



## INITIATION REPORT

### Sweet Home of Battery Graphite...

Jan 23, 2017

TSXV-CSPG

Target

C\$0.69

- **Unique Business Model:** Alabama Graphite is a different type of graphite company, one whose business model is solely focused on providing high-value secondary products (CSPG and PMG) into the battery supply chain.
- **The Right Model:** Stormcrow views a downstream-focused strategy to be the only way a new entrant can show material and sustainable profitability in the current (and likely, future) pricing environment for graphite products.
- **Made for Customers:** Alabama Graphite's "Sourced (not just 'Made') In America" product offerings will be of significant interest to major Western battery graphite end-users, and the company's active dialogue (and product qualification) with at least nine Department of Defense contractors, is testament to this.
- **Local Support:** Alabama's Coosa Graphite project is already receiving local and State-level support
- **Low-Cost:** Due to the project's mineralogy and location, Coosa will have an extremely low cost of start-up and rapid payback, which makes building the project realistic.
- **Strong Management:** Alabama Graphite has assembled what we believe to be the strongest operationally- and technically-focused management team in the junior graphite developer universe.
- **Strong Value:** Stormcrow believes the company is materially undervalued today, and initiates coverage with a **target of C\$0.69/shr** and a **Positive** rating based on **1x NPV<sub>18</sub>** using a long term CSPG price of **\$7,500**.

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	New	Old
<b>Recommendation</b>	Positive	N/A
<b>Target</b>	C\$0.69	N/A

<b>Shares O/S</b>	131M
<b>Shares O/S FD</b>	~172M
<b>Recent Price</b>	C\$0.17
<b>Market Cap</b>	C\$22.27
<b>Net Cash</b>	~C\$750k



See the end of report for important disclosures

## Summary

When we launched coverage on Focus Graphite Inc. in August of 2014, we did so largely because of the presence of one key person in the management team, a mining engineer with actual, extensive field experience in graphite mining and processing, Don Baxter. While the Lac Knife project compared well with other graphite projects in the pricing environment of 2014, the primary reason that we took initial interest in the company was a management team that included someone with strong graphite production and operational experience. The junior graphite world is woefully short of people who understand how to build and consistently operate graphite mines, and even shorter of those who understand how to make money with the commodity.

We regard graphite as a critical material, in the sense that where it is required, it is an absolutely essential component, and the critical nature of graphite for use in batteries has been recognized in past reports on critical materials from the United States Department of Energy and the European Union. For example, in secondary lithium batteries there is really no substitute for the (largely) natural graphite currently used in anodes. If for some reason the supply of pure, spheroidal natural graphite were suddenly cut off, the battery industry would grind to a halt because the supply of synthetic graphite, made mostly from petroleum by-products, for this purpose is insufficient and too expensive, and there are no ready alternatives.

The situation regarding battery graphite is nuanced. On the one hand, we do not believe that graphite is somehow rare, or that the price of even highly purified anode graphite will rise forever, without bound. There is no shortage of graphite in the world. And while turning natural graphite into anode material is no longer so technically demanding that the ability to do so constitutes a long-term, sustainable barrier to entry, there is a considerable degree of engineering expertise in how the graphite is mined and processed, the development of optimized and environmentally acceptable methods of purification, developing relationships with potential end-users and learning their needs, etc., that will ensure those who know how to make battery anode materials maintain a market advantage for a meaningful period of time. To us, the keys to having a successful graphite company are managing to keep costs low, selling a high fraction of production as a high margin product, and avoiding the production of large quantities of a low-value product such as impure graphite fines.

Given the recent market awareness of lithium batteries, we had decided it was time to take a fresh look at the graphite industry. We also noted that Don Baxter has relocated to Alabama Graphite (TSXV:CSPG; OTCQB:CSPGF; FWB:1AG), which, under Mr. Baxter's leadership as CEO, is now a company that reflects precisely the above strategy and is precisely the sort of company that we believe can become a profitable supplier into this otherwise difficult sector. Alabama

Graphite, it appears to us, is the rare case when high management quality meets high project quality to address a high-margin end market. We reiterate that Alabama's strategy, to make high-end coated spherical purified graphite (CSPG, the material used in anodes in the majority of lithium batteries) and purified micronized graphite (PMG, a high-purity by-product of making CSPG) in the United States and rely solely on the sale of these high-value products rather than on the sale of high volumes of low-value concentrates to compete directly against Chinese suppliers, seems a very wise choice to us, and is a significant point of differentiation between Alabama and all the others in the space. At this point in time, and at these stock prices, Alabama Graphite appears to be a bargain.

### **Graphite – It's about CSPG, not Flake!**

We wish to emphasize that graphite is not rare, although deposits that can be economically developed and that are in desirable locations are not common, either. In 2005, world graphite reserves were approximately 86 million tonnes, but in the intervening years several large discoveries in Africa have raised world reserves to more than 620 million tonnes. With an annual level of demand of roughly 1.2 million tonnes of total graphite, but only 375,000 tonnes of flake, there is obviously enough graphite in the ground to keep supply in balance with demand. Hence, we expect the long-term pricing of simple natural graphite flake concentrates to remain low.

