Avalon announce a positive PEA at Separation Rapids lithium project

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The PEA was prepared under the oversight of Micon International Ltd.

September 27, 2016

Toronto, ON – **Avalon Advanced Materials Inc.** **{TSX: AVL}** is pleased to announce the completion of a positive Preliminary Economic Assessment ("PEA") for its 100% owned Separation Rapids Lithium Project , Kenora, Ontario. The PEA was prepared under the oversight of Micon International Ltd.

The Separation Rapids Lithium Deposit (the "Deposit") was originally evaluated by Avalon in 1997-2000 as a potential producer of lithium minerals for glass-ceramics under a pre-feasibility study (which was also prepared by Micon). The purpose of this 2016 PEA was to investigate the potential for recovery of a lithium product suitable for the battery market from the same lithium resource, and the results confirm a technically viable process and positive economics for the recovery of a battery-grade lithium hydroxide product.

Highlights

- An average mining rate (open pit) of 950,000 tonnes per year would yield an average annual production of 14,600 tonnes of lithium hydroxide for 10 years and 100,000

tonnes per year of feldspar mineral concentrate for 20 years, as it would continue to be recovered from previously processed material for an additional 10 years after the initial 10 year mine life.

- The discounted cash flow ("DCF") analysis yields a 19% internal rate of return ("IRR") on a pre-tax basis and a 16% IRR on an after-tax basis, assuming 100% equity financing. The Project's net present value ("NPV") at an 8% discount rate is CAD$343 million pre-tax and CAD$228 million after-tax.
- Total Project construction capital costs are estimated at $514 million, which is inclusive of $86 million in contingencies and $7 million in sustaining capital.
- The average lithium hydroxide price assumption used for this PEA was US$11,000/tonne and the CAD:USD exchange rate assumption was US$1.00 = CDN$1.30.
- Measured and Indicated Mineral Resources, as currently delineated, total 8.0 million tonnes averaging 1.29% lithium oxide and 38% feldspar. Inferred Mineral Resources contribute an additional 1.63 million tonnes at 1.42% lithium oxide to a maximum vertical depth of 260 metres. The deposit is open to depth and along strike.

At the production rate modelled for this PEA, the currently delineated lithium resource would support lithium production for at least 10 years. There is sufficient high quality feldspar (an industrial mineral) in the resource to support production for at least 20 years. If additional drilling on untested extensions of the Deposit were to increase the resource and extend the initial 10 year lithium production period, each additional year of additional lithium production could add $200 million in revenues per year and significantly increase the NPV of the Project.

Don Bubar, President and CEO, stated "*I am delighted with the*

results of this PEA indicating that production of a high purity lithium battery chemical from Separation Rapids is indeed economically viable in this model. Extraction of lithium chemicals such as lithium hydroxide from lithium pegmatites like Separation Rapids is an emerging business requiring innovative new process technology. Under the leadership of SVP Metallurgy and Technology Development, Dave Marsh, over the past 12 months we have successfully developed a new process flowsheet to extract a lithium hydroxide product from the rare high purity lithium mineral petalite, something that had not been done before. We look forward to working with our partners in government, the battery materials sector and the local community to advance this Project to the demonstration plant stage."

The PEA development model covers all aspects of project development, including mining, mineral concentration, and hydrometallurgical processing as well as all related infrastructure. Micon developed its capital and operating cost estimates from first principle capital quotations, estimates from suppliers, manufacturers, contractors and experience based on comparable operations in Canada and abroad. The capital and operating cost estimates were completed to a level consistent with an AACEI Class 4 estimate, with an intended level of accuracy of ±30%, based on Q3 2016 prices, excluding escalation. Currency is Canadian dollars unless otherwise stated.

Optimisation Opportunities and Next Steps

With the completion of a positive PEA on lithium hydroxide production, next steps are oriented primarily toward gathering all the technical information needed to support the completion of a feasibility study in 2017 and secure customer acceptance of the products, followed by operation of a demonstration scale production facility.

