

Phase II – Wyoming Field Validation Test

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Regional Carbon Sequestration Partnerships Initiative Review Meeting

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Wyoming Test Goals

- Goal – develop understanding of target formation for large volume test and execute pilot injection consistent with NETL guidelines and objectives
- Approach
 - Form team with MSU, UW, Columbia/Schumberger, LANL and LLNL personnel
 - Negotiate private partners participation and secure matching \$
 - Utilize existing and new well on Cimarex property to perform pilot injection (3000-5000 tons) into Nugget sandstone
 - Refine models based on pilot results to prepare for large volume test

Wyoming - Potential Barriers?

Resources Dependencies

- Area has abundant O&G material, personnel and field services.
- UW can supply necessary additional field personnel.
- EORI has numerous contacts in O&G business.

Permitting Requirements

- Permitting for water, drilling and field service is either BLM or Wyoming OGCC.
- No air quality issues.

Land Use Issues

- Moxa Arch is combination of Federal, State and private land.
- Numerous current oil and gas leases.
- Numerous pipeline right of ways.

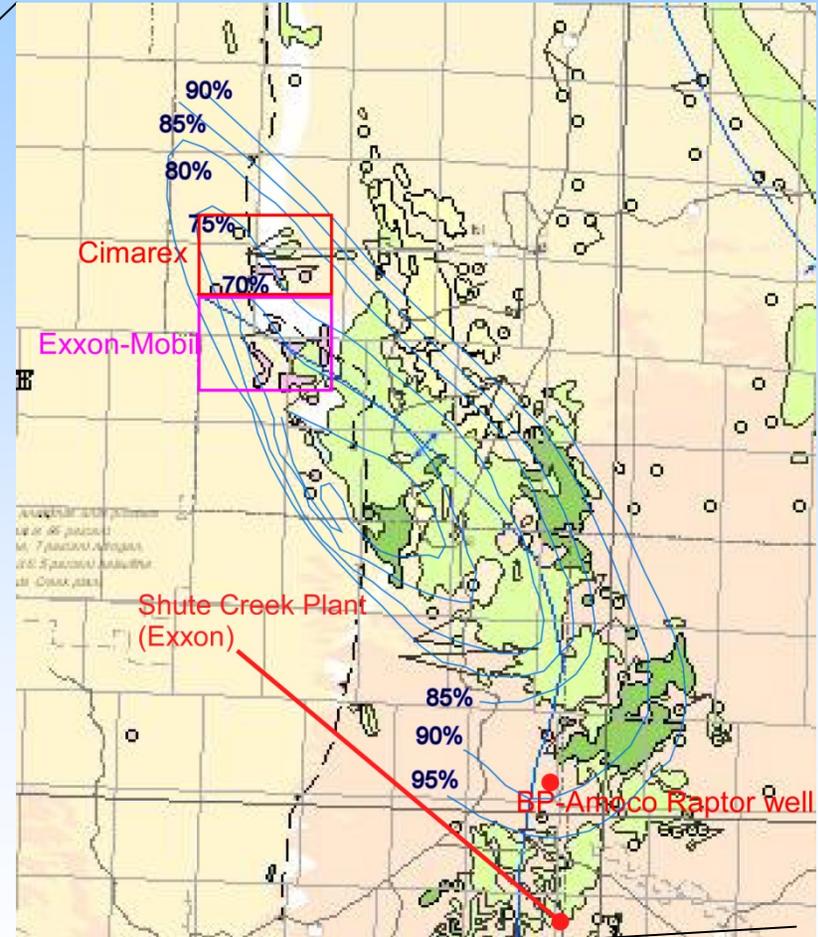
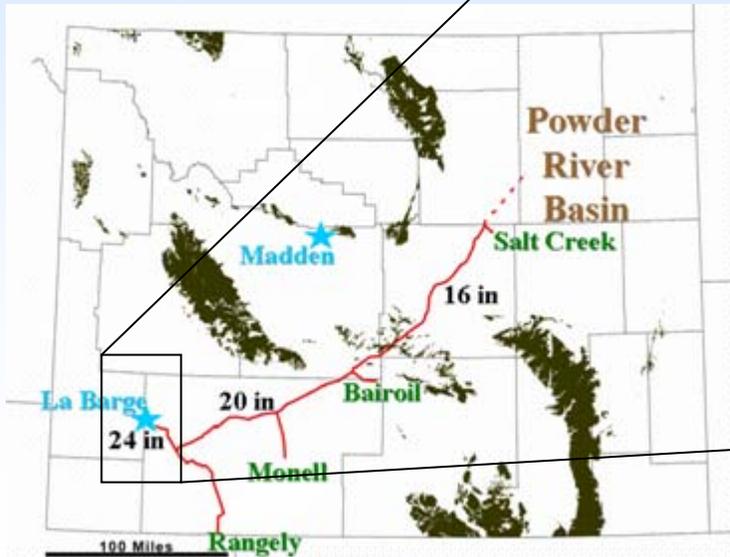
Societal Issues

