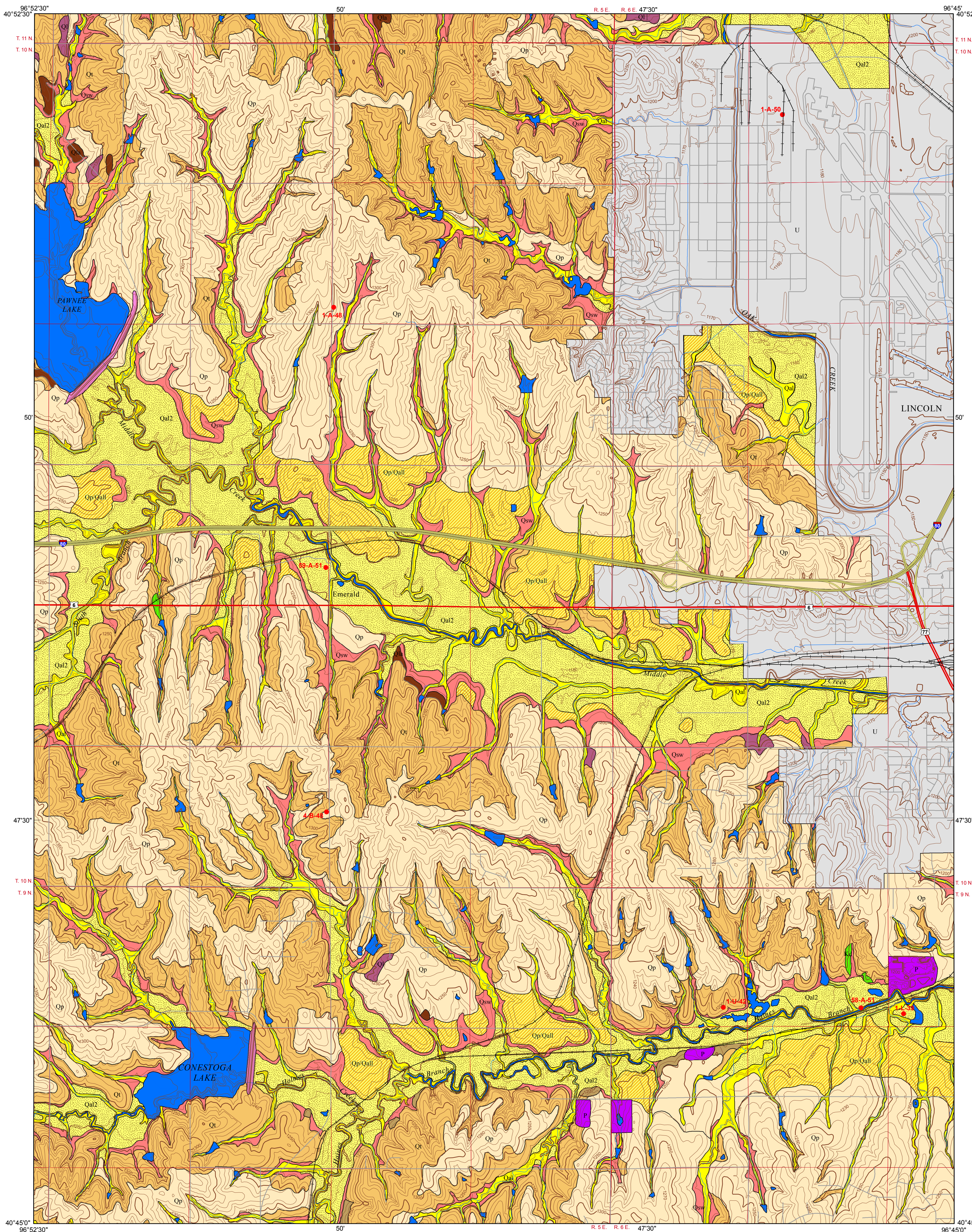


Surficial Geology of the Emerald 7.5 Minute Quadrangle, Nebraska

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Qal Quaternary alluvium, latest Holocene to historic

Clayey to Silty-Clay overlying sandy locally gravelly sediments

Alluvial deposits of very late Holocene to historic sediments of Haines Branch and Middle Creek. These fills are generally less than 5 m (15 ft) thick. These units are mapped as the Camp Creek and Roberts Creek members of the DeForest Formation in the region (see Mandel and Bettis, 2001).

Qal2 Alluvial deposits in the larger stream valleys, late Pleistocene to latest Holocene

Silt and silty clay to very fine sand with gravel

This unit consists of alluvium deposited in the wide valley bottoms of the larger streams. Although these sediments are proximal to the Qal sediments they were deposited as alluvium or floodplain deposits prior to the incision of these stream channels in early historic times. These sediments coarsen with depth. The sediments are up to 10 meters (33 feet) in thickness.

