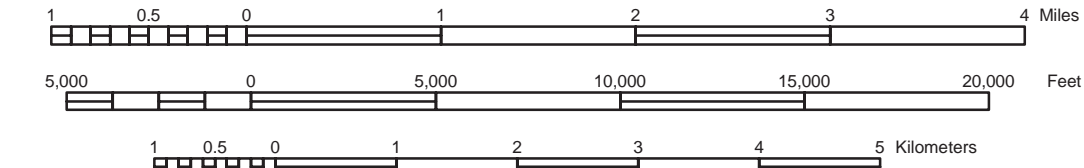


Thickness of the Surficial Sand- and Gravel-Bearing Units of Charles County, Maryland

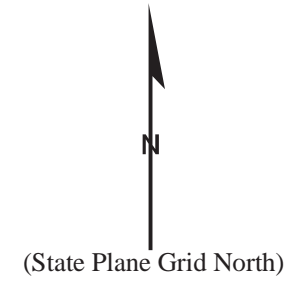
by John M. Wilson, 2003

Digital compilation by Heather Quinn of the Maryland Geological Survey and Catherine Garcia of Towson University Center for GIS

Scale 1:62,500



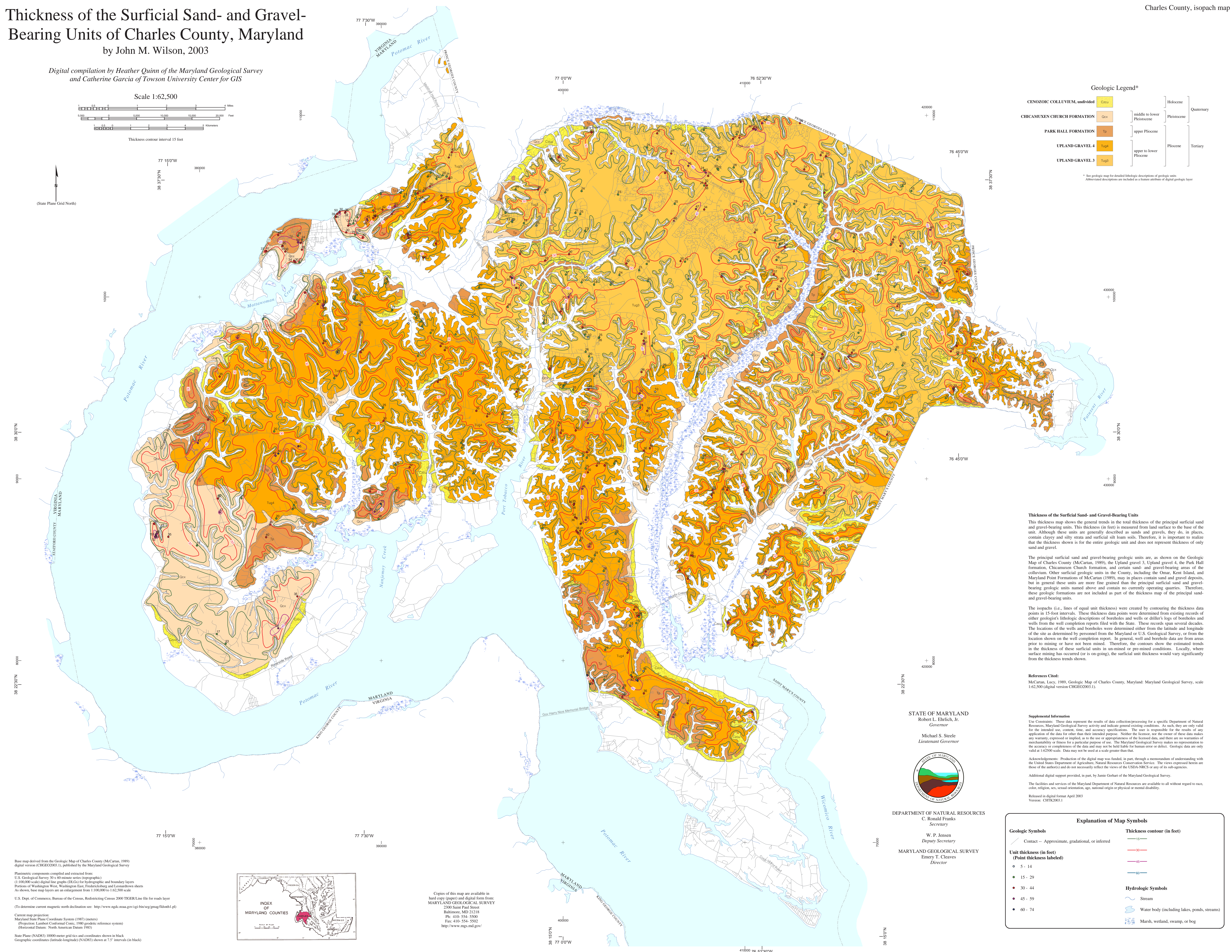
Thickness contour interval 15 feet



Geologic Legend*

Geologic Unit	Color	Age	Period
CENOZOIC COLLUVIUM, undivided	Light Yellow	Quaternary	Holocene
CHICAMUXEN CHURCH FORMATION	Orange	middle to lower Pleistocene	
PARK HALL FORMATION	Dark Orange	upper Pliocene	Pliocene
UPLAND GRAVEL 4	Light Orange	upper to lower Pliocene	
UPLAND GRAVEL 3	Dark Orange	upper to lower Pliocene	

* See geologic map for detailed lithologic description of geologic units. Abbreviated descriptions are included as a feature attribute of digital geologic layer.



Thickness of the Surficial Sand- and Gravel-Bearing Units
 This thickness map shows the general trends in the total thickness of the principal surficial sand and gravel-bearing units. This thickness (in feet) is measured from land surface to the base of the unit. Although these units are generally described as sands and gravels, they do, in places, contain clayey and silty strata and surficial silt loam soils. Therefore, it is important to realize that the thickness shown is for the entire geologic unit and does not represent thickness of only sand and gravel.
 The principal surficial sand and gravel-bearing geologic units are, as shown on the Geologic Map of Charles County (McCartan, 1989), the Upland gravel 3, Upland gravel 4, the Park Hall formation, Chicamuxen Church formation, and certain sand- and gravel-bearing areas of the colluvium. Other surficial geologic units in the County, including the Omar, Kent Island, and Maryland Point Formations of McCartan (1989), may in places contain sand and gravel deposits, but in general these units are more fine grained than the principal surficial sand and gravel-bearing geologic units named above and contain no currently operating quarries. Therefore, these geologic formations are not included as part of the thickness map of the principal sand and gravel-bearing units.

