

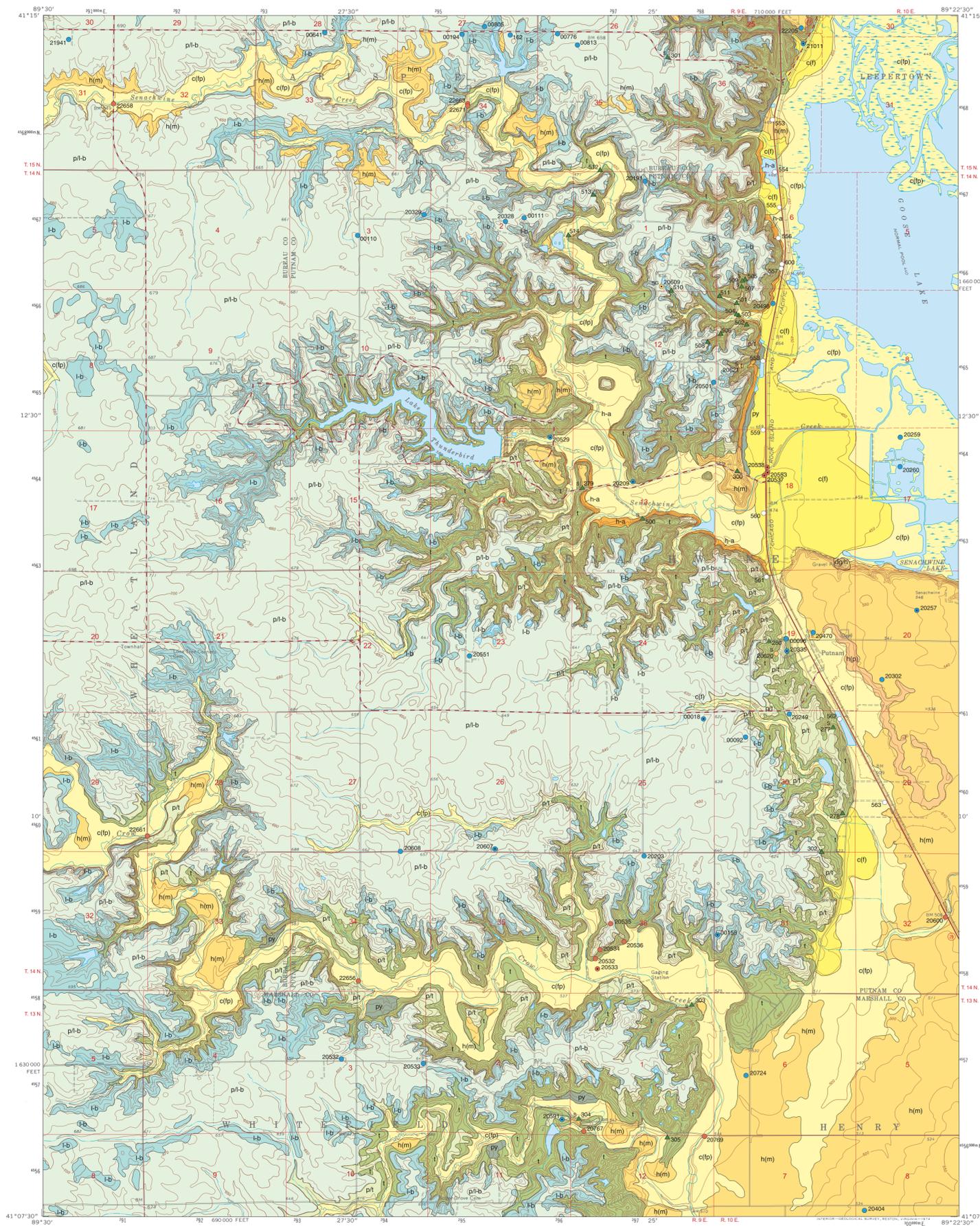
SURFICIAL GEOLOGY OF PUTNAM QUADRANGLE

BUREAU, PUTNAM, AND MARSHALL COUNTIES, ILLINOIS

Illinois Department of Natural Resources
ILLINOIS STATE GEOLOGICAL SURVEY
William W. Shilts, Chief

