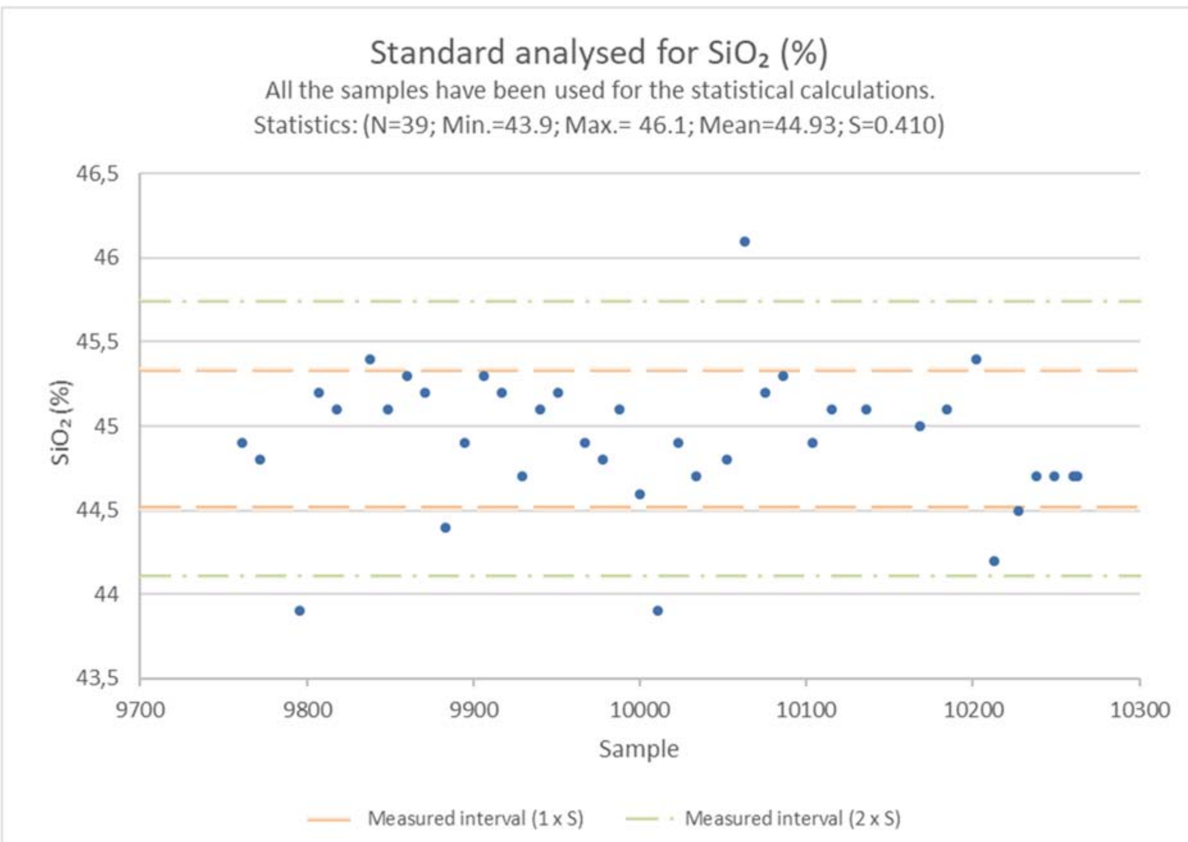


Figure 17. % SiO_2 in the independent standard samples

12 Data Verification

Portions of this section were summarized from previous reports after validation for accuracy with complement of 2017.

12.1 The 2013 and 2015 Drilling Programs

12.1.1 Controls and Verification Measures

All Canadian Metals 2013 and 2015 geological data was collected and verified by Alain Tremblay. The author has reviewed the work and measures taken and considers them adequate for the industry standards.

12.1.2 Limitation of Data Verification

Assays performed by CTMP Laboratory in 2013 on diamond drill holes PL-13-01, 02 and 05 were not reassayed by ALS Chemex. However, the standards used in the two programs were the same. The authors are of the opinion that the 2015 and 2013 data is reliable and representative of the mineralization on the Langis property. The precision obtained and verified by the QA/QC program for the silica content and impurities at Langis confirms that specifications are met for the material to be used as a source for ferrosilicon. Table 11, shows only very minor discrepancies between assays from one laboratory to the other, which means that data from both programs can be used together in the present resource calculation.

12.1.3 Author's Opinion on the Adequacy of the Data

The authors are of the opinion that the 2015 and 2013 data is reliable and representative of the mineralization on the Langis property. The precision obtained and verified by the QA/QC program for the silica content and impurities at Langis confirms that specifications are met for the material to be used as a source for ferrosilicon.

Table 11: Standards analysed by STMP and ALS Chemex

Lab.	DDH	Sample #	Name	Al2O3	CaO	Fe2O3	K2O	MgO	MnO	Na2O	SiO2	TiO2
				%	%	%	%	%	%	%	%	%
CTMP	PL-13-01	P179760	sil	0.42	0.02	0.16	0.05	0.08	0.01	0.03	98.83	0.06
CTMP	PL-13-02	P179784	sil	0.45	0.02	0.11	0.05	0.08	0.01	0.04	98.83	0.06
CTMP	PL-13-02	P179775	sil	0.44	0.03	0.09	0.05	0.09	0.01	0.04	98.70	0.06
CTMP	PL-13-05	P179791	sil	0.39	0.02	0.11	0.05	0.08	0.01	0.04	98.92	0.05
Avg				0.43	0.02	0.12	0.05	0.08	0.01	0.04	98.82	0.06
ALS	PL-13-06	P179612	SL1	0.41	0.01	0.13	0.05	0.11	0.01	0.01	98.63	0.06
ALS	PL-13-07	P175662	SL1	0.41	0.02	0.16	0.06	0.11	0.01	0.02	98.77	0.07
ALS	PL-13-08	P179621	SL1	0.45	0.02	0.15	0.06	0.11	0.01	0.01	98.99	0.07
ALS	PL-15-10	R143760	SL1	0.42	0.02	0.15	0.05	0.08	-0.01	0.02	98.36	0.06
ALS	PL-15-11	R143775	SL1	0.43	0.02	0.14	0.05	0.12	0.01	0.01	98.74	0.06
ALS	PL-15-13	R143816	SL1	0.44	0.02	0.16	0.06	0.12	-0.01	0.01	98.89	0.07
ALS	PL-15-15	R143858	SL1	0.42	0.02	0.14	0.06	0.13	0.01	-0.01	99.32	0.06
ALS	PL-15-15	R143850	SL1	0.45	0.03	0.15	0.06	0.14	0.01	0.01	98.21	0.07
ALS	PL-15-16	R143871	SL1	0.42	0.02	0.14	0.06	0.11	0.01	0.01	98.79	0.07
ALS	PL-15-19	R143906	SL1	0.43	0.02	0.14	0.06	0.11	0.01	0.01	98.64	0.06
ALS	PL-15-21	R143957	SL1	0.41	0.02	0.22	0.05	0.12	0.02	-0.01	98.81	0.06
ALS	PL-15-22	R143980	SL1	0.43	0.02	0.16	0.05	0.10	0.01	-0.01	98.72	0.06
ALS	PL-15-24	R143708	SL1	0.44	0.03	0.16	0.05	0.11	0.01	0.01	99.04	0.07
ALS	PL-15-24	P175734	SL1	0.44	0.02	0.16	0.06	0.09	-0.01	0.01	98.08	0.07
ALS	PL-15-25	R143738	SL1	0.43	0.03	0.15	0.05	0.10	0.01	0.02	98.57	0.07
ALS	PL-15-26	P175681	SL1	0.45	0.03	0.15	0.05	0.11	0.01	0.01	98.81	0.06
ALS	PL-15-27	P179835	SL1	0.43	0.03	0.16	0.05	0.11	-0.01	0.01	98.52	0.07
ALS	PL-13-04	P175859	SL1	0.41	0.02	0.13	0.05	0.10	-0.01	0.01	98.85	0.06
ALS	PL-13-05	P175884	SL1	0.46	0.02	0.14	0.05	0.12	-0.01	-0.01	98.48	0.06
Avg				0.43	0.02	0.15	0.05	0.11	0.01	0.01	98.70	0.07

Source: Consultations Géo-Logic

12.2 The 2017 Drilling Program

12.2.1 Controls and Verification Measures

All Canadian Metals 2017 geological data was collected and verified by Mr. Claude Duplessis eng. and under his supervision. The author has reviewed the work and measures taken and are considered adequate for the industry standards. The control and verifaction measures allowe the author to visually identify the issue with the iron content in the new drilling campaign first assay results which had passed all the standard QA/QC procedures put in place at the lab as well as internal in the campaign. All the samples were reprepared from the reject with a less contaminating equipment and reassayed.

12.2.2 **The Database**

The required steps to produce a suitable geological database from the information received has been done. After receiving basic information, a field inspection took place to verify the location of drillhole collars in the field. Informations regarding hole name and position were entered on a Microsoft Excel® sheet and this file has been used as the base for the creation of the new drillhole database.

12.2.3 **Author's Opinion on the Adequacy of the Data**

For this third drilling campaign, the author is of the opinion that the 2017 data is reliable and representative of the mineralization on the Langis property. Thereby, the adequacy of the database is confirmed for the purpose of this technical report.

13 Mineral Processing and Metallurgy Testing

This section is the integral text of the previous technical report which summarized metallurgical testing on the Langis silica deposit.

13.1 Testing

Following the 2013 drilling program, a number of samples were collected from three drill holes (PL-01, 02 and 5) and from surface. Detailed sampling procedures are described in Section 11: Samples Preparation, Analyses and Security of the 2013 report*. Various chemical and physical analyses were performed on the samples, as the goal was to establish the characteristics of the Val-Brillant sandstone in relation to various potential commercial uses. Again, a detailed description of the various tests performed is given in the 2013 report, and we refer the reader to Section 13.0 (Mineral Processing and Metallurgical Testing) of that report for the full results*. The conclusions of the 2013 tests, taken from that report, were as follows: Based on the preliminary test work by CTMP, basic chemical, physical and thermal properties of the Langis sandstone indicates it has potential to be a usable source of silica. The impurities contained in the core samples are about 1% with a silica grade in the order of 98.55% SiO2 and a loss on ignition ranging from 0.3% to 0.5%. When corrected for loss on ignition incurred during high temperature lump silica applications, the averages are 98.95% SiO2, 0.14% Fe2O3, 0.48% Al2O3 and 0.05% TiO2. Thermal shock tests on twelve representative lump samples reveal that this material has relatively strong cementation, making it a potential source for lump silica applications in high temperature furnaces. For applications requiring silica sand grains it can be shown that a significant amount of impurities can be eliminated with the removal of fine sand below 100 microns. The residual sand then averages 99.44% SiO2, 0.05% Fe2O3, 0.20% Al2O3 and 0.03% TiO2. With attrition, iron oxides and clays can be scrubbed from the surface of the sand grains thereby producing a cleaner silica sand averaging 99.56% SiO2, 0.03% Fe2O3, 0.16% Al2O3 and 0.03% TiO2.

