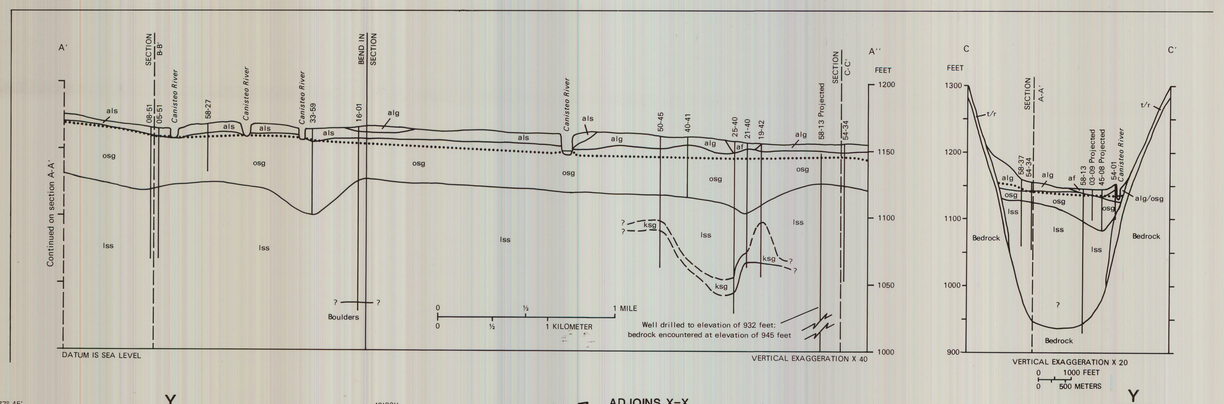
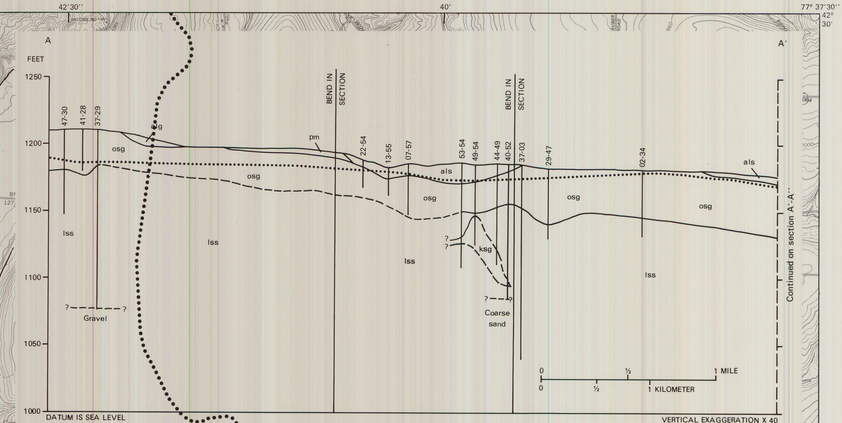
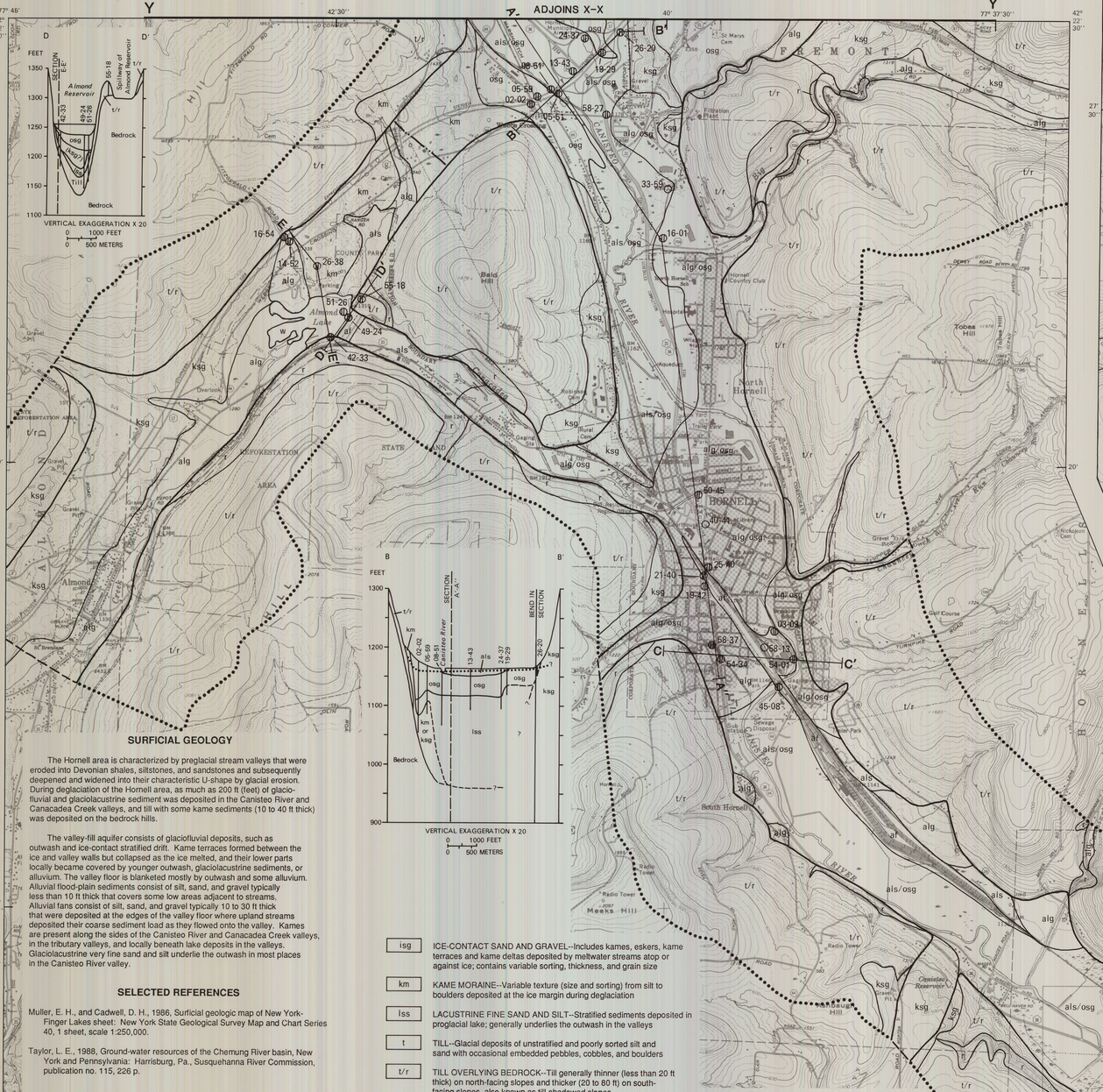
DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