- General local support for O&G Industry.
- Many local businesses are supported by O&G.
- Land owners (ranchers) are generally cooperative.

Wyoming Site Location



Southwest Wyoming
Moxa Arch Structure
Low Impact to Area

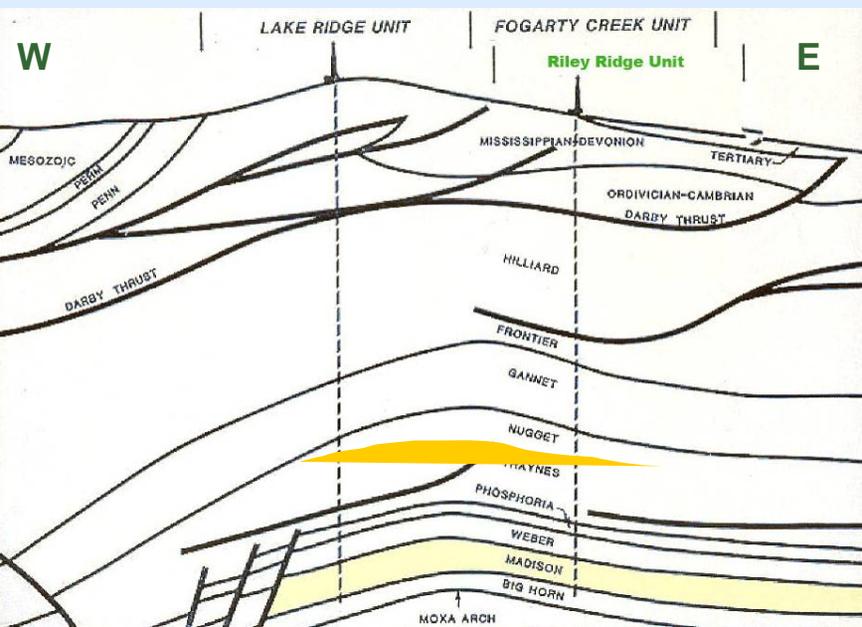


Contours are %CO₂ in Madison Limestone

Nugget Sandstone – Regional Target

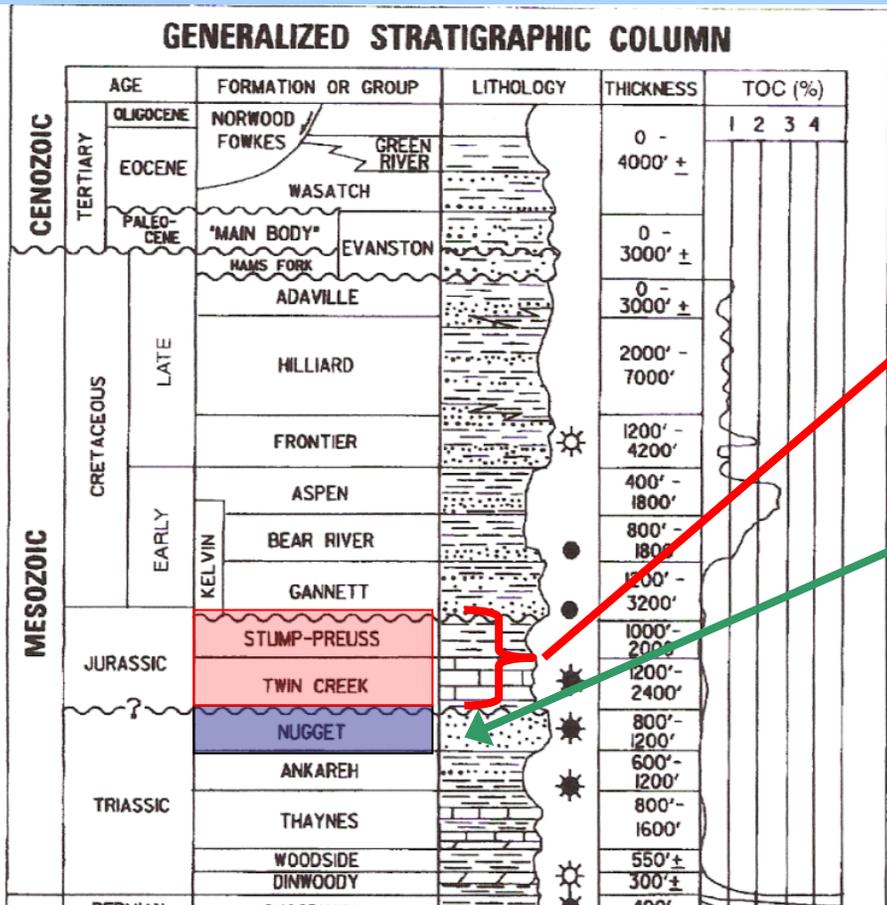
Estimated Nugget storage on the Moxa Arch Structure is 10.4Gt

	TCF	Tons	Gtons
EOR Potential Use	20	1,144,164,760	1.1