**GENIVAR, Characterization Study of the Langis Silica Deposit, p. 41-46 and GENIVAR, Characterization Study of the Langis Silica Deposit, p. 49-64*

High intensity magnetic separation removed a very small fraction of magnetic material with the objective of reducing the Fe2O3 content to below 0.03%, however the average impurities content in the sand product was left relatively unchanged. Physical characteristics of the silica sand were evaluated with respect to particle size distribution; AFS grain fineness numbers, coefficient of uniformity, roundness, sphericity and crush resistance. Based on the chemical, physical and thermal properties observed from the test work at CTMP, by crushing and screening to -120+20 mm lump particles, the Langis silica deposit may be a potential source for the production of ferrosilicon. Further crushing to -25+5 mm particles will also make it a potential source as a flux agent for base metal smelting. The chemical composition of this material, however, does not meet the requirements for the production of silicon metal. Crushing to -600 microns and desliming the -100 microns fines as well as attrition, size classification, dewatering and drying can be considered to provide a potential source of glass sand, foundry sand and other uses like abrasive sand, sodium silicate, silicon carbide. The material was also tested for frac sand and based on an initial evaluation; the presence of many clusters as well as the issue with the grains' roundness should be considered a stumbling block for its potential as a source of frac sand. Further tests are recommended to better evaluate this product by a specialized frac sand laboratory. From the above, Canadian Metals Inc. retained that the Langis Property sandstone can provide suitable material for ferrosilicon production. This conclusion tends to confirm historical information previously mentioned in Section 6, History, whereby some 22,000 tons of material is reported to have been shipped by Uniquartz to Norway and Iceland, leading to an agreement by which Uniquartz could supply 150,000 tons per year of lump material for ferrosilicon production.6 Additional testing of the Val-Brillant sandstone was conducted by Canadian Metals Inc. in 2015. Some 130 kg of sandstones were collected in the quarry contiguous to the Langis deposit as 100 mm pieces and sent to MINTEK in May 2015. MINTEK is a metallurgical consulting company with offices in South Africa. The sandstone was crushed and screened in order to prepare four batches of 12 kg feed material that were used in MINTEK's test facility to produce ferrosilicon. Different proportions of additives were used in order to perform a preliminary evaluation of the optimal recipes for production of ferrosilicon with the Langis sandstone.

All tests succeeded in producing ferrosilicon of commercial quality*. Also, the thermal shock resistance of the sandstone, an essential criterion for a silica feed, was confirmed*. MINTEK's conclusion was that Langis sandstone would be an acceptable feedstock for ferrosilicon production, and they suggested testing on a larger scale be performed to better define the parameters for commercial-scale production of ferrosilicon. **MINTEK, Investigation on the Production of Ferrosilicon from Canadian Quartzite Using MINTEK's 100KVA DC Arc Facility, page 27-28*

13.2 Comments on Previous Work

Commercial production of metallurgical-grade silicon, in place of or in addition to ferrosilicon, was not under consideration by Canadian Metals Inc when MINTEK was engaged to conduct testing of Langis silica in 2015. Consequently, Section 13 of this report is oriented more toward the production of ferrosilicon than metallurgical silicon. Nevertheless, MINTEK's conclusions regarding the thermal stability of Langis silica within a smelting furnace and the reduction of Langis silica to a silicon alloy are equally applicable to the metallurgical silicon base case, as is CTMP's determination of thermal shock resistance for the Langis material. Thermal shock resistance is a critical factor when selecting a silica feedstock for silicon or ferrosilicon production. Silica with inadequate thermal shock resistance can fracture into smaller and smaller particles as the lumpy material travels through the raw material charge (burden) into the reaction zone of a submerged arc furnace. These fine particles decrease porosity in the furnace burden, which can result in poor furnace operation and reduced silicon recovery. Several minor variations of a test method to evaluate thermal shock resistance of potential silica sources exist today. One or another of these test methods is typically used in the silicon and ferrosilicon industry as a screening tool to qualify potential silica sources for full-scale production testing. Chemical requirements for silica used to produce metallurgical silicon are more rigorous than those for ferrosilicon smelting. The content of Fe and other minor contaminants in the silica source must be held to very low levels to allow production of the best premium grades of metallurgical silicon. Silica from the Langis deposit, by itself, may not meet these requirements, based on analyses provided by Géo-Logic, GENIVAR and MINTEK as for now. The author is aware that material has been sent to different end users for their evaluation. This is confidential and the author does not have access to these proprietary and confidential informations. No additional metallurgical testing has been done since the last report of October 2016 with results which can be publicly disclosed.

14 Mineral Resource Estimates

Canadian Metals Inc. engaged Goldminds Geoservices Inc. to prepare an updated Mineral Resource Estimation with the integration of the new drilling data from the 2017 drilling campaign. This mineral resource update was carried out using existing drilling data and the new drilling of 2017.

GMG carried out the update of the resource estimation of the Langis Silica property. This section presents the methodology used and the results of the mineral resource estimation. One resource model was produced by GMG (Claude Duplessis, Eng. and Isabelle Hébert, Jr. Eng.) using model with blocks dimensions of 5 m (EW) x 5 m (NS) x 3 m (Z).

Cautionary note: Mineral resources that are not mineral reserves have not demonstrated economic viability. Additional trenching and/or drilling will be required to convert inferred mineral resources to indicated or measured mineral resources. There is no certainty that the assumptions and forecasts used in this updated mineral resource report will be realized.

14.1 Previous estimates 2016

Mineral resources statement of the Langis quartz property 2016. All classified as Inferred mineral resources 9.95 million tonnes of resources in pit, with average SiO_2 98.71% Al_2O_3 0.38% TiO_2 0.05% Fe_2O_3 0.12% Waste in pit : 3.76 Million tonnes for a stripping ratio of 0.38 to 1 Mining cost Mineralized Material 5$Can/t Mining Cost waste 4$ Can/t Processing Cost of Quarry including G & A 10$Can/t Recovery 95% Slope angle of 45 degrees Product value fixed at 44$Can/t purchase price at the Quarry (these mineral resources are free of contrains and surface right limits). Effective date: September 28th 2016. Notes: 1) Mineral Resources are not Mineral Reserves and have no demonstrated economic viability. The estimate of Mineral Resources may be materially affected by mining, processing, metallurgical, infrastructure, economic, marketing, legal, environmental, social and government factors. 2) CIM definitions of May 10th 2014 were followed with reasonable prospect of economic extraction. 3) The resources are pit constrained by Lersch Grossman pit optimizer with MineSight software. 4) Density of rock used 2.5 T/m3. 5) Parameters used for the definition of mineral resources. + Mining cost of CAN$5/tonne; + Processing cost (crushing, screening, hauling to plant plus Quarry G&A) CAN$10/Tonne; + Plant purchase price to Quarry CAN$44/tonne with mine recovery of 95% with no dilution. 6) Definition of cut-off grade used comparable to similar projects: 98.1% SiO2, 0.8% Al2O3, 0.075% TiO2 and 0.24% Fe2O3. About the Cut-off: the cut-off used in the mineral resources of GMG is higher in Silica than the one used in the similar model of Veridis used for the mining sequence in the PEA. The use of this COG by GMG which comparable to silimar public projects demonstrates that even in applying a more restrictive COG the mineral resources in pit are still sufficient to provide the required feed in the PEA analysis. The mining sequence with COG of 97% has demonstrated it can meet the % SiO2 specification of the planning.

14.2 Exploration Database

The database used for this report was prepared by GoldMinds Geoservices up to April 2017. This database is the master database covering the Langis property. It gathers the information on historical to recent work.

The File name is: accesslangis2017_5decMMV3MR.accdb. The database contains the following components:

- Drill hole collar table with collar coordinates, bearing and dip at collar and length of 51 holes.
- A drill hole deviation table with 419 entries (hole name, depth, azimuth, dip).
- A drill hole assay table with 943 assays data (hole name, from, to, major elements in % : SiO_2, Al_2O_3, Fe_2O_3, TiO_2 ,BaO, CaO, Cr_2O_3, K_2O, MgO, MnO, Na_2O, P_2O_5, SO3 and SrO).
- A drill hole lithology table with 396 entries (hole name, from-to, lithology code).

These drillholes are the results from exploration works done between 1984 and 2017. As a result of our database construction, and revision the author believes the database to be accurate enough for the preparation of a resource estimate.

The coordinate system used is: UTM NAD 1983 ZONE 19N

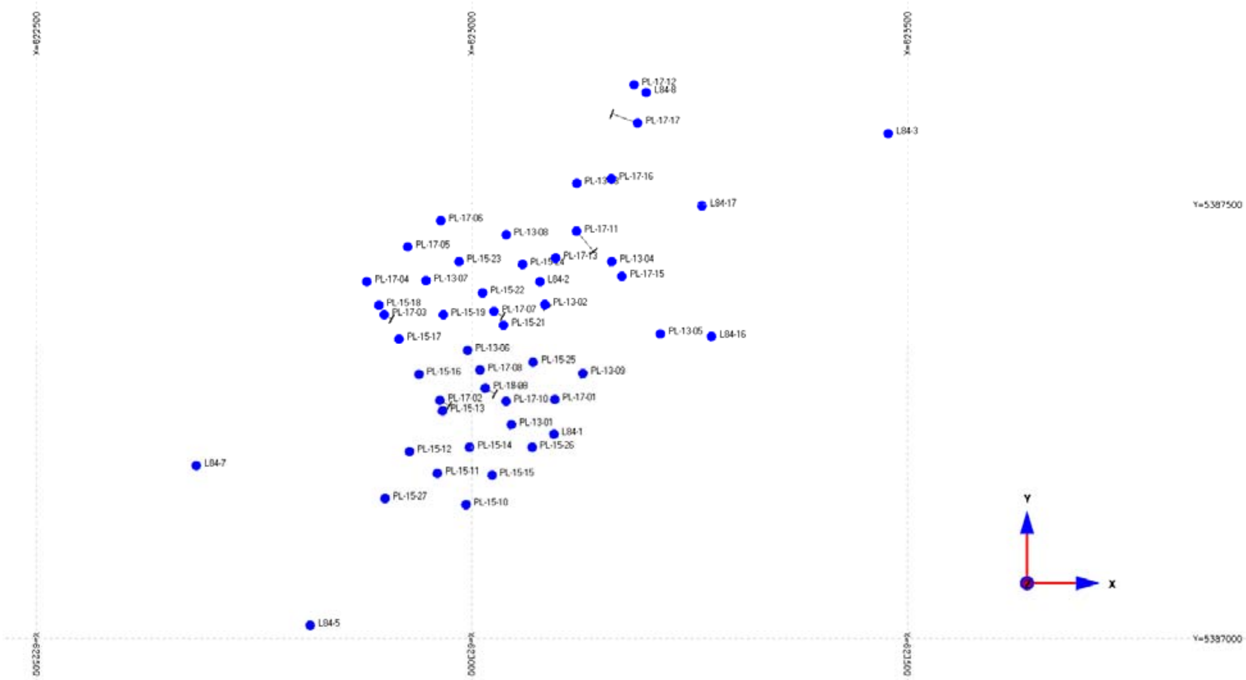


Figure 18: Drill hole plan view

14.3 Geological model-Enveloppes

The Langis deposit is composed of sedimentary rocks in which lateral variations of composition are gradual and very continuous but vertical variations may be found to be important over short distances. The results obtained at a particular point have more continuity to extrapolate horizontally than vertically.

The Langis deposit is part the Val-Brillant Formation, and is located in an area where northwest-southeast tectonic compressive forces were active subsequent to the consolidation of the sandstones. As a result, the deposit is now on the north limb of an east- west regional structure. Locally, this means that the geological units dip gently to the south. Drilling and surface reconnaissance indicate that the general dip is around 5-10º to the south.

Compression also forced a horizontal shortening of the geological units. This was accommodated by vertical movements along NNE and NE north-dipping faults. These sets of faults have been identified in the walls of the old Uniquartz quarry.

A geological model must be stable from one section to another and consistent with the various structures (bedding, faults) identified in the core of the drill holes. In the previous model high importance was given to these displacement and interpretation of blocks movements was attributed to these faults with important implication on grades. A portion of 2017 drilling has tested these faults with drilling across the interpretation. We had also schedule trenching on surface to located them as they where all interpreted between vertical holes. It was found that some of these movements are late events (recent in geological time) compared to two other major faults we found which have affected the quality of the stone by migration by limited impregnation along these two faults (about 5m wide subvertical as shown in hole PL 17-11) . One of the fault can be observed in the topographic depression, the little valley aligns NE with that fault. The small faults do not present significant impregnation and migration of iron. The quality and grade if not affected or very little and limited vertical displacement will have to be followed during the extraction process as the scale observed range from 0.5 to 3m shift but when conjugated can be higher than that on a portion where an uplift is observed at the Eastern limit of the existing quarry.

The modelling of the silica formation is within the claims property boundaries.

