Prepared in cooperation with the
STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION
GEOLOGICAL AND NATURAL HISTORY SURVEY

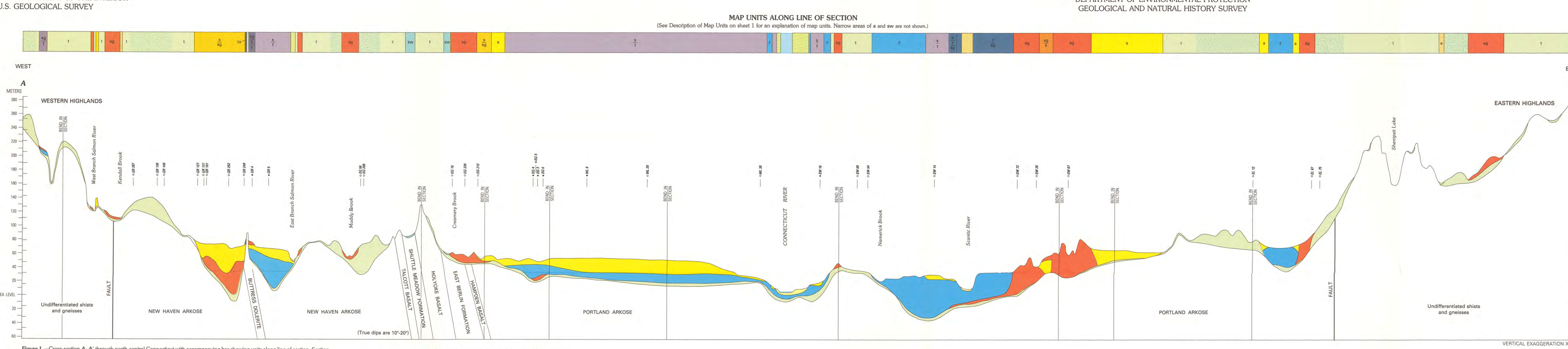


Figure 1.—Cross-section *A–A′* through north-central Connecticut with accompanying bar showing units along line of section. Section transects the Central Lowland where surficial materials are relatively thick and extends into the Eastern and Western Highlands where surficial materials in smaller valleys are generally thinner. The extensive bodies of sand and fine-grained deposits in the Central Lowland (east and west of the Connecticut River) are deltaic and lake-bottom sediments of glacial Lake Hitchcock, the largest and longest-lived glacial lake in Connecticut. The Lake Hitchcock deposits in the vicinity of the present-day Scantic River occupy the ancestral valley of the Connecticut River, which today is superimposed on a higher bedrock surface to the west. Locations of wells (open circles) and test holes (closed circles) used to construct the section are indicated above the section (letter and number designations are as used in Ryder and Weiss, 1971). This figure illustrates that some subsurface units have not been mapped. The bar showing "map units along line of section" does not reflect all subsurface units. See text for further explanation. Exaggeration of the vertical scale in relation to the horizontal scale causes slopes to appear steeper and deposits to appear thicker. The true dip of interbedded basalts and sedimentary rocks west of center on the section is 10°–20°.

EXPLANATION OF CROSS-SECTION UNITS

- Fine deposits
- Sand deposits
- Sand and gravel deposits
- Till
- Alluvium
- Swamp deposits
- Talus