PREPARED IN COOPERATION WITH THE
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

WATER-RESOURCES INVESTIGATIONS REPORT 89-4053
SHEET 2 OF 7--SURFICIAL GEOLOGY AND GEOLOGIC SECTIONS







SURFICIAL GEOLOGY

The Hornell area is characterized by preglacial stream valleys that were eroded into Devonian shales, siltstones, and sandstones and subsequently deepened and widened into their characteristic U-shape by glacial erosion. During deglaciation of the Hornell area, as much as 200 ft (feet) of glaciofluvial and glaciolacustrine sediment was deposited in the Canisteo River and Canacadea Creek valleys, and till with some kame sediments (10 to 40 ft thick) was deposited on the bedrock hills.

The valley-fill aquifer consists of glaciofluvial deposits, such as outwash and ice-contact stratified drift. Kame terraces formed between the ice and valley walls but collapsed as the ice melted, and their lower parts locally became covered by younger outwash, glaciolacustrine sediments, or alluvium. The valley floor is blanketed mostly by outwash and some alluvium. Alluvial flood-plain sediments consist of silt, sand, and gravel typically less than 10 ft thick that covers some low areas adjacent to streams. Alluvial fans consist of silt, sand, and gravel typically 10 to 30 ft thick that were deposited at the edges of the valley floor where upland streams deposited their coarse sediment load as they flowed onto the valley. Kames are present along the sides of the Canisteo River and Canacadea Creek valleys, in the tributary valleys, and locally beneath lake deposits in the valleys. Glaciolacustrine very fine sand and silt underlie the outwash in most places in the Canisteo River valley.

