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BIOTA ASSESSMENT MAP..(U) WESTERN ECO-SYSTEMS
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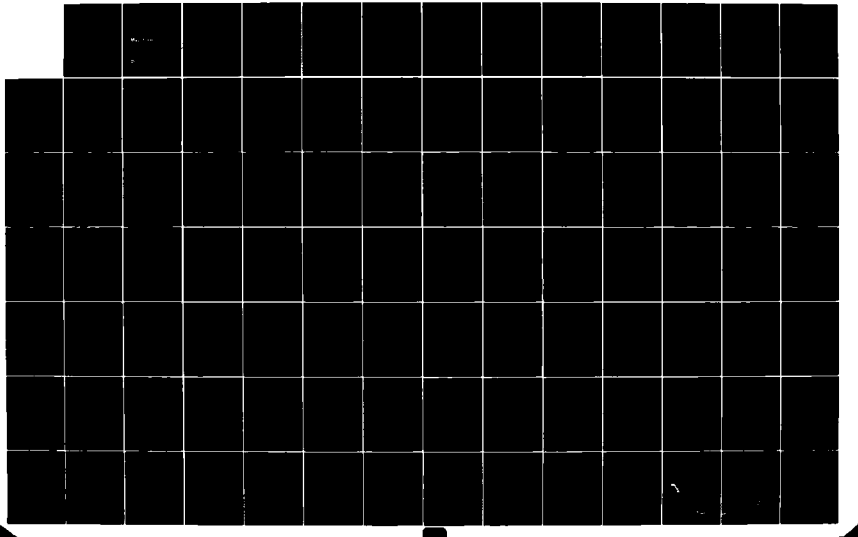

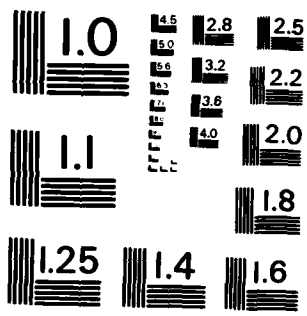

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May 1982

Chesapeake Bay Low Freshwater Inflow Study
Phase II Biota Assessment

Map Folio

US Army Corps
of Engineers
Baltimore District

by Western Eco-Systems Techr

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r Inflow Study

Prepared for U.S. Army Engineer District Baltimore
by Western Eco-Systems Technology, Inc. 204 215th St., S.E. Bothell, Washington 98011

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Chesapeake Bay, Biology, Salinity, Habitat, Estuary

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

-An assessment of the effects of low freshwater inflow conditions on the biota of Chesapeake Bay was conducted through use of data output from the U.S. Army Corps of Engineers' Chesapeake Bay Hydraulic Model. Four sets of test conditions (scenarios) were used which simulated effects of drought and effects of future consumptive water withdrawal and use as deviations from present average flow conditions. Changes in habitat of over 50 biological organisms were predicted and mapped based on salinity and other variables. Changes in habitat,

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which were used to delineate the amount of impact from low flow, were found to include increases and decreases depending on the species, its lifecycle, tolerances, and interactions with other organisms. The magnitude of habitat change was found to generally increase as salinity changes increased.

INTRODUCTION

This folio is a principal product of the Biota Assessment portion of the Corps of Engineers' Chesapeake Bay Low Freshwater Inflow Study. The purpose of the mapping is to portray habitat for selected Chesapeake Bay species under a variety of freshwater inflow conditions. They are based on the results of tests done on the Chesapeake Bay Hydraulic Model simulating four freshwater inflow conditions. These were:

1) Base Average -- average freshwater inflow conditions.

2) Future Average -- reflective of average inflow conditions reduced by increased water consumption projected for the year 2020.

3) Base Drought -- simulating an actual drought in the 1960's.

4) Future Drought -- simulated 1960's drought inflows, reduced by increased water consumption projected for the year 2020.

Data from the hydraulic model tests were subsequently used to generate seasonal average salinities at various depths from the mouth of the Bay to the head of tide in each tributary. These salinity data, in conjunction with data on depth, substrate, and dependence on other organisms, was used to create the maps of habitat portrayed in this volume. For further discussion of the information presented herein, the reader is referenced to the Chesapeake Bay Low Freshwater Inflow Study Biota Assessment, Phase II; Final Report, May 1982.

