Project Overview

The 100% owned Separation Rapids property is host to a “complex-type” lithium-cesium-tantalum (LCT) pegmatite deposit, unusual in its enrichment in the rare, high purity lithium mineral petalite. Separation Rapids is a potential producer of lithium minerals for glass and ceramics and lithium chemicals for the lithium ion battery market. The property covers a total of 6,000 acres and is situated close to road, rail and power infrastructure approximately 70 km north of Kenora, Ontario, Canada.

Avalon’s Sustainable Strategy

→ Focus on materials that enable clean technology
→ Design the operation to minimize environmental impacts and plan for productive use of the land post closure
→ Minimize GHG emissions and water impacts
→ Focus on process efficiency, minimizing waste and maximizing productive use of the resource
→ Engage in dialogue early and often with local Indigenous communities to listen to their concerns and identify opportunities for partnerships, job creation and training
→ Apply a staged development approach, starting at a modest scale, to minimize project footprint and potential risks to environment, while also reducing investment risk
→ Focus on near-term revenue with growth potential

PEA Development Model

The current development model results in a small environmental footprint, including low GHG emissions and almost non-existent air emissions.

There are no anticipated environmental impacts of concern, with the mineral deposit and waste rock being non-toxic and non-acid generating and minimal water discharge being anticipated.

PEA (August 2018) highlights include:

• Simplified business model with initial focus on production of lithium mineral concentrates for glass and ceramics
• Production of 71,500 tpa petalite, 11,800 tpa lepidolite
• Initial CAPEX: C$77.7m (475,000 tpa mill capacity)
• Feldspar circuit added in Year 6 (C$13.7m CAPEX)
• 20 year operational life
• Average Annual Revenues: C$90m
• Average Annual Costs: C$60m
• NPV pre-tax (8% discount rate): $156m
• IRR (pre-tax): 27.1%
• IRR (post tax): 22.7%

The PEA is preliminary in nature, includes inferred mineral resources that are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as mineral reserves, and there is no certainty that the PEA will be realized.
Lithium Demand Forecast to 2040

(Source: Benchmark Minerals Lithium Forecast 2020)

Lithium Demand by Application:

Batteries dominate with demand growing rapidly, but ceramics and glass and ceramics remain major markets that are also growing.

(Source: Roskill)

Lithium minerals enable innovation in high strength glass products

Lithium creates thermal shock resistance in glass and ceramic products, such as glass-ceramic stovetops, Corningware® cookware and fireplace shields.

Lithium additions reduce the melting temperature and lower GHG emissions from the furnace, and can strengthen traditional glass formulations to extend the containers’ life.

Lithium minerals can also be added to high strength glass products such as computer screens and automobiles.

Avalon can offer two petalite products: one at the standard grade of 4.2% Li₂O and a second higher grade product (>4.5% Li₂O) with very low impurity content.

Current Activities and Future Plans

- Bulk sample processing to produce more lithium mineral product samples and finalize process flowsheet and plant design parameters (2020)
- Secure off-take agreements and arrange project financing
- Complete Feasibility Study-level cost estimates and project engineering
- Complete environmental assessments and advance project permitting

Avalon continues to explore for new lithium pegmatites, including a detailed mapping and sampling program on the western extension area.

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