USGS science for a changing world
DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

Prepared in cooperation with the
CHESTER COUNTY WATER RESOURCES AUTHORITY

SCIENTIFIC INVESTIGATIONS MAP 2876

INTRODUCTION

Since 1984, the U.S. Geological Survey (USGS) has been mapping the altitude and configuration of the potentiometric surface in Chester County as part of an ongoing cooperative program to measure and describe the water resources of the county. Areas where the potentiometric surface has been mapped are shown on figure 1. These maps can be used to determine the general direction of ground-water flow and contaminant movement and are frequently referenced by municipalities and developers to evaluate ground-water conditions for water supply and resource-protection requirements (Wood, 1998).

The map shows the potentiometric surface for an area along the western boundary of Chester County that includes parts of Lower Oxford, East Nottingham, and West Nottingham Townships, and part of the Borough of Oxford. The study area is mostly underlain by metamorphic rocks of the Peters Creek Schist and Wissahickon Formation (Sloto, 1994). Ground water is obtained from these bedrock formations by wells that intercept fractures.

The altitude and configuration of the potentiometric surface was contoured from water levels measured in available wells and from the altitude of perennial streams. Topography was used as a guide for contouring so that the altitude of the potentiometric surface was inferred everywhere to be lower than land surface. The potentiometric surface shown on this map is an approximation. The altitude of the actual potentiometric surface may vary, especially in areas where wells are completed in a semiconfined zone or have long open intervals that reflect the composite hydraulic head of multiple water-yielding fractures. A composite head may differ from the potentiometric-surface altitude, particularly beneath hilltops and valleys where vertical hydraulic gradients are significant.

