PLATE 1a.

72-219

EXPLANATION

A layer of windblown sand or silt, mixed with the underlying glacial deposits, is present over much of the area but has not been mapped. This eolian mantle is best developed on higher older deposits and is generally missing on lower younger deposits

Holocene

Qal — Alluvium

Recent stream deposits of silt, sand, and gravel along the Connecticut River, Westfield River, and smaller streams. Color varies from dark gray to light grayish brown to yellowish brown. Occurs in several levels of flood plains as much as 25 feet above river level

Qm — Swamp deposits

Grayish-brown to black peat, organic muck, silt, sand, and clay

Qds — Dune sand

Yellowish-brown to light-brown well-sorted, medium to fine sand; contains wind-polished pebbles and cobbles

Qta — Talus deposits

Mostly coarse, blocky rubble accumulating at the foot of cliffs of Holyoke Basalt.

Qt — Terrace deposits

Yellowish-brown silt, sand and gravel. Where developed on lake clays the bottom portion is oxidized dark yellowish brown by ground-water activity.

Bottom Deposits of Lake Hitchcock and Lake Manhan

Qbh — Beach deposits

Reddish-brown to yellowish-brown sand and gravel. Clean and well sorted. As much as 20 feet thick

Qls — Lake sand deposits

Laminated, reddish-brown, light-brown to yellowish-brown sand and silt deposited in a lake. Includes proximal and distal bottomset beds of a delta built into a glacial lake. Contains up to 10 percent clay

Qlc — Lake clay deposits

Yellowish-gray to grayish-brown alternating thin silt and clay layers 1/2 to 2 inches thick (varves). Represents cyclic sedimentation in a glacial lake. Contains over 10 percent clay

Glacial stream and lake deposits

West of Holyoke Basalt ridge

East of Holyoke Basalt ridge

(units east and west of the Holyoke Basalt ridge are not correlative)

Qdw4 Qdw3 Qdw2 Qdw1

Qde7 Qde6 Qde5 Qde4 Qde3 Qde2 Qde1

Stratified drift deposits

Stratified drift deposits

Pleistocene Wisconsin

QUATERNARY

Qdw4, deltaic, lacustrine, and ice-contact deposits; yellowish-brown to reddish-brown fine to coarse sand and pebbles

Qdw3, deltaic, lacustrine, and ice-contact deposits; yellowish-brown, reddish-brown to brown clay, silt, sand, pebbles, and cobbles; includes delta foreset beds which dip south

Qdw2, deltaic, lacustrine, and ice-contact deposits; yellowish-brown to reddish-brown medium to coarse sand, pebbles, and cobbles; becomes finer grained with depth and grades southward into yellowish-brown to light reddish-brown fine to coarse sand and pebbles; includes minor amounts of clay, silt, and flowtill

Qdw1, deltaic deposits; upper part light reddish-brown medium to coarse sand and pebbles; represents delta topset beds. Lower part reddish-brown fine to coarse sand; represents delta foreset beds which dip southeast

Qde7, deltaic and lacustrine deposits. Top part yellowish-brown to reddish-brown coarse sand with pebbles, cobbles, and boulders; crossbedding dips to south. Middle part yellowish-brown, reddish-brown to light-brown medium to coarse sand with numerous pebbles; represents delta foreset beds; crossbedding dips to south-southeast. Lower part reddish-brown to light-brown clay, silt, and fine to coarse sand; represents delta bottomset beds

Qde6, deltaic and ice-contact deposits; yellowish-brown to brown medium to coarse sand, pebbles, and cobbles; crossbedding dips to south-southwest

Qde5, deltaic, lacustrine, and ice-contact deposits; yellowish-brown, reddish-brown to brown medium to coarse sand with pebbles which grades southward into olive-gray, reddish-brown to brown clay, silt, and fine sand; includes minor till

Qde4, deltaic and lacustrine deposits; reddish-brown to brown coarse sand with pebbles and cobbles which grades southward into light-brown silt and fine sand; crossbedding dips southward

Qde3, glaciofluvial and lacustrine deposits; yellowish-brown, dark to light-brown fine sand and silt with clay partings (varves) to coarse sand and pebbles