14.4 Density

Twenty-two (22) individual core samples from hole PL-17-07 of 2017 campaign which were used for modeling the Mineral Resource were submitted for density measurements. Cores were weighed and placed in a graduated cylinder and the difference in water levels was noted. Given the porous nature of the rock, cores were wrapped in a plastic film to avoid infiltration of water inside the cores (Figure 19). The mass divided by the difference of volume gave the density of the core. Therefore, the initial rock weight, weight in water and water displacement was recorded on a Microsoft Excel® sheet.

These samples are taken from 9,23m to 15,19m, which is an interval with an average SiO_2 grade 98,73% and an average Fe_2O_3 grade of 0,58%. The average length of samples is 0,14m. The weights were then used to calculate the specific gravity of the ore. The average density obtained is 2,33 g/cm^3, ranging from 2,21 g/cm^3 to 2,44g/cm^3. The density of pure quartz (SiO2) is 2,65 g/cm^3. This would put the porosity of the rock at about 14%. Given the fact that density measurements were taken in only one hole, it may not represent the whole deposit. However, the author prefers to remain on conservative, measured side. The density used in 2016 was 2.5 T/m^3 and we are now using 2.33 T/m^3.

Figure 19. Core wrapped in a plastic film to avoid water infiltration in pores

Table 12: Density measurements on samples from hole PL-17-07

Length (m)			Density (g/ml)	
From	To	Total	Dry rock (with plastic film)	Wet rock (without plastic film)
9.23	9.42	0.19	2.315	2.482
9.42	9.52	0.1	2.206	
9.92	10.08	0.16	2.338	
10.08	10.17	0.09	2.300	2.463
10.21	10.39	0.18	2.352	2.523
10.39	10.53	0.14	2.364	2.496
10.53	10.64	0.11	2.277	2.545
10.64	10.67	0.03	2.343	2.509
10.67	10.87	0.2	2.436	2.493
10.87	10.99	0.12	2.360	2.512
10.99	11.1	0.11	2.323	2.523
11.1	11.3	0.2	2.384	2.527
11.39	11.55	0.16	2.343	
11.55	11.7	0.15	2.325	
11.7	11.87	0.17	2.336	
11.87	11.99	0.12	2.292	
11.99	12.14	0.15	2.303	
12.14	12.28	0.14	2.272	
12.28	12.43	0.15	2.311	
12.65	12.82	0.17	2.287	
15.07	15.19	0.12	2.333	
15.19	15.34	0.15	2.444	

Table 13: Density measurement results, samples from hole PL-17-07

Density method	Min (g/cm^3)	Max (g/cm^3)	Weighted Average (g/cm^3)
Dry rock	2.206	2.444	2.329
Wet rock	2.463	2.545	2.507

14.6 Geological and block modelling 2017

14.7 Introduction

The mineral resource was estimated by Claude Duplessis, Eng., consulting Geological Engineer of GoldMinds Geoservices Inc.., Mr. Duplessis is an independent qualified person (QP) as per section 1.4 of the NI 43-101 Standards of Disclosure for Mineral Projects.

14.7.1 **Modelling**

Vertical cross-sectional views oriented NNW/SSE looking NE and mostly 45 m apart were used to study mineralization patterns and group assays into mineralized intervals. Prisms were created by snapping to the mineralized intervals. A cut-off grade of 98 %SiO_2 was considered while modeling however, waste or lower grade material was included for structure continuity. Mineralized solids were generated based on the linked prisms and faults were designed based new findings of the 2017 drilling. The faults are discussed in further detail in previous section. A solid consisting of all the mineralized solids was generated and the waste fault solid were substracted. Equal-length composites of 3 m were produced from the mineralized intervals and no capping was applied. The author is aware higher selectivity could be reached as the siltstone deposit is sub-horizontal and specific layers could be selectively mined should higher grade specifications be required.

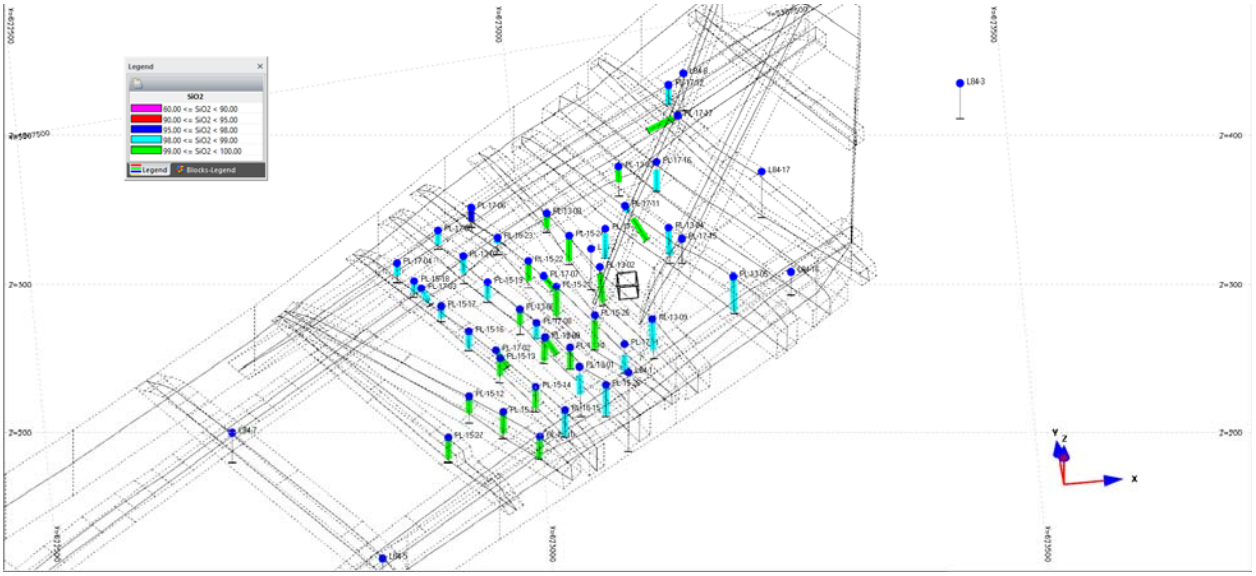


Figure 20: Perspective view of the prims and drill hole with colour coded mineralized intervals

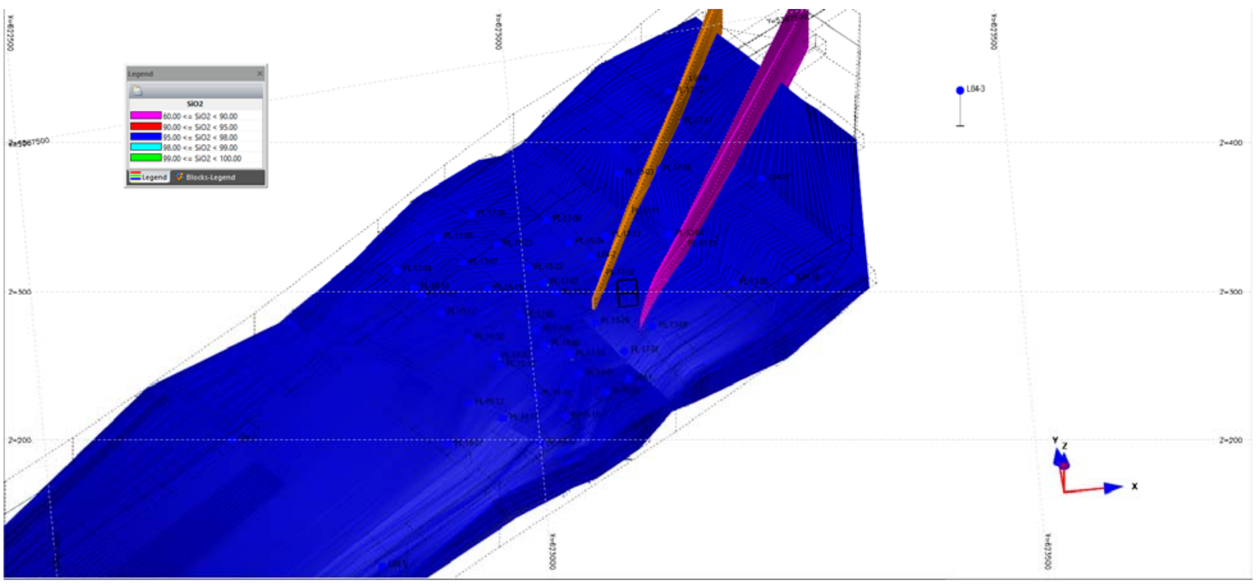


Figure 21: Perspective view of the good Sandstone envelope and the 2 fault zone enveloppes

14.7.2 **Compositing, statistical analysis**

After compositing an assessment of the grade distribution for the SiO_2 and the Fe_2O_3 has been done.

It can be found a thight SiO2 distribution with an average of 98.91%. The iron has an average of 0.13% Fe_2O_3. The iron is inversely proportional to %SiO_2 as the more iron we have the les SiO_2 we have, which is normal.

