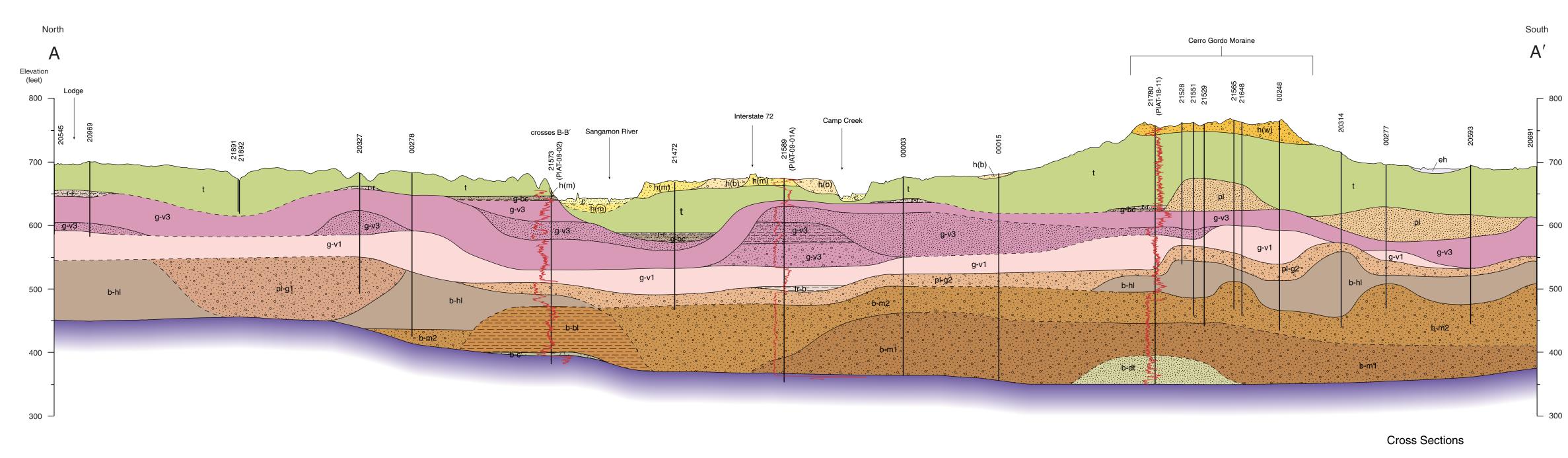
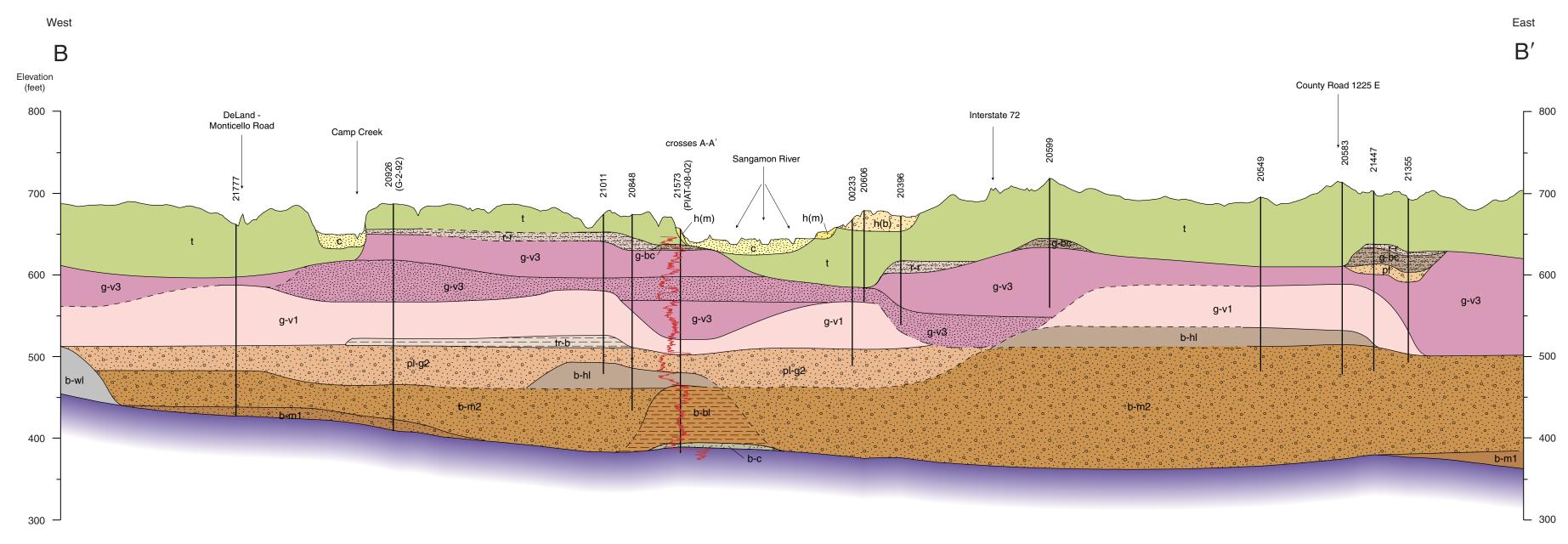
QUATERNARY DEPOSITS SURFICIAL GEOLOGY OF MONTICELLO QUADRANGLE PIATT COUNTY, ILLINOIS HUDSON EPISODE (~14,700 years before present (B.P.) to today)² Prairie Research Institute STATEMAP Monticello-SG ILLINOIS STATE GEOLOGICAL SURVEY Sand, silt, clay, and gravel; Cahokia Formation Alluvium (stream deposits) massive to stratified; locally (undivided) mapped in floodplains along creeks oxidized; noncalcareous to locally Andrew J. Stumpf and drainage ways and in calcareous; poorly sorted; fan-shaped deposits where streams 2018 emerge from the moraines onto contains beds of organic material; up to 18 ft thick lower gradient slopes | 930 000 FEET R. 5 E. ³66 R. 6 E. HUDSON AND WISCONSIN EPISODES (~22,000- ~14,700 years B.P.)^{2, 3} 40°07'30" Silt and clay to sand and Equality Formation -Lacustrine or fluvial sediment gravel; interstratified; grayish deposited in lowlands and Henry Formation complex brown to olive brown; weakly depressions during proglacial and eh stratified to massive; noncalcarepostglacial times; overlain by up to ous to calcareous; up to 15 ft thick 5 feet of loess and or resedimented LATE WISCONSIN EPISODE (~24,000- ~22,000 years B.P.)^{2,3} 4442^{000m} N Fine sand to gravelly coarse Mackinaw facies, Glaciofluvial sediment (outwash) sand; brown to yellowish brown; Henry Formation deposited by glacial meltwater in calcareous; moderately to well streams and rivers that flowed from h(m) sorted; up to 25 ft thick ice margins Sand and gravel; silty to gravelly; Glaciofluvial sediment (alluvial Batavia facies, dark yellowish brown to light olive fans) deposited in ice-contact and Henry Formation brown; noncalcareous to weakly proglacial environments on frontal h(b) calcareous; moderately sorted; up side of Cerro Gordo Moraine; may to 25 ft thick include some debris-flow deposits; overlain by up to 5 feet of loess Wasco facies, Glaciofluvial sediment (ice-Sand and gravel; loamy; brown contact deposits) in small kames Henry Formation to light olive brown; noncalcareous to calcareous; poorly to on the Cerro Gordo Moraine and h(w) esker-like features on west side of moderately sorted; up to 20 ft the Sangamon River; may include some supraglacial deposits; overlain by up to 5 feet of loess 1 250 000 Diamicton; loam; grayish brown Tiskilwa Formation Till and ice-marginal sediment to reddish gray; calcareous; very derived