Illinois Preliminary Geologic Map
IPGM Putnam-SG

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2007



QUATERNARY DEPOSITS

Description ¹	Unit	Interpretation
HUDSON EPISODE (~12,000 years before present (B.P.) to today)		
Areas of disturbed earth and/or removed earth; grain size ranges from clay to gravel, and may include waste or other rubble	Disturbed ground	Deposits disturbed or modified by human activity in gravel pits, coal mine spoil banks, earthen dams, other excavations and landfills
Silt and clay with local surface occurrences of sand and gravel; typically grades at depth to sand and gravel, which may be indistinguishable from Henry Formation; stratified, brownish gray to gray; 5 to 50 feet thick	Cahokia Formation (floodplain facies)	Alluvium (river sediment); post-glacial overbank deposits on floodplains, natural levees, and in backwater lakes; coarse deposits in channels, point bars, and tributary streams
Silt and silty clay, interbedded with fine sand, and locally gravel and redeposited bedrock clasts; brownish soft to moderately stiff gray; calcareous or non-calcareous; typically overlies Cahokia or Henry Formations; interfingers with Cahokia floodplain facies; 5 to 30 feet thick	Cahokia Formation (alluvial fan facies)	Alluvial fan deposits; post-glacial redeposited loess and till in fans where streams and ravines emerge from uplands onto low-slope valley floors; subject to flooding
Silt, clay, sand, gravel and diamictic; unstratified to crudely stratified; yellowish brown to brownish gray; may include bedrock clasts; overlies Cahokia, Henry, or older glacial drift or bedrock; 10 to 20 feet thick in tributary valleys and 10 to 80 feet thick in Illinois River valley	Peyton Formation	Slopewash, talus, rock-fall, and slump deposits on or at base of steep slopes in small coalescing fans along bluff of Illinois River valley and its tributaries; post-glacial; may be poorly consolidated and unstable
WISCONSIN EPISODE (~12,000–75,000 years B.P.)		
Sand; very fine to fine, well-sorted, and loose; yellowish brown to grayish brown; calcareous in lower part; conformably overlies Henry Formation; 5 to 15 feet thick	Henry Formation (Parkland facies)	Sand dunes, dune fields and sheet deposits of sand eroded from underlying outwash and redeposited locally on Illinois River terraces; proglacial and post-glacial
Sand and gravel with cobbles and boulders; stratified; yellowish brown to grayish brown; usually clean and moderately well sorted; unconformably overlies older sand and gravel deposits; glacial diamictic; or bedrock; 10 to 20 feet thick in tributary valleys and 10 to 80 feet thick in Illinois River valley	Henry Formation (Mackinac facies)	Fluvial (riverine) and ice-marginal outwash deposits in Illinois River valley in terraces, former bars and channels and locally in terraces along tributaries to Illinois River; deposited proglacially by meltwater from distant glaciers; not consistently differentiable from sand and gravel of the underlying Pearl Formation or Sankoty Sand Member where intervening tills are absent
Pebbly silty clay loam diamictic; unstratified; olive (oxidized) to grayish brown (unoxidized); firm to hard; compact; calcareous; massive to jointed; some cobbles, few boulders; discontinuous beds of sand, silt, or clay; overlain in places by wind-blown silt (loess) of the Peoria Silt; unconformably overlies Dry Creek tongue, Tiskilwa Formation, or older units; 5 to 35 feet thick	Batestown Member, Lemont Formation	Till and associated sediment derived directly from glacial ice; overlain by thin covering of loess; absent in the Illinois River valley and tributary valleys, where removed by post-glacial erosion
Pebbly loam diamictic; unstratified; reddish brown (oxidized) to dark brownish gray with distinctive reddish cast (unoxidized); firm to hard; calcareous; some cobbles; few boulders; includes discontinuous beds of stratified sand, silt, or clay; lower 5 to 30 feet commonly more silty than upper part; usually lacks reddish cast, and may contain dispersed wood fragments and gastropod shells; unconformably overlies Ashmore Tongue, Morton Tongue silt, Foxana Silt, or older deposits; 25 to 120 feet thick	Tiskilwa Formation	Till and associated sediment derived directly from glacial ice; exposed in gullies, excavations and along steep slopes where overlying Peoria Silt and the Batestown Member have been eroded; occurs throughout the uplands of the area; absent in the Illinois River valley and tributary valleys, where removed by post-glacial erosion; where lower part of the unit is gray, the Delavan Member can be differentiated, and where it contains common wood fragments, the Oakland Member can be differentiated.
Fine to coarse sand, sand and gravel; occasional cobbles; yellowish brown to grayish brown; calcareous; few boulders; water saturated; occasional armored "till balls" in the upper part; calcic cemented in places; overlies older sand and gravel and diamictic deposits or bedrock; 5 to 70 feet thick	Ashmore Tongue, Henry Formation	Fluvial and ice-marginal outwash deposits in former bars and channels of Ancient Mississippi River; deposited by meltwater from advancing Wisconsin Episode glacier; also sheets and channels fills beneath Tiskilwa diamictic; widespread in subsurface; underlies but not differentiated from rest of Henry Formation in Illinois River valley; not consistently differentiable from underlying sand and gravel of the Pearl Formation or Sankoty Sand Member where no intervening diamictics are absent

