DEPARTMENT OF ENVIRONMENTAL PROTECTION
NEW JERSEY GEOLOGICAL SURVEY

SURFICIAL GEOLOGY OF THE JAMESBURG QUADRANGLE, MIDDLESEX AND MONMOUTH COUNTIES, NEW JERSEY

by
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MAP UNITS

Age of unit indicated in parentheses. For units spanning more than one period, principal age is listed first.
Order of map units in list does not necessarily indicate chronologic sequence.

ARTIFICIAL FILL--Sand, silt, clay, gravel; brown, gray, yellowish brown; may include demolition debris (concrete, brick, asphalt, glass) and trash. As much as 50 feet thick in landfills, generally less than 20 feet thick elsewhere. Many small areas of fill in urban areas are not shown.

Qal ALLUVIUM (Holocene and late Pleistocene)--Sand, silt, clay, peat; yellowish brown, dark brown, gray; and pebble gravel. Abundant organic matter. Sand is chiefly quartz, with some feldspar, glauconite and mica. Gravel is quartz and quartzite with minor ironstone. As much as 15 feet thick. Deposited in floodplains, channels, and ground-water seepage areas.

Qs SWAMP AND MARSH DEPOSITS (Holocene and late Pleistocene)--Freshwater peat and organic silt, sand, and clay; dark brown to black. As much as 10 feet thick.

Qcal COLLUVIUM AND ALLUVIUM (Holocene and late Pleistocene)--Interbedded alluvium and colluvium in headwater valleys. As much as 15 feet thick.

Qe EOLIAN DEPOSITS (late Pleistocene and Holocene)--Fine-to-medium sand, very pale brown to reddish yellow. Sand is chiefly quartz with minor glauconite and mica in places. As much as 20 feet thick. Forms dunes and sand sheets.

Qtl LOWER TERRACE DEPOSITS (late Pleistocene)--Sand and minor silt; yellow, yellowish brown, reddish yellow; and pebble gravel. Sand is chiefly quartz with some glauconite and mica. Gravel is quartz and quartzite with minor ironstone. As much as 30 feet thick. Forms stream terraces with surfaces 5 to 20 feet above the modern floodplain.

Qcl LOWER COLLUVIUM (late Pleistocene)--Sand, silt, minor clay; yellow, yellowish brown, reddish yellow, light gray; some quartz and ironstone pebbles. As much as 10 feet thick. Forms aprons graded to lower terraces or the modern floodplain.

Qtu UPPER TERRACE DEPOSITS (middle Pleistocene)--Sand, minor silt; yellow, reddish yellow; and pebble gravel. Sand is chiefly quartz with some glauconite and mica. Gravel is quartz, quartzite, and minor ironstone. As much as 20 feet thick. Forms stream terraces with surfaces 20 to 50 feet above the modern floodplain.

Qcu UPPER COLLUVIUM (middle Pleistocene)--Sand, silt, minor clay; pale brown, yellow, reddish yellow; some quartz, quartzite and ironstone pebbles. As much as 10 feet thick. Forms aprons graded to upper terraces.

Tg UPLAND GRAVEL (Pliocene-early Pleistocene)--Sand, yellow to reddish yellow, and pebble gravel; minor fine-cobble gravel. Sand is chiefly quartz, with minor glauconite in places; gravel is quartz and quartzite with minor weathered chert. Locally iron-cemented. As much as 10 feet thick. In erosional remnants on hilltops in southeast corner of quadrangle.

Tuc UPLAND COLLUVIUM (Pliocene-early Pleistocene)--Sand, minor silt; yellow, reddish yellow; with quartz, quartzite, and ironstone pebbles, and minor weathered chert. As much as 10 feet thick. In erosional remnants on a sloping interfluve in southeast corner of quadrangle, graded to Pensauken Formation.

Tp PENSAUKEN FORMATION (Pliocene)--Sand, minor silt and clay; yellow to reddish yellow; pebble gravel and minor cobble gravel, particularly at the base of the deposit. Sand is chiefly quartz with some weathered feldspar and minor glauconite and mica. Gravel is chiefly quartz and quartzite with some chert and ironstone, and minor sandstone and mudstone. Locally iron-cemented. As much as 70 feet thick. In erosional remnants of a dissected river plain.

Tpg PENSAUKEN FORMATION, GLAUCONITIC PHASE (Pliocene)--Sand, minor silt and clay; reddish yellow to yellowish brown; and pebble gravel. Sand is chiefly quartz with some glauconite and mica and minor feldspar. Gravel is chiefly quartz and quartzite with some chert. As much as 40 feet thick. A phase of the Pensauken Formation deposited by tributaries from the Coastal Plain. Interfingers with Pensauken Formation.

Qwcp WEATHERED COASTAL PLAIN FORMATIONS--Exposed sand and clay of Coastal Plain bedrock formations. May be overlain by thin, patchy alluvium and colluvium. Quartz and ironstone pebbles left from erosion of surficial deposits may be present on the surface and in the upper several feet of the formation.

MAP SYMBOLS

Contact--Contacts of alluvium and swamp deposits are well-defined by landforms and are drawn from 1:12,000 scale aerial stereophotos. Contacts of other units are approximately located based on both landforms and field observation points.

Material observed in hand-auger hole, exposure, or excavation.

Shallow topographic basin--Of probable periglacial origin. Basins within eolian deposits may be of eolian origin.

▲ S77 21 Well or boring--Upper number (italicized) is identifier, lower number is thickness of surficial material, in feet. Identifers of the form '28-xxxx' are N. J. Department of Environmental Protection well permit numbers. Identifiers of the form '23-xxx' and '21-xx' are from Gronberg, J. M., Birkelo, B. A., and Pucci, A. A., 1989, Selected borehole geophysical logs and drillers' logs, northern Coastal Plain of New Jersey: U. S. Geological Survey Open-File Report 87-243, 133 p. Identifiers of the form 'Sxx' are borings made for a proposed ship canal in the 1930s. Logs of these borings are on file at the N. J. Geological Survey.

60 Elevation of base of Pensauken Formation--In feet above sea level. Contour interval 20 feet. Dashed where eroded.

Paleocurrent measurement--Arrow indicates paleoflow direction; "x" indicates location of measurement. Measurements made on tabular, planar cross beds.

SCALE 1:24 000

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER

CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

1981 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET IS 11°

LOCATION IN NEW JERSEY

Base map from U. S. Geological Survey, 1953
Photorevised 1981

Geology mapped 1992