directly from glacial ice; in (undivided) stiff; contains beds of sand, silt, the upper part includes the Piatt and gravel; contains many clasts Member, which is recognized in of metamorphic rocks in Cerro Cerro Gordo Moraine by numerous Gordo Moraine; up to 130 ft thick clasts of metamorphic rocks; includes ice-disintegration deposits along east side of the Sangamon ¹ In places, the surficial geologic materials have been excavated or buried. The areas impacted by human activiites (disturbed ground) are delineated by the overlying striped pattern. ² Generally, the Wisconsin Episode sediments mapped at the land surface are overlain by 3 to 5 feet of wind-deposited silt and fine sand (loess), which was deposited between 22,000 and 14,700 years B.P.. ³ The time periods for the Wisconsin Episode and the Hudson Episode are reported as calibrated radiocarbon years and can be directly compared to calendar years before 1950 (Stuiver et al. 2015). Point Data Type Other Data Stratigraphic boring Contact Contact inferred Water well boring for irrigation Line of cross section Water municipal well Earth electrical resistivity Engineering boring Glaciofluvial terrace scarp Coal boring Glacial meltwater flow Labels indicate samples (s) or Disturbed ground geophysical logs (G). Boring labels includes waste or other rubble, thickness < 10 feet indicate the county identification number. Dot indicates boring is to Boring labels indicate the county identification number. The county identification number is a portion of the 12-digit API number on file at the ISGS Geological Records Unit that references records in the ISGS Institutional Database. The geologic and geophysical logs are available from the ISGS websites ILWATER (http://www.isgs.illinois.edu/ilwater) and ILOIL (http://www.isgs.illinois.edu/illinois-oil-and-gas-resourc-2'30" Bedrock Data Points Bedrock Elevation (feet above mean sea level) Stratigraphic boring (ISGS) Water-well boring Engineering boring Bedrock topography of the Coal boring Monticello Quadrangle. Localities of all data that reliably — Quadrangle boundary indicate the bedrock surface are Township lines shown (many of these data are Cross section lines not shown on the surficial map). Map scale is 1:100,000. **CORRELATION OF MAPPING UNITS** GLACIAL ICE-CONTACT GLACIOFLUVIAL FLUVIAL ACUSTRINE
