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UNCONSOLIDATED SEDIMENTS

During the Pleistocene Epoch, continental glaciers scoured the bedrock surface of the French-Quinebaug Rivers basin and deposited a discontinuous mantle of fill, an unconsolidated and unstratified mixture of clay, silt, sand, gravel, cobbles, and boulders. During melting of glacial ice, soil and rock fragments carried with the glaciers were transported, sorted, and deposited by meltwater as stratified sand and gravel in stream channels and as fine sand, silt, and clay in ponds and lakes. Unconsolidated glacial stream (glaciofluvial) deposits of sand and gravel constitute the principal surficial aquifer in the basin. Figure 11 illustrates the distribution of the glacial deposits in the basin. The fine-grained deposits are identified as lacustrine sediments, and the glaciofluvial outwash has been differentiated into coarse-grained sediments composed chiefly of sand and gravel and medium-grained sediments composed chiefly of sand. Areas of wetlands where organic deposits are underlain by fine-grained sediments are also illustrated.

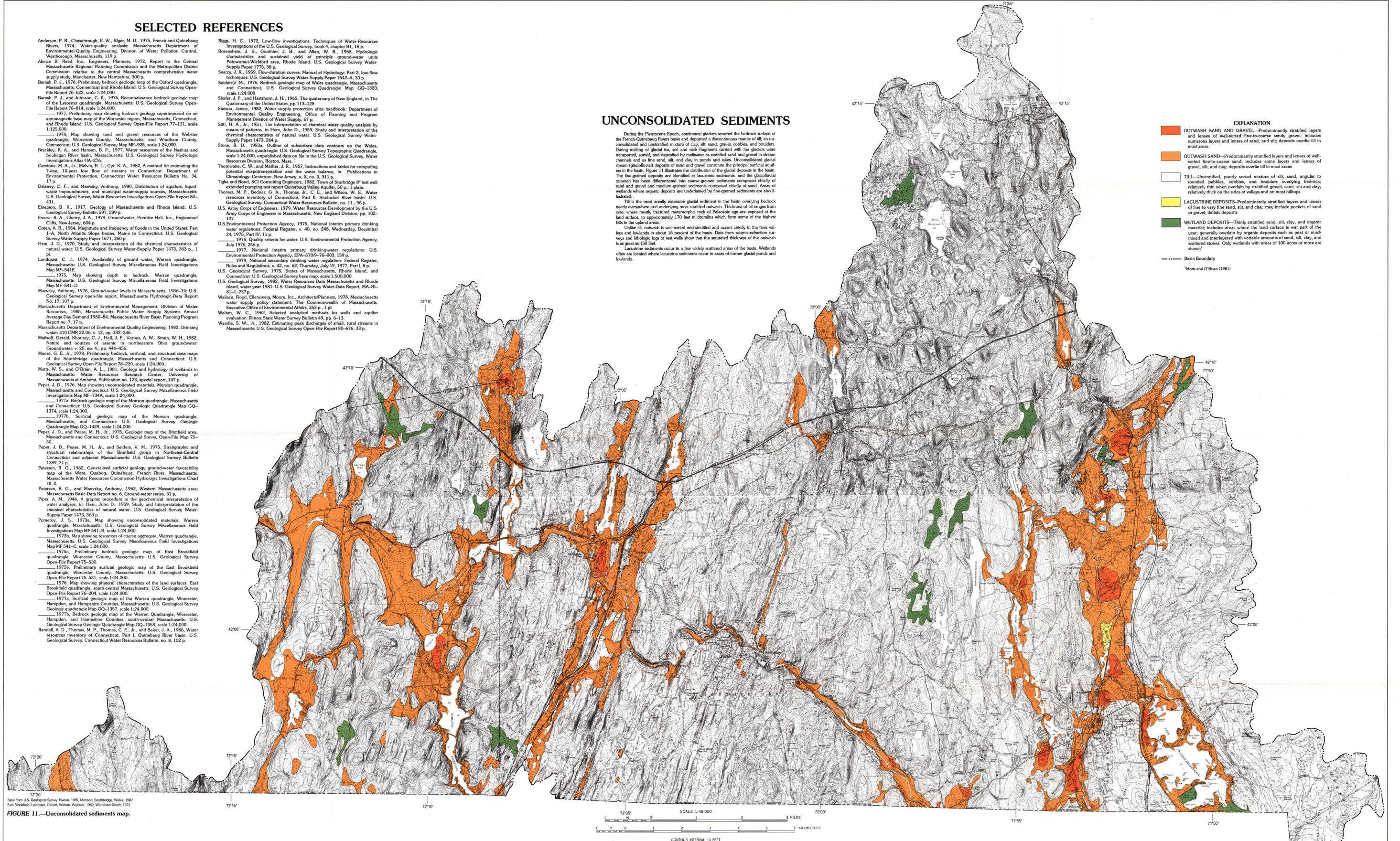
Till is the most areally extensive glacial sediment in the basin overlying bedrock nearly everywhere and underlying most stratified outwash. Thickness of fill ranges from zero, where mostly fractured metamorphic rock of Paleozoic age are exposed at the land surface, to approximately 170 feet in drumlins which form some of the highest hills in the upland areas.

Unlike till, outwash is well-sorted and stratified and occurs chiefly in the river valleys and lowlands in about 16 percent of the basin. Data from seismic-refraction surveys and lithologic logs of test wells show that the saturated thickness of the outwash is as great as 150 feet.

Lacustrine sediments occur in a few widely scattered areas of the basin. Wetlands often are located where lacustrine sediments occur in areas of former glacial ponds and lowlands.

EXPLANATION

- OUTWASH SAND AND GRAVEL**—Predominantly stratified layers and lenses of well-sorted fine-to-coarse sandy gravel; includes numerous layers and lenses of sand, silt, and clay; deposits overlie till in most areas
- OUTWASH SAND**—Predominantly stratified layers and lenses of well-sorted fine-to-coarse sand, includes some layers and lenses of gravel, silt, and clay; deposits overlie till in most areas
- TILL**—Unstratified, poorly sorted mixture of silt, sand, angular to rounded pebbles, cobbles, and boulders overlying bedrock; relatively thin when overlain by stratified gravel, sand, silt, and clay; relatively thick on the sides of valleys and on most hillslopes
- LACUSTRINE DEPOSITS**—Predominantly stratified layers and lenses of fine to very fine sand, silt, and clay; may include pockets of sand or gravel; detritic deposits
- WETLAND DEPOSITS**—Thinly stratified sand, silt, clay, and organic material; includes areas where the land surface is wet part of the year; generally overlain by organic deposits such as peat or muck mixed and interlayered with variable amounts of sand, silt, clay, and scattered stones. Only wetlands with areas of 100 acres or more are shown.
- Basin Boundary**
- Motts and O'Brien (1981)**



Base from U.S. Geological Survey Patuxent, 1965, Monson, Southbridge, Wales, 1967, East Brookfield, Leicester, Oxford, Warren, Webster, 1969, Worcester South, 1973

FIGURE 11.—Unconsolidated sediments map.

WATER RESOURCES IN THE FRENCH-QUINEBAUG RIVERS BASIN, MASSACHUSETTS

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