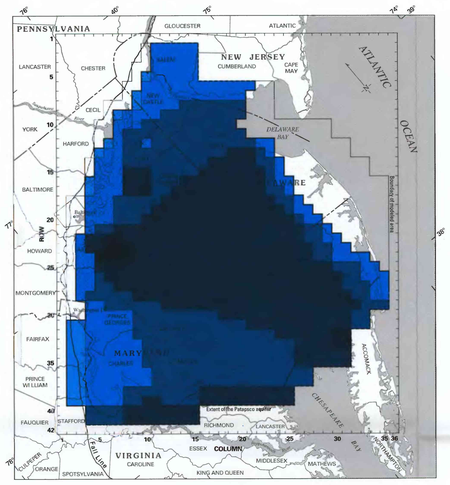
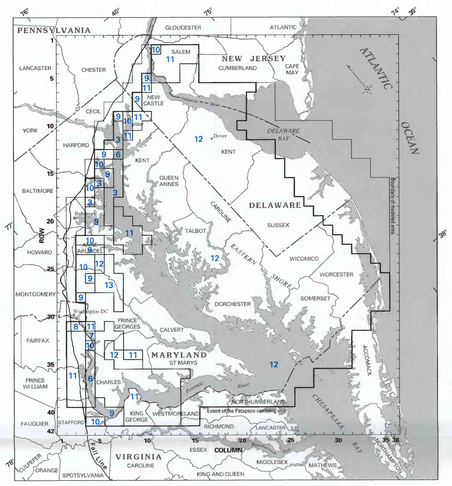


EXPLANATION

Transmissivity, in feet squared per day
- 440 to 1,000
- 1,000 to 5,000
- 5,000 to 10,000
- 10,000 to 20,000
- More than 20,000

Boundary condition
- Outcrop cell—See text and figure 6 for explanation
- No flow
- Constant flux

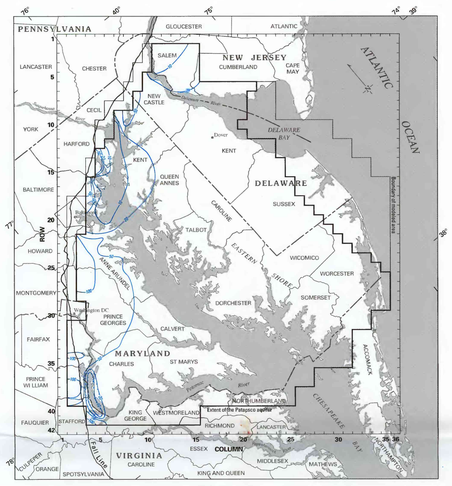
A. Transmissivity, boundary conditions, and extent of the Patapsco aquifer as used in model



EXPLANATION

10 Leakance of confining unit—Number is negative exponent of base 10. (Example: 10 indicates 10^{-10} cubic feet per second per cubic foot)

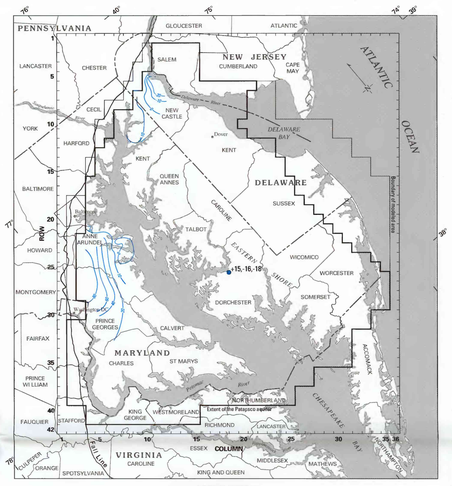
B. Leakance values of the Patapsco confining unit used in model



EXPLANATION

Simulated potentiometric contour—Shows altitude at which water level would have stood in tightly cased wells. Hachures indicate depression. Contour interval, in feet, is variable. Datum is sea level

