

Coalbed Methane in Kansas

Presented to:
Wichita Chapter SPE
October 13, 2004

Presented by:
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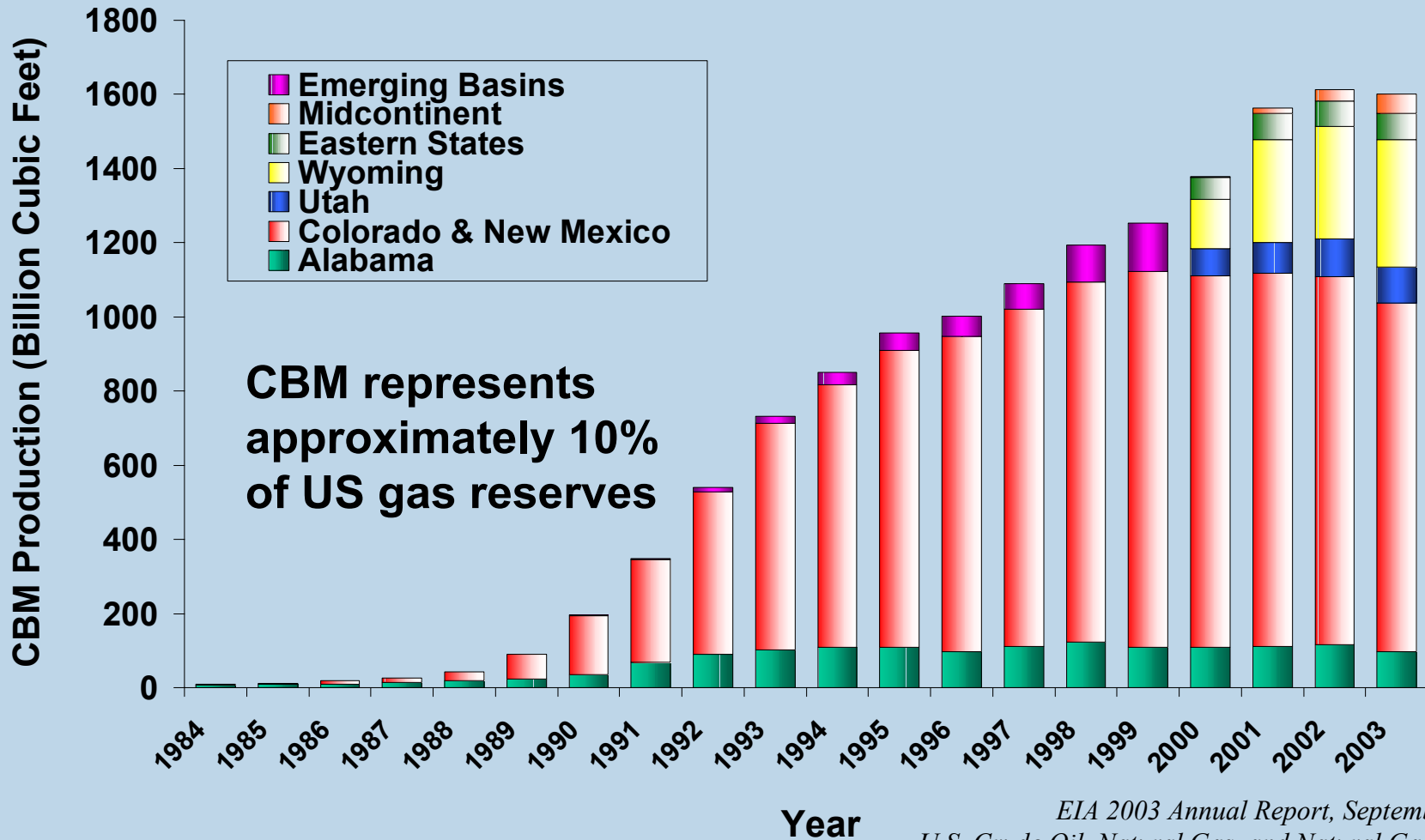


Kansas CBM

- Expect CBM Production Increase to Continue
- Continued Exploration Expected
 - Extent Dependent on Outcome of Pilots
 - Geological Survey Working to Provide Information
 - Northward Spread
 - Significant Impact on SE Kansas Economy
 - Potential Significant Impact on Kansas Economy
- A Substantial Boost in US and Kansas Supplies Will Take Time
- Potential for ECBM/Carbon Sequestration



Coalbed Methane Production from U.S. Basins



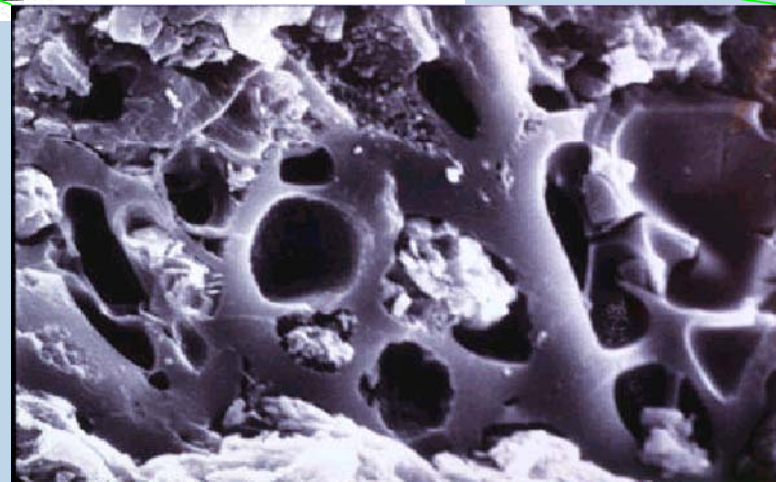
Kansas Geological Survey

Unconventional Reservoir



**Fractured
Reservoir**

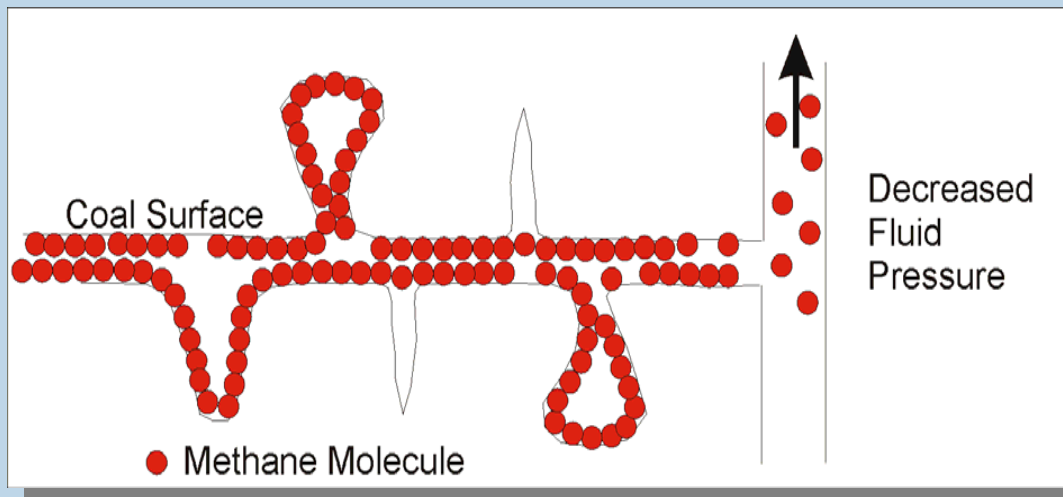
Micropores



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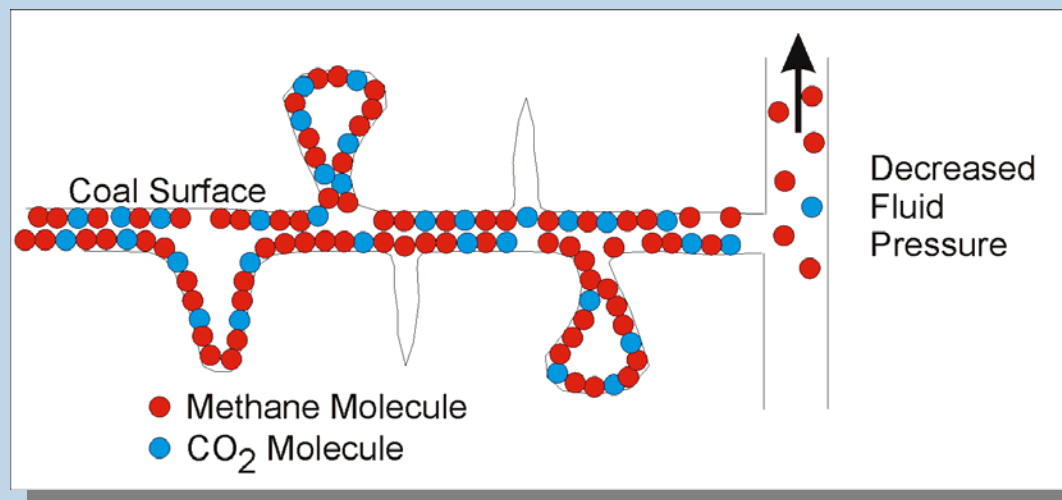
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Methane Production from Micropores



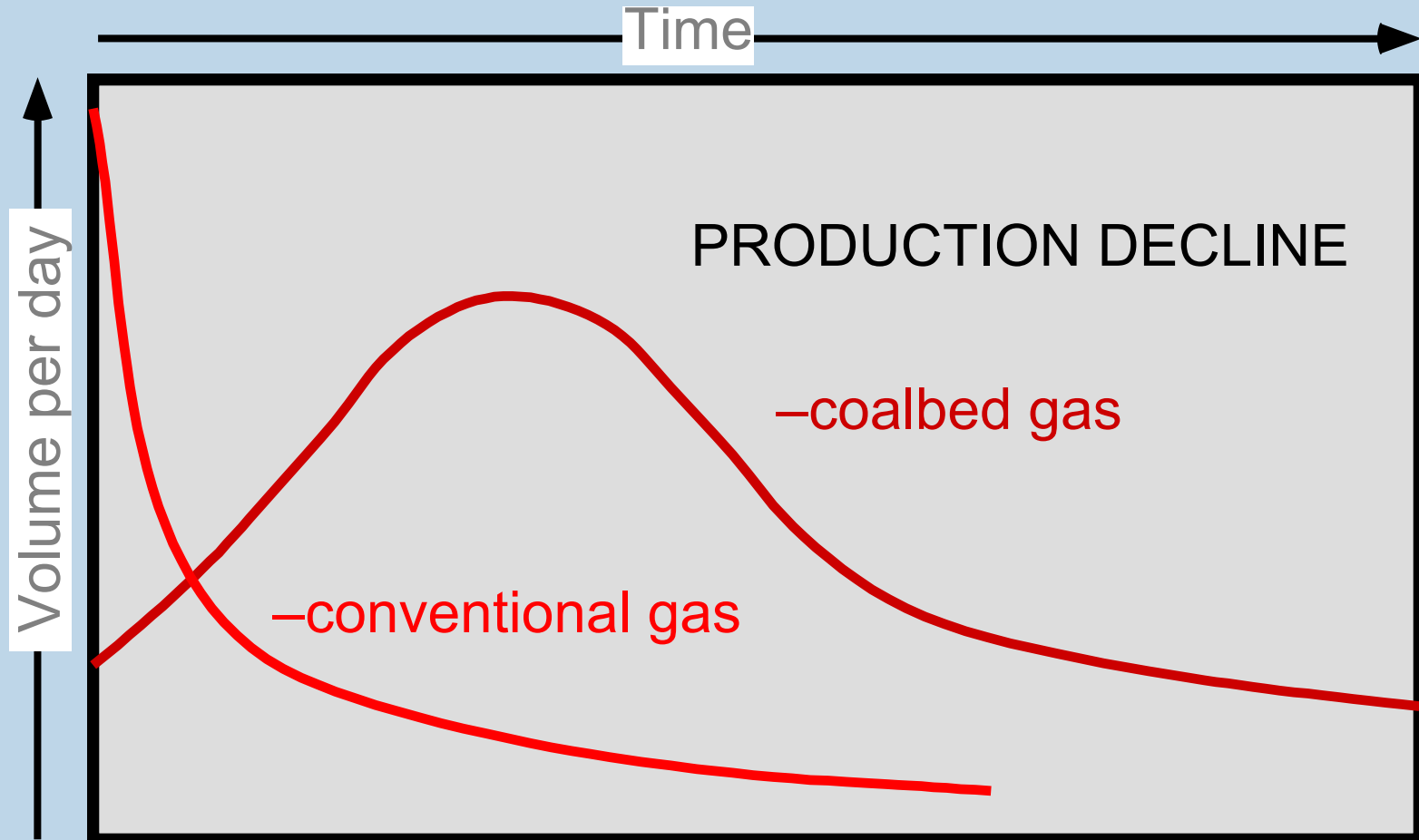
Desorption

Replacement



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Conventional Gas and Coal Bed Gas