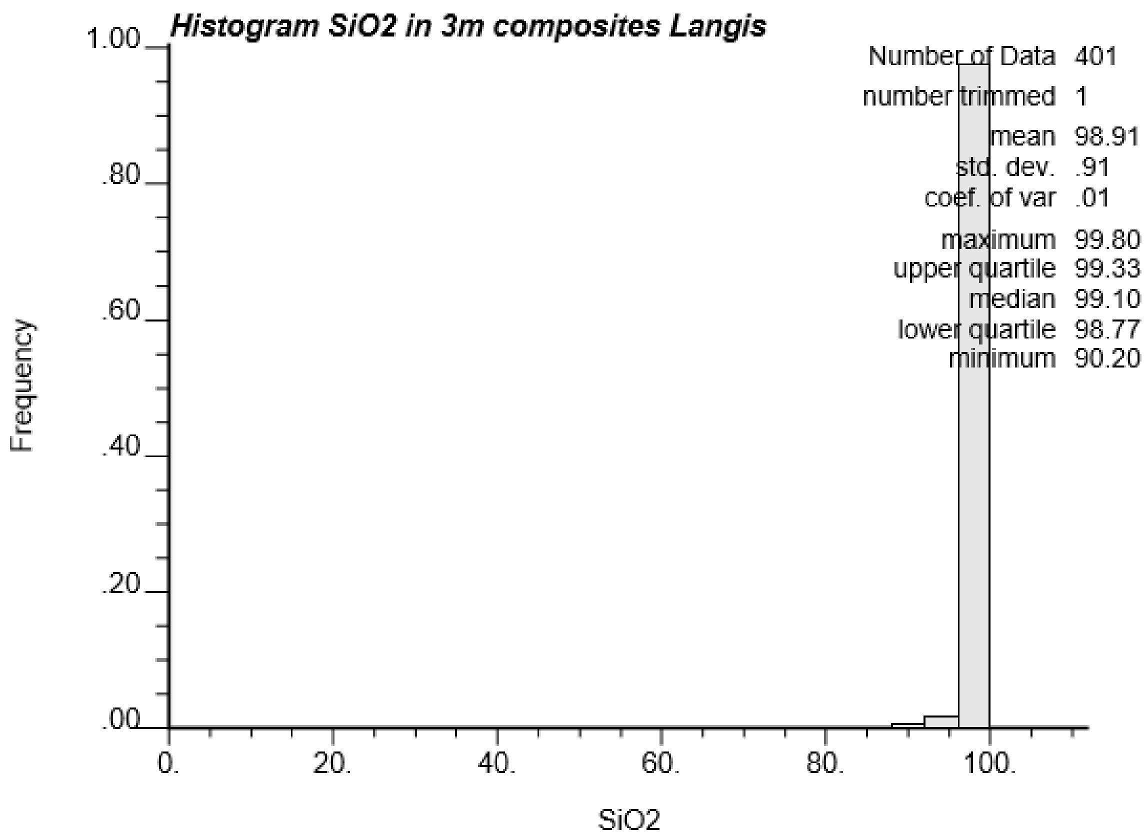


Figure 22: Histogram of % SiO_2 in 3m composites

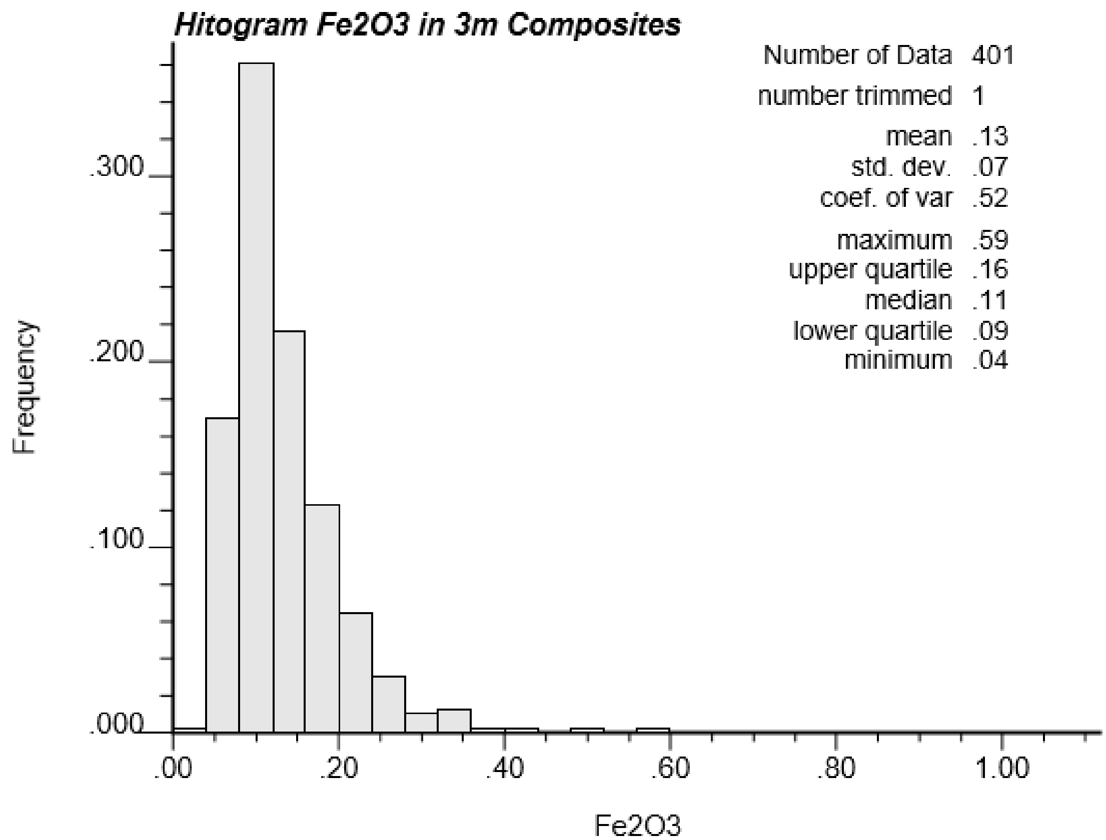


Figure 23: Histogram of %Fe_2O_3 in 3m composites

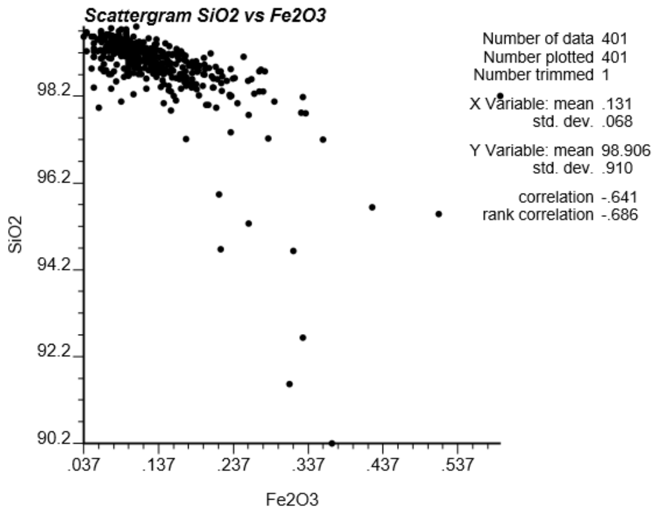


Figure 24: Scatterplot % SiO_2 vs % Fe_2O_3

The variography presents a very good continuity North-Est as well as South-East and has expected across the strata is much shorter range.

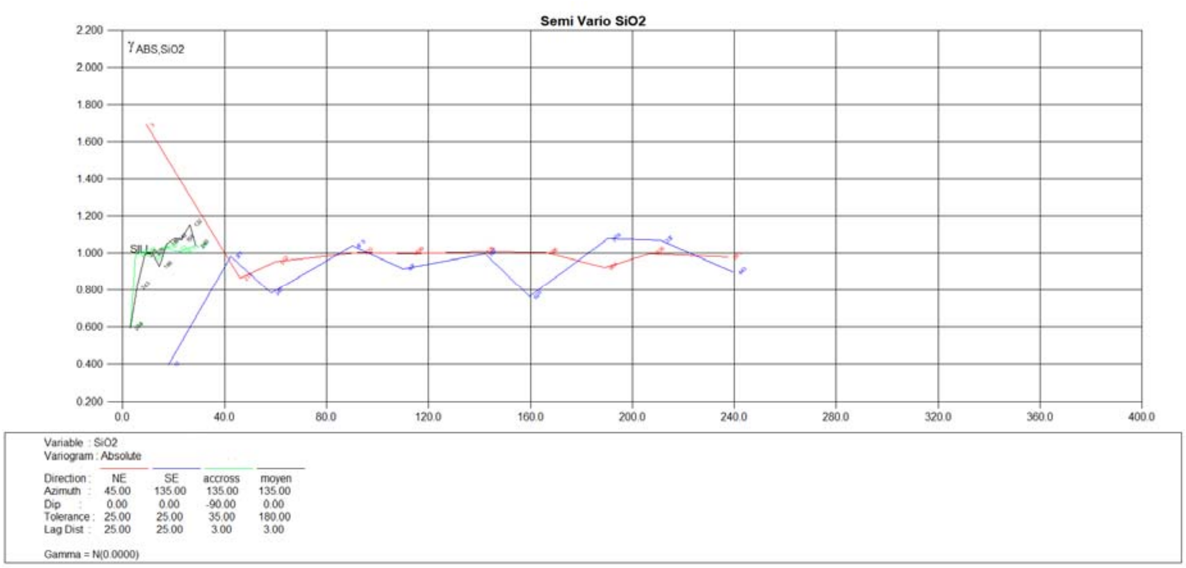


Figure 25: Variogram 3m composites %SiO2 absolute

We can observe the anisotropy and also the effect of the few low SiO2 grade samples kept in the envelope in a conservative manner.

14.7.3 Block Model

The material within the resource model is discretized with the blocks of 5m (E-W) by 5m (N-S) by 3m (Vertical). The 3m vertical side corresponds to the bench height of a potential future open-pit operation. The 5m E-W dimension corresponds to about 1/8 the minimum spacing between CME surface holes. The 3m vertical accounts for the perceived greater grade variability across the strata. With fixed density of 2.33 t/m^3, each full block (5mx5mx3m) represents about 174.75 tonnes and it is assumed reasonable for the selective mining unit (SMU) or minimum size block which can be selectively extracted as mineralized material or waste in a future potential open-pit operation. The block model parameters are presented in the following table.

Blocks Grid Origin	
Origin X	622 365
Origin Y	5 386 750
Origin Z	175
Blocks Size	
Size in X	5
Size in Y	5
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	208
End iY	207
End iZ	29
Blocks Grid Coordinate	
Start X	622 365
Start Y	5 386 750
Start Z	175
End X	623 400
End Y	5 387 780
End Z	259

Table 14: Block grid parameters

14.7.4 **Ellipsoid parameters and interpolation of grades**

The average grades of major Elements (14) in percent SiO_2, Al_2O_3, Fe_2O_3, MgO, MnO, TiO_2, P_2O_5, Na_2O, K2O, Cr_2O_3, CaO, BaO, SrO, SO3: is computed for each block using interpolation according to the inverse of the distance power 3 from the nearest composites. Interpolation parameters were based on drill spacing, envelope extension and orientation. The blocks model was then cut by surface, envelope was built below overburden and waste material.

Three runs were used in the mineral resource estimation. All three runs have different ellipsoid Three search ellipsoids, with dimension following the geological interpretation trends were use in the grade estimation. The subsequent table shows the size of the ellipsoid used to generate the mineral resource estimation.

Table 15: Search ellipsoid parameters and estimation parameters.

Run	Azimuth	Dip	Spin	X (m)	Y (m)	Z (m)	Minimum Comp per Block	Maximum Comp per Block	Maximum per Drillhole
1	135	-3	0	60	60	1.5	5	5	1
2	135	-3	0	120	120	3	5	5	1
3	135	-3	0	600	600	6	1	5	1

Block Model classification

The classical search ellipsoid method was used to classify the deposit where one defined class is used by ellipsoid. A total of two ellipsoids and two runs were used in the Blocks Model classification. In run one (measured), a minimum of three (3) composites within 75m radius were established per block with a limited number of one (1) composites per drillhole. In run two (indicated), a minimum of four (4) composites within the 120 radii were established per block with a limited number of one (1) composite per drillhole. The remaining blocks classified as inferred.