Commercial operations could begin by 2020. The key factors going forward influencing the timely execution of the Project are: securing sufficient product offtake commitments to support Project financing; the availability of sufficient equity and/or debt financing and receipt of all requisite operating permits and approvals.

Avalon's first priority will be to carry out additional drilling with the objective of increasing the resources, while continuing to optimize metallurgical processes to confirm design parameters and product properties. While the economics contained in the PEA are positive, ongoing metallurgical process development work and market research have identified opportunities to improve the overall Project economics or reduce Project risk. These include:

- Recovery of lithium from other lithium-bearing minerals in the resource;
- Defining a low-cost, clean energy solution for the operations;
- Improvements in lithium recovery rates in the flotation process and in the hydrometallurgical plant while maintaining high product quality;
- Expansion of feldspar markets through product research and market development work;
- The recovery of high purity silica and tantalum by-products; and
- Integrating the production of petalite concentrate for glass-ceramics customers into the development model.

The development model presently contemplates connection to the hydro-electric grid near the Whitedog power generation station at a cost of $11 million, including construction of a 25 km power transmission line and substation. The Company has begun to investigate the potential to meet the power needs for the mine and concentrator (estimated at 5 MW) using local low-

cost, run-of-river power generation supplemented by renewable energy delivered by an independent energy company. An initial reconnaissance study has identified a promising site close to the Deposit capable of meeting most of the operation’s energy requirements at a lower total cost.

Lithium and Feldspar Markets

Lithium Compounds for Batteries

The demand for lithium chemicals, such as lithium carbonate and lithium hydroxide, has been growing rapidly over recent years, driven predominantly by lithium ion rechargeable battery technology now in high demand for the electric vehicle marketplace and other energy storage applications. Current projections indicate continued growth in lithium demand from the battery sector for the foreseeable future. Because lithium is marketed in different forms, (including lithium minerals used in glass and ceramics) aggregate lithium demand and supply is usually expressed in terms of lithium carbonate equivalent (“LCE”).

Market studies completed by the Company in 2015 indicated that at least three different lithium chemicals are used in lithium ion batteries, depending on the specific cathode chemistry the technology employs: lithium carbonate, lithium hydroxide, and lithium metal. There are at least four battery cathode chemistries presently competing for market share: Lithium cobalt oxide, lithium-nickel-aluminum-cobalt oxide (“NAC”), lithium-nickel-manganese-cobalt oxide and lithium iron phosphate. The lithium ion battery now preferred by many electric vehicle manufacturers uses the NAC chemistry, for which lithium hydroxide is becoming the preferred lithium chemical feedstock. Demand for lithium hydroxide is projected by Stormcrow Capital Ltd (August, 2015) to grow at a faster rate than lithium carbonate demand and to more than double from 82,000 tonnes LCE in 2016 to 186,000 tonnes LCE in 2025.

Based on these market observations, Avalon selected lithium hydroxide as its target lithium product and conducted process testwork to create a flowsheet to produce it cost effectively from its lithium mineral (petalite) concentrate which contains few impurities requiring removal from the final product. Lithium hydroxide can also be produced directly from the mineral concentrate without first making an intermediate product such as lithium carbonate. New hydrometallurgical technologies offer an environmentally efficient and relatively low cost extractive alternative to make lithium hydroxide from the mineral concentrate and achieve the high purity requirements now demanded by battery makers.

It is clear that new lithium supply sources will be needed to meet the growing demand for batteries for electric vehicles. The Separation Rapids Lithium Project will be well-situated to serve new battery production facilities contemplated in North America. Just one well-known example, the lithium battery Gigafactory of Tesla Motors Inc. in Nevada, is expected to consume up to 25,000 tonnes per year of lithium hydroxide after it has reached full production.

Prices for both lithium hydroxide and lithium carbonate have increased significantly in recent years, with the growing demand from the battery sector exceeding supply growth. This is creating upward pressure on prices, a trend that analysts are predicting will likely continue until the market comes back into balance. Lithium hydroxide typically sells at a US$2-3/kg premium to lithium carbonate reflecting higher average production costs.