The isopachs (i.e., lines of equal unit thickness) were created by contouring the thickness data points in 15-foot intervals. These thickness data points were determined from existing records of either geologist's lithologic descriptions of boroholes and wells or driller's logs of boroholes and wells from the well completion reports filed with the State. These records span several decades. The locations of the wells and boroholes were determined either from the latitude and longitude of the site as determined by personnel from the Maryland or U.S. Geological Survey, or from the location shown on the well completion report. In general, well and borohole data are from areas prior to mining or have not been mined. Therefore, the contours show the estimated trends in the thickness of these surficial units in un-mined or pre-mined conditions. Locally, where surface mining has occurred (or is on-going), the surficial unit thickness would vary significantly from the thickness trends shown.

References Cited:
 McCartan, Lucy, 1989, Geologic Map of Charles County, Maryland: Maryland Geological Survey, scale 1:62,500 (digital version CHGEO2003.1).

Supplemental Information
 Use Constraints: These data represent the results of data collection/processing for a specific Department of Natural Resources, Maryland Geological Survey activity and indicate general existing conditions. As such, they are only valid for the intended use, content, time, and accuracy specifications. The user is responsible for the results of any application of the data for other than their intended purpose. Neither the licensor, nor the owner of these data makes any warranty, expressed or implied, as to the use or appropriateness of the licensed data, and there are no warranties of merchantability or fitness for a particular purpose of use. The Maryland Geological Survey makes no representation to the accuracy or completeness of the data and may not be held liable for human error or defect. Geologic data are only valid at 1:62,500 scale. Data may not be used at a scale greater than that.