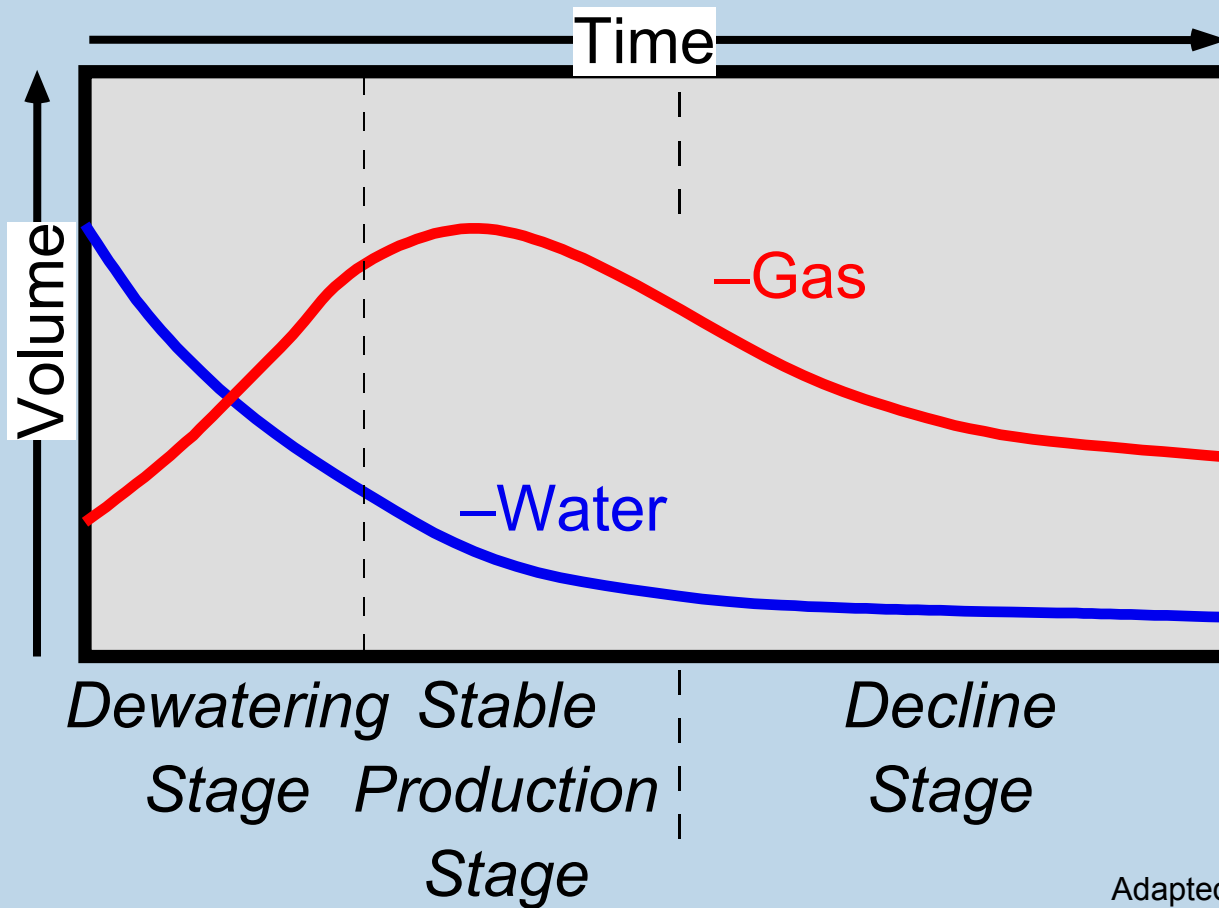
Adapted from Rice, 1997



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Production Stages of a Coalbed Gas Well



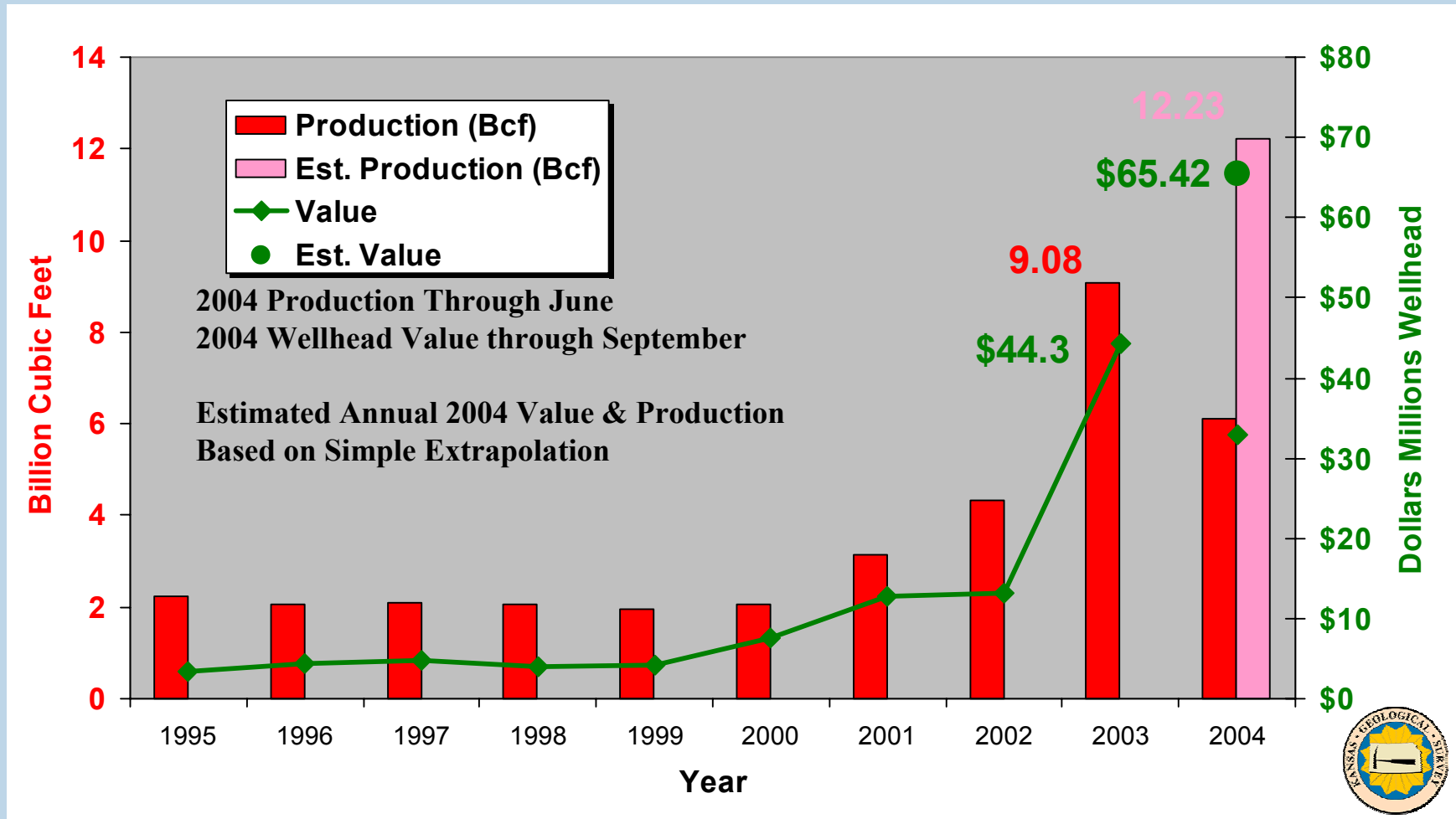
Adapted from Rice, 1997



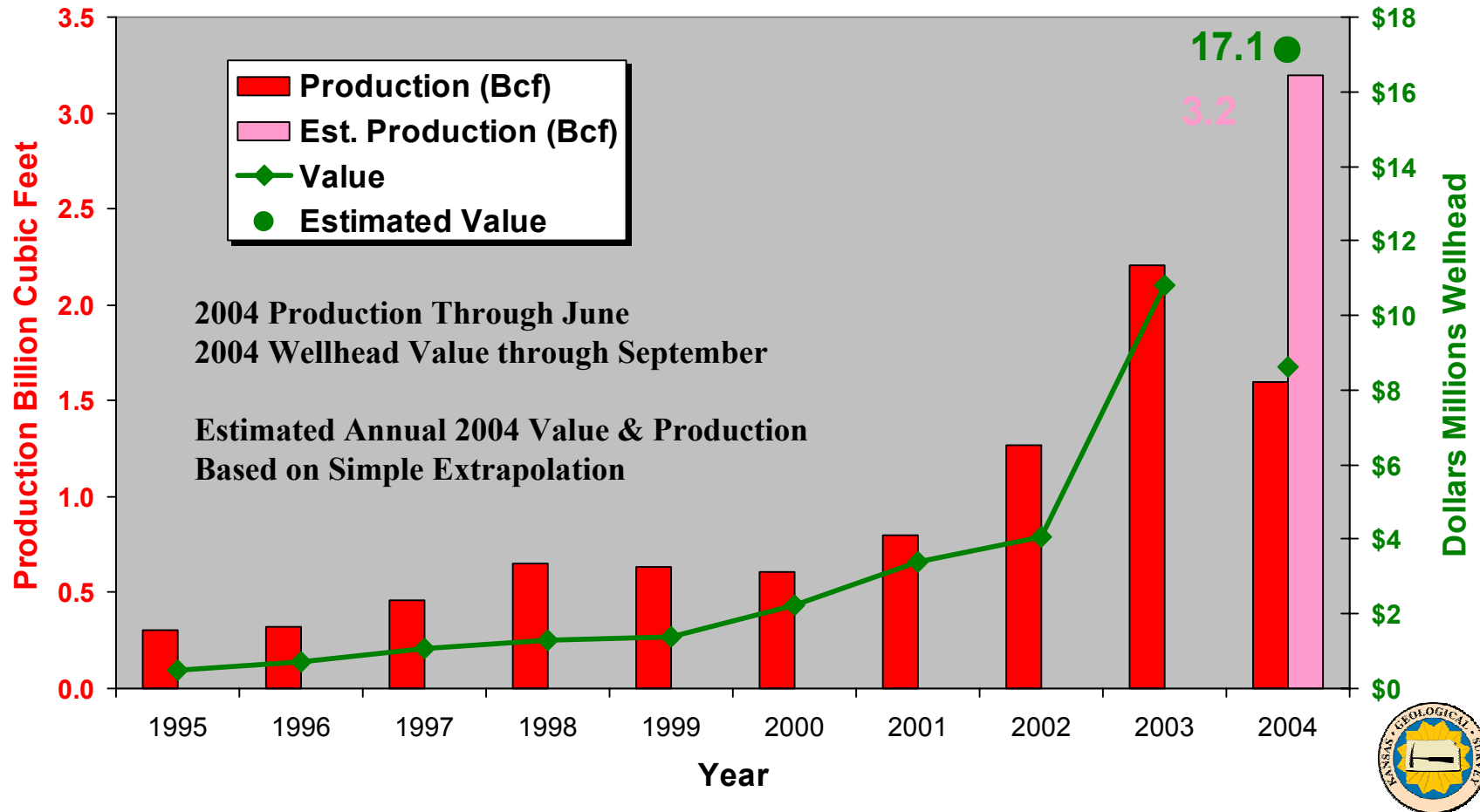
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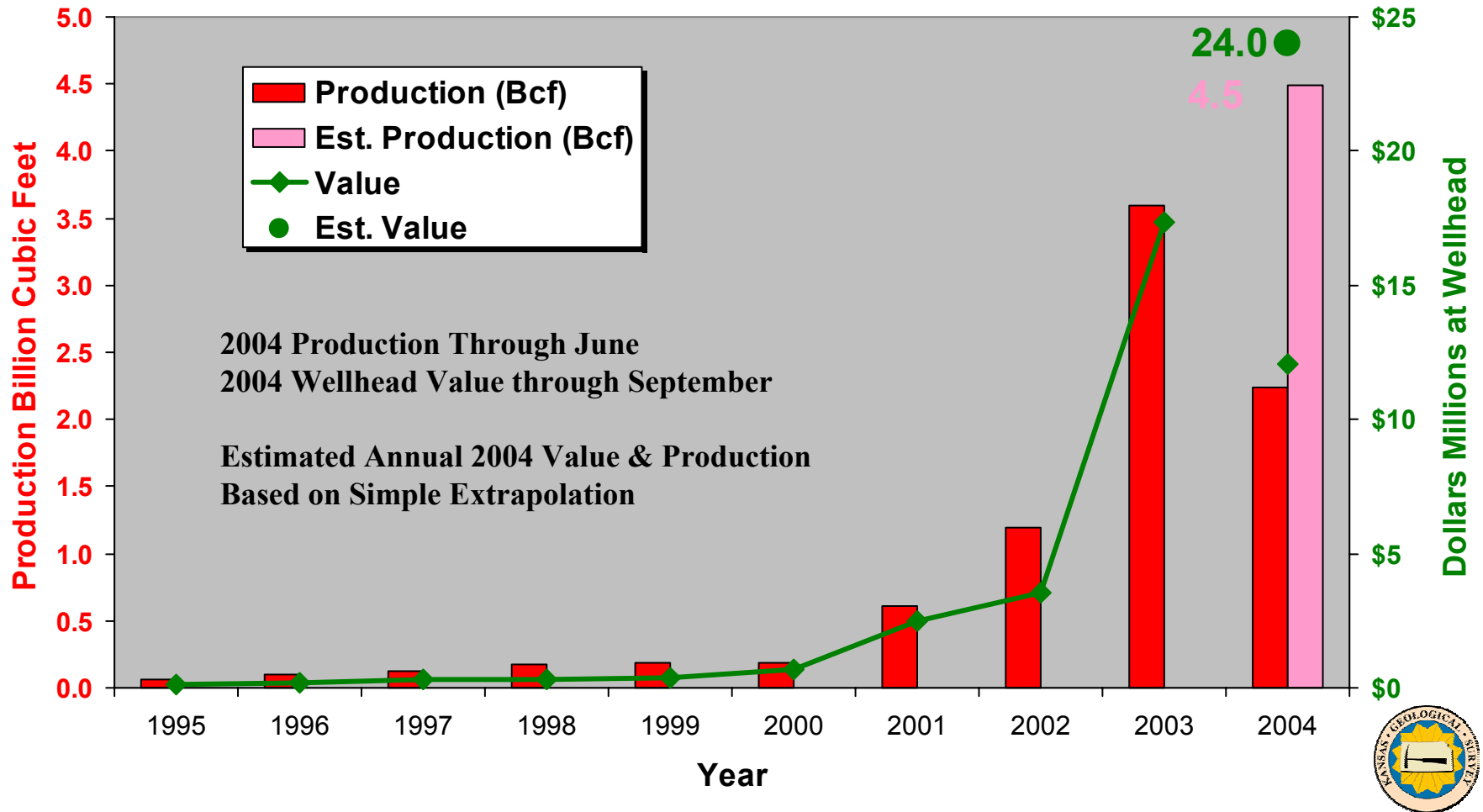
SE Kansas CBM Production



