EXPLANATION

QUATERNARY — HOLOCENE

Qal — ALLUVIUM

Interbedded sand, gravel, and silt-clay.

Interbedded fine to very coarse sand, pebbly sand, and fine to very coarse gravel; massive to laminated silt-clay; often with organic matter such as leaves, twigs, and logs; and rarely, peat beds. Color tan, brown, or pale to dark gray. Alluvium includes typically heterogeneous, generally poorly-sorted sediments, ranging from well-stratified to massive, which strongly reflect the texture and lithology of the source materials. Qal associated with streams draining upland areas of Brandywine and Calvert Formations is chiefly quartzose sand and gravel, whereas Qal derived from areas underlain by the Nanjemoy and Aquia Formations is predominantly sand with a variable glauconite content.

Qal underlies stream channels, floodplains, and adjacent low areas, and is the product of channel and overbank deposition within the last 10,000 years.

Thickness 3 to 15 feet.

QUATERNARY — PLEISTOCENE

Qt — TERRACE DEPOSITS

Sand, clayey sand, gravel, and minor silt-clay.

Interbedded fine to coarse quartz sand and pebbly sand, glauconitic in part, and fine to medium vein quartz gravel. Thin silt-clay beds occur in places. Color tan, reddish-brown, or gray. Terrace deposits include largely heterogeneous sandy sediments exhibiting lenticular bedding, in part cross-bedded or flat-bedded, but also massive with poor sorting in some deposits. Gravel is commonly arranged in thin, discontinuous bands. The unit includes small areas of unsorted colluvium. The largest patches of Qt lie along the south side of Western Branch, and on the north side of Charles Branch. These terraces are typically thin (10 to 15 feet) and composed of pebbly sand with thin gravel bands; glauconite is conspicuous in places.

The terrace deposits included here are wholly fluvial in origin, and are the product of Late Pleistocene deposition along the larger streams in the map area.

Thickness 3 to 25 feet.

TERTIARY — PLIOCENE

Tb — BRANDYWINE FORMATION

Sand, pebbly sand, and gravel; capped by sandy loam in places.

Sand, medium to coarse grained, poorly-sorted, interbedded with pebbly sand and medium to coarse gravel. Color tan, orange-brown, or reddish-brown. Pebbles are quartzite, sandstone, and chert. Bedding mostly lenticular; cross-bedded, flat-bedded, or massive. Gravel beds are concentrated in the lower portion of the unit, and contain boulders to several feet in diameter in some places. Where least dissected, the uppermost Brandywine is as much as 15 feet of yellowish to reddish-brown pebbly loam.

The Brandywine is fluvial in origin and was presumably deposited by the ancestral Potomac River between Late Miocene and Early Pleistocene time.

Thickness 3 to 40 feet.

TERTIARY — MIOCENE

Tc — CALVERT FORMATION

Sand, clayey to silty, and diatomaceous silt.

Sand, very fine to fine grained, clayey in part, grading to silt and diatomaceous silt. Color olive-green to olive-gray where unweathered; pale-gray, tan, or brown in weathered sections. The diatomaceous silt is concentrated in the basal portion of the unit, and over the southern half of the map area, forms a bed up to 9 feet thick with up to 40% of diatoms. The diatomaceous bed thins northward and is mostly absent above Md. Rt. 4. The upper portion of the Calvert is relatively homogeneous sand and silty sand with obscure bedding. The most prominent sedimentary structure is a pervasive burrow mottling; molds and casts of mollusks are frequently encountered, but intact shells are rare. The lower contact with the underlying Nanjemoy Formation is sharp and unconformable. All of the outcropping Calvert Formation in the Upper Marlboro Quadrangle probably belongs to the Fairhaven, the lower of the two Calvert members.

The Fairhaven Member of the Calvert Formation probably accumulated in a restricted marine basin in relatively deep water.

Thickness 3 to 80 feet.

TERTIARY — EOCENE

Tn — NANJEMOY FORMATION

Sand, clayey and glauconitic; and minor silt-clay.