C. Simulated heads of the Patapsco aquifer for prepumping conditions

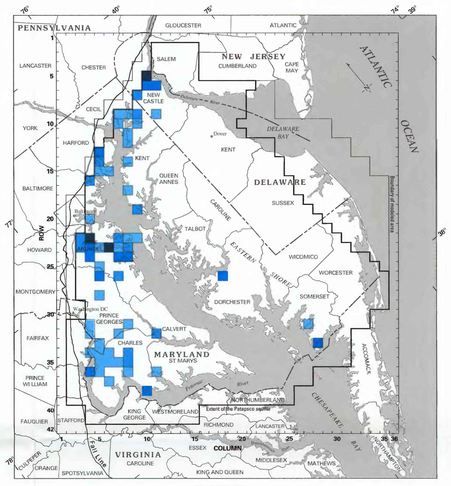


EXPLANATION

Potentiometric contour—Shows altitude at which water level would have stood in tightly cased wells. Contour interval, in feet, is variable. Datum is sea level

15, 16, 18 Water levels, in feet above or below sea level, at different depths in Patapsco aquifer for test well DO Ce 88 (Trapp and others, 1984, table 14)

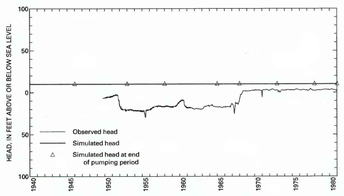
D. Observed heads of the Patapsco aquifer for 1980



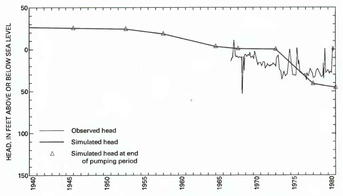
EXPLANATION

Model cell for which there was pumpage for transient simulation pumping period 10, 1978–80—Magnitude of pumpage, in cubic feet per second
- 0.1 to 0.5
- 0.5 to 1
- 1 to 5
- More than 5

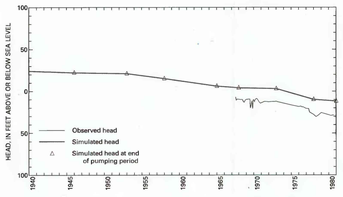
E. Location and magnitude of pumpage (1978–80) for the Patapsco aquifer as used in model



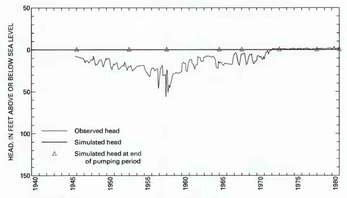
G. Simulated and observed head for the Patapsco aquifer at well HA Ed 24



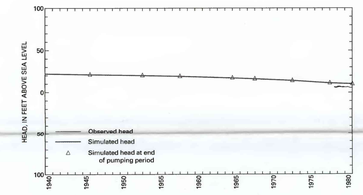
H. Simulated and observed head for the Patapsco aquifer at well Dc 51-9



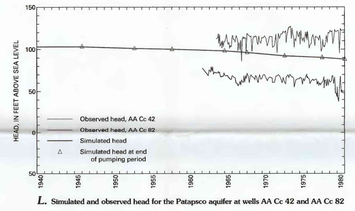
I. Simulated and observed head for the Patapsco aquifer at well Ec 32-3



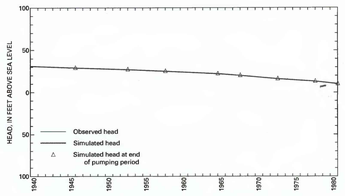
J. Simulated and observed head for the Patapsco aquifer at well BA Gf 178



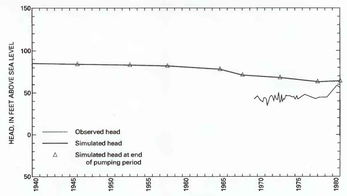
K. Simulated and observed head for the Patapsco aquifer at well CE Ee 29