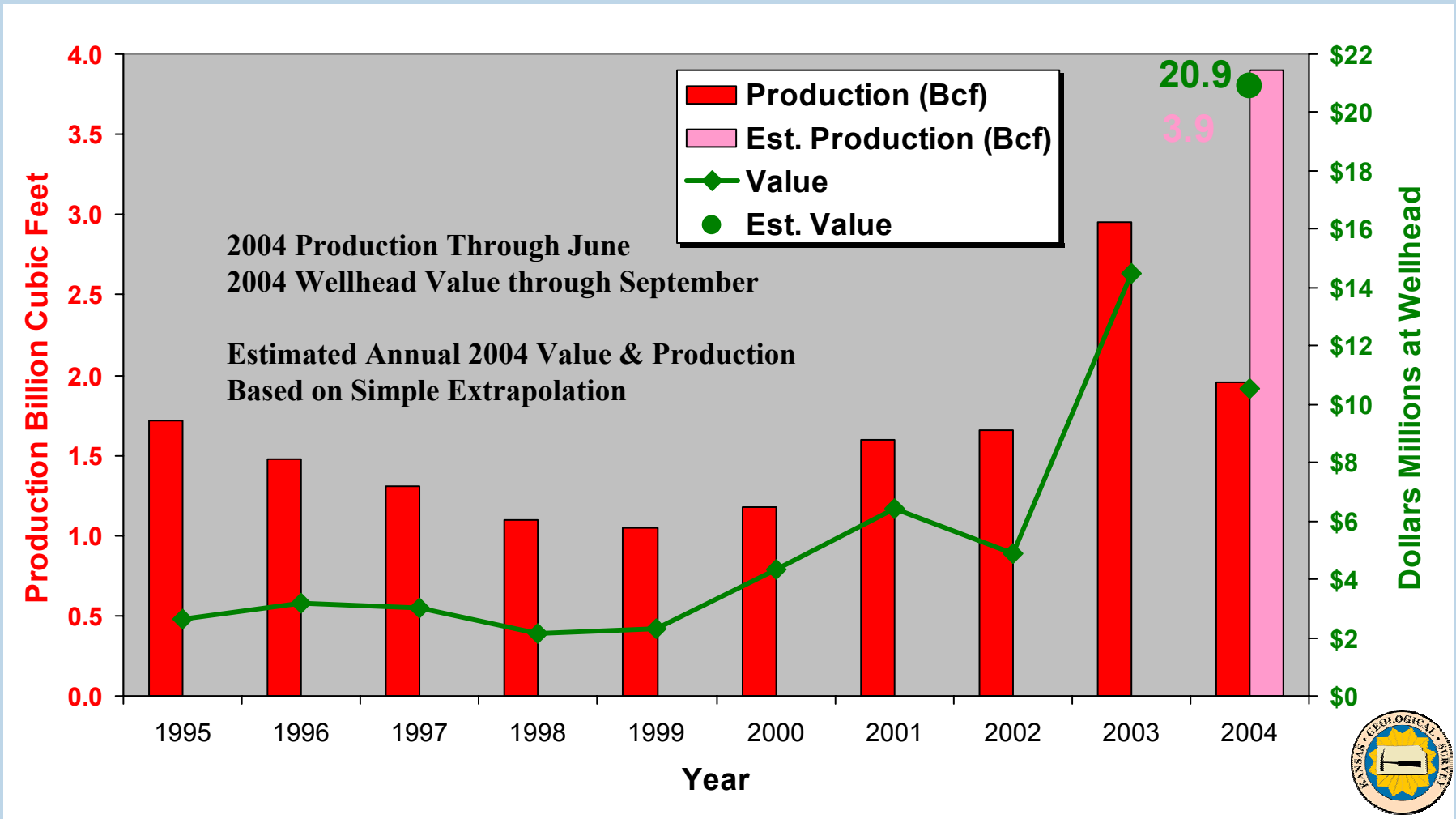
Wilson County Gas Production



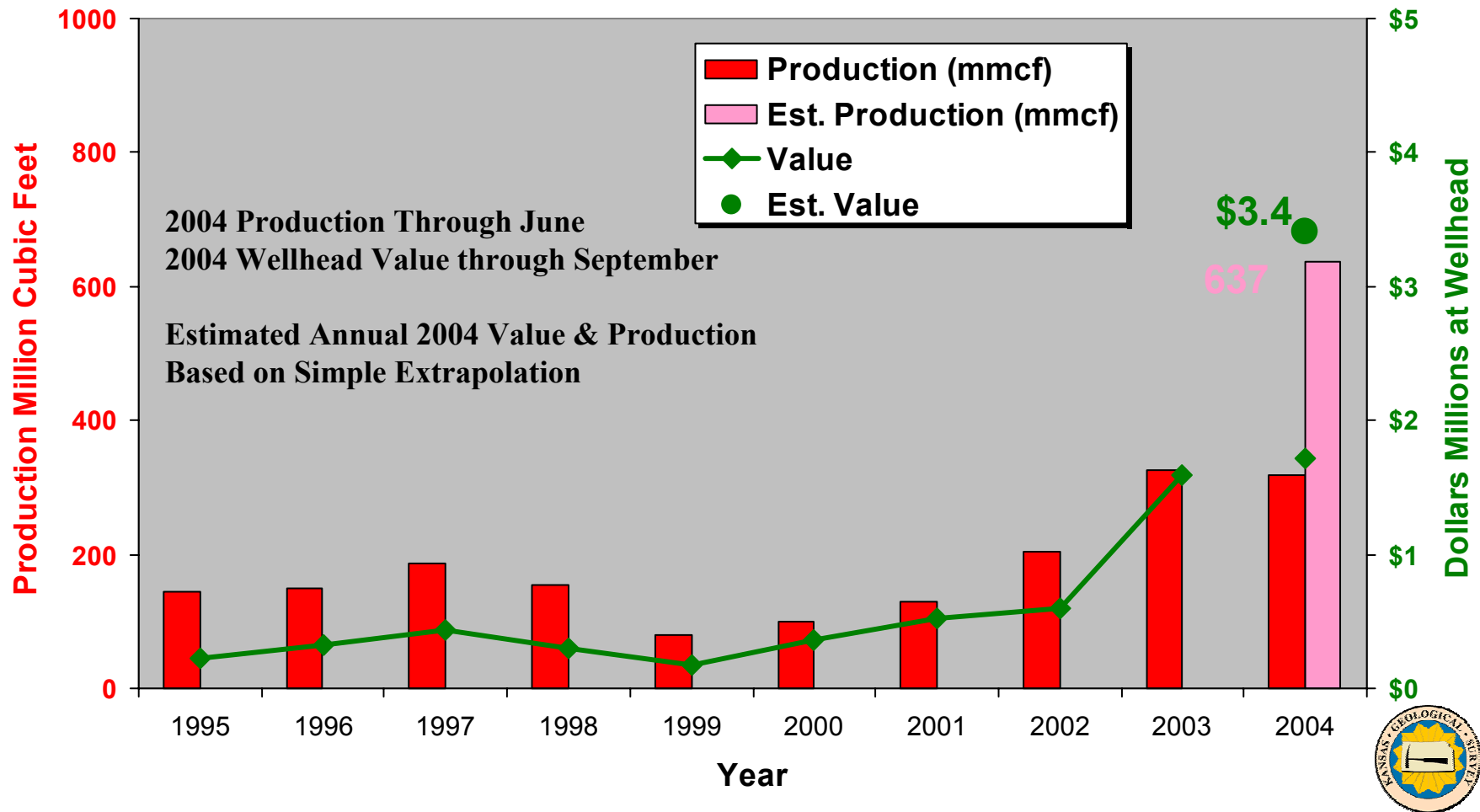
Neosho County CBM Production



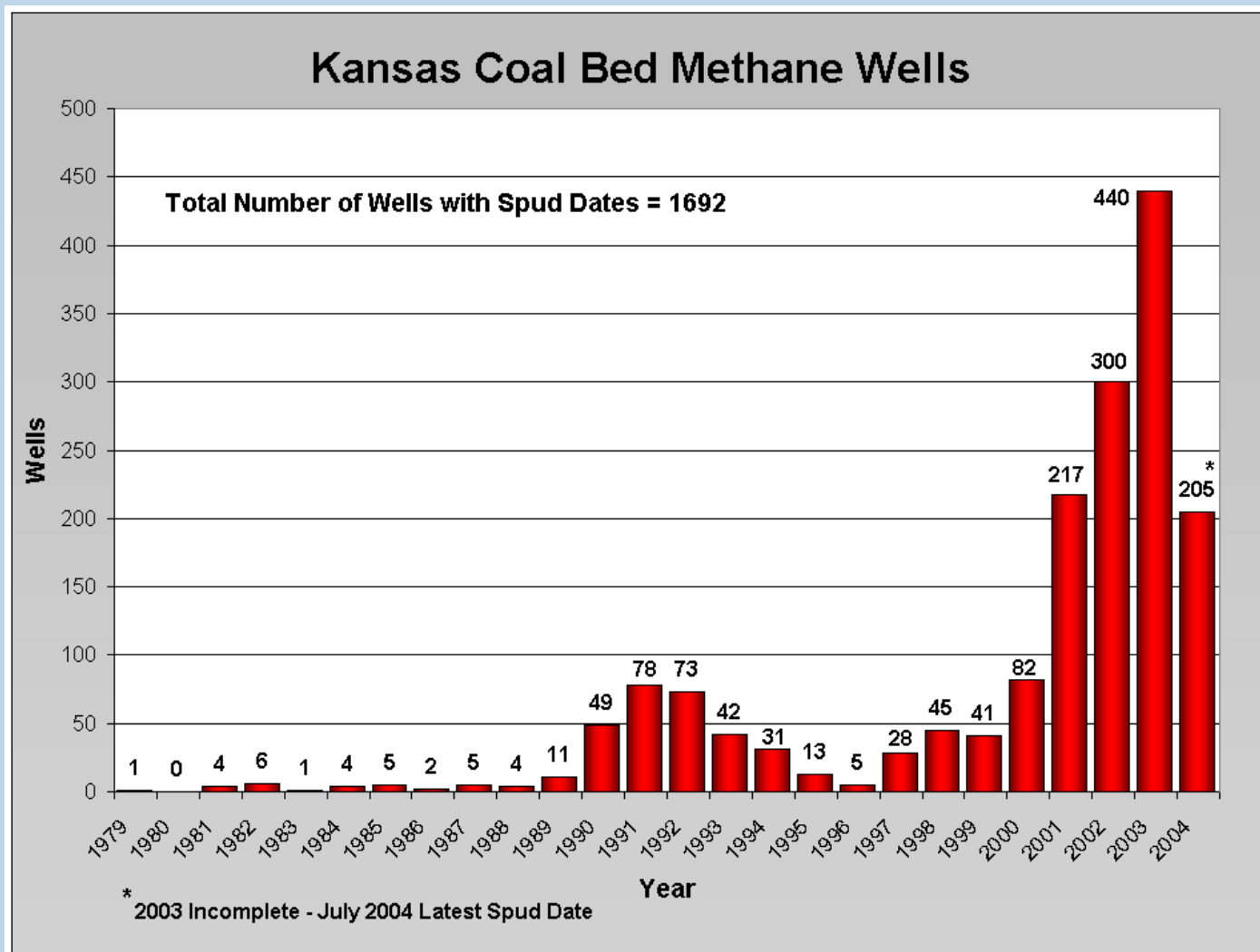
Montgomery County CBM Production



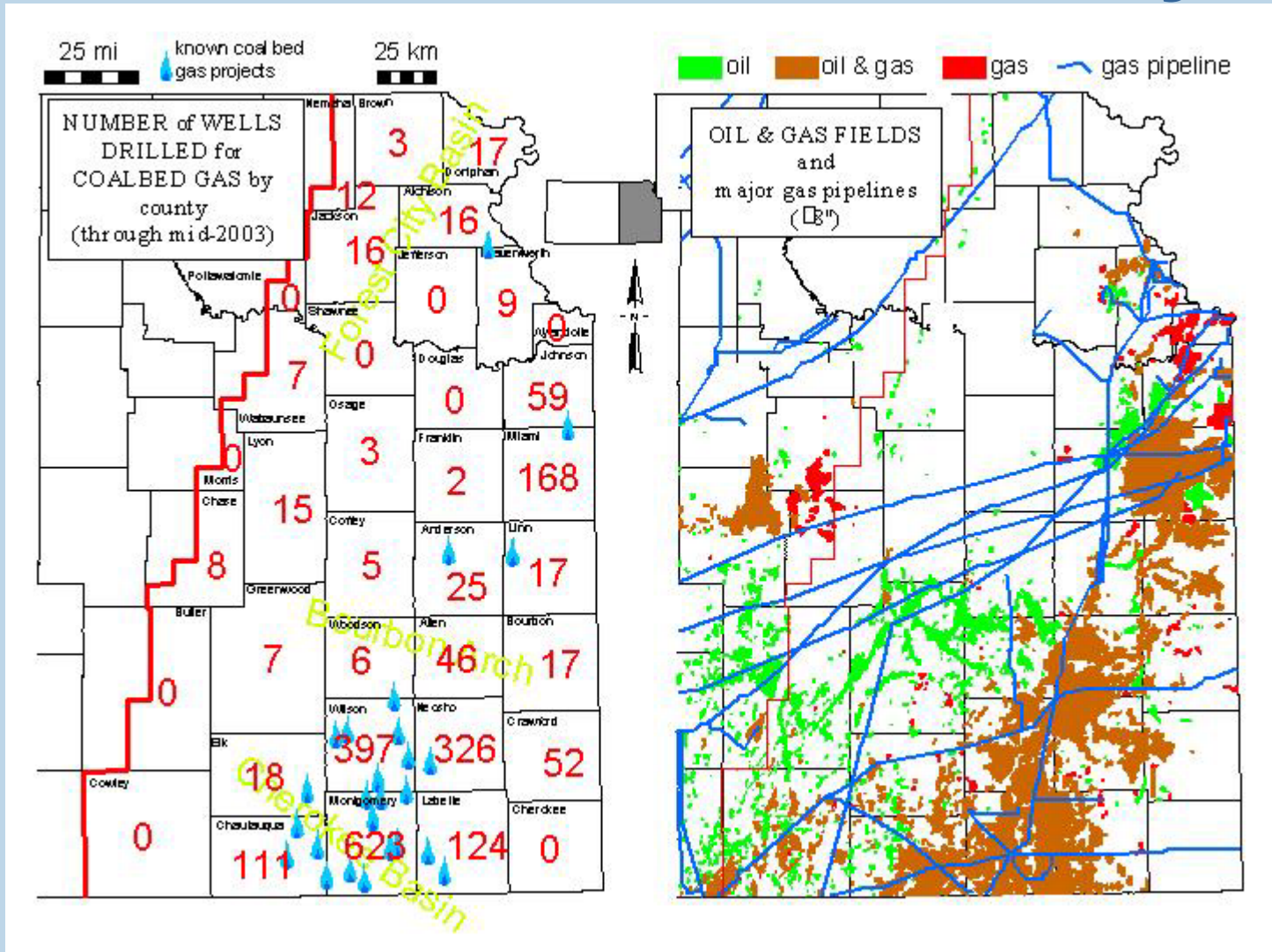
Labette County CBM Production



Coalbed Methane Activity

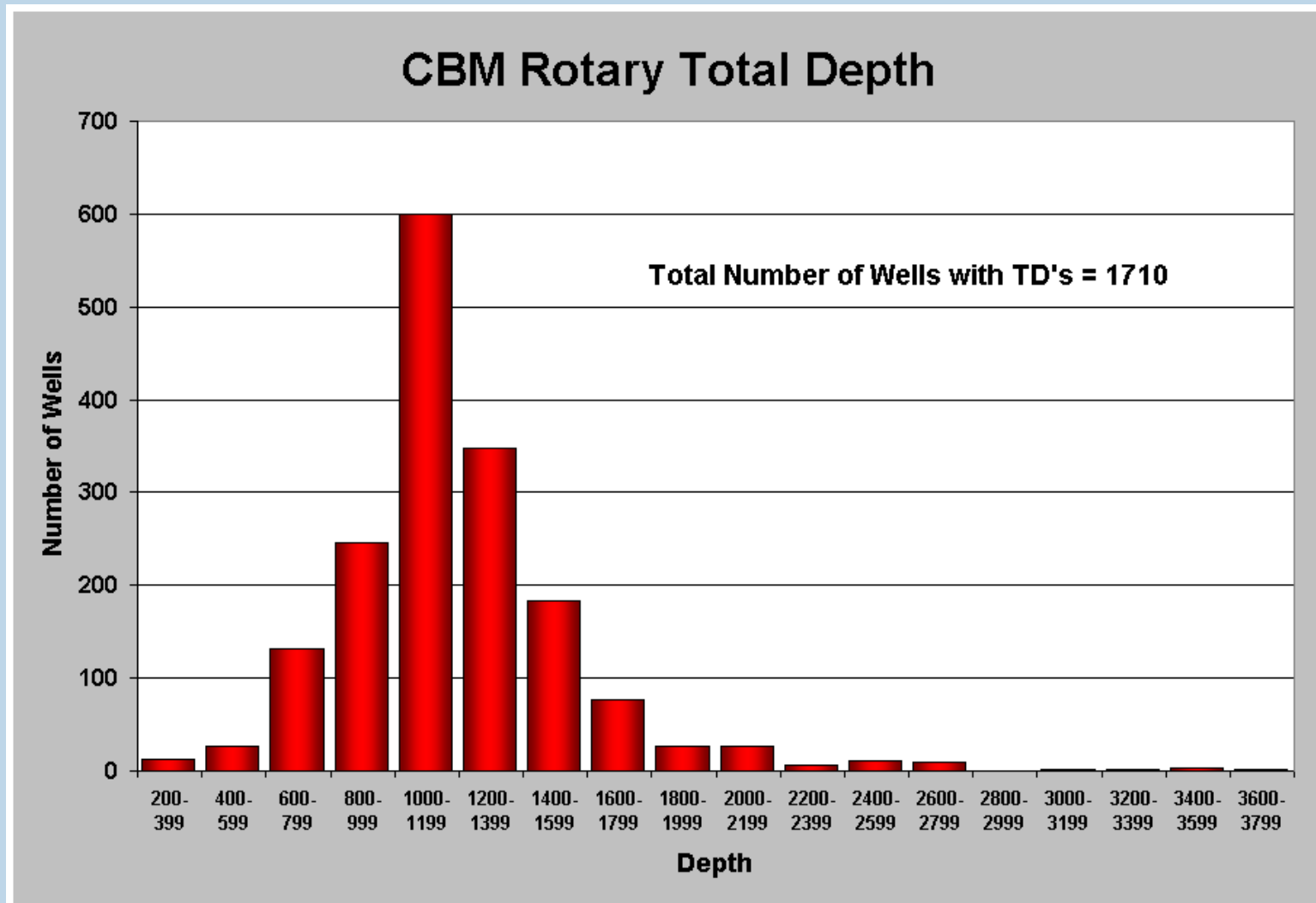


Coalbed Methane Activity



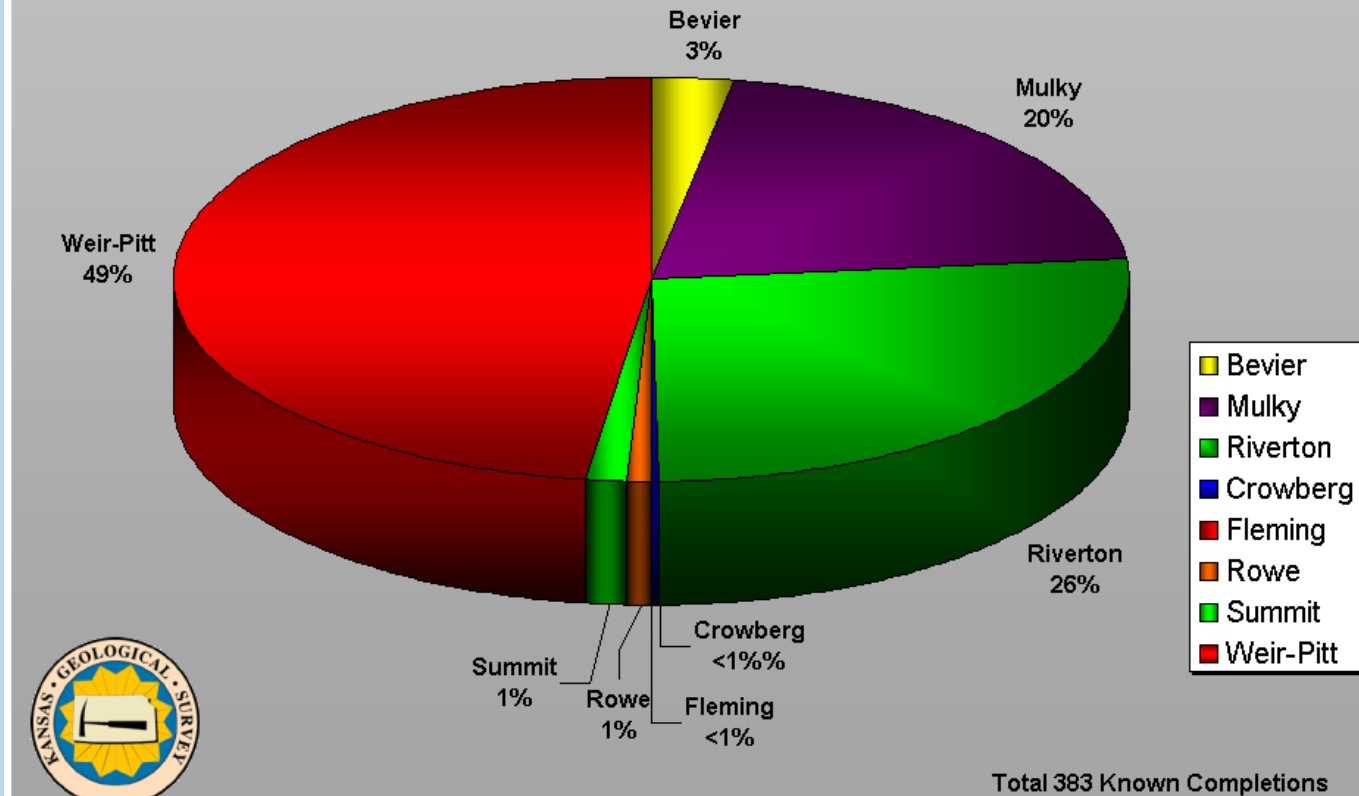
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Coalbed Methane Activity



