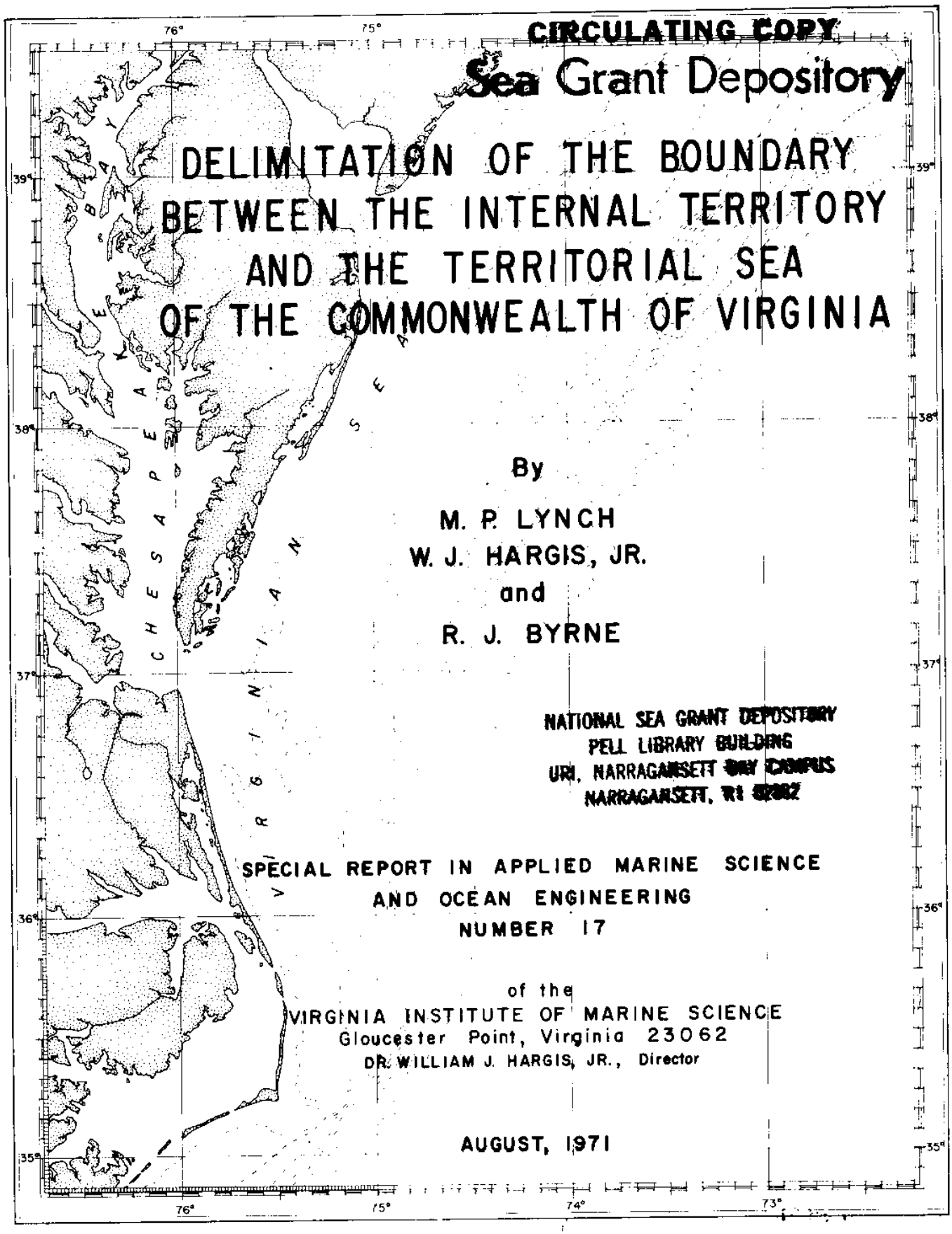

DELIMITATION OF THE BOUNDARY BETWEEN THE INTERNAL TERRITORY AND THE TERRITORIAL SEA OF THE COMMONWEALTH OF VIRGINIA

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ABSTRACT

Delimitation of a boundary between the Internal Waters and Territorial Waters of the Commonwealth of Virginia is discussed. Alternate schemes for determining this boundary (baseline) are presented. Changes in shoreline configuration of the Eastern Shore barrier islands since 1852 are discussed from the point of view of possibly using historical shorelines as a basis for boundary determination.

Background on the Submerged Lands controversy between the United States and the individual states is presented. The rules for developing boundaries that have arisen from this controversy and the Law of the Sea Convention of 1952 are discussed in general and how they apply to Virginia.

A boundary following the coastline south of Chesapeake Bay, closing Chesapeake Bay from Cape Henry to Smith Island and employing the principle of straight baseline north of Chesapeake Bay is recommended.

INTRODUCTION

Increasing competition from many segments of society for the resources found in coastal zone areas is generating greater administrative demands upon government agencies charged with managing these areas. Essential to proper control over exploitation and development of coastal zone resources is clear delineation of the area of responsibility between state and federal jurisdiction.

A possible area of contention between state and federal government involves ownership of offshore submerged lands. Off the coast of Virginia, the extent of Virginia's as opposed to the United States's jurisdiction over submerged lands has never been resolved by either the courts or by agreement between the two parties.

This problem has not been resolved, heretofore, because commercially exploitable submerged lands resources have not been developed in this area. This situation will probably not continue indefinitely. Permits to conduct geophysical explorations in Virginia waters have recently been granted by the Virginia Marine Resources Commission (1) and predictions of exploitable sand, gravel, shell, and heavy mineral deposits off Virginia's coast have been made. Further studies of offshore mineral resources are being conducted by the Virginia Institute of Marine Science (2).

Central to the resolution of the problem of ownership of offshore submerged lands is the delimitation and demarcation of the dividing line or boundary between the internal lands and waters of a state and the territorial waters of the state. In addition to being a boundary, this dividing line is extremely important in

that it serves as the baseline from which to measure extent of the territorial sea and/or the submerged lands of the state. Throughout the remainder of this paper the term "baseline" is used synonymously with the boundary between internal territories and waters and the territorial sea and vice versa.

Griffin makes the distinction between delimination and demarcation as follows:

> *"Delimitation is the choosing of a boundary site and its definition in a formal written instrument such as a treaty or statute.*
>
> *Demarcation is the actual marking of a boundary on the ground by physical means."* (3)

The purpose of this study is to provide background and propose a dividing line between the internal territory and territorial sea of the Commonwealth of Virginia to serve as a basis for the delimitation of this boundary by properly designated authorities.

The study used both existing and historical charts as described later. We realize the inadequacy of some of these charts but as G. Etzel Pearcy, State Department Geographer once said,

> *"In many instances officially recognized large scale charts of a coast show the high-water rather than the low-water line; or the best available charts may already be obsolete. Until such time as hydrographic mapping is everywhere standardized along modern lines there unfortunately remains little choice other than to utilize the best existing charts, irrespective of their short-comings."* (4)

Eventually a complete remapping of Virginia's coastline may be necessary to provide charts of sufficient detail to properly delimit this boundary. The U. S. National Ocean Survey and the State of Florida are presently conducting a jointly funded program to map the coastline of Florida at a scale of 1:10,000 to provide the proper detail for settling boundary problems. (5)

Since we do not have the benefit of specific charts made for the purpose of boundary settlement we have used the latest largest scale United States Coast and Geodetic Survey (C & G.S.) charts available for the Virginia coastline. The features on these charts necessary to determine the boundary under consideration have been reproduced at the same scale as originals. For the historical coastline portion of this study we have used the earliest available official United States government charts. Specific charts used are discussed in pertinent portions of the text.

THE SUBMERGED LANDS CONTROVERSY

The submerged lands controversy had its genesis in 1921 when California first enacted a general leasing statute under which oil lands extending into the marginal sea were leased (6). Various other state and federal actions including passage of state statutes extending jurisdiction of the state various distances from the coast finally came to a head in 1945 when President Harry S. Truman issued a Presidential Proclamation on September 28, 1945, declaring that:

> *"Having concern for the urgency of conserving and prudently utilizing its natural resources, the government of the United States regards the natural resources of the subsoil and seabed of the continental shelf beneath the high seas contiguous to the coasts of the United States as appertaining to the United States, subject to its jurisdiction and control..."* (7)

An Executive Order, also dated September 28, 1945, placed the resources of the continental shelf under the administrative custody of the Secretary of the Interior. (8)

Shortly thereafter, the United States was granted a motion to file a bill against the state of California's claim to submerged lands. (9) This resulted in a long series of suits which are known as the Submerged Lands Cases.

In 1947 the Supreme Court handed down a decision in the California case. (10) This first submerged lands decision gave the federal government control over submerged lands outside of internal

waters below the low water mark. This decision in turn generated a controversy over where the line lay which divided the internal waters of California from the territorial waters of the United States. To resolve this controversy, the Supreme Court appointed a Special Master to determine the dividing line (11). The Special Master's report was submitted to the Supreme Court in 1952 (12). Shalowitz, (13) discusses the Special Master's report in detail and concluded that this report "... *represents the most exhaustive study made thus far looking toward a judicial determination of the inland water and associated boundary problems.*" (14)

A series of rulings in 1950 (15) denied Texas and Louisiana title to offshore submerged lands. The ownership of submerged lands remained thus until 1953 when Congress passed the closely related Submerged Lands Act and the Outer Continental Shelf Lands Act (16). These two acts, in essence, granted to the coastal states title to submerged lands out to a line three geographic miles from the coast (17). Submerged lands beyond this line were retained by the United States. A provision in the Submerged Lands Act stated that if a state had a valid historic claim to lands more than three geographic miles from the coast, then these lands would revert to the state on establishment of its validity by competent authority. Claims by Texas and Florida for lands extending three marine leagues (nine nautical miles) into the Gulf of Mexico were unheld by the Supreme Court, while claims for additional lands by Louisiana, Mississippi and Alabama were denied. (18)

On the international level the submerged lands problems were discussed along with other legal problems of the sea at the

1958 Law of the Sea Conference, sponsored by the United Nations at Geneva, Switzerland. The results of this conference were four conventions (19), two of which, the Convention of the Continental Shelf and the Convention on the Territorial Sea and Contiguous Zone, have a specific bearing on the submerged lands problems.

The Convention on the Continental Shelf gave coastal states (nations) title to the sea bed and resources of the contiguous continental shelf. This essentially was an international acceptance of the Truman Proclamation of 1945.

The Convention on the Territorial Sea and Contiguous Zone (referred to hereafter as the Convention) is particularly pertinent to the submerged lands problem because it describes a system for determining the boundaries between Internal Waters and the Territorial Seas. The Supreme Court has stated that these rules will be used in determining the baseline from which state ownership of the lands described under the Submerged Lands Act will be drawn. (20)

RULES FOR THE DETERMINATION OF BASELINES

The Convention states that the normal baseline is the low water mark as marked on large scale charts officially used by the State (nation). The charts of the U. S. Coast that best serve this purpose are the United States Coast and Geodetic Survey Charts in the 1200 series of the Atlantic and Gulf Coasts at 1:80,000 and the 5000 series of the Pacific Coast at 1:180,000. (21) In many areas, the use of the low water line is not feasible because of fringing islands, deeply indented coasts, bays or other geographical features. The Convention describes special rules for such special areas, some of which are described below. (22)

Deeply Indented Coasts: Along coasts where many deep indentations occur, or where there is a fringe of islands immediately adjacent to the coast, straight baselines joining appropriate points along the coast may be used. Guidelines for drawing the straight baselines include requirements that: a) the baselines must follow the general direction of the coast, b) the sea areas enclosed must be closely linked to the land domain, c) baselines shall not be drawn to low tide elevations unless permanent structures (such as light houses) have been erected upon them, and d) straight baselines may not be applied by one state so that the territorial sea of another state is cut off from the high seas.

