

# **CO<sub>2</sub> STORAGE RESOURCE POTENTIAL OF THE CAMBRO-ORDOVICIAN SALINE SYSTEM IN THE WESTERN INTERIOR OF NORTH AMERICA**

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A binational effort between the United States and Canada is under way to characterize the lowermost saline system in the Williston and Alberta Basins of the northern Great Plains region of North America in the United States and Canada. This 3-year project is being conducted with the goal of determining the potential for geologic storage of CO<sub>2</sub> in rock formations of the 1.34 million-km<sup>2</sup> Cambro-Ordovician saline system. To date, no other studies have attempted to characterize the storage potential of large, deep saline systems that span the U.S.–Canada international border. This multiprovince/multistate, multiorganizational, and multidisciplinary project is led on the U.S. side by the Plains CO<sub>2</sub> Reduction Partnership at the Energy & Environmental Research Center (EERC) and on the Canadian side by Alberta Innovates – Technology Futures (AITF).

A recently completed 2-D model incorporated the geologic data collected in the baseline characterization effort and distributes the various rock properties (e.g., pore volume and in situ conditions of temperature and pressure) throughout the study region through geostatistical methods. A significant part of the effort was to match the work done on the U.S. study region with the data sets generated by AITF for the Canadian side. A novel approach was used to join the two data sets, and the resulting 2-D model indicated a storage capacity in excess of 142 Gt. This work also provided the groundwork for the development of a massive 3-D geologic model encompassing the entire study area. This 3-D model incorporates the internal architecture of numerous facies changes that occur across the study region and allows for the propagation and distribution of the petrophysical properties of this heterogeneous system for the purpose of injection scenario modeling.

In addition to the leading organizations of the EERC and AITF, other partners in the project are the U.S. Department of Energy, Lawrence Berkeley National Laboratory, and Princeton University in the United States and Saskatchewan Industry and Resources, Manitoba Water Stewardship, Manitoba Innovation – Energy and Mines, CanmetENERGY, Natural Resources Canada, TOTAL E&P Ltd., and the University of Regina Petroleum Technology Research Centre in Canada.