We acknowledge that the cost of natural graphite in a lithium battery is less than 15%, and in some cases less than 10% of the total final cost of the battery (according to market research firm Avicenne). Some would argue (as they have done with rare earths in the past, and with lithium in the present day) that this means that prices can rise essentially without restraint. We simply point out that commodity prices are generally established using the cost to produce the commodity, assuming there is sufficient supply. We believe that this will be the case for natural graphite. In other words, while graphite demand, especially for use in batteries, is almost certain to increase, the likely supply response can, and likely will, cancel out any major price increases.

Another important factor governing future pricing for battery anode material is that while a more complicated product, such as coated, spherical purified graphite (CSPG), may enjoy higher prices for a period of time due to a lack of processing capacity and engineering expertise, in the long-term there are no overwhelming barriers to entry. Eventually, there will be many companies that will be able to take small- and medium-flake natural graphite, purify it using acceptable methods, micronize and spheroidise the pure flakes (making uncoated, purified spherical graphite or 'USPG', along with quantities of purified, micronized graphite, or PMG, as a by-product), coat those roughly spherical particles with clean sources of carbon and then fire them in a furnace to

graphitize that material and make CSPG. Of course, there are nuances to understand and quality control factors to consistently achieve, and we acknowledge that the firms that can do this today will likely enjoy a multi-year window to sell their products to end-users. But, by and large, the production of basic CSPG requires no additional pure scientific research, only engineering development. Given, however, that Alabama Graphite possesses the expertise to produce CSPG now, it is one of the companies that could benefit from this window of opportunity, and is the only one that will be mining and processing graphite in the United States for sale to western customers.

### **Exhibit 1 – Scanning Electron Micrograph of Alabama Graphite’s CSPG**



*Source: Alabama Graphite*

The current Chinese method for purifying graphite flakes involves leaching them in a mixture of acids, including highly dangerous hydrofluoric acid. Properly neutralizing any remaining hydrofluoric acid would be expensive, likely increasing operating costs by thousands of dollars per tonne of CSPG. We note Alabama Graphite’s use of an environmentally friendly, low-temperature, halogen gas-based purification process, to purify its graphite to the required  $\geq 99.95\%$  Cg purity. This purification process is a key point of differentiation between Alabama Graphite and many of its peers. Although this thermochemical process is not proprietary, it is necessarily different for each graphite deposit, and involves several parameters (including temperature, time and halogen gas amounts and mixtures) that must be tuned carefully to the contaminant content of the particular graphite being processed, something that has already been accomplished for the Coosa deposit. Per Alabama Graphite’s PEA, published in November 2015, the Company’s average operating cost for making CSPG will be USD\$1,555 per tonne, making Alabama Graphite, potentially, the lowest cost producer of CSPG in the market.

Another junior graphite company, Syrah Resources (SYR-ASX) of Australia, announced the results of an internal economic assessment on CSPG in June of 2015. The major conclusion from this analysis regarding CSPG was that their cash cost of manufacturing would be roughly USD\$3,200 per tonne. New suppliers of CSPG are almost certain to be required as secondary lithium battery demand continues to grow, and costs as high as USD\$3,200 per tonne will support strong margins for a low-cost producer such as Alabama Graphite over time.

**The Graphite Industry – Down, but Definitely Not Out**

To say that the last few years have been hard ones for the flake graphite industry is to sell the downturn in pricing short. We can think of few ways to demonstrate the issues facing the industry more plainly than to simply provide market prices for natural flake graphite concentrates over the last five years:

**Exhibit 2 – Natural Flake Graphite Prices**

	2012	2013	2014	2015	2016
Flake, 94-97% C, +80 mesh, FCL, FOB, Qingdao, China	\$ 1,394	\$ 1,184	\$ 1,179	\$ 965	\$ 900
Flake, 94-97% C, +100 -80 mesh, FCL, FOB, Qingdao, China	\$ 1,202	\$ 980	\$ 886	\$ 800	\$ 750
Flake, 94-97% C, -100 mesh, FCL, FOB, Qingdao, China	\$ 868	\$ 690	\$ 715	\$ 685	\$ 636

Source: Industrial Minerals

The prices for natural graphite have fallen despite a burgeoning rechargeable lithium battery industry, both because the other major uses for natural flake graphite have suffered their own slowdowns, and because supply remains plentiful. While the majority (roughly 67%, according to Avicenne in 2015) of lithium battery anodes use CSPG, a substantial portion (24%) of the battery industry still uses anode particles composed of 100% synthetic graphite, made in furnaces from pure feedstocks such as petroleum coke, an energy intensive and environmentally unfriendly process. Lower price, environmental pressures and superior electrochemical performance will likely compel more battery manufactures to switch to CSPG over time, but potential concerns regarding safety and operational longevity in the remaining applications not yet using CSPG likely mean that this transition will happen slowly, over the course of perhaps the next five to 10 years.

