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Brine Disposal: Overcoming the Dominant Barrier to Salt-Cavern Gas Storage in the Northeast

Salt caverns are ideal for natural gas storage because of high deliverability rates and short cycle times. New York has enough salt in the Silurian Salina Group to make good-sized caverns in the south central portion of the State. Currently within the state there is one operational salt-cavern storage facility and several others in various stages of completion. The greatest obstacle to successful completion of many of these salt caverns is disposal of the brine created during solution mining. The purpose of this study is to systematically analyze each potential formation for its ability to accept brine. We have made a first pass analysis and are limiting our studies to sandstones and carbonates (excluding shales) that occur below the salt. We are now doing more detailed reservoir characterization on many potential targets. Our studies include studies of porosity and permeability, sequence stratigraphy, mechanical stratigraphy (fracture distribution) and more. Final deliverables will include detailed analysis of potential targets with maps, cross sections, core analysis and more. At this point in the study, the most promising prospects include the Queenston Sandstone, and the Trenton/Black River and Beekmantown carbonates. Using New York as a representative model, we will establish a system model that can be used in other regions where brine disposal is also a barrier. This poster presents the current results of our efforts towards this research.