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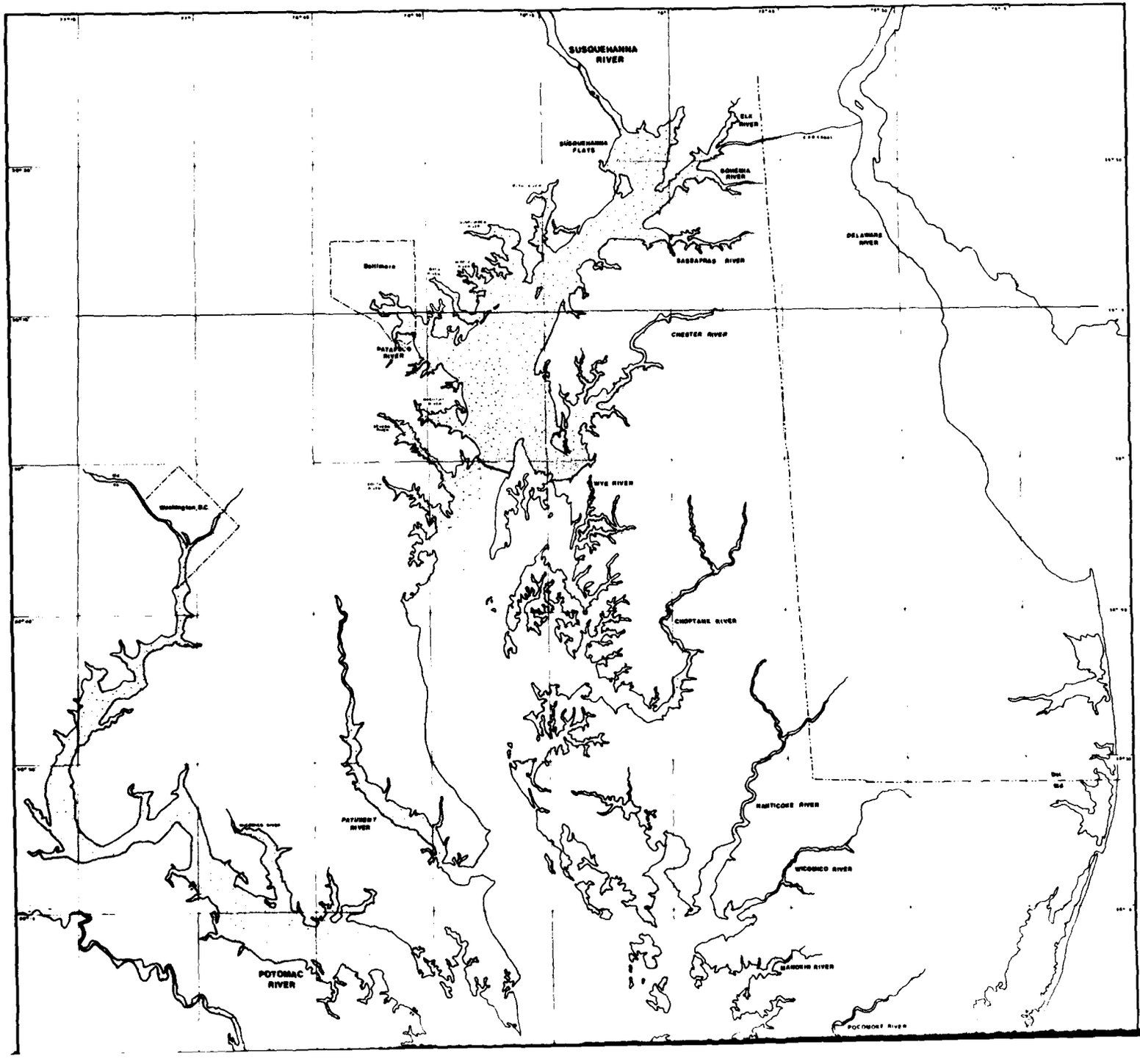
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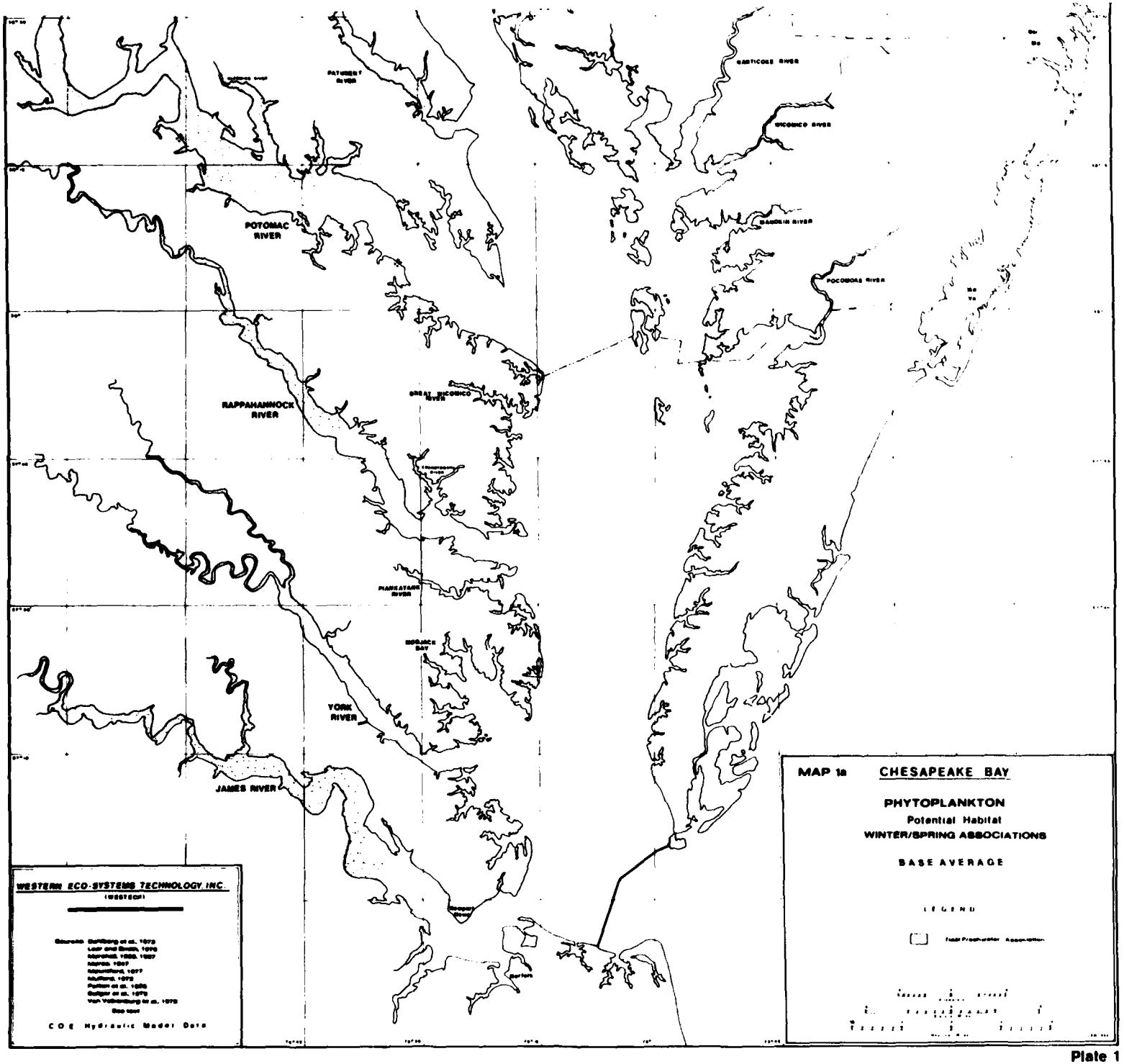