0 1 2 3 MILES
0 1 2 3 4 KILOMETERS

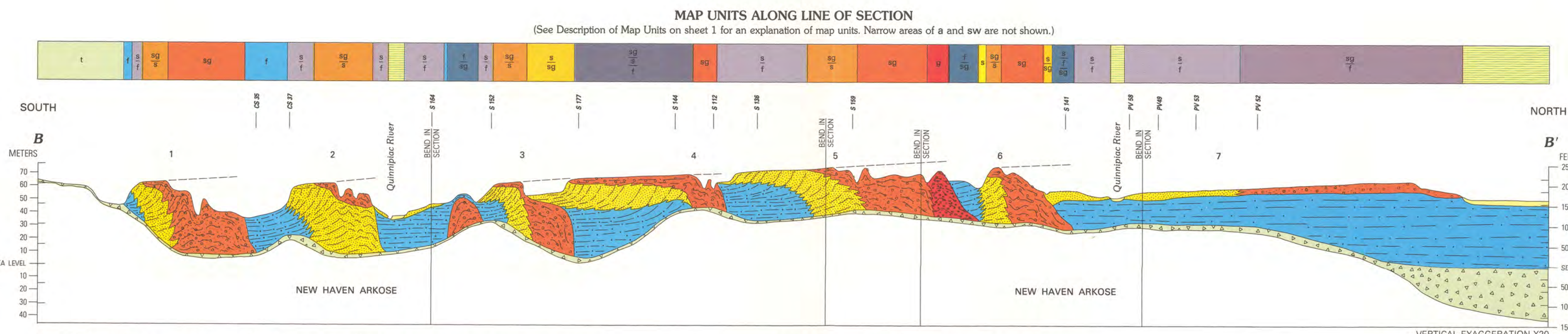
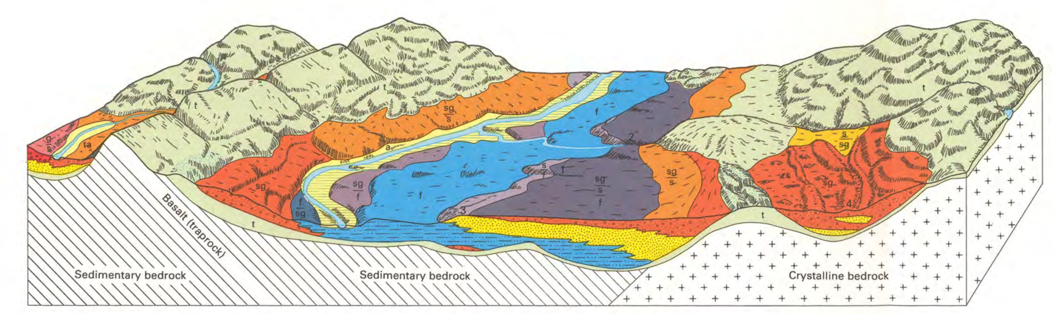


Figure 2.—Longitudinal-section *B–B′* along the Upper Quinnipiac River Valley with accompanying bar showing map units along line of section. The distribution of subsurface textures in this valley is based on closely spaced point-data control from more than 150 test hole and well logs; locations of those which fall on or near the line of section are indicated above the section (letter and number designations are as used in Haeni and Anderson, 1980; Mazzaferro, 1973). This section crosses six deltaic morphosequences (numbered in chronologic order of deposition from south to north) deposited in a glacial lake. Each deltaic unit exhibits collapsed ice-contact forms and structure at its north or iceward side, and a delta foreset slope that built into open water on its south side. Each delta grades from coarser material at the ice-contact head to finer material southward. This series of deltas records a progression of depositional events during which sediment was supplied from the northward-retreating ice margin. Horizontal dashed lines extend the glaciofluvial topset surfaces to their probable positions before collapse. Fine-grained lake-bottom deposits occur in front of and beneath the deltas. The seventh morphosequence is a non-ice-contact glaciofluvial terrace deposit which overlies lake-bottom sediments.

EXPLANATION OF LONGITUDINAL SECTION UNITS

- Fine deposits
- Sand deposits
- Sand and gravel deposits
- Gravel deposits
- Till
- Alluvium

0 1 2 3 MILES
0 1 2 3 4 KILOMETERS



EXPLANATION OF CROSS-SECTION VIEW

- Gravel deposits
- Sand and gravel deposits
- Sand deposits
- Fine deposits
- a — Alluvium
- t — Till
- ta — Talus

EXPLANATION OF SURFACE VIEW

- sg — Sand and gravel deposits
- f — Fine deposits
- g/s — Gravel overlying sand
- sg/s — Sand and gravel overlying sand
- s/sg — Sand overlying sand and gravel
- sg/s/f — Sand and gravel overlying sand overlying fines
- sg/f — Sand and gravel overlying fines
- s/f — Sand overlying fines
- f/sg — Fines overlying sand and gravel
- a — Alluvium
- Alluvium overlying fines
- t — Till and bedrock
- Thick till

Figure 3.—Block diagram illustrating the relationship of map units (shown on the surface view) to the subsurface distribution of materials over the bedrock surface (shown on the cross-section view). Conditions at numbered localities are described in the map text (sheet 1).