Avalon has reviewed all publicly available lithium price forecasts. While they all forecast increasing prices, there is considerable variability in absolute price levels predicted for battery grade lithium chemicals in the future. Lithium hydroxide prices negotiated in 2019-2020 (when Avalon may be entering the market) are forecast to range from current price levels of around US$11,000/tonne to as high as US$25,000/tonne

(Global Lithium LLC) with the average being around US$16,000-$17,000/tonne (Benchmark and Global Lithium LLC).

For the purposes of this PEA, Avalon has used a price assumption of US$11,000 per tonne FOB plant for lithium hydroxide. This is consistent with a recent price forecast for the period 2019-2020 prepared by Roskill Information Services.

Feldspar

Feldspar is an industrial mineral used commonly in the manufacture of glass and ceramics, also used as a filler and extender in the production of paints, plastics and rubber. The glass market for feldspar in the United States represents the largest market at around 68%, while ceramics account for 23% and filler and other applications represent less than 10%. Market access depends upon product quality and freight costs to individual markets.

Global Industry Analysts Inc. (“GIAI”) projects that between 2015 and 2022, feldspar demand in the United States will grow at a compound annual growth rate of 3.8% to reach approximately 800,000 tonnes per year.

Testwork carried out by Dorfner Anzaplan GmbH, Germany, a specialist in industrial minerals process development, indicates that feldspar from the Separation Rapids Deposit has a very low iron content and comparable quality to the feldspars marketed by other North American producers.

Through discussions with market participants and industry experts, and evaluation of data provided in purchased reports and publicly available information, Avalon estimates that 100,000 tonnes per year of feldspar can be sold into the glass, ceramics, frits/glazes and filler markets in the United States and potentially other markets in Europe and Mexico. However, Avalon has sufficient feed material to produce much greater quantities of feldspar should there be sufficient market demand.

Pricing for feldspar in the USA currently ranges from US$175/tonne to US$250/tonne FOB plant. Avalon has based the feldspar revenue calculations for this PEA on a conservative price assumption of US$170/tonne FOB Separation Rapids plant.

Mineral Resources

Mineral Resources are essentially the same as used for the 1999 pre-feasibility study, adapted to current resource reporting guidelines under NI 43-101 and are summarized in the tables below. Measured and Indicated Resources are estimated to total 8.0 million tonnes at a grade of 1.29% Li_2O using a 0.6% Li_2O cut-off grade. In addition, the Deposit includes an estimated Inferred Resource of 1.63 million tonnes at 1.42% Li_2O. Within the same rock volume, there is also an estimated Inferred Resource of 8.0 million tonnes averaging 38% feldspar at a 30% feldspar cut-off grade.

The Deposit is hosted within a large, highly-evolved pegmatite body of a rare petalite sub-type, similar to the “Tanco” pegmatite: a rare metals producer located 60 km to the west at Bernic Lake, Manitoba. The Separation Rapids pegmatite forms a vertically-dipping body varying in thickness up 70 metres and traceable for approximately 1.5 km along strike. Unlike the Tanco pegmatite, it is highly deformed and was essentially flattened and stretched into its present sub-vertical orientation. The Deposit exhibits typical mineralogical zoning characteristics seen in other highly evolved rare metal pegmatites like Tanco, such as well-developed wall zones and a petalite-rich intermediate zone. Exploration potential exists to discover additional mineralogical sub-zones typical for such pegmatites enriched in other rare metals, notably tantalum and cesium. The Deposit has been delineated by exploration drilling over 500 metres of strike length to a depth of 260 metres, and is open for expansion.

The primary lithium bearing minerals in the deposit are

petalite and lepidolite and locally spodumene formed from petalite. The feldspars include both albite and potassium feldspar. The other major rock-forming minerals are quartz and muscovite. Accessory minerals include columbite-tantalite, cassiterite, apatite and topaz. Results from 69 historic diamond drill holes totalling 10,152 metres were used to create a 3-D model of the host pegmatite.