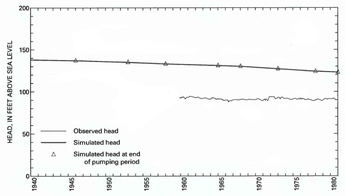
L. Simulated and observed head for the Patapsco aquifer at wells AA Cc 42 and AA Cc 82



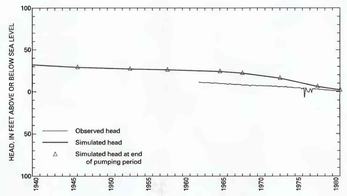
M. Simulated and observed head for the Patapsco aquifer at well AA Cg 23



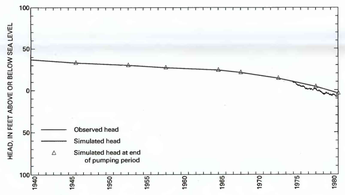
N. Simulated and observed head for the Patapsco aquifer at well PG Cf 44



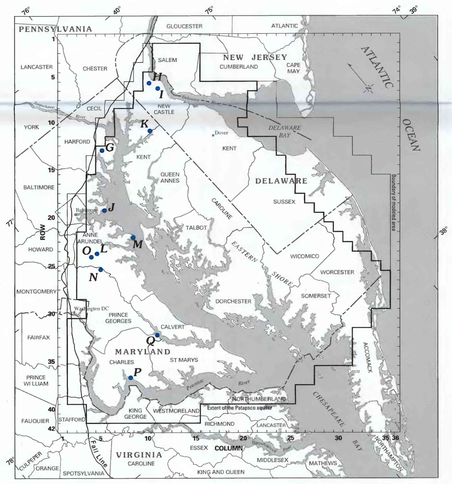
O. Simulated and observed head for the Patapsco aquifer at well AA Cc 40



P. Simulated and observed head for the Patapsco aquifer at well CH Dd 33



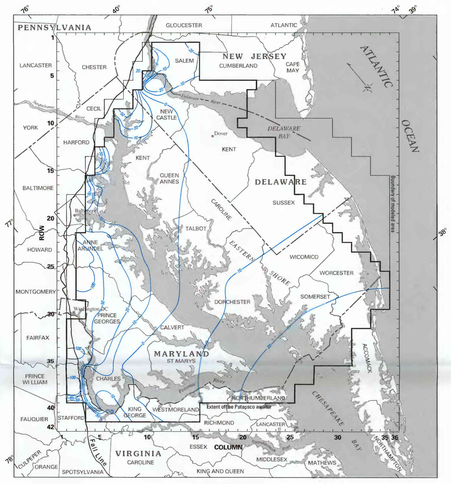
Q. Simulated and observed head for the Patapsco aquifer at well PG Hf 40



EXPLANATION

G Well location and letter of accompanying hydrograph

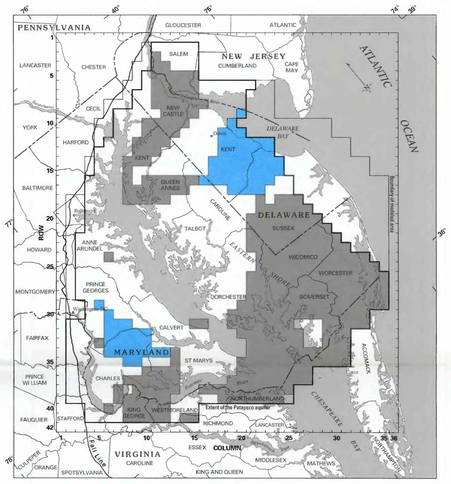
F. Location of wells for accompanying hydrographs



EXPLANATION

Simulated potentiometric contour—Shows altitude at which water level would have stood in tightly cased wells. Contour interval, in feet, is variable. Datum is sea level

R. Simulated heads of the Patapsco aquifer for pumping period 10, 1978–80



EXPLANATION

Area in which direction of vertical leakage through confining unit was downward under simulated prepumping conditions, but reversed to upward under simulated period of 1978–80 conditions