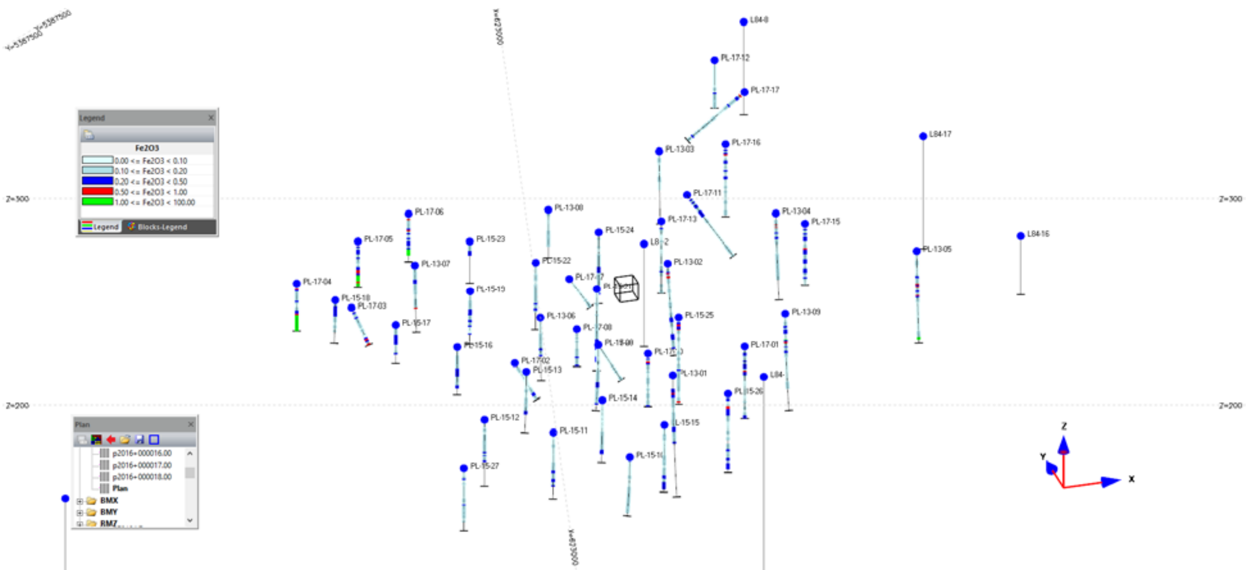


Figure 26 Isometric view of iron grades in the drill holes

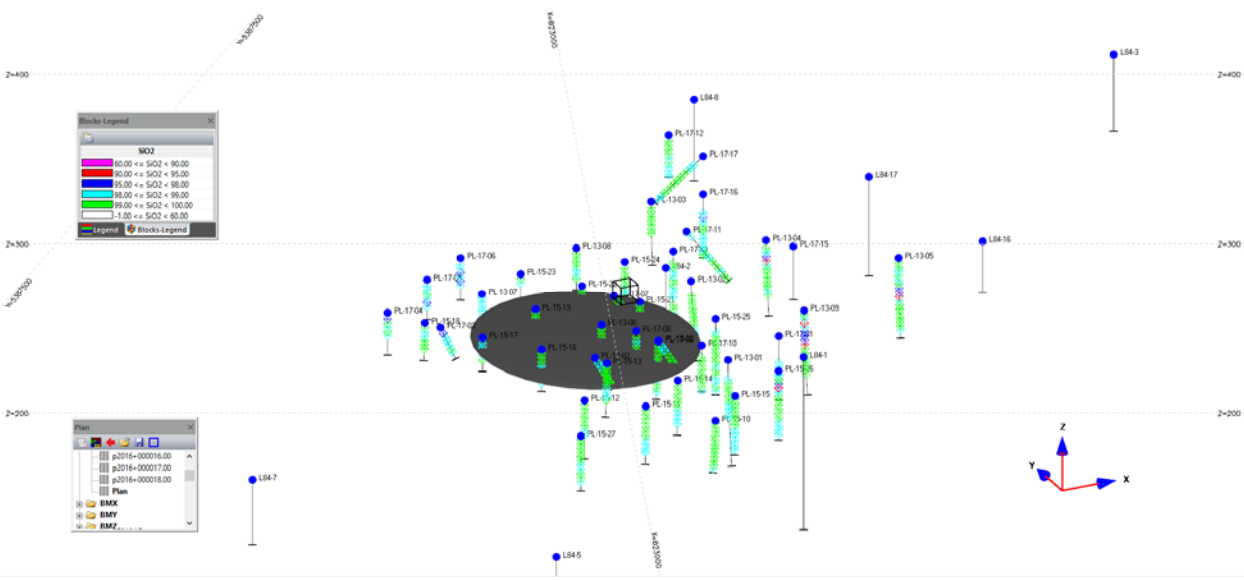


Figure 27: Isometric view of %SiO2 composite and the short search ellipsoid

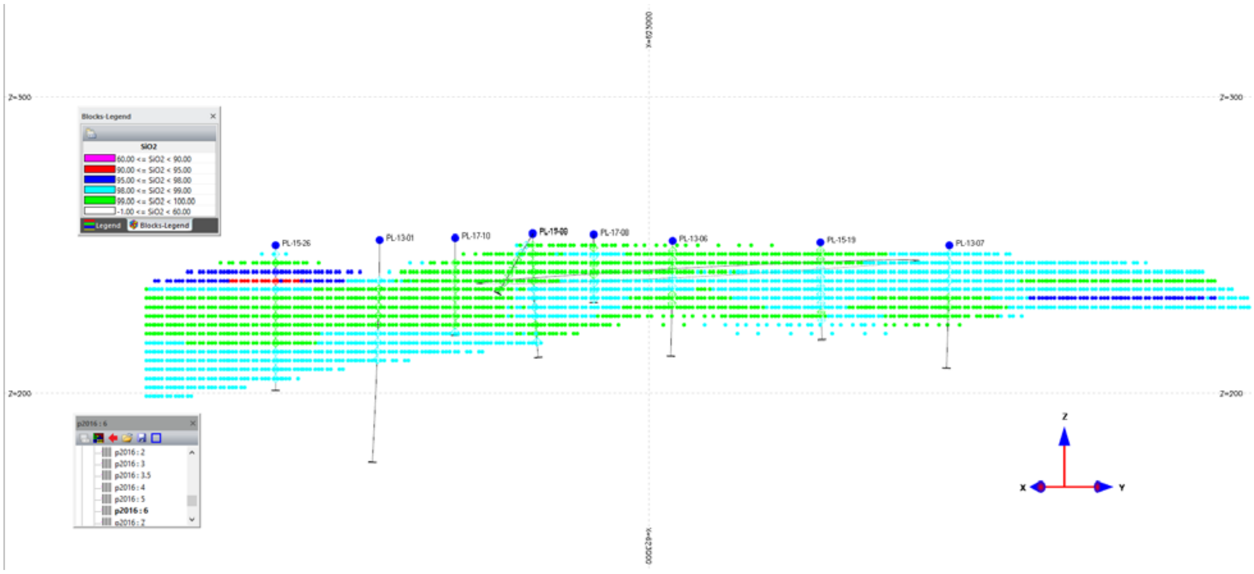


Figure 28: Block model cross section with %SiO_2 grade

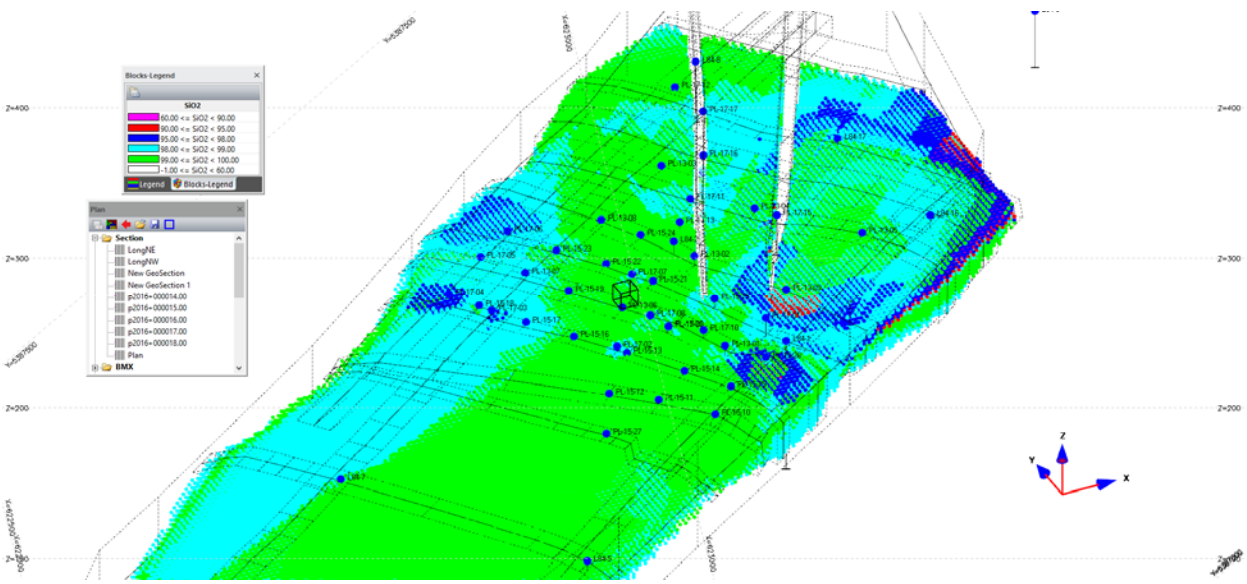


Figure 29: Isometric view of the block model grades colour coded by %SiO_2

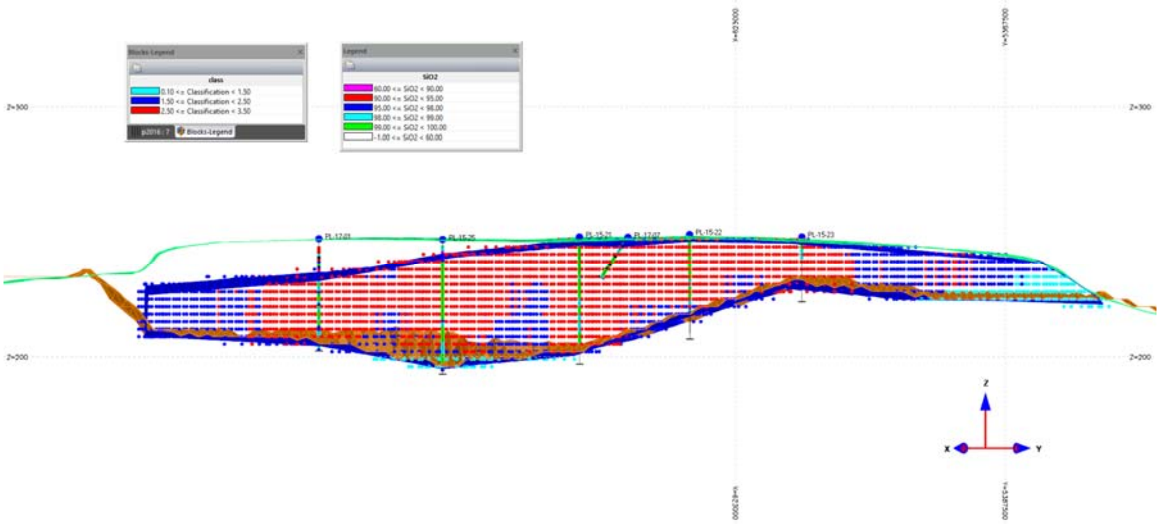


Figure 30: Cross section with block classification colour coded with silica grades

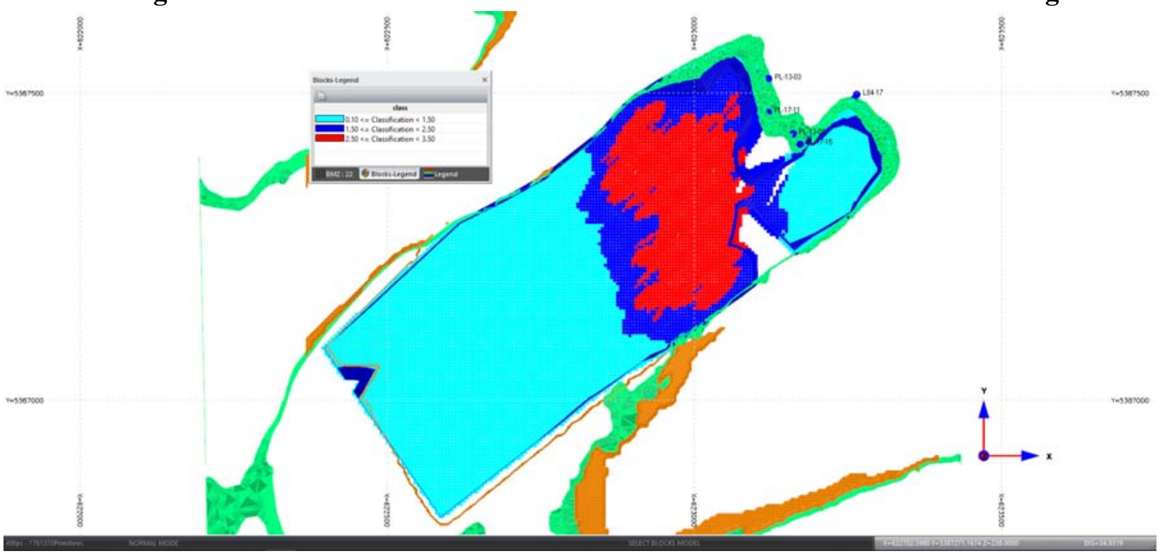


Figure 31: Plan view of blocks classification at Z=238m

The portion of measured and indicated is consistent with the drilling and knowledge of the deposit.