Bays: Bays are defined as well marked indentations whose penetration is sufficient enough that the area is as large as or larger than that of a semicircle whose diameter is a line drawn across the

mouth of the indentation. If the distance across the mouth of the indentation is 24 miles or less, the closing line is drawn across the entrance. If the distance is greater than 24 miles, a straight baseline of 24 miles shall be drawn so as to enclose the greatest practical area.

Harbor Works: The outermost permanent harbor works which form an integral part of the harbor system are regarded as forming part of the coast.

Low Tide Elevations: Where a low tide elevation (an area bare at low water, submerged at high water) is located wholly or partly within the territorial sea, the low water line on that elevation may be used as a baseline for *measuring the breadth of the territorial sea.*

A low tide elevation within the territorial sea has the effect of enlarging the territorial sea. A low tide elevation, however, *cannot* be used as *part of the baseline used to separate internal waters from the territorial sea.* (23)

Rivers: If a river flows directly into the sea, a straight line drawn across the mouth between points on the low tide line of the banks shall represent the baseline.

Roadsteads: Roadsteads normally used for loading, unloading and anchoring ships which normally would be outside of territorial waters, are included in territorial seas. These must clearly be marked on charts, and given publicity by the coastal state.*

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* The term coastal state used throughout this paper is synonymous with coastal nation.

Opposite or Adjoining States: Neither of two states whose coasts are opposite or adjacent may extend their territorial sea beyond the median line, every point of which is equidistant from the nearest points on the baseline, unless by reasons of historical title or agreement between the states, another line is appropriate.

MARITIME BOUNDARIES OF VIRGINIA

The Code of Virginia specifies the boundaries of the Commonwealth including the lateral and seaward extent of territorial seas. The northern limit of the territorial sea is the boundary line between Virginia and Maryland which is described as follows:

> "... *beginning at a point on the Maryland - Virginia line located on Assateague Island designated as station 'Pope Island Life Saving Station (1907)' defined by latitude 38° 01' 36.93" and longitude 75° 14' 47.105" thence running N 84° 05' 43.5", E (true) - 1,100 feet to station 'Atlantic'; thence due east (true) to the Maryland - Virginia jurisdictional limit.*" (24)

The southern limit of Virginia's territorial sea is described as:

> "... *a line beginning at the intersection with the low water mark of the Atlantic Ocean and the existing North Carolina - Virginia boundary line; thence due east to the jurisdictional limit of Virginia; such boundary line to be extended on the true ninety degree bearing as far as a need for delimitation may arise.*" (25)

The present North Carolina - Virginia line extends along the line coinciding with the 36° 33.02'N latitude in the eastern parts of the two states. (26)

The seaward extent of the Commonwealth's jurisdiction and ownership over offshore waters and submerged lands is stated in the

Code as follows:

"The jurisdiction of this state shall extend to and over, and be exercisable with respect to waters offshore from the coasts of this state as follows:

a. *The marginal sea to its outermost limits as said limits may from time to time be defined or recognized by the United States of America by international treaty or otherwise.*

b. *The high seas to whatever extent jurisdiction therein may be claimed by the United States of America, or to whatever extent may be recognized by the usages and customs of international law or by any agreement, international or otherwise to which the United States of America or this state may be party.*

c. *All submerged lands, including the subsurface thereof, lying under said aforementioned waters."* (27)

Virginia's claim to offshore waters and submerged lands is based on the three Virginia Charters issued at various times by James I, King of England.

The first charter (1606) granted:

"..., toward the west and southwest as the coast lyeth, with all the islands within one hundred miles directly over against the same sea coast; ... towards the east and northeast, or towards the north as the coast lyeth together with all the islands within 100 miles, directly over against the said sea coast." (28)

The second charter (1609) expanded the grant to the colonists laterally and more pertinent to this paper defined more specifically what was being granted offshore. The charter states:

"... *we do also of our special grace...grant and confirm...; and also all the islands lying within one hundred miles along the coast of both seas of the precinct aforesaid; together with all the soils, grounds, havens, and ports, mines, as well Royal mines of gold and silver, as other minerals, Pearls and precious stones, quarries, woods, rivers, waters, fishings, commodities, jurisdictions, royalties, privileges, franchises, preheminences (sic) within the said territories, and the precincts thereof, whatsoever, and thereto and thereabouts both by Sea and Land, being, or in any sort belonging or appertaining ...*" (emphasis, ours) (29)

The specific listing of items of commercial value that are obtained only from within the waters or from the bed of the sea, as indicated by underlining above, indicates the interest of James to give the early colonists specific control and jurisdiction over the resources in the offshore area. The words *pearls, waters, fishings, jurisdictions,* by *sea and land* are very unambiguous.

The third charter (1611-1612) extended the offshore limits of the colonists grants seaward some 800 miles. This charter also includes a more detailed list of items in the grant than the first charter. Some pertinent excerpts from the third charter are:

"... *we do by these presents give, grant and confirm ..., forever, all and singular those islands whatsoever situate and being in any part of the ocean seas bordering upon the coast of our said First Colony in Virginia, and being within three hundred leagues of any of the*

parts heretofore granted ...; together with all and singular soils, lands, grounds, havens, ports, rivers, waters, fishings, mines, and minerals as well as royal mines of gold and silver, as other mines and minerals, pearls, precious stones, quarries, and all and singular other commodities, jurisdictions, royalties, privileges, franchises, preheminences (sic), both within the said tract of land upon the Main, and also within the said islands and seas adjoining whatsoever and thereupon or thereabouts both by sea and land ..." (emphasis ours) (30)

James I was not a proponent of principle of "Freedom of the Seas". It was during his reign that large areas of water adjacent to the British Isles were delineated and designated as areas of exclusive English control. These areas were known as the *King's Chambers*. (31) James I obviously felt he had the power to govern large bodies of water adjacent to his territory; therefore, it is probably safe to assume that he felt that his royal prerogative allowed him to grant large areas of adjacent waters to the colonists. His specific mention of *pearls*, a commodity only found on the seabed, and *fishings*, a resource obviously found within bodies of water, leads us to believe that he was specifically granting the adjacent seas and seabeds to the early colonists.

The validity of the claims of the Commonwealth of Virginia to extensive offshore areas has not been adjudicated. The claims of Virginia and the other Atlantic Coast states to offshore areas based on colonial charters are presently under consideration by the United States Supreme Court. (32)

The boundary line separating the internal waters and territories of the Commonwealth from the territorial seas of the Commonwealth has never been delimited. It is important that this line be delimited so as to ensure control of exploitable resources by proper authority. If the ownership of offshore lands, beyond the line 3 geographic miles from the coast is vested in the U. S. government, then the Commonwealth must be sure that the baseline chosen from which to measure this 3 mile distance is the most advantageous baseline possible. Along some parts of the coast, the selection of a baseline is relatively straightforward. Along other sections, various interpretations or selection of the rules of the Convention are possible. The remainder of this paper will discuss the delimitation of a baseline for determining the territorial seas of the Commonwealth. This baseline once determined will apply regardless of the outcome of current litigation on the extent of offshore claims.

DEVELOPMENT OF THE BASELINE FOR VIRGINIA

It is relevant, in any discussion of territorial rights which hinges on shoreline position, to examine the question of positioning accuracy in map construction and the nature of positional changes due to dynamical processes.

Two approaches have been used in developing the baseline for Virginia. The latest Coast and Geodetic Survey charts (numbers 1220, 1221, 1222 and 1227) were used to construct the recent coastline. These charts on a scale of 1:80,000 depict the 1962 high water shoreline as determined by photogrammetric techniques. The oldest available maps of the shoreline which have legal status are those constructed from the earliest topographic and hydrographic surveys of the Coast and Geodetic Survey. For the region under consideration the relevant topographic surveys are T-264, 522, 524, 378, 464bis, 492, 510, 512, 511, 523, 525, 509, which were constructed on a 1:20,000 scale in the years 1849 thru 1855 (nominally hereafter called the 1952 survey). These surveys indicate the mean high water shoreline at the time of the survey. It should be pointed out, however, that the line surveyed is not based on tidal height observations but on the position of markings such as drift materials on the berm. Shalowitz (33) indicates the accuracy of the location of the high-waterline is within a maximum error of ten meters.

The mean high water or mean low shoreline position is generally dependent on the season of the year insofar as the seasons reflect the varying wave climate which molds the beach. Characteristically the summer shoreline is further seaward due to the ten-

dency for the summer wave input to build the beach vertically with a consequent steeper foreshore slope. The seasonal change in position, although impossible to predict with our present knowledge, frequently exceeds fifty or sixty meters.

It is important to be aware of changes in the coastline, particularly if the Commonwealth of Virginia's historic claim to submerged lands beyond the three mile limit is upheld by the U. S. Supreme Court. The Court held, in a case involving Texas's attempt to use the baseline constructing provisions of the Convention, that since Texas's historic claim to three marine leagues was valid, the baseline would have to be the coastline as it existed in 1845, the year Texas joined the United States. (34)

The Baseline Using The Present Coastline

Figures 1 through 12 in Appendix I represent our determination for the baseline based upon the present coast line. In all instances throughout these figures, where alternative methods of determining the baseline might exist, we have used a green line to represent what in our opinion is the best alternative and a red line to represent the least desirable alternative. Along those sections of the coast where we feel only one interpretation of the rules for determining the baseline is possible we have used a green line.

From the North Carolina line northward to Cape Henry, (Figures 1, 2 and 3) the coast, with one exception, is a relatively straight, unbroken beach. With the exception of the area at Rudee Inlet (Figure 3) the baseline is determined according to Article 3 of the Convention:

> "... *the normal baseline for measuring the breadth of the territorial sea is the low water line along the coast as marked on large-scale charts officially recognized by the coastal state.*"

Because of the small tidal range, the particular beach profile in this area, and the scale of the charts, the low waterline and the high waterline as marked on the charts are indistinguishable from each other. The baseline, indicated by the green line, therefore, in the area south of Chesapeake Bay coincides with the coastline except in the Rudee Inlet area.

In the Rudee Inlet area (Figure 3), stone breakwaters extend seaward from either side of the inlet. These breakwaters

or jetties are permanent harbor works and therefore, under Article 8 of the Convention which states:

> "*For the purpose of delimiting the territorial sea, the outermost permanent harbour works which form an integral part of the harbour system shall be regarded as forming part of the coast.*"

are used to determine the baseline. The baseline in this area will follow the jetties and a line connecting the seaward end of the two jetties.

Immediately north of Rudee Inlet are two recreational fishing piers extending from the beach. These piers are not used for loading, unloading or the berthing of vessels, and cannot therefore be classified as permanent harbor works, and may not be used in drawing the baseline.

Proceeding northward, the next area to be considered is the entrance to Chesapeake Bay (Figures 4 and 5). The distance across the Bay mouth is well within the 24 mile closing limit set by the Convention. In addition, Chesapeake Bay has long been considered a *historic bay* in the sense used in the Convention. (35)

Two alternate proposals for determining the closing line for Chesapeake Bay entrance are provided. The green line represents the closing line most favorable to the Commonwealth of Virginia, while the red line represents the line most favorable to the federal government.

To develop the more seaward of the baselines (green) the point along the coastline at which the land curves inward forming Cape Henry was used as the southern terminus. The northern terminus

was located on Smith Island since this island forms the northern limit of the secondary entrance to the Bay. The point along the coastline at which the coastline curved inward forming Smith Island Inlet was used as the northern terminus.