DEPOSITS DEPOSITS DEPOSITS DEPOSITS DEPOSITS BEDROCK EPISODE* HUDSON 14,700 yrs BP 910 000 FEET ³**64** R. 5 E. R. 6 E. Geology based on field work by A. Stumpf, 2007–2010, and 2017–2018. Base map compiled by Illinois State Geological Survey from digital data (2015 US Topo) SCALE 1:24,000 WISCONSIN provided by the United States Geological Survey. Shaded relief and contours derived from Digital cartography by Deette M. Lund and Jennifer E. Carrell, Illinois State Geological 2012 LiDAR elevation data. 1 KILOMETER North American Datum of 1983 (NAD 83) This geologic map was funded in part by the USGS National Cooperative Geologic Map-Projection: Transverse Mercator ping Program under StateMap award number G17AC00306, 2017. The views and conclu-10,000-foot ticks: Illinois Coordinate System of 1983, east zone 1,000-meter ticks: Universal Transverse Mercator grid system, zone 16 sions contained in this document are those of the authors and should not be interpreted BASE MAP CONTOUR INTERVAL 10 FEET as necessarily representing the official policies, either expressed or implied, of the U.S. 29,000 yrs BP NATIONAL GEODETIC VERTICAL DATUM OF 1988 Recommended citation: QUATERNARY Stumpf, A.J., 2018, Surficial Geology of Monticello Quadrangle, Piatt County, Illinois: Illinois This map has not undergone the formal Illinois Geologic Quadrangle map review process. Whether or when this map will be formally reviewed and published depends on the State Geological Survey, USGS-STATEMAP contract report, 2 sheets, 1:24,000 © 2018 University of Illinois Board of Trustees. All rights reserved. resources and priorities of the ISGS. ILLINOIS ~ For permission information contact the Illinois State Geological Survey. tr-b The Illinois State Geological Survey and the University of Illinois make no guarantee, expressed or implied, regarding the correctness of the interpretations presented in this document and accept no liability for the consequences of decisions made by others on the basis of the information presented here. The geologic interpretations are based on data 200,000 yrs BP that may vary with respect to the accuracy of geographic location, the type and quantity of 420,000 yrs BP data available at each location, and the scientific and technical qualifications of the data sources. Maps or cross sections in this document are not meant to be enlarged. ADJOINING **I**ILLINOIS QUADRANGLES PRE-ILLINOIS ROAD CLASSIFICATION Farmer City South Illinois State Geological Survey 2 Mansfield 3 Mahomet 4 Weldon East Prairie Research Institute