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(WESTECH)
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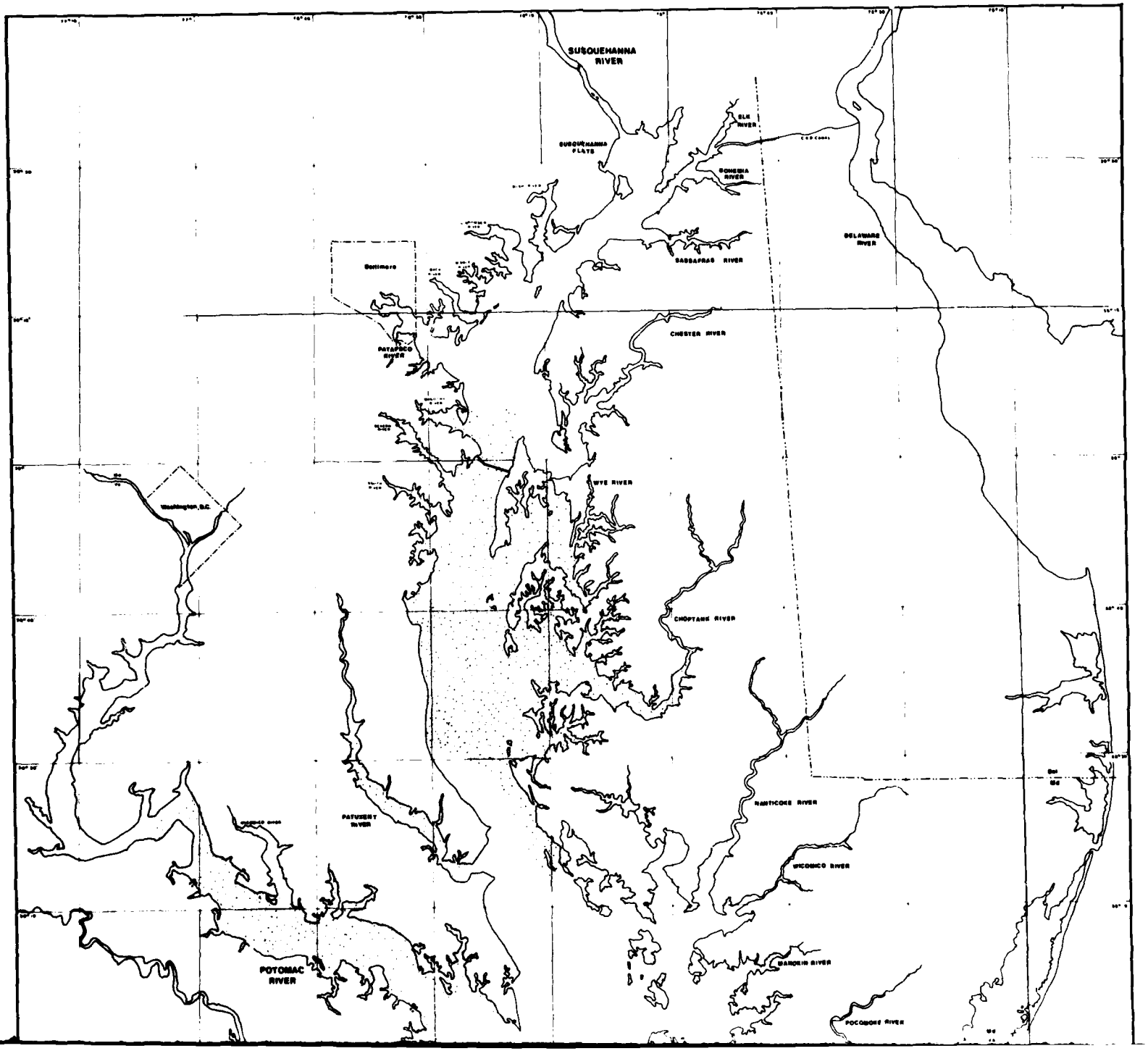