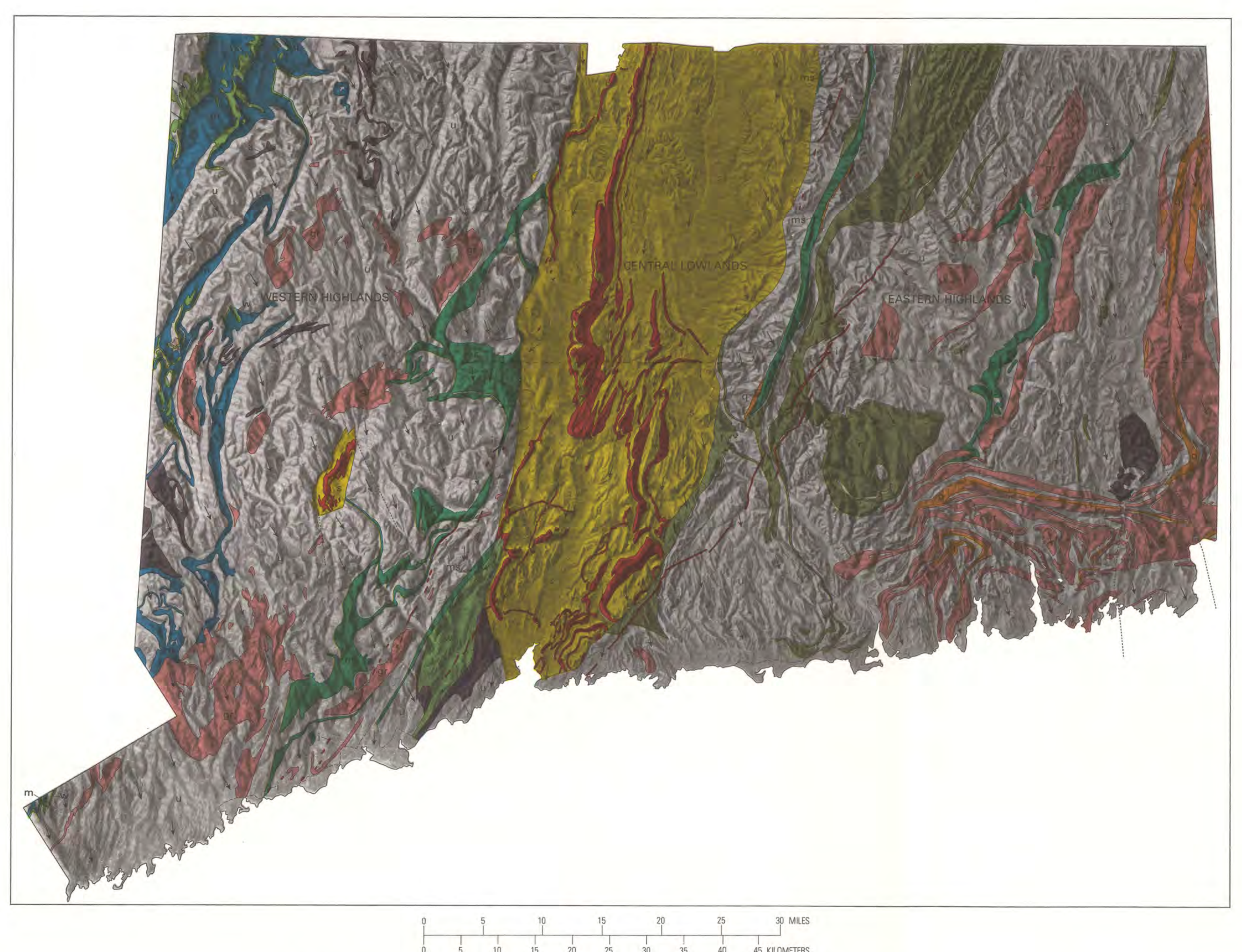


Figure 4.—Generalized bedrock lithologic map of Connecticut. The color and composition of glacial (surficial) materials is a result of the lithologic characteristics of subjacent and northerly adjacent rock types. Arrows indicate direction of glacial-ice movement across the State (see Discussion of Mineral Composition of Surficial Materials).