100 year generation	222	12,683,066,362	12.7
Moxa current resource	170	9,725,400,458	9.7
Moxa Storage (Nugget)	182	10,400,000,000	10.4
Rock Springs Storage	454	26,000,000,000	26.0



Nugget Sandstone is extensive eolian unit of regional extent with geological equivalents such as the Navajo, Weber and Tensleep Formations.

Wyoming Geology



Sealed by 2200-4400 feet of Twin Creek LS and Stump-Preuss Shale

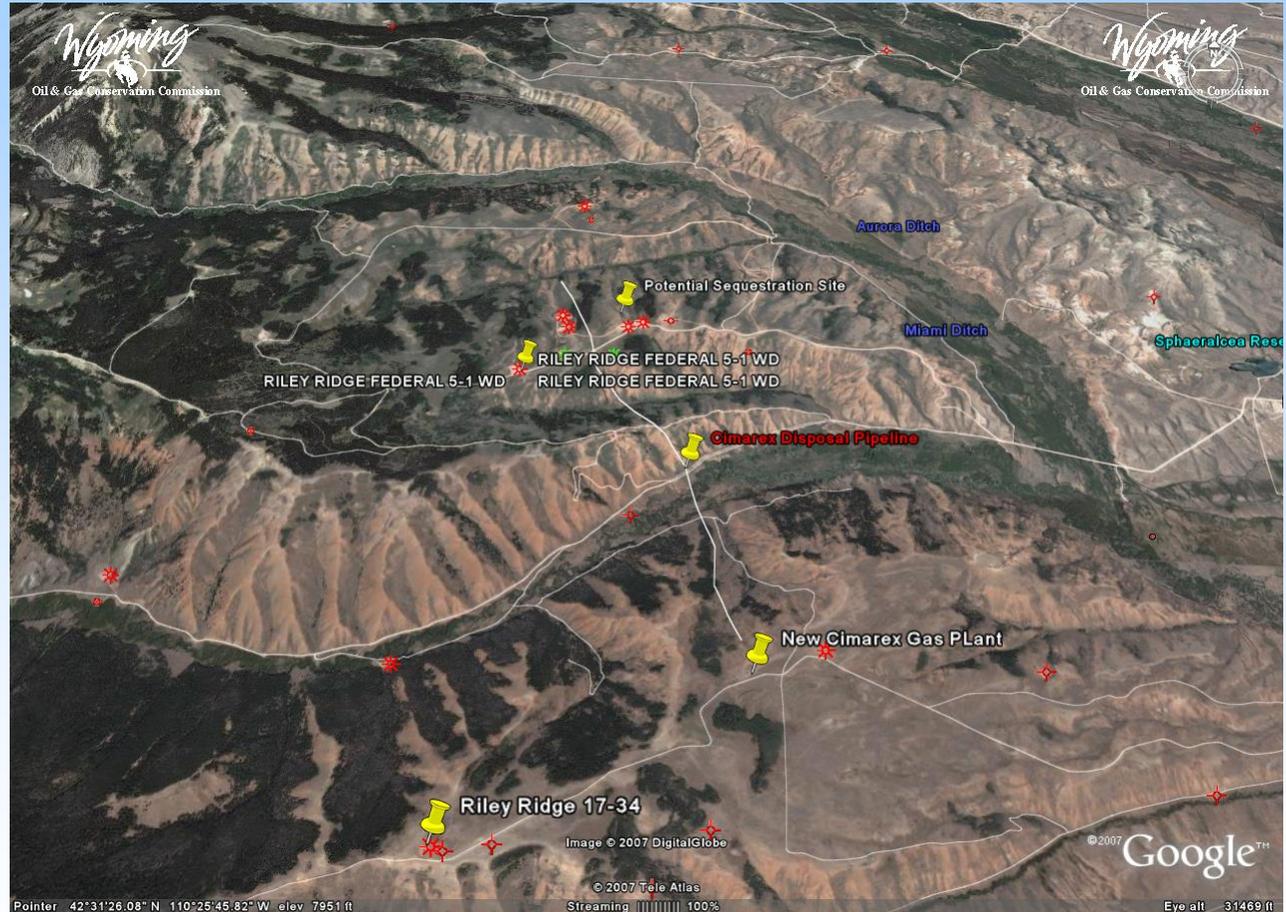
Target - Nugget Sandstone Saline Aquifer (100,000 TDS) 12% porosity, 70-300mD