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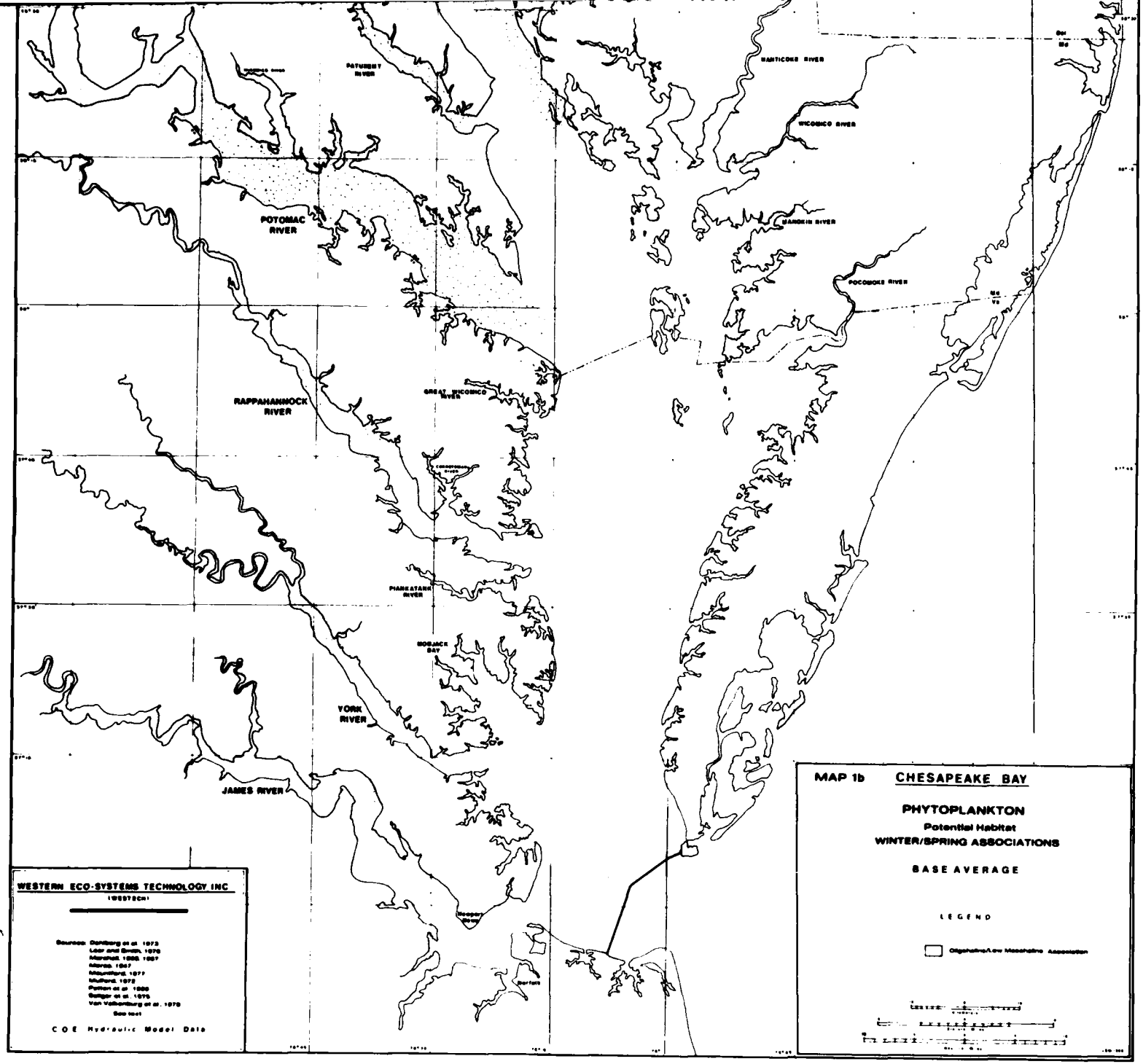
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