News in Brief

Compiled by Lorraine A. Manz, Editor

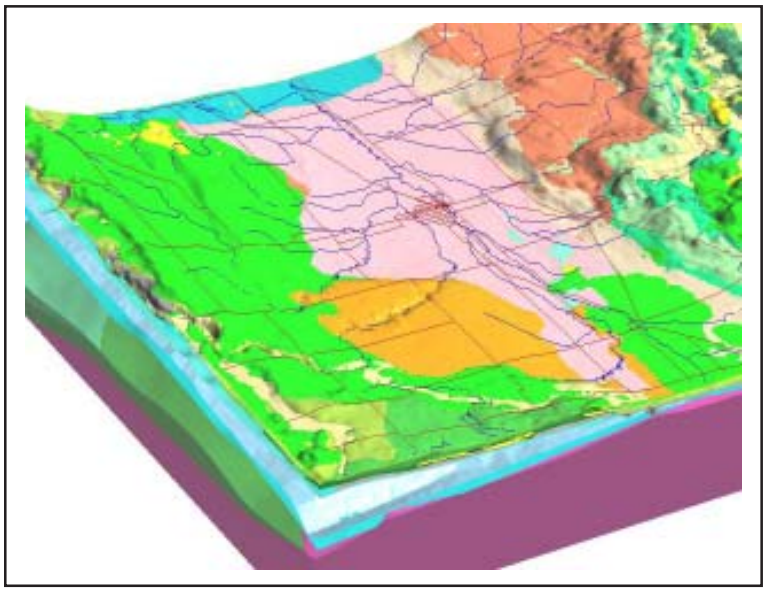
Geologists in the Public Eye

In the past this part of News in Brief has probably been no less tedious to write than it was to read. There are only so many ways to say that this or that person gave a talk here or there on this or that date. So, to spare us all from further suffering, a new, tabular format has been adopted; and if the process of its compilation is anything to go by, you will find things much improved.

Who	When	Where	Presentation Title
Randy Burke	25 September	AAPG Rocky Mountain Section Meeting	The upper Birdbear (Nisku) of western North Dakota: another emerging oil play
John Hoganson	8 July	Paleontology laboratory	Tour (teachers' group)
	15-25 July	Fossil dig	Fossil dig
	13-14 August	Heritage Outbound Canoe Trip	Geology along the Missouri River valley
	15 November	Paleontology laboratory	Tour (students from Will-Moore School)
	17 November	Minnesota State University, Moorhead	Prehistoric life of North Dakota (public presentation)
Lynn Helms	6 July	North Dakota Petroleum Council and North Dakota Legislators	Seismic activity in western North Dakota
	8-11 August	IOGCC staffers to States	How the oil industry produces sustainable, environmentally friendly energy
	8 September	ND Petroleum Council annual meeting	The Bakken Play – technical problems and possible solutions
	17-20 September	IOGCC annual meeting	Council of States – regulatory officials with the EPA
	29 September	North Dakota Oil and Gas Producing Counties meeting	Oil and gas activity and opportunities in North Dakota
	24 October	Meeting on oil and gas permit issues with the federal government	
	2 December	Williston Annual Economic Development luncheon	Challenges and opportunities in the oil and gas industry in the Williston Basin
	8 December	Annual meeting of the North Dakota Water Users Association	World oil outlook and energy challenges and opportunities in North Dakota
Julie LeFever	29 August	Wilson M. Laird Core and sample Library	Tour (UND geology 101 class)
	8 September	North Dakota Petroleum Council Annual Meeting	The Bakken Play – technical problems and possible solutions
	24 September	AAPG Rocky Mountain Section Meeting	Overview of Bakken stratigraphy and mini core workshop
	25 September	AAPG Rocky Mountain Section Meeting	Horizontal drilling potential of the Middle Member Bakken Formation, ND
Lorraine Manz	8-9 September	Williams County 7th grade Eco Ed camp	North Dakota rocks
	27 September	Northridge Elementary School, Bismarck	Glaciers in North Dakota
	19 December	Northridge Elementary School, Bismarck	How to identify and describe rocks
Brett Woodward	15-25 July	Fossil dig	Fossil dig