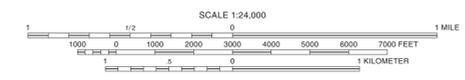
¹ Stratigraphic nomenclature follows that of Hansel and Johnson (1996) for Wisconsin and younger deposits and Willman et al. (1975) for deposits older than Wisconsin Episode; within each unit, the components are listed in order of decreasing abundance.
² **Diamictic** is a name for an unsorted or poorly sorted, sedimentary deposit that contains a wide range of particle sizes, such as a till that contains clay, silt, sand, gravel, cobbles and boulders.

References
Hansel, A.K., and W.H. Johnson, 1996. Wedron and Mason Groups: Lithostratigraphic reclassification of deposits of the Wisconsin Episode, Lake Michigan Lobe area. Illinois State Geological Survey, Bulletin 104, 116 p.
Willman, H.B., E. Atherton, T.C. Buschbach, C. Collinson, J.C. Frye, M.E. Hopkins, J.A. Lineback, and J.A. Simon, 1975. Handbook of Illinois stratigraphy. Illinois State Geological Survey, Bulletin 95, 261 p.

Data Type

- ▲ Outcrop
 - Stratigraphic boring
 - Water boring
 - Engineering boring
 - Hand-auger boring
- 80₃ 31500 Labels indicate samples (s) or geophysical log (g).
Numeric labels indicate the county number.
Outcrop and hand-auger boring labels indicate geologist's field number.
Dot indicates boring is to bedrock.
- Contact
- Note: The county number is a portion of the 12-digit API number on file at the ISGS Geographical Records Unit. Online well and boring records are available from the ISGS Web site.

Base map compiled by Illinois State Geological Survey from digital data provided by the United States Geological Survey, Digital Line Graph hypsography data from 1970; PLSS data from 1972; hydrography and transportation data from 1998.
North American Datum of 1983 (NAD 83)
Projection: Transverse Mercator
10,000-foot ticks: Illinois State Plane Coordinate system, west zone (Transverse Mercator)
1,000-meter ticks: Universal Transverse Mercator grid system, zone 16



BASE MAP CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

Released by the authority of the State of Illinois: 2007

Geology based on field work by E.D. McKay, R.C. Berg, A.J. Stumpf, and C.P. Weibel, 2001–2003.

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Digital cartography by J. Carrell, J. Demier and Z. Golshani, Illinois State Geological Survey. GIS support by P. Johnston, L. Smith, and B. Stiff, Illinois State Geological Survey.

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ADJOINING QUADRANGLES
1 Wyand
2 Princeton South
3 Depeu
4 Whitefield
5 Florid
6 La Prairie Center
7 Lacon
8 Henry

ROAD CLASSIFICATION
Primary highway, hard surface
Secondary highway, hard surface
Light-duty road, hard or improved surface
Unimproved road
State Route