And simply because such a transition is happening does not mean that batteries will prove to be a panacea for the graphite industry. As in any other commodity, the laws of supply and demand remain fully in force. In the past, the demand for battery graphite was small, but as the battery industry has developed, the number of China-based suppliers of purified but uncoated spherical graphite (USPG) has been increasing, and with scale and competition the prices for USPG

have fallen, as shown below. We expect the same to happen, over the course of time, to CSPG:

### Exhibit 3 – Price for Uncoated Spherical Purified Natural Graphite (USD\$/tn)

	2012	2013	2014	2015	2016
Uncoated Spherical, 99.95% C, 15 um, FOB China	\$ 4,000	\$ 3,571	\$ 3,135	\$ 2,750	\$ 2,750

Source: Industrial Minerals

A major component of the cost of USPG is the medium-flake material that usually serves as a feedstock. In fact, since 2012, 96% of the price change in USPG can be explained by price changes in medium-flake natural graphite. The basic process for creating CSPG from USPG is to take the uncoated particles, coat them in a carbon-rich material and fire them. While requiring technical control and know-how, basic CSPG requires no further significant amount of scientific knowledge to be added, although Alabama Graphite as well as others are attempting to improve on the basic coating technology. However, for basic CSPG, this is a well-understood process that adds cost but will over time likely no longer carry a substantial value premium.

We note that there is a misconception in the investment community regarding the “need” to use jumbo or surperjumbo flake as the starting point to make CSPG. Actually, both could be used as feedstock. Larger flakes would seem to be a preferred starting point, given there is a correlation between the chemical purity of the graphite and its flake size; larger flake graphite is generally purer, making the process of producing highly purified CSPG simpler and less expensive. However, the use of larger flake graphite is actually less efficient, given the flakes must be broken up to create the correct size of CSPG, which takes additional energy and processing time.

And with a cost disadvantage to medium-flake graphite of even the present \$150 per tonne, there is an economic penalty to using jumbo or larger flake for the purpose of making battery materials. Jumbo and superjumbo flake is put to much better use in making what is known as expanded graphite and related products, such as graphite foils. Medium flake and even smaller material (assuming sufficient purity) is a better choice, from the viewpoint of cost, for producing CSPG.

We believe that the cost of coating and firing USPG to produce CSPG is roughly USD\$500-750 per tonne. The coating uses relatively little coating material, and the firing is not nearly as extensive (or expensive) as that required to make large synthetic graphite components. The net result is, we believe, a final cost of USD\$3,250-3,500 per tonne for CSPG, today.

This agrees well with the cost to produce CSPG published by Syrah Resources, as mentioned above. In June of 2015, that company released their internal estimate for the cost of production of CSPG of USD\$3,200 per tonne. We can be forgiven for believing that Syrah's estimates are, perhaps, slightly optimistic, since almost all cost estimates included in junior company economic analyses are optimistic. Stormcrow believes that the final market price for CSPG should eventually support a margin of 40-50%, given the eventual commodity nature of the final product and the increasing number of potential suppliers. However, these predictions pertain to the conditions of the market today. We still need to be concerned about the potential that medium flake graphite prices might rise, resulting in higher USPG prices and therefore higher CSPG prices in future.

Natural graphite price should be dependent on its use in refractories, particularly in refractory blocks and parts for iron and steel production. Natural graphite is still not suitable for use in some applications, such as electrodes, because the electrical performance of natural flake graphite can be variable, and, when high currents are involved, such variability becomes dangerous. But the thermal properties of natural graphite are more than acceptable, so, as demand for iron and steel improves, we would expect natural graphite prices to react. However, we have determined that the graphite price for fine flake graphite does not correlate with crude steel production to any meaningful degree (well under 1% of the price variation in -100 mesh natural flake graphite in China is explained by variation in global crude steel production), and the extent of this influence not much higher for medium- and large-flake natural graphite (19% and 12%, respectively).

The major determinant of graphite pricing seems to be graphite production. Since 2012, 99%, 95% and effectively 100% of price variation in small-, medium- and large-flake natural graphite from Qingdao, China, is negatively correlated to changes in production volume of graphite (negative correlation referring to the expected behaviour that, as production goes up, prices go down). Given that steel production is expected to remain flat to slowly improving for many years, it is the amount of new natural flake graphite production entering the market that should concern us, with respect to determining the strength or weakness of future pricing.

One junior graphite company, Syrah Resources, is threatening to bring as much as 380,000 tpa of additional flake graphite concentrate production to the existing total 1,200,000 tpa natural graphite market (of which the vast majority is amorphous graphite, with only about 375,000 tonnes of annual flake graphite output, at present). If we factor such a prospective volume increase into our model, the model is unable to calculate meaningful prices. On that basis, it is our conclusion that the pricing for simple natural flake graphite concentrates will be

driven entirely by a cost-plus pricing framework, and so to will the pricing of USPG and, eventually, CSPG, in our opinion.

