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## Regional characterization of stacked storage units for potential CO<sub>2</sub> sequestration in Western Nebraska, USA

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In Nebraska, most electricity comes from burning fossil fuels, which is estimated to emit 15 million tons of CO<sub>2</sub> per year. Additionally, ethanol plants in Nebraska are estimated to emit 4 million tons of CO<sub>2</sub> annually. CCS enables those industries to continually operate whilst emitting far fewer greenhouse gases. The study area of this project covers Western Nebraska not fully evaluated to date. We postulate there is extensive storage space in the subsurface of Western Nebraska. The storage space needs to be a formation or formations that meet the following criteria: extensive in the study area, porous, deep (greater than 2600 feet below ground surface) and situated below a primary and secondary stratigraphic or structural seal.

We plan on using existing well call outs (available through Nebraska Oil and Gas Commission's website) and wireline logs to construct a lithostratigraphic and structural framework for potential storage and seal units. Additionally, we will use GIS to create maps of formations and isopach maps to model unit thickness. We also propose to log core in Denver at the USGS Core Storage facility or at the Nebraska Conservation and Survey Division to further understand the stratigraphy. Subsequently, geophysical data (seismic, aeromagnetic, and gravimetric) will be utilized to delineate regional structures in detail. Lastly, we will conduct geomechanical tests on core samples to evaluate porosity, permeability, stiffness, and strength of target units to estimate specific CO<sub>2</sub> storage volume capacity.

The hope is to provide Western Nebraska with storage space for 50 million tons of CO<sub>2</sub> within the project area. The subsurface storage of CO<sub>2</sub> is critical to global efforts to reduce the effects of greenhouse gas-induced climate change. Reducing emissions will improve local air quality and aid in the larger goal of curtailing emissions of greenhouse gases to mitigate the impacts of climate change.

