

Southwest Regional Partnership on Carbon Sequestration

Quarterly Progress Report

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Executive Summary

Tasks addressed in this quarter were Tasks 1, 2, 4, 5, 6, and 8.

Task 1–Regional Characterization: Using Arbuckle tops from the revised database, researchers prepared a map depicting the depth to the top of the Arbuckle (vs subsurface structure).

Task 2–Public Outreach and Education: Point of contact at UU continues, and SWP researchers worked together on maintenance and expansion of the Velo data-sharing system.

Task 4–Site Characterization and Planning: Oversight by SWP of core analysis continued. Work during the quarter continued providing user support and maintaining the core software for STOMP-EOR, which added a new capability that uses a black-oil-formulation, now giving STOMP-EOR two EOS options. In risk analysis, researchers continued initial reservoir model development on several fronts. A literature survey on Column Experiment Design for evaluating potential impacts of CO₂ leakage to groundwater was conducted. Researchers conducted a statistical analysis to the measured porosity and permeability data and then developed an integrated framework for understanding CO₂ storage potential within an enhanced oil recovery (EOR) environment at the Farnsworth Unit. Top risks for the Farnsworth site were categorized to begin planning mitigation strategies. SWP continued to work on uncertainty quantification approaches. Two site work plans were completed and submitted (Simulation and Risk).

Task 5–Well Drilling and Completion: Well 3208 was spudded and at 1983 ft at the end of June. The first two characterization wells (1310A and 1314) were readied for CO₂ injection during the quarter and CO₂ injection was initiated.

Task 6–Operational Monitoring and Modeling: Work progressed on a number of fronts. The preliminary history matching and flow models of primary and secondary depletion for the FWU were completed. In other work, water sampling and CO₂ flux readings continued in the area, with new sites being added. Eddy covariance flux monitoring continued at the U of U campus site. SWP continued to track CO₂ injection, CO₂ production, and oil production at the FWU with data provided by Chaparral. Sampling began in the eight production wells that had tracer injections in May. Flowline and pipeline maps were developed. Seismic data transmission from the FWU to New Mexico Tech began in this quarter; data were used to further refine reservoir models. Morrowan Interval cross sections and core and wire-line log integration/ interpretation for the FWU was performed. SWP researchers conducted a literature review of key potential geomechanical processes in the Morrow sandstone formation and associated effects on CO₂ capacity and injectivity.

Task 8–Project Management: On April 3, an outreach event was held in Perryton, Texas, near the project. Landowners and stakeholders, people living at water sampling sites and the general public were invited. The meeting included two hours of presentation and discussion; 25 people attended. The VSP/crosswell data preprocessing update meeting was held April 24 in Houston. At the end of the quarter, the Project Review was set for November in Socorro, NM and SWP PIs were preparing for the NETL August Project Review Meeting. Other items addressed were oversight of tracer injections, budget modifications, the IEA Expert Review, OSU MVA program coordination, and Risk and Simulation Group Work Plan submission.