Sand, fine to coarse, variably clayey, with glauconite amounts ranging from trace to 50%, interbedded with sporadic silt-clay lenses. Color medium-gray to dark greenish-gray, silt-clay dark gray to brown; sediments mottled brown and yellow to pale-brown in weathered outcrops. Bedding massive or thick-bedded with pervasive burrow mottling. Fossils common, chiefly molluscan with abundant Venericardia. Basal contact with Marlboro Clay abrupt with sand filling burrows in the clay. Indurated layers and concretionary bodies common in places. In general, the Nanjemoy sand coarsens upward through the Formation. This unit thins rapidly northward and is overlapped by the Calvert above Cabin Branch.

The Nanjemoy was deposited on the inner shelf in relatively shallow marine waters.

Thickness 3 to 60 feet.

TERTIARY — PALEOCENE

Tm — MARLBORO CLAY

Clay, dense, and minor silt.

Clay, dense and brittle, massive or thick-bedded to finely-laminated, bedding irregularly lenticular or hummocky in part; contains sparse partings and thin lenses of micaceous, lignitic, clayey silt, commonly laminated. Color of clay pale red to silvery gray, silt yellowish gray to reddish gray. Typically, the uppermost few inches to eight feet of the unit are gray, and the remainder red; in some sections, the lower few feet are also gray. The lower contact generally exhibits interbedding of thin clay strata and Aquia greensand. The Marlboro thins northward through the map area and is overlapped by the Calvert Formation northwest of Westphalia. In the walls of many stream valleys, the presence of the Marlboro is typically reflected by a prominent flat topped bench marking the outcrop trace.

The Marlboro Clay probably accumulated in very shallow marine or brackish water, perhaps in part a tidal flat environment.

Thickness 3 to 20 feet.

TERTIARY — PALEOCENE

Ta — AQUIA FORMATION

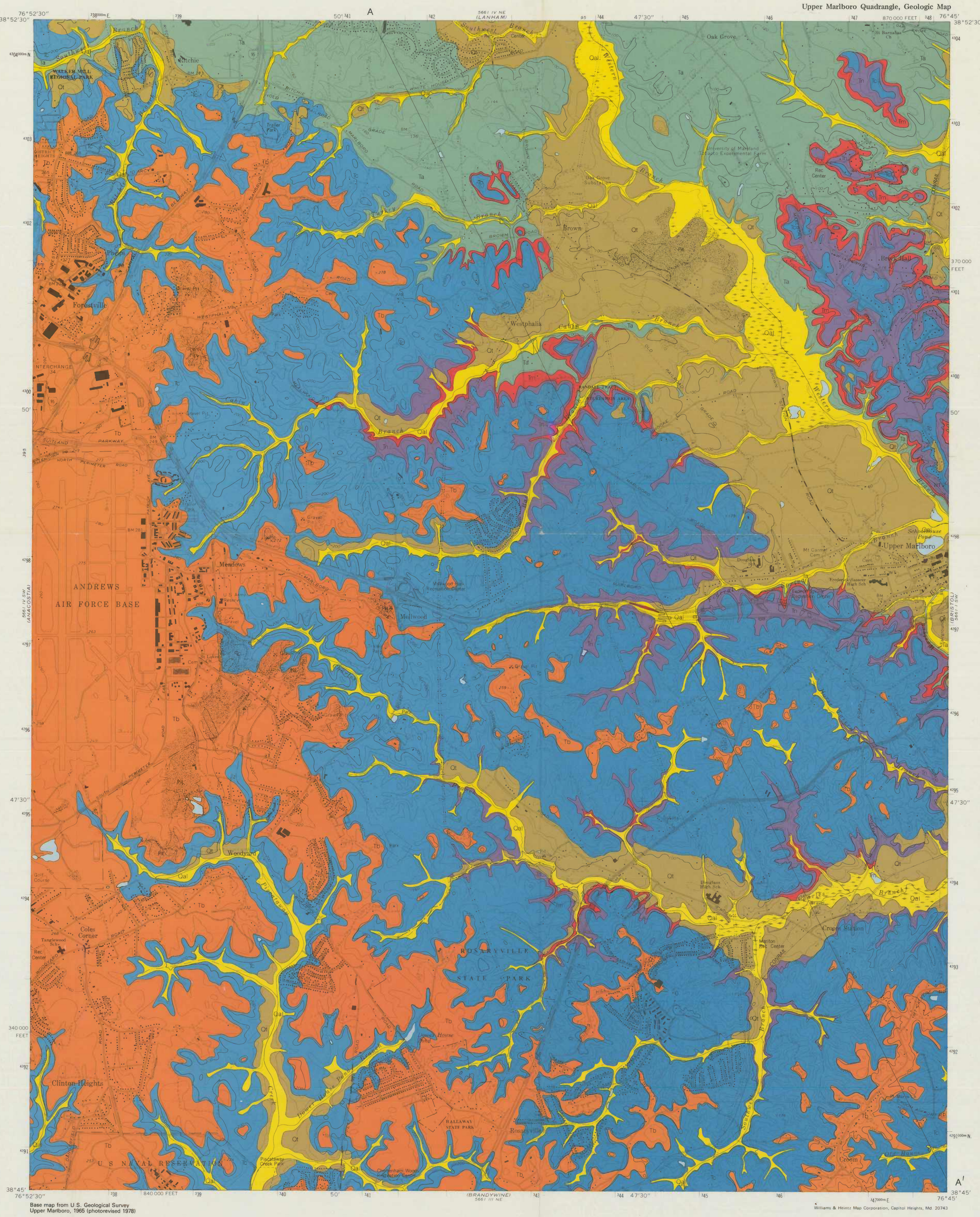
Sand, variably glauconitic, and minor calcareous sandstone.