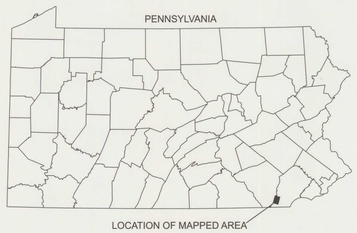
REFERENCES CITED

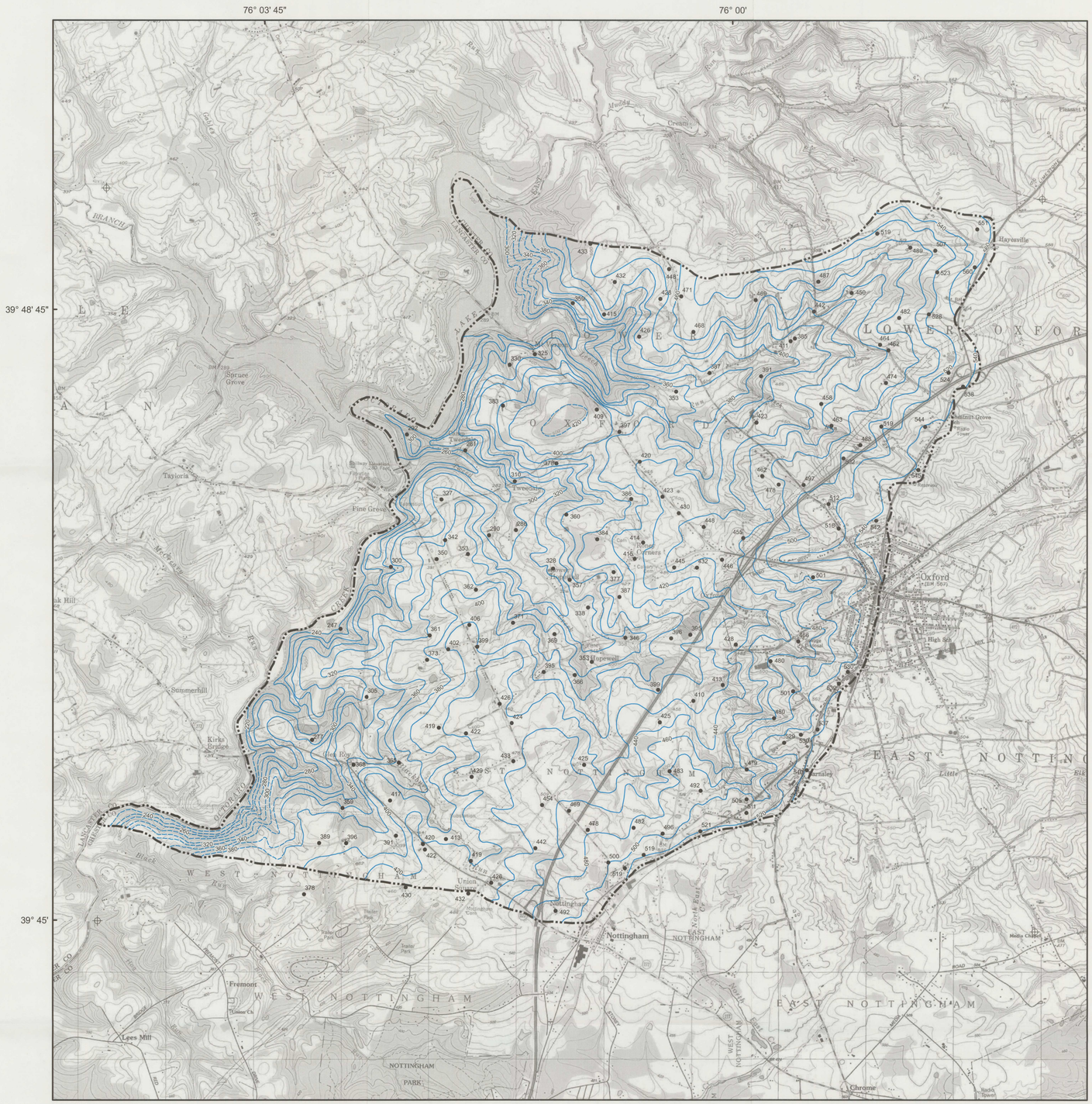
Sloto, R.A., 1994, Geology, hydrology, and ground-water quality of Chester County, Pennsylvania: Chester County Water Resources Authority Water-Resource Report 2, 127 p.

Wood, C.R., 1998, U.S. Geological Survey Cooperative Water-Resources Programs in Chester County, Pennsylvania: U.S. Geological Survey Fact Sheet 067-98, 6 p.

EXPLANATION

- STUDY AREA BOUNDARY
- 520 — POTENTIOMETRIC SURFACE CONTOUR—Shows altitude of the potentiometric surface as defined by measured water levels, altitudes of streams, springs, and topography. Dashed where approximately located. Intermittent streams are discharge areas during periods of high ground-water levels. Contour interval is 20 feet. Altitude in feet above National Geodetic Vertical Datum of 1929.
- 428 WATER-LEVEL MEASUREMENT SITE—Symbol gives location of well. Number is altitude of water level in drilled or dug well in feet above National Geodetic Vertical Datum of 1929. Wells outside the study area are shown if they were used to contour the potentiometric surface.





Base from U.S. Geological Survey
Oxford 1:24,000, 1992 Contour interval 10 feet and
Kirkwood 1:24,000, 1990 Contour interval 20 feet
Universal Transverse Mercator, Zone 18, NAD 27

SCALE 1:24,000
1 1/2 0 1 MILE
1,000 0 1,000 2,000 3,000 4,000 5,000 6,000 7,000 FEET
1 1/2 0 1 KILOMETER

ALTITUDE AND CONFIGURATION OF THE POTENTIOMETRIC SURFACE IN PART OF LOWER OXFORD, EAST NOTTINGHAM, AND WEST NOTTINGHAM TOWNSHIPS, AND IN PART OF THE BOROUGH OF OXFORD, CHESTER COUNTY, PENNSYLVANIA, APRIL THROUGH JUNE 2003

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2005

Aichele, S.S., and Wood, C.R., 1996, Altitude and configuration of the potentiometric surface in the crystalline and metasedimentary rocks in East Brandywine, Upper Uwchlan, and Uwchlan Townships and parts of Caln, East Caln, and West Whiteland Townships, Chester County, Pennsylvania, April 1993 through June 1994: U.S. Geological Survey Open-File Report 96-338, 1 plate, scale 1:24,000.

