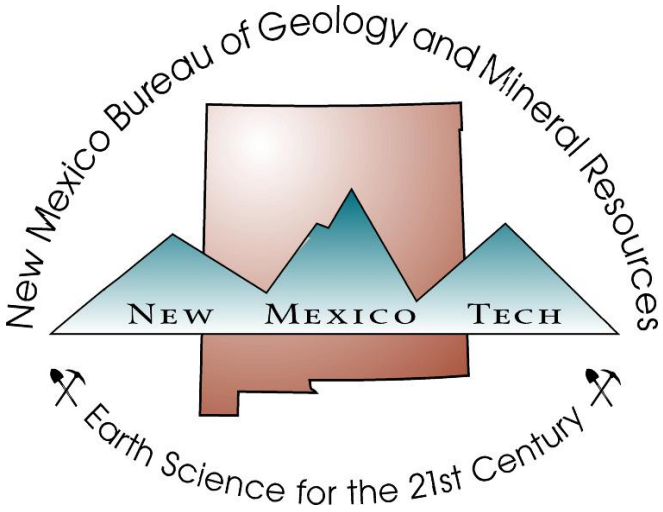

Digitizing of Coal Outcrop Maps: US Geological Survey Bulletin 767 – Geology and coal resources of the Gallup-Zuni Basin, New Mexico

by

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Open-file Report 554

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The GIS project included in this open file report reflect the coal outcrop data available on US Geological Survey Bulletin 767 Plates 1 and 16.This work was completed through funding from the US Geological Survey, (Cooperative Agreement G10AC00463), as part of the National Coal Resource Data System state cooperative project. Two maps from the referenced publication were scanned for this project. Cathryn Pokorny georeferenced the original map and digitized the coal crop features with assistance from Mark Mansell. Mark Mansell created the geodatabase used for digitizing. Gretchen Hoffman added the drill hole database and layer to the ArcMap project, and supervised the process of producing the project.

- The original printed maps (Plates 1 and 39) were scanned as tiff files, palletized and brought into an ArcMap 10.1 project.

- The scanned images were georeferenced to topographic maps in the appropriate scale: 1:62,500 and 1:63,360. These maps were georeferenced in Lambert Conformal Conic projection coordinate with GSC Clarke 1866 geographic coordinate system.

- A geodatabase was created for each map and populated with coal outcrop features using the FGDC (Federal Geographic Data Committee) Digital Cartographic Standard for Geologic Map Symbolization guidelines. The types of geologic lines follow the descriptions from the original map. The southern San Juan Basin has coal outcrops in the Gallup Sandstone, Crevasse Canyon and Menefee Formations of the Mesaverde Group. The nomenclature used in the ArcMap projects reflects changes to nomenclature from the original reports (see Beaumont, Dane, and Sears, 1956). The coals mapped as part of the Gallup Sandstone on these maps would now be considered within the Dilco Coal Member, Crevasse Canyon Formation (Nummedal and Molenaar, 1995). Coal thickness attribute is dependent on original map data.

- The base maps in each ArcMap project is a topographic map compiled in All Topo to the scale of the project map and clipped to the extent of each map.

- Non confidential drill sites from the NMBG coal database for the map area are included as a separate layer. These data points are projected in ArcMap from a Microsoft Access database. The formation and coal thickness tables in the database are related to each drill site seen on the map. By using the information pointer the user can drill down through these data points for this information.

- Metadata was entered via the FGDC metadata editor in ArcCatalog 10.1 and in the ArcMap layer descriptions.

System Requirements:

A computer capable of running some or all of the following software:

Adobe Acrobat (v.7 or later) to view plates (*.pdf)
--freeware: http://adobe.com

ArcGIS (v. 10.1 or later) to open GIS projects/data (*.mxd)
Or
ArcReader (v.10.1 or later) to view GIS [projects/data (*.pmf)
--freeware: http://www.esri.com/software/arcgis/arcreader

Access 2003 or later for drill hole database (*.mdb)

Files of interest:

DrillHole.mdb	-database containing drill hole data projected in ArcGIS projects, both Gallup and Zuni areas.
Gallup_Area folder:	
Bull_767_Gallup.pdf	-Pdf from ArcMap showing full extent
Bull767_Gallup.mxd or Bull767_Gallup.pmf	-ArcGIS ArcMap document or ArcReader document containing digital coal outcrop and projected drill hole data.
Zuni_Area folder:	
Bull_767_Zuni.pdf	-Pdf from ArcMap showing full extent
Bull767_Zuni.mxd or Bull767_Zuni.pmf	-ArcGIS ArcMap document or ArcReader document containing digital coal outcrop and projected drill hole data.

Please note: All mxds or pdfs are set to a fixed scale of the original map. This may be removed by going to View/Data Frame Properties/Data Frame. On the Data Frame tab the extent can be changed to Automatic.

You may wish to install a copy to a hard disk to speed up the loading of the ArcMap project.

References:

Beaumont, Edward C.; Dane, C. H.; Sears, J. D., 1956, Revised nomenclature of Mesaverde Group in San Juan Basin, New Mexico, American Association Petroleum Geologists, Bulletin, v. 40, no. 9, pp. 2149-2162.

Nummedal, Dag; Molenaar, C. M., 1995, Sequence stratigraphy of ramp-setting strand plain successions: The Gallup Sandstone, New Mexico, *in:* Sequence stratigraphy of foreland basin deposits; outcrop and subsurface examples from the Cretaceous of North America, Van

Wagoner, J. C.; Jones, C. R.; Taylor, D. R.; Nummedal, D.; Jennette, D. C.; Riley, G. W., *ed(s)*, American Association Petroleum Geologists, Memoir, v. 64, pp. 277-310.

Sears, Julian D., 1925, Geology and coal resources of the Gallup-Zuni Basin, New Mexico, U.S. Geological Survey, Bulletin, v. 00767, pp. 1-53. http://pubs.er.usgs.gov/publication/b767