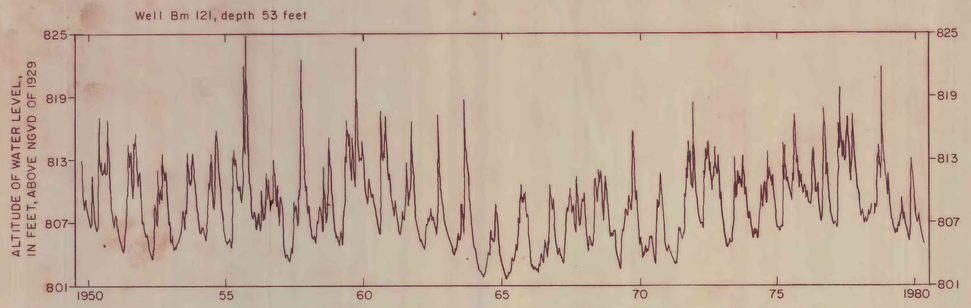
DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

PREPARED IN COOPERATION WITH THE
NEW YORK STATE DEPARTMENT OF HEALTH



Hydrograph of Water Levels in Observation Well Bm 121, Johnson City, N.Y.

The hydrograph of U.S.G.S. well BM 121 shows the range of seasonal fluctuations of the water table in a well slightly west of Johnson City. It also shows a decline and gradual recovery of water levels during the drought of the mid-sixties. This well is within 1,000 feet north of 4 municipal wells (00685000) in the western part of the Clinton Street-Ballpark aquifer, the central part of the valley-fill aquifer of this report (Randall, 1977). Water levels throughout this aquifer are affected by pumping. The water level data shown in the hydrograph is on file with the U.S. Geological Survey, Albany, New York.

REFERENCES CITED

Randall, A. D., 1977, the Clinton Street-Ballpark aquifer in Binghamton and Johnson City, New York: New York State Department of Environmental Conservation Bulletin 73, 87 p.

EXPLANATION

- 900 — POTENTIOMETRIC CONTOUR--shows approximate altitude at which water would stand in tightly cased wells. Hachured contours surround pumping centers. Contour interval 10 feet. Arrow indicates direction of ground-water flow.
- AQUIFER BOUNDARY--dashed where full extent of aquifer is not shown
- MAJOR INFLOW TO AQUIFER--streamflow and ground-water flow along main valleys beyond extent of aquifer mapped
- MAJOR OUTFLOW FROM AQUIFER--streamflow and ground-water flow along main valley beyond extent of aquifer mapped

WELL SYMBOLS

- 00685000 — COMMUNITY WATER SYSTEM WELL OR WELL FIELD--numbered by New York State Department of Health; may apply to one or more systems
- X — DATA POINT--well or test hole used to draw contours
- Bm 121 — OBSERVATION WELL--location for which hydrograph is shown, with number assigned by U.S. Geological Survey

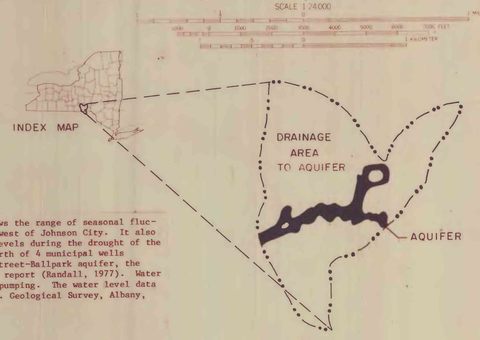
NOTE

The potentiometric surface for any particular aquifer is the level to which water rises in wells tapping that aquifer. The potentiometric surface in the surficial aquifer is also the water table. A map of this surface was constructed by fitting contours to water levels measured in about 130 wells within the Susquehanna River valley in Binghamton, Endicott, Johnson City, and Vestal and to the altitudes of streams and swamps as shown on the topographic map or measured by levelling.

Where the surficial aquifer is relatively thick (sheet 3), wells finished near the bottom of the aquifer commonly have water levels slightly above the water table, but such wells were also used in drawing the contours. The potentiometric surface, however, in the buried, artesian aquifers may be appreciably lower than the water table, particularly near streams and near public or industrial water-supply wells.

The altitude of the potentiometric surface varies in response to seasonal variations in precipitation, evapotranspiration, river stage, and changes of rate and distribution of pumping from municipal or industrial wells. The contours shown are based largely on measurements made by the U.S. Geological Survey (Randall, unpublished data) in early April 1981. Water levels in April are ordinarily the highest of the year. However, the winter of 1980-81 was characterized by record low snowfall and an early spring snow melt (February). Therefore, water levels measured in early April 1981 were no more than 3 feet higher than those measured in October 1980 and October 1981 in most wells, and, in a few wells, the October water levels were higher. Therefore, these contours may be a reasonable approximation of average annual conditions.

Water is recharged to the surficial aquifer over most of the valley floor, as precipitation percolates through permeable materials to the water table. Recharge also occurs by seepage from small streams crossing the aquifer and by seepage from the Chenango and Susquehanna Rivers in localities where pumping has lowered the water table below stream grade. Lesser amounts of recharge also occur from underlying and adjacent till and bedrock. Randall (1977) discusses sources of recharge to part of this area. Discharge occurs principally as inflow to the rivers and as from pumping wells. Several depressions in the potentiometric surface due to pumping are visible on the map.



POTENTIOMETRIC SURFACE

By

Thomas J. Holecek and Ronald V. Allen

BASE FROM NEW YORK STATE DEPARTMENT OF TRANSPORTATION BINGHAMTON EAST, N.Y., 1973; BINGHAMTON WEST, N.Y., 1973; CASTLE CREEK, N.Y., 1973; CHENANGO FORKS, N.Y., 1973; ENDICOTT, N.Y., 1973; MAINE, N.Y., 1973. 1:24,000

HYDROLOGY MAPPED IN 1981

GEOHYDROLOGY OF THE VALLEY-FILL AQUIFER IN THE ENDICOTT-JOHNSON CITY AREA, BROOME COUNTY, NEW YORK

1982