EXPLANATION

Most of the geologic contacts on this map and all the rock names and ages in the explanation are derived from the Bedrock Geological Map of Connecticut at 1:125,000 scale compiled by John Rodgers (1985). Generalization of lithology at the 1:500,000 scale of this figure means that areas mapped as one rock type generally include rocks of other types, in bodies too small or too poorly known to show on the map. The lithologic units emphasized here are not everywhere coextensive with the stratigraphic units of Rodgers (1985) or of the more detailed studies on which his map is based. The shaded relief base of this figure shows the form of the landscape. The rock types of Connecticut, because of their different resistances to weathering and erosion, affect landscape form. The central lowlands are low because the area is underlain by the easily eroded sedimentary rocks. The marbles of western Connecticut generally underlie deep valleys.

- s — **Sedimentary rocks**—Brown, reddish-brown, and gray sandstone, siltstone, and conglomerate of the Connecticut and Pomperaug valleys. Portland Arkose and East Berlin and Shuttle Meadow Formations (Jurassic); New Haven Arkose (Triassic)
- i — **Basalts and dolerites**—"Traprock"; lava flows and intrusive igneous bodies in and near the sedimentary rocks of the Connecticut and Pomperaug valleys. Hampden, Holyoke, and Talcott Basalts and West Rock and Buttress Dolerites (Jurassic)
- q — **Quartzites**—Mostly clean and light-gray to yellowish-gray. In eastern Connecticut, quartzite of the Plainfield Formation (Late Proterozoic); in central Connecticut, one small body of Cheshire Quartzite (Cambrian)
- m — **Marbles**—Mostly very light gray or yellowish-gray to nearly white. In western Connecticut, Stockbridge Marble (including Inwood Marble) and basal marble member of Walloomsac Schist (Ordovician and Cambrian)
- w — **Schists and phyllites**—Mostly fine-grained and dark-gray or greenish-gray. Walloomsac Schist (Ordovician) in belts adjacent to marble; Wepawaug Schist (Devonian and Silurian) west of New Haven
- ms — **Muscovite schists**—Gray schists that contain abundant fine to coarse muscovite (white mica). In western Connecticut, Straits Schist; in eastern Connecticut, Littleton Formation and Scotland Schist (Devonian and Silurian)
- r — **Sulfidic schists and gneisses**—Strongly rusty weathering. In eastern Connecticut, lower member of Bigelow Brook Formation, Collins Hill Formation (not including metavolcanic member), Brimfield Schist, and lenses of sulfidic schist in Tatnic Hill Formation (Silurian and Ordovician)
- gr — **Granitic rocks**—Light-colored (light-gray to reddish), relatively low in dark minerals (commonly 3–10 percent biotite); mostly gneissic; include some quartz monzonites. In western Connecticut, Pinewood Adamellite, Nonewaug Granite, Shelton Member of Trap Falls Formation, and Ansonia and other gneisses, (Permian to Ordovician). In eastern Connecticut, Narragansett Pier Granite, Canterbury Gneiss, Stony Creek Granite Gneiss, and felsic gneisses of Sterling Plutonic Group (Permian to Late Proterozoic)
- a — **Mafic and ultramafic rocks**—Dark-gray and greenish-gray to nearly black; rich in dark minerals such as amphiboles. In western and eastern Connecticut, amphibolite and hornblende gneiss (Ordovician and Proterozoic); west of New Haven, the Allingtown and Maltby Lakes Metavolcanics (Ordovician); in southeastern Connecticut, Preston Gabbro (Ordovician)
- u — **Undivided schists and gneisses**—Mostly light-gray to medium-gray; metasedimentary and metaigneous; wide variety of aluminous, felsic, intermediate and mafic rocks (Devonian to Proterozoic)
- Contact between bedrock lithologic units
- Boundary of coastal area where bedrock outcrops are rare or absent and lithologic units are not known
- Margin of indicator fan composed of fragments of distinctive rock type transported by ice
- ← Generalized direction of ice movement, based on orientation of bedrock striations and drumlins