Illinois State Geological Survey
615 East Peabody Drive 5 Seymour 6 Cerro Gordo 7 Bement APPROXIMATE MEAN Champaign, Illinois 61820-6918 8 Ivesdale DECLINATION, 2018 (217) 244-2414 http://www.isgs.illinois.edu * The procedure for applying the use of episodes is after Hansel and Johnson (1996) and Hansel and McKay (2010). Time periods are not to scale. The till units were deposited during separate ice advances, and their duration is not represented by the size of the boxes. PENNSYLVANIAN STATEMAP Monticello-SG Sheet 1 of 2





HUDSON EPISODE (~14,700 years before present (B.P.) to today)³

Sand, silt, clay, and gravel; massive to stratified; locally oxidized: noncalcareous to locally calcareous; poorly sorted; contains beds of organic material; up to 18 ft thick

Silt and clay to sand and

gravel; interstratified; grayish

brown to olive brown; weakly

stratified to massive: noncalcare-

ous to calcareous; up to 15 ft thick

Description

emerge from the moraines onto lower gradient slopes HUDSON AND WISCONSIN EPISODES (~22,000 - ~14,700 years B.P.) Equality Formation – Henry Formation complex

QUATERNARY DEPOSITS

Cahokia Formation

(undivided)

С

eh

Mackinaw facies,

Henry Formation

h(m)

Batavia facies.

Henry Formation

h(b)

Wasco facies,

Henry Formation

h(w)

Lacustrine or fluvial sediment deposited in lowlands and depressions during proglacial and postglacial times; overlain by up to 5 feet of loess and or resedimented loess

Glaciofluvial sediment (outwash)

streams and rivers that flowed from

deposited by glacial meltwater in

Interpretation²

mapped in floodplains along creeks

Alluvium (stream deposits)

and drainage ways and in fan-

shaped deposits where streams

LATE WISCONSIN EPISODE (~24,000 - ~22,000 years B.P.)

sand; brown to yellowish brown; calcareous; moderately to well sorted; up to 25 ft thick Sand and gravel; silty to gravelly;

Fine sand to gravelly coarse

dark yellowish brown to light olive brown; noncalcareous to weakly calcareous; moderately sorted; up to 25 ft thick

Sand and gravel; loamy; brown to light olive brown; noncalcareous to calcareous; poorly to moderate-

ly sorted; up to 20 ft thick

Diamicton; loam; gravish brown to reddish gray; calcareous; very

Tiskilwa Formation (undivided) stiff; contains beds of sand, silt, and gravel; contains many clasts of metamorphic rocks in Cerro Gordo Moraine; up to 130 ft thick

t

Robein Member,

Roxana Silt

r-r

EARLY WISCONSIN EPISODE (~60,000 - ~24,000 years B.P.) Proglacial eolian, lacustrine or colluvial sediment containing a weakly developed paleosol (cross sections only)

(Farmdale Geosol) deposited on a

former land surface, well to poorly

drained; includes Robein Member

(peaty silt) and overlying silty sand

of Morton Tongue, Peoria Silt (loess

and resedimented loess) partly

eroded in most places

SANGAMON AND LATE ILLINOIS EPISODES (~150,000 – 60,000 years B.P.) Diamicton, silt, and clay; clay loam to silty clay; dark gray to greenish gray; laminated to massive; moderately stiff; few pebbles; noncalcareous; up to 10 ft thick

Silt and fine sand; massive to

and/or fossil snails: 3 to 10 ft thick

crudely stratified; very dark

grayish brown; leached; may

contain humus, peat, wood,

Berry Clay Member, Glasford Formation (cross sections only) g-bc

Weathered lacustrine or accreted sediment deposited in depressions with slow sediment accumulation; weathering attributed to the Sangamon Geosol (interglacial soil)

Proglacial fluvial sediment

(outwash) deposited by glacial

flowed from former ice margins;

inset into the Vandalia Member

(upper unit), Glasford Formation;

contains the Sangamon Geosol in

the upper part except where eroded

meltwater or sediment gravity flows

Proglacial or ice-contact

sediment deposited by glacial

(debris flows) along ice margins;

may contain Sangamon Geosol

(typically eroded or truncated)

weathering profile in upper 10 feet

meltwater in streams and rivers that

ILLINOIS EPISODE (~200,000 – 130,000 years B.P.) Pearl Formation

Fine to coarse sand with gravel; yellowish brown to grayish brown; upper part may be weathered and contain silt and clay, associated with formation of the Sangamon Geosol; up to 25 ft