Coalbed Methane Activity

Kansas Coalbed Methane Producing Horizons



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Coalbed Methane Program



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Coalbed Methane Program



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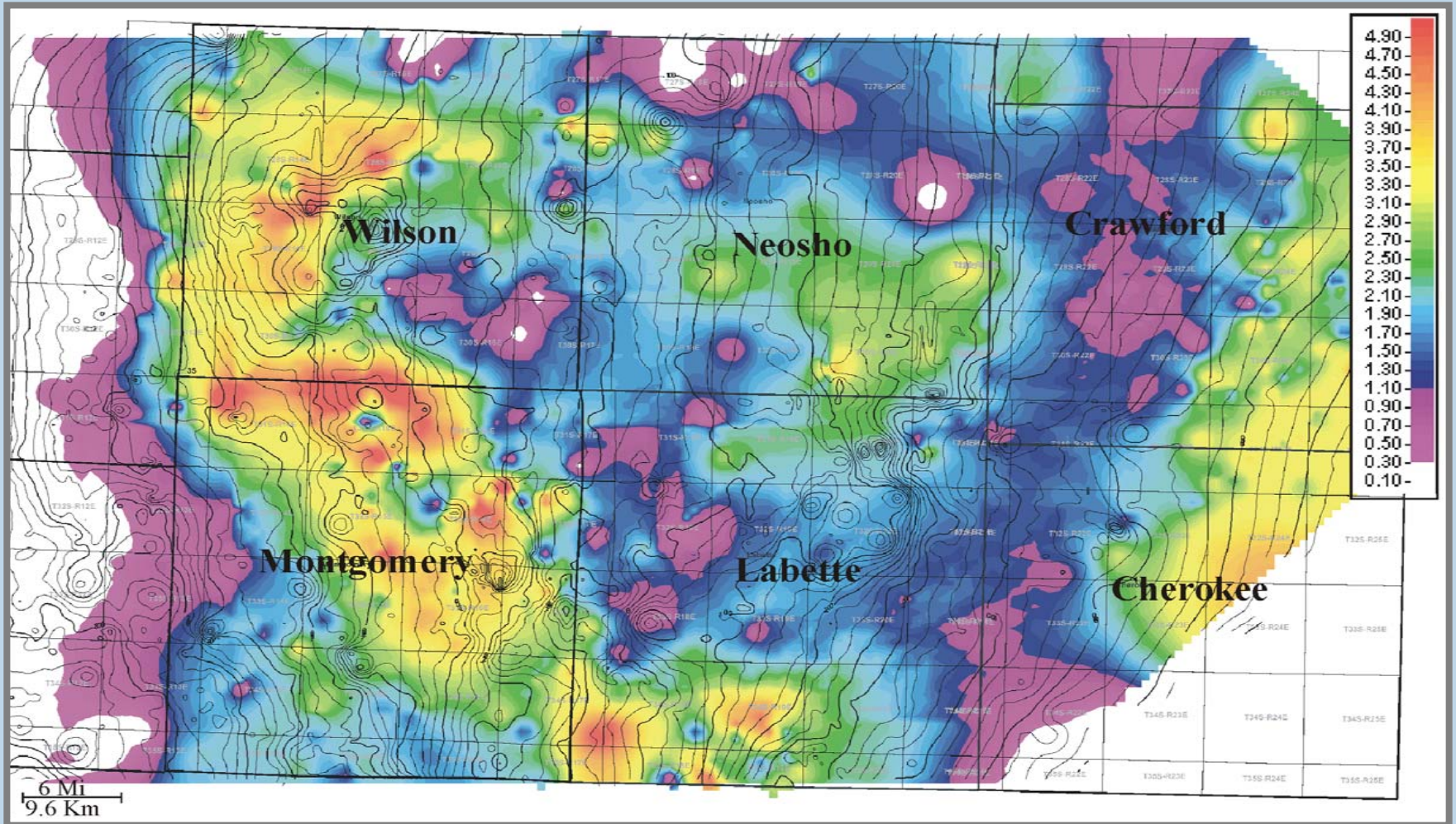
Coalbed Methane Program



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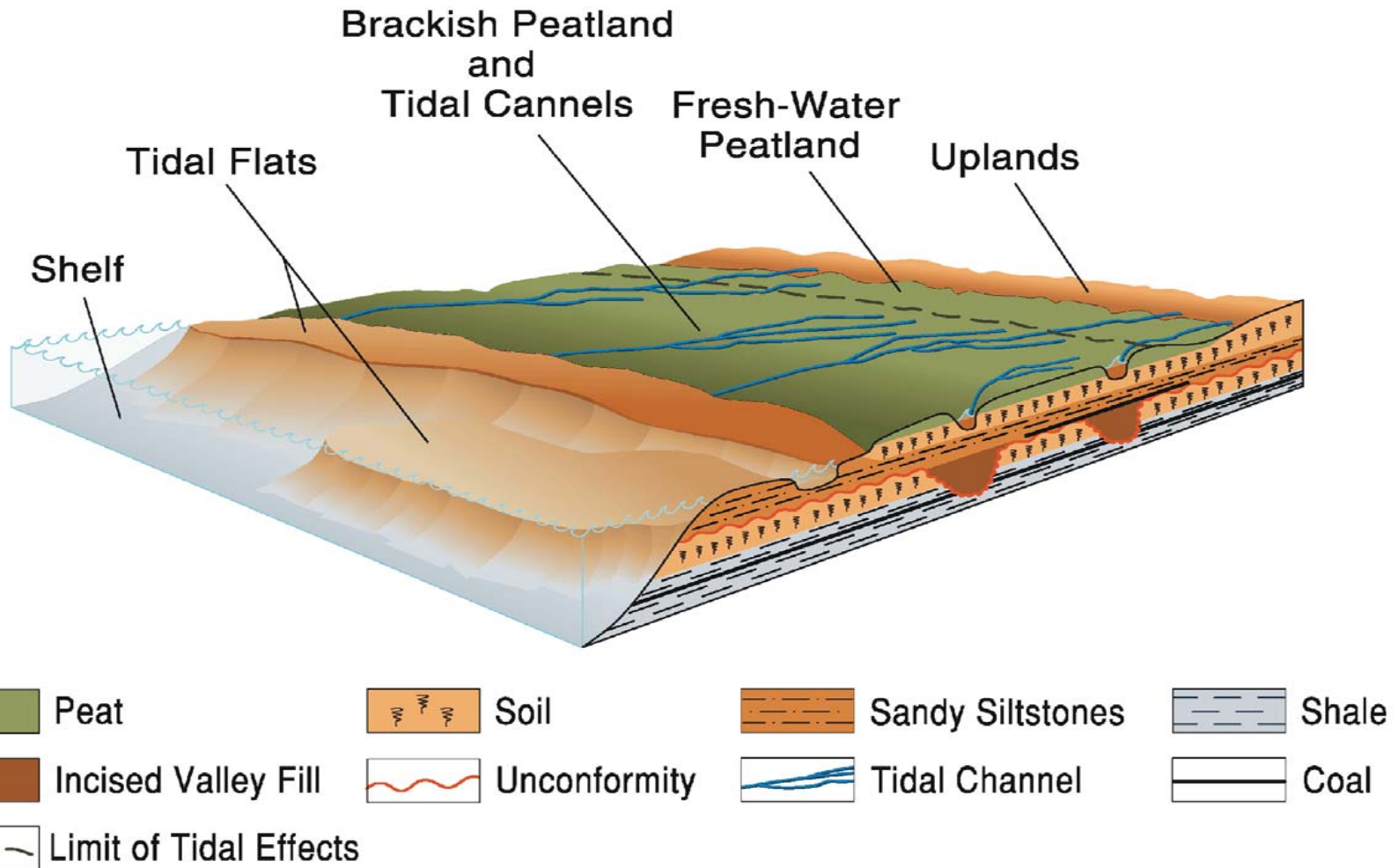
Weir-Pitt Coal