DISCUSSION OF MINERAL COMPOSITION OF SURFICIAL MATERIALS

The character of the surficial materials of Connecticut is very much determined by the physical characteristics and mineral composition of the source rocks. This is conspicuously true of glacial deposits, and also of alluvium and stream-terrace deposits, which are largely derived from nearby glacial deposits. The relationship holds not only in areas directly underlain by specific rocks, but also "downstream" in the direction the glacier was moving. The directions of movement were south to southeast in most of Connecticut, but southwest to nearly west on the west side of the Connecticut Valley glacier lobe, as is shown by the arrows on the map. Abundant fragments of a particular rock generally occur no more than a few miles downstream from the source area, but scattered fragments, particularly of hard rocks, may occur tens of miles away. In the Glastonbury area of central Connecticut, till that is largely derived from Jurassic sedimentary rocks was deposited 0.2–1.0 mi downstream on metamorphic rocks (Langer, 1977). Fragments of distinctive rock types downstream from restricted source areas form indicator fans, two of which are shown in figure 4. The indicator fan in western Connecticut is derived from the sedimentary and igneous rocks of the Pomperaug Valley; the fan in southeastern Connecticut is derived from the Preston Gabbro.

The following comments about the effects of specific rocks are based mostly on general impressions rather than detailed studies. These comments apply most strongly to glacial tills; the removal of fine particles from glacial and alluvial sands and gravels diminishes some of the contrasts in texture and color.

The sedimentary rocks of central Connecticut produce surficial deposits that are commonly reddish brown; siltstones contribute considerable fine-grained material; and conglomerates contribute rounded pebbles and cobbles that have been broken out of matrix. Basalt and dolerite are relatively hard rocks; fragments are abundant near the sources, and occur mainly in the reddish-brown deposits derived from the adjacent sedimentary rocks.

Deposits derived from quartzites contain abundant quartz sand grains and quartzite fragments. Quartzites, because of their hardness, occur as very widespread erratic fragments. Marbles produce fine-grained, light-colored, highly calcareous glacial deposits. Dark schists and phyllites (Walloomsac and Wepawaug) produce fine-grained, dark-colored deposits. Abundant flakes of muscovite are very conspicuous in deposits derived from muscovite schists. The weathering of iron sulfides in sulfidic schists and gneisses produces very rusty or iron-cemented deposits. Granitic rocks that are low in dark minerals produce light-colored deposits, with abundant quartz and feldspar in the sand and coarse silt sizes. Dark mafic and ultramafic rocks produce dark-colored deposits that contain abundant dark iron minerals.

The undivided light-gray to medium-gray schists and gneisses underlie more than half of Connecticut; they are the source rocks for the widespread sandy-silty tills of various shades of light and medium gray and yellowish gray. Associated sands and gravels are generally yellowish to light brownish gray. These common deposits show considerable range of composition, color and texture, but lack the distinctive lithologic effects produced by the other rock types mentioned above.

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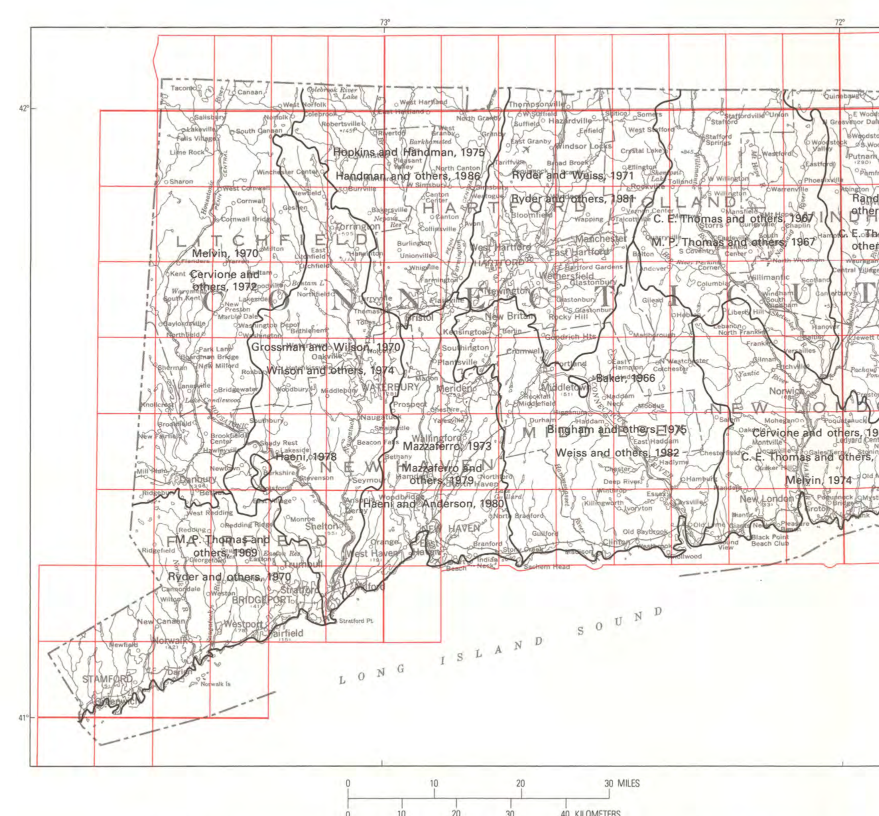

