

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

PRELIMINARY SURFICIAL GEOLOGIC MAPS (1:24,000) SHOWING QUATERNARY
DEPOSITS IN PARTS OF UNION AND SNYDER COUNTIES,
CENTRAL PENNSYLVANIA

(ALL OR PARTS OF THE ALLENWOOD, BEAVER SPRINGS, BEAVERTOWN,
FREEBURG, HARTLETON, LEWISBURG, MCCLURE, MIDDLEBURG,
MIFFLINBURG, MILTON, NORTHUMBERLAND, SUNBURY, WEIKERT,
AND WILLIAMSPORT SE 7 1/2-MINUTE QUADRANGLES)

by

Denis E. Marchand

Open-file report 78-1025

1978

This report is preliminary
and has not been edited or
reviewed for conformity with
Geological Survey standards

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EXPLANATION TO ACCOMPANY OPEN-FILE MAP 78-1025

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These quadrangle maps depict the distribution of glacial and non-glacial Quaternary deposits west of the Susquehanna River in the Lewisburg-Selinsgrove area of the central Susquehanna Valley. The mapped quadrangles extend as far west as Laurelton and McClure. Quaternary deposits have been subdivided (Marchand, 1978) into six groups believed to have been laid down during the Holocene and during five major continental glacial advances: Woodfordian (late Wisconsin, least extensive), Altonian (middle or early Wisconsin), and three pre-Wisconsin advances, here informally designated White Deer (youngest), Laurelton, and Penny Hill (oldest and most extensive). These time-related units have been recognized and mapped on the basis of relative degree of soil profile development, weathering and rubefaction of clasts, degree of preservation of depositional landforms, geographical distribution, and superposition. In local areas some of the till units are lithologically distinguishable. Separate till, outwash, local alluvial, colluvial, and eolian facies have been identified where sufficiently extensive or thick enough to be mapped. Marchand (1978) discusses the Quaternary deposits and history of these areas in more detail. Characteristic soils formed on Quaternary deposits in the region are described and interpreted in several publications by Ciolkosz and his colleagues (Ciolkosz, 1978; Ciolkosz and others, 1971; Cunningham and others, 1974).

In preparing these maps, previously mapped soil units from published and unpublished soil survey mapping (Bacon and others, 1946; Parrish and Derr, 1971; preliminary sheets, new Union County Soil Survey) were transferred onto standard 7 1/2' topographic maps. Some soils map units were combined and others subdivided to best conform to geologic map units determined from field observations of soils and deposits in roadcuts, streamcuts, plowed fields, borrow pits and other excavations, auger holes, and other suitable exposures. The resulting soil contacts were then modified by extensive field reconnaissance and through the use of topography in those places where contacts tend to follow topographic breaks. Deposits less than two feet thick are not shown, except in places where thin surficial deposits contrast sharply with underlying bedrock. A few map units, especially pw, may include areas of deposits other than those indicated because soil survey map units do not closely correspond to definite geologic parent materials. The pw geologic unit, for example, may include colluvium, till, alluvium, lake beds, or even areas of red residual soils formed on bedrock, since it is keyed to the Alvira, Watson, and Shelmadine soil series and these soils are mapped on a variety of parent materials. Other map units such as wbc, however, are keyed to soil series such as the Laidig, Buchanan, and Andover, which are consistently mapped on blocky Woodfordian colluvium derived from the high sandstone ridges.