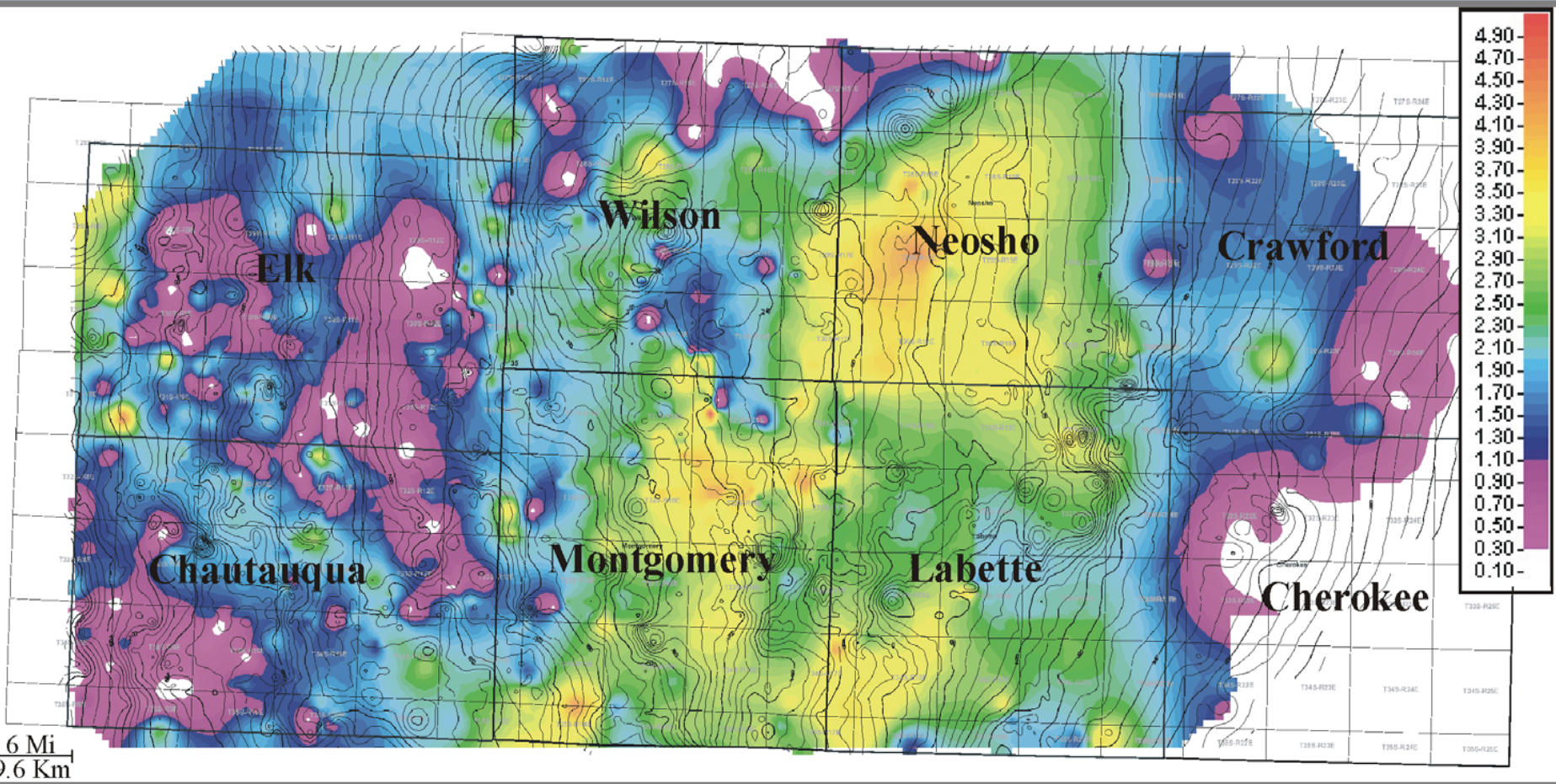
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Coastal Plain



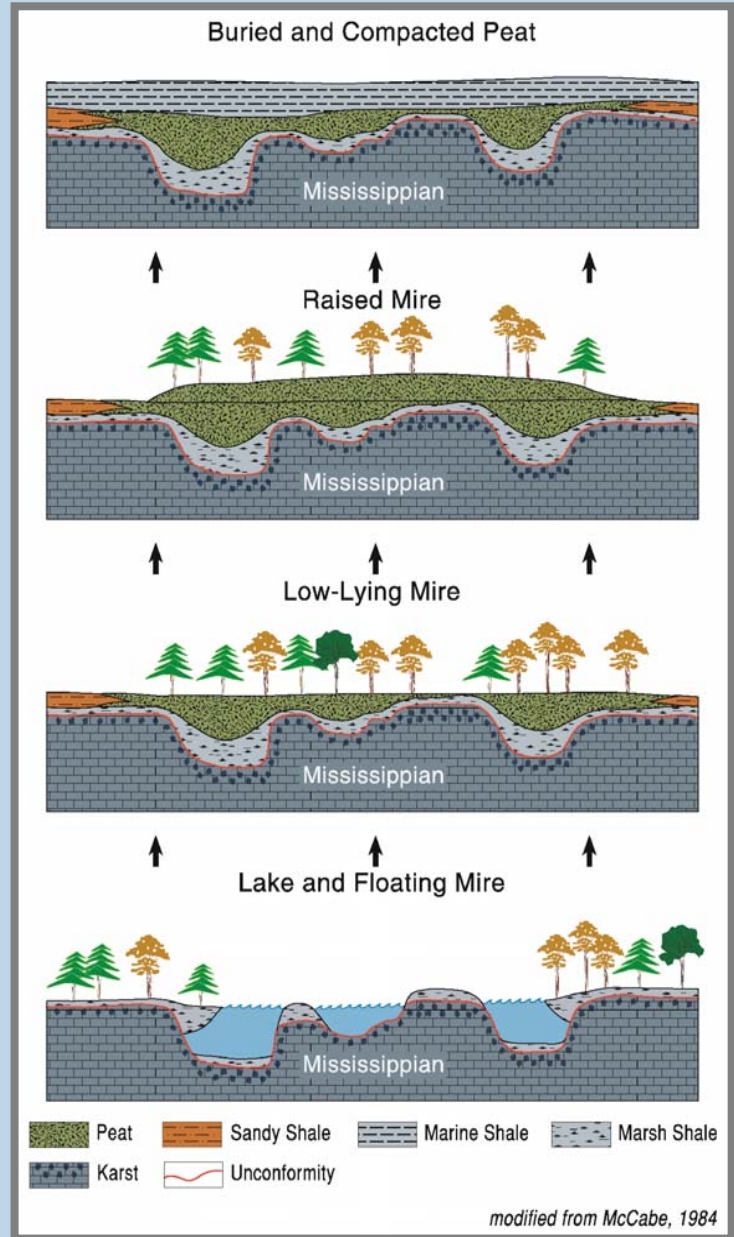
Riverton Coal



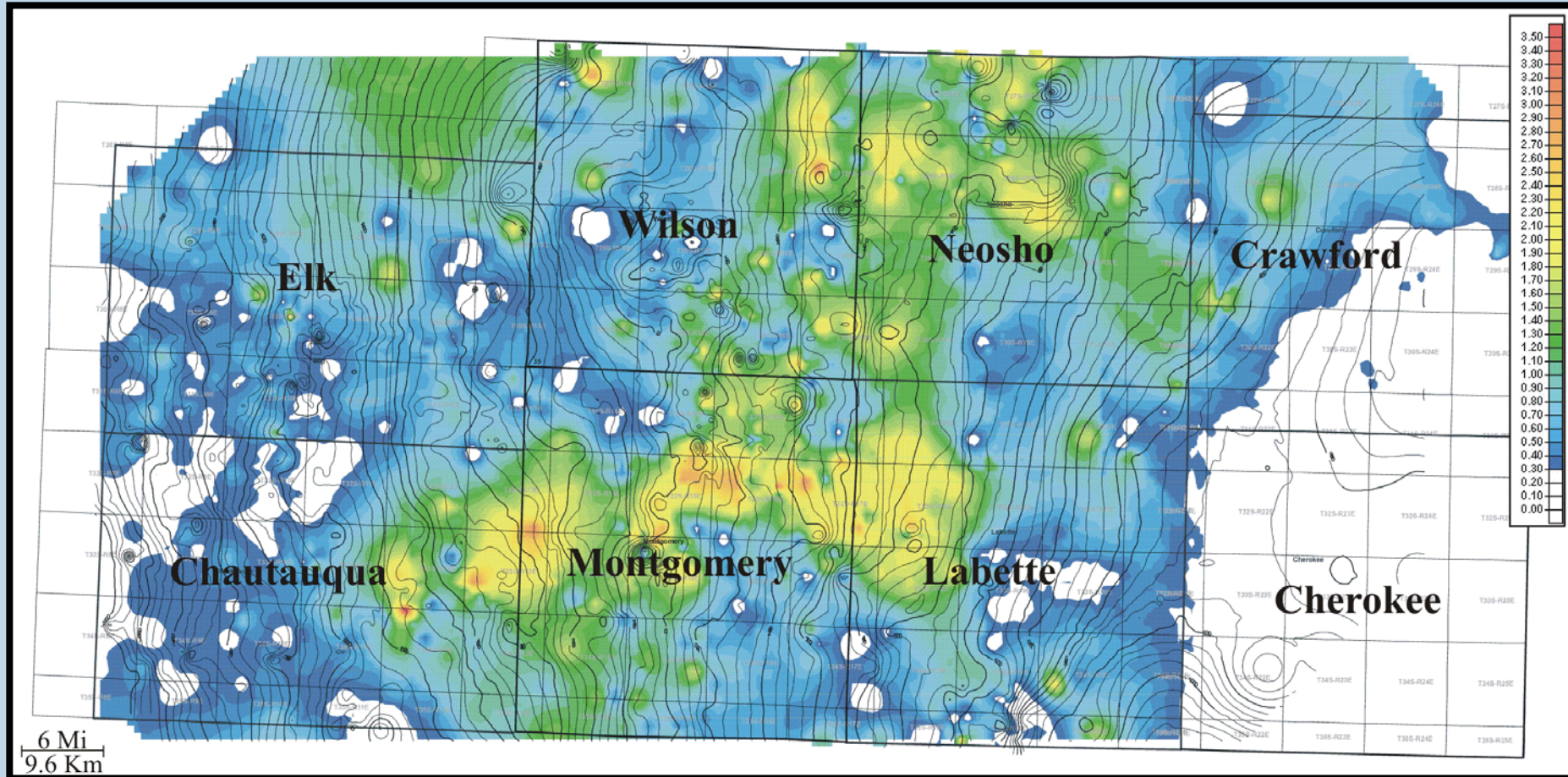
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Pre-Pennsylvanian Topography



