

CUSP – Arizona: CCUS in Arizona

CUSP Annual Meeting
Sept. 10-12, 2024
Santa Fe, NM

By Arizona Geological Survey
University of Arizona
Basin Analysis Group

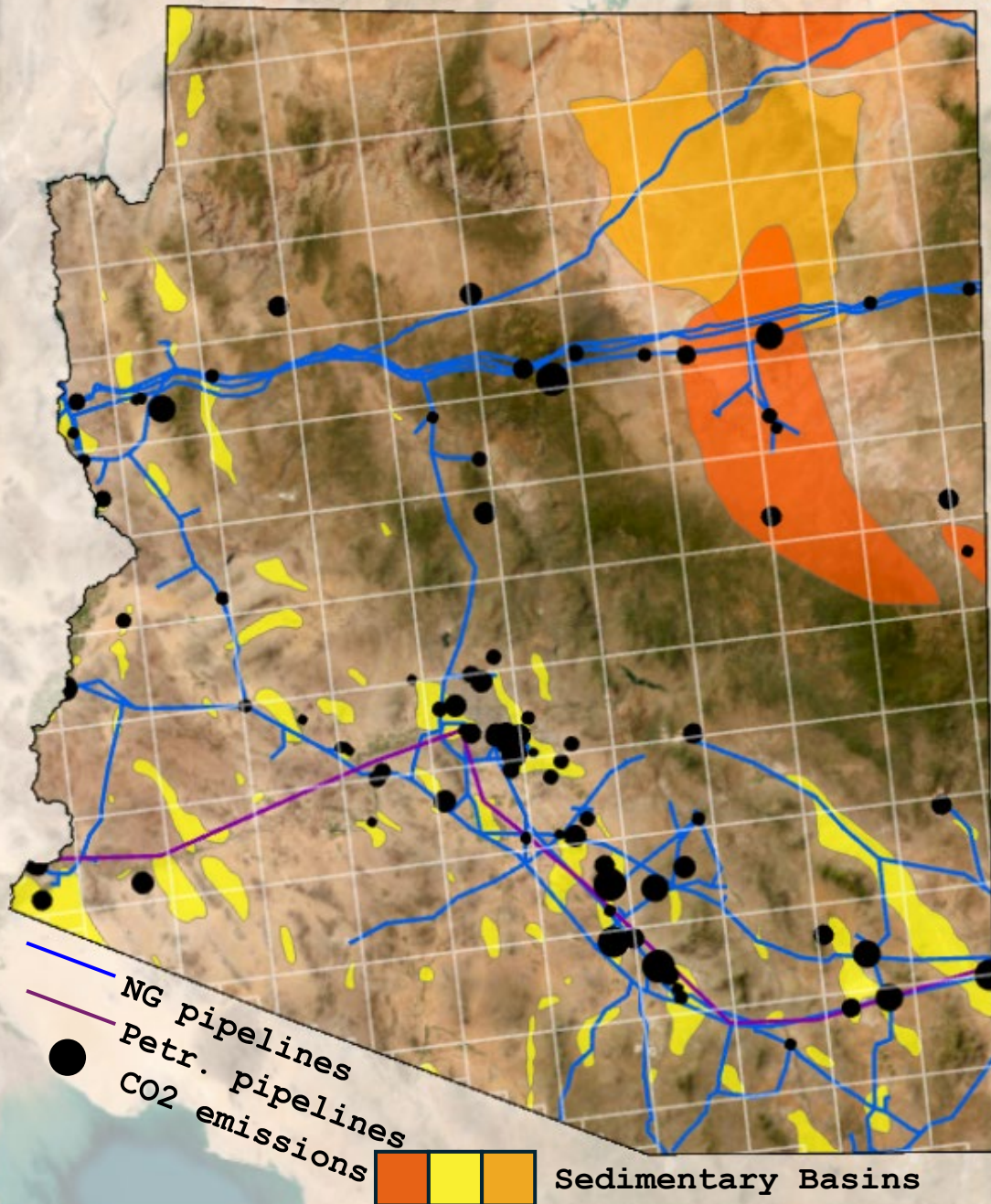
Tawnya Wilson – Lisa Thompson – Brian Gootee



