MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY

OFFICE OF GEOLOGY

Fact Sheet 2 August 2009

LIGNITE RESOURCES OF MISSISSIPPI

Stan Thieling, RPG, David E. Thompson, RPG, and Michael B. E. Bograd, RPG

Mississippi has an estimated 5 billion tons of surface minable lignite, or low grade coal, also referred to as brown coal. These deposits are characterized as having a low heating value as compared to bituminous coal, low sulfur and metals content, and high moisture and ash content. Consequently, it is generally uneconomic to transport lignite over long distances, and typically requires adjacent power plants. However, lignite is a cleaner fuel than coal from other areas.

Mississippi's lignite requires surface mining because it is found in soft or unconsolidated sediments, not rock. Rock beds would be required to support underground mining. Mississippi has no economically recoverable high grade or bituminous coal. The map on the reverse side has general locations of lignite prospects. The inset map illustrates the outcrop belts of the Wilcox and Claiborne groups, and identifies regions of the state favorable for economic lignite deposits.

Currently, Mississippi has one active lignite mine. The Red Hills Mine, north of Ackerman in Choctaw County, produces over 3.5 million tons per year of lignite for an adjacent power generating station. The Mississippi Department of Environmental Quality issues all permits required for coal mining in the state, including the mining permit, air permits for associated power plants, wetlands, surface and groundwater storage and usage, dam safety, NPDES (wastewater and runoff), and solid waste management permits. Contemporaneous with completion of mining, the land is returned as closely as possible to the natural shape and condition. Landowner preferences are strongly considered during this process with 94% of the disturbed area in the existing mine being reclaimed as loblolly pine reforestation. No Acid Mine Drainage (AMD) has been encountered during mine reclamation. Blasting is not required due to the lack of rock. The majority of the land involved in mining is leased from the landowners and is released after mining and reclamation are completed, generally from 10-15 years. Reclamation is performed and managed by the mining company.

Lignite is the preferred coal to convert to synthetic natural gas due to the natural volatiles it contains. This conversion process has been utilized for many years in a commercial natural gas generation plant in North Dakota. Higher grade coals typically contain lesser amounts of these volatile constituents, having been 'cooked off' over time by heat and pressure. The proposed Southern Power Company Integrated Gasification Combined Cycle (IGCC) plant in Kemper County would utilize a gasification process on mined lignite, and would not directly burn the coal for fuel. This technology also makes it possible to capture much of the CO_2 generated during combustion, making it environmentally friendly. The proposed Kemper County power plant is being designed to capture up to 50% of the CO_2, which can be utilized for advanced oil recovery in depleted Mississippi oil reservoirs.

Other potential products generated from lignite include: gasoline and diesel, liquified petroleum gas (LPG), methanol, ethanol, phenol, ammonium sulfate, anhydrous ammonium, nitrogen, krypton/xenon, sulfuric acid, and road aggregate from slag. Possible future technology could produce synthetic natural gas from deeply buried lignite, via drill hole extraction. Such technology could expand the use of lignite to a much larger part of the state, to the west and south of the outcrops on the following map.

TABLE 1.