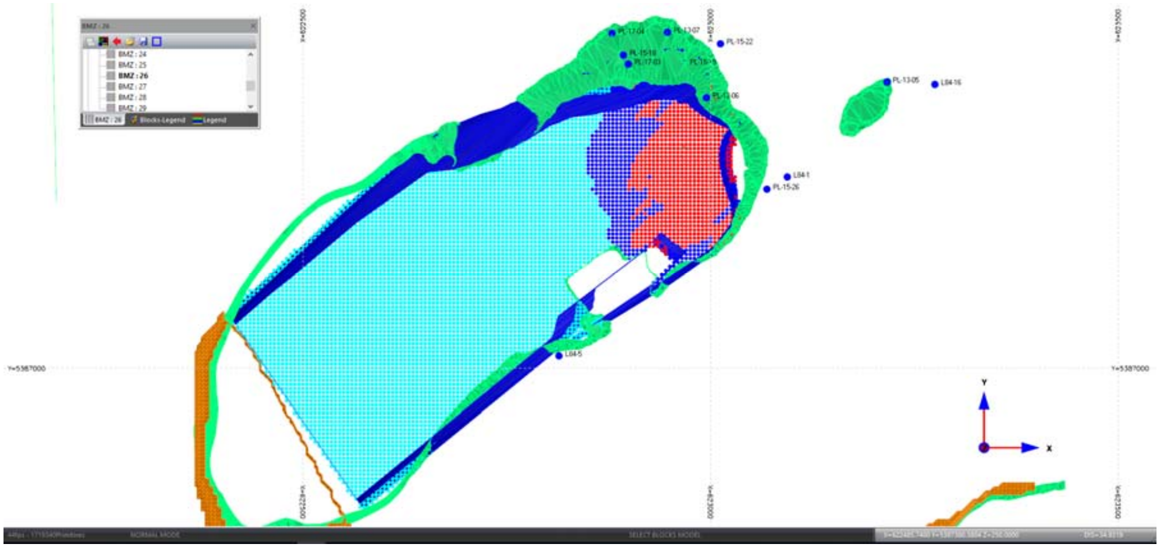


Figure 32: Plan view of blocks classification at Z=250m

It is possible to see the notch of the existing quarry wall in the above figure.

14.8 Mineral resources Pit Constrained

The mineral resource statement is based on pit constrained shell of the classified block model.

Pit optimization have been done with specific mining and milling operation costs.
The pit optimization result with a single base case scenario of parameters (mining cost, processing cost, processing recovery and one commodity selling price). The parameters were estimated by GoldMinds Geoservices based on the knowledge of similar operations and parameters defined in the PEA of 2016 which are still considered valid. The author is aware a PFS study is being prepared with the new mineral resources. No detailed economic study was produced for this mandate, therefore the resources presented have not shown economic viability but present a reasonable prospect of economic extraction as per CIM definition.

The optimization uses a mining cost of 5 $/t, the quarry processing cost is 10$/t with recovery of 95% for mineralized material above 97% SiO_2 with slopes of 45 degrees and an assumed selling price of Can $ 44/t. The pit optimization includes measured, indicated and inferred material.

The high-grade silica sandstone deposit at surface open-pit constrained resources:

- 3,900,000 tonnes Measured @ 99.01 % SiO_2
- 3,700,000 tonnes Indicated @ 98.92 % SiO_2
- total of 7,600,000 tonnes M&I @ 98.96 %SiO_2 at a cut-off grade of 97% SiO_2;
- 14,000,000 tonnes Inferred @ 98.97 % SiO_2

Cautionary note: Mineral resources that are not mineral reserves have not demonstrated economic viability. Additional trenching and/or drilling will be required to convert inferred mineral resources to indicated or measured mineral resources. There is no certainty that the assumptions and forecasts used in this updated mineral resource report will be realized.

The next figure shows the pit optimization generated by MineSight[c] software and the block model in the pit shell within GENESIS[c].

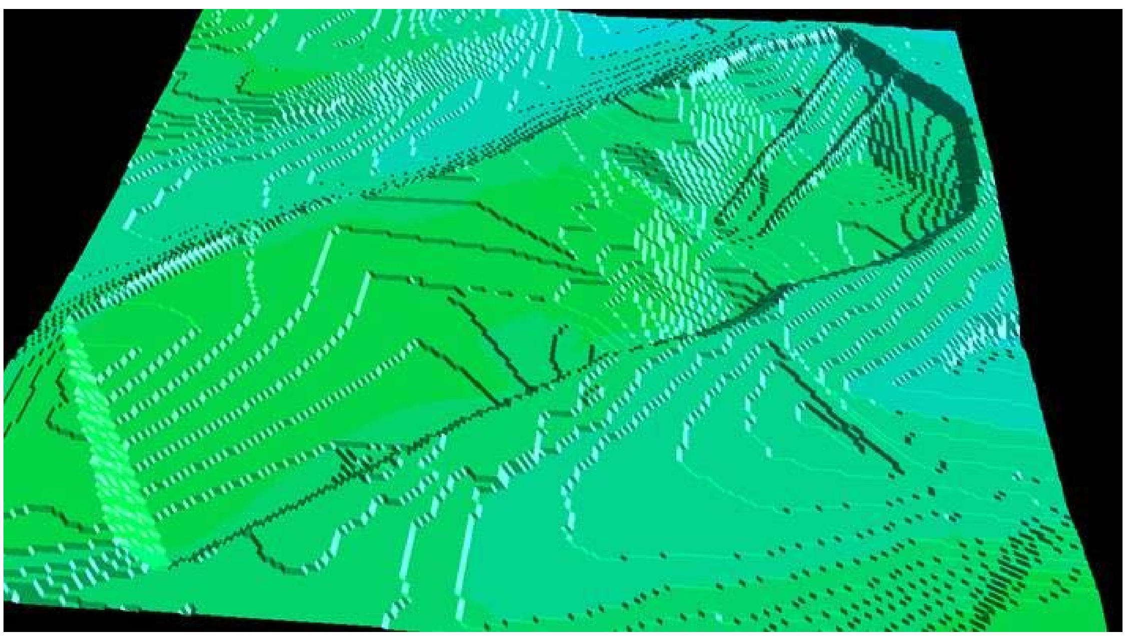


Figure 33: Perspective views of optimized pit

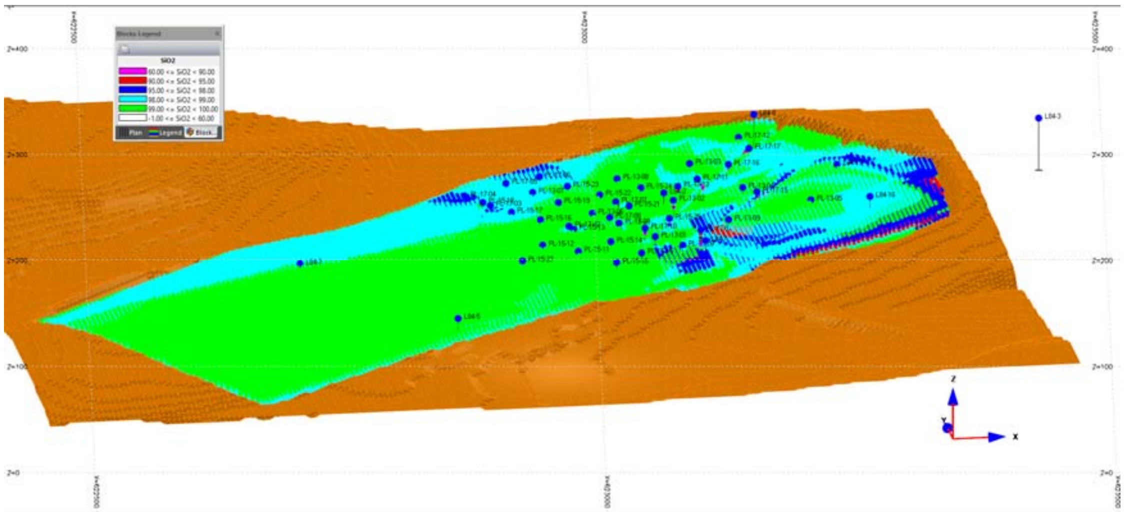


Figure 34: Perspective views of optimized pit with blockls colour coded by %SiO_2

Globally, the morphology of the deposit is very favorable for the development of an open pit with no waste or a very low waste-to-mineralized material ratio. Quarrying could be started quickly at the northeast end of the old quarry, extending north-northeast. The overburden thickness averages approximately two metres. A thicker zone of overburden is located at the eastern edge of the deposit, where some waste material overlies the Lower White Sandstone.

14.9 Discussion and risks

Other than the known standard risk in mineral resource project in Canada, the principal technical risk is in the market value of the product. For the mineral resources, there may be some changes in the amount of waste to be removed if the additional faults in the inferred sectors have contaminated the sandstone to a point it can not be blended. It has to be verified and measured in order to increase the quality of the inferred mineral resources. The estimate of Mineral Resources may be materially affected by mining, processing, metallurgical, infrastructure, economic, marketing, legal, environmental, social and government factors.

On the positive side, the company has been able to obtain a BEX (Quarry Lease) from the Ministry of Mines of Quebec (MERN) for a quarry with an attached Certificate of Authorization from the Mininstry of Environment of Quebec (MDDELCC). This has removed the risk of not being able to move forward in the development of the mineral resources. The permits do not encompass the whole resources but a portion of it. Modifications to the exiting permits with additional studies will be required to have access to the whole resources.

Sections 15 to 22 do not apply as this is a resource estimate

15 Mineral Reserves Estimates

Since this report is not a feasibility or prefeasibility study, no mineral reserves can be defined. Also, the technical report of October 3th, 2016, is a Preliminary Economic Assessment report where no Mineral Reserves have been estimated for the Langis deposit as per NI 43-101 regulations. In-pit / Pit constrained Mineral Resources are described in Section 14.

16 Mining Methods

Since this report is a Mineral Resource Estimation Update, this section will not be discussed in the present document.

17 Recovery Methods

Since this report is a Mineral Resource Estimation Update, this section will not be discussed in the present document.

18 Projet Infrastructure

Since this report is a Mineral Resource Estimation Update, this section will not be discussed in the present document.

19 Market Studies and Contracts

The author is aware that CME has started the process of market studies and contracts negotiations but due to confidentiality agreement with CME can not disclose any information at this time. This information will be disclose in due time at the PFS and FS stage of this project. For the purpose of this study, a fair quarry price for FeroSilicon plant, filler, aggregates & additives of $44/t CAD was used to meet the reasonable prospect of economic extraction.

20 Environmental Studies, Permitting, and Social or Community Impart

Since this report is a Mineral Resource Estimation Update, this section will not be discussed in the present document.

21 Capital and Operating Costs

Since this report is a Mineral Resource Estimation Update, this section will not be discussed in the present document.

22 Economic Analysis

Since this report is a Mineral Resource Estimation Update, this section will not be discussed in the present document.

23 Adjacent Properties

23.1 Langis Quarry

There are few properties adjacent to the Langis property. One is directly adjacent to the territory refered to in the present technical report and few more are located in a radius of 8 km surrounding the property. These informations appear on Figure 35.

Junita Tedy Asihto owns the segment right next to Langis property, located at top east, where no work of any kind has been undertaken in the last two years. Further East, Bowmore exploration ltd. has done research and examination on rocky outcrops in 2015 but nothing was reported for 2016. Continuing in the same direction, activity regarding to the development of partnership for quartzite and silica occurred on land registred under the number 9285-3696 Québec Inc. Right east to this last one, no work has been reported for 2016 and 2017 by Cathy MacEwen. Finally, it's the same situation for Glenn Griesbach, west of the Langis property.