Eden, K.S., 1998, Altitude and configuration of the potentiometric surface in Honey Brook and West Nantmeal Townships, and Honey Brook and Elverson Boroughs, Chester County, Pennsylvania, April through September 1997: U.S. Geological Survey Open-File Report 98-93, 1 plate, scale 1:24,000

Eden, K.S., and Schneider, F.M., 1998, Altitude and configuration of the potentiometric surface in Wallace Township, Chester County, Pennsylvania, February 1996 through June 1997: U.S. Geological Survey Open-File Report 98-187, 1 plate, scale 1:24,000.

Garges, J.A., 1986, Ground-water levels in lower Paleozoic and Precambrian crystalline rocks, southeastern Chester County, Pennsylvania, July and August 1986: U.S. Geological Survey Water-Resources Investigations Report 86-4352, 1 plate, scale 1:24,000.

Garges, J.A., 1988, Ground-water levels in lower Paleozoic and Precambrian crystalline rocks of East Bradford and West Bradford Townships, Chester County, Pennsylvania, July and August 1987: U.S. Geological Survey Water-Resources Investigations Report 88-4052, 1 plate, scale 1:24,000.

McGovern, J.E., Bossert, April, and Wettstein, W.C., 1996, Altitude and configuration of the potentiometric surface in the crystalline and metasedimentary rocks in Valley and West Brandywine Townships, Chester County, Pennsylvania, May 1992 through August 1993: U.S. Geological Survey Open-File Report 96-339, 1 plate, scale 1:24,000.

McManus, B.C., 1990, Altitude and configuration of the potentiometric surface in the Triassic sandstones and shales, northern Chester County, Pennsylvania, October 1989 through March 1990: U.S. Geological Survey Water-Resources Investigations Report 90-4114, 1 plate, scale 1:24,000.

McManus, B.C., 1992, Altitude and configuration of the potentiometric surface in the crystalline and metasedimentary rocks, northern Chester County, Pennsylvania, May through October 1990: U.S. Geological Survey Water-Resources Investigations Report 91-4182, 1 plate, scale 1:24,000.

McManus, C.B., and Sloto, R.A., 1994, Altitude and configuration of the potentiometric surface, May and June 1993, and change in water level 1983-93, in the carbonate rocks in part of East Whiteland and Charlestown Townships, Chester County, Pennsylvania: U.S. Geological Survey Open-File Report 93-659, 1 plate, scale 1:24,000.

McManus, C.B., and Sloto, R.A., 1996, Altitude and configuration of the potentiometric surface, December 6, 1994, in the carbonate rocks in part of East Whiteland and Charlestown Townships, Chester County, Pennsylvania: U.S. Geological Survey Open-File Report 96-367, 1 plate, scale 1:24,000.

Mohammad, Abdul, 2000, Altitude and configuration of the potentiometric surface in lower Elk Creek watershed, Chester County, Pennsylvania, January through June 1999: U.S. Geological Survey Open-File Report 99-475, 1 plate, scale 1:24,000.

Mohammad, Abdul, 2001, Altitude and configuration of the potentiometric surface in the upper Elk Creek watershed, Chester County, Pennsylvania, March through September 2000: U.S. Geological Survey Open-File Report 01-329, 1 plate, scale 1:24,000

Mohammad, Abdul, 2002, Altitude and configuration of the potentiometric surface in Highland and West Fallowfield Townships, Chester County, Pennsylvania, March through July 2001: U.S. Geological Survey Open-File Report 02-167, 1 plate, scale 1:24,000.

Mohammad, Abdul, 2004, Altitude and configuration of the potentiometric surface in West Fallowfield, Upper Oxford, and Lower Oxford Townships, Chester County, Pennsylvania, March through July 2002: U.S. Geological Survey Open-File Report 03-262, 1 plate, scale 1:24,000.