CarbonSAFE II Harquahala Basin, SW-Centra

Arizona CCUS Basins

- ~60 Arizona basins with known/potential CCS
 - Stacked saline
 - Mafic rocks
 - Bedded evaporites
 - Unconventional
- Ranked on source-to-sink scenarios (not shown)
- Readiness & SCOT 50km still in progress (NCE)
- CCUS Ecosystem in AZ:
Wind, Solar, DAC, Geothermal, Hydrogen, 2



CUSP-CCS Research Activity

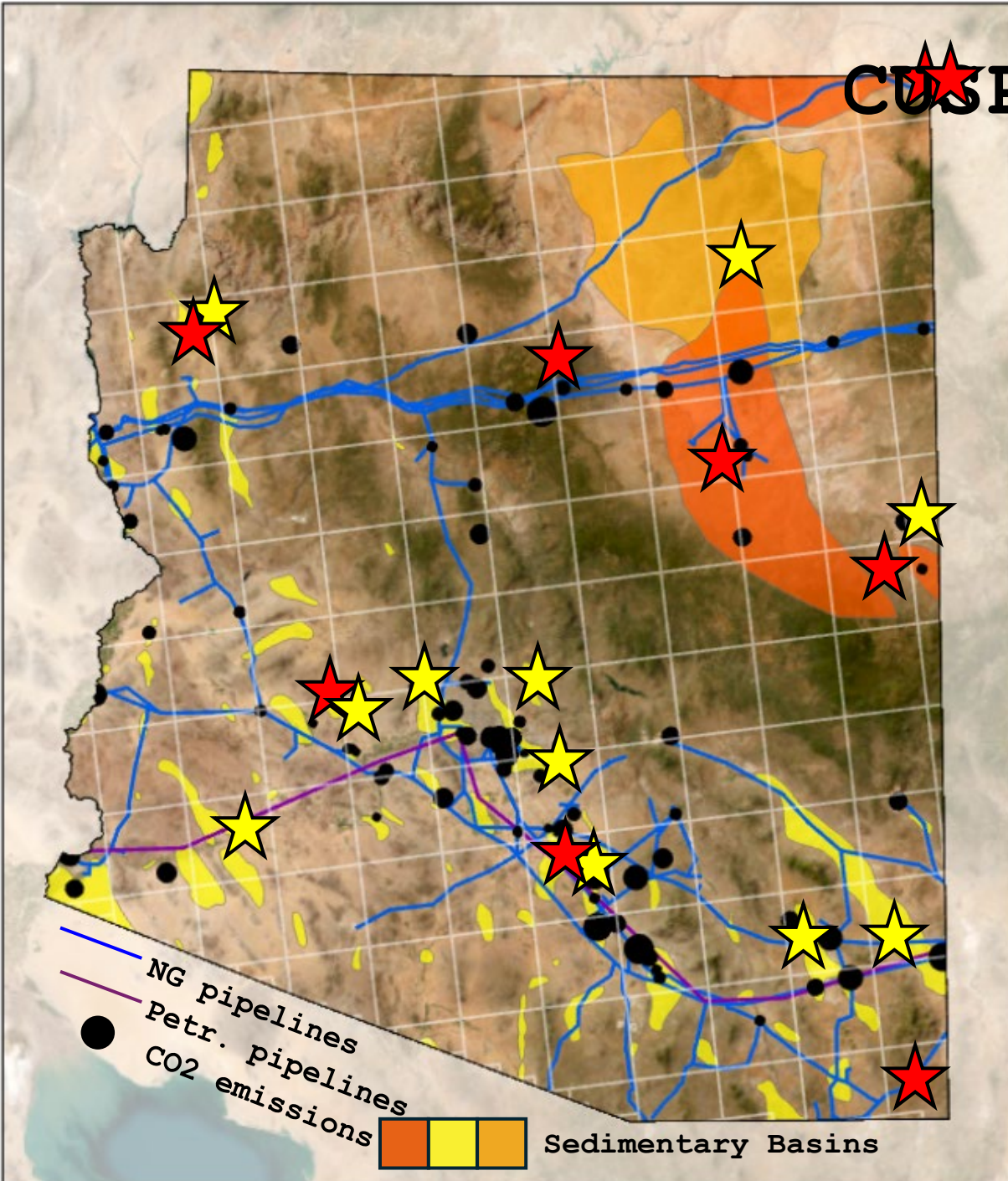
Past Projects

- 14 CCS-related OFR's dating back to 2008
- Cholla Phase-I well (EPRI) (2009)