Well and accompanying data in area available through WYOOCC and State Geological Survey

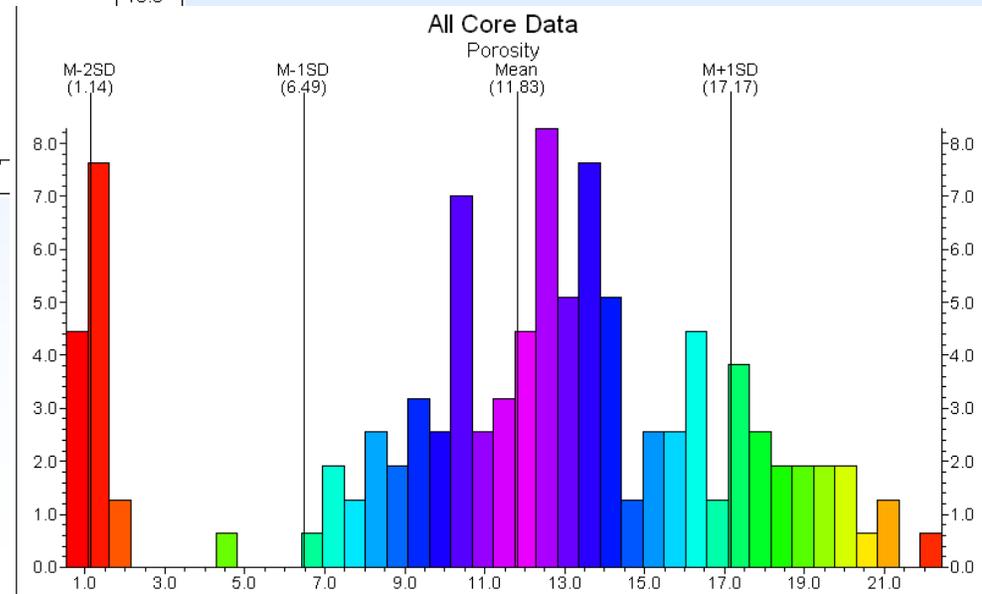
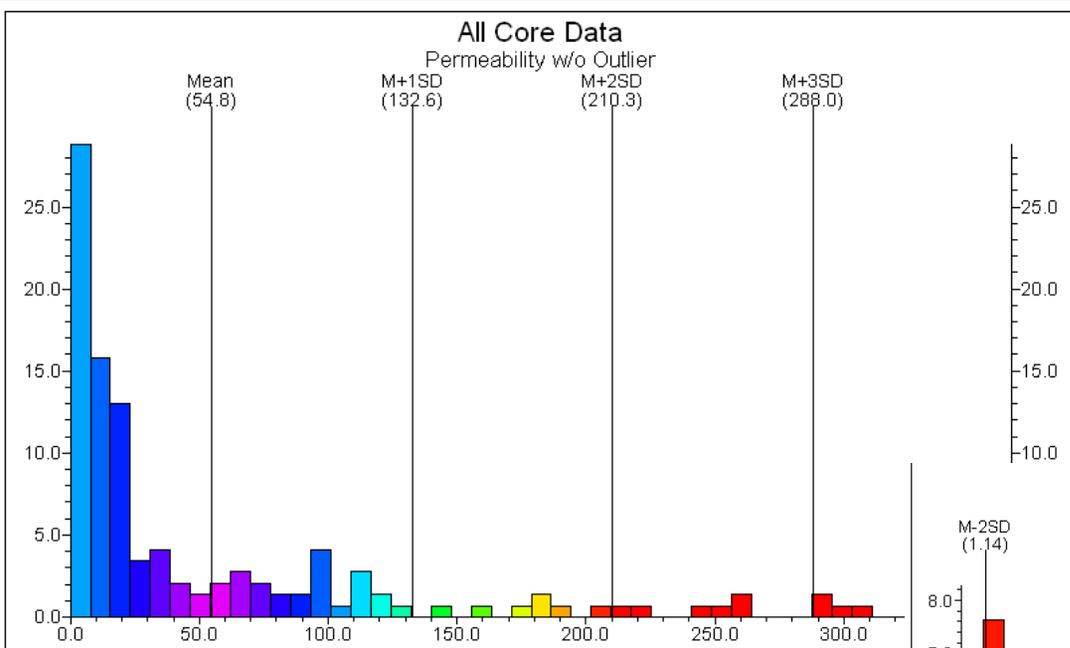
Seismic data from commercial services and in-kind petroleum partner contributions