The alternate closing line (red) is drawn between Cape Henry and the Fishermans Island complex. The respective termini on these landmarks were determined using the bisected angle technique (36). This closing line must be considered as an alternate to the longer closing line when combined with the red closing line across Smith Island Inlet shown in Figure 5.

We favor the longer closing line because of the wording of Article 7, paragraph 3 of the Convention which states that:

> *"... where, because of the presence of islands, an indentation has more than one mouth, the semicircle shall be drawn on a line as long as the sum total of the lengths of the lines across the different mouths. Islands within an indentation shall be included as if they were part of the water area of the indentation."*

As can be seen from Figure 5, Chesapeake Bay clearly has two entrances, the main entrance through Chesapeake Channel and a smaller entrance through Smith Island Inlet and Fisherman Inlet.

The coastline of Virginia northward from Chesapeake Bay to the Maryland-Virginia border (Figures 5 through 12) is relatively complex. A series of low-lying barrier islands interspersed with many channels and inlets leading to extensive expanses of shallow bays and salt marshes border the entire mainland. Within some of the inlets and off some of the islands are numerous low tide elevations.

Two alternate methods of drawing the baseline were used along the portion of the coast from the northern end of the Smith Island complex (Figure 6) to the southern end of Assateague Island (Figure 11).

The alternative most advantageous to Virginia and in our opinion the preferred method is that of straight baseline. Article 4 of the Convention states that:

> *"1. In localities where the coastline is deeply indented and cut into, or if there is a fringe of islands along the coast in its immediate vicinity, the method of straight baselines joining appropriate points may be employed in drawing the baseline from which the breadth of the territorial sea is measured."*

The straight baseline is shown in green on Figures 6 through 11.

This straight baseline goes from the northern headland of the Smith Island complex to the most seaward portion of Myrtle Island, enclosing Little Inlet and from that point to the most seaward portion of Ship Shoal Island enclosing Ship Shoal Inlet (Figure 6). From the point chosen on Ship Shoal Island, the straight baseline then crosses New Inlet and Sand Shoal Inlet to the most seaward portion of Cobb Island, which is the northeastern tip of an extensive sand flat at the northern end of the island and crosses Great Machipongo Inlet to the most seaward point on Hog Island (Figures 7 and 8). From this point on Hog Island, the straight baseline crosses Quinby Inlet to the most seaward portion of Dawson Shoal Island off the northern end of Parramore Island (Figures 8 and 9). The straight baseline then crosses Wachapreague Inlet to

the point on the southern tip of Assateague Island where the coastline begins to turn westward forming Chincoteague Inlet. This portion of the baseline encloses Wachapreague, Gargathy, Assawaman and Chincoteague Inlets (Figures 9, 10 and 11).

These straight baselines follow the restriction in Article 4 of the Convention that

> "2. *The drawing of such baselines must not depart to any appreciable extent from the general direction of the coast, and the sea areas lying within the lines must be sufficiently closely linked to the land domain to be subject to the regime of internal waters.*"

The alternative method we used (red line), followed the contours of the individual islands and treated each individual inlet as a bay with its own closing lines. As can be seen from Figures 6 through 11, this method results in a very complex baseline.

A further complicating factor if the straight baseline method is not used is the large number of low tide elevations outside (seaward) of the red line. These elevations are marked on the various figures stippling. While Article 4 of the Convention states:

> "3. *Baselines shall not be drawn to and from low tide elevations, unless lighthouses or similar installations which are permanently above sea level have been built on them.*"

Article 11 of the Convention states:

> "1. ... *where a low tide elevation is situated wholly or partly at a distance not exceeding the breadth*

of the territorial sea from the mainland or an island, the low-water line on that elevation may be used as the baseline for measuring the breadth of the territorial sea."

By using the straight baseline in combination with the recommended closing line across Chesapeake Bay from Smith Island to Cape Henry only four low tide elevations (Figures 5, 6, 7) are found outside of the baseline. If the red baseline is chosen, some thirteen low tide elevations (Figures 6 through 11) are outside of the baseline. Use of the green closing line across the Chesapeake Bay entrance places an area in Smith Island Inlet (Figure 5), which is marked on the original chart (C & G.S. 1222) *"Changeable area (No recent surveys)"*, inside the territorial waters where constantly changing features will not affect the determination of the baseline.

The possible importance of these low tide elevations lying outside the baseline should not be underestimated, particularly if exploitable mineral resources are discovered offshore. For example, if the end of a pier extending approximately 380 feet from the shore in Carpenteria, California is used as the point on the baseline for the determination of limit of the territorial sea, an additional 30.984 acres is added to California's territorial sea. This 30.984 acres may be part of a tract for which the high bidder for an oil and gas lease payed the U. S. government a cash bonus of $10,618.50/acre or about $329,000 total. (36). The low tide elevations shown in Figure 6 is approximately 1,000 feet from the coastline, for example, and will increase Virginia's territorial sea by a measurable amount regardless of which baseline is chosen.

The baseline, from the northern terminus of the straight baseline from Parramore Island to Assateague Island, coincides with the coastline of Assateague Island to the intersection of the coastline with the Virginia-Maryland state line. (Figure 12)

As mentioned earlier in the introduction we do not intend in this paper to construct possible seaward boundaries for Virginia's territorial sea. The boundary line(s) developed thus far are based upon the most recent C & G.S. charts of the Virginia coast. One other possibility exists, that of determining the baseline based on the best available historical configurations of the coastline. This possibility will be discussed in the next section.

The Baseline Using Historical Surveys

As noted earlier the Coast & Geodetic Survey topographic surveys of "1852" were used to determine the old shoreline position. The 1852 position is shown in Figures 5 through 12 as a brown line. The old shoreline position has not been shown for the area south of Cape Henry because the erosion rates for this reach have been relatively small; about 0.22 meter/yr (U. S. Army Corps of Engineers). The reach of the coast north of Cape Henry has undergone very dramatic erosion resulting in a possible dislocation of the Commonwealth's territory. The shoreline positions shown are part of a compilation of historical positions between 1852 and 1962 which were initially prepared by the U. S. Army Corps of Engineers and recently updated by VIMS.

Since dramatic erosion has occurred on the Eastern Shore, the Commonwealth may wish to claim a baseline position reckoned from historical information. Three possibilities are immediate; the charted "1852" position, the inferred position at the time Virginia became a state (1788) or the inferred position at the time of chartering by England. The latter two could be estimated by extrapolation based on the measured erosion rates between 1852 and 1962. In any of the three cases above it would be favorable to Virginia to use the straight baseline provision.

In the following paragraphs each of the barrier islands is discussed as to its erosion history. In each case the average recession or advance distance is given for the period between 1852 and 1962. This distance was computed by dividing the areal change by the smaller of the two shoreline lengths (either 1852 or 1962).

Fishermans Island (Fig. 5) - This island has accreted during the time period. Since the shoreline configuration is very complex the average distance is not calculated. Suffice it to say the area of the island has increased dramatically; in 1852 the area was 854,000 square meters while in 1954 the area was 3,437,200 square meters.

Smith Island (Figure 5 and 6) - This island has experienced a rather uniform recession rate during the time period. The average recession distance is 766 meters.

Myrtle Island (Fig. 6) - The recession has been rather irregular with a net average recession of 624 meters during the time period.

Ship Shoal Island (Fig. 6) - The recession has been very irregular and small.

Wreck Island (Fig. 7) - This narrow island has had an irregular recession accompanied with lateral shifting. The net average recession is 1,675 meters.

Cobb Island (Fig. 7) - Although the recent trend is for accretion on the north end of the island the net change has been recession over the study period; 493 meters in the northern section and 535 meters in the southern.

Hog Island (Fig. 7 and 8) - Like Cobb Island to the south and Parramore to the north, Hog Island has experienced a growth on its northern end and relatively dramatic erosion on its southern end. The average distance of advance on the north was 423 meters while the average recession on the south was 1,226 meters.

Parramore Island (Fig. 8 and 9) - The shoreline change is characterized by an average advance of 309 meters in the northern section, an advance of 172 meters in the central section and a recession of 590 meters in the southern section.

Cedar, Metomkin, Assawaman and Wallops Islands (Fig. 9, 10 and 11) - These four islands experienced a rather uniform recession during the time period with a net recession of 527 meters on Cedar, 631 meters on Metomkin, 571 meters on Assawaman and 248 meters on Wallops.

Assateague Island (Fig. 11 and 12) - The Virginia shoreline on Assateague has accreted during the time period with extensive growth southward of the island and a slight easterly advance of the barrier shoreline.

Summary - If a comparison is made between the 1852 shoreline positions and the suggested straight baseline constructed from the 1962 chart, it is apparent the historical shoreline positions between Parramore Island (northern end) and Assateague (southern end) will offer no advantage to Virginia. Between Fishermans Island and Parramore Island, however, the use of historical shoreline positions with the straight baseline would be advantageous relative to the 1962 shoreline.

RECOMMENDATIONS

We believe that the delimitation of a boundary between the territorial and internal waters of the Commonwealth of Virginia would assist in the orderly development of Virginia's Coastal Zone nearshore-offshore resources.

Once a baseline is determined the question arises as to how permanent the baseline becomes. If the baseline is determined from the best available historical information and defined precisely by specific coordinates, it would be permanent. If, however, the baseline is determined based on the best existing charts, should this baseline shift as the coastline advances or recedes? Shalowitz (38) discusses this problem and concludes that the present shoreline as charted is best upon which to determine the baseline since accurate surveys do not exist prior to the middle of the 19th century.

We recommend the baseline be delimited using present-day charts, and that this baseline be developed using the principle of straight baselines to the north of Chesapeake Bay, and that the baseline essentially follow the coast south of Chesapeake Bay. The baseline we developed as the recommended line is marked in green on the accompanying figures.

We further recommend that once this baseline is delimited, that it be defined by coordinates of latitude and longitude, marked on the pertinent U. S. Coast and Geodetic Survey charts and remain as a fixed boundary unless major changes in coastline configuration occur that would make the boundary absurd.

With this in mind, we also recommend that the Commonwealth of Virginia begin discussions with the proper agencies of the United States to explore the possibility of designating a commission composed of representatives of the Commonwealth, the United States and some disinterested experts to attempt to delimit the boundary between the Internal Waters and the Territorial Waters of the Commonwealth.

NOTES

1. Virginia Marine Resources Commission, Minutes of Meetings, September 22, 1970.

2. Emery, K. O. 1965. *Submarine Geology and Geophysics*. Butterworths, London 464 p. & 39 plates, indicates extensive deposits of sand and phosphorite off Virginia's coast (map p. 14). M. M. Nichols (personal communication) of the Virginia Institute of Marine Science has indicated the presence of sand, gravel, shell, heavy metals and phosphate in shelf areas off Virginia.

3. Griffin, W. L. 1968. Ocean Boundaries of the United States and the Several States, p. 15-27. In Workshop on Law as Related to Ocean Development Problems, April 20, 1968, Workshop Materials, Marine Technology Society, Washington, D. C.

4. Pearcy, G. E. 1959. Geographical Aspects of the Law of the Sea. Annals Assoc. Am. Geographers. 49: 1-23.

5. U. S. Department of Commerce, National Oceanic and Atmospheric Administration Press Release, NOAA 71-22, March 2, 1971.

6. Memorandum from Stewart French, staff counsel, to Senator Guy Cordon in Hearings before Committee on Interior and Insular Affairs on S. J. Res. 13 and other Bills, 83rd Congress, First Session, P. 1231-1232, 1953. This memorandum contains a brief chronological listing of major events in the submerged lands controversy from 1921 to 1953.