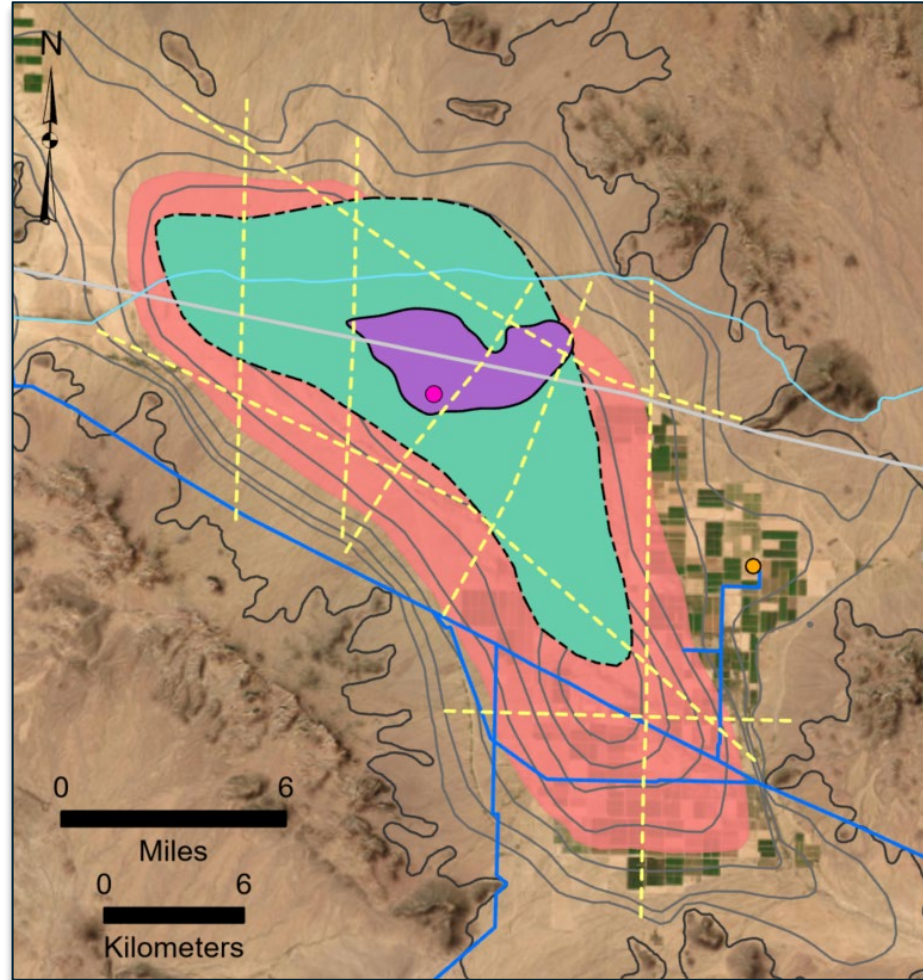
