

Field Demonstration of an Active Reservoir Pressure Management Through Fluid Injection and Displaced Fluid Extraction at Rock Springs Uplift

Award Number: FE0026159

Project Summary:

The primary objective of Phase I of this project was to address technological gaps of reservoir pressure management by developing and validating advanced technologies and engineering approaches for: (1) predicting, monitoring, and managing pressure and injectate plumes; and (2) developing a Brine Extraction Storage Test (BEST) facility to validate treatment technologies for extracted brines. The study area is the Rock Springs Uplift (RSU) in southwest Wyoming, an area that has already been intensively studied for carbon capture, utilization, and storage (CCUS) purposes. The project team evaluated monitoring technologies, performed modeling, developed simulation approaches, and conducted life-cycle analyses to propose an active reservoir pressure and injectate plume management strategy that could be implemented during field testing in Phase II.

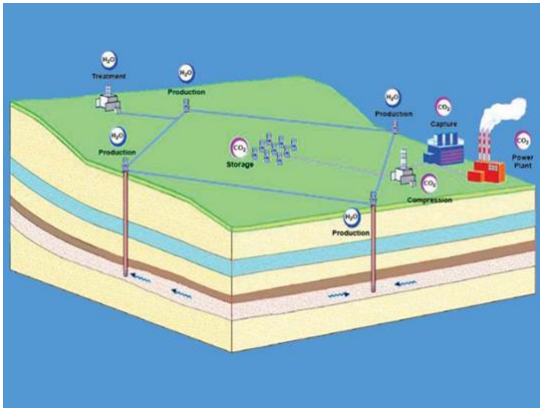


Figure 1: A conceptual map of reservoir management strategies for CO₂ injection and brine extraction.

Prime Performer:
University of Wyoming

Key Performers:
Battelle Memorial Institute

Principal Investigator:
Zunsheng Jiao

Project Duration:
9/1/2015 – 1/6/2017

Performer Location:
Laramie, Wyoming

Field Sites:
Rock Springs Uplift, Wyoming

Program:
Carbon Transport & Storage

Project Outcomes:

To meet the project goals, the project team completed the following tasks: (1) gathering the information necessary to permit new and existing wells at the RSU and in its vicinity for potential use in Phase II; (2) developing a monitoring, verification, and accounting (MVA) plan; (3) evaluating the feasibility of repurposing existing wells at the RSU; (4) developing a strategy to manage the produced water; (5) modeling and simulating injections; (6) assessing the geomechanical impacts of comparable CCUS-related injections at the RSU; and (7) developing and validating active reservoir pressure management strategies. By successfully completing these Phase I tasks, the project team demonstrated the potential for a successful Phase II test center deployment at the RSU with the promise to fundamentally advance CCUS through advanced pressure management and monitoring, verification, and accounting techniques while making beneficial use of produced brines, thereby separately advancing the state of water treatment science.

Presentations, Papers, and Publications

Final Report: [Field Demonstration of an Active Reservoir Pressure Management Through Field Injection and Displaced Fluid Extractions at the Rock Springs Uplift](#) (February 2017) Jiao Zunsheng