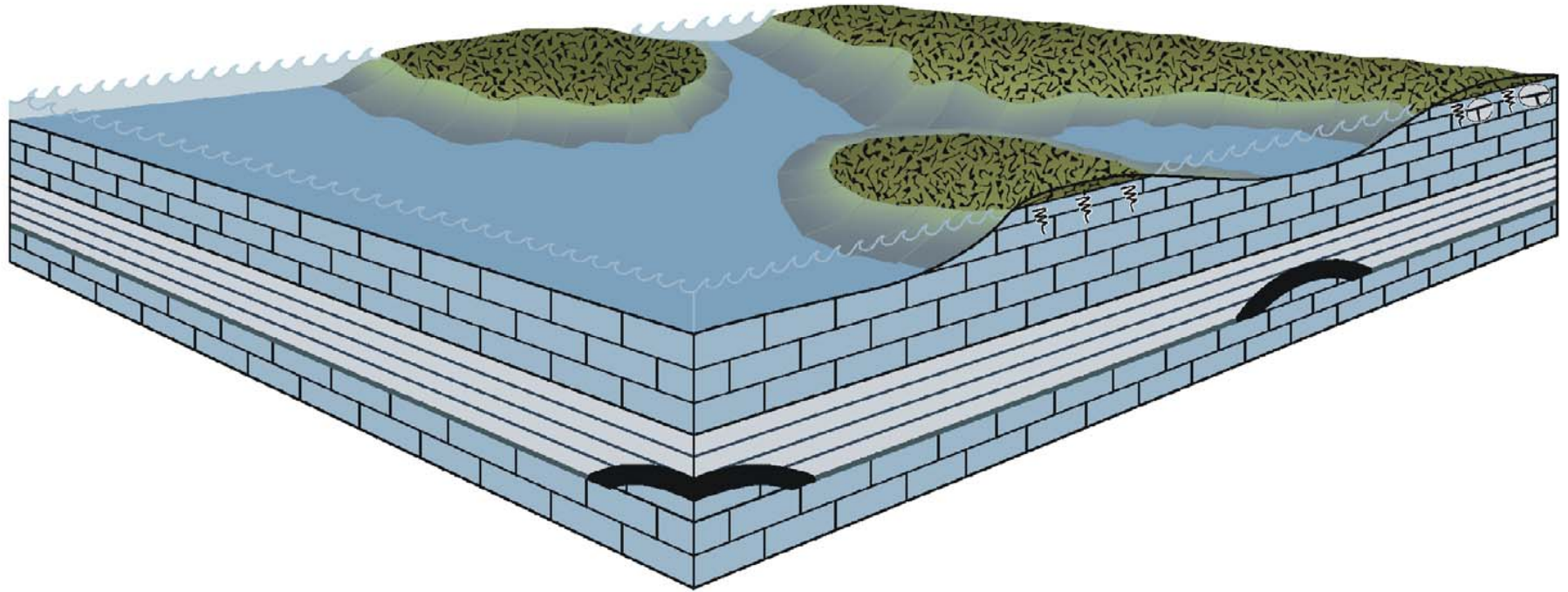
Mulky Coal



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Marine Regression



Peat



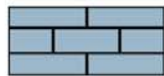
Black Shale



Carbonaceous
Shale



Coal



Limestone



Caliche



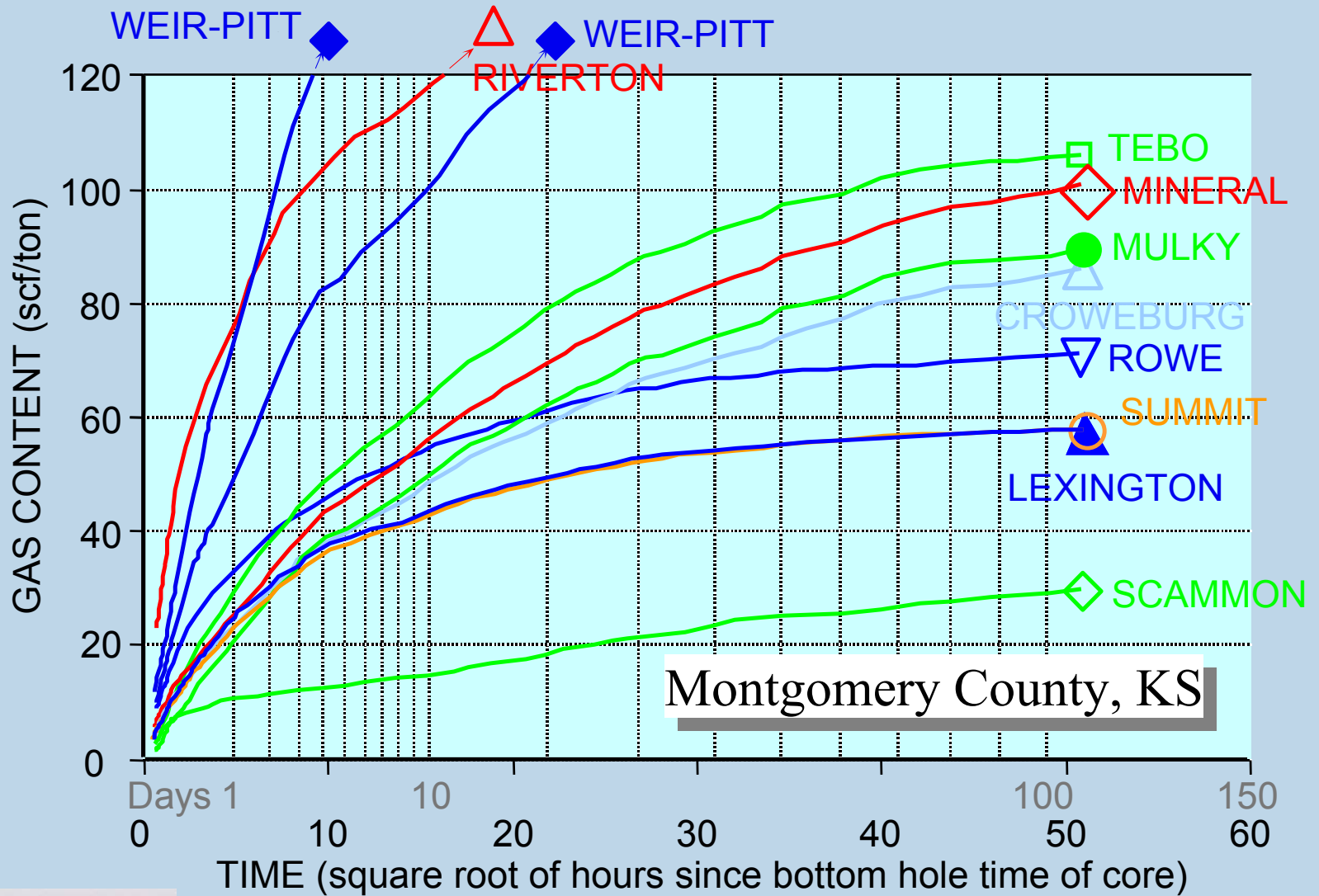
Rooting



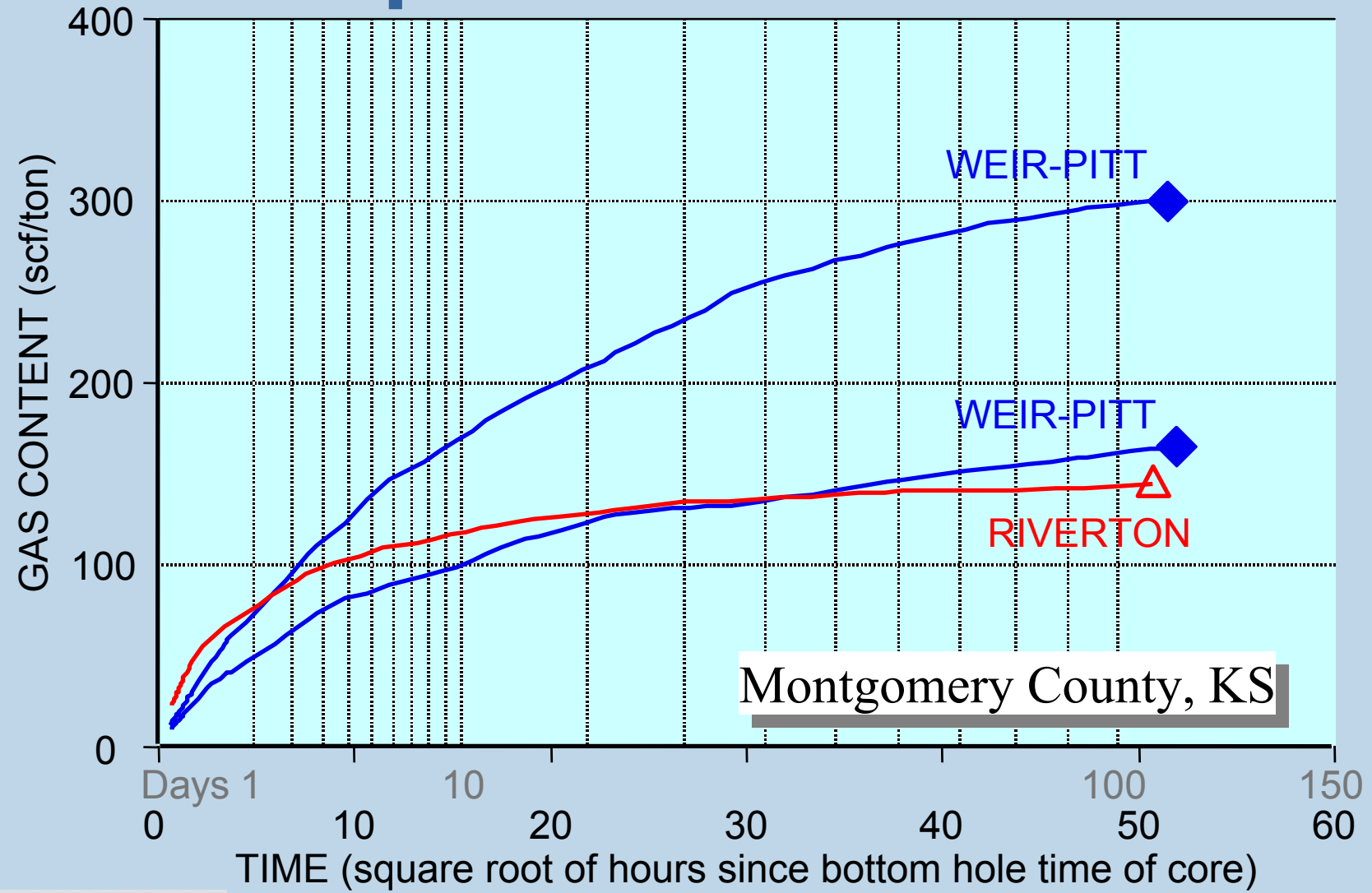
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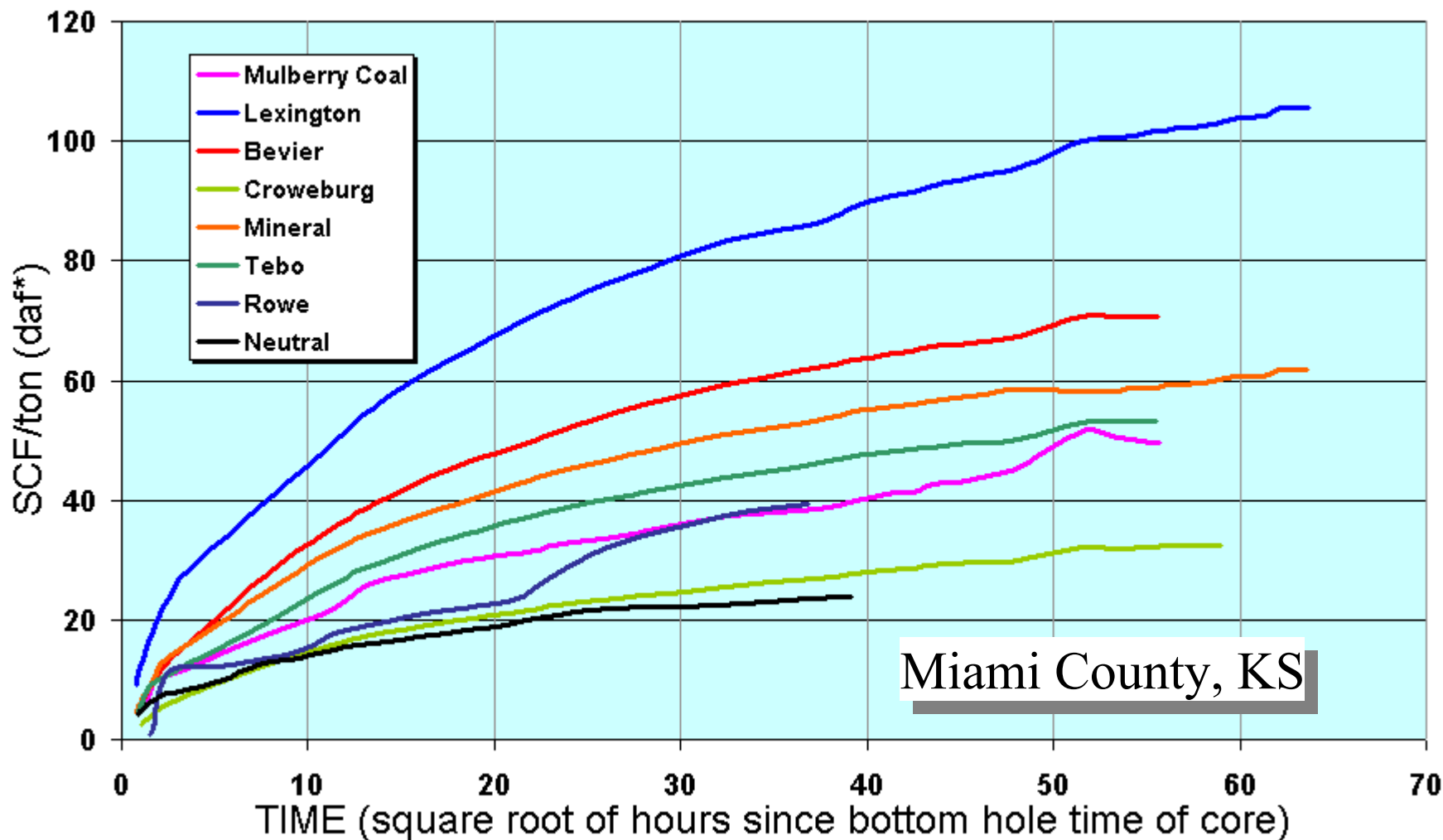
Desorption Characteristics