Diamicton, sand and gravel, and silt and clay; interstratified; includes sediments previously assigned to the Hagarstown, Radnor, and Toulon Members, or Roby Silt; upper part contains weathered silty to clayey materials assigned to the Sangamon Geosol; 15 to 70 ft thick

Diamicton: silt loam to loam: grayish brown; calcareous; contains beds of sand, silt, and gravel; hard; 5 to 80 ft thick

Silt, fine sand, and clay; stratified; gray to brown; calcareous; may contain beds of diamicton; in some places organic rich; up to 20 ft thick

Vandalia Member, **Glasford Formation** upper unit (cross sections only) g-v3

Bellflower tongue,

Teneriffe Silt

(cross sections only)

tr-b

(cross sections only)

pl

Till and ice-marginal sediment Vandalia Member, derived directly from glacial ice; Glasford Formation overlain by deposits that accumulatlower unit ed along ice margins (cross sections only) g-v1

> Proglacial glaciolacustrine sediment deposited in depressions or shallow channels

Sand and gravel; fine to medium sand; pebbly; grayish brown to

to 50 ft thick

Description

Grigg tongue, Pearl Formation light brown; contains some beds upper / lower units of silt or diamicton; calcareous; (cross sections only) well to moderately well sorted; up pl-g2 pl-g1

Proglacial fluvial sediment deposited in front of advancing ice margins; include sediment deposited by outflows from lakes ponded behind ice margins; over the Mahomet Bedrock Valley (MBV) the upper unit is difficult to distinguish from the Mahomet Sand Member, when intervening older tills are absent; includes deposits of sand and gravel (pl-g1) outside MBV

Till and ice-marginal sediment

derived directly from glacial ice;

weathering profile in upper 10 feet

(outwash) deposited in the MBV by

meltwaters flowing from retreating

ice margins located northeast of the

Till and ice-marginal sediment

flowing into the area from northern

derived directly from glacial ice

Deposits of a large proglacial

lake that inundated part of the

Proglacial fluvial sediment

(outwash) deposited in the MBV by

meltwaters flowing from advancing

ice margins located northeast of the

Fluvial sediment deposited in the

MBV prior to the earliest pre-Illinois

Episode glaciation; encountered in

the deepest channel of the bedrock

Slopewash, lacustrine sediment,

accumulated during preglacial times

or weathered bedrock that

MBV: associated with advance of

or eastern ice source

may contain Yarmouth Geosol

(typically truncated or eroded)

Proglacial fluvial sediment

map area

ice margins

Interpretation²

PRE-ILLINOIS EPISODE (~1,200,000 – 420,000 years B.P)

Hillery Member,

Banner Formation

(cross sections only)

b-hl

Mahomet Sand Member,

Banner Formation

upper unit

(cross sections only)

b-m2

West Lebanon Member,

Banner Formation

(cross sections only)

b-wl

Blackford member⁴

Banner Formation

(cross sections only)

b-bl

Mahomet Sand Member,

Banner Formation

lower unit

(cross sections only)

b-m1

Banner Formation

Diamicton; loam; reddish gray to gravish brown: calcareous: contains beds of sand, silt, or gravel; hard; upper part weathered in profile of Yarmouth Geosol; 5 to 30 ft thick

ice margins Sand and gravel; very fine to coarse sand; brown to grayish Glaciofluvial sediment (alluvial brown; contains some beds of fans) deposited in ice-contact and silt; calcareous; well to proglacial environments on frontal moderately well sorted; typically side of Cerro Gordo Moraine; may 30 to 50 ft thick include some debris-flow deposits:

overlain by up to 5 feet of loess **Diamicton**; sandy loam to clay loam; brown to pinkish gray; Glaciofluvial sediment (icecalcareous; contains intervals of contact deposits) in small kames sand and gravel or silt and clay; on the Cerro Gordo Moraine and hard; ~45 ft thick esker-like features on west side of

the Sangamon River; may include Silt, clay, and fine sand; clayey some supraglacial deposits; at the bottom of the unit; bedded overlain by up to 5 feet of loess or massive; reddish brown; calcareous; may contain beds of Till and ice-marginal sediment diamicton; up to 80 ft thick Sand and gravel; fine to very

derived directly from glacial ice; in the upper part includes the Piatt Member, which is recognized in Cerro Gordo Moraine by numerous clasts of metamorphic rocks; includes ice-disintegration deposits along east side of the Sangamon