Three-Dimensional Geologic Mapping in the Fargo-Moorhead area of the southern Red River Valley

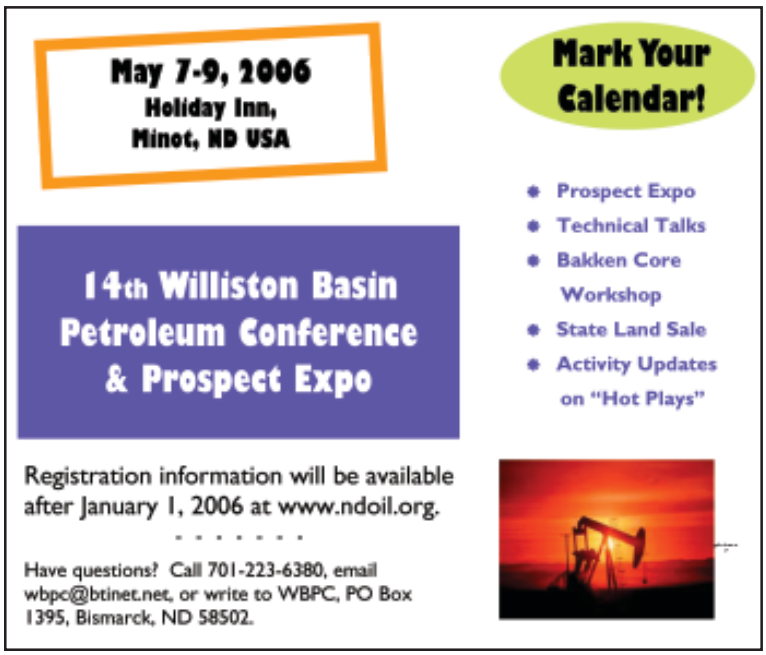
By Fred Anderson



A portion of the Fargo-Moorhead 3D geological model, shown vertically exaggerated and viewed from the southwest (Image courtesy of the Minnesota Geological Survey).

The Minnesota Geological Survey (MGS) and Minnesota Department of Natural Resources in collaboration with geologists from the North Dakota Geological Survey recently completed a 3D geologic mapping investigation in the Fargo-Moorhead region of the geologic materials that contain potential ground-water supplies. This collaborative effort, led by the MGS, involved NDGS scientists who prepared and compiled three dimensional and surficial geologic mapping datasets of the ND portions of the study area. These datasets were used by the Minnesota workers to complete a full characterization of the area geology from the land surface down to the top of Precambrian igneous and metamorphic rock. A new surficial geologic map of the Fargo-Moorhead area was recently completed at a scale of 1:200,000 as a part of this work. Successively deeper geologic units were mapped as 3D surfaces using GIS based cross-sectional mapping techniques. Each layer is currently available as a digital file.

14th Williston Basin Petroleum Conference & Prospect Expo



The 14th Williston Basin Petroleum Conference & Prospect Expo will be held May 7-9, 2006 at the Holiday Inn in Minot. The North Dakota Petroleum Council will be co-sponsoring the upcoming conference along with the Department of Mineral Resources and the Saskatchewan Department of Industry and Resources. This year's conference will feature a Prospect Expo.

Get Smart with your mineral interests!

By Dave Hvinden

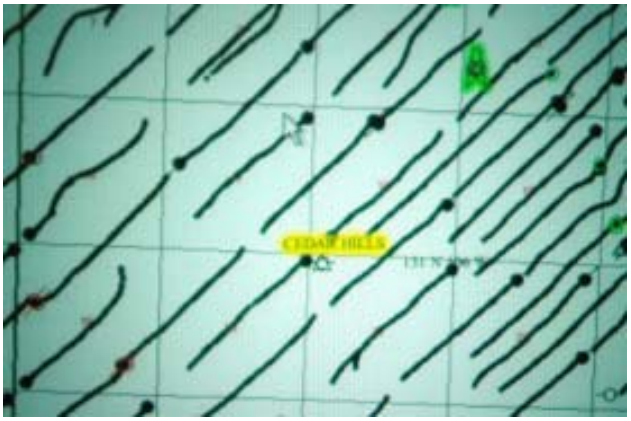
The Oil and Gas Division of the Department of Mineral Resources recently purchased a 66-inch electronic SmartBoard ™ to aid producers and mineral owners in finding information about their mineral properties. The Smartboard ™ replaces the old, reliable but onerous to update, flip maps that were housed in the Oil and Gas Division lobby. The SmartBoard ™ works similar to the web based ARCIMS map server found on the agency's subscription site, but instead of using a computer mouse all you have to do is touch the screen.