While we anticipate an eventual drop in pricing for CSPG, we should note that a further barrier to commoditization of battery anode graphite is that the performance of CSPG from different suppliers will necessarily vary. This is already true, of course, for other components within a lithium battery, including cathode chemicals from different suppliers. This is dealt with by the battery manufacturers by using different amounts of the materials from different suppliers to achieve the same cell performance. However, it is obvious that the battery manufacturers must know the relative performance of materials from different suppliers, and this will extend the time before CSPG becomes anything like a simple commodity.

Eventually, we will leave this period, when the supply of high-purity CSPG was limited to a few companies with significant experience in the space, behind, but it will take some time for prices to fall to the levels that simple commodity pricing would suggest. Alabama Graphite has received third-party input regarding future CSPG prices for its recent 43-101 from Benchmark Mineral Intelligence, suggesting that the price for CSPG today remains well above USD\$8,000 per tonne, in the range of USD\$8,000 to USD\$12,000. We believe the price will go lower, but the rate of that price decrease is uncertain. **For purposes of modeling the company at this stage, we therefore elect to use a long-term price of USD\$7,500 per tonne for CSPG in our financial models.**

### **The Company – Sourced in America**

The graphite market has changed materially over the past 5 years, and in our view, it has become virtually impossible to yield a positive investment case for any new, large-scale, hard-rock graphite mine where management has the intention to sell nothing more than simple natural flake graphite concentrates. That said, we believe Alabama Graphite (TSXV-CSPG) has the potential to become a very profitable niche player, delivering a high-value engineered product, produced within the United States, into a rapidly expanding market.

The US 2016 election re-introduced a substantial amount of rhetoric regarding US manufacturing back into the public discourse. Regardless of any opinion as to whether this time will be different, there are some groups for whom “sourced in America” does matter. Amongst the most important of those groups is the United States Department of Defense. The US DoD has internal policies and groups devoted to sourcing their raw materials in such ways as to avoid relying on unfriendly, or potentially unfriendly, sources of supply. Unlike the “Made in America” label, which can be applied to a product from anywhere in the world as



long as final processing occurs in the USA, there is a very specific meaning to “Sourced in America”.

Alabama Graphite reports to have received feedback from numerous lithium battery manufacturers that sell their products to the US DoD that “Sourced in America” raw materials are much more important to them than a “Made in America” label, which likely explains Alabama Graphite’s sales approach, and emphasis on DoD connections to customers. In particular, we also highlight the appointment of a former EaglePicher Technologies President, Randy Moore, as Alabama Graphite’s Strategic Advisor. EaglePicher is America’s leading DoD lithium-ion battery manufacturer, as well as a leading producer of batteries and energy-storage devices for space and defense. Moore led EaglePicher through 2015, overseeing its most significant growth period, and was responsible for EaglePicher’s recently opened 100,000-square foot Lithium-ion Center of Excellence in Joplin, Missouri. Arguably, there are no executives that know and understand the U.S. DoD lithium battery sector better than Mr. Moore, and he should prove to be a significant asset for Alabama Graphite.

Alabama Graphite’s flagship Coosa Graphite Project is located in central Alabama, an area of the state with strong local infrastructure and easy project access. The area is, obviously, geopolitically stable and mining-friendly. The Coosa Project is actually located in roughly the middle of the historic, past-producing Alabama Graphite Belt. From the late 1800s through the 1950s, the Alabama Graphite Belt was home to significant flake graphite production and more than 30 graphite mines. Large portions of the deposits found in this region are, like the Coosa Project, hosted by graphite-bearing material that has oxidized and weathered into extremely soft rock. The world’s largest calcium carbonate (marble) quarry is in Sylacauga, Alabama, less than 20 miles from the Coosa Graphite Project. Weather is not an issue in any way, ensuring that production will not be interrupted due to freezing temperatures or deep snow, at a bare minimum.

## Exhibit 4 – Deposit Location



Source: Alabama Graphite PEA

The characteristics of the Coosa deposit, itself, are perhaps the most encouraging we have seen at this stage of development. The soft rock that hosts this graphite makes mining far less costly than a true hard rock-hosted deposit, but also improves the likelihood that the graphite will survive primary processing, prior to diverting the material to secondary processing. Because of the weathered nature of the host rock, there is actually very little primary processing required, with no crushing or grinding. As Alabama Graphite plans to micronize and spheroidise all its flake to make CSPG, there is also no concern over preserving larger flake material.

The value of the graphite contained in the deposit is considerable, as the published resource makes clear:

## Exhibit 5 – Graphite Resource

	Tonnage (t)	Grade	Contained Graphite (t)
<b>Indicated</b>	71,204,314	2.39%	1,701,783
<b>Inferred</b>	72,061,618	2.56%	1,844,777

Source: Alabama Graphite PEA

Mining at Coosa will be an above-grade contour mining operation, only. With a low waste-to-ore stripping ratio of 0.11:1, and Alabama Graphite’s intention to process only 200,000 tonnes of graphitic material, annually, the company’s current business model utilizes only 10% of the Coosa resource over a 27-year life-of-mine, as per the published PEA.

