Technical Report on the Buckingham Graphite Project, Buckingham Township, Quebec, Canada (in accordance with National Instrument 43-101)

Submitted to



Isabelle Robillard, Geo, M. Sc, OGQ permit #287

April 11, 2023

Signature Page and Qualification for the first Author

I, Isabelle Robillard, P.Geo., M.SC., do hereby certify that:

I reside at the 7667 Chateaubriand Street, Montreal, Quebec, Canada H2R 2M2 and I am currently an independent consultant and President of R.I. Géo-Conseil, located at the same address.

This certificate accompanies the report entitled "Technical Report on the on the Buckingham Graphite Project, Buckingham Township, Quebec, Canada dated of April 5th, 2023 (the "Technical Report") prepared for Noble Mineral Exploration Inc.., in accordance with National Instrument 43-101 - Standards of Disclosure For Mineral Projects ("NI 43-101").

I received a B.Sc. in Geology from the University of Montreal in 1987 and a M. Sc. degree in Geochemistry in 1990 from McGill University. I have been working as a geologist in mineral exploration since 1997 being involved in various metal and industrial minerals. I am an active Professional Geologist presently registered with the *Ordre des Géologues du Quebec*, permit # 0287.

I supervised the drilling programs of summer and fall 2016 and accessed the Property from November 27th, to December 23rd, 2016. In addition, I was involved in the exploration works of two other nearby graphite properties since 2013.

I am a "qualified person" for the purposes of this National Instrument 43-101 and I am independent of the issuer Noble Mineral Exploration Inc., as set out in section 1.5 of NI 43-101

I have read NI 43-101 and confirm that this Technical Report has been prepared in accordance therewith.

As of the date of this Technical Report, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

April 11th, 2023

Isabelle QUÉBE

Isabelle Robillard M.Sc., P.Geo, OGQ #0287

Table of Contents

Signature Page and Qualification for the first Author	i	
Table of Contents		ii
List of Figures:		iii
List of Tables:		iii
Item 1: Summary	1	
1.1 Location, Access and Property Agreement.		
1.2 Historical Exploration		
1.3 Geology, Mineralisation and Deposit type		2
1.4 Exploration and drilling		2
1.5 Adjacent Properties		2
1.6 Conclusions and Recommendations		2
Item 2: Introduction	3	
Item 3: Reliance on Other Experts	3	
Item 4: Property Description and Location	3	
4.1 Surface Rights and Permitting		
4.2 Environmental liabilities and other significant factors and risks		
Item 5: Accessibility, Climate, Local Resources, Infrastructure and Physiography	9	
Item 6: History		
6.1 Prior Ownership		
6.2 Regional History of graphite mining and exploration		
Item 6.3 Recent Exploration Works on Buckingham Graphite Property (2013-2018)		
Item 6.3.1 Cavan Ventures (2013-2015)		
Item 6.3.2. Ashburton (2015-2016)		
Item 7: Geological Setting	24	
Item 7.1 Geology of Buckingham region		24
Item 7.2 Geology of Buckingham Graphite Property		
Item 7.3 Mineralization		
7.3.1 Graphite Mineralization at Buckingham Graphite Property		
7.3.2 Regional Mineralization		
Item 8: Deposit Types		
Item 9: Exploration		
Item 10: Drilling		
Item 11: Sample Preparation, Analyses and Security		

Item 12: Data Verification	
Item 13: Mineral Processing and Metallurgical testing	
Item 14: Mineral Resource Estimates	
Item 15 to 22: (Mineral Reserve Estimate, Mining and Recovery Methods, Project Infrastructu Studies and Economic Analysis)	re, Environmental 36
Item 23: Adjacent Properties	
Item 24: Other Relevant Data and Information	
Item 25: Interpretation and Conclusions	
Item 26: Recommendations and Budget	
Item 27: References	

List of Figures:

Figure 1. location map of Buckingham Graphite Property	5
Figure 2. Physiography of Buckingham Property	6
Figure 3. Regional restrictions for mineral exploration.	10
Figure 4. Historical geophysical surveys, geological mapping and location of drillholes in early '80s	13
Figure 5. Conductive zones from Heliborne EM and DTEM survey of 2013 superimposed on conductors as defined in	1
1983 (blue lines)	16
Figure 6. 2014 Phi Spy survey (modified after Ouellet 2015) and location of the samples for trenches 22C and T1	17
Figure 7. Vein type occurrence near creek	18
Figure 8. Location of drillholes from the 2015-2016 drilling program	22
Figure 9 Ground PhiSpy survey and conductive ensembles (Dubé 2016)	23
Figure 10. Grenville Geological Province in the SW portion of Québec (after Corriveau and van Breemen 2000)	25
Figure 11. Geology of Buckingham Property (after Wilson 1920 and Hébert 1988) and historical mines	27
Figure 12. Photographs showing different styles of mineralization	29
Figure 13. Location of grab samples collected by Noble Minerals	34
Figure 14. Adjacent properties and former graphite mines	38
Figure 15. Location of Zones for future exploration works	44

List of Tables:

Table 1. Claim list	7
Table 2. 1986 Drilling Program in East Claim Block	12
Table 3. Flake size distribution of bulk sample from Trench 22C (taken from Ouellet 2015)	15
Table 4. Drillholes location data	19
Table 5. Best intersections of the 2015 drilling program	20
Table 6. Best intersections of the 2016 drilling program	21
Table 7. Grab samples from the creek and trenched areas	35
Table 8. Recommended exploration budget: Phase 1	
Table 9. Recommended exploration budget: Phase 2	43
Table 10. Recommended exploration budget: Phase 3	43

Item 1: Summary

This technical report presents an update on the exploration works that were undertaken at the Buckingham Graphite Property of Noble Mineral Exploration Inc. (Noble Mineral) in accordance with the National Instrument 43-101 Standards of Disclosure for mineral projects. The Buckingham Graphite Property is at an exploration stage and is in the Outaouais region of Quebec, Canada, about 30 km NE of Ottawa.

1.1 Location, Access and Property Agreement.

The Buckingham Graphite Property consists of 45 CDC claims (2662.91 ha) acquired through map staking and are 100% owned by Noble Mineral. The Property consists of two separate claim blocks (West Claim Block and East Claim Block) distributed on each side of the Lièvre River, about 8 km north of the small town of Buckingham. The Property is readily accessible by roads 309 and Chemin River and is 100% situated on private land. Most of the exploration works took place in the West Claim Block, on grounds owned by logging companies and over which several logging roads facilitate the access. Local resources and infrastructures area available nearby, with the Outaouais Electrical Substation located 7km south of the Property and Highway 50, running east-west, about 10 km south of the property. Land uses for the West Claim block is mostly for forestry purposes whereas it is more diversified for the East Claim Block (farming land, forestry, sand and gravel pit, residential development).

1.2 Historical Exploration

The Buckingham region is historically known for its numerous small graphite mines that were operated in late 1800's and early 1900's, including the Walker Mine and the Peerless Mine both nearby Noble's Property. In 1982, a regional EM heliborne airborne survey outlined several conductors on the Property. In the east claim block, two moderate conductors identified as Anomaly 20 and Anomaly 21 were tested with 3 drillholes that returned small graphite intersections (10.9% Gp over 2 m in hole 86-40 and 9.1% Gp over 3,65 m in hole 86-45). In 2013-2018, substantial exploration works were concentrated in the SW portion of the West Claim Block, at the location of two untested NE-SW conductors that were originally believed to be derived from the overburden. A heliborne geophysical survey further defined these conductors as a 1.3 km long conductor striking 30-35° and a smaller conductive zone extending over 300 m and oriented 65-70° a few hundreds of meters to the west and for which only the NE end is inside Noble's Property. Two trenches (T1 and 22C) made at the southwest end of the 1.3 km long conductor returned mineralized intercepts, including 8.2% Cg over 4.75 m (T1) and 21.6% Cg over 14.5 m (22C). In 2015, a bulk sample (20 Kg) from trench 22C was submitted to an initial flotation test of the graphite. With a head grade of 20.7% Cg, the bulk sample returned 32% of the flakes ranging from large (+65 mesh) to jumbo (+28 mesh) size with a purity varying from 94.8 to 96.1% for these large fractions.

Ashburton Ventures Inc. (Ashburton) drilled 15 holes to test about the two-third of the 1.3 km long NNE conductor in 2015 and 2016. These exploratory holes were spaced at approximately 100 m intervals along a line running parallel to the conductor with most of them having similar orientations (310-320°) and dips (- 45°). Boreholes drilled along the NNE conductor all returned mineralized intersections with best intervals at the southwest end of the conductor (112 m at 4.07% Cg in BH15-03 and 24 m at 6,28% Cg in BH16-03). The mineralized intercepts were mainly hosted in marble and some of them were also partly contained in a garnet-bearing paragneiss (3.24% Cg over 25 m in BH16-02). A conceptual model designed in 2016 and based on the drill hole database defined three mineralized planes: 1) a marble plane (MBR-1) that is 30-35° with a dip of approximately 50-55° to the northwest, a thinner marble plane of similar strike (MBR-2) located to the SE of MBR-1 and dipping 30-35° and a small not very well-defined garnet gneiss mineralized plane of small extent.

1.3 Geology, Mineralisation and Deposit type

The property lies in quartzite-rich domain of the southern Central Metasedimentary Belt (CMB) of the Grenville Geological Province. It is mostly overlain by different types of paragneisses, quartzites and more or less pure marbles/calc-silicate rocks. A few marble/calc silicate occurrences are present on the Property with enclaves of surrounding rocks. A zone of graphite veins hosted in pegmatites and extending for 80 m in length was found along a creek running parallel to the linear conductive zone. The graphite mineralization is related to a disseminated flake graphite deposit hosted in marble, which would have formed, at least partly, by a metasomatic or hydrothermal process. The linear shape of the conductive zones, the evidence of faulting along the creek parallel to the conductive zone indicate a deformation zone possibly related to a metasomatic/hydrothermal event and that the cooling of C-H-O fluids may have contributed to the graphite mineralization of the deposit along with a diagenesis process (or graphitization) of carbonaceous material present in the sediments.