Qp/Qal Loess Covered Alluvium, late Pleistocene

Silt to silty clay (loess) over sand and silty sand (alluvium)

Old alluvium that has been buried by loess in the larger stream valleys in the mapping area including Haines Branch and Middle Creek. The tops of these units are generally 9-12 meters (30-40 feet) above the modern stream levels. Loess thickness is ~ 4.5 meters (~ 15 feet) of Peoria and sometimes an older loess unit called the Gilman Canyon loess. Parts of these fills are reddish in color at the surface because they contain alluvial fans that were sourced from Loveland loess (Ql).

Qp Peoria Loess, Late Pleistocene

Silt to silty clay

Late Pleistocene aged loess. Loess is a wind-blown silt and clay deposit. Peoria Loess thickness ranges from 3 to 7 meters (10 to 23 feet) in the mapping area, and was likely deposited between ~ 25,000 to 14,000 years ago. Peoria Loess is the primary parent material for upland soils in the mapping area. This unit is commonly underlain by Gilman Canyon Formation, a dark brown or black colored silty loess unit that is ~1 meter (3 feet) in thickness. The Gilman Canyon Formation is locally underlain by early Pleistocene age Loveland Loess (Ql), which is a clay-rich loess that is commonly red or pink in color and of variable thickness in the mapping area.

Ql Loveland Loess, Mid-Pleistocene

Silty clay to clayey silt

Several exposures of Loveland loess are mapped along the larger stream valleys in the mapping area. Loveland loess can be distinguished from Peoria Loess by its characteristic red or pink color and finer (clay-rich) texture. Loveland Loess is of varying thickness in the mapping area, and is found overlying other silty sediments or glacial deposits in the study area.

Qla Lacustrine Sediment, pre-Illinoian; Mid-Pleistocene

Silt to very fine sand

Several exposures of lacustrine sediment are mapped in the area. These are interpreted as glacial lacustrine deposits that have highly variable thicknesses. Lacustrine sediments are exposed along stream valleys, typically near till bodies.

Qsw Slopewash, Late Pleistocene to Holocene

Silty, Clayey, and locally sandy

Sediments located at the base of slopes. Generally slopewash is sourced from adjacent loess or till deposits that are located upslope. Slopewash deposits are commonly less than 3 meters (10 feet) thick.

Qo Outwash, pre-Illinoian; Mid-Pleistocene

Fine to Medium Sand, locally gravelly

Outwash deposits of pre-Illinoian age are found along the Haines Creek valley in the southern portion of the mapping area. Outwash is generally moderately well-sorted medium to fine sand deposits that may locally contain gravel and are of variable thickness. Some of these outwash deposits were locally deflated by winds in the late Pleistocene.

Qt Glacial Till, Pleistocene (Pre-Illinoian)

Gravelly-clay diamicton

Tills were deposited by glaciers between ~ 2,500,000 and 600,000 years ago. Glacial till in the mapping region is generally clay-rich sediment containing varying quantities of rocks. The upper portions of till deposits often have secondary deposits of carbonates (white) and iron staining (orange). Specific till locations can locally be bluish gray clay with gravel or brownish clay with varying amounts of sand and gravel. Thick silt, sand and gravel deposits can be locally associated with till bodies. Boulders and cobbles of Sioux Quartzite (hard, pink rock) and crystalline rocks such as granite and gneiss are commonly found in this unit.

Kd Dakota Formation (Cretaceous)

Sandstones, mudstones and shales deposited in fluvial, estuarine, and nearshore marine settings

Both sandstones and red shales of the Dakota Formation are exposed in the mapping area. Dakota sandstone is exposed in several locations in Pioneer's Park in the southeastern portion of the mapping area (Pabian, 2001). The Dakota sandstone varies in color and can appear brown, yellow, light grey, and nearly white. The sandstone contains concretions of the iron oxide limonite that appear as orange or brown pebbles to cobble sized masses. Red shales are mined for brick making in the southeastern portion of the mapping area.

F Artificial Fill

Built up areas, dams, pits and other man-made deposits.