Figure 5.—Index map to sources of point data in Connecticut. References are in accompanying list. Quadrangles boundaries are shown in red. For quadrangle names, see figure 6.

SOURCES OF POINT DATA IN CONNECTICUT

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SURFICIAL MATERIALS MAP OF CONNECTICUT

By

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1992

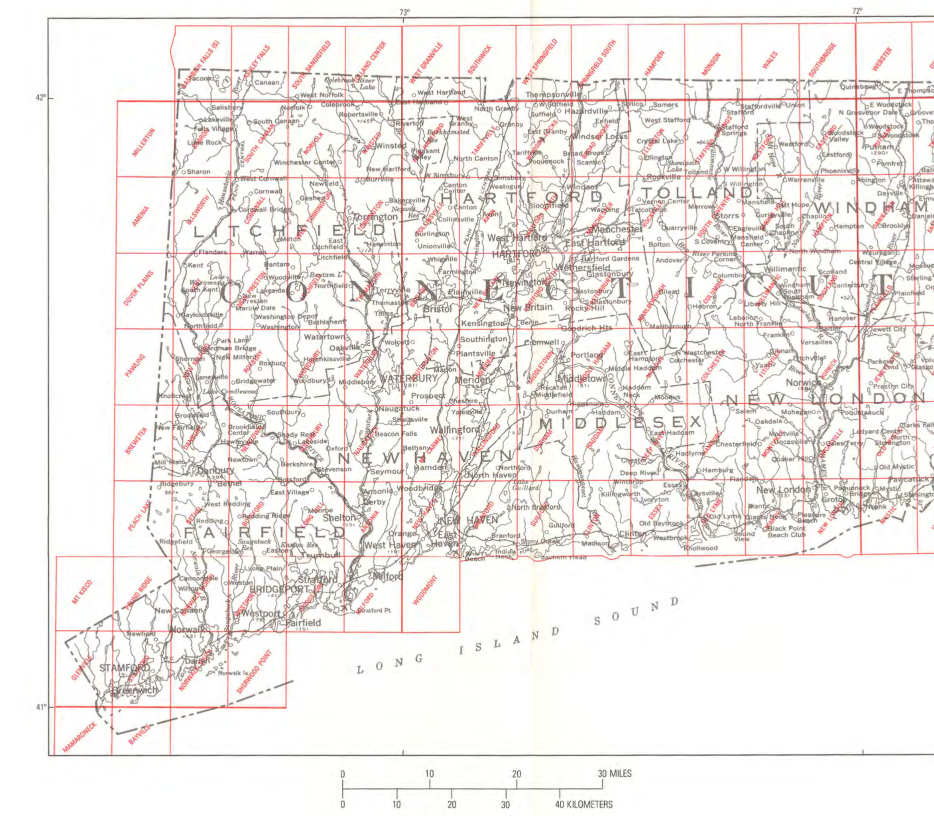

Figure 6.—Index map of 1:24,000-scale surficial geologic quadrangle maps. References are in accompanying list.

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