1.4 Exploration and drilling

In May 2022, Noble Minerals undertook a short exploration program which consisted in prospecting, using a Beep Mat. Exploration works focused on the West Claim Block, nearby old trenches and along the small creek roughly parallel to the 1.3 km long conductor. A total of 13 grab samples were collected and graphite values ranged from 13.84 to 86.52% Cg with some of the highest values located nearby the creek, where graphitic veins were observed.

1.5 Adjacent Properties

Exploration works have been undergoing intermittently in the surroundings of Noble's Buckingham Property for the past ten years. Adjoining the south limit of the West Claim Block is the Buckingham Property of CKR Carbon (now Gratomic). Significant graphite intersections were obtained from a drilling program of 11 holes carried out in 2017-2018, including 6.06% Cg over 88 m (CK17-02) and 6,88% Cg over 62 m (CK18-07). Other graphite properties were drilled in a 5 km radius surrounding Noble's Property. To the east, a resource estimate in the Inferred Category was calculated for the Lochaber Graphite Project (4,090,000 t. averaging 4.01% Cg, for a total of 160 000 t. of graphite, with a cut-off grade of 2.45% Cg) The property is presently owned by Mr. Rosenblat. To the south, the Bell Graphite Project of Mayne Minerals Inc was subjected to a drilling program in 2017 (11 ddh for a total meterage of 1,338 m) and one additional drillhole was drilled in 2021.

1.6 Conclusions and Recommendations

The Buckingham Property of Noble Mineral fully deserves further investigation as several mineralized intersections were drilled over historical conductors. 3 zones of interest were identified as follows: Zone 1 as the Northeast end of the 1.3 km long conductor in the West Claim Block; Zone 2 as the two conductors in the East Claim Block that underwent exploration works in the eighties and Zone 3 a and b, respectively corresponding to a short conductor in the NE portion of the East Claim block and the Robidoux Graphite Prospect. A three phases work program is proposed. A first, non-contingent phase of C\$ 526,000 includes additional drilling and metallurgical testing in Zone 1, along with prospecting works in Zones 2 and 3. A contingent second phase totalling 700,000 CAD\$ is recommended and consists of a detailed drilling program in Zone 1 and a ground geophysical survey in Zones 2 and 3, if supported by the results obtained from Phase 1. Phase 1 and Phase 2 programs would totalize 1,226,000CAD\$. Based on the positive results of the detailed drilling program of Phase 2, a third drilling phase of 700,000CAD\$ could be added for Zone 1, in order to complete a first calculation of the mineral resources. This third phase would bring the total to 1,926,000CAD\$ for the exploration works in Buckingham Property.

Item 2: Introduction

Noble Mineral Exploration Inc. (Noble Mineral), the Issuer, has commissioned R.I. Géo-Conseil to prepare a technical report for its newly acquired Buckingham Graphite Property, in compliance with the National Instrument 43-101. The purpose of the report is to document the graphite potential related to the Property which includes a description of the geology as well as past and current exploration works.

Sources of information to complete this report were obtained from; 1) drillhole data, certificates of analysis and complete results from the metallurgical testing transmitted by Ashburton Ventures Inc. (Ashburton) to the author, 2) statutory reports, geological reports and maps from the Ministère des Ressources Naturelles du Québec (MERN) on their "Examine" website; 3) land tenure information on mining claims from the MERN's "GESTIM" website accessed on March 9, 2023, and4) scientific papers available in public domain

Item 3: Reliance on Other Experts

The author has also relied on two geophysical reports pertaining to the property, both authored by Joël Dubé, geophysicist. These reports were respectively published in 2013 and 2016 as assessment reports in MERN's EXAMINE. The first report is entitled "Technical Report, High-Resolution Heliborne Magnetic and TDEM Survey, Buckingham Property". The second report is entitled "Technical Report, Ground TDEM PhiSpy Survey, Buckingham Property, Outaouais region".

Item 4: Property Description and Location

The Buckingham Graphite Property is 30 km NE of Ottawa and 150 km west of Montréal, in the Outaouais region of southern Quebec (Figure 1). It is entirely located in the municipality of L'Ange-Gardien and lies 8 km northwest of the small town of Buckingham, now amalgamated with Gatineau. The property is comprised within SNRC sheet numbers 31G11 and 31G12 and consists of two claim blocks: the West Claim Block and East Claim Block, located on each side of Lièvre River (Figure 2). The Property size totalizes 45 claims for a surficial area of 2662.91 ha and is 100% owned by Noble Mineral.

The West Claim block is composed of 14 map designated cells or "*cellules désignées sur carte*" (CDC) for a total area of 841.53 ha. Expiry dates range from June 22nd, 2024 to September 23rd, 2024 for all the mining titles grouped under this block. The East Claim block is defined by 31 map designated cells for a total of 1821.38 ha with expiry dates ranging from January 28th, 2024 to July 25th, 2024 (Table 1).

Since 2000, the claims are referred to as map-designated cells (CDC) in the Province of Québec and can be acquired online, using the form « Notice of Map Designation" available on the GESTIM website operated by the Ministry of Natural Resources of the Province of Québec (MERN). The Mining Act recently extended the first term of a claim from two to 3 years after the date at which

the claim was registered. The subsequent terms remained at two years. The claims are nenewed by the Ministry of Natural Resources (Ministère des Ressources naturelles et des Forêts) providing the conditions set out in the Mining Act are met.

These conditions include a minimal amount of expenses in exploration works, as predetermined by the regulations in force. The amount of expenditure per claim will vary depending on the surface area of the claims, whether the claim is located north or south of 52 latitude and the number of terms since their issuance which implies larger amount to be spent as the number of terms increases. The Mining Act allows excess amounts of expenses on a specific claim to be distributed on nearby claims which are located within a radius of 4.5 km from the center of the claim having excess credits. All the claims forming the Buckingham Graphite Property are in good standing as they are all valid until year 2024. To the best knowledge of the author, there are no current or pending litigations that may be material to the assets of Noble Mineral.

4.1 Surface Rights and Permitting

The whole property is located on private land which is divided among several landowners. A significant portion (about 40%) of the ground located in the West Claim block is owned by a logging company. This portion of land also corresponds to areas of immediate interest as it hosts most of the conductive zones that have been defined during past exploration works. Since exploration works were still limited, no permit or certification from governmental agencies were required at that time (Robillard 2017). The east claim block is mostly owned by individuals landowners, except a minor portion that is owned by Lafarge Company. Minor parts within southeast and west portions of the East claim Block are located in residential development (Figure 2).

4.2 Environmental liabilities and other significant factors and risks

There is no liability directly related to mineral exploration over the Buckingham Graphite Property. On a regional scale, the Regional County Municipalities (MRC) of both des Collines de L'Outaouais and Papineau have substantial areas for which mineral exploration activities are temporarily suspended in regards with future delimitations of incompatible territories for mineral exploration (Figure 3).

Since Buckingham Property is located on private land, considerable attention should be given to maintain a good communication with surface right owners. They must be kept informed about upcoming exploration programs. Additionally, Noble Mineral must obtain their permission before initiating any exploration program.



Figure 1. location map of Buckingham Graphite Property



Figure 2. Physiography of Buckingham Property

Table 1. Claim list

East Claim Block	Claim #	NTS Sheet	Area (ha)	Date Registry	Date Expiry
	2612898	31G11	60.13	2021/06/09	2024/06/08
	2612899	31G11	60.13	2021/06/09	2024/06/08
	2612900	31G11	60.13	2021/06/09	2024/06/08
	2612901	31G11	60.12	2021/06/09	2024/06/08
	2612902	31G11	60.12	2021/06/09	2024/06/08
	2612903	31G11	60.12	2021/06/09	2024/06/08
	2612904	31G11	60.12	2021/06/09	2024/06/08
	2612905	31G11	60.12	2021/06/09	2024/06/08
	2612906	31G11	60.11	2021/06/09	2024/06/08
	2612907	31G11	60.11	2021/06/09	2024/06/08
	2612908	31G11	60.11	2021/06/09	2024/06/08
	2612909	31G11	60.11	2021/06/09	2024/06/08
	2612910	31G11	60.11	2021/06/09	2024/06/08
	2612911	31G11	60.11	2021/06/09	2024/06/08
	2612912	31G11	60.1	2021/06/09	2024/06/08
	2612913	31G11	60.1	2021/06/09	2024/06/08
	2612914	31G11	60.1	2021/06/09	2024/06/08
	2612915	31G11	60.1	2021/06/09	2024/06/08
	2612916	31G11	60.1	2021/06/09	2024/06/08
	2612917	31G11	60.1	2021/06/09	2024/06/08
	2612918	31G11	60.1	2021/06/09	2024/06/08
	2612919	31G11	60.1	2021/06/09	2024/06/08
	2612920	31G11	60.1	2021/06/09	2024/06/08
	2597247	31G11	60.11	2021/01/29	2024/01/28
	2597248	31G11	60.11	2021/01/29	2024/01/28
	2597249	31G11	60.11	2021/01/29	2024/01/28
	2597250	31G11	60.11	2021/01/29	2024/01/28
	2597251	31G11	60.11	2021/01/29	2024/01/28
	2615545	31G11	18.07	2021/07/26	2024/07/25
	2607642	31G11	60.11	2021/05/12	2024/05/11
	2611797	31G11	60.1	2021/05/27	2024/05/26

West Claim Block	Claim #	NTS Sheet	Area (ha)	Date Registry	Date Expiry
	2613575	31G12	60.12	2021/06/23	2024/06/22
	2613576	31G12	60.11	2021/06/23	2024/06/22
	2620221	31G11	60.12	2021/09/24	2024/09/23
	2620222	31G11	60.12	2021/09/24	2024/09/23
	2620223	31G11	60.11	2021/09/24	2024/09/23
	2620224	31G11	60.11	2021/09/24	2024/09/23
	2620225	31G11	60.11	2021/09/24	2024/09/23
	2620226	31G11	60.11	2021/09/24	2024/09/23
	2620227	31G11	60.1	2021/09/24	2024/09/23
	2620228	31G11	60.1	2021/09/24	2024/09/23
	2620229	31G12	60.11	2021/09/24	2024/09/23
	2620230	31G12	60.11	2021/09/24	2024/09/23
	2620231	31G12	60.1	2021/09/24	2024/09/23
	2620232	31G12	60.1	2021/09/24	2024/09/23

Land used for the West claim Block is mainly recreational and for forestry purposes whereas for the East Claim block, most of the grounds is zoned for as agricultural land, although not entirely used as such, as observed from the satellite map. Therefore, any exploration activity within such zones will have to comply to the law in force, identified as *Lois sur la Protection du territoire et des activités agricoles* (LPTAA) and authorisation for such works will have to be forwarded to the Commission de protection du territoire Agricole du Québec (CPTAQ). A sand a gravel quarry is also present in the west portion of the East Claim Block and correspond to the portion of land that is owned by Lafarge Company (Figure 2).