We also note that the Alabama Graphite PEA highlights the lowest initial capital expenditure of which we are aware in the entire graphite development space, at USD\$43.2 million. The capex covers mining, primary processing and secondary processing plants. Planned production for the first seven years is 5,000 tpa of specialty graphite products, with a 3:1 ratio of CSPG to PMG (3,750 tpa of CSPG and 1,250 tpa of PMG). Subsequent capital expenditure to expand production by a factor of three for year seven and beyond is an estimated USD\$84.4 million, representing a grand total of USD\$127.6 million in capital expenditures for the 27-year LOM. The company intends to fund any necessary subsequent expansions through free cash flow, alone.

It should be noted that, based on current pricing for flake graphite, it will be extremely difficult for any new graphite project producing nothing more than sieved natural flake graphite concentrates, to generate a meaningful return for investors on the significant investment to build a new mine. Yes, producers can likely make money, in that they are not selling simple flake graphite below their costs, but there is little joy for investors in owning a company that sells a simple mined product for thin margins. This makes Alabama Graphite's work, in analyzing the graphite supply chain and determining what stage their own products should reach to generate meaningful profits, very valuable.

We will now discuss our modeling and justification of the prices we will use in our analysis of Alabama Graphite.

### **Financial Analysis:**

#### **Good Margins and Presently Low Stock Price Yield Good Value**

The reader should recall our long-term price forecast for CSPG (discussed earlier) to be USD\$7,500/tonne. We recognize that the price determined by the analysis above is at the very low end of the range recommended by the third party responsible for Alabama Graphite's recent PEA, however we also note that the net present value of the company resulting from our price deck still remains far above current trading ranges. To illustrate this point and to provide some other scenarios, we have included a sensitivity table with a prospective range of valuations, should those reading this report believe that our assessment of the market is overly pessimistic.

## Exhibit 6 – Share Px Target at Long-Term CSPG Price and Discount Rate

Disc. Rate	CSPG Price													
	\$	5,000	\$	6,000	\$	7,000	\$	7,500	\$	8,000	\$	8,500	\$	9,000
10%	\$	1.54	\$	1.81	\$	2.08	\$	2.21	\$	2.35	\$	2.48	\$	2.62
14%	\$	0.84	\$	0.99	\$	1.13	\$	1.21	\$	1.28	\$	1.35	\$	1.42
18%	\$	0.48	\$	0.56	\$	0.65	\$	0.69	\$	0.73	\$	0.77	\$	0.82
22%	\$	0.27	\$	0.32	\$	0.38	\$	0.40	\$	0.43	\$	0.46	\$	0.48

Source: Stormcrow

In our model, initial production is currently slated to begin in 2020, although this start-up date could be advanced if capital is available. In addition, the jurisdiction allows for rapid commercialization. For example, no more than an additional eight months is required to gain full permitting. In our model, production ramps to a steady-state annual production level of 3,720 tonnes of CSPG (along with 1,280 tonnes of PMG (a rough 3:1 production ratio) by early in the second year. Production then increases to 10,800 tpa of CSPG and 4,200 tpa of PMG by year seven. Based on our analysis, we project that annual revenues at Alabama Graphite will be USD\$86.4 million by year seven. Overall production costs still leave Alabama Graphite with a very healthy margin, even taking into account our more conservative pricing assumptions for CSPG and PMG.

We apply a discount rate of 18%, which we believe fairly values the remaining technical risk (which is minimal), market risk (moderate, owing to the risk of price declines for CSPG and PMG, offset somewhat by annual growth of demand for anode material, the relatively small size of production from Alabama Graphite, and the unique location of production within the US) and financing risk (still significant, but decreasing with time as efforts are made to secure business partners within the state of Alabama itself). Taking into account all existing options and warrants, as well as the cash that exercising all of them would inject, we derive a **NPV<sub>18</sub>/share of \$0.69**. We are uncertain as to why this management team and the opportunity are currently receiving as little recognition in the capital markets as they are.

### Management – Knowledgeable and Connected

We have previously noted that given the intricacies of the graphite industry, from the points of view of processing, production and marketing, graphite requires significant experience. Alabama Graphite is fortunate enough to have this knowledge and experience, but they also combine that with individuals who are deeply connected to the government of the State of Alabama as well as local government and the business community. The result is a series of connections that, we believe, will help bring Alabama Graphite to full production and make this a very interesting critical material story to watch.

### **Don Baxter, P.Eng. – CEO**

We regard Don Baxter as one of the very few actual graphite mining experts in North America. Many people declaim their relationship to one graphite producer or another, but at this stage Alabama Graphite requires the knowledge of someone who has built and operated graphite projects, and Mr. Baxter is on a very short list of those people. He has defined three commercially-viable graphite deposits and has helped to build one of only two producing graphite mines in North America.