7. Presidential Proclamation 2667, September 28, 1945, with respect to Natural Resources of the Subsoil and Sea Bed of the Continental Shelf by Harry S. Truman. 10 Fed. Reg. 12303 (a copy is reproduced in Shalowitz, Vol. 1, p. 362, see note 13).

8. Executive Order No. 9633, 10 Fed. Reg. 12305, 1945.

9. U. S. vs. California, 326 U. S. 688, 22 October 1945.

10. U. S. vs. California, 332 U. S. 19, 1947.

11. U. S. vs. California, 334 U. S. 855, 1948.

12. 344 U. S. 872, 10 November 1952. A copy of the Special Masters Report is reproduced in Shalowitz, Vol. 1, p. 329, see note 13.

13. Shalowitz, A. L., 1962. *Shore and Sea Boundaries*, Vol. 1, U. S. Government Printing Office, Washington, D. C., 420 pages.

14. Shalowitz, Vol. 1, p. 107, see note 13.

15. U. S. vs. Louisiana, 339 U. S. 699, 1950.
U. S. vs. Texas, 339 U. S. 707, 1950.

16. Submerged Lands Act, 43 USCA 1301-1315, 1953. Outer Conti- Shelf Land Act, 43 USCA 1331-1343, 1953. A copy of these is reproduced in Shalowitz, Vol. 1, p. 363 and 368, see note 13.

17. Geographic mile is same as nautical mile, = 6076 feet.

18. U. S. vs. Louisiana, Texas, Mississippi and Alabama 363 U. S. 1, 1960, U. S. vs. Florida, 363 U. S. 121, 1960.

19. I. Convention on the Territorial Sea and Contiguous Zone.

II. Convention on the High Seas.

III. Convention on Fishing and Conservation of the Living Resources of the High Seas.

IV. Convention on the Continental Shelf.

A copy of these Conventions is reproduced in Shalowitz, Vol. 1, beginning on p. 371, see note 13.

20. U. S. vs. California, 381 U. S. 139, 1965, and 382 U. S. 448, 1966, In this decision the Supreme Court determined California's boundary separating inland waters from territorial waters. The decision was based primarily on the report of the Special Master (see note 11), with the exception that the 24 mile closing rule for bays described by the Convention on the Territorial Sea and Contiguous Zones was used. The Supreme Court adopted the definitions of the inland waters contained in the above Convention as binding for determining inland waters of the U. S.

21. Pearcy, G. E., 1959. Measurement of the U. S. Territorial Sea. U. S. Department of State Bull. 29 June 1959, p. 963-971.

22. Detailed interpretations of these rules, including graphic illustrations may be found in Shalowitz (note 13), Pearcy (note 21) and Sovereignty of the Sea, U. S. Dept. of State Geog. Bull. No. 3, Rev. 1969.

23. The importance of this distinction is that, subject to certain provisions contained in the Convention on the Territorial Sea and Contiguous Zone, ships of all states enjoy the rights of innocent passage through territorial seas. There is no right of innocent passage through internal waters guaranteed under

international law.

24. Title 7.1, Ch. 1, Section 7.1-7.1, Code of Virginia, approved by the 1970 Virginia General Assembly, becomes effective upon consent of the U. S. Congress. Maryland approved similar legislation in 1969.

25. Title 7.1, Ch. 1, Section 7.1-4.1, Code of Virginia, approved by the 1970 Virginia General Assembly, becomes effective upon consent of U. S. Congress and concurrence of North Carolina. North Carolina passed similar legislation in 1969, but with a proviso that the legislation would be repealed if not agreed to by the U. S. Congress by November 1, 1970. Correspondence with the North Carolina Attorney General's Office indicates essentially similar legislation will be considered in the present session of the North Carolina legislature.
As of the date of this paper, the U. S. Congress has taken no action on either the Virginia-North Carolina or the Virginia-Maryland seaward boundary.

26. As determined from C & G.S. Chart 1227, Cape Henry to Currituck Beach Light.

27. Title 7.1, Chapter 1, Section 7.1-2, Code of Virginia.

28. The First Charter of Virginia, issued by James I of England in 1606.

29. The Second Charter of Virginia, issued by James I of England in 1609.

30. The Third Charter of Virginia, issued by James I of England

in 1611-12.

31. Grant, L. J., 1915. The King's Chambers. The Law Quarterly Review. 124: 410-420.

32. In April, 1969, the U. S. Filed a motion for a leave to file complaint against all those states bordering on the Atlantic Ocean to deny these states title to any submerged lands lying more than 3 geographic miles from the coast.

33. Shalowitz, A. L., 1964. Sea and Shore Boundaries, Vol. II. Interpretation and Use of Coast and Geodetic Survey Data. U. S. Government Printing Office, Washington, D. C. 749 pages.

34. U. S. vs. Louisiana et al. 389 U. S. 155, 1967.

35. McDougal, M. S. and Burke, W. T., 1962. The Public Order of the Oceans, p. 358 and Jessup, 1927. The Law of Territorial Waters and Maritime Jurisdiction, p. 383-439.

36. Shalowitz, Vol. 1, p. 64, see note 13.

37. Hortig, J. F., 1968. Report on Jurisdictional, Administrative and Technical Problems Related to Establishment of California Coastal and Offshore Boundaries, Ch. 2, p. 143-145 in L. M. Alexander, Ed. Proceedings of the Second Annual Law of the Sea Institute, June 21-29, 1967.

38. Shalowitz, Vol. 1, p. 165, see note 13.

APPENDIX I: TEXT FIGURES

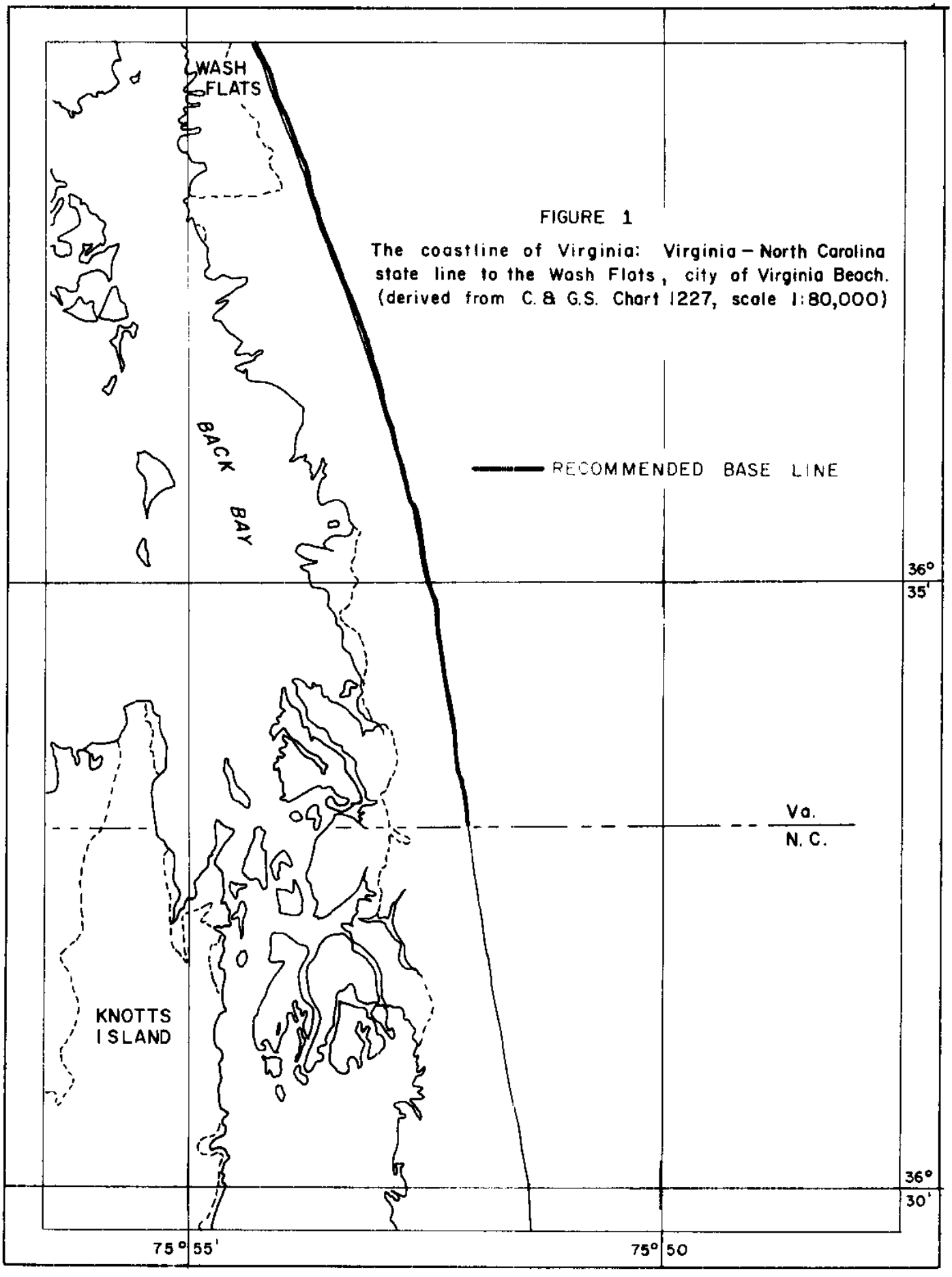

FIGURE 1

The coastline of Virginia: Virginia – North Carolina state line to the Wash Flats, city of Virginia Beach. (derived from C. & G.S. Chart 1227, scale 1:80,000)