To the best knowledge of the author, there are no other known significant factors and risks besides noted in the technical report that may affect access, title, or the right or ability to perform the recommended exploration program.

Item 5: Accessibility, Climate, Local Resources, Infrastructure and Physiography

The Buckingham Property is about 7 km north of the small town of Buckingham that is located nearby highway 50 connecting Montréal to Ottawa. The East claim Block is easily accessed, as its west portion is crosscut by Road 309 connecting Buckingham to Mont-Laurier. This road runs along the east side of Lièvre River in its south portion. This claim block covers a region that is partly inhabited, and is therefore traversed b multiple roads, in addition to Road 309. Access to the west Claim block is made via Chemin River, a paved road running along the west side of Rivière du Lièvre that extends north of the town of Buckingham. At approximately 7 km north of Buckingham, a left turn on Devine Road connects to a network of logging roads providing various access throughout the West Claim block. These logging roads are not maintained during the winter months.

The property is located in the Laurentian Hills, near the flattened area of the St Lawrence Platform. The north portion of the East Claim Block and the whole West Claim block are characterized by a rugged topography with steep-sided hills reaching 325 m above sea level. The hydrography is dominated by small lakes and creeks draining into south flowing Rivière-du-Lièvre although the drainage may be partly disturbed by beaver dams. The east claim block is partly overlapping the valley of Lièvre River that is mainly used for agriculture and with elevation of about 140 m above sea level.

Southern Québec is characterized by a fresh and humid continental climate. According to Environment Canada, the average mean annual temperature in the area range in summer from 14° to 25° C while in winter the average temperature vary from -13° to -4° C. Typically, the land is free of snow from mid-April to late November. Private roads during the winter season, such as the logging trails of the West Claim Block, would require contracting snow removal for their access.



Figure 3. Regional restrictions for mineral exploration.

Within the West Claim Block, the land is mostly used for, forestry and hunting. As for the East Claim Block, a wider variety of land uses are noted with significant portions that are used as farming land. Forested areas represent about half of the surficial area and are prevalent in the north and south portions of the claim block (Figure 2). A residential development is noted in one of these forested areas, at the southeastern end of the Claim Block. A sand/gravel pit is also in operation in its central portion. Local resources are available at nearby localities, notably Gatineau. Transportation and housing are available nearby and a local work force should be suitable to support a mining operation. The Outaouais Electrical substation is located 7 km from the property. Highway 50 run in East West direction, 10 km south of the Property.

Item 6: History

6.1 Prior Ownership

In early eighties, the Outaouais region was explored for graphite. Stratmin Inc. owned three properties in the Buckingham region (Scantland, Peerless and Lochaber) in 1986. Peerless Property was partly overlapping the East Claim Block while Scantland was located about 800 m west of the West Claim Block. Following the discovery of the Lac Des Îles deposit just south of Mont-Laurier (Figure 1), Stratmin concentrated their efforts in that area. The region of Buckingham remained mostly idle until the demand of graphite started to rise in late 2000's resulting from a growth demand for electric vehicle and electronic devices.

Since 2013, the grounds located within the Buckingham Property of Noble Mineral were successively held by different mining companies. In 2013, the West Claim block became the property of Cavan Ventures. In 2018, the West Claim Block was owned by Ashburton (5 claims), Saint Jean Carbon (7 claims), one claim was held by Steven Lauzier and another by Cavan Ventures. In 2019, all the claims were under the name of Progressive Planet Solutions (formerly Ashburton Ventures Inc.) and became available for mapstaking in July 2022.

The area east of Lièvre River was also staked in the same period of time. From 2015 to 2018, the East Claim block was owned by several individuals and small companies, including Robert Rosenblat and 9228-6202 Québec inc. From 2018 to 2021. The east claim block was available for mapstaking except one claim overlapping the Robidoux graphite occurrence that was held by 9228--6202 Quebec inc. It became available for mapstaking in late April 2021.

6.2 Regional History of graphite mining and exploration

The Buckingham and Lochaber Townships are historically known to host several graphite deposits which were first described by Vennor (1878). Small scale production of disseminated flaky type graphite are known from several nearby deposits over the period of 1860's to 1920 (Spence 1920). They reached maximum production in1916, resulting from increasing demand of material for manufacturers during World War I and prices being 3 to 5 times those which ruled in 1914. Nearby Buckingham Property, the Walker Mine and the Peerless (Diamond) Graphite Mine were sporadically in operation (Figure 3). The Walker Mine, whose main adit was located about 800 m

south of the West Claim Block produced a total of 318 tons of graphite from 1876 to 1906. An additional 90 tons of vein-type graphite is also said to have been extracted nearby at the same period. On the east side of Lièvre River, the Diamond Graphite Company built a small mill and produced 320 tons of graphite from 1906 to 1910. The mine was then acquired by the Peerless Graphite Company but no extraction was made.

In 1982, the Ministry of Natural Resources mandated Les Relevés Géophysiques to carry out a heliborne EM survey over an area totaling 365 km², covering the Buckingham region (DP83-05). The survey delineated several moderate to strong conductive anomalies over Noble's property, some of which extending for several hundred of meters. Follow-up works focused on two moderate to strong anomalies (Anomaly #20 and Anomaly # 21) located in the East Claim Block (Figure 4). These anomalies were geologically mapped, and a ground EM geophysical survey (Max-Min II) was subcontracted to Géomines Ltd (Fortin 1987) over these areas (Figure 4). A folded conductor axis was delineated, along which old exploitation works were found. A drilling program consisting of 12 short holes was designed to test the folded conductive zone (Tremblay and Cummings 1987). However, the drilling campaign was stopped after the completion of 3 holes totaling 304 m (Table 2). Nevertheless, a graphitic horizon was found in holes 86-40 and 9.1% Gp over 3,65 m in hole 86-45). Despite these positive results, no further works are known to have been occurred in this area and more generally, in the East Claim block.

In addition, the airborne survey of 1983 delineated two parallel conductive zones trending NE-SW in the West Claim Block. Although these two conductive zones extended from 1, 300 to 300 m in length, they were not subjected to follow-up works since they were interpreted to originate from the overburden.

DDH	Azimut	Dip	Depth	From	То	Gp (%)	Lithology
			(m)	(m)	(m)		
86-40	135	-45	115	35.55	36.55	15.25	
				36.55	37.55	6.5	
86-41	90	-45	108				
86-45	270	-45	81	37.4	38.9	7.4	Graphitic marble
				38.9	39.9	4.7	Graphitic marble and CSR
				39.9	41.05	15.5	CSR

Table 2. 1986 Drilling Program in East Claim Block



Figure 4. Historical geophysical surveys, geological mapping and location of drillholes in early '80s

Item 6.3 Recent Exploration Works on Buckingham Graphite Property (2013-2018)

Over the last ten years, several areas were explored in the Buckingham and Lochaber townships, with some projects that included drilling programs (Derosier and Marchand, 2017, Bernier et al. 2015, Robillard 2017, Robillard 2019). Although Noble's Buckingham Property was entirely mapstaked, only the West Claim Block has reported exploration works during that period of time.

Item 6.3.1 Cavan Ventures (2013-2015)

In 2013, Cavan Ventures commissioned Magnor Exploration to conduct prospecting works in the West Claim Block. A total 40 samples including 11 channel samples were assayed (Ouellet 2014). Best results were concentrated in the southwest portion of the 1 km long historical airborne conductor with 6 grab and channel samples that returned Cg content from 2.93 to 21.7%.

In August 2013, a heliborne magnetic (MAG) and time-domain electromagnetic (TDEM) survey was carried out by DD Geoscience, covering most of Noble's West Claim block. A total of 135 line-km was flown, with traverse lines at 50 m spacing and oriented N305. The survey confirmed the two historic conductors of the 1982 airborne survey with improved precision on their extent, magnitude and orientation (Figure 5). The longest, 1.3 km long conductor, was defined from two anomalies that were interpreted to originate from similar conductive source as they displayed similar characteristics and strike (30-35°) (Dubé 2013). The second conductor extended for about 300 m in length and was not associated with magnetism, as opposed to the first. This second conductor was therefore considered as highly prospective for graphite (Dubé 2013). The 1km long conductor is entirely contained in Noble's Property while the second, 300 m long conductor is mostly outside the limits of Noble's Property (Figure 5).

In 2014 a limited ground geophysical survey was conducted over the newly defined conductors. The survey was a PhiSpy ground TDEM system that was developed by DD Geoscience. It allows the detection of relatively deep conductors while being a light and portable device. The survey consisted in a single traverse which indicated highly conductive zones (pink areas) scattered along the 1.3 km long conductor with two larger zones being found at its SW end (Ouellet 2015). Six trenches (T1 to T5 and 22C) were later excavated over these highly conductive zones and 59 channel samples were collected in Trenches T1 and 22C (Figure 6).

