

EXPLANATION

Gal

ALLUVIUM

Sand, gravel, and silt-clay.
 Interbedded fine to coarse quartz sand, commonly clayey; pebbly sand; and fine to very coarse gravel with scattered boulders; subordinate massive to laminated silt-clay. Sediments in places with abundant organic matter including leaves, twigs, and logs; rare peat beds. Color tan, brown, or pale to dark gray. Unit includes generally heterogeneous, typically poorly-sorted sediments, ranging from well-stratified to massive, generally reflecting the texture and lithology of the source materials. Glauconite is a common sand component in alluvium derived from the Aquia or Nanjemoy Formation.
 Alluvium underlies stream channels, floodplains, and adjacent low areas including marshes, and records steamed and overbank deposition during the past 10,000 years.
 Thickness 3 to 20 feet.

Q1

TERRACE DEPOSITS

Sand, clayey sand, gravel, and minor silt-clay.
 Interbedded sand, fine to coarse grained, variably sorted, often clayey in upper portions of deposits; gravel, predominantly quartzose, fine to very coarse with boulders in places; and thin-bedded subordinate silt-clay lenses. Color chiefly tan to light brown, varying to gray or mottled. Limonite cemented conglomeratic ledges locally common. Sand in places glauconitic. Bedding massive, lenticular, or flat-bedded, with cross-bedding prevalent in thicker terraces. The dominant lithology in the extensive terraces of the Patuxent River is tan to pale brown, fine to medium grained, loose sand, containing lenticular beds of fine to medium quartz gravel.
 The sediments included here are wholly fluvial in origin, having been deposited by the Patuxent River and its tributary streams during Late Pleistocene time.

Tb

BRANDYWINE FORMATION

Sand, pebbly sand, and gravel.
 Sand, medium to coarse grained, poorly to moderately sorted, interbedded with pebbly sand and quartz gravel, medium to coarse. Color tan to orange-brown. Bedding chiefly lenticular and massive. Gravel concentrated in basal beds of units; upper beds chiefly clayey loam.
 The distribution of the Brandywine Formation in the Bristol Quadrangle is limited to a few remnant hill cappings in the southwestern portion of the area. The unit is fluvial in origin and thought to have been deposited by the ancestral Potomac River between Late Miocene and Early Pleistocene time.
 Thickness 3 to 25 feet.

Tc

CALVERT FORMATION

Sand, olive-green silt, and diatomaceous silt.
 Sand, very fine to fine grained, muddy; silt; minor clay; and diatomaceous silt. Color olive-green to olive-gray where unweathered, pale-gray, tan, or brown in weathered sections. Near the base of the unit is a bed of diatomaceous silt containing as much as 40% of diatoms; the bed thickens to a maximum of 10 feet over the southern third of the map area, and is thin or absent over the northern third. Upper portion of the Calvert is relatively homogeneous sand and silty sand with obscure bedding and laced with pervasive burrow-mottling, molds and casts of mollusks frequent but shells rare. Lower contact sharp and unconformable on underlying Nanjemoy greensand. All of the Calvert sediments in the map area probably belong to the Fairhaven, the lower of the two Calvert members. The upper member, the Plum Point Marls, may be present in the higher hills of the eastern part of the map area, but if so was not recognized.
 The sediments mapped as Calvert in this quadrangle probably accumulated in a restricted marine basin in relatively deep water.
 Thickness 3 to 70 feet.

Tn

NANJEMOY FORMATION

Glauconitic sand, clayey sand, and silt-clay
 Quartz sand, fine to coarse, variably clayey, containing as much as 50% of glauconite, gradationally interbedded with silt-clay strata. Color medium gray to dark greenish gray, silt-clay dark gray to chocolate brown; mottled yellow and pale brown in weathered outcrops. Bedding massive or thick-bedded with conspicuous burrow mottling. Fossils moderately common, chiefly *Venericardia*. Lower contact sharp with sand-filled burrows excavated in underlying Marlboro Clay. Indurated beds and concretionary bodies common in places. Sand generally coarsens upward within the Formation.
 The Nanjemoy was deposited on the inner shelf in relatively shallow marine waters.
 Thickness 3 to 60 feet.

Tm

MARLBORO CLAY

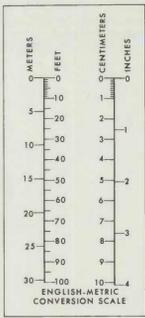
Clay and minor interbedded silt.
 Clay, dense and brittle, massive or thick bedded to finely laminated, bedding irregularly lenticular or hummocky in part, with sparse partings and thin lenses of micaceous, lignitic, clayey silt, laminated in places. Color pale red to silvery gray, silt yellowish gray to reddish gray. Typically, the upper portion of the Marlboro is gray, and the remainder red; in places, the lower few feet are also gray. The lower contact shows interbedding of thin clay strata and glauconitic sand. In the walls of many stream valleys, the presence of the Marlboro is reflected by a prominent flat-topped bench marking the outcrop trace.
 This unit probably accumulated in very shallow marine or brackish water, perhaps in part a tidal flat environment.
 Thickness 3 to 20 feet.

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, with thin layers and concretionary zones of calcareous shelly sandstone, friable to well-cemented. Color dark greenish gray to medium gray where fresh, "salt and pepper" speckled to rusty brown in weathered outcrops. Bedding massive or thick bedded with burrow mottling prevalent. Molluscan fossils common in places, chiefly large *Turritella* and *Ostrea*.
 The Aquia Formation accumulated on the marginal marine shelf in less than 200 feet of water.
 Thickness 3 to 130 feet.

Contact generally approximate or inferred



GEOLOGIC MAP OF THE BRISTOL QUADRANGLE, PRINCE GEORGES, ANNE ARUNDEL, AND CALVERT COUNTIES, MARYLAND

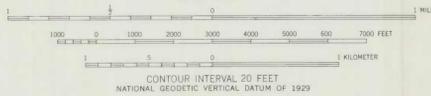


STATE OF MARYLAND
 DEPARTMENT OF NATURAL RESOURCES
 MARYLAND GEOLOGICAL SURVEY
 Kenneth N. Weaver, Director

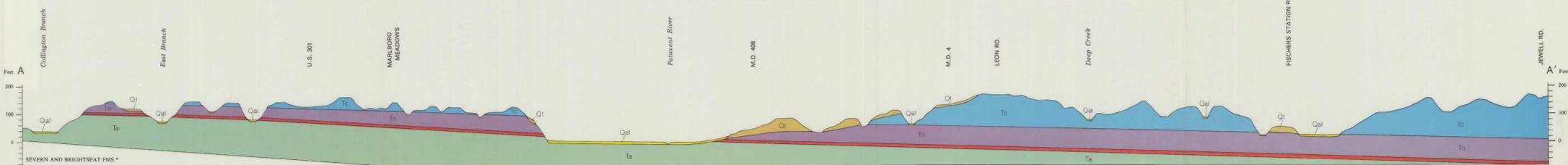
Copies of Map available from Maryland Geological Survey

By John D. Glaser 1984

SCALE 1:24,000



CROSS SECTION A-A' Vertical Exaggeration 10x



G 4341
 -CS
 -34
 -M3
 B-15-10-1

* do not outcrop in the Bristol Quadrangle