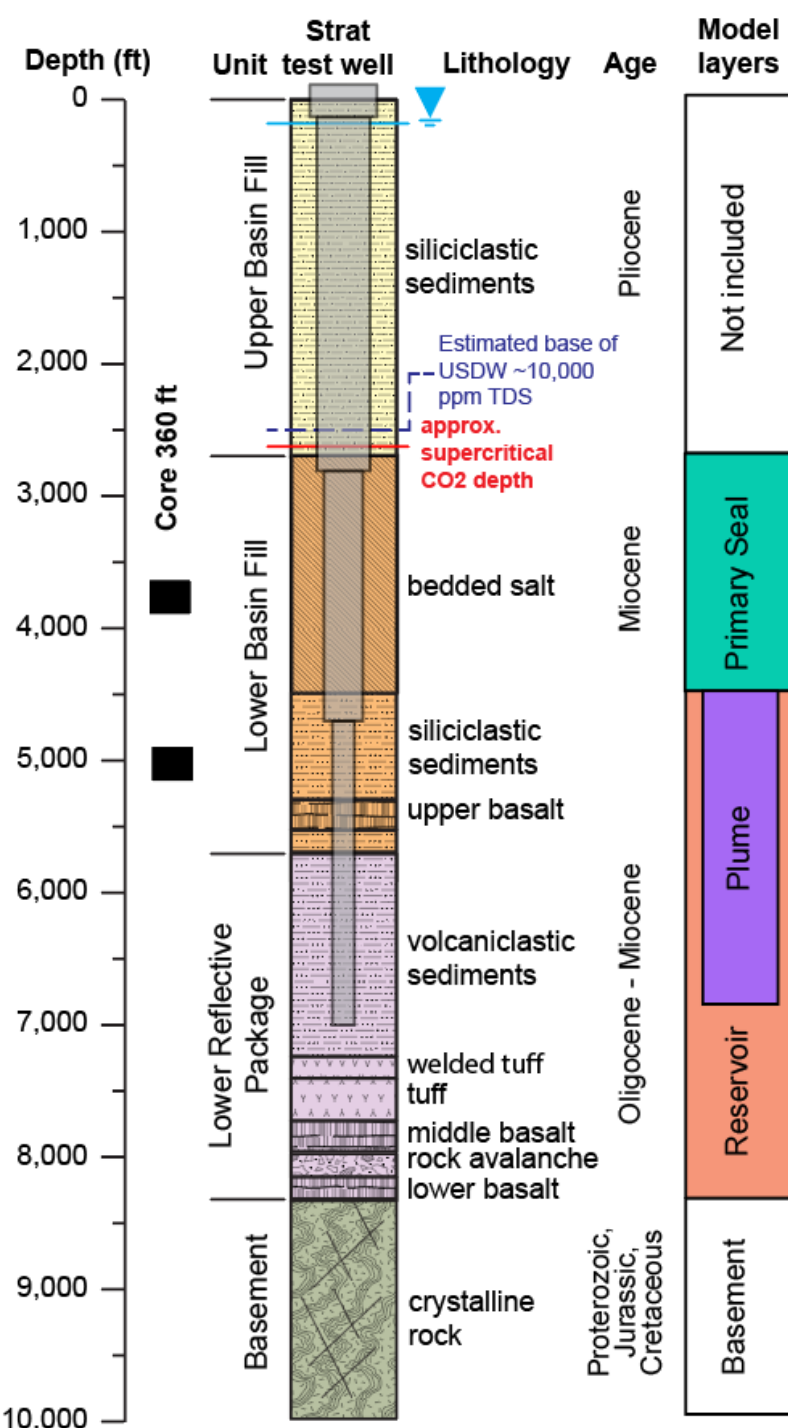