Separation Rapids, Mineral Resource Estimate at 0.6% Li_2O Cut-off Grade

Class	Tonnes (Mt)	Li_2O (%)	Specific Gravity
Measured	4.03	1.32	2.66
Indicated	3.97	1.26	2.67
Measured plus Indicated	8.00	1.29	2.66
Inferred	1.63	1.42	2.64

Notes:

- CIM Definition Standards for Mineral Resources and Mineral Reserves, 10 May, 2014 were followed for this mineral resource estimate.
- The Qualified Person for this mineral resource is Benjamin Webb, P.Geo. (B.C.).
- The resource estimate is constrained by a 3D geologic model of the mineralized material.
- Assay intervals were interpolated using the Inverse Distance Weighted method to create a 3D block model.
- All figures are rounded to reflect the relative accuracy of the estimates. Summation of individual columns may not add-up due to rounding.
- Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability. There is no certainty that all or any part of the Mineral Resource will be converted into Mineral Reserves.

- In addition, while the terms “Measured”, “Indicated” and “Inferred” mineral resources are required pursuant to National Instrument 43-101, the U.S. Securities and Exchange Commission does not recognize such terms. Canadian standards differ significantly from the requirements of the U.S. Securities and Exchange Commission, and mineral resource information contained herein is not comparable to similar information regarding mineral reserves disclosed in accordance with the requirements of the U.S. Securities and Exchange Commission. U.S. investors should understand that “inferred” mineral resources have a great amount of uncertainty as to their existence and great uncertainty as to their economic and legal feasibility. In addition, U.S. investors are cautioned not to assume that any part or all of Barrick’s mineral resources constitute or will be converted into reserves.

Separation Rapids, Feldspar Inferred Mineral Resource Estimate at 30% total Feldspar Cut-off grade

Classification	Tonnes (Mt)	Feldspar (%)
Inferred	8.0	38

- Notes.CIM Definition Standards for Mineral Resources and Mineral Reserves, 10 May, 2014 were followed for this mineral resource estimate.
- The Qualified Person for this mineral resource is Benjamin Webb, P.Geo. (B.C.).
- Feldspar is the total of potassium feldspar and albite.

The model includes lithium resources with an average grade of below 1% Li_2O. The lower grade lithium mineralization consists of a swarm of narrow lithium-bearing pegmatite dykes intruded into meta-volcanic rocks, where tests indicate the resource can be pre-concentrated using optical sorting technology.

The resource block model has had an open pit mine design applied to it using Whittle Pit optimization resulting in 9.34 million tonnes of mineralized material at an average grade of 1.22% Li_2O within the pit. The pit has a strip ratio of 1:5.6, resulting in 52 million tonnes of waste rock for stockpiling for use as aggregate. For the purpose of this PEA, the mine depth was limited to 260 metres.

The mine design has not been optimized and the appropriate timing to transition the operation to underground mining has yet to be determined. Further drilling is expected to identify additional resources at depth which would create the opportunity to ultimately re-work the development model to include an underground mining operation to access the depth extensions of the Deposit and reduce the amount of rock generated for stockpiling.

Summary of the PEA Project Development Model

The PEA Project development model consists of facilities located at two separate sites: an open pit mine and concentrator located on the Company's mining lease approximately 75 km north of Kenora, Ontario and a hydrometallurgical plant located at an industrial site near the city of Kenora.

The current development model contemplates an open pit mine to a final depth of 260 metres providing 950,000 tonnes of mineralized plant feed per year for 10 years at an average diluted grade of 1.2% Li_2O. The mineralized plant feed will be crushed and processed at a concentrator constructed at the mine site. At full production the concentrator will produce an average of 144,400 tonnes per year of petalite concentrate and 100,000 tonnes per year of feldspar concentrate. The petalite will be transported by truck to the proposed hydrometallurgical plant presently contemplated for Kenora.

