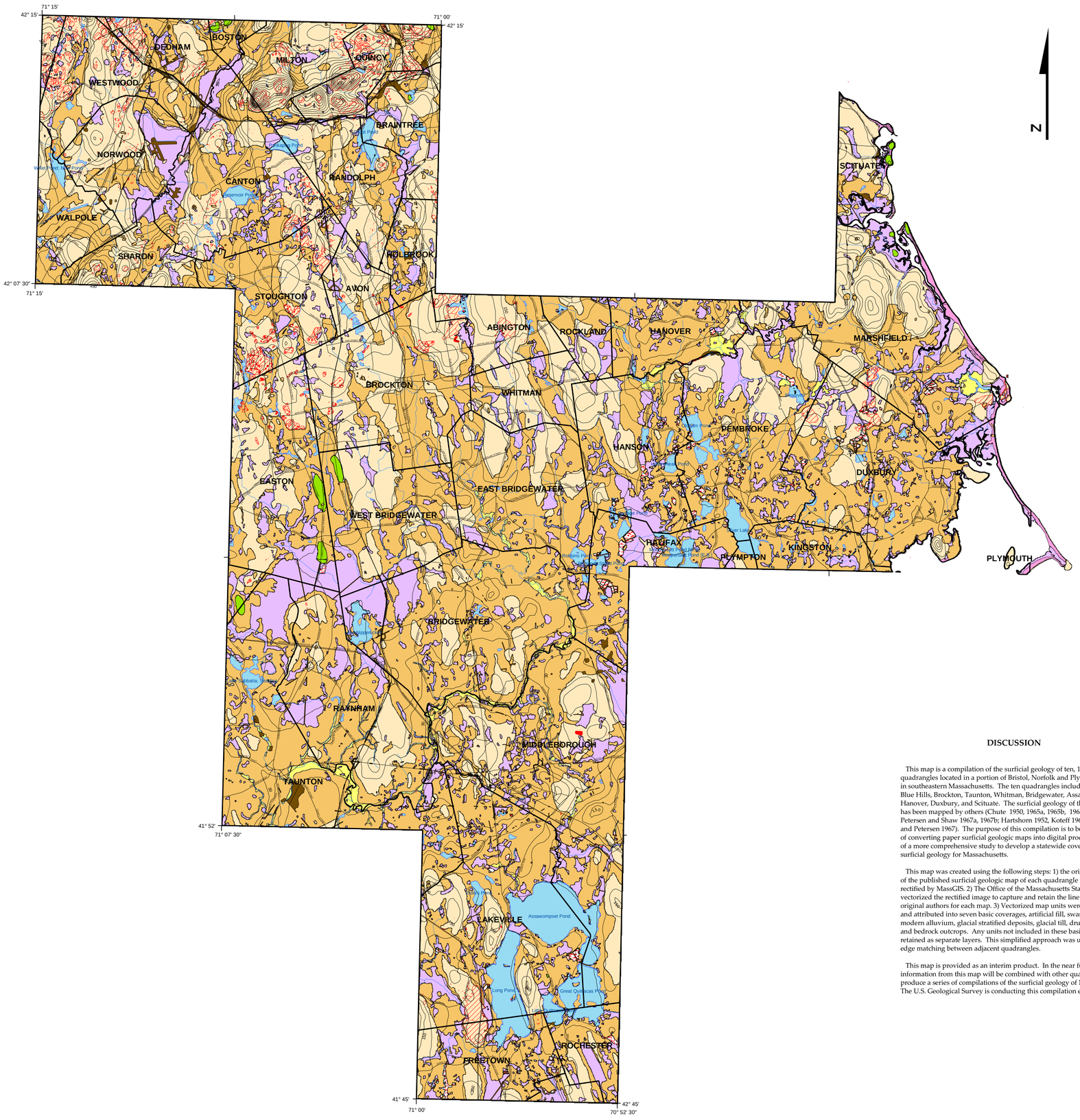
OFFICE OF THE MASSACHUSETTS STATE GEOLOGIST
UNIVERSITY OF MASSACHUSETTS

Prepared in cooperation with the
COMMONWEALTH OF MASSACHUSETTS
STATE GEOLOGIST

SURFICIAL GEOLOGIC MAP
PORTION OF SOUTHEASTERN MASSACHUSETTS



DESCRIPTION OF MAP UNITS

A layer of windblown sand and silt containing sparse ventifacts, and generally mixed with underlying glacial deposits, is present over much of the area but has not been mapped separately.

af — Artificial Fill - Artificially emplaced earth chiefly along roadways, railroads, dams and construction sites. Contains mostly sand and gravel but may include other unconsolidated materials; locally may incorporate rubbish, and construction and demolition debris.

Cb — Cranberry Bog

Qbd — Beach and Dune Deposits - Beach sand and gravel developed along parts of shoreline exposed to open ocean; lacking or poorly developed along most of the protected shores of saltwater estuaries. Beach materials, derived mainly from glacial deposits, are bouldery where till occurs in adjacent sea cliffs and are reworked by wave and current action. Along smaller freshwater ponds beach materials are well-sorted sand, and locally, pebbles and cobbles; reworked by wave action. Dunes are well-sorted sand developed along parts of shoreline exposed to open ocean; lacking or poorly developed along most of the protected shores of saltwater estuaries.

