

# Message from the President & CEO

**Thank you** for your continued interest in Avalon's annual Sustainability Report, where we share our progress as we sustainably advance our critical minerals projects.

Establishing new critical mineral supply chains outside of China has now become a priority for government policymakers. There is growing recognition that these minerals are essential in many clean technologies. Sustainable production of critical minerals is essential to realizing a lower-carbon future.

Consequently, we are seeing a substantial increase in demand for critical minerals, which is creating opportunities for producers like Avalon to emerge and satisfy looming supply deficits. Public awareness about mining of critical minerals is increasing and acknowledgment that they are essential to establishing these new supply chains. This became apparent earlier this year when the World Bank launched an initiative called *Minerals for Climate Action* at an event in Washington DC, where I was an invited speaker.

	Separation Rapids	Nechalacho	Will Scarlett	East Kempville	Lilypad
	<b>Petalite (Li)</b>	<b>HREE</b>	<b>REE</b>	<b>Tin</b>	<b>Cesium</b>
<b>Examples of end uses</b>					
<b>Other metals/minerals present</b>	Cs, Rb, SiO <sub>2</sub> , Feldspar, Lepidolite (Li)	Be, Li, Nb, Nd, Pr, Ta, Zr	Co, Li, Ni, Zn, Manganese	Cu, In, Zn	Li, Ta
<b>FY2019</b>	Planned extraction of 2,500 tonne petalite mineralization sample for pilot plant processing	Sold Upper Zone resources to Cheetah Resources for \$5 million; managed \$900,000 work program on Cheetah's behalf	Signed a binding Letter of Intent with Coal Strategy Advisors to earn up to 50% interest in project (subsequent to reporting period)	Received encouraging preliminary results from Cronimet Mining Processing ore-sorting testwork on 28 tonne bulk sample collected January 2019	Following the election of new leadership, communications resumed with the Eabametoong First Nation at the nearby community of Fort Hope
<b>Upcoming news</b>	Bulk sample program to produce petalite products for interested end-users	Finalize details of transaction with Cheetah	Testwork to confirm concentration levels of rare earths, and most efficient extraction process	Feasibility Study to incorporate ore-sorting results; finalize transfer agreement with surface rights holder	Exploration field work program planned



May 2019: Don Bubar sits (third from right) on a panel at the World Bank's launch of the Climate-Smart Mining Facility in Washington, DC

## RARE EARTHS: HOW CAN NORTH AMERICA COMPETE?

As China still supplies over 80% of the world's rare earths, and the United States' defense industry relies heavily on Chinese sources of rare earths for military technology, concern is increasing about security of supply in the context of the United States/China "trade war." In December 2017, President Trump issued an Executive Order to encourage the creation of a North American rare earths supply chain, stating rare earths are "essential to national defense." The United States Department of Defense is now conducting an assessment of North America's critical infrastructure supply chains, including evaluating the main barriers to getting product to market experienced by domestic business. The President and Canadian Prime Minister Trudeau subsequently agreed that Canada and the United States would cooperate in creating these new supply chains in North America.

In Canada, Avalon has since been asked to participate in conversations with federal, provincial and territorial government officials on what government can do to assist. We are emphasizing the importance of developing more efficient extraction technologies for rare earths and are encouraging government to look at supporting establishing new pilot scale process plant facilities in Canada to support the necessary research work. We also point out that demonstrating an efficient and economically viable extraction process is essential in order to secure off-take commitments that will assist in accessing the venture capital needed to initiate production.

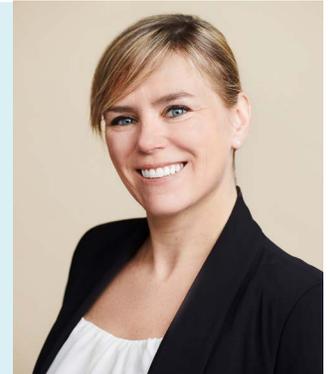
Most mineral development companies operating in North America are publicly-traded and rely on equity markets for raising venture capital. For non-exchange traded commodities that lack visibility on pricing, like rare earths, raising capital can be challenging for junior companies. Consequently, junior companies need to find strategic investors (including government) that understand the market and can provide confidence to other equity investors that the investment opportunity is real.

There is no doubt that rare earths are once again front and centre in the news cycle. In addition to the Nechalacho Rare Earth Elements Property in the Northwest Territories, we are also looking at other opportunities in North America to take advantage of renewed interest in the sector.