Sand, fine to medium-grained, moderately sorted to well sorted, clayey in part, with as much as 40% of glauconite; containing thin layers and concretionary zones of calcareous shelly sandstone ranging from friable to hard rock. Color dark greenish-gray to medium gray where unaltered, speckled "salt and pepper" to rusty brown in weathered outcrops. Bedding massive or thick-bedded with extensive burrow mottling. Molluscan fossils common in fresh exposures in places, chiefly large Turritella *and* Ostrea.

The Aquia Formation was deposited on the shallow marine shelf, probably in less than 200 feet of water.

Thickness 3 to 140 feet.

Contact
generally approximate or inferred



Base map from U.S. Geological Survey
Upper Marlboro, 1965 (photorevised 1978)

Field mapping done, 1974-1976

Map scribed by Margaret P. McCabe

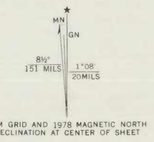
Williams & Heintz Map Corporation, Capitol Heights, Md. 20743

GEOLOGIC MAP OF THE UPPER MARLBORO QUADRANGLE, PRINCE GEORGES COUNTY, MARYLAND

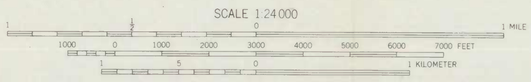
By
John D. Glaser
1981

STATE OF MARYLAND
DEPARTMENT OF NATURAL RESOURCES
MARYLAND GEOLOGICAL SURVEY
Kenneth N. Weaver, Director

Copies of Map available from
Maryland Geological Survey

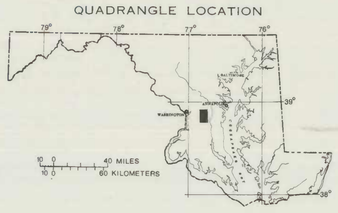


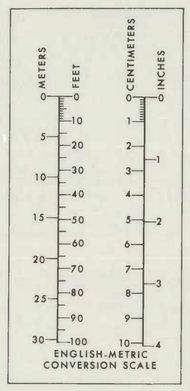
UTM GRID AND 1978 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET



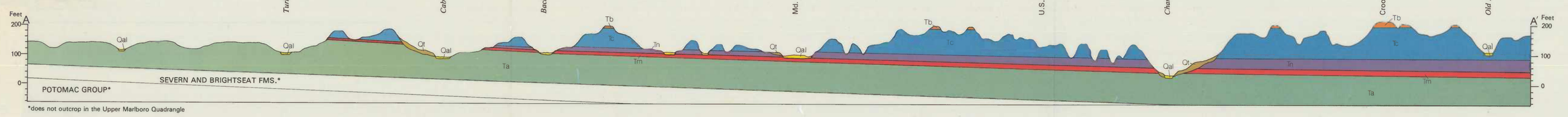
CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

QUADRANGLE LOCATION





CROSS SECTION A-A′
Vertical Exaggeration 10x



*does not outcrop in the Upper Marlboro Quadrangle