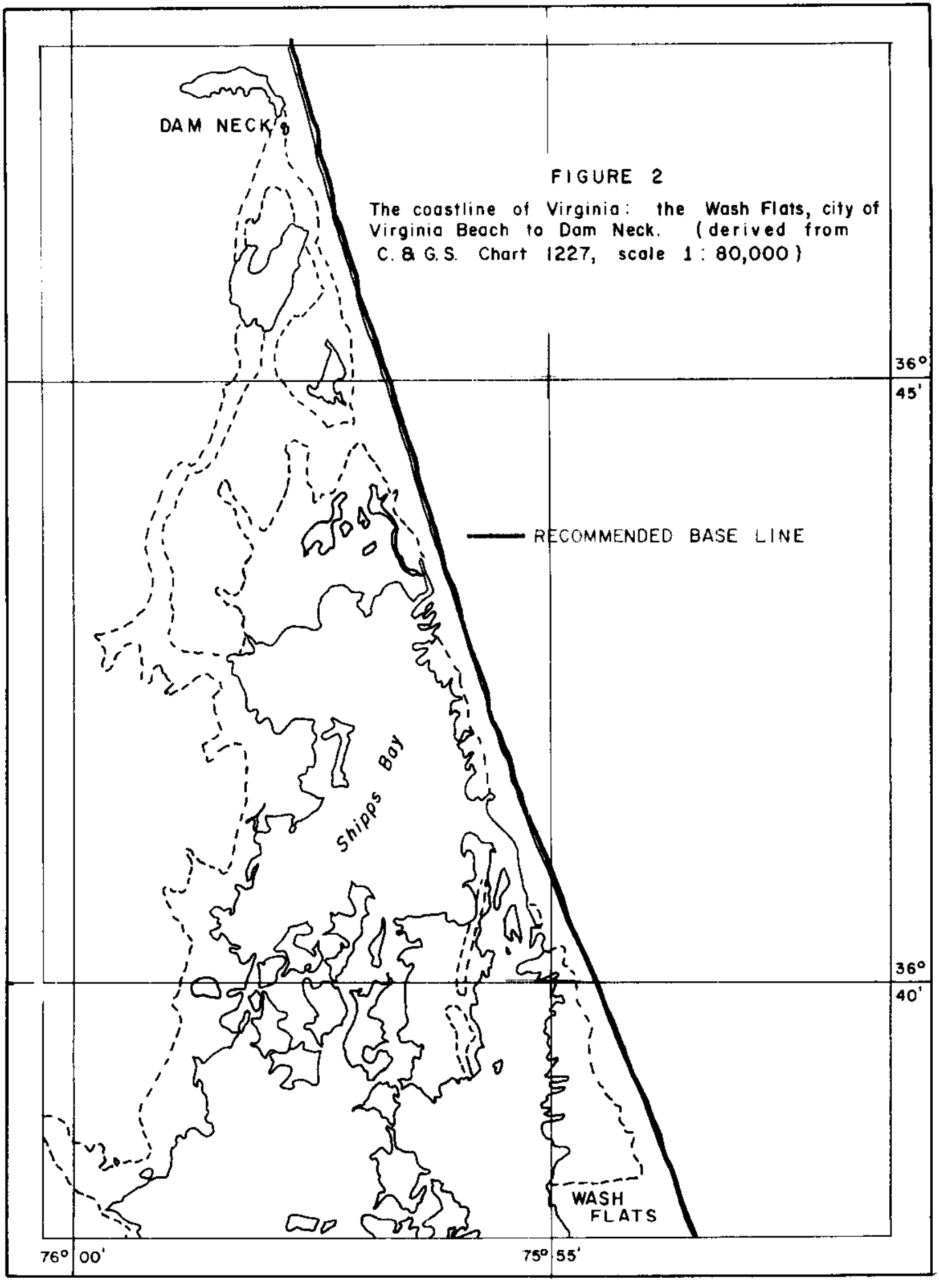

FIGURE 2

The coastline of Virginia: the Wash Flats, city of Virginia Beach to Dam Neck. (derived from C. & G.S. Chart 1227, scale 1 : 80,000)

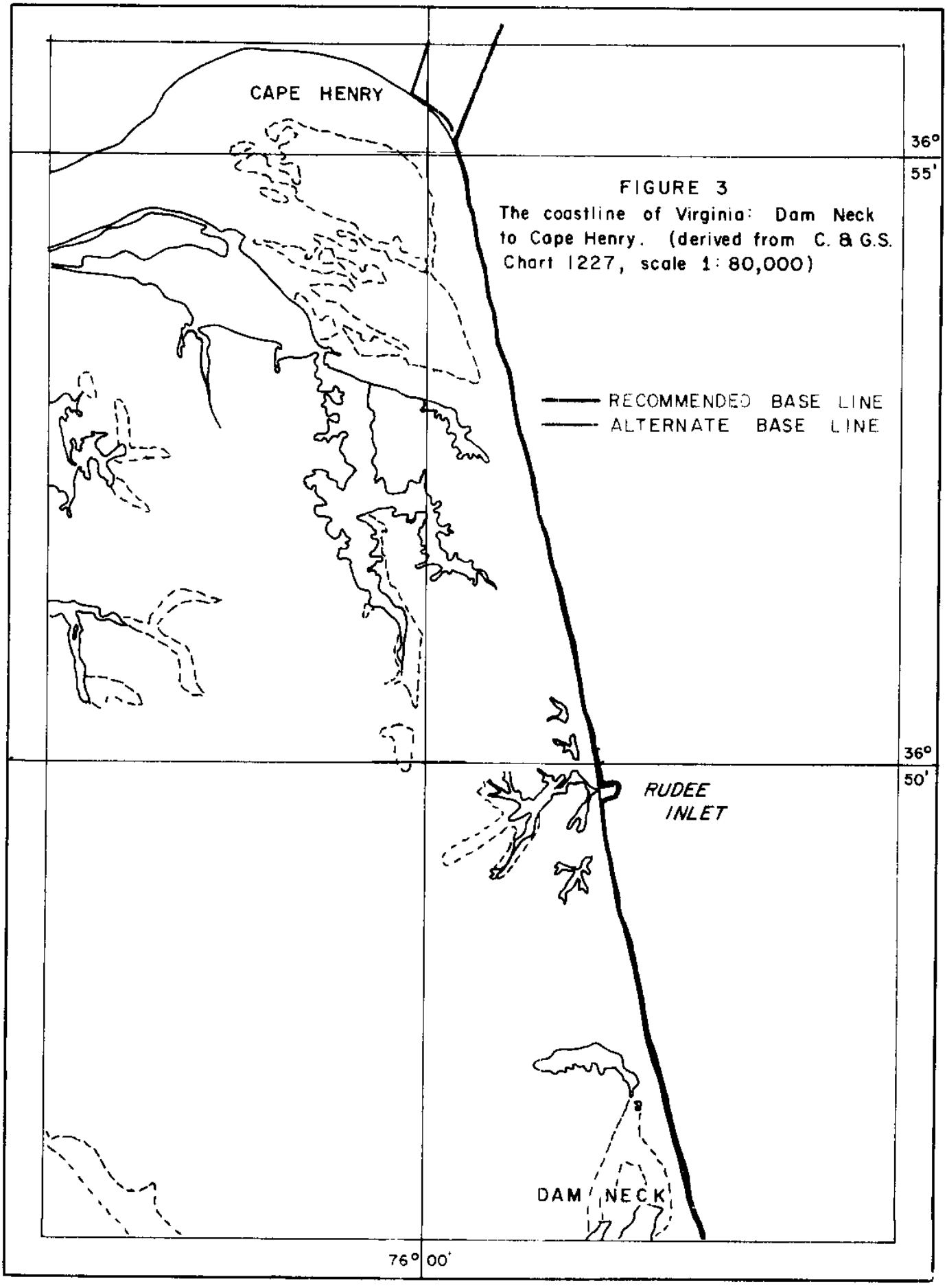

FIGURE 3

The coastline of Virginia: Dam Neck to Cape Henry. (derived from C. & G.S. Chart 1227, scale 1: 80,000)

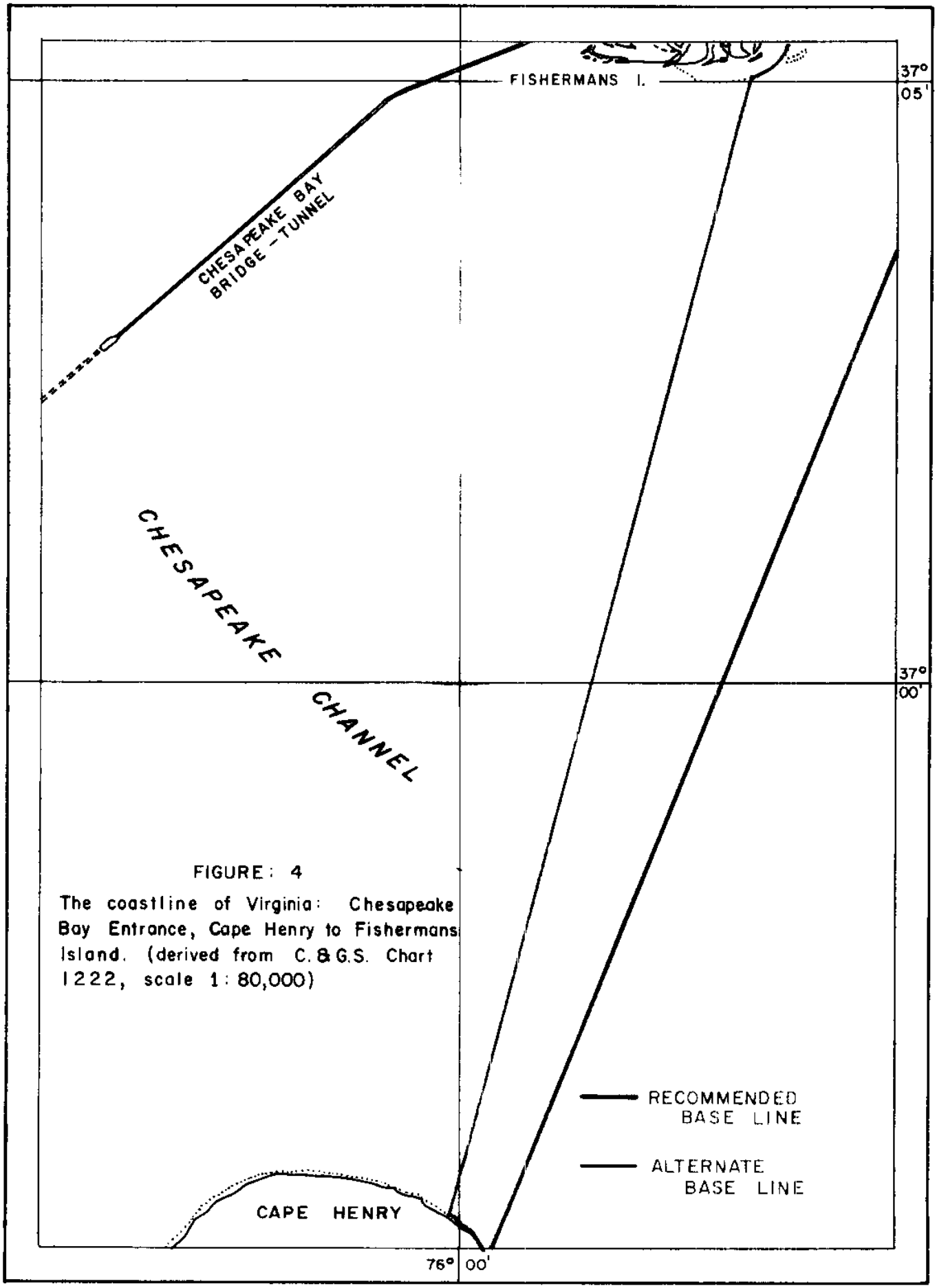

FIGURE: 4

The coastline of Virginia: Chesapeake Bay Entrance, Cape Henry to Fishermans Island. (derived from C. & G.S. Chart 1222, scale 1: 80,000)

