

Wisconsin Geological and Natural History Survey **Bulletin 92** Pleistocene Geology of Polk County, Wisconsin

Mark D. Johnson

Explanation

Marshes and wetlands composed of peat and muck.

Modern floodplains predominantly composed of noncalcareous sand, with some gravel and finer sediment deposited by modern

Steep slopes with gullies and scarps along margins of St. Croix River valley and its tributaries and along the Horse Creek channel; composed predominantly of unlithified sediment. Paleozoic bedrock exposed along St. Croix River valley at Osceola and farther south; formed by fluvial and hillslope erosion.

Terraces developed along the St. Croix River valley during postglacial valley incision; composed of sand and some gravel derived from Copper Falls and Trade River Formations. In the northwest, the terrace with transverse dunes is composed of noncalcareous sand derived primarily from the Superior Lobe and built initially by meltwater flowing from the north and later modified by westerly and southwesterly winds; sand between dunes is 5 to 15 m thick.

Outcrops of Ordovician dolomite of the Prairie du Chien Group.

Outcrops of Precambrian basalt of the Chengwatana Group; basalt is amygdaloidal and vesicular in places, and displays a high concentra tion of magnetic minerals in places; outcrops have high relief, are polished, grooved, striated, and weathered; potholes occur at St.

Pitted to hummocky till plain underlain by calcareous, gray loamy Trade River till deposited by the Grantsburg Sublobe; shale, dolomite, limestone, and other rock types are present in till pebbles; till is several meters thick and underlain in most places by Copper Falls stream sediment that contained blocks of Superior Lobe ice that melted out after the Pine City Phase, collapsing the Trade River till and producing the collapse topography.

Moraine ridges marking the edge of the Grantsburg Sublobe at its maximum extent and during its retreat; composed of Trade River till.

Trade River stream sediment occurring in ice-marginal channels and outwash plains; sediment is predominantly calcareous pebbly sand; in places, it contains significant admixtures of sediment eroded from the Copper Falls Formation; deposited by meltwater from the Grantsburg Sublobe.

Ice-dammed-lake plains occurring at the ice-margin limit of the Grantsburg Sublobe; composed of gravel, sand, silt, and clay; lake sediment is calcareous and includes sediment derived from the Grantsburg Sublobe as well as sediment that was eroded from the Copper Falls Formation and carried to the lakes by streams.

Osceola bench; composed of Trade River sand, pebbly sand, and coarse gravel. Trade River till and Only and pebbly sand, and

COPPER FALLS FORMATION

Sylvan Lake Member

Gently rolling to streamlined upland areas underlain by thick, reddish-brown, sandy loam till of the Sylvan Lake Member; deposited by the Superior Lobe during the St. Croix and later phases.

Pitted outwash plains composed of noncalcareous sand, slightly pebbly sand, and pebbly sand deposited by meltwater from the Superior obe; cobbles and boulders are common near former ice-margin positions; pits are as large a 1 km²; abandoned channels and terrace scarps present in places.

Hummocks composed of noncalcareous sand, slightly pebbly sand, and pebbly sand deposited by meltwater from the Superior Lobe;

Lobe ice melted; small marshes present in places.

Broad, flat floors of St. Croix River tributary valleys in northwestern Polk County and the channel bottom of the Horse Creek Channel in southwestern Polk County; terrace scarps present in places; composed of sand to pebbly sand. Includes aprons of sandy hillslope sediment deposited at base of scarps. Valleys in northwestern Polk County were cut following retreat of the Superior Lobe ice and prior to the advance of the Grantsburg Sublobe; the Horse Creek Channel was cut during or after the Centuria Phase and prior or during the

Gently rolling, flat, to low-relief-hummocky landscape underlain by till and stream sediment of the Sulvan Laboratory till and stream sediment of the Sylvan Lake Member. West of Luck, this unit overlies thick stream sediment. This unit is used also to represent a relatively young wave-cut surface around Bone Lake.

Hummocky topography underlain by till, gravity-flow sediment, stream sediment, and lake sediment of the Sylvan Lake Member; small marshes present in places.

Nearshore deposits of ice-walled-lake plains and ice-dammed-lake plains; composed of silt, sand, pebbly sand, and unsorted material; deposited by streams, waves, and sediment gravity flow; deposited along the shorelines of ice-walled and ice-dammed lakes when stagnant ice of the Superior Lobe was present.

Offshore deposits of ice-walled-lake plains and ice-dammed-lake plains; composed primarily of silt with some sand and clay; deposited from suspension and by turbidity currents in the centers of icewalled and ice-dammed lakes when stagnant ice of the Superior

Poskin Member

Gently rolling, stream-dissected landscape underlain by red, sandy loam till of the Poskin Member; deposited by the Superior Lobe during the Emerald Phase; outcrops of River Falls till may occur in this

dashed where unce < Slope of outwash surface Crest of transverse dun Ice-flow from striation

<u>Extension</u>

Wisconsin Geological and Natural History Survey 3817 Mineral Point Road • Madison, Wisconsin 53705-5100 • 608/263.7389 http://www.uwex.edu/wgnhs/