The hydrometallurgical plant site selected for the purposes of

the PEA is in close proximity to sources of hydropower, natural gas and water needed for the processing of the petalite. The hydrometallurgical plant would have the capacity to produce an average of 14,600 tonnes per year of lithium hydroxide. The lithium hydroxide will be bagged at the hydrometallurgical plant and loaded on to rail cars for shipment to market.

Non lithium-bearing rock produced in the mining operation will be stored at site for potential recovery of other industrial minerals or use as aggregate in the surrounding region. Tailings from both the concentrator and the hydrometallurgical plant will be stored in a tailings management facility located at the mine site. Future engineering, procurement and construction of both the concentrator and the hydrometallurgical plant will proceed in parallel.

Environmental Assessment and Community Engagement Update

Avalon is committed to developing the Project based on modern Corporate Social Responsibility ("CSR") principles and reporting on its performance in its annual Sustainability Reports. These CSR principles include commitments to minimize environmental impacts, ensuring the health and safety of employees, maximizing benefits for local communities and providing full transparency in its social and environmental performance. The Company and the Project are well known in the local community.

A detailed environmental baseline study was updated in 2007 and work has been ongoing to further update this study to align it with recent regulatory changes. Following some additional baseline work to validate the 2007 study, a detailed project description and Environmental Impact Assessment will be produced in consultation with regulators, Indigenous Peoples and other communities of interest. Initial studies suggest that aggregate stockpiles, tailing and concentrate storage areas will not contribute effluents of

environmental concern. Dry stacking of tailing and concentrates will minimize long term storage risk, water use and effluent quantity.

The Project is located in the traditional land use area of the Wabaseemoong Independent Nations ("WIN") for which they have stewardship under an agreement with the Province. The Company first signed an MOU with WIN in 1999 which was renewed when the Project was re-activated in 2013. Avalon management has been keeping WIN leadership informed on Project activities and remains committed to fulfilling its community consultation obligations and partnering with WIN on Project business opportunities. The Company has also initiated dialogue with the Métis Nation of Ontario who hold Aboriginal rights in the area.

Qualified Persons

The PEA was prepared with contributions from the following Avalon independent consultants and "Qualified Persons" for the purposes of National Instrument 43-101, who have reviewed and approved this release.

Qualified Person	Consulting Firm	Contribution
Richard Gowans, P.Eng	Micon International Limited	Process, Infrastructure, Capital & Operating Costs
Bruce Pilcher, Eur Ing, CEng, FAusIMM (CP)	Micon International Limited	Mining and Mineral Reserves, Mine Capital & Operating Costs
Christopher Jacobs, CEng, MIMMM	Micon International Limited	Economic Analysis

Jane Spooner, P.Geo	Micon International Limited	Lithium and Feldspar Markets
Benjamin Webb, P.Geo. (BC)	BMW Geoscience LLC	Resource Estimation
Kevin Hawton, P.Eng	Knight Piésold Ltd.	Tailings Management Design, Mine Rock and Water Management
Steve Aiken, P.Eng	Knight Piésold Ltd.	Environmental Studies, Permitting & Social or Community Impact Assessment

About Avalon Advanced Materials Inc.
Avalon Advanced Materials Inc. (formerly Avalon Rare Metals Inc.) is a Canadian mineral development company specializing in niche market metals and minerals with growing demand in new technology. The Company has three advanced stage projects, all 100%-owned, providing investors with exposure to lithium, tin and indium, as well as rare earth elements, tantalum, niobium, and zirconium. Avalon is currently focusing on its Separation Rapids Lithium Project, Kenora, ON and its East Kemptville Tin-Indium Project, Yarmouth, NS. Social responsibility and environmental stewardship are corporate cornerstones.

For questions and feedback, please e-mail the Company at ir@AvalonAM.com,

or phone

Don Bubar, President & CEO at +1 416-364-4938.