As President and COO of Focus Graphite, Mr. Baxter achieved wide recognition for that company within the graphite industry, updated the company's PEA and advanced the company to a completed NI 43-101 DFS. He was also responsible for rapidly advancing the development of value-added graphite products, principally CSPG for the lithium-ion battery sector. Previously, Mr. Baxter served as President of Northern Graphite, and was responsible for all technical aspects related to the Bissett Creek graphite project, including Northern Graphite's NI 43-101 DFS, metallurgical test work, environmental and mine permitting, as well as developing battery-related graphite products. Mr. Baxter also served as Mine Superintendent at the Kearney Graphite Mine, when it operated in the 1990s, which obviously gave him relevant and direct operational experience in graphite mining and processing. Additionally, he served as Director of Mining at Ontario Graphite, and has worked for Inco Limited (now Vale SA) and Noranda Minerals, as well as on numerous consulting projects in both base and precious metals.

Mr. Baxter holds a degree in mining engineering from Queen's University and is a member of the Board of Directors for NAATBatt International, a US-based, not-for-profit trade association commercializing advanced electrochemical energy-storage technology for emerging, high-tech applications. Mr. Baxter is also regarded as a Qualified Person for purposes of NI 43-101.

### **Jean Depatie, P.GEO. – Chairman of the Board**

Mining industry veteran and graphite expert, Jean Depatie put the world's largest graphite mine into production, the Stratmin Lac-des-Îles Graphite Mine in Québec (now Timcal of Imrey's SA), and for this feat, Mr. Depatie was awarded the Prix d'Excellence by the Government of Québec. After only two years of production, Stratmin Lac-des-Îles was selling graphite in more than 16 countries.

Mr. Depatie has been at the forefront of the mining industry for the past 45 years. He is an internationally recognised expert in the mining world in financing, takeovers, and mergers and acquisitions. Mr. Depatie is a past director of Glamis Gold Ltd. that was sold to Goldcorp Inc., creating a \$21.3-billion entity, a past Director of Novicourt Inc. (acquired by Xstrata plc, now Glencore plc), and a past Director of Consolidated Thomson Iron Mines Ltd. (acquired by Cliffs Natural

Resources Inc. in a \$4.9-billion transaction in 2011). As the Vice-President of Exploration for Sullivan Mines, Mr. Depatie was directly involved in the reactivation of the Win-Eldrich gold mine. As the President and CEO of Louvem Mines Inc. he was instrumental in the discovery of the Louvicourt base metal mine and the development of the Beaufor gold mine in Québec (later sold to Richmond Mines Inc.). In Peru, as a Director of Gold Hawk Resources Inc. Mr. Depatie was involved in the acquisition and reactivation of the Cobre San Juan base metal mine located in San Mateo (later sold to Nyrstar NV, a Dutch Company).

#### **Daniel P. Goffaux, P.Eng – Independent Director**

A mining industry veteran and graphite expert, Daniel Goffaux brings more than 40 years of engineering, development, operations, and managerial experience to Alabama Graphite Corp. Mr. Goffaux served as Chairman Depatie's President and led the construction, certification, start-up, and full-scale production and operations at the Stratmin Lac-des-Îles Graphite Mine in Québec (now Timcal of Imrey's SA) — the world's largest graphite mine. After only two years of production, Stratmin Lac-des-Îles — the most important graphite mine in North America — was selling graphite in more than 16 countries.

Mr. Goffaux's extensive mining experience includes serving as Mine Superintendent and Chief Engineer of the Umex's (a subsidiary of Belgium-based Union Minière SA) Thierry Copper Mine, Vice President of Mines at Sullivan Mines, General Manager for all joint ventures at Cambior Inc. (acquired by IAMGOLD Corporation), Vice President of Operations of El Limon Mine at Triton Mining Corporation, and General Manager of the Bougrine Zinc Mine, in addition to Vice President of Latin America for Breakwater Resources Ltd. (acquired by Nyrstar NV, a Dutch Company). Mr. Goffaux is also an Independent Director of Rio Moche Exploration Inc.

#### **Dr. Gareth P. Hatch, CENG, FIMMM, FIET – Independent Director**

A two-time graduate of the University of Birmingham in the United Kingdom, Dr. Hatch holds a Bachelor of Engineering degree with Honours in Materials Science & Technology and a doctorate in Metallurgy & Materials, focused on rare-earth permanent-magnet materials. Dr. Hatch is a Fellow of the Institute of Materials, Minerals & Mining (IOM3) a Fellow of the Institution of Engineering & Technology (IET), a Chartered Engineer registered through the U.K. Engineering Council and a Senior Member of the Institute of Electronic and Electrical Engineers (IEEE). He is also a member of the Washington, DC-based Strategic Materials Advisory Council.

Dr. Hatch is Co-Founder, President and Director of Innovations Metals Corp., a private, Toronto-based company, specializing in cost-effective processing solutions for many metals vital to high-tech and green-energy, including battery-grade nickel and cobalt, and rare-earth elements (REEs). Dr. Hatch is also a Founding Principal of Technology Metals Research, LLC, a consulting firm that

develops market intelligence and analysis on the critical materials and technology metals sector. Dr. Hatch was previously Director of Technology at U.S.-based Dexter Magnetic Technologies, Inc., and holds five patents on a variety of magnetic devices.