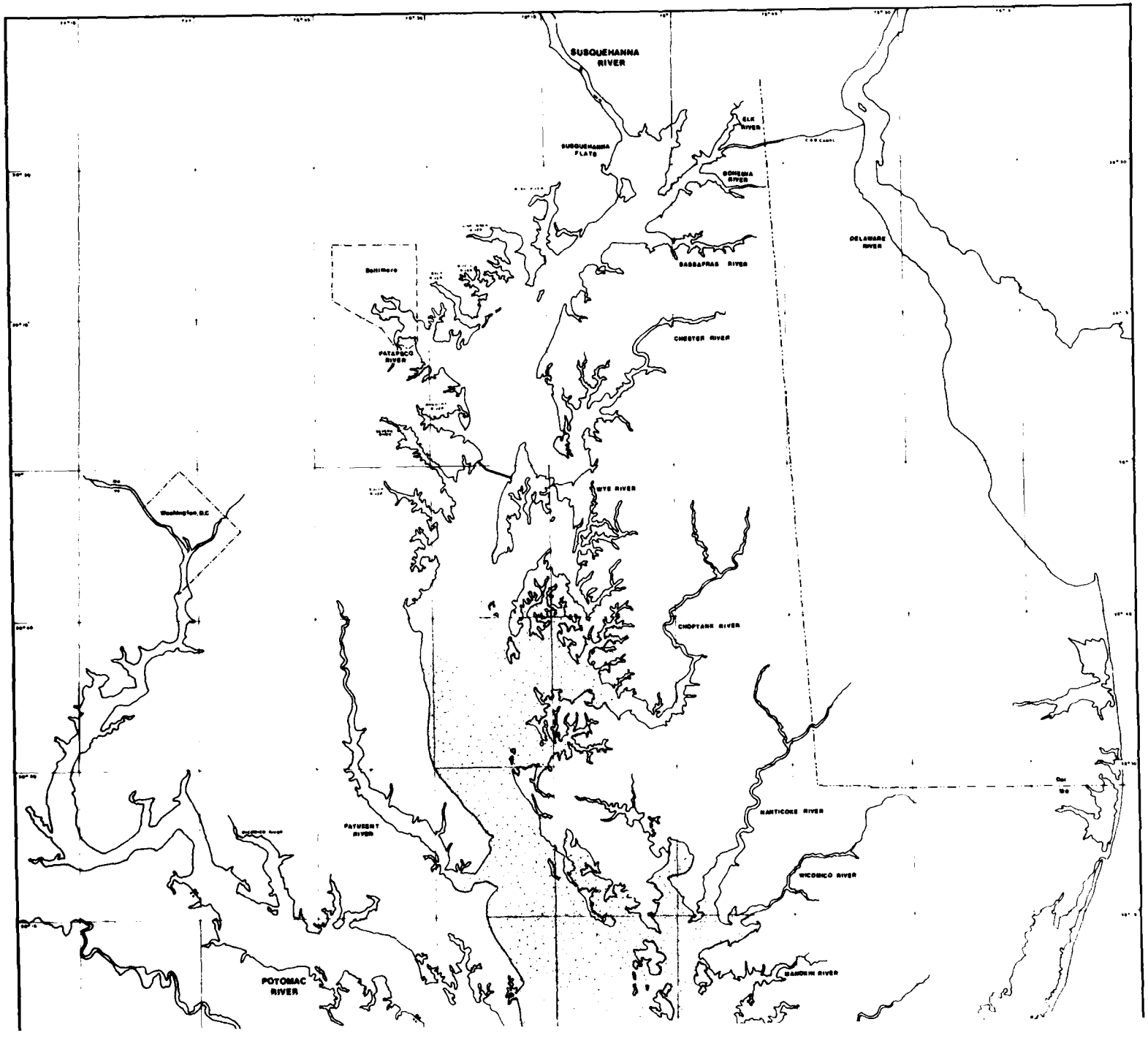
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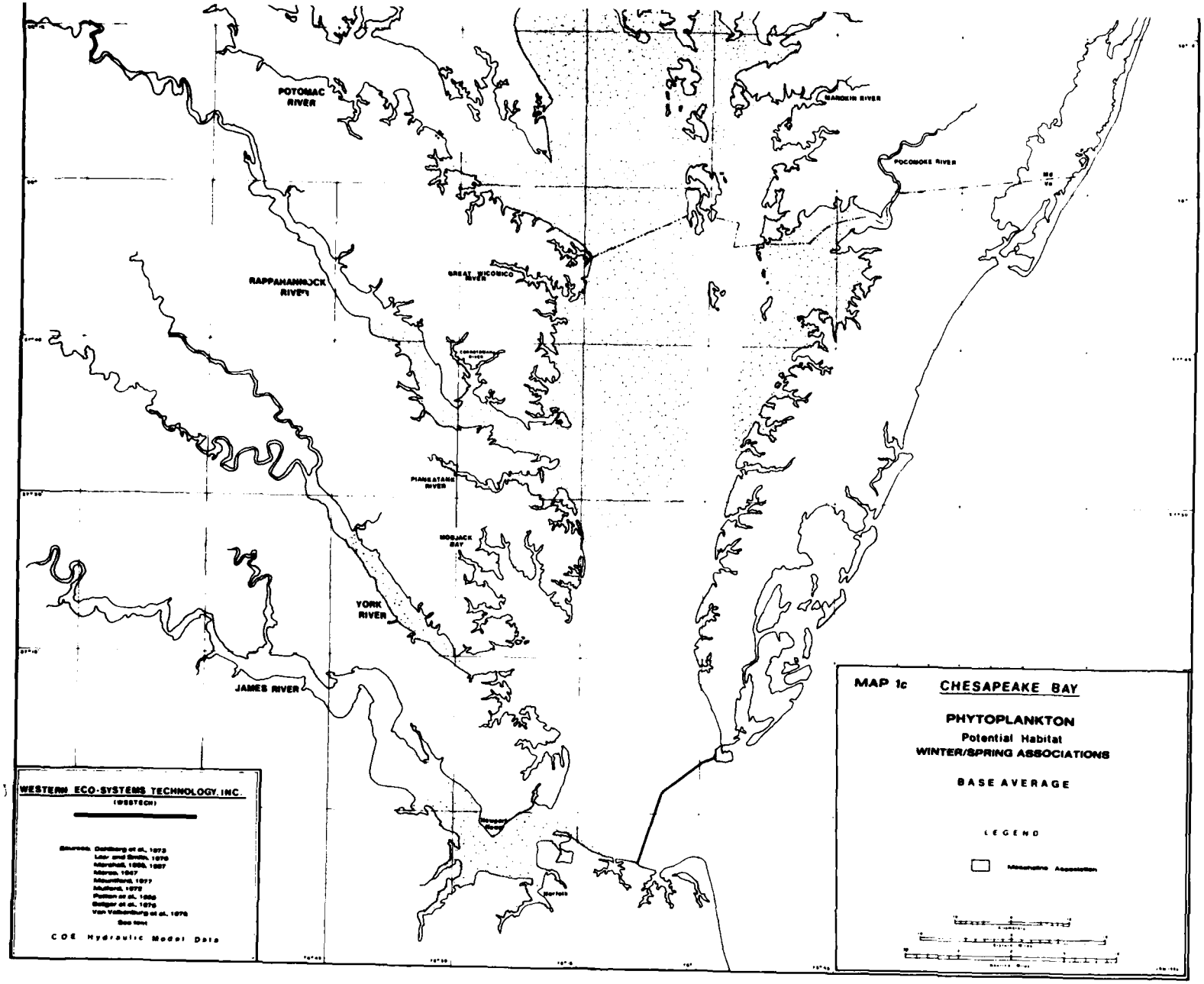
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