> PRE-ILLINOIS EPISODE (> ~1,200,000 years B.P) Dewitt member,

Sand with gravel; clayey in upper part; brown to dark gray; weakly calcareous to noncalcareous; contains beds of silt and clay; lower part pebbly to cobbly: contains a higher proportion of fragments of the local bedrock; 5 to 45 ft thick

coarse sand; pebbly to cobbly;

grayish brown; may contain beds

well to moderately well sorted; up

of silt or diamicton; calcareous;

to 70 ft thick

(cross sections only) b-dt Diamicton and silt and clay; Canteen member, crudely stratified; brownish gray; Banner Formation⁵

contains a higher proportion of fragments of the local bedrock than the local diamictons; 5 to 10 Shale, siltstone, limestone, and sandstone; green, gray, and

calcareous or noncalcareous:

black; fissile

Pennsylvanian bedrock (cross sections only) P

b-c

Bedrock; includes strata having a marine or terrestrial origin; the bedrock surface is undulating or irregular (including valleys and uplands) shaped by multiple cycles of erosion y running water and glaciers

¹ The lithostratigraphy is modified after Stumpf and Atkinson (2015) and Stumpf and Dey (2012), and includes units from classifications systems published by Hansel and Johnson (1996), Kempton et al. (1991), Willman and Frye (1970), and Willman et al. (1975). ² Generally, Wisconsin Episode sediments mapped at the land surface are overlain by 3 to 5 feet of wind-deposited silt and fine sand (loess). ³ The time periods for the Wisconsin Episode and the Hudson Episode are reported as calibrated radiocarbon years and can be directly compared to calendar years before 1950 (Stuiver et al. 2015).

⁴ The Blackford Member, Banner Formation is correlative to glaciolacustrine sediments mapped in west-central Indiana by Bleuer (1991). ⁵ Correlative to nonglacial sediments mapped by Phillips (2004).

Purpose

Detailed geologic mapping on the Monticello USGS 7.5-minute quadrangle was undertaken to better delineate the distribution of geologic materials over the Mahomet Bedrock Valley area in east-central Illinois (Fig. 1). This work also supports the geologic mapping program at the Illinois State Geological Survey (ISGS) that is producing 1:24,000-scale three-dimensional maps of the glacial geology from land surface to the top of bedrock for

The geologic materials found at the land surface and in the subsurface have complex distributions that are mappable. The geologic materials are the source of important earth and water resources. This geological information can be used by decision-makers in the area to address a wide variety of local and county-wide issues, including water-supply planning, remediation of contaminated sites, identifying potential aggregate resources, designing and constructing foundations and structures, and preserving natural areas. Having an understanding of the surficial and subsurface geology can assist in identifying opportunities and limitations for future development as well as in determining the environmental consequences of past and future land-use decisions. This mapping forms a basis upon which other derivative maps can be produced for specific purposes such as assessment of groundwater resource, mineral resources, and earth hazards.

Introduction

The Monticello Quadrangle is located in the central part of Piatt County and includes the City of Monticello and Village of White Heath, and surrounding unincorporated areas. The land surface ranges in elevation from a minimum of approximately 625 feet above sea level in the Sangamon River Valley in the southwestern part of the map area to higher than 770 feet on the Cerro Gordo Moraine (Fig. 1). The map area contains a variety of landforms including the Cerro Gordo Moraine, undulating morainal uplands, glacial outwash terraces, glacial lake plains, and alluvial fans. Glaciers flowed into the map area from ice sources located over Canada north and northeast of the Great Lakes. The ice margin positions associated with one of these advances is marked by the Cerro Gordo Moraine.