Since 2014, Dr. Hatch has served as Principal Investigator on a multi-million-dollar U.S. Army Research Laboratory (ARL) U.S. Department of Defense (DoD) research program on innovative rare-earth elements processes. A world-renowned expert on critical materials and global supply chains, Dr. Hatch has advised the DoD on threats to the United States and allied strategic materials suppliers, as well as the U.K. Parliament and members of the U.S. Congress on critical materials. Dr. Hatch has contributed to and has been referenced by reports published by the U.S. General Accountability Office, the U.S. Geological Survey, the British Geological Survey, the DoD, the U.S. Department of Energy (DoE), and many others.

### **Tyler Dinwoodie - EVP**

Mr. Dinwoodie is responsible for Alabama Graphite's corporate development, as well as day-to-day operational matters. A marketing expert and a corporate strategic advisor with two decades of international experience, Mr. Dinwoodie has an extensive background in market and industry analysis in the graphite sector. Most recently, Mr. Dinwoodie has served as a marketing and communications consultant for Alabama Graphite, having previously served as Senior VP of Marketing for Focus Graphite, and as a marketing, communications and strategic consultant for other graphite development companies. As Special Advisor to the CEO of Intercontinental Potash Corp., Mr. Dinwoodie contributed significantly to raising millions of dollars in strategic investment. Additionally, Mr. Dinwoodie has consulted for numerous private and public resource and advanced materials companies, both in Canada and the United States. Mr. Dinwoodie studied economics at McMaster University and physics at Laurentian University.

### **Doug Bolton, CPA, CA - CFO**

Mr. Bolton has more than three decades of public accounting experience, providing audit, accounting, tax, and consulting services to a wide variety of clients, including a number of reporting issuers listed on the TSX-Venture Exchange and involved in the mining and resource industry. In addition to his role as CFO of Alabama Graphite, Mr. Bolton also serves as Director and CFO for Laurion Mineral Exploration Inc., and as interim CFO for Adex Mining Inc. Mr. Bolton is a former CFO for Romios Gold Resources and former Director and Treasurer of the Tony Stacey Centre for Veterans Care, a not-for-profit, long-term care facility located in Toronto. A graduate of York University, Mr. Bolton holds both CPA and CA designations from the Chartered Professional

Accountants of Ontario and the Institute of Chartered Accountants of Ontario, respectively.

### **George Hawley – Director of Technology**

Mr. Hawley is a leading international industrial minerals expert, specializing in the development and marketing of graphite and value-added graphite products, and adds more than a half-century of experience to Alabama Graphite's world-class team of graphite industry professionals. He holds a Bachelor of Science degree from the University of London, with a background in chemistry, chemical engineering and polymer materials. Having successfully developed several innovative processes involving graphite, Mr. Hawley's graphite work has encompassed nuclear and chemical applications, rocket nozzles, anodes, friction materials, heat management, electrodes, and carbon brushes. A member of the U.S. Society of Plastics Engineers, American Chemical Society, and Society of Mining Engineers, his experience includes research and development for one of the world's largest producers of synthetic graphite products, the Morgan Crucible Company (now Morgan Advanced Materials), and lead acid battery manufacturer Chloride Exide Limited, as well as work for government agencies and various mining companies in the USA, Europe, Japan, Australia, Africa, and Canada.

Mr. Hawley specializes in natural graphite anodes for lithium batteries, and has consulted for Quinto Mining (now Cliffs Natural Resources), Northern Graphite and Focus Graphite, prior to joining Alabama Graphite. Mr. Hawley has published more than 50 technical papers on industrial mineral products pertaining to technical and marketing topics, in addition to regularly presenting at global graphite and industrial mineral conferences worldwide.

### **Jesse Edmondson – Director Business Development and Director, Government and Community Relations, Project Geologist**

Mr. Edmondson holds a Masters of Science degree in geology from the University of Arkansas at Fayetteville, and has a distinguished academic background that includes numerous peer-reviewed publications and lectures. Mr. Edmondson has been with Alabama Graphite since the company's inception, and has supervised all surface exploration, airborne and ground geophysics, trenching, and sonic and core drilling. In addition to his role as Project Geologist, Mr. Edmondson also serves as Director of Community Relations, managing the Company's relationships with local stakeholders, and local government officials and agencies.

Mr. Edmondson was awarded an I-WATER (IGERT) PhD Fellowship from Colorado State University in 2012, and a Ph.D. Research Fellowship to the MIT/WHOI Joint Program in 2014, both of which he declined in order to continue his work with Alabama Graphite. An avid outdoorsman and environmentalist, Mr. Edmondson works out of Alabama Graphite's U.S. field office in Sylacauga, Alabama.



## **Randy Moore - Strategic Advisor**

Randy Moore is the former President of EaglePicher Technologies, LLC., a leading US. Department of Defense lithium-ion battery manufacturer. Mr. Moore led EaglePicher for eight years, through to the end of 2015, overseeing its most significant growth and was directly responsible for EaglePicher's 100,000-square foot Lithium-ion Center of Excellence manufacturing facility in Joplin, Missouri.