Mohammad, Abdul, 2005, Altitude and configuration of the potentiometric surface in part of Lower Oxford, East Nottingham, and West Nottingham Townships, and in part of the Borough of Oxford, Chester County, Pennsylvania, April through June, 2003: U.S. Geological Survey Scientific Investigations Map 2876, 1 plate, scale 1:24,000

Rowland, C.J., 2000, Altitude and configuration of the potentiometric surface in Warwick and East Nantmeal Townships, Chester County, Pennsylvania, July through December 1998: U.S. Geological Survey Open-File Report 99-458, 1 plate, scale 1:24,000.

Senior, L.A., and Garges, J.A., 1989, Altitude and configuration of the potentiometric surface in the Triassic sandstones and shales, northeastern Chester County, Pennsylvania, September 1987 through January 1988: U.S. Geological Survey Water-Resources Investigations Report 89-4043, 1 plate, scale 1:24,000.

Sloto, R.A., 1984, Water-table contour map of the carbonate rocks of eastern Chester County, Pennsylvania: U.S. Geological Survey Open-File Report 84-235, 1 plate, scale 1:24,000.

Vogel, K.L., Miller, W.E., and McManus, B.C., 1991, Altitude and configuration of the water-level surface in the lower Paleozoic and Precambrian crystalline rocks of the Red Clay Creek basin, Chester County, Pennsylvania, and New Castle County, Delaware, June through October 1989 and March 1990: U.S. Geological Survey Water-Resources Investigations Report 91-4004, 1 plate, scale 1:24,000.

Wettstein, W.C., and Wood, C.R., 1996, Altitude and configuration of the potentiometric surface in the crystalline and metasedimentary rocks in Sadsbury, West Caln, and West Sadsbury Townships, Chester County, Pennsylvania, April 1993 through August 1994: U.S. Geological Survey Open-File Report 96-340, 1 plate, scale 1:24,000.

Wood, C.R., 1984, Ground-water levels in the carbonate rocks of central Chester County, Pennsylvania, May 18 to June 15, 1984: U.S. Geological Survey Open-File Report 84-715, 1 plate, scale 1:24,000.

Wood, C.R., 1985, Ground-water levels in the lower Paleozoic carbonate rocks of western Chester Valley, Chester County, Pennsylvania, November, 1984: U.S. Geological Survey Water-Resources Investigations Report 85-4224, 1 plate, scale 1:24,000.

Wood, C.R., Wettstein, W.C., Aichele, S.S., Joyce, James, and Schneider, F.M., 1996, Altitude and configuration of the potentiometric surface in the crystalline and metasedimentary rocks in Birmingham, Newlin, Pennsbury, and Pocopson Townships and parts of East Marlborough and Kennett Townships, Chester County, Pennsylvania, June 1994 through November 1995: U.S. Geological Survey Open-File Report 96-336, 1 plate, scale 1:24,000.

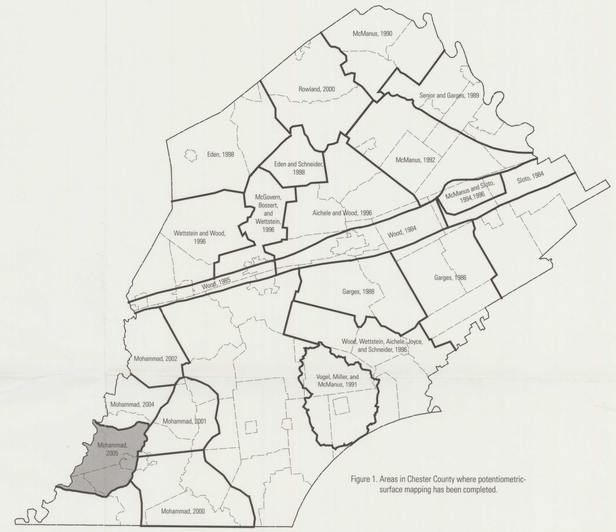

Figure 1. Areas in Chester County where potentiometric-surface mapping has been completed.