

## Geologic Sink – Coal Seams



### Tags

Geologic Storage of CO<sub>2</sub>, Carbon capture and storage, geologic sink, formation, coal

### Summary

This data was collected and analyzed by the BSCSP for the purpose of geologic capacity inventory and to gain a national perspective on CO<sub>2</sub> capture and storage in the United States.

### Description

This data set illustrates individual coal seams that have been evaluated for carbon dioxide sequestration. The data shown in this layer is the highest level (or resolution) that coal seams in a particular basin have been evaluated. Coal seams that were calculated to have less than 1 thousand cubic feet per ton of coal capacity value are not shown.

The CO<sub>2</sub> sequestration capacity of a coal deposit depends on five key geologic variables: 1) the amount of coal, 2) the hydrostatic pressure of the coal zone, 3) the CO<sub>2</sub> storage capacity of the coal, 4) the coal's content of sorbed-phase natural gas, and 5) the composition of the sorbed-phase natural gas. The first three geologic variables define the CO<sub>2</sub> storage capacity of the coal deposit. The third and fourth geologic variables account for factors that would reduce the number of adsorption sites available for CO<sub>2</sub> uptake and storage. A sixth variable is an engineering safety factor. The injected CO<sub>2</sub> volume must be less than the CO<sub>2</sub> storage capacity of the coal because the hydrologic pressure in the formation could undergo natural variation over geologically long time periods (Pashin and McIntyre, 2003). The amount of CO<sub>2</sub> that could potentially be sequestered in BSCSP coal seams was evaluated with the procedure that is used for gas-in-place (GIP) analysis of coalbed reservoir.

For a more detailed discussion of calculation methods see: Robertson, E.P. (2009) Economic Analysis of Carbon Dioxide Sequestration in Powder River Basin Coal, *International Journal of Coal Geology*, vol 77, p 234-241.

### References

- R.M. Flores and D.J. Nichols, Executive Summary, 1999 Resource Assessment of Selected Tertiary Coal Beds and Zones in the Northern Rocky Mountains and Great Plains Region, U.S. Geological Survey Professional Paper 1625-A.
- R.M. Flores and D.J. Nichols, Chapter IN – Introduction, 1999 Resource Assessment of Selected Tertiary Coal Beds and Zones in the Northern Rocky Mountains and Great Plains Region, U.S. Geological Survey Professional Paper 1625-A.)
- M.S. Ellis, G.L. Gunther, A.M. Ochs, S.B. Roberts, E.M. Wilde, J.H. Schuenemeyer, H.C. Power, G.D. Stricker, and Dorsey Blake, Chapter PN – Coal Resources, Powder River Basin, 1999 Resource Assessment of Selected Tertiary Coal Beds and Zones in the Northern Rocky Mountains and Great Plains Region, U.S. Geological Survey Professional Paper 1625-A.

Nelson, C.R.; et al; 2005: "Geologic CO<sub>2</sub> Sequestration Potential of the Wyodak-Anderson Coal Zone in the Powder River Basin," Plains CO<sub>2</sub> Reduction (PCOR) Partnership Topical Report for U.S. Department of Energy; Energy and Environmental Research Center: University of North Dakota (August).

**Credits**

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**Access and use limitations**

This data is updated irregularly. This data should not be modified in any way.

**Dates** Last updated: April 2008