Mapping Techniques

A preliminary surficial geology map for the quadrangle was compiled from soil-parent material data published by the U.S. Department of Agriculture, Natural Resources Conservation Service (Cochran 2010). A digital database accompanying the hardcopy soil survey was queried to classify the parent material for each soil horizon. The parent material class of the lowest-most horizon of each soil was used to construct the surficial geology map. The parent material classes then were grouped into mapped lithostratigraphic units following Hansel and Johnson (1996), Willman and Frye (1970), and Stumpf and

It is assumed the thickness of each soil unit is at least 6 to 10 feet or more based upon the depth to which the soil scientists sample during their mapping. The distribution of specific mapping units was adjusted according to information from borehole logs, field observations, or other geologic records. Further adjustments to the map polygons were made after the parent material/surficial geology information was draped on a shaded relief map representing the topography of the land surface that was developed from newly acquired LiDAR data (ISGS 2012) and orthophotography compiled from historical aerial photographs taken by the U.S. Department of Agriculture, Agricultural Adjustment Administration in 1940 (ISGS 2010).

The cross sections depict the geologic materials encountered between the land surface and the buried bedrock surface along transects A-A' and B-B'. Limited detailed information exists on sequences of Quaternary deposits, including clayey till, sand, gravel and silt, formed during multiple periods of glacial and postglacial deposition and erosion. The cross sections were made by correlating the lithologic units interpreted from geologic and geophysical logs in water wells, and coal and petroleum exploration boreholes. These data were correlated with geological and geophysical logs in four stratigraphic boreholes continuously-cored by the ISGS, and a geophysical log taken in another borehole drilled for a water supply. A customized tool for the ESRI ArcMap software (version 10.3.1) programmed by the ISGS (Carrell 2015) was used to generate georeferenced cross-section from the lithologic data. Polygons for each geologic unit were outlined in ArcMap, but a shapefile of the cross section was later imported into Adobe Illustrator (version CC 22.0.0) for graphical editing using the MAPublisher plugin by Avenza Systems Inc. (version 10.2). In Adobe Illustrator, the polygons were closed and symbolized, line segments smoothed, and surrounding elements added to a standardized layout for publication.

The locations of boreholes were corrected with the best data available. Prior to 2012, water wells were typically located by Township, Range, and Section, the Legal Location, using the Illinois Public Land Survey System (PLSS). County tax parcel data (e.g., Champaign County GIS Consortium http://www.maps.ccgisc.org) and public aerial and ground-based photography (e.g., Google Maps https://www.google.com/maps) were used to obtain the more accurate locations. The updated coordinates were uploaded to the ISGS wells and borings database that contains the records of wells drilled in the State of

Geophysical Surveys

A new electrical earth resistivity survey was conducted over 0.5 miles of roadway in the quadrangle (see surficial geology map). In addition, two resistivity surveys were conducted at north of Monticello across the Sangamon River valley in 2008 (Stumpf and Dey 2012). All three surveys were run over the Mahomet Bedrock Valley where the bedrock surface is 250–300 feet below the ground surface. This geophysical method determines the contrast in electrical properties of geologic materials by transmitting an electric current into the ground and measuring the resulting electrical potential. Deposits of sand and gravel have relatively high electrical resistance or resistivity to the passage of an electrical current, whereas clay tends to conduct electrical current. Resistivity (the resistance of a unit area of material divided by a unit length) is reported as ohm-meters, is the same regardless of the volume of the material. For this test, the dipole-dipole configuration was used with the High Resolution Electrical Earth Resistivity (HREER) method. Profiles of continuous resistivity measurements were obtained every 5 feet to a depth of 230 feet. Generally, alluvium (Cahokia Formation) and sandy loam diamicton (till) or sand and gravel (Vandalia Member, upper unit) are present in the subsurface along the southernmost ³/₄ of the survey line to a depth of 200 feet. Resistivity values for the units range from 101–480 ohm-m.

Forty walkTEM electromagnetic soundings and 2 miles of Profiler resisitivity survey were conducted along the western boundary of the quadrangle. The walkTEM soundings imaged the top of bedrock 300 feet below ground surface, which is at a similar elevation determined in several ISGS stratigraphic test holes drilled in the adjacent Weldon East quadrangle. The resistivity data collected provided detailed information about the sediments in the upper 10 feet, which was used to map the geologic materials across the flat to undulating landscape in the northwestern part of the map area.