The SmartBoard ™ allows you to zoom in to an area by just touching on the "Zoom In" button on the left side of the screen and then by touching the area of interest on the map. With each touch you go from a statewide view, to a regional view, to a countywide or township-sized view, to a local view of between 6 and 9 sections, continuing on down to the specific land description or well of interest. As with most GIS-based mapping programs, the SmartBoard ™ has information layers that can be added or hidden throughout the process. These layers include rig location, oil fields, well spots, roads, rivers, state and federal lands, and topography.

Some other nice features are the "find well", "find field/unit", and "find section" buttons. Each of these features speeds up the process if you have specific information that applies to a well, field or land description. Just touch the dropdown menus and the SmartBoard ™ takes you there.

Next time you are in Bismarck and want to find out some information on your mineral properties, stop by and **Get Smart** with us!

Bruce Juenker, Oil and Gas Division, points to oil fields in southwestern North Dakota on the new SmartBoard ™. By touching the board repeatedly while in the zoom mode, you can zoom into an area of less than 20 acres.



The SmartBoard ™ zoomed into an area of approximately 12 square miles within the Cedar Hills oil field in Bowman County. Note the southwest-northeast orientation of the horizontal legs within the Red River "B" at approximate depths of 9,800 feet.

Geologic Mapping in the Minot area of the Souris River Valley

By Fred Anderson

NDGS geologists Lorraine A. Manz and Fred J. Anderson are currently conducting geologic mapping work in the Minot area of the Souris River Valley. Detailed geologic quadrangle maps of the Minot, Surrey, Burlington, and Burlington SE 1:24,000 scale quadrangles are underway and will be completed and published as digital GIS files and as traditional paper maps this coming summer. This mapping is a component of ongoing geologic mapping work under the USGS STATEMAP program for fiscal year 2005. Major geologic units, consisting of Quaternary glacial and alluvial sediments in addition to Tertiary-age bedrock units of the Fort Union Group present in the Minot area and within the valleys of the Souris and Des Lacs Rivers in and around the urban centers of Minot and Burlington, are being mapped at a scale of 1:24,000. Derivative products will follow completion of the geologic maps. To obtain more information about the availability of these products, contact Fred Anderson or Elroy Kadrmas at (701) 328-8000. For more information on geologic mapping being conducted as a part of the STATEMAP program, visit the NDGS website link at: http://www.state.nd.us/ndgs/surface/surface.htm

Skeleton of the Oligocene (30 million-year-old) horse, *Mesohippus,* is a featured exhibit at the new North Dakota Cowboy Hall of Fame in Medora

By John W. Hoganson

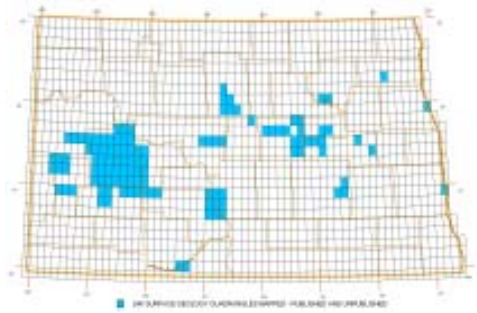
Developers of the recently opened North Dakota Cowboy Hall of Fame contacted me about having a fossil exhibit in the new Hall in Medora. Of course, what would be more appropriate than an exhibit interpreting the evolution of the horse? Most people are under the false impression that horses did not inhabit North America until they were introduced by the Spaniards during the early days of conquest. But horses are indigenous to North America. Fossil remains of the earliest horse, referred to as *Hyracotherium* (or sometimes *Eohippus*), have been recovered from early Eocene (about 50 million years old) rocks in North America. In fact, they were some of the most abundant mammals that lived during that time. The fossil record of horses in North Dakota extends back to the Oligocene, about 30 million years ago, when the diminutive horse, *Mesohippus* roamed western North Dakota. *Mesohippus* was tiny, about the size of a sheep. The adults were only about 20 inches tall at the shoulder. They also had three toes on each foot compared to the modern horse *Equus* that has one. *Mesohippus* was also probably more of a browsing herbivore compared to the modern grazing horse. We have found many *Mesohippus* fossils in North Dakota but no complete skeletons. Consequently, the *Mesohippus* skeleton on exhibit at the Cowboy Hall of Fame is an exact cast replica.