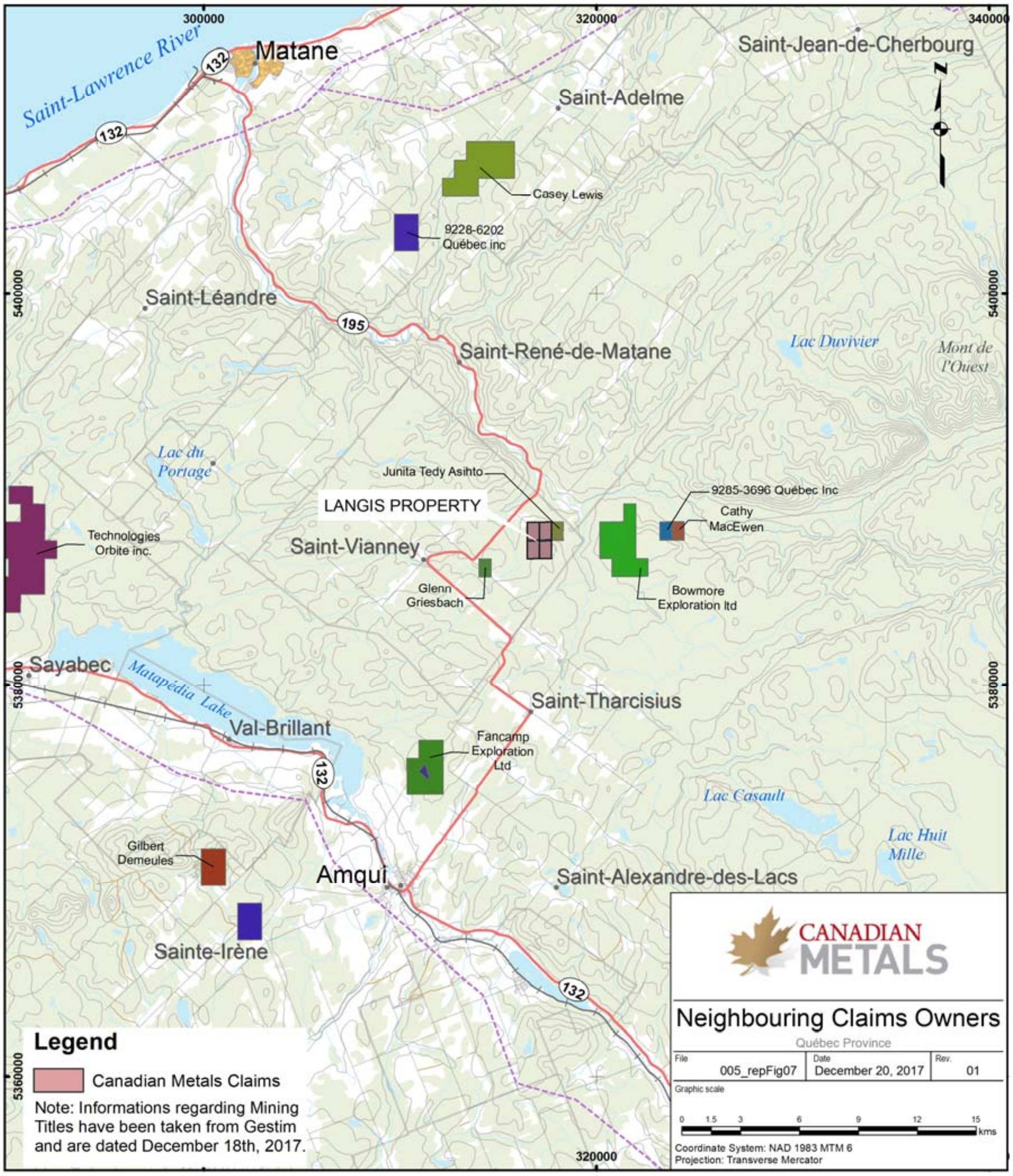


Figure 35. Top view – Territory of Langis property and surrounding lands, Saint-Vianney

Situations may have changed and the reader should rely only from news from the owners of the adjacent properties.

24 Other Relevant Data and Information

24.1 Water level measurement summer 2017

GMG has carried out water level measurements in the casing of the holes which were open and stabilized. This information has been used in the preparation of the application for the C of A.

24.2 The permits obtained by Canadian Metals BEX & Certificate of Authorization

As previously mentioned, the company has the right to extract the sandstone with its lease and C of A. The request for these permits were prepared by WSP, GoldMinds and Biofilia informations. The following maps are extract from the technical documents submitted with the layout as well as the conceptual reclamatinon of the site. Quarry permit in place with an average of 84,286 tpy with a maximum of 100,000 tpy with extraction of 590,000 Tonnes. There is 674,000 Tonnes in the M&I at 99% SiO_2 in the original quarry design based on resource update.

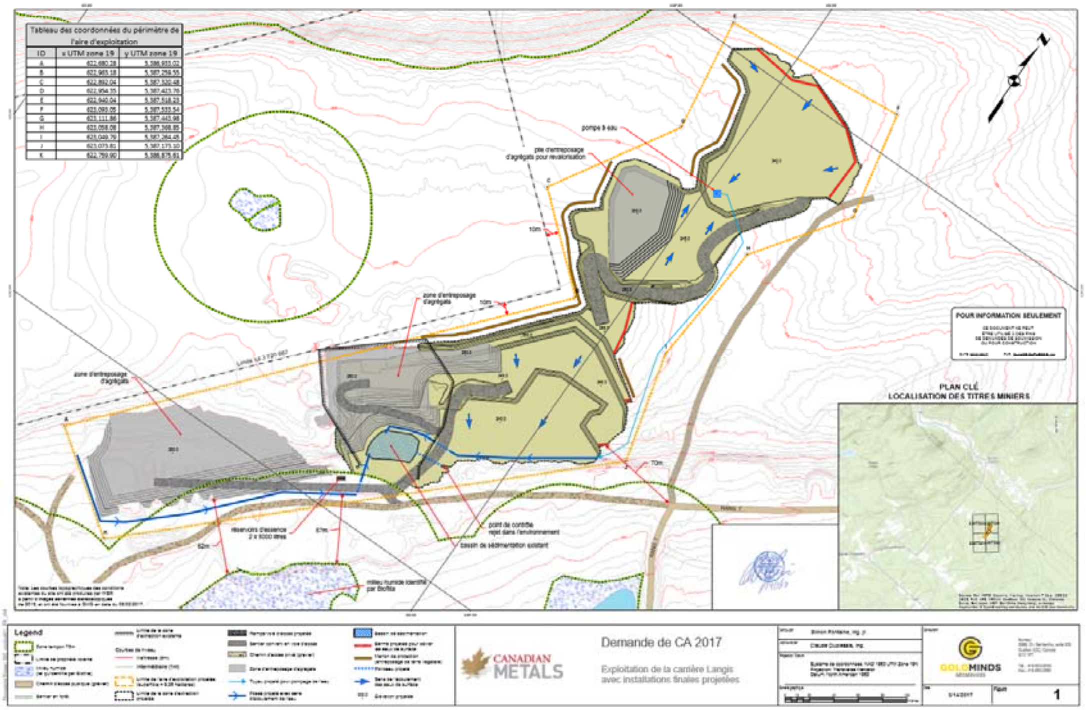


Figure 36: Laytout map for the request for Certificate of Autorisation

Figure 37: Conceptual site after reclamation by CME of the initial projected quarry

24.3 2016 Technical Report on Revised Premilinary Economic Assessment

On October 3rd, 2016, Canadian Metals Inc. provided an independent NI 43-101 compliant technical report on preliminary economic assessment on its Langis Property. The section of this technical report captures and reproduce informations presented and discussed in Preliminary Economic Assessment which are relevant to the project. The author invites the reader to consult the PEA Technical report filed on SEDAR in October 2016 should they need more details.

Cautionnary Statement: the preliminary economic assessment is preliminary in nature, that it includes inferred mineral resources that are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as mineral reserves, and there is no certainty that the preliminary economic assessment will be realized.

24.3.1 Mineral Resource Estimate

Since this report is a Preliminary Economic Assessment report, no Mineral Reserves are estimated. The Mineral Resources have been classified as In-pit Mineral Resources.

As discussed in Section 6.2, a historical resource was estimated by Uniquartz in 1982-84. The resources at the time were established at:

Millions of short tons	SiO_2%	Fe_2O_3	Al_2O_3	
25.5	not specified	0.12	0.41	including
9.0	not specified	0.11	0.26	including
5.7	not specified	0.05	0.183	

The authors have not done sufficient work to classify the historical estimates as current resources and the owner of the Property is not treating the historical estimate as current mineral resources.

Efforts by Uniquartz to define resources with minimal iron and alumina content were driven by a different market outlook than the current work by Canadian Metals Inc. The resources calculated by Uniquartz were based on holes drilled on a fairly large, irregular drilling pattern with a spacing of around 200-250 metres. Some 12 holes covering almost 30 hectares were drilled to investigate the Val-Brillant Formation. With such a density of holes, the geological model presented was essentially conceptual. Done in the early 1980s, the Uniquartz estimate does not meet current NI 43-101 standards.

Following the 2013-15 drilling programs completed by Canadian Metals Inc., the current resource estimate was prepared. This estimate is significantly different from the historical one described above, as 27 holes were drilled on an area of some 10 hectares. The drilling pattern of 100 metres in 2013 was reduced to 50 metres in 2015, which was deemed sufficient to construct a reliable geological model.

Mineral resources statement of the Langis quartz property

All classified as Inferred mineral resources

9.95 million tonnes of resources in pit, with average

SiO_2	98.71%
Al_2O_3	0.38%
TiO_2	0.05%
Fe_2O_3	0.12%

Waste in pit : 3.76 Million tonnes for a stripping ratio of 0.38 to 1

Mining cost Mineralized Material 5$Can/t

Mining Cost waste 4$ Can/t

Processing Cost of Quarry including G & A 10$Can/t

Recovery 95%

Slope angle of 45 degrees

Product value fixed at 44$Can/t purchase price at the Quarry

(these new current mineral resources are free of contrains and surface right limits).

24.3.2 Mining Methods

The various intermediary pit developed by Viridis.iQ for the life of mine, was revised and used to readjust the mine plan. The potential for an open pit quarry of Langis to produce 150,000 t of quartz per year which will then be converted into 78,742 t of ferrosilicon. The Mineral Resources used for the PEA are based on the resource estimation validated by Goldminds which is discussed in this Report. Since this Study is at a PEA level, NI 43-101 guidelines allow Inferred mineral resources to be used in the optimization and mine plan.

The mining method selected for the Project is a conventional open pit drill and blast operation with articulated dump trucks and hydraulic shovels. Vegetation, topsoil and overburden will be stripped and stockpiled for future reclamation use. The mineralization and waste rock will then be drilled, blasted and loaded into haul trucks with hydraulic shovels.

The mine plan is limited to a 26-year mine life for the PEA, even though there are sufficient mineral resources for a longer period.

The pit includes 3.9 Mt of Mineral Resources with an average SiO_2 grade of 98.49% and has a strip ratio of 0.21:1 with 0.83 Mt of waste rock.

A production schedule (mine plan) was developed for the Langis Project to produce 150 kt of SiO_2 per year.

The fleet of equipment will include 2 articulated haul trucks (28.1 tonnes payload), one (1) hydraulic excavators (270 hp), one (1) drills as well as a fleet of support equipment and service vehicles.

Recovery of the deposit will be conducted in compliance with good practices of quarrying operations, according to the standards established in Mining Regulatory Standards, with special attention to safety conditions of the people involved, and with minimal negative impact to the environment.

Before actual production starts, there will be a stage of quarry preparation or development. At this stage the quarry will be prepared to insure the continuity of sufficient silica production to feedstock the smelter without interruption. This step must precede the start of smelter operations.

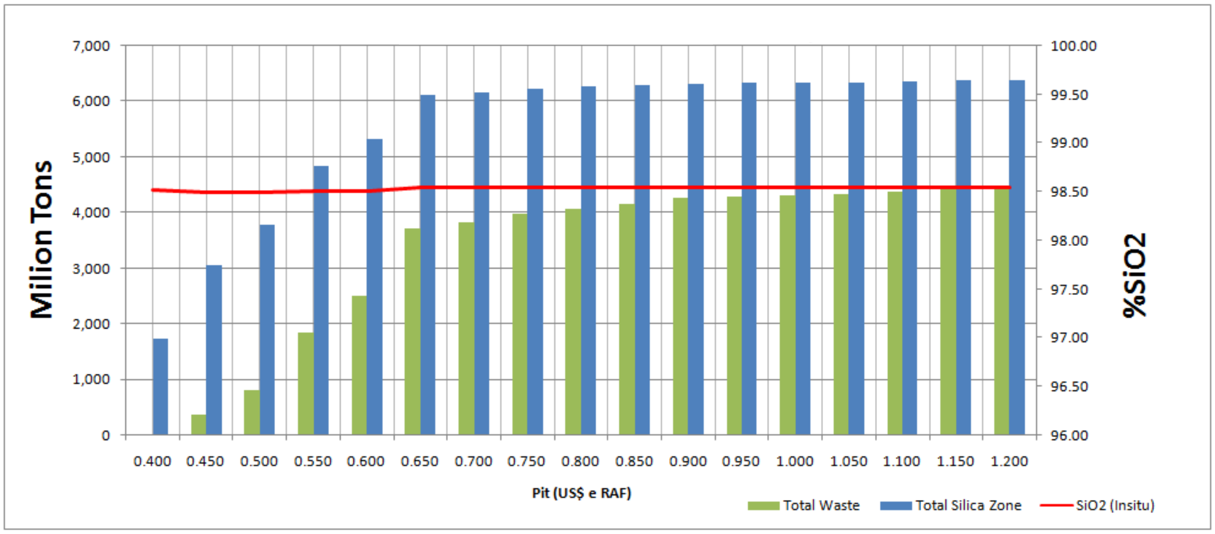
The mining studies were conducted with inferred resources with the block model.