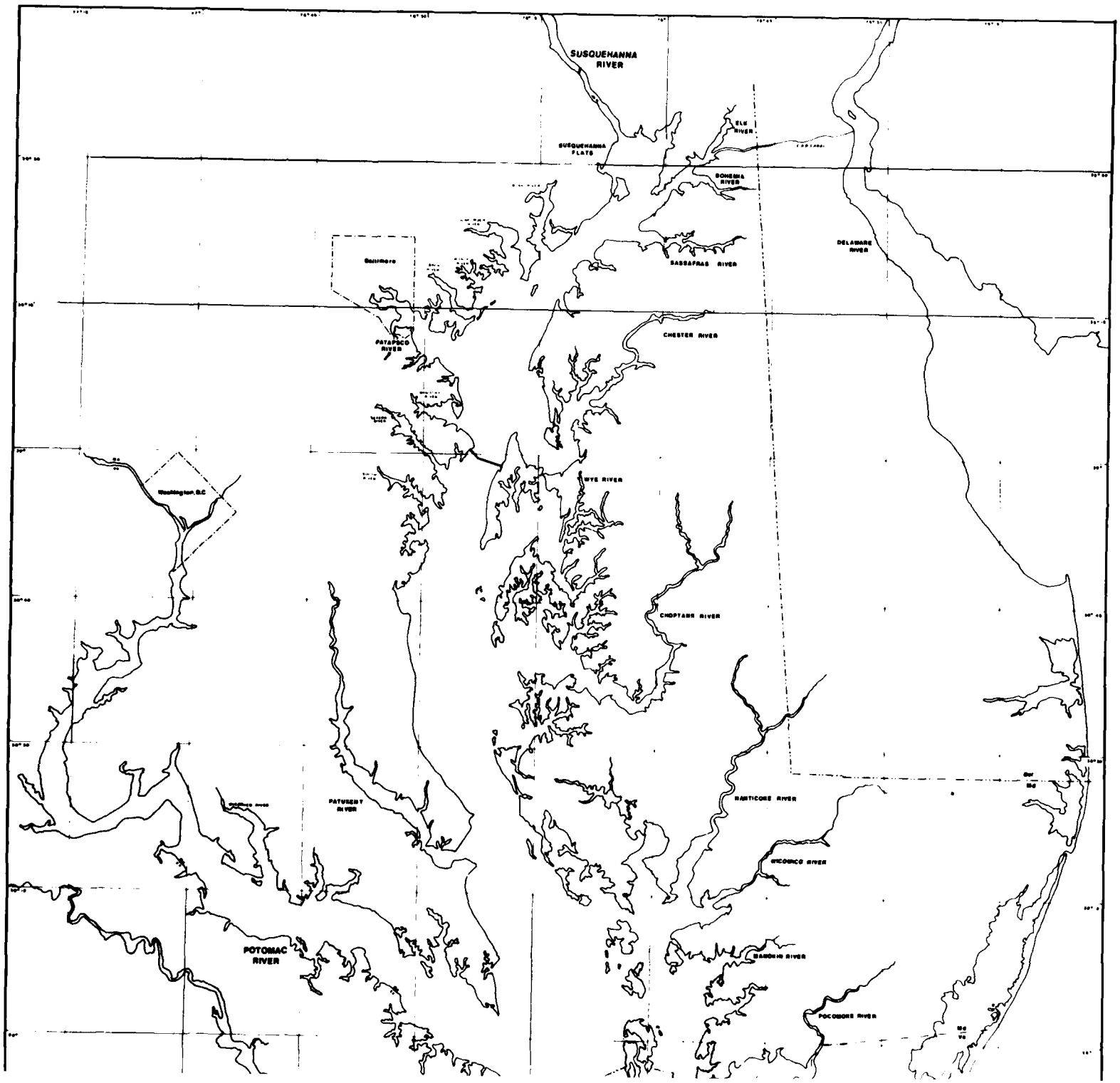
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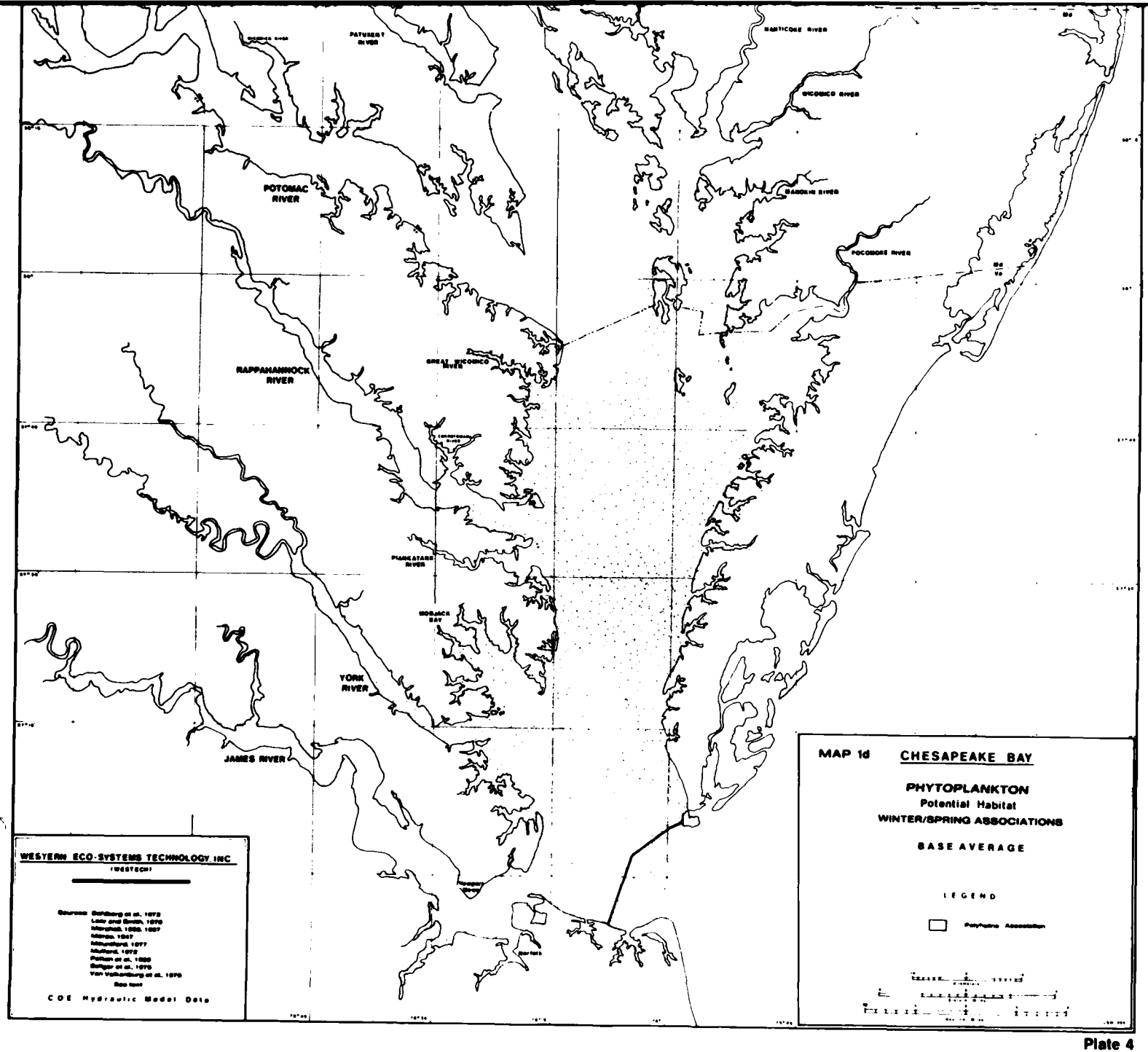