Trench T1(48 m long) was oriented 100° and 25 channel samples were distributed along three distinct segments. Each segment returned mineralized intersections with best results including 8.2% Cg over 4.75 m, including 12.1% Cg over 1 m and 12.5% Cg over 3.5 m. (Figure 6). Trench 22C was excavated on the top of a steep-sided hill, some 75 m to the NE of T1. It consisted of two perpendicular corridors: one shorter NE-SW corridor measuring 20.5 m in length, being cut at the southeast end of a longer corridor measuring 24 m and oriented NW-SE. 39 channel samples were

collected and most of them returned graphite contents above 8% Cg (Figure 6). The NW-SW corridor returned 21.6% Cg over 14.5 m and 16.8% Cg over 3.9 m (Ouellet 2015).

In April 2015, Cavan Ventures carried out a bulk sampling for initial flotation testing of the graphite. About 20 kg of material was collected in trench 22C at roughly 0.5 m in depth in order to minimize the amount of weathered material (Ouellet 2015). The bulk sample was submitted to SGS Canada Inc. of Lakefield, Ontario for a simple flotation test, without process optimization or chemical treatment, such as addition of acid leach or alkaline roast.

The head grade was 20.7% Cg and returned an overall combined flotation concentrate purity of 94.8% (Table 3). The results indicate that 32% of the flakes are large (+65 mesh) to jumbo (+28 mesh) in size and that the purity obtained in these large fractions ranges from 94.8 to 96.1%, which is equivalent or higher than the overall average obtained.

Product	Wei	ight	Assays, %	% Distribution
	g	%	C (t)	C (t)
+28 mesh	9.4	2.3	96.1	2.3
+35 mesh	12.5	3.0	95.9	3.1
+48 mesh	31.1	7.6	95.3	7.6
+65 mesh	78.8	19.1	94.8	19.1
+100 mesh	21.7	5.3	92.5	5.2
+150 mesh	30.7	7.5	92.8	7.3
+200 mesh	14.6	3.5	97.1	3.6
+270 mesh	19.2	4.7	97.1	4.8
+400 mesh	21.9	5.3	96.6	5.4
-400 mesh	172.2	41.8	94.2	41.6
Head (calc.)	412.2	100.0	94.7	100.0
Head (direct)			94.8	

 Table 3. Flake size distribution of bulk sample from Trench 22C (taken from Ouellet 2015).



Figure 5. Conductive zones from Heliborne EM and DTEM survey of 2013 superimposed on conductors as defined in 1983 (blue lines)



Figure 6. 2014 Phi Spy survey (modified after Ouellet 2015) and location of the samples for trenches 22C and T1

Blue= below 5% Cg; Green = 5-10% Cg; Yellow = 10-15% Cg; Orange = 15-20% Cg; Red = > 20% Cg.

Item 6.3.2. Ashburton (2015-2016)

Ashburton realised substantial exploration works during that period, which included some prospecting works, a 3-phase drilling program and a ground geophysical survey. 19 grab samples were collected along the 1.3 km long conductor and 13 of them returned Cg values ranging from 12.2% Cg to 68% Cg, notably from a vein type occurrence that was found near the creek running parallel to the conductor (Figure 7).



Figure 7. Vein type occurrence near creek

The 3-phases drilling program included 19 holes with the objective of testing the two conductors. 15 of these drillholes were emplaced within the limits of Noble's Property, as listed in Table 4. Phase 1 started with the southwest end of the NNE conductor, nearby the mineralized trenches. Five holes were spaced at every 100 m, except for holes BH15-03 and BH15-04 which were collared at the same location (Figure 8). The holes were oriented perpendicular to the conductor with a NW dip ranging from 45-50°, except for BH15-04 (70°).

Drillhole	Easting*	Northing*	Azimut	Dip	# of samples	Total depth (m)
BH15-01	460535	5054608	310°	50°	116	209
BH15-02	460573	5054701	320°	45°	32	200
BH15-03	460499	5054487	310°	50°	172	224
BH15-04	460499	5054487	310°	70°	103	200
BH15-05	460617	5054750	302°	45°	108	200
Subtotal 20	15				531	1033
BH16-01	460688	5054841	318°	45°	123	200
BH16-02	460727	5054891	318°	45°	123	199
BH16-03	460726	5054890	356°	45°	120	200
BH16-04	460913	5055258	315°	45°	192	200
BH16-05	460852	5055336	0°	45°	76	200
BH16-06	Outside	Noble's	Property			
BH16-07	Outside	Noble's	Property			
BH16-08	460762	5055173	164°	45°	128	200
BH16-09	Outside	Noble's	Property			
BH16-10	460554	5054650	315°	45°	149	199
BH16-11	460821	5054934	318°	45°	16	223.4
BH16-12	460284	5054968	138°	45°	12	181.9
BH16-13	460434	5055097	105°	45°	40	217.9
BH16-14	460850	5055196	15°	45°	24	188.2
Subtotal 20	16				1003	2209.4
TOTAL					1534	3242.4

Table 4. Drillholes location data

Significant mineralized intervals were intercepted, with longest intersection obtained at the southwestern end of the 1.3 km long conductor in drillhole BH15-03 with a reported 112 m at 4.07% Cg (Ashburton's PR dated of February 11th, 2016). The hole ended in the mineralization at 224 m. Other significant intersections were intercepted in BH15-01 (8.36% Cg over 28.8 m) and BH15-05 located some 300 m further to the NNE, returned 88 m at 3.29% Cg (Table 5). These intersects included intervals with higher Cg average content (11.2% Cg over 7 m in BH15-03 and 17.70% Cg over 8 m in BH15-01). Most of the mineralized intercepts, more specifically the high-grade intercepts, are hosted in marble. Other significantly mineralized intervals were hosted in paragneiss, although they returned lower in graphite content (2.86% Cg over 12.3 m in BH15-02).

Hole ID	From (m)	To (m)	Length (m)*	Cg (wt %)	Hosting Rock
BH15-01	70	106	36	2.51	Marble, gneiss
including	73	85.7	12.7	4.16	Marble
	175	203.8	28.8	8.36	Marble
including	185	193	8	17.7	Marble
BH15-02	187.7	200	12.3	2.86	Gneiss
BH15-03	30	54	24	3.05	Marble
including	46	52	6	6.63	Marble
	112	224	112.0**	4.07	Marble, gneiss
including	166	173	7	11.2	Marble
including	198	203	5	8.45	Marble
BH15-04	51	67	16	11.9	Marble, gneiss
BH15-05	68	81	13	2.43	Phlogopite and garnet gneiss
	109	197	88.0*	3.29	Marble, gneiss
including	144	160	16	7.34	Marble

Table 5. Best intersections of the 2015 drilling program

In summer and late fall of 2016, the 1.3 km long conductor was tested over its northeastern portion and additional mineralized intercepts were obtained, although they were shorter and less rich in graphite content than the ones obtained from Phase 1. Boreholes drilled along the conductor all returned mineralized intersections that are summarized in Table 6.

These mineralized intercepts were mainly hosted in marble (4.33% Cg over 14 m in BH16-03; 3,2% Cg over 18 m in BH16-08) although mineralized intercepts were also partly contained in a garnet-bearing paragneiss, such as observed in drill holes BH16-02 (3.24% Cg over 25 m). Higher grade graphitic intercepts are typically found near contacts between the marble and gneisses, such as the mineralized intercepts of BH16-03, from 176 to 200 m which returned 6,28% Cg over 24 m including a high-grade interval of 17.9% Cg over 7 m, from 177 to 184 m (Table 6).

The drilling program of 2015-2016 left the mineralized graphitic zone open at depths with boreholes BH15-03, BH16-01 and BH16-02 that ended in mineralization.

Hole ID	From (m)	To (m)	Length (m)	Cg (wt %)	Hosting Rock	
BH16-02	69	74	5	4.45	Marble	
	124	149	25	3.24	Gneiss, Marble	
BH16-03	87	101	14	4.33	Marble	
	176	200	24	6.28	Marble, Gneiss	
including	177	184	7	17.9		
BH16-04	94	122	28	3.88	Gneiss, ductile zone and marble	
including	106	116	10	5.75	Ductile zone and Marble	
BH16-08	91	101	10	4.42	Marble	
	113	130	18	3.2	Marble	
	148	184	36	3.34	Marble	
BH16-10	48	87	39	2.66	Marble, gneiss	
including	80	87	7	4.62	Gneiss	
	104	114	10	3.98	Gneiss, marble	
BH16-14	111	122	11	3.54	Calc silicate rocks, gneiss	

Table 6. Best intersections of the 2016 drilling program



Figure 8. Location of drillholes from the 2015-2016 drilling program

Dynamic Discoveries Geoscience was contracted to conduct a PhiSpy ground TDEM survey covering the two previously defined linear conductors, The survey was carried out from in November of 2016. The survey grid was oriented N125 with lines spaced every 50 m perpendicular to the dominant strike of heliborne anomalies and a total of 36.3 km was surveyed (Figure 9). 41 PhiSpy conductors were identified in the surveyed area, out of which two ensembles "C" and "I" were considered as being of highest priority. These two ensembles or clusters are at both ends of the 1.3 km long conductor. Cluster "C", at the SW end of the conductor, includes anomalies with widest apparent thickness with significant amplitude and longitudinal extensions. Ensemble "I", at the NE end of the conductor, consists of particularly strong, wide and continuous anomalies (Dubé 2016).



Figure 9 Ground PhiSpy survey and conductive ensembles (Dubé 2016)

Item 7: Geological Setting

The property is found in the Central Metasedimentary Belt (CMB) of the Mesoproterozoic aged (1.6 Ga – 1.0 Ga) Grenville geological Province. The Grenville is recognised as a deeply exhumed Mesoproterozoic Himalayan-type collision orogenic belt that extends over thousands of kilometers and interpreted as a collage of gneissic terranes that were subjected to high-grade metamorphism ranging from upper amphibolites grade to granulite facies, locally (Martignole and Friedman 1998, Corriveau and van Breemen 2000).