With all premises for the open pit optimization calculated, the optimization process results were obtained through the development of a RAF (Revenue Adjustment Factor) study as indicated by specialists in quarry pit optimization. This study aims to analyze the sensibility of the final pit by permitting the choice of a scenario with the best ratio between the variables of waste tonnage, silica tonnage and grades. The best results for optimization of the group, including inferred resources are shown in the next Table 16 and Figure 38.

Table 16: Optimization results for the Langis quarry 2016

	('000') Tons			
RAF	Total Silica	Total Waste	% SiO2 (in situ)	Strip Ratio
0.550	4.834	1.848	98.51	0.38

Source: Caban Geoservices, Viridis.iQ GmbH



Source: Caban Geoservices, Viridis.iQ GmbH

Figure 38. Optimization result

The selected scenario was RAF 0.550 due to the satisfactory ratio between waste and silica.

24.3.3 **Project Infrastructure**

The main planned infrastructures are: - Administration building – Security building with in-ground weighing station – Furnace building with control rooms – Crushing, sizing and product packaging building – Vehicul repair and maintenance dedicated area with building and covered garage – Laboratory – Onsite roads – Liqui Oxygen storage area – Fuel storage area – Backup generator – Electrical substation – Storm-Water storage areas – Fire water and potable water station (including storage tanks).

24.3.4 **Capital and Operating Costs**

The capital cost of the project is the cost for the initial development of the project. Table 17 summarizes the capital cost estimate.

The preliminary assessment of the consolidated direct capital requirements for CME's integrated Hybrid Flex Plant project, which encompasses the development of the Langis silica deposit as well as the proposed first phase of the downstream smelter operation in Matane, is expected to amount to approximately CAN$305.4M within a range of +/-30%. Included in the estimation is approximately CAN$232.9M of direct and CAN$72.5M of indirect costs.

The capital requirements need to be provided in stages to fund further project development expenses with the lion's share expected to become due over a three years period once construction has been commenced at the two sites.

The contingency buffer accounts for project uncertainties related to events that might lead to revisions or cost overruns for individual capital components during the various project execution stages, including early-stage planning, detailed design and engineering, procurement, construction, commissioning, ramp-up and process stabilization phases.

The overall estimation bandwidth is within the aforementioned range of +/-30% in accordance to the current early-planning stage of the project and is deemed sufficient to evaluate project economics to derive at a sensible go- or no-go decision for the integrated project.

Table 17: Summary of Capital Cost Estimate

CAPEX Iem	Cost, CAN$
Direct Costs	
Mine Development/Pre-stripping	$ 295,201
Mine Equipment	$ 3,462,107
Mine Infrastructure	$ 435,000
Beneficiation Plant	$ 1,338,000
HF Plant	$ 206,759,839
HF Plant Infrastructure	$ 20,565,835
TOTAL DIRECT	**$ 232,855,982**
Indirect Costs	
Owner's Costs	$ 8,544,000
EPCM	$ 24,139,998
Contingency	$ 39,830,997
TOTAL INDIRECT	**$ 72,514,995**
TOTAL DIRECT & INDIRECT	**$ 305,370,977**

Source: Viridis iQG mbH/CIMA+ estimates

24.3.5 **Operating Costs**

The operating costs for the project were estimated annually. A summary of these operating costs is shown in the followings tables. The operating costs of the average life of mine of operations have been detailed for each option and are considered representative of the typical average cost for the life of the mine. The operation has been divided into six (6) areas namely:

Mining, Beneficiation, G&A mining site, Transportation to HF Plant, HF Plant;

The summary of the annual operating costs and the cost per tonne of Ferrosilicon for an average year of operations (Year 5), are shown in the following Table 18.

Table 18: Operating Costs

Area	Annual Cost	Unit Cost	Unit Cost
		($/t SiO_2)	($/t FeSi)
Mining	1,877,238	12.51	23.86
Beneficiation	1,273,532	8.49	16.19
G&A mining site	395,000	2.63	5.02
Transportation to HF Plant	443,451	2.96	5.64
HF Plant	91,281,670	608.54	1,160.14
TOTAL	**95,270,891**	**635.13**	**1,203.68**

24.3.6 **Economic Analysis**

An economic analysis based on the production and cost parameters of the Project has been carried out and the results are shown in Table 19. In the analysis, FOB-HF Plant selling prices of US$1,600 per tonne for Ferrosilicon and US$250 per tonne for Silica Fume were used. A US$/CAN$ exchange rate of 0.7407 was assumed.

Table 19: Summary of the Life of Project Production, Revenues and Costs

Description	Units	
Production – Mineralization	k tonnes	3,900.0
Production – Silica Product Feed to HF Plant	k tonnes	2,924.7
Revenue	M CAN$	4,668.9
Initial Capital Costs (excludes Working Capital)	M CAN$	305.4
Sustaining Capital Costs	M CAN$	5.8
Operating Costs (excludes royalty payments)	M CAN$	2,479.1
Closure Costs	M CAN$	3.0
Total Pre-Tax Cash Flow	M CAN$	1,735.6
Total After-Tax Cash Flow	M CAN$	1,187.3

The financial indicators associated with the economic analysis are summarized in Table 20.

Figure 39 show the sensitivity of the after-tax NPV and IRR, respectively, to variations in Capital Costs, Operating Costs, Selling Prices and the US$/CAN$ Exchange Rate.

This Study has been compiled according to widely accepted industry standards. However, there is no certainty that the conclusions reached in this Study will be realized.

Table 20: Summary of Financial Indicators

Description	Units	
Pre Tax		
Payback Period	Years	4.2
NPV @ 6 %	M CAN$	611.9
NPV @ 8 %	M CAN$	437.9
NPV @ 10 %	M CAN$	312.0
Internal Rate of Return	%	21.8
After Tax		
Payback Period	Years	4.8
NPV @ 6 %	M CAN$	396.5
NPV @ 8 %	M CAN$	273.1
NPV @ 10 %	M CAN$	183.7
Internal Rate of Return	%	18.0

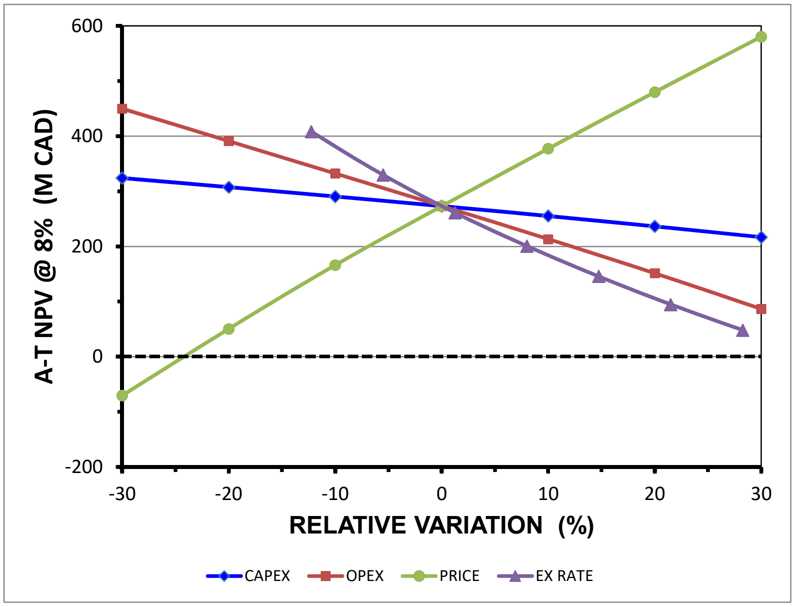


Figure 39. Sensitivity of Project NPV @ 8% (After tax)

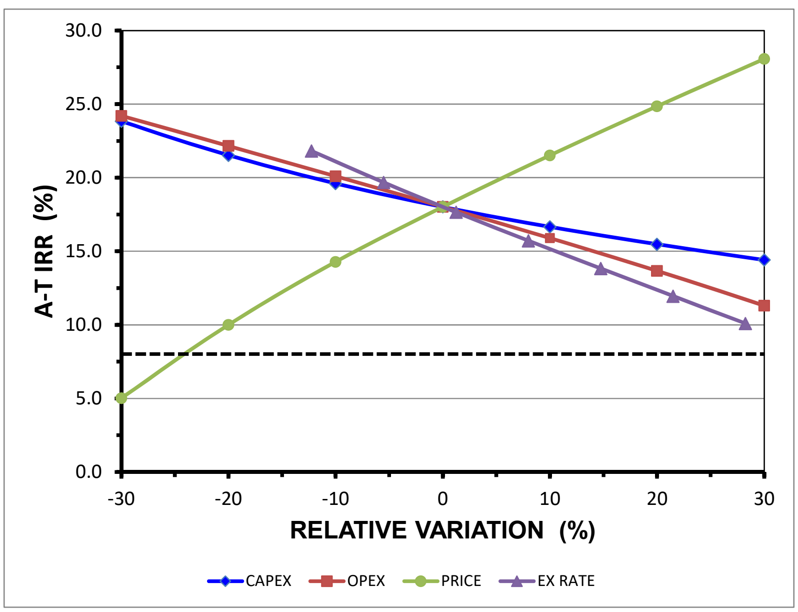


Figure 40. Sensitivity of Project IRR (After tax)

25 Interpretation and Conclusion

The Langis Val-Brillant sandstones with its Lower White sandstones of which is 15 to 35 metres thick is found to be fairly uniform in term of chemistry and to meet the specifications indicated to the authors for ferrosilicon plant feed. The deposit is dissected by numerous faults, the most important being NNE-SSW or NE-SW oriented thrust faults with a steep dip to the north and uprising of the northwest block relative to the southeast block with apparently not much effect on the quality of the material. Horizontal movement is also present along these faults.

Inclined holes drilled in 2017 have shown the grades not be affected by the displacement faults, however two major faults were highlighted in location and witdth of ferigineous alteration aside the plane. For that reason, these tow faults with their perimeters have been modelled as waste and excluded from the resource model.

As there are vertical displacement caused by some fault movements, followup with 3D mapping of the face will be necessary should a specific strata selection is to be made in the white material. The strata with higher iron content can easily be observed in the face visually and can therefore be set appart if required.

The new drilling has allow the transformation of inferred mineral resources to indicated and measured mineral resources in a positive manner.

26 Recommendations

In GMG opinion the actual resource appears sufficient for the contemplated project of CME. Most of the recommendations of 2016 has been realized and place the property in good position for the next step. Our suggestions are now:

1) Realize a Prefeasibility with the current Measured and Indicated resources within the crown land for an estimated budget of 350,000$ to 500,000$

2) Negociate to acquire the surface right with inferred resources to the west of the existing quarry whre there is an open face an dit is ready for quarrying technically. Once acquisition or agreement with neighbour is done and should additional resources be required for the project then drill on regular grid of 60 x 60m (250 to 350K$) The author suggest the acquisition at evaluation plus a reasonable % factor associated with a limited royalty per tonne for a fixed amount.

27 References

CIMA+, 2016: Technical Report on the Revised Preliminary Economic Assessment Langis, CIMA+ 4303 – M03846B, October 3rd, 2016.

End of Report