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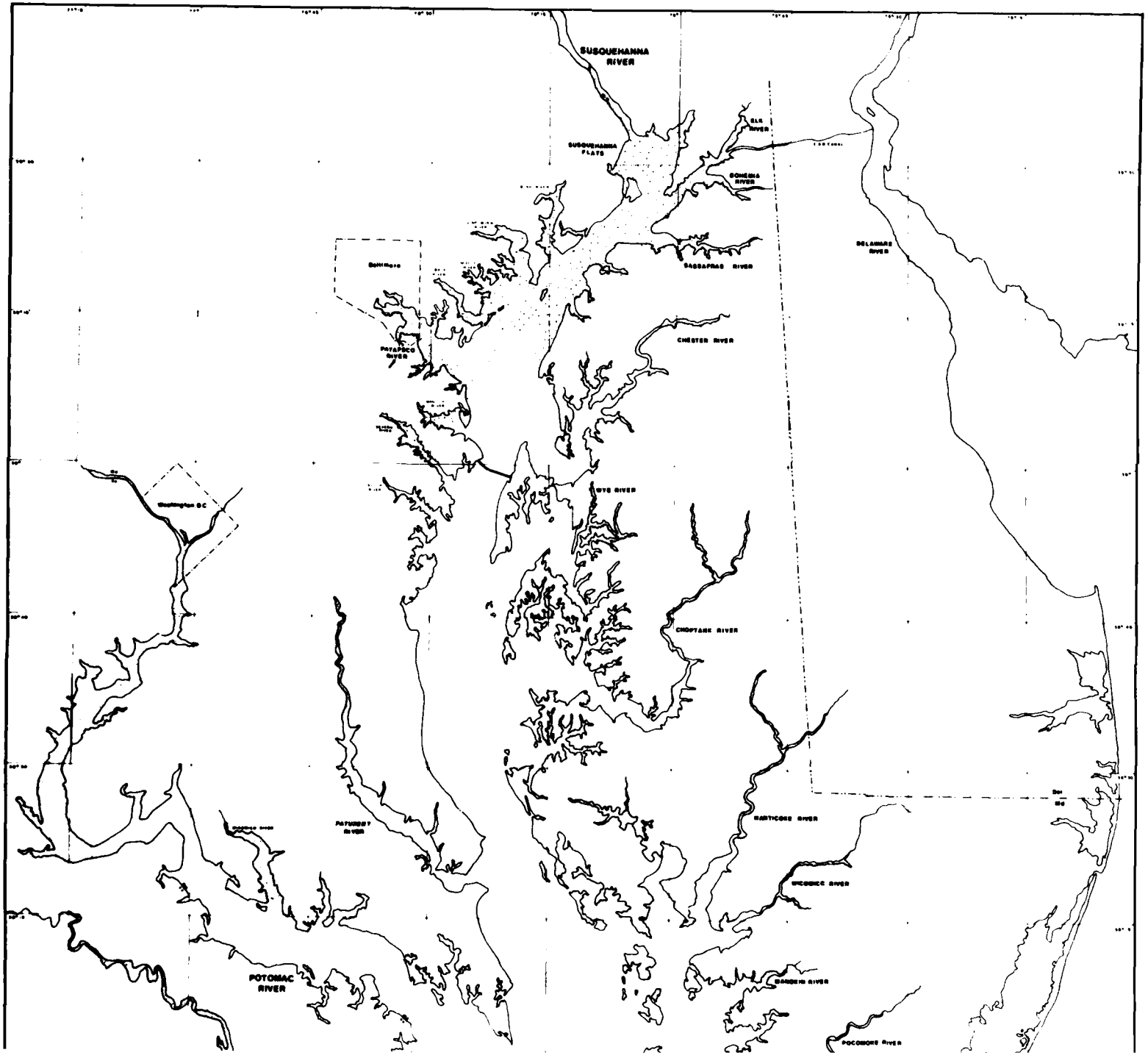
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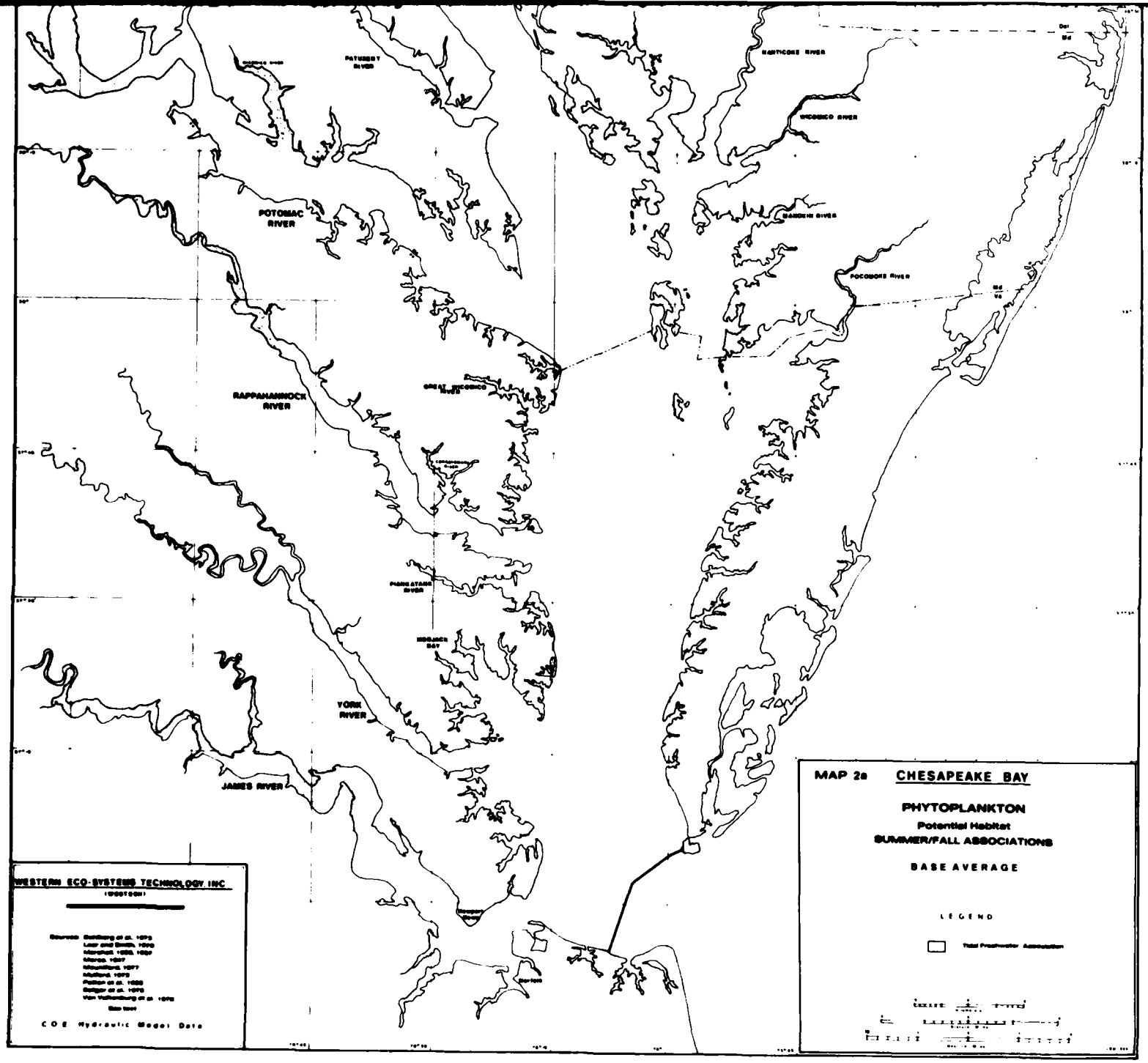