The southwest portion of the CMB is divided into two distinct domains, a marble –rich domain and a quartzite-rich domain, respectively found west and east of Gatineau River (Figure 10). The property is located in the quartzite-rich domain, which consists of quartzite and quartz-rich rocks with horizons of metapelite, graphitic quartzo-feldspathic and biotite gneisses, marble and calc-silicate rocks. Monzonite and gabbro bodies cut across the gneisses. These two main groups were already recognized by Wilson (1920) who distinguished the Grenville sedimentary Series with the Buckingham Igneous Series. The regional structural grain of the quartzite-rich domain trends northeast-southwest and is mostly subvertical (Corriveau and van Breemen 2000).

Item 7.1 Geology of Buckingham region

The Buckingham/Gatineau region was first geologically mapped in 1913-15 at the scale of 1:63 360 by the Geological Survey of Canada (Wilson 1920). Over the years, the Provincial Government of Québec conducted geological mapping, focusing on specific regions such as the Wakefield-Cascades area (Dupuy 1989), Glen Almond (Papezik 1961) and the western half portion of NTS sheet 31G11 (Hébert 1988), which overlies the East Claim Block and half of the West Claim Block. No Geological mapping is known to postdate the works of Wilson (1920) for the west portion of Buckingham Graphite Property (NTS sheet 31G12), resulting in discontinuous geological units at the border of NTS sheet 31G11 and 31G12 (Figure 11).

Wilson (1920) mapped the Buckingham Township as being mostly covered by igneous intrusives (pyroxene-syenite, pegmatite diorite, gabbro, pyroxenite, peridotite) grouped as the Buckingham Series with lesser extents of metamorphosed sedimentary rocks (gneiss, quartzites and crystalline marbles) grouped as the Grenville series. Later geological mapping which focused on the eastern side of the township (NTS 31G11), rather describes the Buckingham region as being mostly overlain by the sedimentary rocks of the Grenville Supergroup with abundant paragneiss and quartzites and lesser amounts of marbles and calc-silicate rocks. These sedimentary rocks are crosscut by several intrusives of small extents that include syenite, diorite, granite, pegmatite-granite sills, gabbro pyroxenite and peridotite (Hébert 1988). The whole region is characterized by a high-grade metamorphism (granulite facies) typical of the Grenville Geological Province, that resulted in partial melting of rocks, producing locally observed migmatites. Finally, a swarm of diabase dykes mostly oriented E-W crosscut all the formations.

Paragneiss are usually well banded and are alternating with marbles, quartzites and amphibolites. They are observed in a variety of compositions (quartzo-feldspathic gneiss, biotite gneiss, biotitegarnet gneiss, biotite-garnet-sillimanite gneiss and biotite-hornblende gneiss). Quartzite is also



Figure 10. Grenville Geological Province in the SW portion of Québec (after Corriveau and van Breemen 2000)

observed in larger beds (up to 100 m wide), that may form the crests of ridges. Quartzite is impure and can be distinguished as feldspath-bearing quartzite, biotite-bearing quartzite and a massive bleuish-grey quartzite. Marble is generally forming thin beds of less than 1 m within gneiss and quartzites, although larger bands up to 150 m can be found locally. Marble is also impure and may contain various amounts of diopside, phlogopite, graphite and serpentine. It may also contain abundant fragments of surrounding rocks such as paragneiss and quartzite. Marble outcrops are seldom observed as it is a soft rock that usually occurs in swampy, topographic lows. Calc-silicate rocks can be found locally and usually form thin beds at the contact with marbles units. They are the result of regional metamorphism or contact metamorphism and metasomatism of carbonated rocks. They can be recognized by the presence of specific minerals such as scapolite, tremolite, apatite, diopside, wollastonite and/or sphene. Amphibolite may also occur as bands within the paragneiss and can be intercalated with quartzite and locally reach 100 m in width. Finally, partial melting of paragneiss resulted in migmatites, described as a medium to coarsegrained, quartzo-feldspathic rock that can be observed locally (Hébert 1988).

Item 7.2 Geology of Buckingham Graphite Property

A large syenite intrusive appears on the NTS31G12 side of the geological map, in the SW corner of the West Claim Block, where are found the two conductors. However, fieldworks and drill core indicate that this part of the property is mostly underlain with paragneisses and quartzites. Several types were recognized in the drill core of 2016, in the west Claim Block including quartzo-feldspathic gneiss, a phlogopite gneiss and a phlogopite-garnet paragneiss that usually contains graphite mineralization (Photograph 11b). Pure quartzite, mostly blue in color was also observed on outcrops in the West Claim Block.

Several bands of marble and calcsilicate rocks generally trending northeast/southwest are mapped in the East Claim Block. Narrow bands of amphibolite are intercalated at the contact between the marble/calc-silicate rocks and the paragneiss (Figure 11). Although no marble outcrops are mapped in the West Claim block, some of them were noted nearby Trench T-1 and along the drilling trail during field works of the 2015-2016 (Robillard 2017). At the surface, marble shows a crumbly texture due to weathering and has a brown beige color. In drillcore, marble is medium gray and is composed of calcite with a wide range of impurities (apatite, diopside, tremolite). Marble usually contains graphite mineralization.

Minor outcrops of pegmatite and pyroxenite are found on Buckingham Property. A Pyroxenite outcrop is mapped in the East Claim Block and a Pyroxenite interval was described at the bottom of BH16-02. Late diabase dykes crosscut the geological units. Several of them were found in drillholes and were generally less than 1 m in width, except in hole BH16-05 where a diabase dyke reached a thickness of 70 m (Robillard 2017).



Figure 11. Geology of Buckingham Property (after Wilson 1920 and Hébert 1988) and historical mines

Item 7.3 Mineralization

7.3.1 Graphite Mineralization at Buckingham Graphite Property

Known Graphite occurrences are located in the southwest portion of the West Claim Block and at two locations in the East Claim Block, i.e. the area drilled by Stratmin and the Robidoux occurrence, a historical graphite prospect (Lauzier 2018) (Figure 11).

According to the exploration program undertaken on the West Claim block, most of graphite mineralization was of flaky type and hosted in marble, garnet-bearing paragneiss and occasionally in quartzite. The graphite content is highly variable within the mineralized marble ranging from 2-5% up to higher grades of 10-15% over several meters (Figure 12a). Minerals other than calcite and graphite are generally lower than 5-10% in proportions and includes 2-4% sulphides (pyrrhotite/pyrite), on a visual basis. Graphite flake size is also highly variable, ranging from amorphous to 2-3 mm.

Mineralized intersections were also present in a medium to coarse grained garnet-phlogopite -rich paragneiss (up to 30-35% garnet), which gives the unit a distinctive purplish color (Figure 12b). The longest mineralized intercept of this type was found in BH16-01 with 2.22 % Cg over 32 m. Graphite grades are generally lower (1.5-4%) than those observed in marble unit. Finally, short, mineralized intercepts with graphite contents higher than 5% are found at the contacts between marble and paragneiss. These intercepts are observed for a few meters and are characterized by sharp change of graphite content, such as observed in drillholes BH16-04 (95-97m) and BH16-10 (82-85 m). In the drill core, this is reflected by a fine grained rock typically dark green in color with a gray shiny luster typical of graphite mineralization (Figure 12c). Vein type graphite hosted in pegmatites were sporadically noted within long intercepts (BH15-01, from 203 to 209 m).

Variable amounts of pyrite and pyrrhotite are the main sulphides that were commonly observed. They are found either as disseminated, stringers or chunks within all identified units. Some calcsilicate layers may contain higher pyrrhotite/pyrite (5-10%) content that are disseminated within the unit. These layers are generally devoid of graphite mineralization.

Even though a limited description of drillholes is available from the drilling program of the East Claim block, it seems that the style of mineralization has some similarities with what is found in the West Claim block. Graphite mineralization is associated with marble and thin bands of higher grades are found at contacts with calc silicate rocks (Fortin 1987).

Vein type graphite mineralization is also locally present on Noble's Property. Such graphite mineralization was noted in the West Claim Block (Figures 7 and 13). The occurrence is described as thin (1 to 3 cm) graphite veins of irregular shape that are sporadically observed in pegmatite outcrops located on the southeast side of the creek. Such occurrence extends for about 80 m along the creek.



Figure 12a) High grade graphite in marble (BH15-05)



Figure 12b) Low grade graphite in garnet-gneiss (BH16-01)



Figure 12c) Very high grade graphite at the contact marble/paragneiss (BH16-04)

Figure 12. Photographs showing different styles of mineralization.

7.3.2 Regional Mineralization

Most of the graphite that were extracted from the small graphite mines located in the Buckingham and Lochaber Townships was of flaky type but some production of vein type graphite is also documented, notably west of the adit of the Walker Mine, and at Pugh & Weart Mine, both located southwest of the Property (Figure 2). At the Walker Mine, graphite flakes would grade up to 25% whereas other nearby mines (Peerless (Diamond) and Bell Graphite Mine) had historical grades ranging from 6 to 8% (Spence 1920). Calc-silicate rocks such as diopsidite are also mentioned to be associated with graphite mineralisation at the Walker Mine (Simandl 1989).

Other than graphite, the Outaouais region is well known for its past industrial mineral activities. Historical mines of feldspar, quartz, micas apatite and graphite that were in operation since late 1800's. The existence of a "belt of apatite", 1-2 km north of the West Claim Block was first mentioned by Venner (1878). The area produced considerable amounts of apatite for its phosphate content, the largest producer being the Emerald mine (Papezik 1961). Most of these mines represented small mining activities and today, there is no extraction except for the Othmer Feldspar Mine located in the Derry Township, some 8 km from the Property. Some Feldspar/quartz mines (Gorman, Lac Doré Mine, McGiverin Mines) were also in operation on the East Claim Block (Figure 11).

