

Avalon helping to meet the lithium and rare earths demand

[Note from the Publisher: I was delighted to see that Matthew Bohlsen had elected to write an update on Avalon Advanced Materials, especially in lieu of the column published yesterday The Single Biggest Legislative Development in the Rare Earths Market since 2010. While this column highlights the latest in their Separation Rapids Lithium Project, I would like to remind our readers that InvestorIntel.com was the blending of 29 blogs, including RareMetalBlog.com in 2012. That particularly blog, and the associated rare earth education sites were inspired by conversations I had with the CEO of Avalon Advanced Materials Inc. Don Bubar. The **Nechalacho** Project is Avalon's flagship rare metals NA project and is exceptional for its high concentrations of the more scarce heavy rare earth elements or rare earths – enjoy Matthew's update!]

Avalon Advanced Materials Inc. (TSX: AVL | OTCQX: AVLNF) ("Avalon") offer investors exposure primarily to lithium, in addition to tin, indium, silica, rubidium, cesium, tantalum, neodymium and praseodymium.

Lithium is the lightest known metal, and it can also lighten your mood. Lithium, atomic number 3, is an element of many uses. It's used in aircraft manufacture and in certain batteries. Lithium is a special metal in many ways. It's light and soft, so soft that it can be cut with a kitchen knife, and so low in density that it floats on water. Lithium-ion batteries are the key to lightweight, rechargeable power for laptops, phones and other digital devices. Growing demand for rechargeable batteries in electric vehicles and home energy storage is expected to result in continued rapid growth in

global consumption of lithium. Many industry analysts are predicting that the demand for lithium will increase substantially over the next 5-10 years, possibly creating a supply deficit, as existing producers struggle to meet the new demand.

Avalon could be in a position to benefit from this demand with their Separation Rapids Lithium Project having the potential to produce high purity lithium compounds for two distinct markets – An industrial mineral product for glass-ceramics, and lithium chemicals for energy storage. The lithium petalite found at the Separation Rapids lithium deposit also offers potential to provide a high purity lithium chemical product at a relatively low-cost to serve the needs of lithium ion rechargeable battery manufacturers. It also has potential for several by-products including feldspar's, silica, rubidium, cesium and tantalum. The Company's by-product recovery offers the possibility of significantly increased revenues and reducing the amounts of waste material having to be disposed. Petalite is the preferred lithium mineral feed-stock for certain specialty glass-ceramic products for technical reasons, notably its consistently low impurity levels.

Technology Metals and Minerals *Project Pipeline*

Lithium

Critical ingredient both for energy storage and high strength glass products

Rare Earths, Lithium

'Energy Metals' vital to electric vehicle technology



East Kemptville

Tin-Indium

Tin

An emerging technology metal vital in electronics with potential in batteries

Avalon's Canadian based projects

Separation Rapids Lithium Project

On September 2016, Avalon announced the results of a positive Preliminary Economic Assessment on the Separation Rapids lithium project. The results confirm a technically viable process and positive economics for the recovery of a battery-grade lithium hydroxide product. The Project has a net present value ("NPV") of C\$ 228 million after-tax, an IRR of 16% after tax, while construction capital costs are estimated at \$514 million, inclusive of \$86 million in contingencies and \$7 million in sustaining capital. The PEA was based on annual production of 14,600 tonnes of lithium hydroxide for 10 years, 100,000 tonnes per year of feldspar mineral concentrate for 20 years, with low production costs (estimates to be below US\$5,000/t).

East Kemptville Tin-Indium Project

Avalon's other focus is their East Kemptville Tin-Indium Project. In July 2018, Avalon finalized its Preliminary Economic Assessment (PEA) on that project. The re-development model, as presently conceived, is an environmental remediation project that will be financed through the sale of tin concentrates recovered in large part from previously-mined mineralized material on the site supporting economic recovery of tin concentrates for at least 15 years. Total estimated Measured and Indicated Mineral Resources are now 22.97 million tonnes at 0.153% Sn, with an additional Inferred Resource estimate of 14.25 million tonnes at 0.139% Sn at a cut-off grade of 0.1% Sn.



Avalon – An emerging technology metals producer

Avalon also recently announced they will re-activate their 100% owned Nechalacho Rare Earth Elements Project, Thor Lake, NWT ("Nechalacho" or "the Project") in 2018 due to strong demand for the 'magnet rare earths' neodymium and praseodymium.

Avalon Advanced Materials Inc. has a market cap of C\$ 16 m. The Company is a Canadian mineral development

company headquartered in Toronto, Ontario. Avalon specializes in critical metals and minerals with growing demand in new technology. One to follow.

Avalon ignites interest with high-purity lithium

NY based asset firm Lind: "the time is right to invest in Avalon"...

A project in the making since Clinton was president, Separation Rapids has had a difficult upbringing, but like a failing college student graduating with surprise honours, the site recently revealed its long-concealed potential, reigniting development and attracting considerable interest.

100% owned by Avalon Advanced Materials Inc. (TSX: AVL |OTCQX: AVLNF) ("Avalon"), Separation Rapids is one of the largest lithium-cesium-tantalum pegmatite deposits in the world, including an unusual density of the rare crystal-like mineral petalite, a source of high-purity lithium.

Since the results of a 2016 preliminary economic assessment ("PEA") confirmed that battery-grade lithium hydroxide could be reasonably and economically extracted from the resource, the project has gathered much more steam. More recently, major Australian processor Lepidico Ltd. have issued a letter of intent suggesting that they would purchase a minimum of 15,000 tpa for processing in their planned commercial facility. Additionally, Avalon have purchased a further 1,008 hectares of property from a neighbouring gold company.

According to the existing PEA, the mine has the potential to

produce 14,600 tpa of lithium hydroxide for ten years, and another 100,000 tpa of feldspar mineral concentrates over twenty years. 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.

Lithium hydroxide is to be in increasing demand for its use in battery cathode chemistries, and with half of the world seemingly digging for the stuff, it’s never going to be bad news to find that you’re sitting on a fair amount of it already.

Petalite and lepidolite are not the only minerals of interest at the Separation Rapids project. Highly fractionated pegmatites, like the Separation Rapids deposit, contain many minerals of economic importance. The deposit has the potential for recovery of several valuable by-products including high purity silica, feldspar, rubidium, cesium and tantalum. By-product recovery offers the possibility of significant increases to both revenue and efficiency.

Petalite is also the preferred lithium mineral feedstock for certain specialty glass-ceramic products precisely because of its consistently low impurity levels. This is essential if you want to serve the needs of lithium ion rechargeable battery manufacturers. Growing demand for rechargeable batteries in electric vehicles and home energy storage is expected to result in continued rapid growth in global consumption of lithium. Many industry analysts are predicting that the demand for lithium will double over the next 5-10 years, creating a supply deficit, as existing producers struggle to meet the new demand.

No surprise, then, that Avalon scored C\$2.5m in a private placement deal earlier this month from New York based asset firm Lind; Phillip Valliere, Managing Director at Lind, had this to say:

*“We have been following Avalon’s progress for several years and, having developed confidence in the management team, we feel **the time is right to invest in Avalon** as it advances both its clean-tech materials business at its Separation Rapids Lithium Project as well as its East Kemptville Tin-Indium Project which is expected to be in a position to generate cash flow within the next two years.”*