Subsequent to the reporting period of this report (Avalon's 2019 fiscal year (FY2019) – September 1, 2018 – August 31, 2019), Avalon signed a binding Letter of Intent with private American company Coal Strategy Advisors, LLC to earn up to a 50% interest in their Will Scarlett Rare Earths Recovery Project located near Marion, Illinois. Will Scarlett is a closed coal mine site where recent geochemical sampling has found

## AVALON WELCOMES NEW DIRECTOR

Avalon welcomes Ms. Naomi Johnson, LL.B. to the Company's Board of Directors, to stand for election at the next Annual Meeting of Shareholders in February 2020. Naomi is a lawyer with over 12 years of experience working in the mineral industry as a global Corporate Social Responsibility executive, primarily in a community relations role both domestically and internationally. From 2008–2017, she worked for Barrick Gold Corporation, most recently serving as Partner and Senior Director, Community Relations.



Avalon has been a leader in Indigenous community engagement in Canada, and Naomi's broad experience will provide very useful perspective as Avalon continues to develop innovative new models for direct participation in clean technology material development by Indigenous business in Canada.

elevated levels of rare earths and other metallic elements such as cobalt, nickel, lithium, manganese and zinc in mine waste materials. Unlike most hardrock rare earth resources, no significant uranium or thorium has been detected.

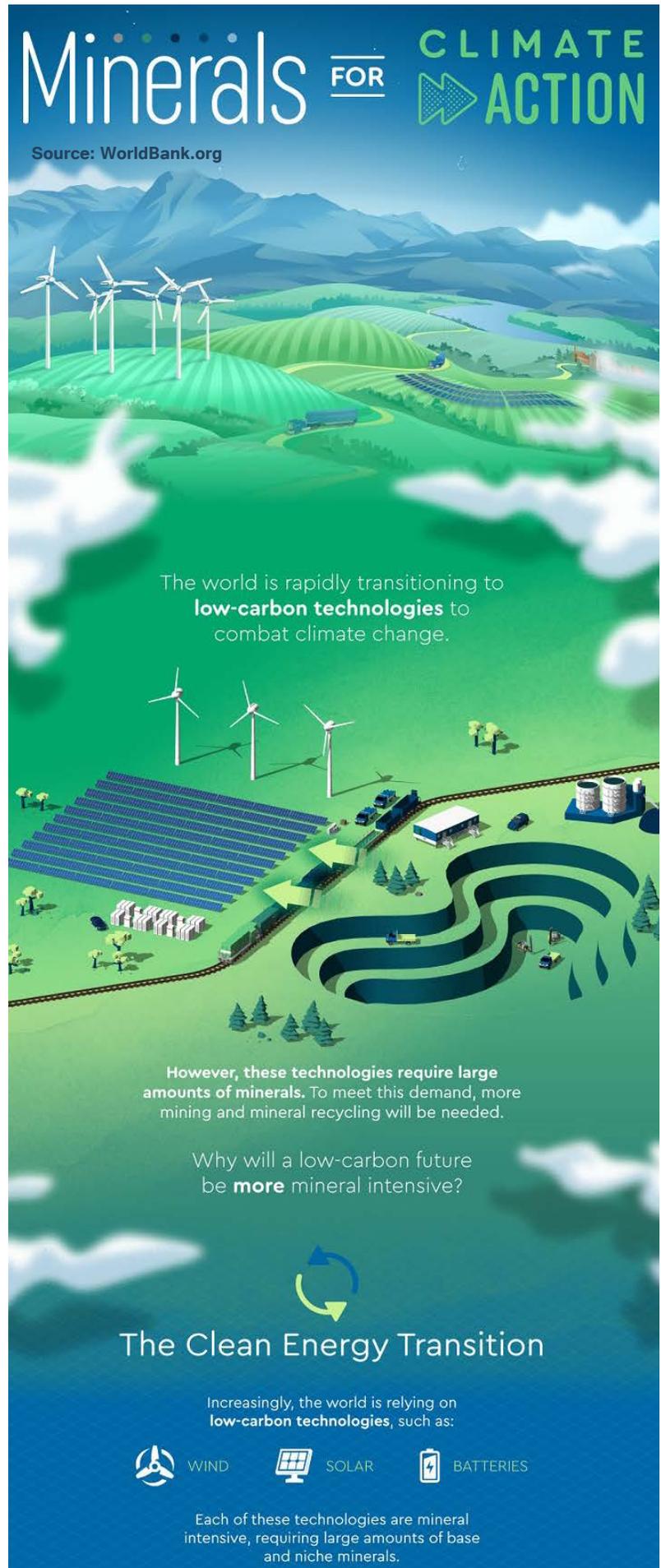
The potential for economic recovery of rare earths from coal mine wastes and fly ash has been receiving a lot of study in the United States. These unusual occurrences represent an interesting opportunity to create a primary rare earth supply relatively quickly and at a low cost, compared to typical hardrock resources.

Like our East Kemptville Tin Project in Nova Scotia, Will Scarlett provides Avalon with an opportunity to extract value out of previously-mined waste materials at a relatively low cost, with the upside potential of fully remediating the site from the long term environmental liability associated with acid mine drainage.