The presence of Rare Earth Elements was noted in some of the pegmatites, notably at the Derry (Glen Almond) Mine, some 5 km NE of the Property and at the Back mine (Rose 1959). At the Back Mine, Rose noted considerable amounts of smoky quartz, brown garnet, black tourmaline, and muscovite together with sporadic grains of Py, Po, Pb, allanite, thucolite, uraninite and cirtolite. Some of these radioactive minerals were partly replacing tourmaline near the south contact of a pegmatite dyke.

Item 8: Deposit Types

There are three types of natural graphite: lump (or vein type), flaky and microcrystalline. Microcrystalline is known commercially as amorphous graphite and is the product of contact metamorphosed coal. Vein graphite and crystalline flake graphite deposits are both found in highly metamorphosed terrains. Economically significant concentrations of flake graphite are commonly hosted in marble, paragneiss, and quartzite. Alumina-rich paragneisses and marbles in upper amphibolite or granulite-grade metamorphic terrains are the most favorable host rocks (Simandl and Kenan, 1997). Depending on market conditions, large deposits having high proportions of coarse flakes that can be easily liberated, may be economic with grades as low as 4% or even less. For example, Nouveau_Monde on its Matawinie Property has an economical deposit with an indicated Resource of 120,3 Mt @ 4.26% Cg (PR March 19th, 2020). The Bissett Creek deposit of Northern Graphite, is also reported as an economically viable deposit-with grades of only 1.74% "Cg, owing to the minimal overburden and the size of the flake (Leduc 2013).

The formation of low-grade crystalline flake deposits is explained by a two-stages process: carbonization during diagenesis and graphitization that occur in subsequent burial and metamorphism. The carbonization is the evolution of carbonaceous matter dispersed in the sediments that are converted into carbon-containing residues, while oil and natural gas are being released. The graphitization stage take place during regional or contact metamorphism during which the carbon enriched residue is developed into a well -ordered graphite crystal structure. These deposits are typically stratabound and consist of individual beds or lenses that reach up to 30 m thick and 2 km or longer in length.

In contrast, the genesis of enrichment zones within crystalline flake deposits and the origin of graphite veins is still widely debated and remains overlooked. An explanation for the graphite enrichment proposed by Simandl (2015) involves either 1) a mixing of fluids produced by decarbonation reactions in marbles and dehydration reactions in paragneiss or fluids derived from pegmatites and other minor intrusions or 2) the cooling of C-H-O fluids. Vein type deposits often displays open space features and textures such as breccia zones and veins and the formation of graphite in this case involves a precipitation of solid carbon from fluids that contain one or more carbonic species such as CO_2 and CH_4 (Rodas *et al.* 2000).

Garland (1987) classified graphite deposits according to the five following types:

- 1) disseminated flake graphite in silica-rich metasediments;
- 2) disseminated flake graphite in marble;
- 3) metamorphosed coal and carbonaceous sediments;
- 4) veins and
- 5) contact metasomatic or hydrothermal deposits in metamorphosed calcareous sediments of marble.

Categories 1), 2) are related to flake type graphite while categories 3 and 4 are respectively related to amorphous and vein type graphite. Flake type or amorphous graphite can be found in category 5 (Garland 1987). Categories 2 and 5 are often interrelated. In this case, flake graphite can be

associated with lenses and pods of graphite in an impure skarn-type marble and may display characteristics grading between flake type and vein type of graphite.

The graphite mineralization of the Buckingham graphite property can be classified as a mixture of disseminated flake graphite deposit in marble (category 2) and contact metasomatic and/or hydrothermal deposit (category 5). According to Garland (1987), graphite content in marble type deposit is typically less than one weight percent but when associated with contact metasomatic deposits, much higher grades are typically observed, although tonnage is usually small.

Graphite mineralization in the Buckingham property is mostly found within marble units in highly variable contents and sizes. Considerable lengths of graphite mineralization over 5% are intercepted, within which a few meters of higher graphite content (20-25%) is observed. Graphite mineralization of lower grade is also present within a garnet gneiss and, finally high contents of graphite may also be found over short lengths at the contact of marble/gneiss. The presence of minor amounts of graphite veins and calc-silicate rocks are further indications of a metasomatic or replacement process that could have remobilized and concentrated the graphite. It is possible that the formation of graphite mineralization could originate primarily from carbonaceous material already present in the sediments (diagenesis process) but the concentration of graphite into enriched bands at the contacts between gneiss and marble may involve other mechanisms such as metasomatism, remobilization or hydrothermal processes (precipitation of carbon from circulating fluids).

The conductive zone where is concentrated the graphite mineralization in Buckingham Graphite property, is of linear shape. The 1.3 k long NNE conductor runs parallel to a linear creek flowing into a lake of similar orientation. Evidence of faulting observed in nearby outcrops show a similar NNE strike (N033) and a subvertical dip and could therefore indicate the presence of a deformation zone, such as also observed in some drillholes (BH16-10). The deformation zone could be a structural control of the graphite mineralization as it would have favored the circulation of fluids. Therefore, the deposition of marble itself could have happened over the length of a deformation zones that is defined by the linear and NE trending conductor. Several fragments of paragneiss are commonly observed in marble outcrops, indicating that was intruded in a later event, incorporating fragments of neighboring units. It is worth noting that the marble bands that are mapped in the East Claim block are also generally displayed along a NE/SW orientation (Figure 11).

In SE Ontario, several graphitic occurrences are located within the Frontenac Axis, a subdivision of the CMB of Grenville province. They all occur are within 5km of a major NE trending structure that transects the Frontenac Axis (Rideau Lake fault) forming a shear zone at least 500 m wide and a is reflected as a prominent lineament. As for the Buckingham graphite property, all occurrences are hosted in crystalline marble interlayered with paragneiss and intruded by pegmatite bodies and most have undergone complex folding and faulting which has produced highly variable thicknesses and attitudes of the graphitic zones. On a regional scale (Figure 1), one can note that the Lac des Iles and Asbury deposits, respectively located at 85 and 50 km north of the Property, are both located close to the Rivière du Lièvre, forming a north-south straight line and flowing some 4 km east of the Property. Although no North -South lineament or other structural features are documented to be

related with this River, this spatial association could be considered as being associated with the formation of graphite deposit.

Effective methods for exploration of graphite

Ground electromagnetic methods (VLF in initial exploration stage, horizontal or vertical loop at later stages) and resistivity are the most appropriate methods to locate large graphite veins. The Ground TDEM (Time Domain EM system) developed by DD Geoscience (PhiSpy) is well suited for detection of relatively deep conductors. The method enables real time display of TDEM profiles, thus on the spot anomaly detection. Shallow anomalies can be dug out and sampled simultaneously. Ground TDEM system can reach deeper conductors (from 15 to 20 m in depth) and records full TDEM decay curves which can be analyzed to retrieve information about the conductance and geometry of conductors. Ground TDEM fills the gap between powerful deep penetration TDEM systems and very small size EM devices (Beep mat) that is generally not exceeding 3 m in depth.

On a geological standpoint, metasedimentary rocks of upper amphibolites or granulite facies represent the best exploration ground as the overall quality of graphite flake increases with the intensity of regional metamorphism. More specifically, for a contact metasomatic or hydrothermal graphite deposit, the presence of a major fault, high regional metamorphic grade complex structure igneous intrusions may have influenced the formation and/or concentration of graphite. The high ductility of marble, particularly graphitic marbles may result in extremely irregular dimensions and attitudes for a potential graphite deposit and may necessitate detailed exploration program.

Item 9: Exploration

In May 2022, Noble Minerals undertook a short exploration program which consisted in prospecting, using a Beep Mat. Exploration works focused on the southwest portion of the Property nearby old trenches, drillholes and along a small creek roughly parallel to the conductor (Figure 13).



Figure 13. Location of grab samples collected by Noble Minerals

A total of 13 grab samples were collected and sent for analysis. Carbon values ranged from 13.84 to 86.52% (Table 7). Some of the highest values were located nearby the creek, where graphitic veins were observed.

Sample#	Easting	Northing	Area	Graphitic C%
605951	460608	5055059	Creek	29.43
605952	460612	5055057	Creek	86.52
605953	460605	5055006	Creek	21.62
605954	460547	5054741	Trench C22	16.16
605955	460542	5054745	Trench C22	20.52
605956	460541	5054746	Trench C22	22.54
605957	460541	5054754	Trench C22	22.97
605959	460511	5054675	Trench T1	13.84
605960	460507	5054676	Trench T1	28.56
605961	460503	5054692	Creek near T1	15.78
605962	460492	5054696	Creek near T1	28.92
605963	460543	5054747	Trench C22	23.98
605965	460543	5054747	Trench C22	17.33

Table 7. Grab samples from the creek and trenched areas

Item 10: Drilling

No diamond drilling has been performed by the Issuer on Buckingham Property, at this time. Former drillholes are located on the Southwest portion of the Property and date back from less than 10years, with the exception of 3 drillholes that were drilled in the eighties, in the East Claim Block

Item 11: Sample Preparation, Analyses and Security

Grab samples collected in 2022 were sent to AGAT Laboratories., an accredited laboratory according to the ISO/CEI 17025:2017 by the Standards Council of Canada for a number of specific test procedures, including the method used to assay samples that were sent within the scope of this project. +Grab samples were transported in sealed bags to the AGAT Laboratories of Calgary, Alberta for the determination of graphitic carbon Cg. Since the number of collected samples was limited, No QA/QC program was implemented.

The drillcore samples of the former drilling program of 2015-2016 were sent to SGS Canada inc., an accredited laboratory according to the ISO/CEI 17025:2005 by the Standards Council of Canada. a QA/QC program that included the insertion of standards, blanks and field duplicate was implemented for the drilling programs of 2016 to ensure the validity of the chemical assays. No QA/QC program was in place for the drilling program of 2015.

