

be sampled from existing oil and gas infrastructure, that is, from wells that are on production and can bring associated water to surface.

The study was conducted in three phases: an initial sample collection phase where operators in NEBC were asked to obtain water (brine) samples from currently producing wells; a second phase to analyze the samples for a full suite of physical and chemical parameters to produce a preliminary brine characterization dataset; and a third phase of integrating the analyzed data into existing water chemistry datasets and the reservoir geology of NEBC. These public, peer-reviewed results will help the natural resource sectors, governments, communities, Indigenous groups and academia to further understand the potential for lithium production in the region.

At this time, it is generally accepted in industry and in literature that lithium brine concentrations need to be above 50 mg/L to be considered economic (Standard Lithium, 2021; LithiumBank, 2023). This study found that northeastern BC could host potentially economic or near-economic concentrations of lithium in brines within the pore spaces of several formations. Brine-hosted in-situ lithium potential was estimated for the Triassic Montney Formation, which is not an aquifer in northeastern BC, but a very fine-grained unconventional reservoir that must be hydraulically fractured to produce hydrocarbons, and also to co-produce lithium from the frac and formation water.

The lack of analyzed lithium samples was the greatest challenge in this study. Relatively few samples were collected over the vast expanse of NEBC; sampling is sparse, not only areally, but also stratigraphically. Specific areas are recommended for further sampling, but in general more samples should be collected in all formations. It is recommended that sampling occur away from waterflood schemes where true formation water chemistry has been diluted or altered by injected water.

Because there is a limited number of samples in each formation, and the geographical extent of those samples is limited, the total dissolved solids (TDS) to lithium concentration correlation developed for this study was used as a proxy to high-grade or low-grade formations for lithium development potential. However, while higher lithium concentrations are often associated with higher TDS concentrations, high TDS concentrations do not necessarily imply high lithium concentrations.

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Biography



Kaush Rakhit received his bachelor's degree from U of Waterloo and master's from U of A, after which he started Rakhit Petroleum Consulting. Rakhit and now CDL developed into a unique worldwide consultancy in basin hydrogeology, fluid chemistry and geothermics. A consummate entrepreneur, Kaush has been the co-founder and director of numerous companies, including Matrix Solutions, Kinwest Resources, Seven Generations Energy and Kiwetinohk Energy. Having recently handed over the CEO baton, Kaush is going back to his hydro roots and supporting CDL's pivot into CCS, Critical Minerals and Geothermal.