## SUSTAINABLE CRITICAL MINERAL SUPPLY CHAINS

While rare earths were in the headlines because of the United States/China trade war and the potential for China to restrict exports (as they did in 2010), the world now realizes that it is not just rare earths where there is risk of security: secure supply sources for all the critical minerals required in clean technologies are needed. This became apparent when I attended the World Bank’s launch of the *Minerals for Climate Action* initiative and Climate-Smart Mining Facility, in Washington, DC, in May of this year. The focus is on finding more support for the sustainable extraction and processing of the minerals needed for clean energy technologies by minimizing the social, environmental and climate footprint throughout the value chain of these minerals. The World Bank produced excellent visual material for the launch, and I often find myself using this infographic (right) to introduce critical mineral supply chains to new audiences! Readers are welcome to visit [Worldbank.org/en/topic/extractiveindustries/brief/climate-smart-mining-minerals-for-climate-action](https://www.worldbank.org/en/topic/extractiveindustries/brief/climate-smart-mining-minerals-for-climate-action) to view the full infographic.

At the launch, I sat on the “Leveraging Innovation to Create Market Opportunities for Critical Minerals” panel, which discussed how to de-risk mining investments; what roles innovation and new partnerships can play; and how public and private sectors can work together to maximize the impacts for sustainable development. My own remarks focused on the challenges that junior companies are having in accessing venture capital to fund the work needed to begin creating these critical mineral supply chains. Many in the audience were shocked to learn that access to the necessary venture capital is so challenging!



## INDIGENOUS PARTNERS

Canada can best contribute to a cleaner environment by creating mineral supply chains that enable more clean technology manufacturing in Canada. Many of the best opportunities to develop these critical mineral resources are in remote, undeveloped parts of Northern Canada near Indigenous communities. Establishing nearby projects offers exciting economic and environmental remediation opportunities to historically-impooverished Indigenous communities in the mineral-rich regions of the Canadian Shield.

Indigenous outreach continues to be a passion of mine, and I am a frequent participant and speaker at conferences about Indigenous participation in the natural resource sector. Last March, I was honoured to receive the Prospectors and Developers Association of Canada (PDAC)'s Distinguished Service Award for my work in this area, including co-founding the Aboriginal Affairs committee at the PDAC annual convention.

Most Indigenous communities want economic development that can be done sustainably. Many critical minerals, such as lithium, do not create the same environmental risks typically associated with base or precious metals mining. Further, Avalon's staged-

development approach to its critical mineral resources is designed to reduce the environmental footprint of the operation and to offer opportunities for wealth creation through real equity participation by local Indigenous businesses.



March 2019: Don Bubar receives the Distinguished Service Award from the PDAC from Patricia Dillon, Director of Mining Matters.

## THANK YOU

As always, thank you to our audience for continuing to support Avalon and the growth of sustainable supply chains for critical minerals in North America. Reports such as this keep us transparent and on track! I am looking forward to progressing our projects to production, and finally bringing a sustainable source of clean technology materials like lithium, rare earths, tin and cesium to the marketplace.

Sincerely,

Donald Bubar

## UNIVERSITY OUTREACH AT AVALON

Avalon contributes to university education in the mining industry through involvement with students from the undergraduate level, capstone projects in engineering, BSc theses in geology and graduate student research. These research projects directly contribute to resolving technical challenges at each of Avalon's projects. In FY2019, Avalon continued to support the work of Garnet Ching and Sarah Bodeving.

Garnet Ching is a professional geologist (P.Geo: APEGM) conducting MSc research on the "age relations and intrusion dynamics of the Separation Rapids pegmatites in Northwestern Ontario." The project is supervised by Professor A. Camacho at the University of Manitoba. Garnet is studying the formation timing of pegmatites and parent granites in relation to rock deformation to refine exploration targeting. He explains, "by understanding and unraveling the geologic puzzle, we can optimize exploration by providing insights into deposit morphology, thus minimizing disturbance to the environment while providing important materials to the global market."

Sarah Bodeving continues her PhD in geology at McGill University under the supervision of Professor A. E. Williams-Jones. Her doctoral studies are focused on the origin and formation of the lithium pegmatite dykes at the Separation Rapids lithium deposit and their relationship to the Separation Rapids granite pluton. This detailed understanding of the distribution of elements and minerals - which geologists refer to as zonation - will assist in future lithium exploration. Sarah reflects, "I quickly understood how complex the geological process of formation of this type of pegmatites is and how special the Separation Rapids pegmatites are. With petalite constituting one of the main ore minerals, Separation Rapids is unlike the majority of lithium-bearing deposits (which host spodumene as their main lithium mineral). In the past two years, I have realized how tightly interconnected academic research is with the exploration industry. Conducting research on the Separation Rapids lithium site is especially interesting, as it touches the very prevailing topic of climate change and the protection of our environment provided by lithium technologies."