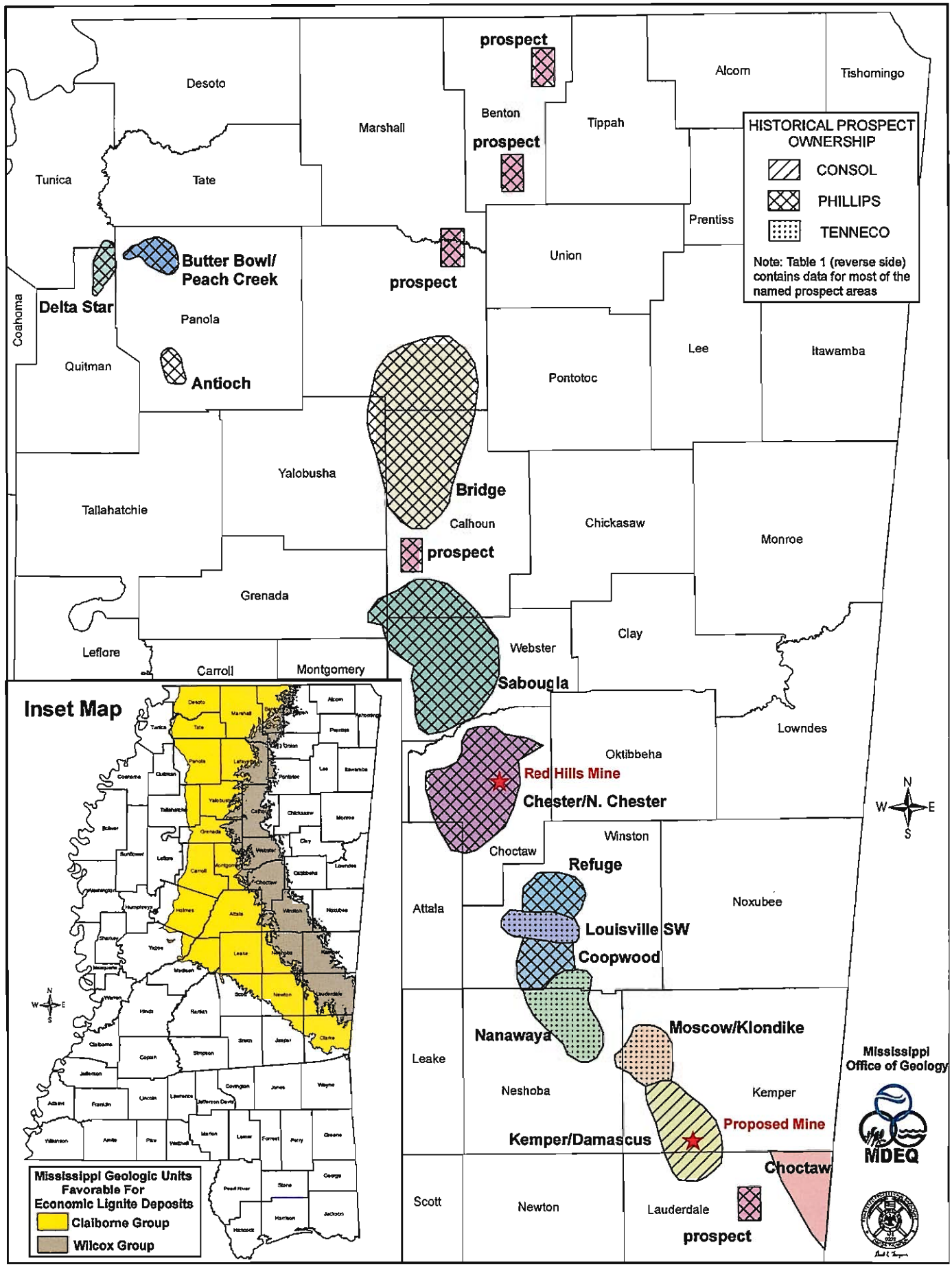
Prospect	BTU/lb. (In place)	Recoverable Tonnage Estimates (Millions)	Overburden Ratio
Delta Star	5575+	500	7.8 to 1
Chester-N. Chester	5100	1,450	9 to 1
Butter Bowl-Peach Creek-Antioch	5400-5600	340	15 to 1
Refuge-Coopwood	5100	667	——
Bridge	4700	336	——
Sabougla	5000	610	——
Louisville South	4700	220	9 to 1
Moscow/Klondike	4870	240	10 to 1
Nanawaya	4990	210	11 to 1
Kemper	4950	413	14 to 1

For more information about lignite in Mississippi, or the regulation of mines, contact:

Mississippi Department of Environmental Quality
Office of Geology
State Geologist: Michael B. E. Bograd (601/961-5528)
Director, Coal Mining Division: Stan Thieling (601/961-5519)

Mississippi Department of Environmental Quality,
Office of Geology,
P.O. Box 2279, Jackson, MS 39225
(601/961-5500)

Major Lignite Prospects of Mississippi



(Source: Unreferenced Industry Figure)