Proposed Project Site

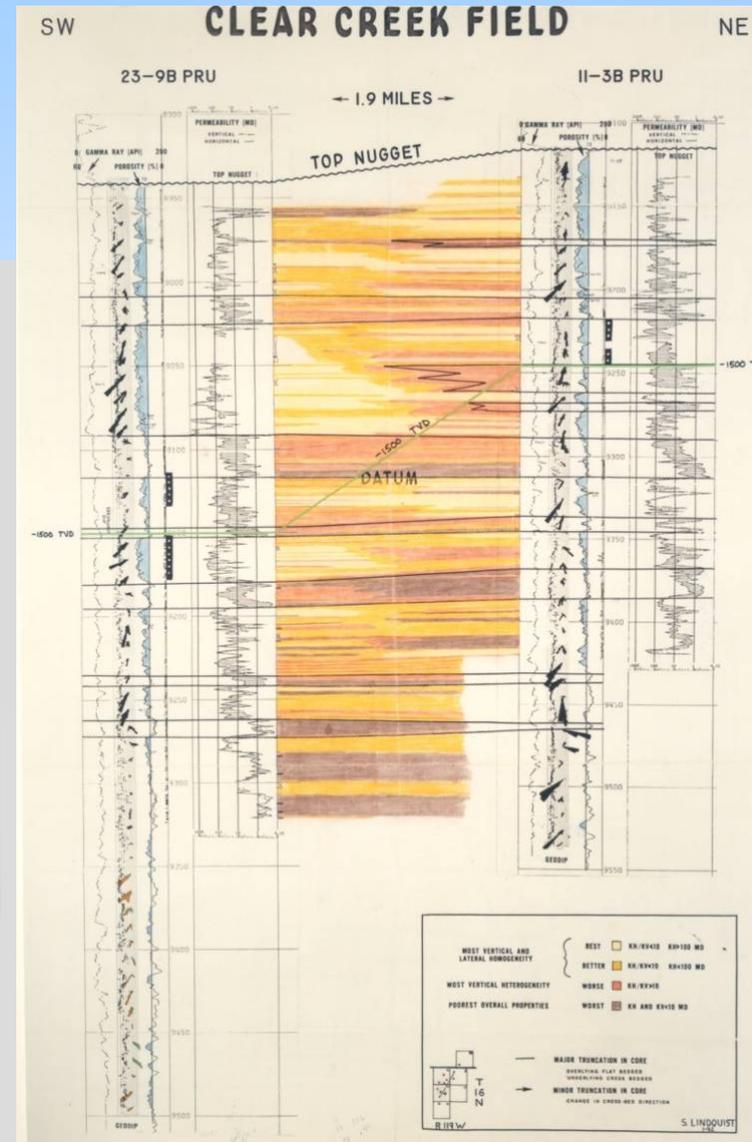
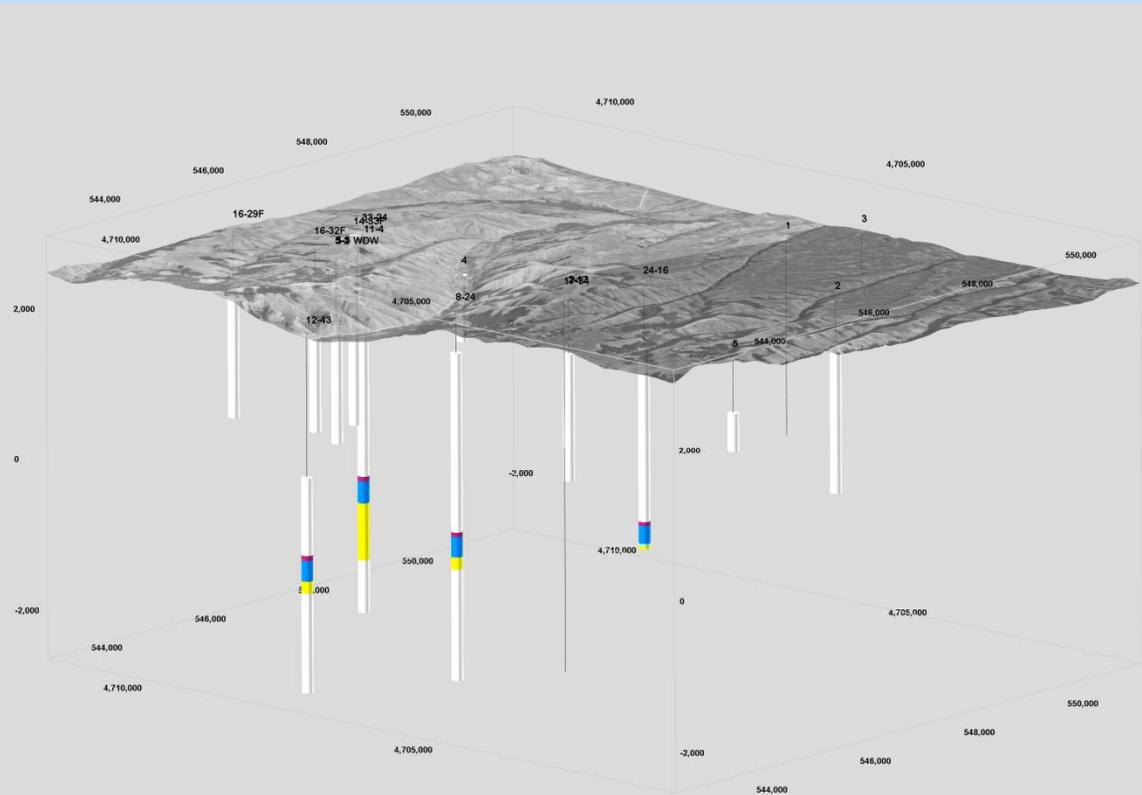
- Cimarex Gas Plant on line in 2008 will produce and inject 75MMCFD of 92% CO₂ and 8% H₂S (3,947 tons of CO₂/day or 1.44 million tons/year)
- Use existing well (17-34) and new well 0.8 miles away to conduct test of Nugget saline aquifer
- Core from new well will be used for analyses and flow testing