Item 12: Data Verification

The author had access to certificates of analysis in addition to drill logs and meterage of samples intersections that were provided by Ashburton for the drilling program of 2015. The author supervised the drilling program of 2016, which included description and sampling of the core. At that time, the author also examined and properly stored the cores boxes of the 2015 drilling program.

The author noted that minor sections of mineralized drill core of 2015 were not submitted for assays, including a few portions of the 112 m long mineral intercept disclosed in 2015 for drillhole BH15-03. These untested intervals are located from 162-169.4 m and from 174.5-179 m.

Finally, the author checked the other mineralized intersections of the 2015 and 2016 drilling programs and compared the graphite assays mentioned for these intersections against the laboratory certificates. No discrepancies were found between the two sources of data.

Item 13: Mineral Processing and Metallurgical testing

No Mineral Processing or Metallurgical testing was performed by the issuer. A historical flotation test was performed by Cavan Ventures in 2015, as discussed in Item 6.3.1. A bulk sample of about 20 kg was sent to SGS Canada Inc. of Lakefield. The bulk sample was collected in Trench 22-C at roughly 0.5 m in depth.

Item 14: Mineral Resource Estimates

There is no NI 43-101 compliant mineral resource estimate that has been carried out by past owners or the current issuer on the Buckingham Property.

Item 15 to 22: (Mineral Reserve Estimate, Mining and Recovery Methods, Project Infrastructure, Environmental Studies and Economic Analysis)

These sections are required for advanced properties and therefore, they do not apply to the Buckingham Property.

Item 23: Adjacent Properties

The region experiences a revival of graphite exploration since 2011, as a response to the steady rise of graphite demand. Wherever permitted, most of the former graphite mines located in Buckingham and Lochaber Townships are presently covered with active claims and exploration works have been undergoing intermittently over these properties for the past ten years. These active claims are largely owned by individuals or private companies (Magemi Mining, Mayne Minerals, 9228-6202 Québec inc). Gratomic (formerly CKR Carbon Corp) owns a graphite property adjoining the south limit of the West Claim Block (Figure 14).

The presence of significant mineralization on these properties is not necessarily indicative of similar mineralization on the Buckingham Graphite Property.

The Buckingham Property of Gratomic consists of 8 claims that were actively explored during the period of 2013-2018. Historical pits containing vein type graphite were surveyed and sampled. Trenching and drilling programs (11 holes, 1930.95m) partly tested a 1,5 km long conductor that was outlined from an heliborne TDEM survey. Significant graphite intersections were obtained, such as 6.06% Cg over 88 m (CK17-02) and 6,88% Cg over 62 m (CK18-07). Based on these positive results, an exploration program was proposed to extend the mineralization further south as well as and infill drilling to the north in order to obtain an initial graphite resource (Moss and Robillard 2018).

In the vicinity of the Property, the most advanced project is the Lochaber Graphite Project, located 5 km to the east. A maiden resource estimate outlined nearby the former Plumbago Mine was completed by SRK in 2015 for Great Lakes Graphite, the owner at that time. A mineral resource estimate of f 4,090,000 t. averaging 4.01 % Cg, for a total of 160 000 t. of graphite were modelled, based on 8,200 m drilling program (Bernier *et al.* 2015). This estimate is classified in the Inferred category, using a cut-off grade of 2.45% Cg. The property is presently owned by Mr. Rosenblat. A technical report was produced in 2022 and included a proposal to further explore the property and the results of one infill hole (LOC-22-01) that was drilled in 2022 (Derosier 2022).

Significant exploration works were also carried out about 4 km south of the Buckingham Property, in the surroundings of the former Bell Graphite Mine. This graphite occurrence is currently included in the Bell Graphite Project of Mayne Minerals Inc. a private, Vancouver based mining Company whose president is Mr. Rosenblat. This property was subjected to a drilling program in 2017 (11 ddh for a total meterage of 1,338 m) and one additional drillhole was drilled in 2021. These latest exploration works and a proposed exploration program are described in a Technical Report that was produced in 2021 (Derosier 2021).

Minor exploration works that included a TDEM geophysical survey as well as lithogeochemical sampling and trenching were also completed during 2018-2021 at l'Ange Gardien Property of Magemi Mining about 5 km south of the Property (Pelletier 2022).

Active claims located between the two claim blocks of Noble's property as well as those adjoining the west limit of the West claim Block were acquired by Mr. Rosenblat over the last two years. The private company 9228-6202 Québec inc and some individuals also acquired several claims in the region, some of which bordering the Property. No ongoing activities have been reported so far for these claim holders.



Figure 14. Adjacent properties and former graphite mines

Item 24: Other Relevant Data and Information

The author is not aware of any additional information or explanation necessary to make this report understandable and not misleading.

Item 25: Interpretation and Conclusions

The Buckingham Property of Noble Mineral fully deserves further investigation as several mineralized intersections are present over historical conductors. The property is formed of two distinct claim blocks that are on each side of Lièvre River, about 8 km north of the small town of Buckingham. Conductive zones and isolated anomalies were delineated in early eighties in both claim blocks. Follow-up works were done by Stratmin over two conductors located in the East claim block. Three of the 12 planned holes were sunk in 1987 and the drilling program was stopped despite the presence of mineralized graphitic intercepts. One can speculate that Stratmin concentrated their efforts more to the north, at the graphite deposit of Lac-des-Îles which began to operate in 1989.

The latest period of exploration was concentrated on the southwest portion of the West Claim Block, at the location of two conductors that had remained untested owing to their supposedly overburden origin. More recent geophysical survey delimited a 1.3 km long NNE conductor and a 300 m long ENE conductor the latter being only partly located within Noble's Property. Both conductors were partly drill-tested in 2015-2016.

A series of drillholes tested about the two-third of the 1.3 km long NNE conductor and a portion of the 300 m long ENE conductor that was located outside Noble's Property. These exploratory holes were spaced at approximately 100 m intervals along a line running parallel to the conductor with most of them having similar orientations (310-320°) and dips (-45°). Also, there was no additional holes along section lines to document the lateral extension of mineralized intercepts.

Several mineralized intercepts likely be controlled by the presence of marble beds and lithological contacts between marble and paragneiss were returned with most significant ones near the southwest end of the 1.3 km long conductor. The style of mineralization observed at the Buckingham Graphite Property indicates that the deposit is a metasomatic like graphite deposit in marble and seems to be associated with a sheared zone. These deposits contain high grade portions of mineralization and may required detailed knowledge of the structural lithology as it is emplaced in a deformed terrain with recrystallization folding and faulting. Therefore, an increased density of infill and step-out drill holes are needed for an eventual model calculation with indicated or measured resources.

Nevertheless, a conceptual model designed in 2016 was used as an exploration target for the 1.3 km NNE conductor, based on the existing drill hole database. Three mineralized planes were defined: 1) a marble plane (MBR-1) that is 30-35° with a dip of approximately 50-55° to the northwest, a thinner marble plane of similar strike (MBR-2) located to the SE of MBR-1 and dipping 30-35° and a small not very well-defined garnet gneiss mineralized plane of small extent (Robillard 2017). These

mineralized planes were said to be considered as preliminary sketch for a possible geometry of the deposit (Robillard 2017).

Metallurgical Testing

Graphite is an industrial mineral whose price is based on quality. Therefore, the characteristics of the graphite for a particular deposit must be investigated in parallel to its spatial distribution. The purity (carbon content) and flake size are key factors for the weighted average price per tonne of concentrate as the value increases with the size of flakes and purity. Limited metallurgical testing was done on one bulk sample from Trench C22 and an overall combined flotation concentrate purity of 94.8% was obtained. The head grade was 20.7% Cg and 32% of the flakes belonged to the large and jumbo size, with purity of 94.8 and 96.1%, respectively. These results were obtained without optimization process. These preliminary metallurgical testing are positive for the Buckingham graphite property as concentrate grades over 94% and large flakes (above 80 mesh) sell at higher prices, therefore contributing to obtain an economically viable deposit.

Item 26: Recommendations and Budget

Both West Claim Block and East Claim block of Noble's Buckingham Property deserve additional exploration works that should focus on three zones 1, 2 and 3a) and b), as depicted in Figure 15. The costs of a 2-phases exploration program are detailed in Tables 8 and 9.

West Claim Block (Zone 1)

Additional drilling to further explore the 1.3 km long conductor and metallurgical testing of high grade and low-grade graphite mineralization are recommended. Exploration holes should be located at 100 m intervals over the last 300-400 m forming the NE end of the NNE conductor and should target the Cluster "I" of anomalies that was outlined from the PhiSpy ground TDEM survey (Dubé 2016). Two drill holes should be collared for each section line to constrain the structural geology. Similarly, additional holes along section lines in the SW drilled area would precise the orientation and dip of the mineralized planes. These additional holes should be emplaced further to the NW and dip in the opposite direction from those that were drilled in 2015-2016.

Metallurgical testing should be planned as the quality of graphite has a great influence on its demand and price. Sulphide contents should also be determined as pyrite and pyrrhotite represent common impurities having an impact on the liberation of pure graphite. Information on gangue materials by scanning electron microscopy (SEM) imaging would help to refine the grinding process in order optimize the proportion of large flake products and to determine which chemical purification technique should be used to improve the graphite purity.

East Claim block (Zone 2 and 3)

Although this part of Buckingham Property is in a more inhabited area and is much less advanced in terms of exploration, an exploration program could be considered since several anomalous zones were delineated in historical geophysical surveys over this region. 2 zones of interest are defined in decreasing order of priority:

Zone 2 correspond to the follow-up works near Lièvre River and former Peerless (Diamond) Mine (Figure 15). A period of six days of prospecting works with the use of a Beep Mat could be done over this area with sampling and mapping of the outcrops. An additional 2-3 days could be spent on Zone 3 a), at the location of a linear, 500 m long historical conductor of NE-SW direction that has never been tested (Figure 15). Lastly, about 1 or two days could focus the Robidoux Graphite Prospect (Zone 3b), to validate historical observations of graphite mineralization (Figure 15).