Desorption Characteristics



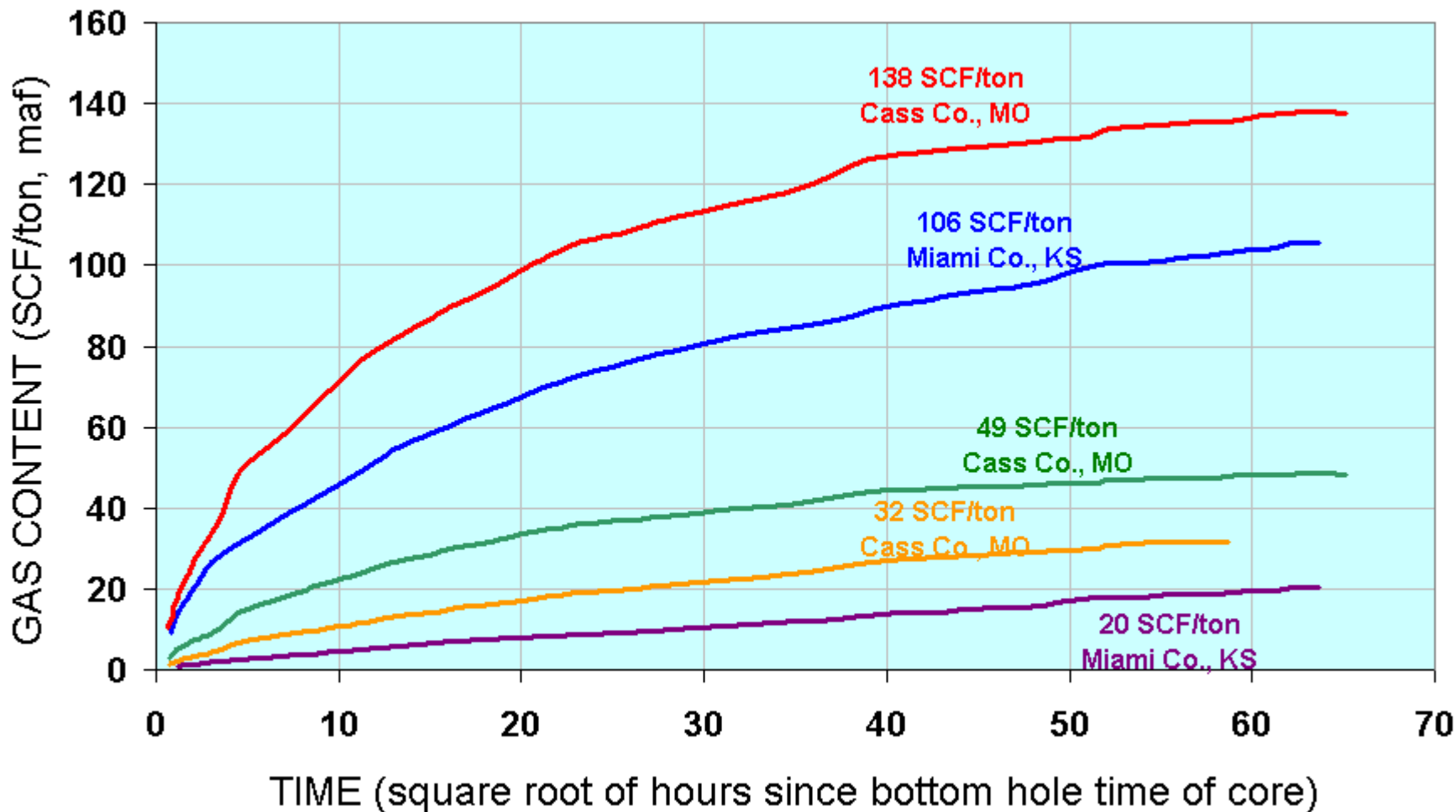
Desorption Characteristics



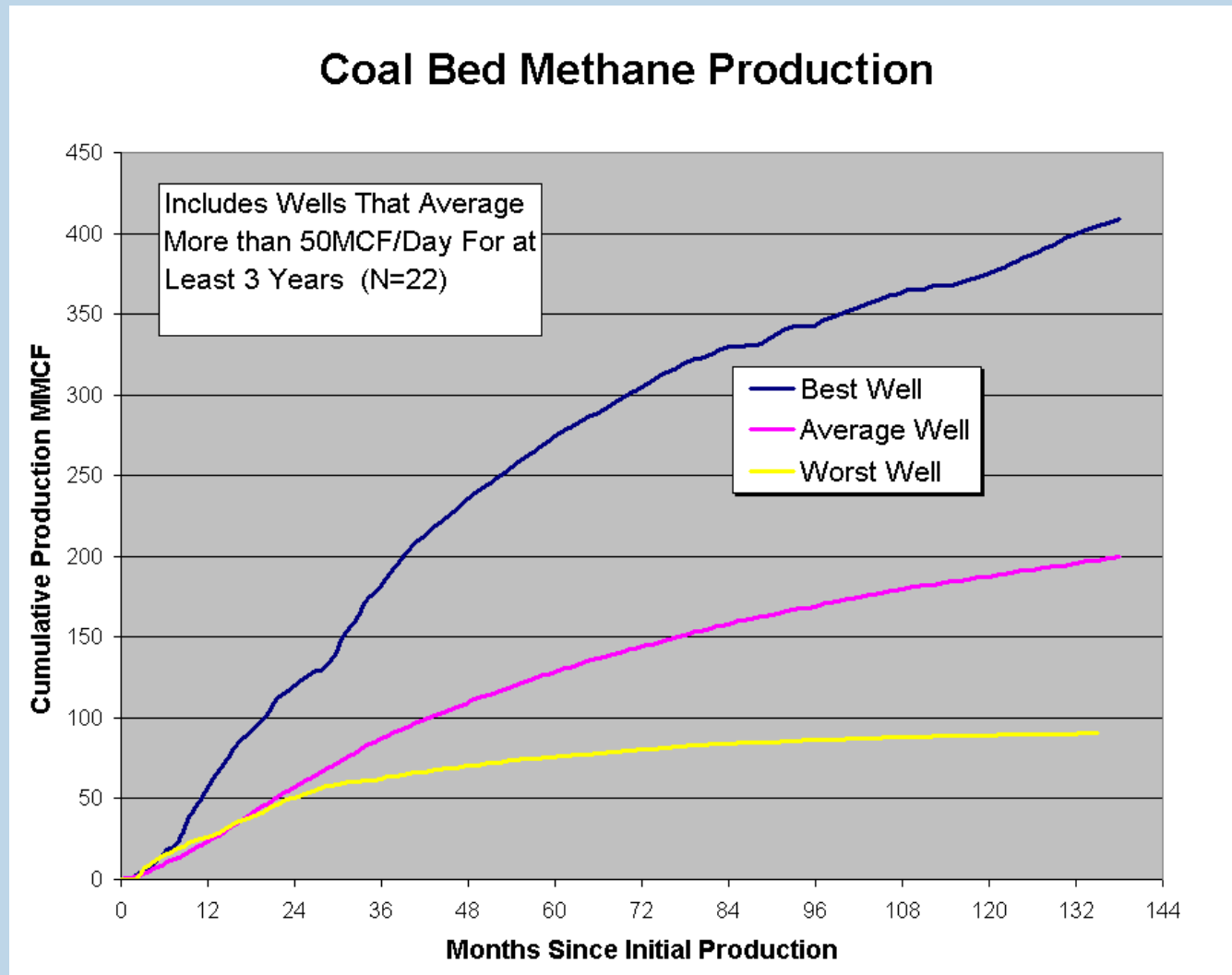
Miami County, KS



Desorption Characteristics

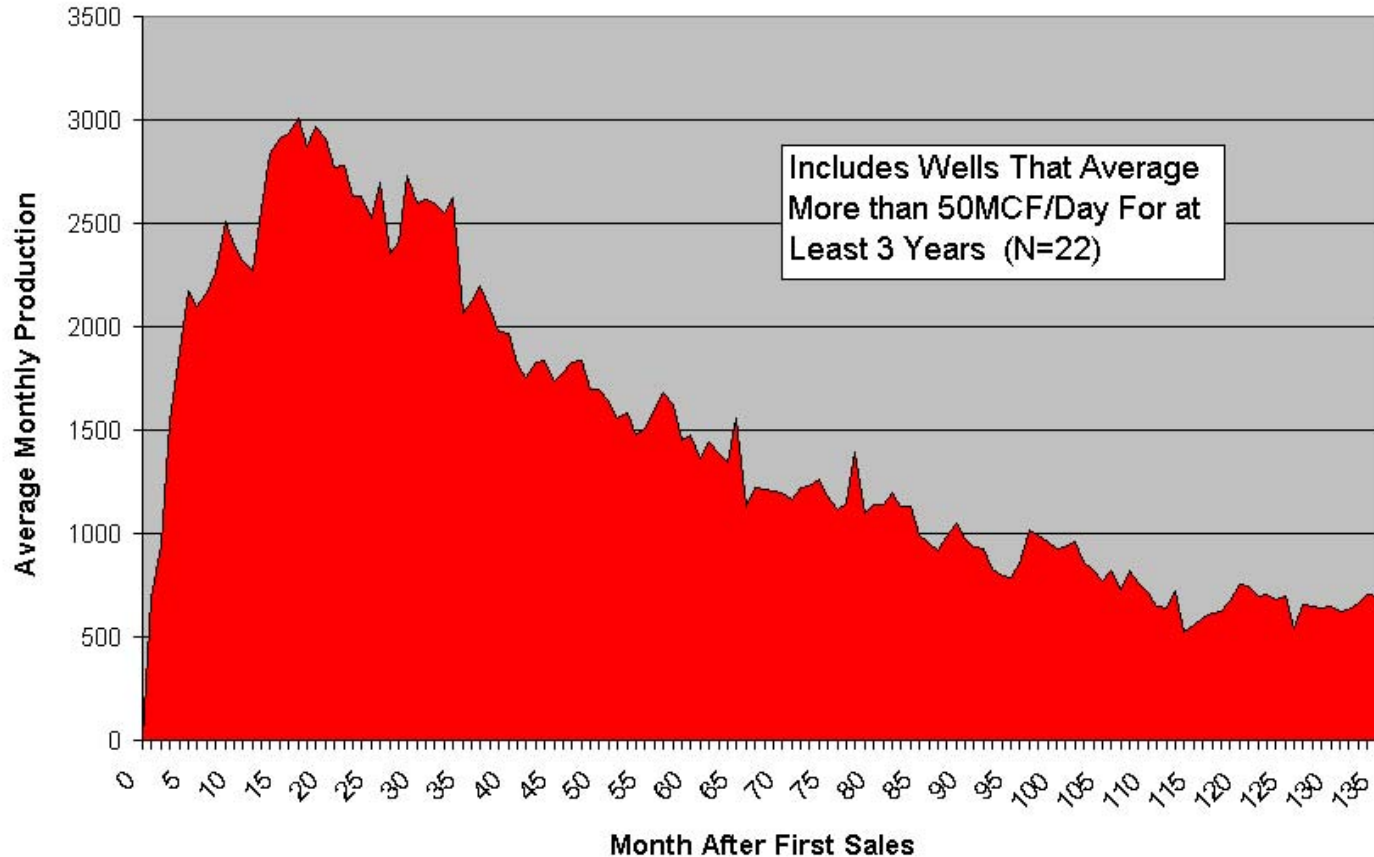


Coalbed Methane Production

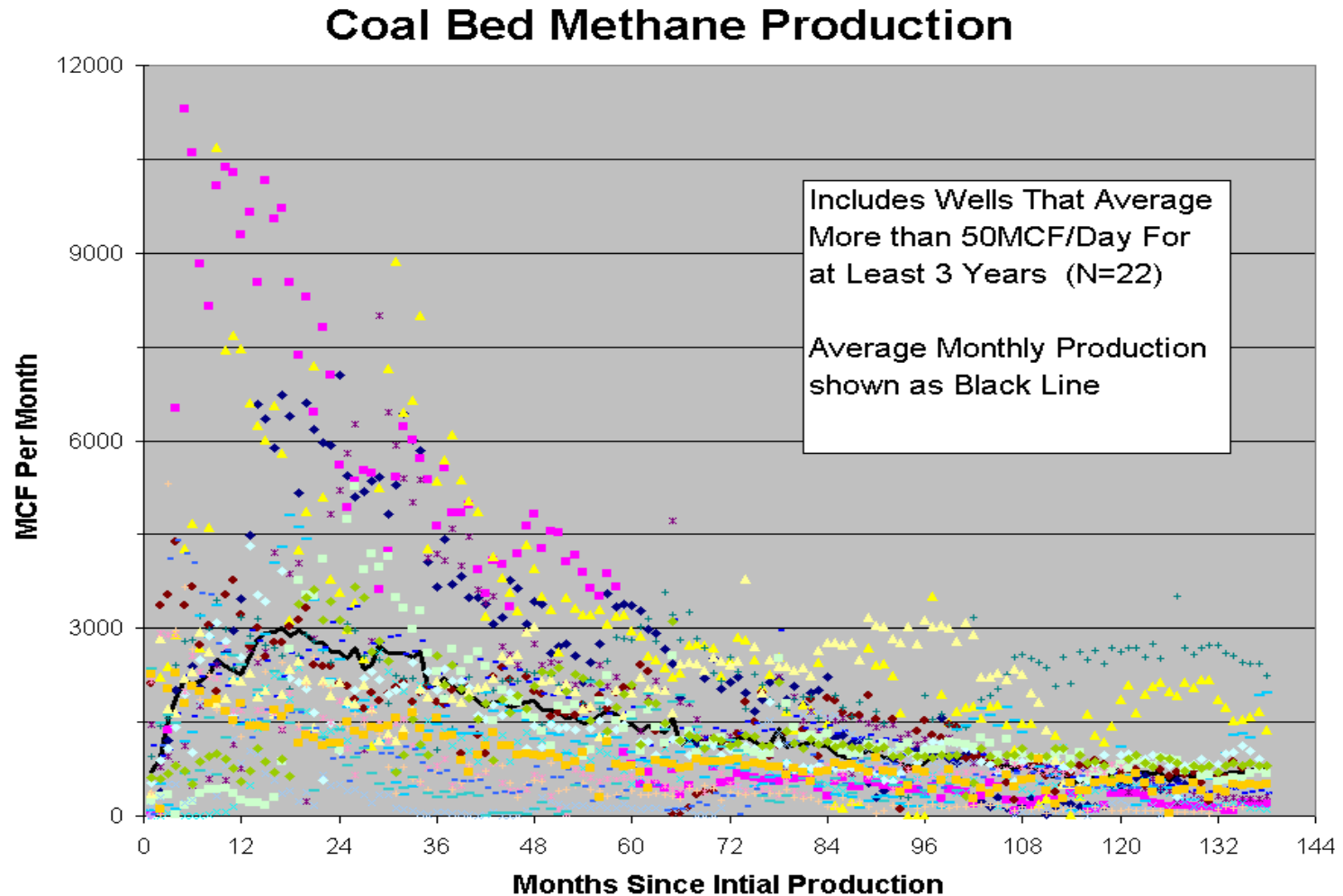


Coalbed Methane Production

Kansas Coal Bed Methane Production



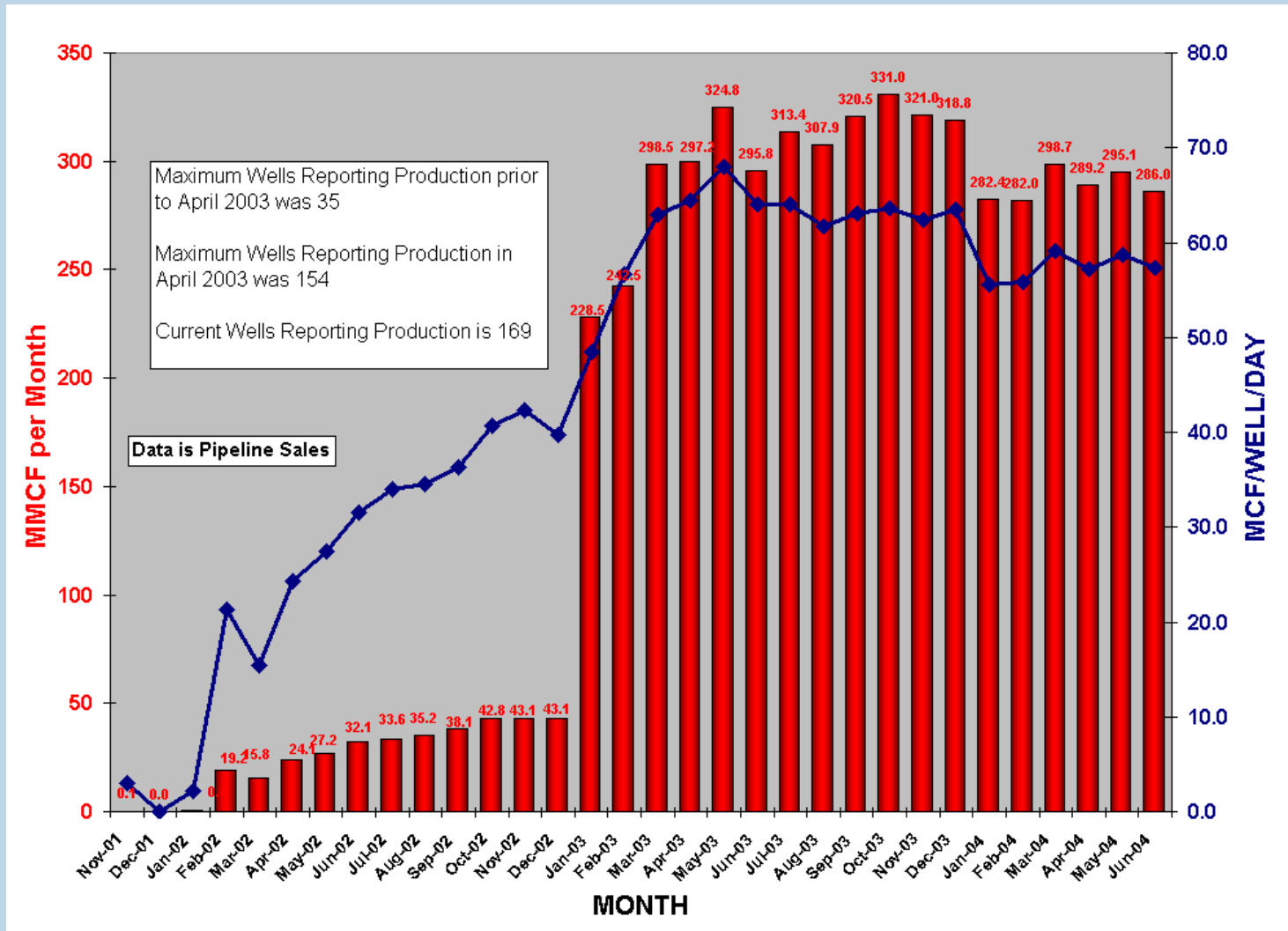
Coalbed Methane Production



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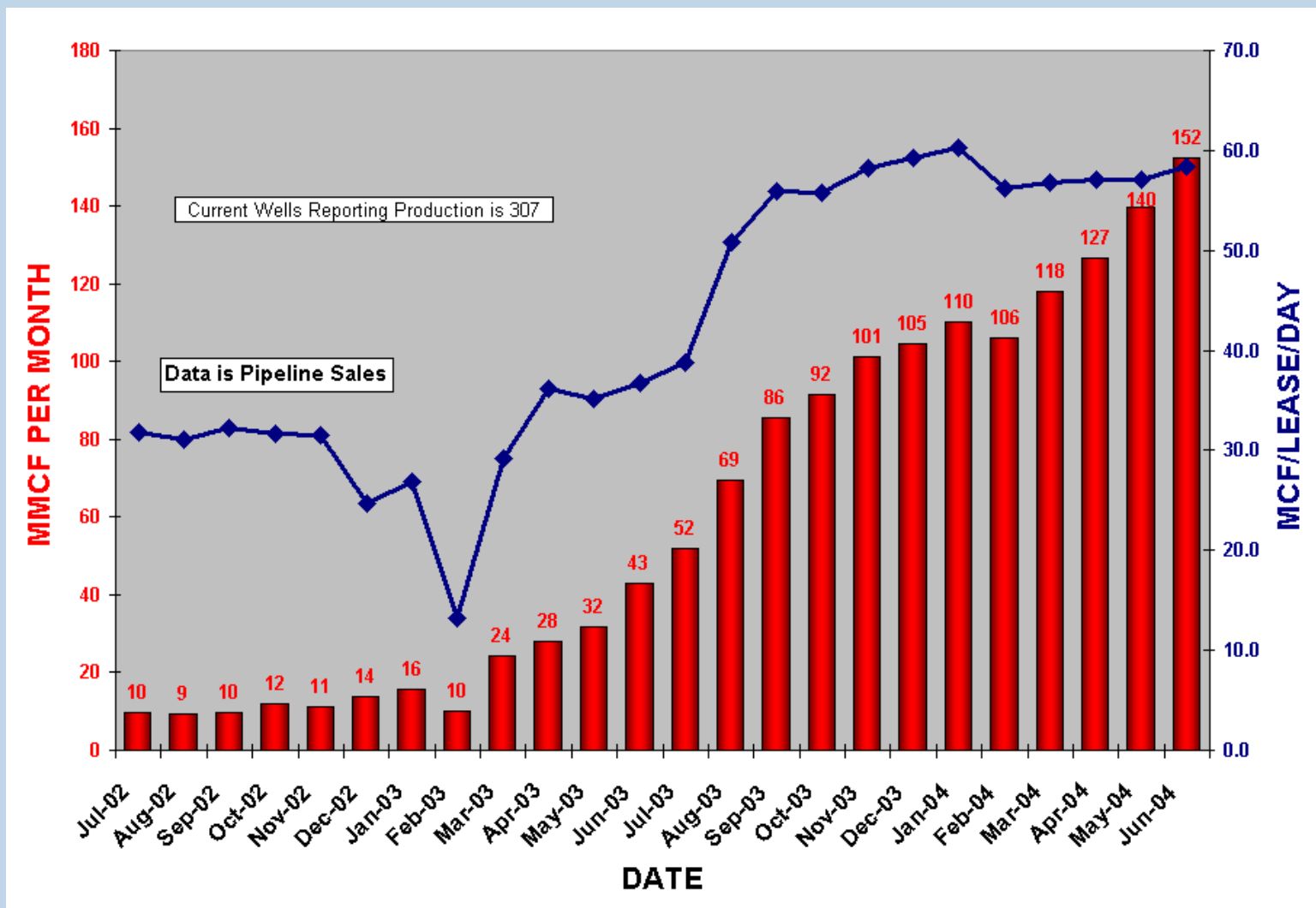
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Devon/Quest CBM Production



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Dart CBM Production



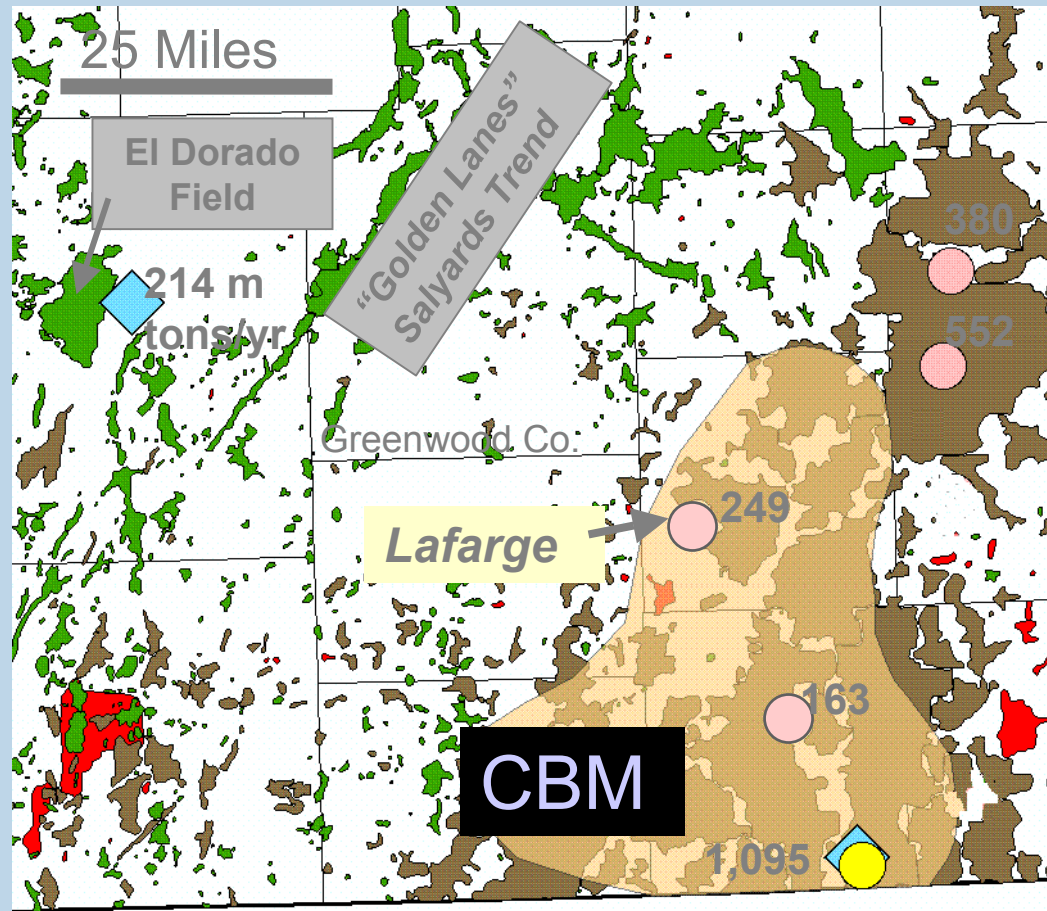
Southeast Kansas

Partially miscible and immiscible CO₂ EOR

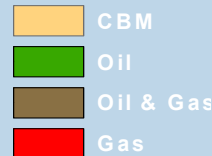
- El Dorado
- Salyards Trend,