Qs — Salt Marsh and Swamp Deposits - Salt marshes composed of marine peat underlain by postglacial silt and clay, glacial deposits, and coastal plain deposits. Fresh-water swamps comprised of undecomposed to partly decomposed plant material, mixed with clay, silt, sand, and gravel. Generally a few inches to 10 feet thick, but may be as much as 25 feet thick.

Qal — Alluvium - Gravel, sand, silt, and some clay deposited along streams; found chiefly in areas flooded by modern streams. May contain scattered pebbles. Generally less than 20 feet thick.

Qsd — Glacial Stratified Deposits - Stratified deposits of gravel, sand, silt, and clay deposited by glacial meltwater and in glacial lakes during the most recent deglaciation event in the late Pleistocene. Includes stratified materials associated with kame deltas, kame plains, kame terraces, kames, outwash and valley train deposits, ice-contact deposits, ice-channel (esker) deposits, and lake-bottom deposits. Grain size and bedding thicknesses are variable. Deposits can range from a few feet to over 100 feet thick.

Qt — Till - Nonsorted to poorly sorted, unstratified mixture of boulders, cobbles, gravel, sand, silt, and minor clay. Occurs as an uneven and discontinuous blanket over the region, generally 1 to 20 feet thick, but may be up to 100 feet thick in drumlins. Thin where bedrock outcrops are abundant, thick where bedrock outcrops are scarce. Probably underlies stratified deposits in many places. Small lenses of stratified sand and gravel may occur within the till. In many places, loose gravelly till a few feet in thickness, probably an ablation deposit, is underlain by hard compact till, probably lodgement till.

Qd — Drumlins - Elongated, oval-shaped hills composed mostly of till, elliptical in plan, deposited and molded by advancing ice.

Bedrock Outcrops - Solid color represents individual outcrops; ruled pattern indicates large areas of abundant outcrops where surficial deposits are 10 feet (3 m) or less thick.

Qtcs — Clay, Sand, and Fine Gravel (Coastal Plain Sediments) - Unconsolidated Coastal Plain sediments, composed of dark-gray clay; highly siliceous, glauconite-bearing, yellowish to brown sand and fine gravel; believed to underlie a part of the glacial and postglacial deposits along the Scituate coastal region. These Coastal Plain deposits may be of late Tertiary or Quaternary age. The deposits originally were thicker and more widely distributed, but were extensively eroded by streams before the last ice advance.
Map unit too small on map and is not shown.

DISCUSSION

This map is a compilation of the surficial geology of ten, 1:24,000-scale quadrangles located in a portion of Bristol, Norfolk and Plymouth Counties in southeastern Massachusetts. The ten quadrangles include: Norwood, Blue Hills, Brockton, Taunton, Whitman, Bridgewater, Assawompsett Pond, Hanover, Duxbury, and Scituate. The surficial geology of these quadrangles has been mapped by others (Chute 1950, 1965a, 1965b, 1965c, 1966; Petersen and Shaw 1967a, 1967b; Hartshorn 1952, Koteff 1964, Shaw and Petersen 1967). The purpose of this compilation is to begin the process of converting paper surficial geologic maps into digital products and is part of a more comprehensive study to develop a statewide coverage of the surficial geology for Massachusetts.

This map was created using the following steps: 1) the original paper copy of the published surficial geologic map of each quadrangle was scanned and rectified by MassGIS. 2) The Office of the Massachusetts State Geologist vectorized the rectified image to capture and retain the line work of the original authors for each map. 3) Vectorized map units were then compiled and attributed into seven basic coverages, artificial fill, swamps and marshes, modern alluvium, glacial stratified deposits, glacial till, drumlins (thick till) and bedrock outcrops. Any units not included in these basic coverages were retained as separate layers. This simplified approach was used to facilitate edge matching between adjacent quadrangles.

This map is provided as an interim product. In the near future, information from this map will be combined with other quadrangles to produce a series of compilations of the surficial geology of Massachusetts. The U.S. Geological Survey is conducting this compilation effort.

REFERENCES CITED

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Petersen, R. G. and C. E. Shaw, Jr. 1967. Surficial Geologic Map of the Whitman Quadrangle, Plymouth County, Massachusetts. U.S. Geological Survey, GQ-632.
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Projection is Universal Transverse Mercator, Zone 19, North American Datum, 1927.

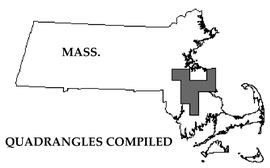
Topography from MassGIS (1:250000 scale)
Hydrography from MassGIS (1:100000 scale)
Major roads from MassGIS.

SCALE 1:100000

5 2.5 0 5 Kilometers

5 2.5 0 5 Miles

CONTOUR INTERVAL 30 FEET



QUADRANGLES COMPILED

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SURFICIAL GEOLOGIC MAP OF A PORTION OF BRISTOL, NORFOLK, AND PLYMOUTH COUNTIES, MASSACHUSETTS

Compiled By
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2004