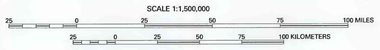
Area in which direction of vertical leakage through confining unit was upward under simulated prepumping conditions, but reversed to downward under simulated period of 1978–80 conditions

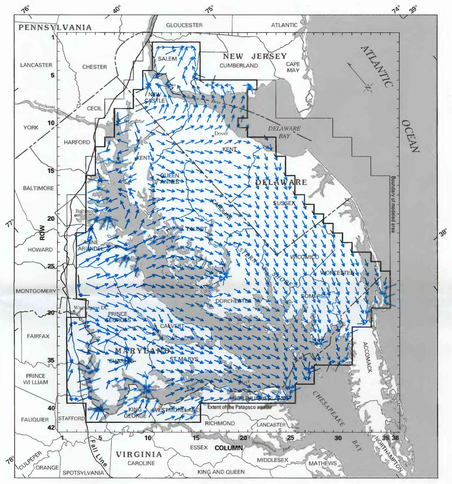
S. Reversals in the direction of vertical flow through the Patapsco confining unit, from simulations of prepumping conditions to pumping conditions during 1978–80

V. Ground-water budget analysis of the Patapsco aquifer by simulation

[—, not applicable; <, less than]

Principal sources and sinks	Prepumping				Pumping Period 10, 1978–80					
	Source		Sink		Source			Sink		
	Cubic feet per second	Percentage of sources	Cubic feet per second	Percentage of sinks	Cubic feet per second	Percentage of sources	Percent change from prepumping	Cubic feet per second	Percentage of sinks	Percent change from prepumping
Areal ground-water recharge	793.8	97.2	—	—	793.8	95.7	0	—	—	—
Surface water	0	0	788.2	96.7	0	0	—	741.9	90.3	-5.9
Leakage through confining units	18.8	2.3	26.4	3.2	24.5	3.0	30.3	21.2	2.6	-19.7
Constant-flux boundary	1.0	0.3	<0.1	<0.1	3.9	0.5	390.0	6.8	0.8	—
Storage	0	0	0	0	7.1	0.9	—	0.3	<0.1	—
Pumpage	—	—	0	0	—	—	—	51.3	6.2	—
Total	816.4	99.8	815.4	100.0	829.3	100.1	1.6	821.6	100.0	0.8
Percent error	0.1				0.9					

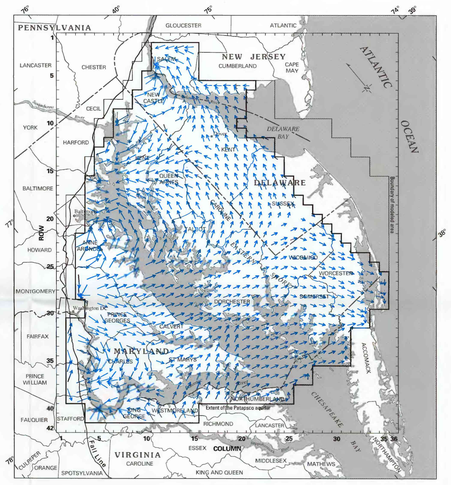




EXPLANATION

Vector indicates direction of ground-water flow and length indicates relative magnitude of the logarithm of ground-water velocity

T. Simulated direction and magnitude of ground-water flow in the Patapsco aquifer during pumping period 10, 1978–80



EXPLANATION

Vector indicates direction of ground-water flow and length indicates relative magnitude of the logarithm of ground-water velocity

U. Simulated direction and magnitude of ground-water flow in the Patapsco aquifer during prepumping conditions

Base modified from U.S. Geological Survey digital data, 1:2,000,000, 1972

DESCRIPTION OF HYDROGEOLOGY AND SIMULATION OF GROUND-WATER FLOW FOR THE PATAPSCO AQUIFER AND THE PATAPSCO CONFINING UNIT (LAYER 2 OF MODEL)

By
William B. Fleck and Don A. Vroblesky

1996