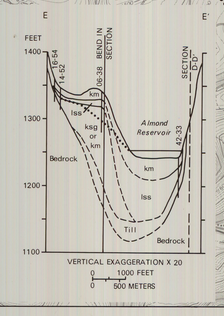
SELECTED REFERENCES

Muller, E. H., and Cadwell, D. H., 1986, Surficial geologic map of New York--Finger Lakes sheet: New York State Geological Survey Map and Chart Series 40, 1 sheet, scale 1:250,000.

Taylor, L. E., 1988, Ground-water resources of the Chemung River basin, New York and Pennsylvania: Harrisburg, Pa., Susquehanna River Commission, publication no. 115, 226 p.

EXPLANATION

- af — ARTIFICIAL FILL
- als — ALLUVIAL SILT AND FINE SAND--Postglacial flood-plain deposits generally confined to low areas within the valleys
- alg — ALLUVIAL SILT, SAND, AND GRAVEL--Postglacial stream deposits generally found where tributary streams built fans as they issued from the uplands onto the main valleys
- pm — PEAT AND MUCK--Postglacial swamp deposits
- pm/osg — PEAT AND MUCK OVERLYING OUTWASH--Postglacial swamp deposits overlying outwash
- als/osg — ALLUVIAL FINE SAND AND SILT OVERLYING OUTWASH--Postglacial flood-plain deposits overlying outwash
- alg/osg — ALLUVIAL SILT, SAND, AND GRAVEL OVERLYING OUTWASH--Postglacial stream deposits overlying outwash
- osg — OUTWASH SAND AND GRAVEL--Sand and gravel deposited by meltwater streams that flowed along the sides or in front of the ice
- isg — ICE-CONTACT SAND AND GRAVEL--Includes kames, eskers, kame terraces and kame deltas deposited by meltwater streams atop or against ice; contains variable sorting, thickness, and grain size
- km — KAME MORAINE--Variable texture (size and sorting) from silt to boulders deposited at the ice margin during deglaciation
- lss — LACUSTRINE FINE SAND AND SILT--Stratified sediments deposited in proglacial lake; generally underlies the outwash in the valleys
- t — TILL--Glacial deposits of unstratified and poorly sorted silt and sand with occasional embedded pebbles, cobbles, and boulders
- t/r — TILL OVERLYING BEDROCK--Till generally thinner (less than 20 ft thick) on north-facing slopes and thicker (20 to 80 ft) on south-facing slopes, also known as till-shadowed slopes
- ud — UNDIFFERENTIATED DRIFT--Steep-sloped sides of gorges and ravines, contains numerous slumps and landslides
- w — WATER
- r — BEDROCK--Undifferentiated Devonian shale, siltstone and fine-grained sandstone
- C—C' — LINE OF GEOLOGIC SECTION
- GEOLOGIC CONTACT
- AQUIFER BOUNDARY--Dashed where full extent of aquifer is not shown
- GROUND-WATER DIVIDE
- BOUNDARY OF STUDY AREA
- 58-13 — WELL USED TO CONSTRUCT GEOLOGIC SECTION--Number is well location, in seconds of latitude and longitude
- 13-43 — TEST HOLE USED TO CONSTRUCT GEOLOGIC SECTION--Number is test hole location, in seconds of latitude and longitude



Base from New York State Department of Transportation, Arkport, NY, 1978; Canaseraga, NY, 1976; Canisteo, NY, 1978; and Hornell, NY, 1978

Geology modified from Taylor, L.E., 1988; and Muller, E.H., and Cadwell, D.H., 1986

GEOHYDROLOGY OF THE SURFICIAL AQUIFER IN THE HORNELL AREA, IN STEUBEN AND ALLEGANY COUNTIES, NEW YORK

By
Todd S. Miller, Christopher C. Warren, and Wendy S. McPherson

SURFICIAL GEOLOGY AND GEOLOGIC SECTIONS