

The Many Fac(i)es of the Cooking Lake Formation and Their Implications for CCS

Natalie L Sweet, MSc., P. Geo.
Canadian Discovery Ltd

Abstract

In central Alberta (see Figure 1), the Devonian-aged Leduc Formation is renowned as a prolific oil and gas reservoir, drawing attention for Carbon Capture and Storage (CCS) and Lithium exploration. Below the Leduc lies the Cooking Lake Formation, serving as the depositional platform upon which the Leduc Reefs developed. The hydrodynamic role of the Cooking Lake varies, being identified as both a baffle/seal and an aquifer depending on geographic location

This regional geological and hydrogeological overview identifies areas where the Cooking Lake functions as an aquifer underlying the Leduc, as a baffle/seal below the Leduc, and as an aquifer where the Leduc is absent. Understanding the significant variations in deposition, sedimentology, porosity, and reservoir distribution within the Cooking Lake Formation is crucial for comprehending the long-term implications on the competitive utilization of pore space

Assessments of storage potential for both the Leduc and the Cooking Lake will be conducted to pinpoint areas of interest for (CCS) and for Monitoring, Measurement, and Verification (MMV) purposes, particularly where the Cooking Lake is the first porous zone encountered above the Basal Cambrian Sand..

A future phase of this study will involve modeling pressure impact of CCS on the Leduc and Cooking Lake formations and how it could affect competing CCS, Lithium extraction, and MMV programs.