Qde2, glaciofluvial, lacustrine, and ice-contact deposits; yellowish-brown, light- to dark-brown cobble gravel which grades southward to medium sand and pebbly coarse sand; includes large boulders dropped directly from ice in contact with gravel. Portion that extends into West Springfield quadrangle includes olive-gray to light-brown clay, silt, sand, and pebbles with ice-thrust features

Qde1, glaciofluvial, lacustrine, and ice-contact deposits; yellowish-brown, reddish-brown to dark-brown sand, pebbles, and cobbles which display imbrication, cut-and-fill, and collapse

Qgc — Undivided and unassigned glaciofluvial deposits

Yellowish-brown to reddish-brown sand and gravel in irregular landforms not distinct enough to separate by origin. Deposited by melt-water streams.

Qic — Undivided and unassigned ice-contact deposits

Yellowish-brown, reddish-brown to brown silt, sand, and gravel deposited by melt-water streams in, on, or adjacent to stagnant blocks of ice; laid down in part in ponded water; displays collapsed bedding

Qt — Till

Compact to loose, nonsorted to poorly sorted, nonstratified mixture of clay, silt, sand, pebbles, cobbles and boulders. Generally reddish brown to grayish brown west of the Holyoke Basalt ridge and brown east of, and on, the Holyoke Basalt ridge. Thickness varies but generally is less than 10 feet. May be more than 75 feet under crests of some drumlins. Includes minor bodies of stratified drift. Qtc, till formed by readvance of glacial ice

Upper Triassic and Carboniferous

TRIASSIC CARBONIFEROUS

TRs Trb Trv Cg (be on map)

Bedrock exposures

TRs, Triassic sedimentary rocks; exposures of reddish-brown arkosic siltstone, arkose, arkosic conglomerate, and brown to gray arkosic shale. Trb, Triassic basaltic rocks; exposures of medium- to dark-gray basalt; columnar jointing; vesicular to amygdaloidal in places. Trv, Triassic volcanic rocks; gray tuff, agglomerate and volcanic sandstone. Cg, Carboniferous granitic rocks; light- to medium-gray granodiorite and pegmatite; includes minor gneiss and schist. Ruled pattern indicates areas of abundant exposures where till deposits are generally less than 5 feet thick

af — Artificial fill

Artificially emplaced earth, mainly sand and gravel; locally some till. Trash fills not mapped

Contact

Dashed where approximately located, dotted where concealed

Terrace scarp

Line at crest of scarp. Ticks point downslope

Generalized shoreline of low stable stage of glacial Lake Hitchcock before deposition of deltaic and lake sediments. Drumlins and rock-cored till hills appear as islands

Inferred direction of flow of glacial melt-water streams

Drumlin

Hill partly or entirely composed of till, smoothed and streamlined by glacial action. Shaft is parallel to long axis of drumlin and to general direction of ice movement

s,p s, p 12' t

Materials classification

Letter symbols indicate size distribution in order of decreasing abundance. Superposed symbols indicate superposition of materials in exposure. Numbers give thickness of material. Many shallow exposures not shown

b, boulders
c, cobbles
cg, cobble gravel; stones mostly 2.5-10 inches
cl, clay
ft, flowtill
g, interbedded sand and gravel of mixed sizes
p, pebbles
pg, pebble gravel
s, sand as separate beds, not including sand in matrix of gravel
st, silt
t, till

Ice-channel filling

Sinuous ridge of sand and gravel probably formed in subglacial stream. Points of chevrons indicate inferred flow direction of glacial stream

Glacial striations

Arrow shows inferred direction of ice movement. Point of observation at tip of arrow

s,p

Clay, sand, gravel, or till pit

Extent of large pit shown by hachures

Quarry

Abandoned quarry

Extent of large quarry shown by hachured line

U.S. Geological Survey
OPEN FILE MAP
This map is preliminary and has not been edited or reviewed for conformity with Geological Survey standards or nomenclature.

To accompany: Surficial geology of the Mount Tom quadrangle, Massachusetts
Plate 2
Larsen, F.D. 3/31/72

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