Sand and gravel Mainly sand; may contain some gravel or silt Laminated silt and clay Silt and fine sand; organic-rich

Diamicton, massive; loamy; stiff to hard

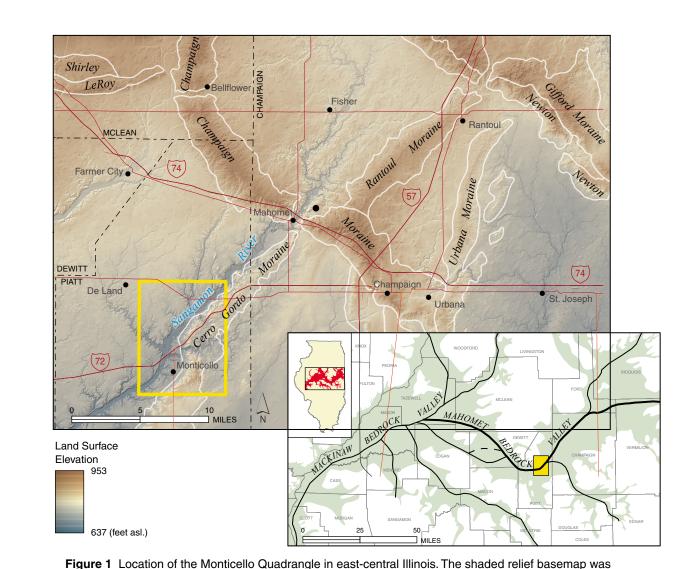
Interstratified loamy sand, sand and gravel, silty and clay,

Inferred contact **Borehole Information** county identification $\rightarrow \frac{8}{2}$ $\stackrel{?}{\downarrow}$ \leftarrow project site identification

Log of natural gamma radiation measured in borehole CPS = counts per second

Boring labels indicate the county identification number and field identification number (in parentheses). The county identification number is a portion of the 12-digit API number on file at the ISGS Geological Records Unit.

Horizontal scale: 1:24,000 (1 inch = 2,000 feet) Vertical scale: 1 inch = 100 feet Vertical exaggeration: 20×



produced from a digital elevation model (DEM) with a 2-foot resolution. The named moraines are outlined in white. On the inset map, the axes (black lines) and extent (green shade) of bedrock valleys in east-central Illinois are shown. The bedrock valleys lie below ~500 feet above mean sea level. The extent Monticello Quadrangle is outlined in yellow.

Stratigraphic Test Drilling

A 407-deep borehole was drilled on the Wolfe property through the Cerro Gordo Moraine in Sec. 9, T18N, and R6E. The borehole was the first drilled by the ISGS through this prominent landform. A continuous core into bedrock was obtained, and the bedrock surface was encountered at a depth of 405 feet. Deposits of at least three glaciations (Wisconsin, Illinois, and pre-Illinois Episodes) were sampled. Previous work on the moraine by private drilling companies to locate water supplies and energy resources suggested the bedrock was at a depth greater than 330 feet.

In this borehole, a thick valley-fill of glacial sand and gravel was cored. These sediments are classified to the Mahomet Sand Member, and regionally with similar deposits classified to the Grigg tongue, Pearl Formation. These deposits form the Mahomet aquifer, an important groundwater resource for residents of east-central Illinois.

Acknowledgments

Appreciation is extended to the many landowners who allowed access to their property. Timothy Larson processed the acquired electrical resistivity profiles. Donna McCoy provided assistance with data entry and Deette Lund compiled the cartography and graphics. The City of Monticello and the Piatt County Highway Department provided geologic logs from boreholes drilled to characterize subsurface conditions at bridge crossings and building footprints.

This mapping was supported in part by the U.S. Geological Survey (USGS) National Cooperative Geologic Mapping Program under USGS STATEMAP award number G17AC0036. The views and conclusions contained in this document are those of the author and should not be interpreted as necessarily representing the official policies, either expressed or implied, of the U.S. Government. Also, the Monticello Quadrangle lies in the area of a multi-year project (2007-2010) funded by a private company (Illinois-American Water) to study the Mahomet aquifer in Champaign County and adjacent areas. Funds from this project were used to collect geological and geophysical information that were used in this mapping.

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