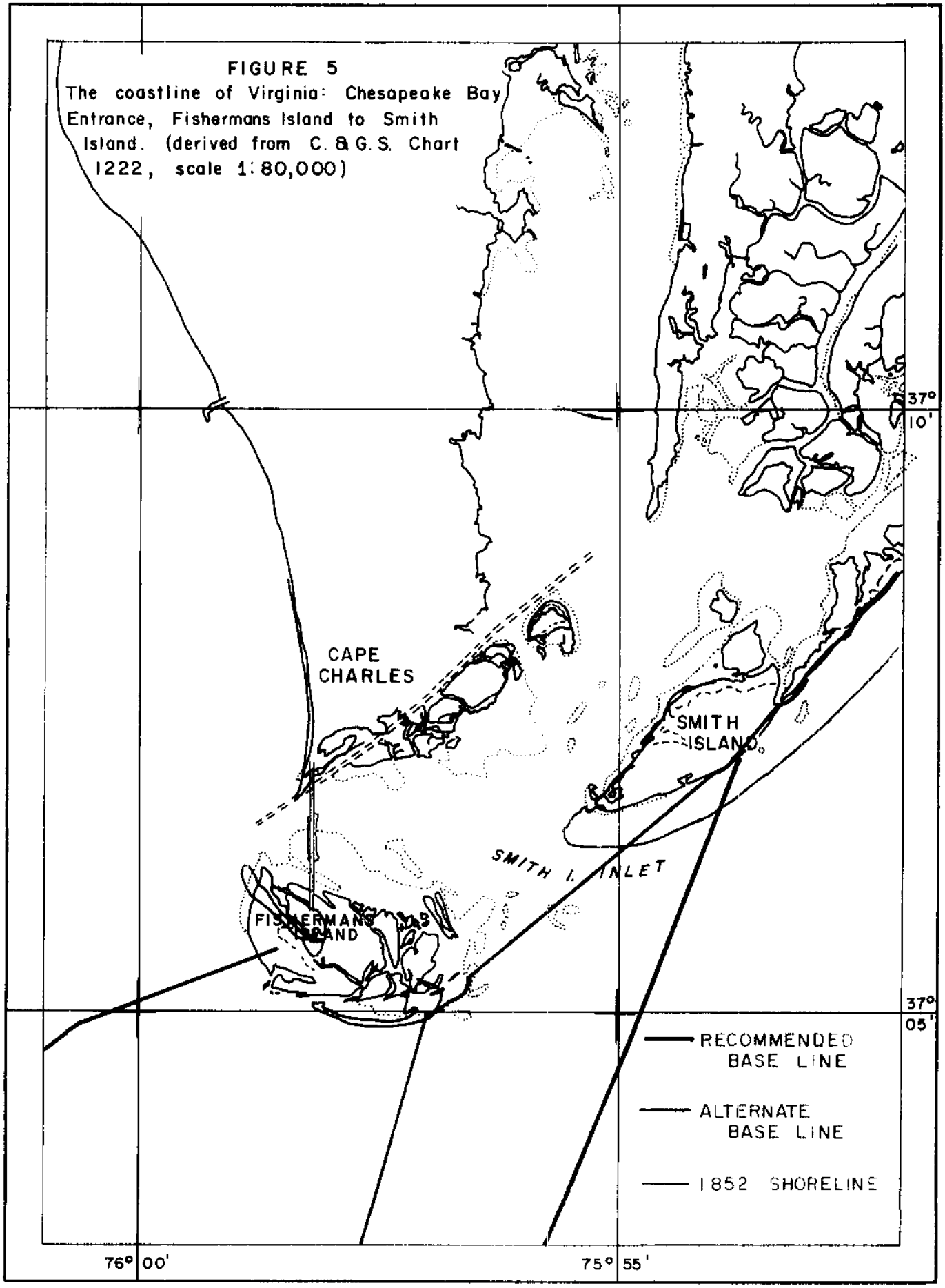
FIGURE 5
The coastline of Virginia: Chesapeake Bay Entrance, Fishermans Island to Smith Island. (derived from C. & G. S. Chart 1222, scale 1:80,000)
CAPE CHARLES
SMITH ISLAND
SMITH I. INLET
FISHERMANS ISLAND
37° 10'
37° 05'
76° 00'
75° 55'
RECOMMENDED BASE LINE
ALTERNATE BASE LINE
1852 SHORELINE

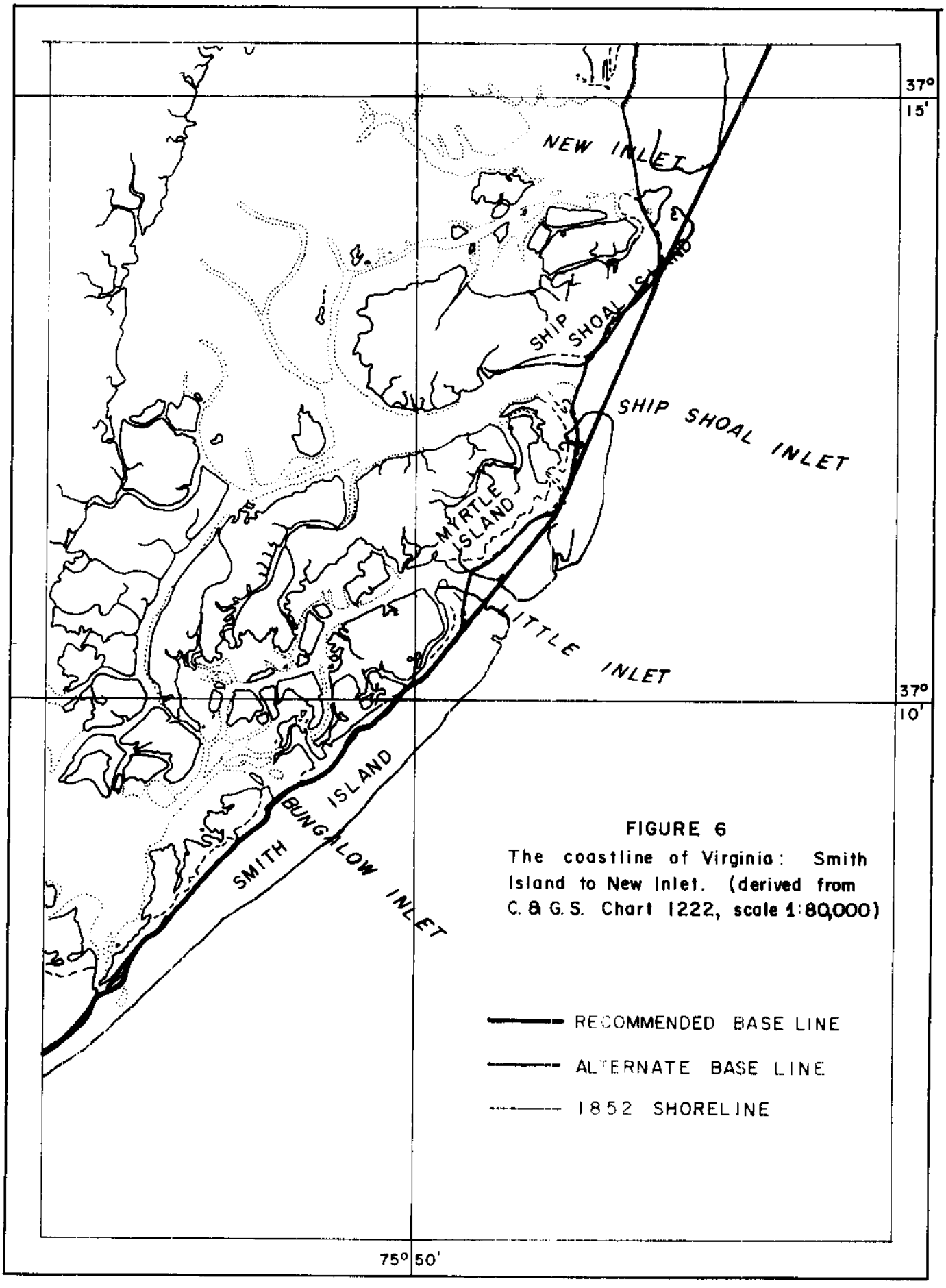

FIGURE 6

The coastline of Virginia: Smith Island to New Inlet. (derived from C. & G.S. Chart 1222, scale 1:80,000)

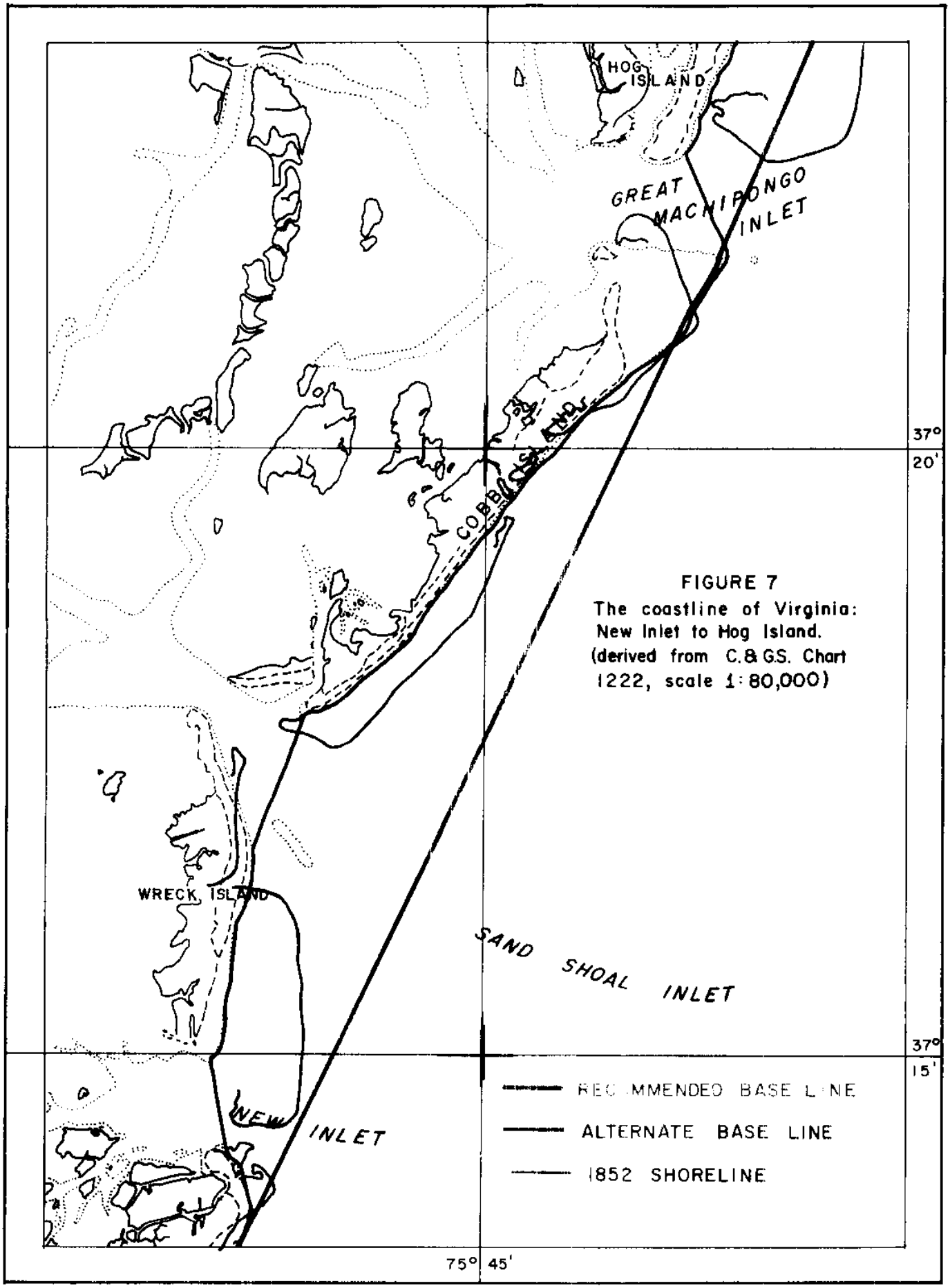

FIGURE 7
The coastline of Virginia: New Inlet to Hog Island. (derived from C.& G.S. Chart 1222, scale 1:80,000)