Mr. Moore is the current President and CEO of ZAF Energy Systems, a company that develops and commercializes state-of-the-art, next-generation battery technologies, and is a founding member, former Chairman, and current member of the Board of Directors of the National Association of Advanced Technology Batteries International (NAATBatt International), a U.S.-based, not-for-profit trade association commercializing advanced electrochemical energy-storage technology for emerging, high-tech applications. He brings more than 35 years of senior operational, defense and global business experience to Alabama Graphite.

Prior to his term at EaglePicher, Mr. Moore was president of the Surveillance Systems Group at Axsys Technologies. He also served as EVP and GM of Kollsman, an operating unit of Elbit Systems that develops advanced avionics and electro-optic instruments and systems for aerospace, defense and medical applications. Mr. Moore spent five years at Kaman Corporation, where he ran a \$65-million business unit and directed programs for the US Navy and US Air Force. Mr. Moore also served in management and operations positions at Westinghouse, E-Systems/Raytheon and Lucent Technologies.

Mr. Moore is a retired Lieutenant Colonel in the U.S. Air Force. He spent a combined 27 years in the active and reserve Air Force where he served in various capacities including as a contracting officer in the Office of Scientific Research and as a special agent in a counterintelligence capacity for the Office of Special Investigations. Mr. Moore completed his undergraduate degree in Marketing and Management at Texas Lutheran University, and received his MBA from Southern Illinois University.

## **Conclusion:**

### **The Right Project, Making the Right Material, Pursuing the Right Markets**

There are a lot of junior, natural flake graphite companies out there, and most of them will never progress beyond issuing stock. The key difference between almost all of them and Alabama Graphite is that Alabama Graphite has focused on finding the necessary graphite industry expertise to allow them to progress the project while also connecting with the right potential buyers regarding off-take. That Alabama Graphite will be a low-cost supplier of a valuable, specialty material like CSPG to a battery industry that has no current North American source of supply is significant. And we believe that the management team at

Alabama Graphite is being wise in avoiding competition with the Chinese suppliers of both flake graphite concentrates as well as USPG. Instead they are focused on making a reasonable amount of very high-quality product for the customers with whom they are engaged, and avoiding having to rely on the sale of large quantities of low-value material to survive.

We like the management team here, we especially like the quality and production cost from the Coosa deposit, and we like the prospective financial results even with projected market prices that a few involved in the industry would describe as tremendously pessimistic. **Even based on those prices, and with a discount rate that is very likely high for the situation in which the company finds itself, we derive a target price of \$0.69 based on 1x NPV<sub>18</sub> and place a Positive recommendation on the company.** Alabama Graphite is one of the true value buys in the critical materials industry, a project that can make money for investors at product prices that are half of what is currently prevailing in the market, and a company that an investor should care to own, whether they are concerned primarily with the quality of management, the quality of the project, or both.

## Keywords

<b>Industry</b>	Graphite, Critical Materials, Critical Metals, Mining, Industrial Minerals, Green-Energy Supply Chain, Battery Materials	
<b>Relevant Companies</b>	GRAPHITE ONE — TSXV:GPH MASON GRAPHITE — TSXV:LLG NORTHERN GRAPHITE — TSXV:NGC FOCUS GRAPHITE — TSXV:FMS NOUVEAU MONDE MINING — TSXV:NOU ST. JEAN CARBON — TSXV:SJL EAGLE GRAPHITE— TSXV:EGA ELCORA ADVANCED MATERIALS — TSXV:ERA LEADING EDGE MATERIALS — TSXV:LEM ENERGIZER RESOURCES — TSX:EGZ CANADA STRATEGIC METALS — TSXV:CJC CKR CARBON CORP — TSXV:CKR ALSET ENERGY CORP — TSXV:ION BERKWOOD RESOURCES — TESC:BKR STANDARD GRAPHITE — TSXV:SGH LARA EXPLORATION — TSXV:LRA SAMA RESOURCES — TSXV:SME GREAT LAKES GRAPHITE — TSXV:GLK DNI METALS — CSE:DNI ONTARIO GRAPHITE – Private	SYRAH RESOURCES — ASX:SYR MAGNIS RESOURCES — ASX:MNS BLACK ROCK MINING — ASX:BKT VOLT RESOURCES — ASX:VRC TRITON MINERALS — ASX:TON TALGA RESOURCES — ASX:TLG BASS METALS — ASX:BSM ARCHER EXPLORATION — ASX:AXE METALS OF AFRICA — ASX:MTA DISCOVERY AFRICA — ASX:DAF BUXTON RESOURCES — ASX:BUX SOVEREIGN METALS— ASX:SVM ANSON RESOURCES — ASX:ASN KIBARAN RESOURCES — ASX:KNL GRAPHEX MINING — ASX:GPX CASTLE MINERALS — ASX:CDT HEXAGON RESOURCES — ASX:HXG LINCOLN MINERALS — ASX:LML NEXT GRAPHITE — OTC PINK: GPNE SKALAND GRAPHITE AS — Private
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