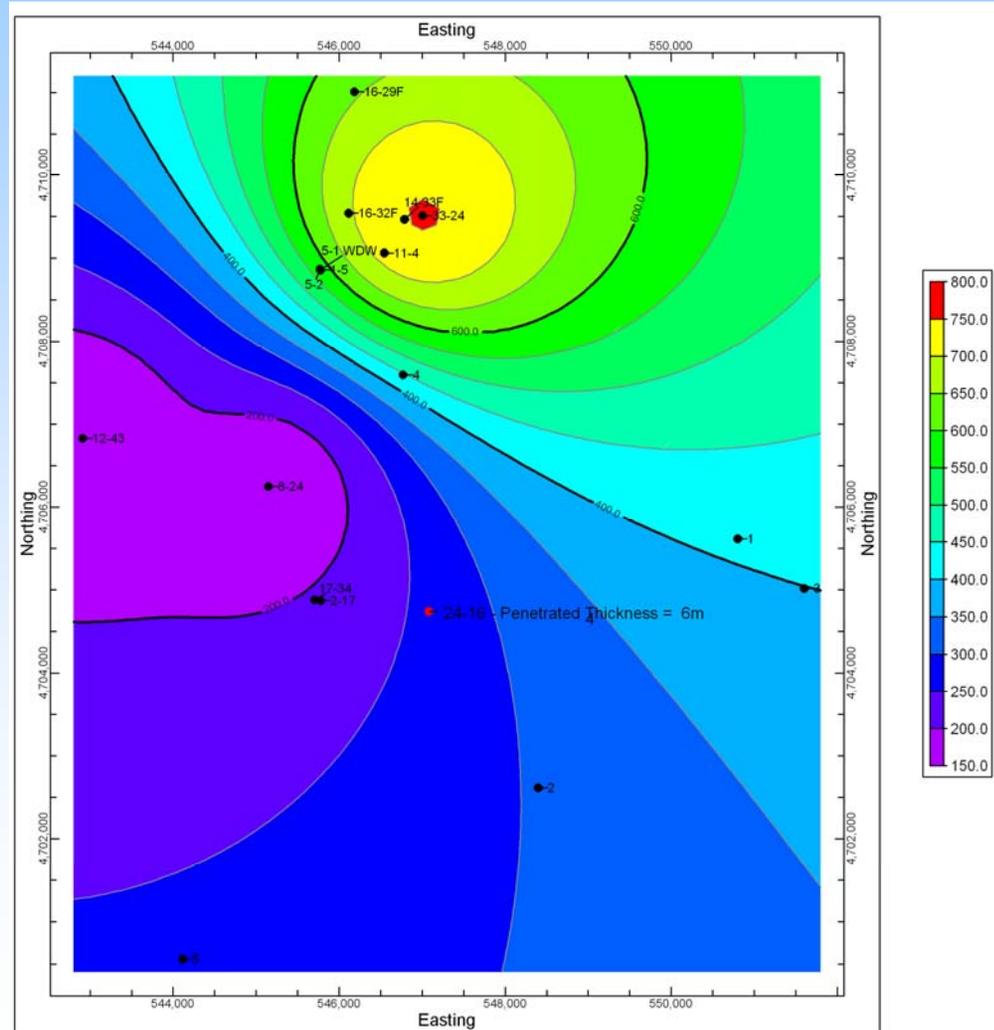
Preliminary Petrophysical Properties



Preliminary Geologic Model



Preliminary Geologic Model



Isopach Thickness of Nugget

Proposed Measurement Monitoring and Verification (MMV)

MMV Goals

- Monitor activity during injection.
- Monitor post-injection migration and
- dispersion of CO₂ in reservoir.
- Test geophysical procedures in deep strata.
- Calibrate and refine pre-injection model to
- refine MMV for large volume test.

Proposed Methods

Geophysical

Surface Seismic
Time lapse – vsp
Microgravity

Geochemical

Produced fluid chemistry
Tracers (noble gases, SF₆, etc.)

Surface

Soil gases

Questions?