Active/completed projects/sites

- CUSP Regional Initiative (DOI-NMT)
- Harquahala Phase-I CCS (UA-AZGS)
- Ex-Situ Mafic Mineralization (UA-AZGS)
- Regional DAC Hub (ASU)
- Four Corners Regional Initiative (NMT)
- LANL Bedded Salt gas storage (NMT)



CUSP Focused Project - CarbonSAFE Phase II



- 105 miles 2D seismic
- 7,000 ft deep strat test well - BLM land
- Cuttings collection and analysis
- Two cores totaling 360 ft
- Wireline logging
- Fluid samples

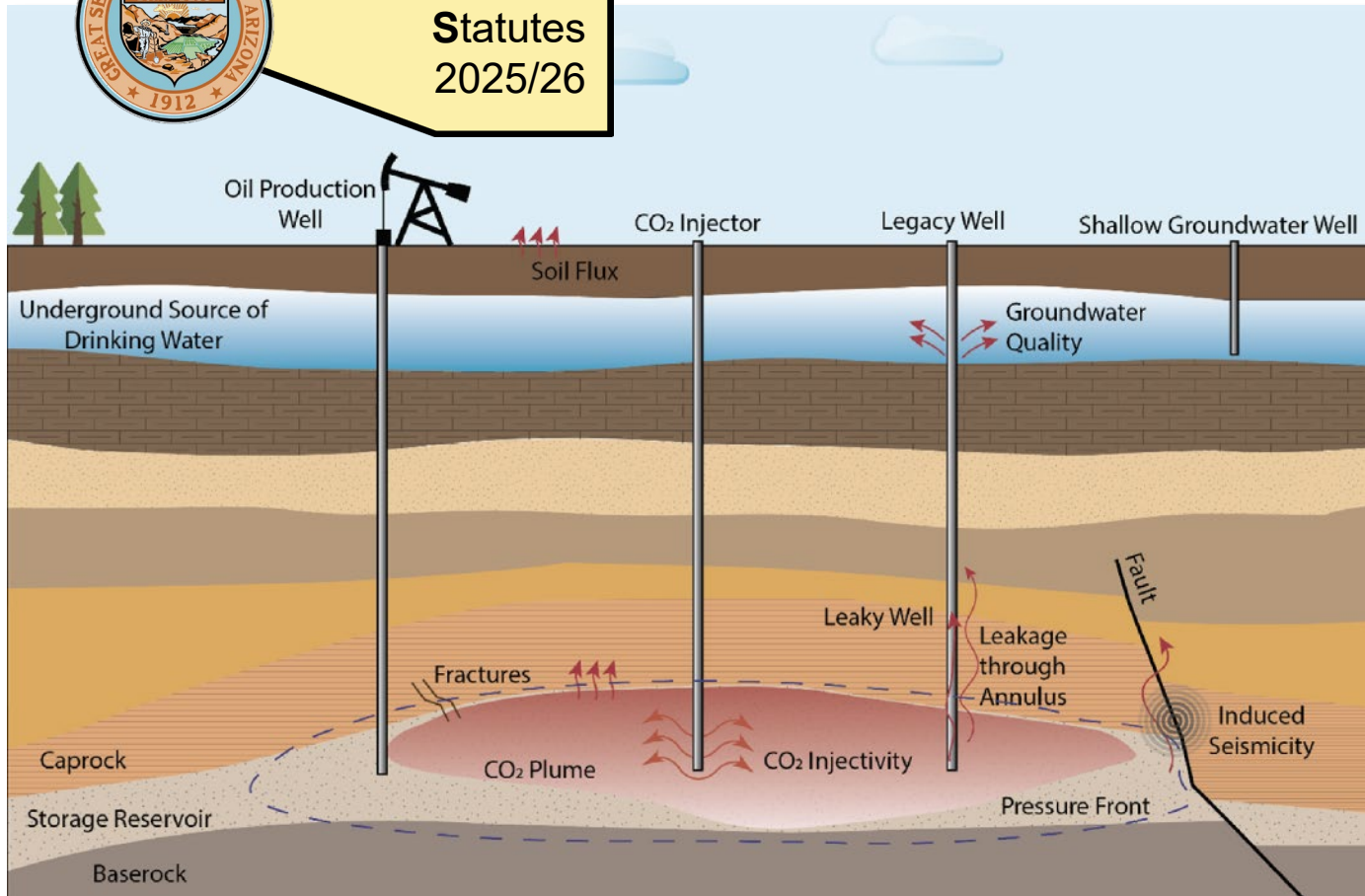
Regulatory Updates and Risk Mitigation

UIC primacy
~October 2025!