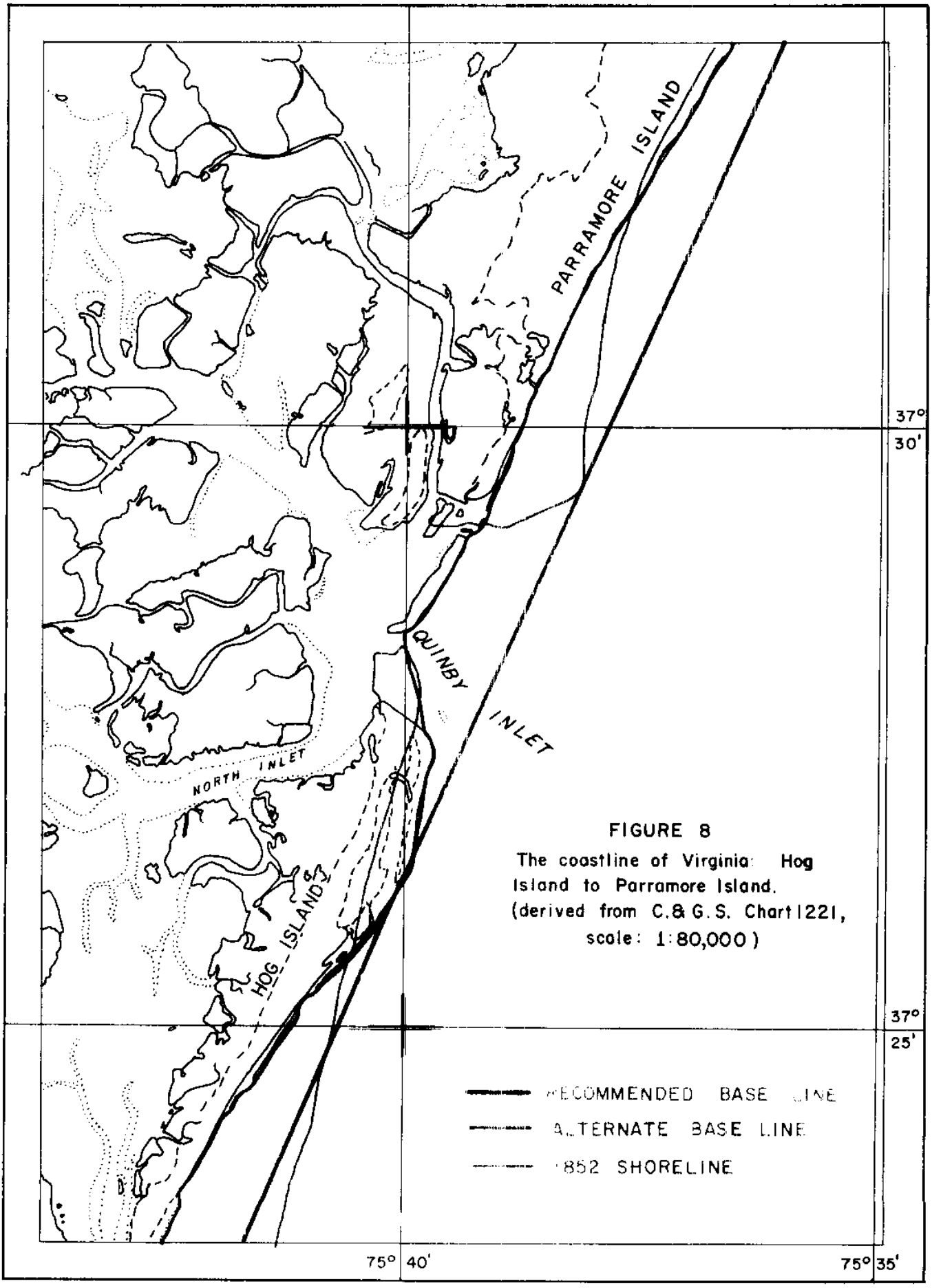

FIGURE 8

The coastline of Virginia: Hog Island to Parramore Island. (derived from C.& G.S. Chart 1221, scale: 1:80,000)

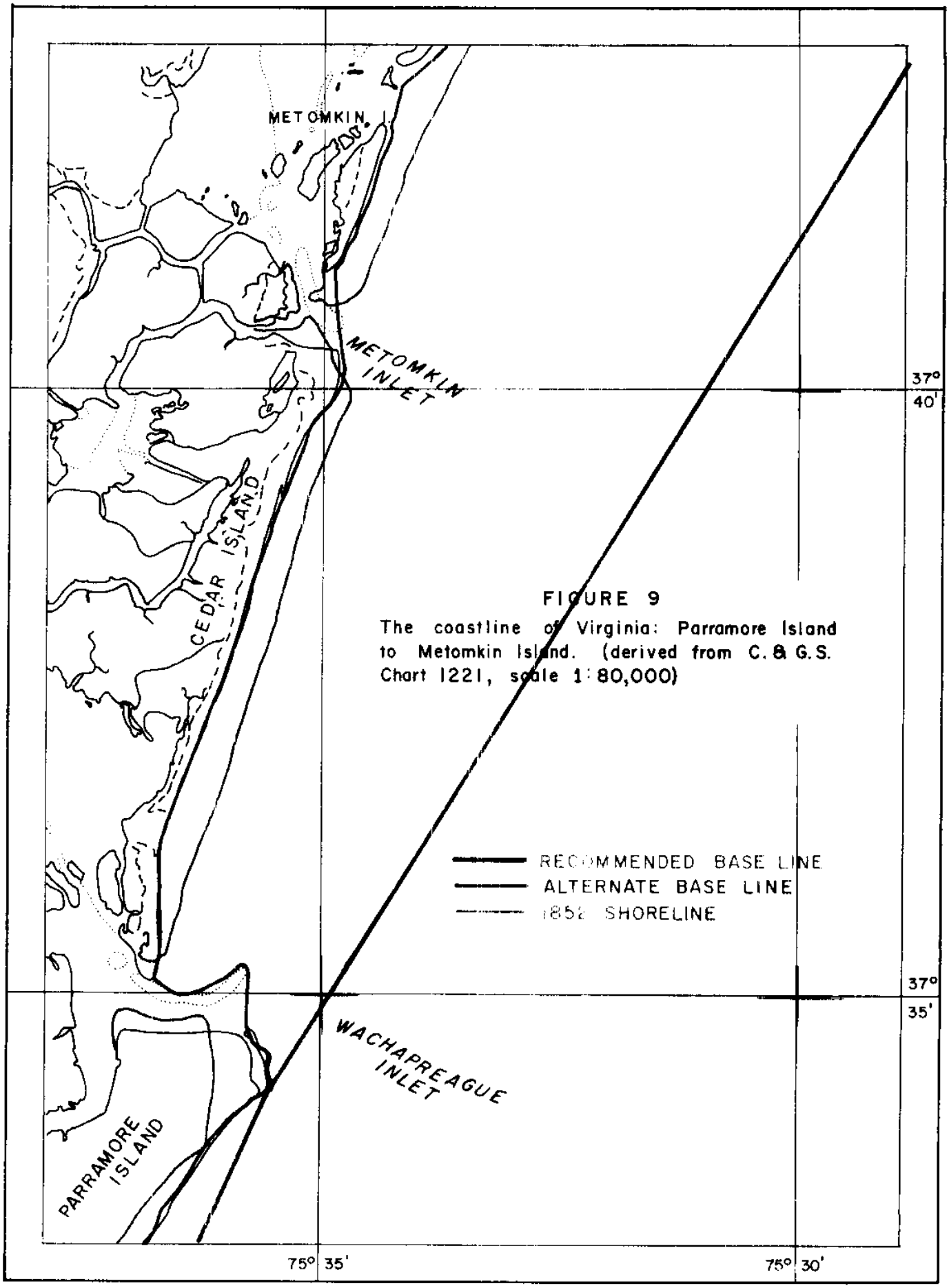

FIGURE 9

The coastline of Virginia: Parramore Island to Metomkin Island. (derived from C. & G.S. Chart 1221, scale 1:80,000)

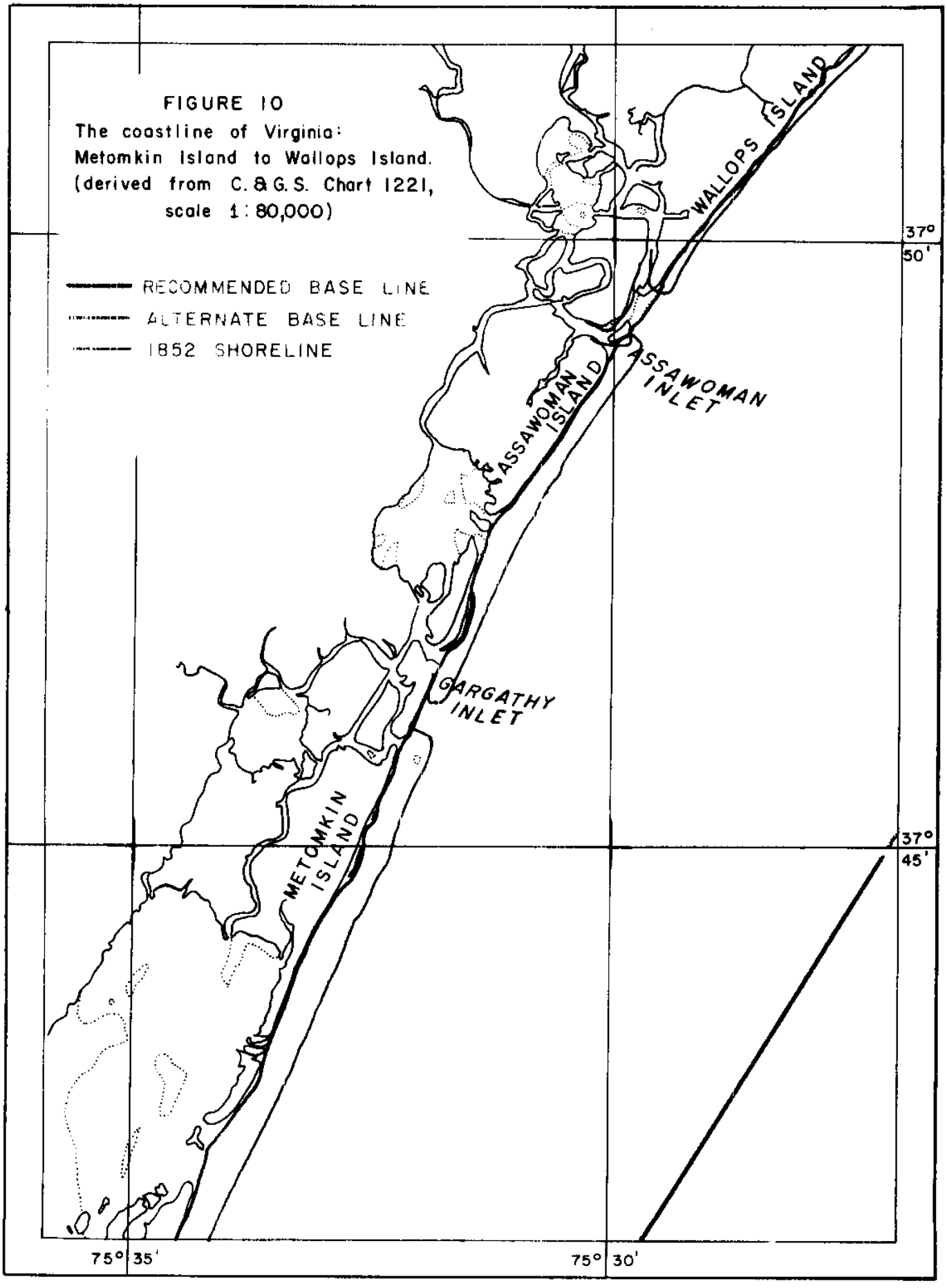
FIGURE 10
The coastline of Virginia:
Metomkin Island to Wallops Island.
(derived from C. & G. S. Chart 1221,
scale 1:80,000)
RECOMMENDED BASE LINE
ALTERNATE BASE LINE
1852 SHORELINE
WALLOPS ISLAND
ASSAWOMAN ISLAND
ASSAWOMAN INLET
GARGATHY INLET
METOMKIN ISLAND
37° 50'
37° 45'
75° 35'
75° 30'