P Gravel Pit

W Water

U Urban and Built-up Areas

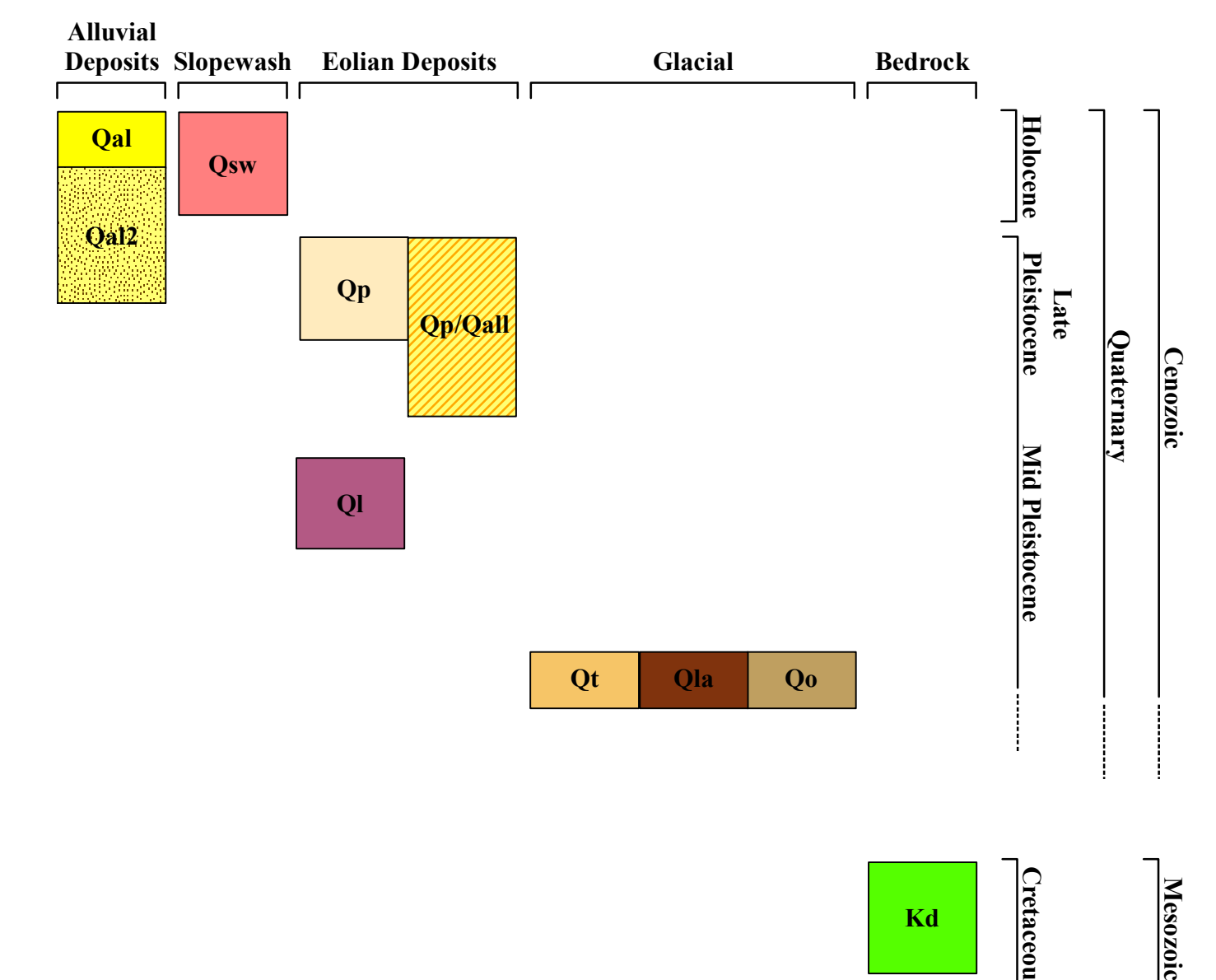
• Test Hole Location

References Cited

Mandel, R.D., Bettis, E.A., III, 2001. Late Quaternary landscape evolution in the South Fork of the Big Nemaha River valley, southeastern Nebraska and northeastern Kansas. University of Nebraska - Lincoln, Conservation and Survey Division Guidebook 11, Lincoln, Nebraska, 58 p.

Mason, J. A., 2001. Transport direction of Peoria Loess in Nebraska and implications for loess sources on the central Great Plains. Quaternary Research 56, p. 79-86.

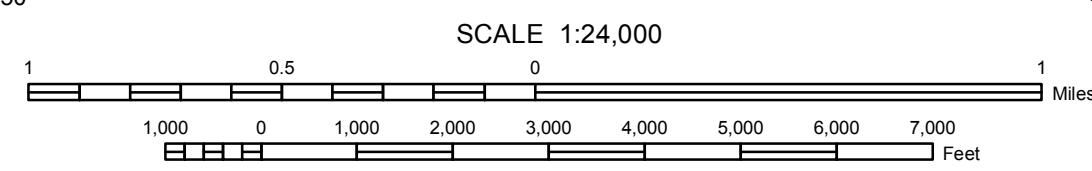
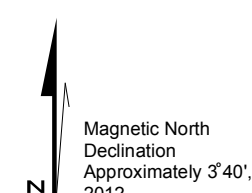
Pabian, R. K., 2001. Geology of Pioneer's Park Lancaster County, Nebraska. University of Nebraska - Lincoln, Conservation and Survey Division Educational Circular no. 14, Lincoln, Nebraska, 19 p.



Projection: UTM zone 14 North, NAD83

Contours from the Nebraska Department of Natural Resources, compiled from USGS 7.5 minute topographic quadrangles

Additional base data derived from 2005 second edition TIGER/line files



CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

Gardner	Raymond	Davey
Pleasant Dale	Emerald	Lincoln
Crite North	Denton	Roca

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