For Classes I, II, III, V, and VI

Pore space
Arizona Revised
Statutes
2025/26

Diagram of potential risks associated with CCS from injected CO2 (Xia et al., 2024)



Regulatory Updates

- Arizona Primacy (I-III, V-VI) 10/25
- 9-month turnaround
- Pore-space ownership
- Risk & liability

MRV Planning (AZ-focused)

- Baseline collection critical
- Plume migration & infringement
- Pressure infringement
- Induced seismicity
- Leakage to USDW

Phase I pre-feasibility study to evaluate carbon dioxide and hydrogen geologic storage potential in Harquahala basin

By Tawnya C. Wilson, Lisa A. Thompson, and Brian F. Gootee

AZGS-CUSP Publications



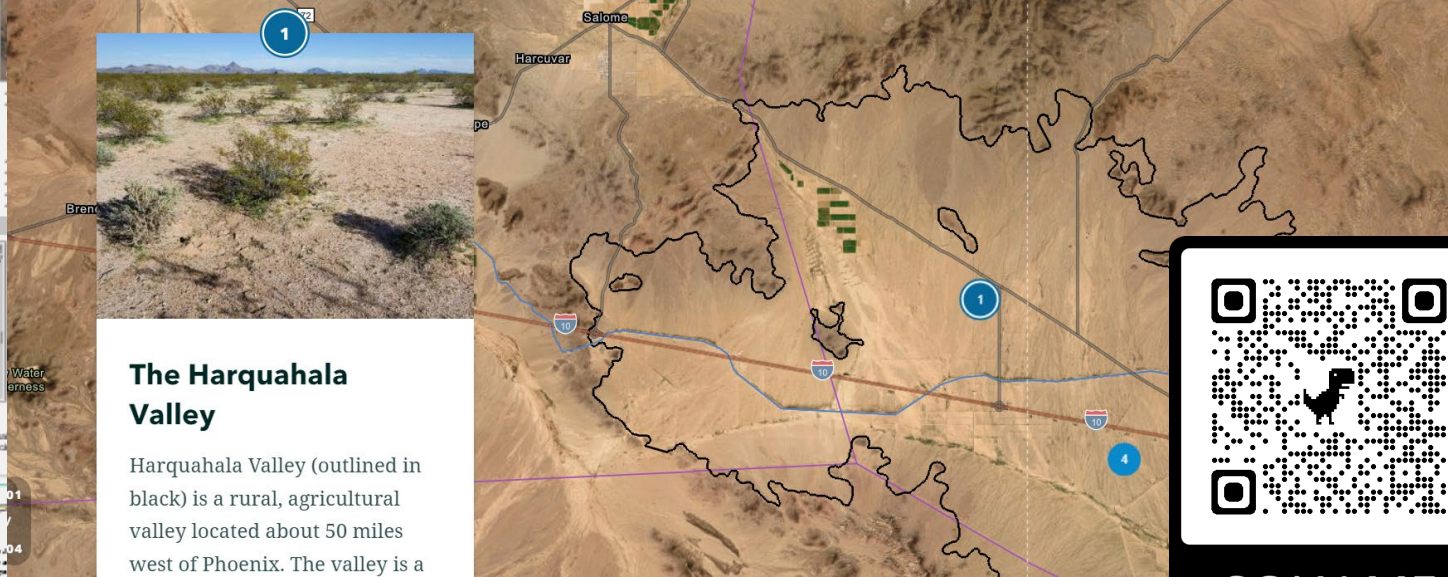
Arizona Geological Survey
Open-File Report 24-01

Aerial view of the Harquahala Generating Station in Harquahala Valley, surrounding agricultural fields, and the Eagletail Mountains on the horizon. Approximately 8,000 ft of basin fill deposits underlie the valley in this area. Photo by B.F. Gootee, Sept. 2023.



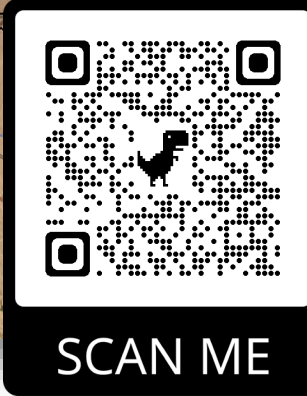
Permanent Underground CO2 Storage in Southern Arizona

Temperatures are Rising | Geologic Sequestration | Arizona's CO2 Storage Sites | Harquahala Valley: A Test Site | How CCS Works | Risks | CO2 Storage Partnership:



The Harquahala Valley

Harquahala Valley (outlined in black) is a rural, agricultural valley located about 50 miles west of Phoenix. The valley is a



ArcGIS Story Map

Open-File Report & Poster