EXPLANATION

QUATERNARY — HOLOCENE

Qal

ALLUVIUM

Interbedded sand, gravel, and silt-clay.

Fine grained to very coarse sand, glauconitic in places; pebbly sand; and fine to very coarse gravel with scattered boulders of quartzite or sandstone; subordinate massive to laminated silt-clay, in places with organic debris including leaves, twigs, and logs, and rare peat. Color tan, brown, or pale to dark gray. This unit includes typically heterogeneous, mostly poorly sorted sediments, ranging from well stratified to massive; composition and texture generally reflect source materials. Alluvium underlies stream channels, floodplains and adjacent low areas, and marshes; and is the record of streambed and overbank deposition during the past 10,000 years.

Thickness 3 to 15 feet.

QUATERNARY — PLEISTOCENE

Qt

TERRACE DEPOSITS

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

Fine grained to coarse sand, generally pebbly, commonly clayey in upper portion of deposit; and quartz gravel, mostly fine to medium; and subordinate thin silt-clay lenses. Color chiefly tan, brown, varying to gray or mottled. These are mostly heterogeneous sandy sediments with massive or lenticular bedding, cross-bedded in places, mostly poorly sorted, with gravel commonly arranged in discontinuous thin bands. Also included in this unit are subordinate amounts of unsorted colluvium, mainly on slopes. The most extensive terraces in the map area are those mantling the south and east walls of the Mattawoman Creek valley, and those flanking Port Tobacco Creek. In both cases, the deposits are thin, 15 ft. or less in thickness. The terrace sediments are wholly fluvial in origin, and are the product of Late Pleistocene deposition by the major streams in the area.

Thickness 3 to 20 feet.

TERTIARY — PLIOCENE

Tb

BRANDYWINE FORMATION

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

Medium grained to coarse sand, wholly quartzose, poorly to moderately sorted; interbedded with pebbly sand and medium to coarse gravel. Pebbles are quartzite, sandstone, and chert. Bedding mostly lenticular, cross-bedded or flat-bedded to massive. Gravel concentrated in basal portion of unit, containing sporadic boulders to several feet in diameter. Color tan, orange-brown to reddish-brown. Where least dissected, uppermost Tb is yellow or reddish-brown pebbly loam up to 15 feet thick. The Brandywine Fm. is fluvial in origin and was presumably deposited by the ancestral Potomac River during the time span between Late Miocene and early Pleistocene.

Thickness 3 to 40 feet.

TERTIARY — MIOCENE

Tc

CALVERT FORMATION

Sand, silt, and diatomaceous silt-clay.

Sand, very fine-grained to fine, clayey; silt, diatomaceous silt, and minor clay. Color olive-green, olive-brown to gray where unweathered; tan to brown in weathered outcrops. Contains in basal portion of unit a bed of diatomaceous silt with as much as 40% of diatoms, up to 10 feet in thickness; diatomaceous bed thin or absent in northwest corner of map area. Upper portion of unit relatively homogeneous sand and silty sand with stratification obscured, showing mostly burrow mottling. Molds and casts of mollusks common but shell carbonate 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 members of the unit. The Fairhaven probably accumulated in a restricted marine basin in relatively deep water.

Thickness 3 to 70 feet.

TERTIARY — EOCENE

Tn

NANJEMOY FORMATION

Sand, glauconitic, and minor clay.

Sand, very fine grained to medium, variably glauconitic, poorly sorted, very clayey. Glauconite content of sand rarely exceeds 40%. Color medium-gray to dark greenish-gray where unweathered; tan, pale-gray, with yellow mottles where weathered. Sand interbedded throughout with thin lenticular beds of dark gray silty clay. Bedding obscure with burrow mottling common. Commonly fossiliferous with Venericardia the most abundant mollusk. Lower contact sharp with clay of Marlboro, marked by sand-filled burrows. Sporadic iron-oxide cemented layers and concretionary bodies common. The Nanjemoy Fm. was deposited on the inner shelf in relatively shallow marine water.

Thickness 3 to 100 feet.

TERTIARY — PALEOCENE

Tm

MARLBORO CLAY

Clay, dense, and subordinate silt.

Clay, dense, brittle or slightly plastic, finely laminated to thick bedded, bedding irregularly lenticular in part; interbedded with thin lenses and partings of micaceous lignitic silt. Color of clay pale red to brownish-gray; silt yellow-gray to reddish-gray. In most sections, the uppermost clay is brownish-gray to silvery-gray and the remainder red. The lowermost beds are also gray in some areas. The contact with the underlying Aquia Fm. is generally marked by thin interbeds of clay and greensand. The Marlboro outcrop is restricted to the northwestern portion of the map area where it is poorly exposed at best. The unit accumulated in very shallow marine or brackish water, possibly a tidal flat environment.

Thickness 3 to 30 feet.

Ta

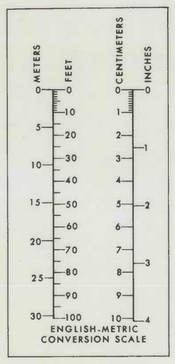
AQUIA FORMATION

Sand, variably glauconitic, and calcareous sandstone.

Sand, very fine to fine grained, silty and micaceous, containing from 5 to 30% of glauconite, interbedded with layers of calcareous sandstone, friable to well-cemented, up to 6 feet thick. Color dark greenish-gray to medium gray where unweathered; tan to brownish-gray with yellow mottles in weathered outcrops. Fossils generally common, fauna dominated by large Turritella mortoni and Ostrea compressirostra. The Aquia, like the Marlboro, is confined in outcrop to the northwestern part of the quadrangle, and is also poorly exposed. This unit was deposited on the shallow marine shelf, probably in less than 200 feet of water.

Thickness 25 to 150 feet.

Contact
generally approximate or inferred



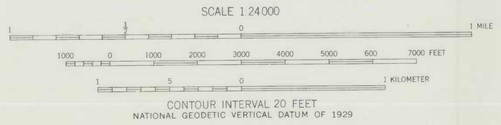
PORT TOBACCO QUADRANGLE, GEOLOGIC MAP

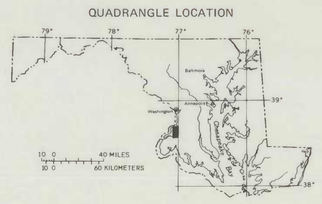
GEOLOGIC MAP OF THE PORT TOBACCO QUADRANGLE, PRINCE GEORGES AND CHARLES COUNTIES, MARYLAND

By
John D. Glaser
1984

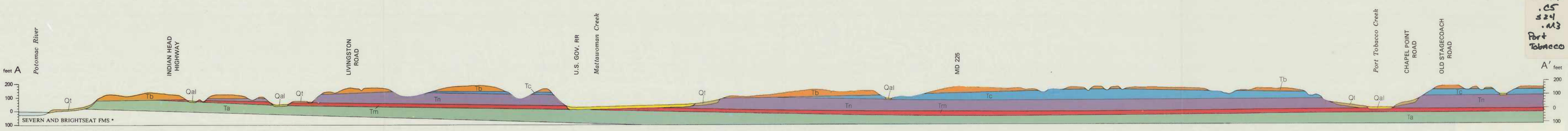
STATE OF MARYLAND
DEPARTMENT OF NATURAL RESOURCES
MARYLAND GEOLOGICAL SURVEY
Kenneth N. Weaver, Director

Copies of Map available from
Maryland Geological Survey





CROSS SECTION A-A'
Vertical Exaggeration 5x



* do not outcrop in the Port Tobacco Quadrangle