THICKNESS OF GLACIAL DRIFT IN DU PAGE COUNTY, ILLINOIS[1]

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A map showing the thickness of glacial drift in Du Page County has been prepared as an aid to the State Department of Public Health in their enforcement of water-supply and sewage-disposal regulations in those regions in which limestone and dolomite constitute the uppermost bedrock and the glacial drift is thin or absent. Water moving underground in limestone and dolomite may receive little or no filtration, and water from the surface recharging these formations is likely to be inadequately filtered unless it has passed through a sufficient thickness of glacial drift. Where less than 50 feet of glacial drift overlies limestone or dolomite from which municipal water supplies are obtained, the Department recommends continuous and adequate chlorination, or, under certain conditions, purification and chlorination. Where the drift is less than 30 feet thick, the Department recommends chlorination of private supplies. In addition, certain local sanitary units, such as township health boards, may permit no private septic-tank sewage disposal unless there is a minimum thickness of 30 feet of glacial drift to filter the effluent.

Du Page County is located directly west of Cook County and its eastern boundary is less than 5 miles from the western city limits of Chicago. It is a suburban region where water-supply and sewage-disposal problems are common, and it is the only county in Illinois in which all the bedrock at the surface or directly underlying the glacial drift is limestone and dolomite.

The thickness of the glacial drift is the resultant of the elevation of the bedrock surface, the amount of glacial deposition, and the extent of subsequent stream dissection. A contour map of the bedrock surface of Du Page County, based on data obtained from the logs of more than 600 wells in the county, shows that the bedrock surface in general slopes from an elevation of about 685 feet above sea-level in the northwest part of the county to an elevation of about 560 feet in the southeast corner where a trench in the bedrock has been cut by the Des Plaines River. The preglacial divide between east and southwest drainage appears to have crossed Du Page County from northwest to southeast, 10 to 15 miles west of the present drainage divide. Buried bedrock hills lie along the former drainage divide.

The present ground surface has a general slope towards the southeast, from an elevation of about 840 feet above sea-level near the northwest corner of the county to an elevation of about 590 feet in the southeast corner in the valley trench cut by the Des Plaines River. Standing about 50 to 90 feet above the general surface are a series of arcuate, somewhat discontinuous, morainic ridges trending north to south-southeast. The greater portion of the county is covered by the Valparaiso morainic system which on its west side includes the West Chicago moraine. Beginning near the west border of the county, the ground surface rises to the west towards Minooka Ridge. In the northeast corner of the county, the Tinley moraine forms a prominent ridge. The rest of the county is mostly covered by ground-moraine and outwash plains.

The map showing the average thickness of glacial drift in Du Page County has isopachous intervals of 50 feet, with inclusion of the 30-foot isopach because of its importance for sanitary engineering considerations. The relative accuracy of the map varies in accordance with the amount of data obtained, which in general is greater in the built-up areas. The thickness of the glacial drift varies from a maximum of about 175 feet in the north part of the county to nothing where bedrock crops out in small areas in the south and east parts of the county. The thick-

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est drift is found in the north part of the county beneath the highest portions of the West Chicago moraine and the undifferentiated Valparaiso moraine. The drift is less than 30 feet thick where streams have cut into thin ground moraine overlying bedrock hills. These areas are in the vicinity of the West Branch Du Page River near Naperville, the East Branch Du Page River near Lisle, and Salt Creek near and south of Elmhurst. Bedrock is exposed near Naperville and in a quarry at Elmhurst. The drift is also less than 30 feet thick in Des Plaines River valley, where bedrock is exposed in quarries and at points along the hillside.

In approximately 90 per cent of the 345 square miles of area of Du Page County the drift is more than 50 feet thick, and in approximately half the county the drift is more than 100 feet thick.