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Additional digital support provided, in part, by Jamie Gehart of the Maryland Geological Survey.
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 Released in digital format April 2003
 Version: CHTK2003.1

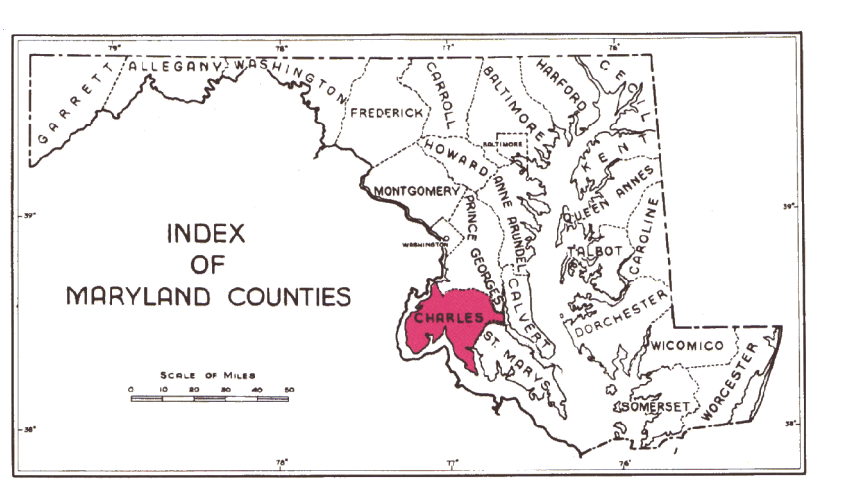
STATE OF MARYLAND
 Robert L. Ehrlich, Jr.
 Governor
 Michael S. Steele
 Lieutenant Governor



DEPARTMENT OF NATURAL RESOURCES
 C. Ronald Franks
 Secretary
 W. P. Jensen
 Deputy Secretary
 MARYLAND GEOLOGICAL SURVEY
 Emery T. Cleaves
 Director

Explanation of Map Symbols	
Geologic Symbols	Thickness contour (in feet)
Contact -- Approximate, gradational, or inferred	15
Unit thickness (in feet) (Point thickness labeled)	30
● 5 - 14	45
● 15 - 29	60
● 30 - 44	
● 45 - 59	
● 60 - 74	
Hydrologic Symbols	
Stream	
Water body (including lakes, ponds, streams)	
Marsh, wetland, swamp, or bog	

Base map derived from the Geologic Map of Charles County (McCartan, 1989) digital version CHGEO2003.1, published by the Maryland Geological Survey.
 Planimetric components compiled and extracted from:
 U.S. Geological Survey 30 x 60-minute series (topographic)
 (1:100,000 scale digital line graphs (DLGs) for hydrographic and boundary layers
 Portions of Washington West, Washington East, Frederickburg and Leonardtown sheets
 As shown, base map layers are an enlargement from 1:100,000 to 1:62,500 scale
 U.S. Dept. of Commerce, Bureau of the Census, Redistricting Census 2000 TIGERLine file for roads layer
 (To determine current magnetic north declination see: <http://www.ngs.noaa.gov/cgi-bin/seg/gmag/ldmsh1.pl>)
 Current map projection:
 Maryland State Plane Coordinate System (1987) (meters)
 (Projection: Lambert Conformal Conic, 1980 geospatial reference system)
 (Horizontal Datum: North American Datum 1983)
 State Plane (NAD83) 10000-meter grid ticks and coordinates shown in black
 Geographic coordinates (latitude-longitude) (NAD83) shown at 7.5' intervals (in black)



Copies of this map are available in hard copy (paper) and digital form from:
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 Fax: 410-554-5502
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