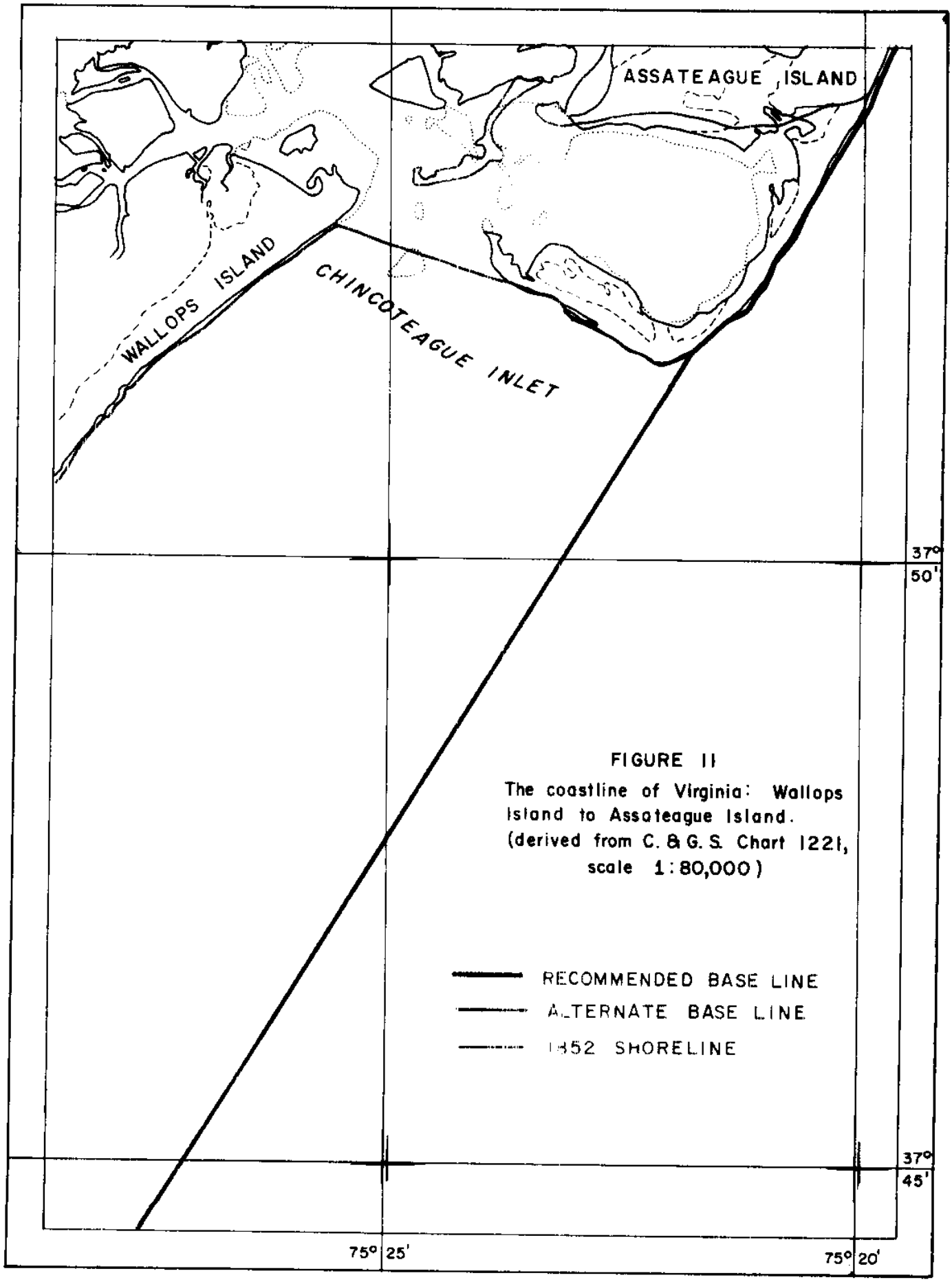

FIGURE 11

The coastline of Virginia: Wallops Island to Assateague Island. (derived from C. & G. S. Chart 1221, scale 1:80,000)

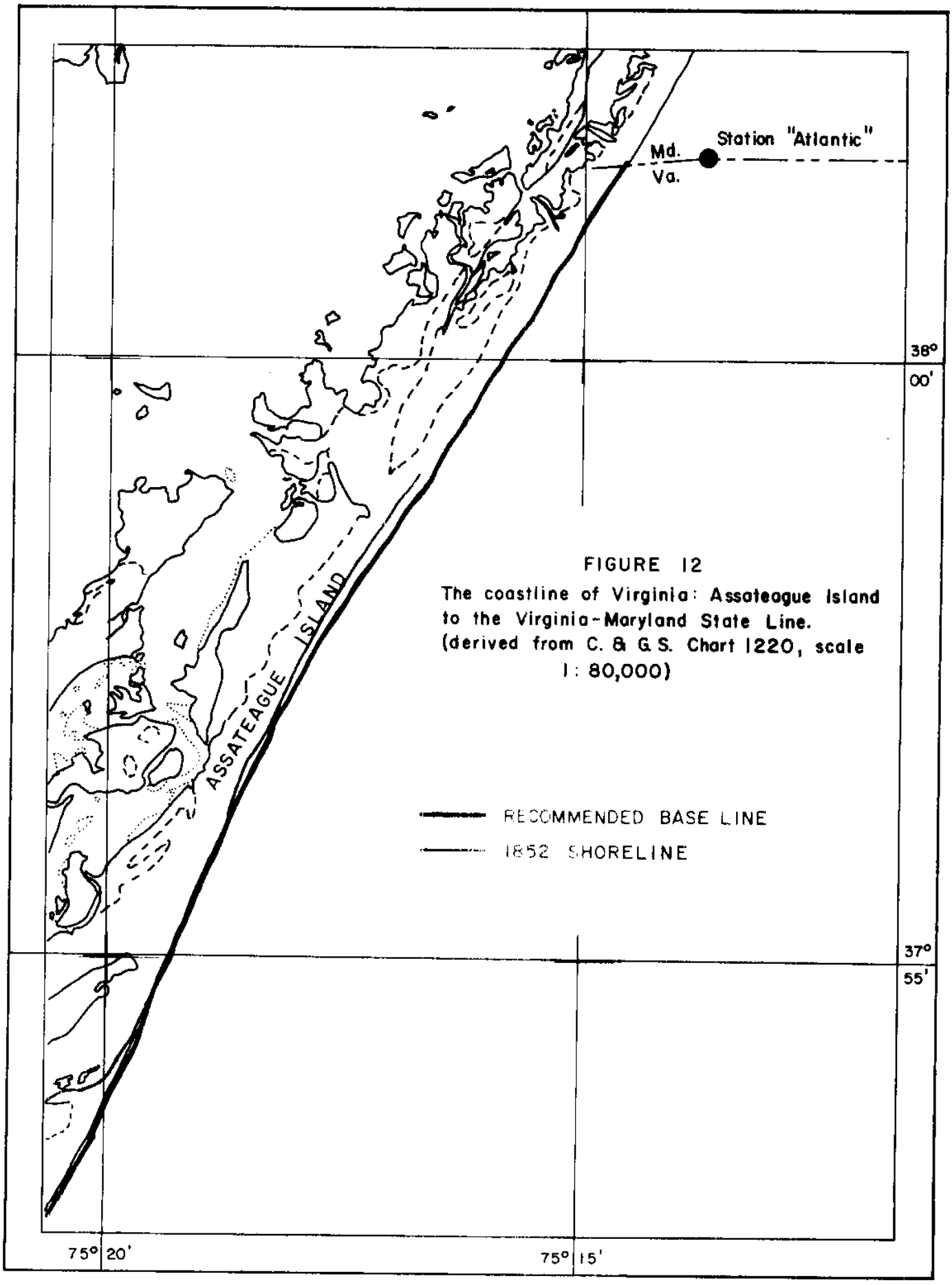

FIGURE 12

The coastline of Virginia: Assateague Island to the Virginia-Maryland State Line. (derived from C. & G.S. Chart 1220, scale 1: 80,000)

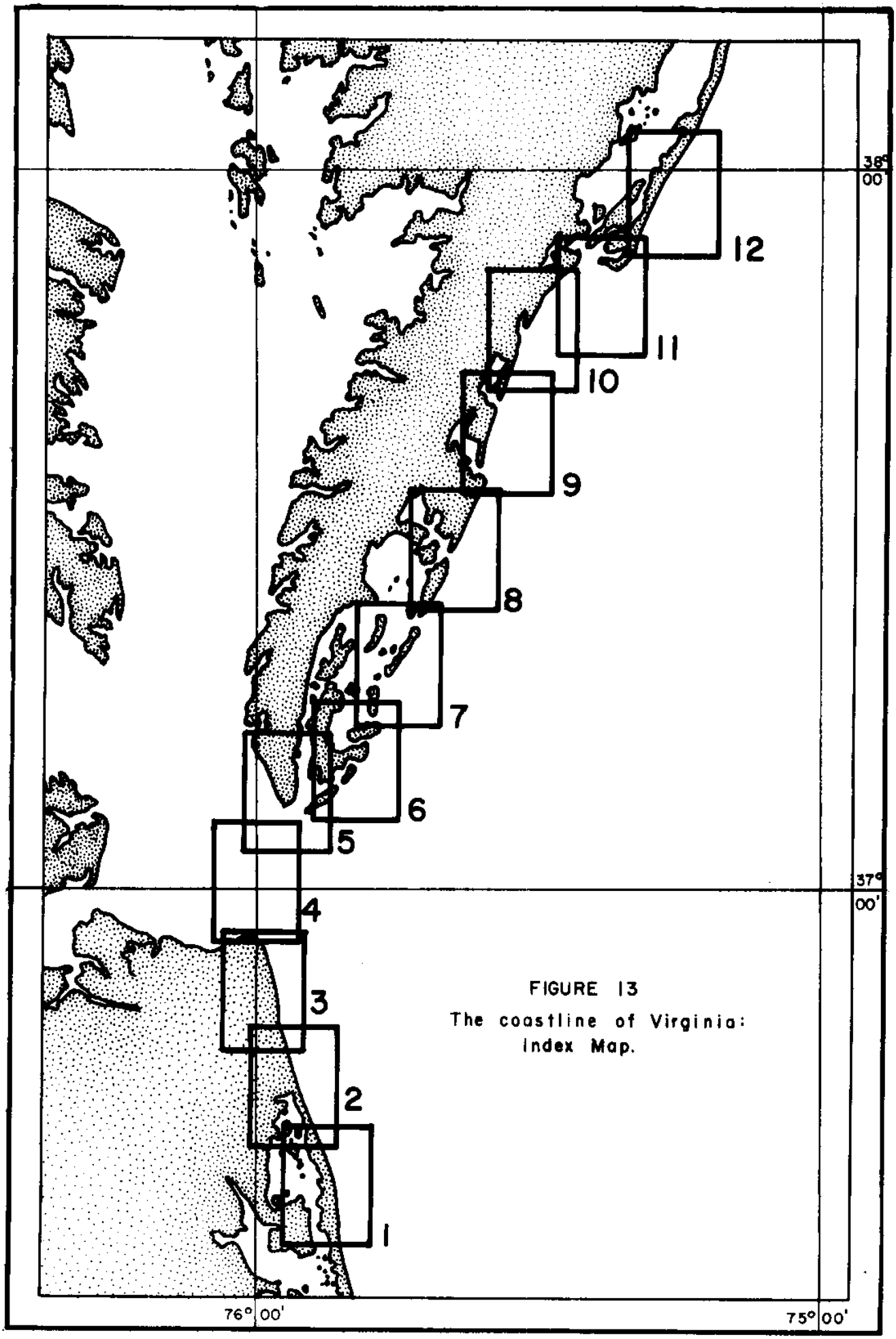

FIGURE 13

The coastline of Virginia: Index Map.