Enhanced Coalbed Methane (N₂ and CO₂)

Cement plant gas stream may be best suited for ECBM



Oil and Gas Fields



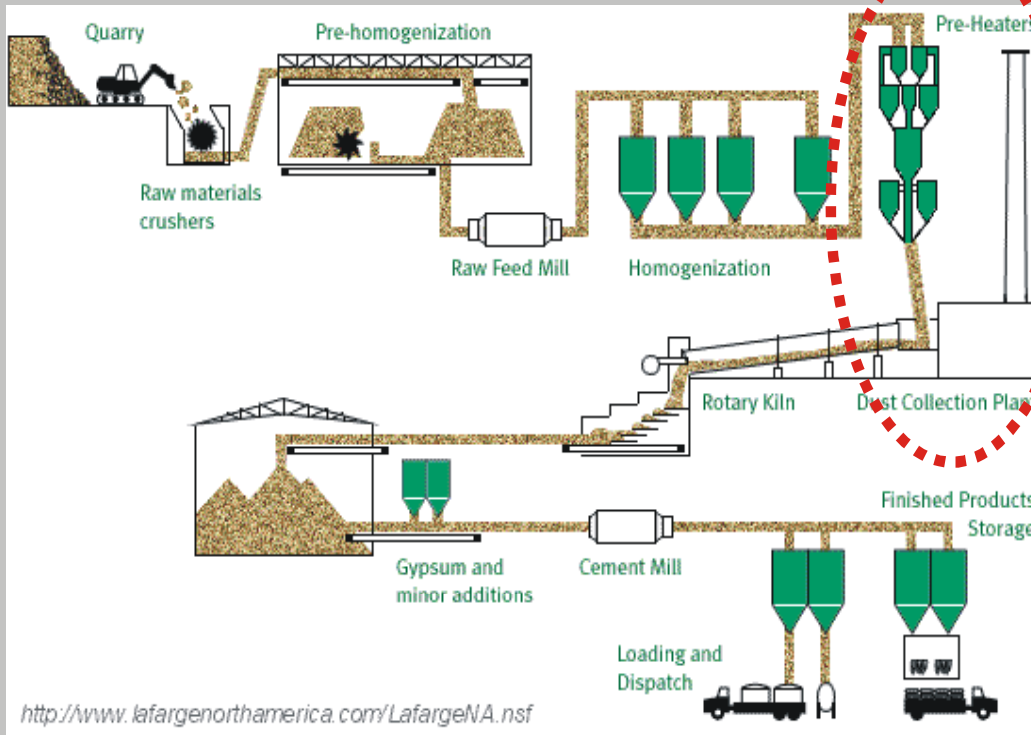
Industry



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Cement Production

Dry Kiln Portland Cement Process

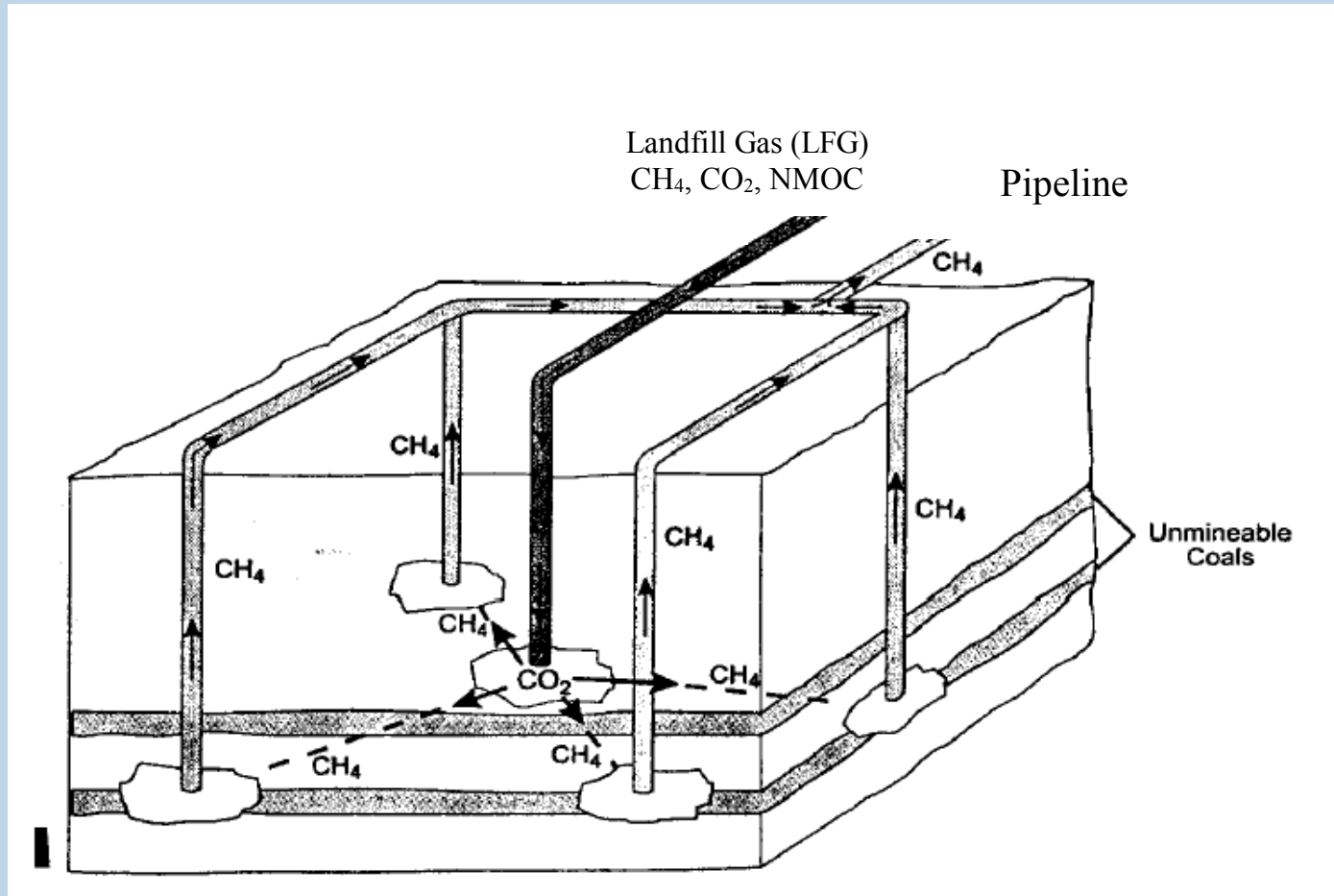


Calcination Process
 $\text{CaCO}_3 \rightarrow \text{CaO} + \text{CO}_2$
0.51 tons CO_2 / ton
cement

CO_2 and N_2 kiln gas
mix may be suitable
for ECBM with little
processing



Landfill Gas



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Additional Information

Kansas Geological Survey Web Site

– Reports

- <http://www.kgs.ku.edu/CBM/reports.html>

– Wells

- <http://www.kgs.ku.edu/Magellan/Qualified/index.html>
- Select “Coal-bed Methane Wells” for Well Type
- Link to Production for Wells

– Call/Email

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