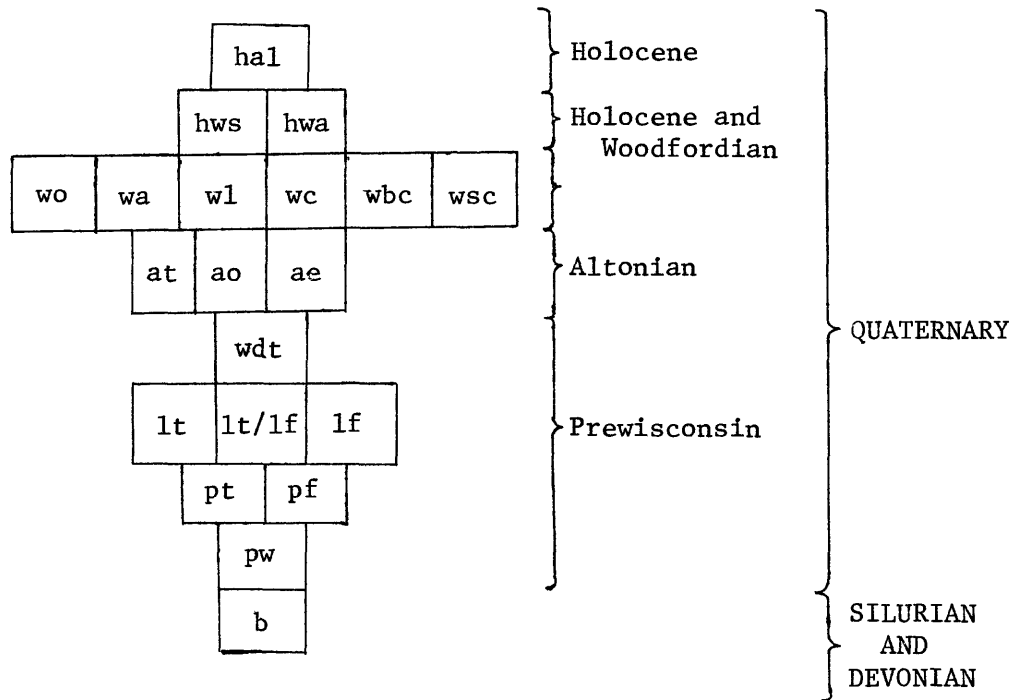
I am greatly indebted to Richard P. Nickelsen for encouraging the study and mapping of surficial deposits in this area and for pointing out many till localities in the Buffalo Valley. The collaboration of Edward J. Coilkosz in interdisciplinary geologic-pedologic studies in this region has

been an invaluable aid to the interpretation of soil map units in geologic terms. The author, however, assumes full responsibility for the interpretations made on these maps. Bucknell University provided logistical support for most of the field mapping.

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HOLOCENE AND ASSOCIATED WOODFORDIAN DEPOSITS

- hal, Holocene alluvium, where topographically distinguishable from latest Woodfordian alluvium; primarily silt and fine sand associated with low floodplains along the Susquehanna River and its major tributaries
- hws, Thin Holocene overbank deposits, commonly underlain by Woodfordian outwash sand and gravel; associated with $20 \pm 5'$ flood plain/low terrace along the Susquehanna River
- hwa, Holocene and Woodfordian alluvium, locally derived and associated with flood plains and low terraces along small streams graded to hws flood plain/low terrace surface along the Susquehanna River; silt, sand, and gravel

WOODFORDIAN DEPOSITS

- wo, Late Woodfordian outwash sand and gravel; associated with 30-40' terrace along the Susquehanna River; mantled by loess in many locations

wl, loess (eolian silt and silty sand); mantles wo terrace, higher terraces, and bedrock surfaces along the Susquehanna River

wc, colluvium derived from shale, limestone, and thin sandstone units in the Buffalo Valley and other valleys; colluvial surfaces are associated in time with the wo and wa terraces and are incised by hws and hwa surfaces

wbc, blocky colluvium derived from high quartzitic sandstone ridges; colluvial surfaces are associated in time with alluvial surfaces underlain by the gravels of wo and wa terraces

wsc, shale chip stratified colluvium; graded to wa terraces

ALTONIAN DEPOSITS

at, till

ao, outwash sand and gravel associated with a terrace remnant about 80-90' above the Susquehanna River at Shamokin Dam

ae, loess and silty eolian sand near Shamokin Dam

WHITE DEER DEPOSITS

wdt, till, in many places mantled by loess capping

LAURELTON DEPOSITS

lt, till; map unit includes some probable ice contact deposits and local eolian, colluvial, fluvial, and lacustrine facies

lt/lf, till overlying fluvial sand

lf, fluvial sand or gravel

PENNY HILL DEPOSITS

pt, till; map unit includes some probable ice contact deposits and minor colluvial, fluvial, and eolian facies

pf, fluvial sand or gravel

PRE-WISCONSIN DEPOSITS

pw, undifferentiated colluvium, till, lacustrine, and fluvial deposits;
overlain in many places by thin younger colluvial or alluvial
deposits

BEDROCK

b, sandstone, shale, limestone, and chert; mantled on slopes and in
swales by thin colluvium