Based on the results obtained from the exploration drilling program for Zone 1, a detailed drilling program for an eventual resource estimate could be added as a second phase (Table 9). Drill holes should be emplaced at 50 m intervals over a grid oriented perpendicular to the NNE conductor. About 3 to 4 holes are proposed per section line and should be oriented 120 or 300° and dip either to the SE or the NW, in order to constrain adequately the geometry of the deposit. Concurrently to the drilling program, the mineralized intervals from the 2015 drilling program that were not assayed should be sampled and sent for the determination of graphite to complete the database.

If supported by the prospecting works of Zones 2 and 3, a ground geophysical survey to further investigate the historical conductors could be performed for an amount of 78,000CAD\$ (Table 9). The cost for the non-contingent Phase 1 Exploration Program is estimated to 526,000 CAD\$ for Zone 1, 2 and 3 (Table 8). A contingent Phase 2 that includes a detailed drilling program for Zone 1 and a ground geophysical survey for zone 2 and 3 is evaluated to 700,000 CAD\$, for a total of 1,226,000 CAD\$ for Phase 1 and 2.

Table 8. Recommended exploration budget: Phase 1

Itom	Quantity	Cost per unit			
Phase 1	Qualitity	CADŞ	CADŞ		
Exploration holes (Zone 1) and Prospecting (Zone 2 and 3)					
West Claim Block (Zone 1): Drilling Program					
Drilling	2,000 m	125	25,0000		
Mob-Demob			20,000		
Accomodation	40 days	500	20,000		
Assaying	2000 analysis	50	100,000		
Geologist (900\$/day) and technician (500\$/day)	40 days	1400	56,000		
Metallurgical testing			30,000		
Sub total zone 1			476,000		
East Claim Block (Zone 2, Zone 3 a and b): Prosp	pecting				
Prospecting Zones 2 and 3	10 days	1400	14,000		
Assaying	100 analyses	50	5,000		
Beep Mat	10 days	100	1,000		
Accomodation	10 days	500	5,000		
Sub Total Zone 2 and 3			25,000		
Subtotal Phase 1			501,000		
Contingencies Phase 1 (10%)			5,000		
Report			20,000		
Total (phase1)			526,000		

Table 9. Recommended exploration budget: Phase 2

		Cost per unit	Total Cost		
Item	Quantity	CAD\$	CAD\$		
Phase 2					
Detailed mapping (Zone 1) and Ground Geophysical survey (Zone 2 and 3)					
West Claim Block (Zone 1): Resource Estimate					
Line Cutting	6 km	600	3,600		
Drilling	2,500 m	125	312,500		
Mob-Demob			20,000		
Accomodation	45 days	500	22,500		
Assaying	2,600 analyses	50	130,000		
Geologist (900\$/day) and technician (500\$/day)	45 days	1400	63,000		
Report			15,000		
Contingencies (approx. 10%)			55,400		
Sub total zone 1			622,000		
East Claim Block (Zone 2, Zone 3 a and b): Geop	hysical Survey				
Line Cutting	60	500	30,000		
Ground Geophysical Survey	60	600	36,000		
Report			5,000		
Contingencies Phase 1 (10%)			7,000		
Sub Total Zone 2 and 3			78,000		
Subtotal Phase 2 700,000					

Finally, a third drilling phase could be added for Zone 1 to complete a first calculation of the mineral resources (Table 10). This phase would be contingent on the results obtained from the drillcore assayed from the first two phases and would represent an additional amount of 700,00CAD\$.

Table 10. Recommended exploration budget: Phase 3

		Cost per unit	Total Cost
Item	Quantity	CAD\$	CAD\$
Phase 3			
West Claim Block (Zone 1): Resource Estimate			
Drilling	3,000 m	125	375,000
Accomodation	45 days	500	95,000
Assaying	1950	50	22,500
Geologist (900\$/day) and technician (500\$/day)	45 days	1400	63,000
Report (Resource Calculation)			75,000
Contingencies (approx. 10%)			69,500
Sub total zone 1			700,000



Figure 15. Location of Zones for future exploration works

Item 27: References

Bernier, S., Chartier, D., Burga, E. and Couture, J. F., 2015. Technical Report for the Lochaber Graphite Project, Quebec., Prepared for Great Lakes Graphite Inc., 100 p.

Corriveau, L. and van Breemen, O., 2000. Docking of the Central Metasedimentary Belt to Laurentia in geon 12: evidence from the 1.17–1.16 Ga Chevreuil intrusive suite and host gneisses, Quebec; Canadian Journal of Earth Sciences, v. 37 p. 253-269.

Derosier, C. and Marchand, J., 2017. Diamond drilling program and mineral resource estimation on the Bell graphite project. SAINT-JEAN CARBON INC, rapport statutaire soumis au gouvernement du Québec; <u>GM70686</u>, 304 pages, 18 plans.

Derosier, C., 2022. Technical report on the Lochaber graphite project. Claims Rosenblat, rapport statutaire soumis au gouvernement du Québec; <u>GM 72789</u>, 118 pages, 7 plans.

Derosier, C., 2021. Technical report on the Bell graphite project. Claims Rosenblat, rapport statutaire soumis au gouvernement du Québec; <u>GM 71865</u>, 118 pages, 2 plans.

Dubé, J., 2013. Technical Report, High-Resolution Heliborne Magnetic and TDEM Survey, Buckingham Property. GM68384, 34 p., 6 maps.

Dubé, J., 2016. Technical Report, Ground TDEM PhiSpy Survey, Buckingham Property, Outaouais region. Report to be submitted to the MERN, 21 p.

Dupuy, H., 1989. Géologie de la région de Wakefield-Cascades; MRN, MB89-18, 14 p. 1 map (Scale 1/20 000).

Fortin, G., 1987. Levé électromagnétique sur les propriétés Lochaber, Peerless et Scantland. GM45034, 11 p., 12 maps.

Garland, M. I., 1987. Graphite in the Central Gneiss Belt of the Grenville Province of Ontario; Ontario Geological Survey, Open file Report 5649, 222 p.

Lauzier, S., 2018. Evaluation report on the Robidoux property. 9228-6202 Québec Inc., GM 70569, 11 p.

Leduc, M., Desautels, J.R.P and Zurowski, G., 2013, Northern Graphite Corporation - Bissett Creek Project - Preliminary Economic Assessment. NI43-101F1 Technical Report, prepared with AGP Mining Consultants Inc., 240p.

Hébert, Y., 1988. Géologie de la région de Buckingham. DP-88-11, 1 map (scale 1/50 000).

Martignole, J. and Friedman, R. 1998. Geochronological constraints on the last stages of terrane assembly in the central part of the Grenville Province; Precambrian Research, vol. 92, p. 145–164.

Ouellet, R., 2014. Rapport des travaux sur la propriété Buck. GM68385, 49 p.

Ouellet, R., 2015. Rapport des travaux sur la propriété Buck 2014-2015. GM69215, 43 p., 1 map.

Papezik, V. S., 1961. Preliminary Report on Glen Almond Area, Derry and Buckingham Townships, Papineau County. RP444, 11p, 1 map (1 : 12 000 scale).

Relevés Géophysiques Inc.,1982. - Levé EM aérien héliporté REXHEM-III – région de l'Outaouais (Saint Jovite, Notre-Dame-de-Pontmain, Bouchette et Buckingham). DP-83-05. 9 maps (Scale of 1/50 000).

Robillard, I., 2019. Assessment report on the 2017-2018 exploration works, Buckingham Graphite property. CKR Carbon Corporation; GM 71974, 199 p.

Robillard, I., 2017. Assessment report on the 2016 drilling program, Buckingham Graphite project. Cavan Ventures Inc., Ashburton Ventures Inc., GM 70291, 186 pages.

Rodas, M., Luque, F.J., Barrenechea, J.F., Fernàndez-Caliani, J.C., Miras, A. and Fernandez-Rodriguez, C., 2000. Graphite occurrences in the low-pressure/high-temperature metamorphic belt of the Sierra de Aracena (southern Iberian Massif); Mineralogical Magazine, v. 64, p. 801-814.

Rose, E. R., 1960. Rare Earths of the Grenville Sub-Province Ontario and Québec GSC Paper 59-10.

Simandl, G.J. 1989. Inventaire de gîtes de graphite dans la région de Lachute – Hull – Mont-Laurier. MB-89-05. 25 p.

Simandl, G.J. and Kenan, W.M., 1997. Crystalline flake graphite, in Geological Fieldwork 1997: British Columbia Ministry of Employment and Investment, Paper 1998–1, p. 24P–1 to 24P–3, available online at

http://www.em.gov.bc.ca/Mining/Geolsurv/MetallicMinerals/MineralDepositProfiles/profiles/p0 4.htm/

Simandl, G.J., Paradis, S. and Akam, C. 2015. Graphite deposit types, their origin and economic significance. In Symposium on critical and strategic materials proceedings, November 13-14, 2015, Victoria, British Colombia. pp163-172.

Spence, H.S., 1920. Graphite in Canada; Canada Mines Branch, Publication No 511, 240 p.

Tremblay, A. and Cummings. J. G., 1987. Programme d'exploration 1986-1987 pour le graphite dans l'Outaouais. GM45932, 375 p., 27 maps.

Tremblay, A., 1984. Géologie et géophysique au sol sur des anomalies EM héliportées dans l'Outaouais, Région de Buckingham, DP-84-22, 31 p. 1 map (1 : 50 000 scale)

Vennor, H. G., 1878. Progress report of explorations and surveys made during the years 1875 and 1876 in the counties of Renfrew, Pontiac and Ottawa; Report of Progress 1876-1877; pages 244-320.

Wilson, M. E., 1920. Geology of Buckingham, Hull and Labelle Counties, Quebec; Geol. Surv. Of Canada, map 1691.

Superintendent of Mines, 1910, Letter to Honorable C.H Devlin, Minister of Colonization, Mines, and Fisheries about Graphite occurrence on the Mr. J.E.Robidoux land. GM14294,1 p.