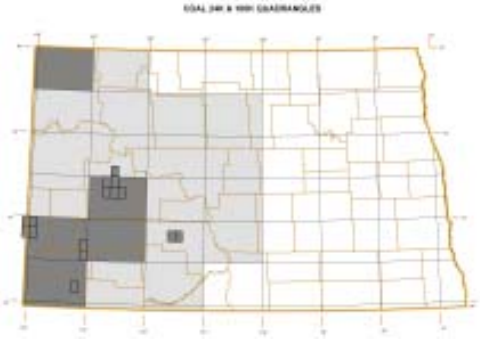
We have also found the remains of 50,000-year-old horses in North Dakota indicating that horses lived here during the last Ice Age. By that time, horses had attained the size and aspect of modern-day horses and are placed in the modern horse genus, *Equus*. Horses did become extinct in North America some time near the end of the Ice Age, several thousand years ago. Why they became extinct in North America and not in the Old World is a matter of debate. Spanish conquistadors did have horses with them when they arrived in the southwestern part of what is now the United States in the 1500s, but most scholars believe that Native Peoples in the southwest probably did not have extensive access to horses until the 1600s. Apparently the Mandan in North Dakota acquired horses by about 1750. The importance of the horse to Plains Indians cannot be overstated. In this respect, some scholars have referred to the period from the time Native Peoples obtained horses until the near extermination of the buffalo about 1880 as the "Horse Culture Period." The importance of the horse on the Great Plains extends to the days of pioneers and settlers and is equally prominent today in Cowboy culture.

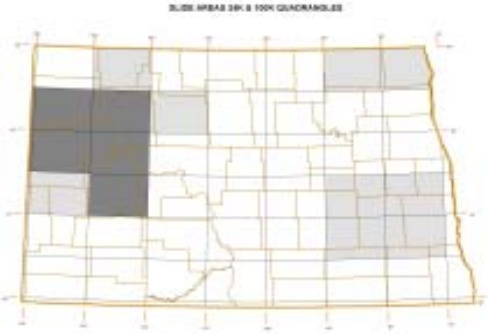
Skeleton (cast) of the 30-million-year-old horse, *Mesohippus,* on display at the new North Dakota Cowboy Hall of Fame in Medora.

Architectural sketch of the new North Dakota Cowboy Hall of Fame in Medora.

100K and 24K GEOLOGIC MAPS OF NORTH DAKOTA







1:24,000 Geological Quadrangle Maps

The NDGS has completed geologic mapping of 114, 24k (1:24,000 scale) quadrangles for selected areas of North Dakota. Detailed geologic maps are available for several of the state's major cities (Bismarck, Fargo, Grand Forks, Jamestown, and Dickinson). Geologic mapping is currently ongoing in the Minot and Valley City areas.

North Dakota Coal Resources Maps

The NDGS has published five 100k (1:100,000 scale) coal resource map sheets in western North Dakota. These include the Killdeer, Bowman, Belfield, Dickinson, and Crosby sheets. Two additional sheets, Mott and Kenmare, are currently in preparation with fourteen additional sheets to be published. Each 100k sheet contains 32, 24k quadrangles.

Landslide Areas in North Dakota

The NDGS has been conducting inventory mapping of landslide features throughout the state since 2000. Five 100k (1:100,000 scale) landslide sheets are available for selected areas in northwestern North Dakota (Killdeer, Stanley, Parshall, Watford City, and Williston). Nine additional sheets (Grassy Butte, Kenmare, Minot, Jamestown, Casselton, Cooperstown, Hillsboro, Cavalier, and Landgon) are in progress.

Map Availability

All of these maps area available in paper as print on demand maps or as downloadable Adobe PDF documents from the NDGS website.