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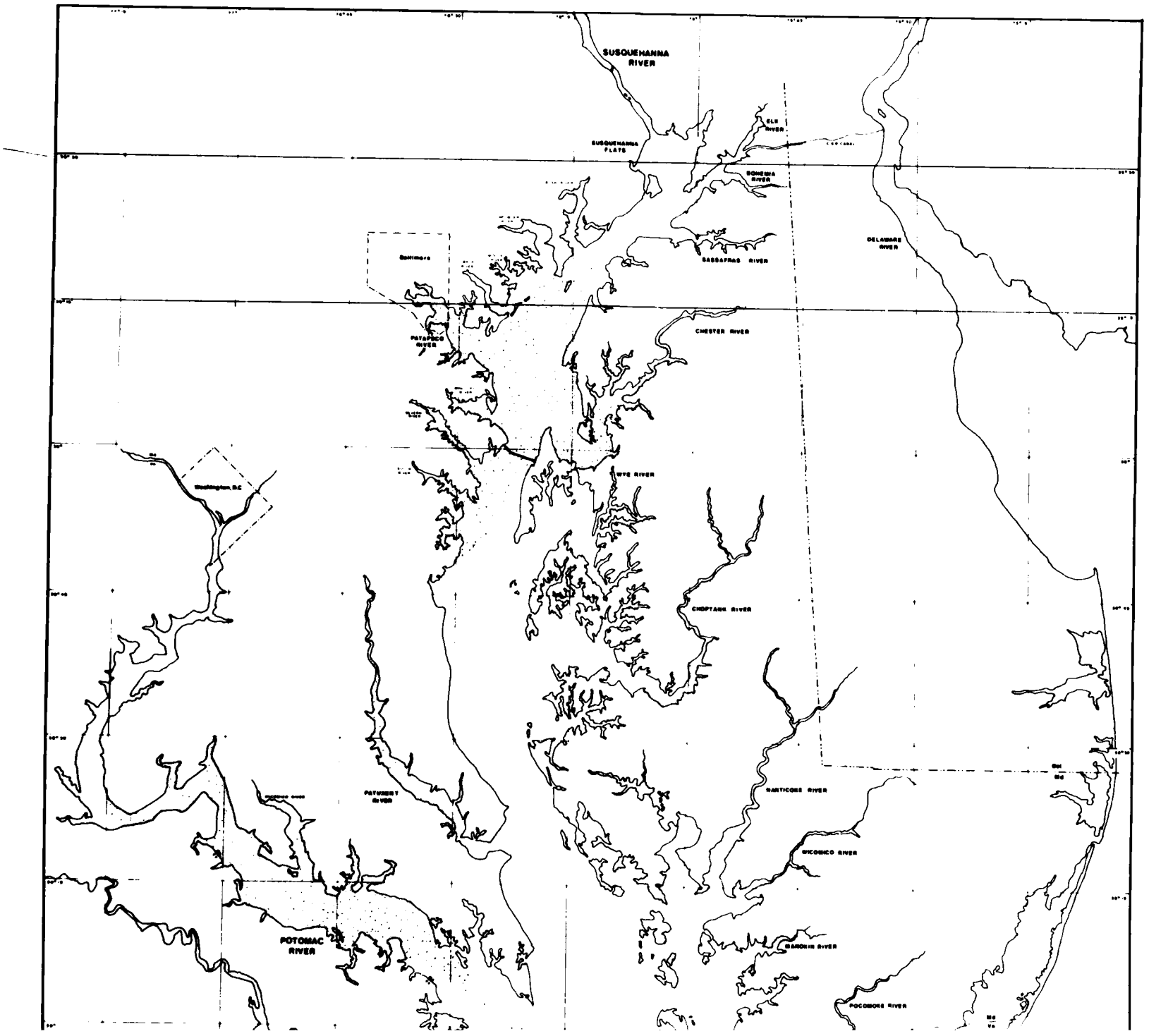
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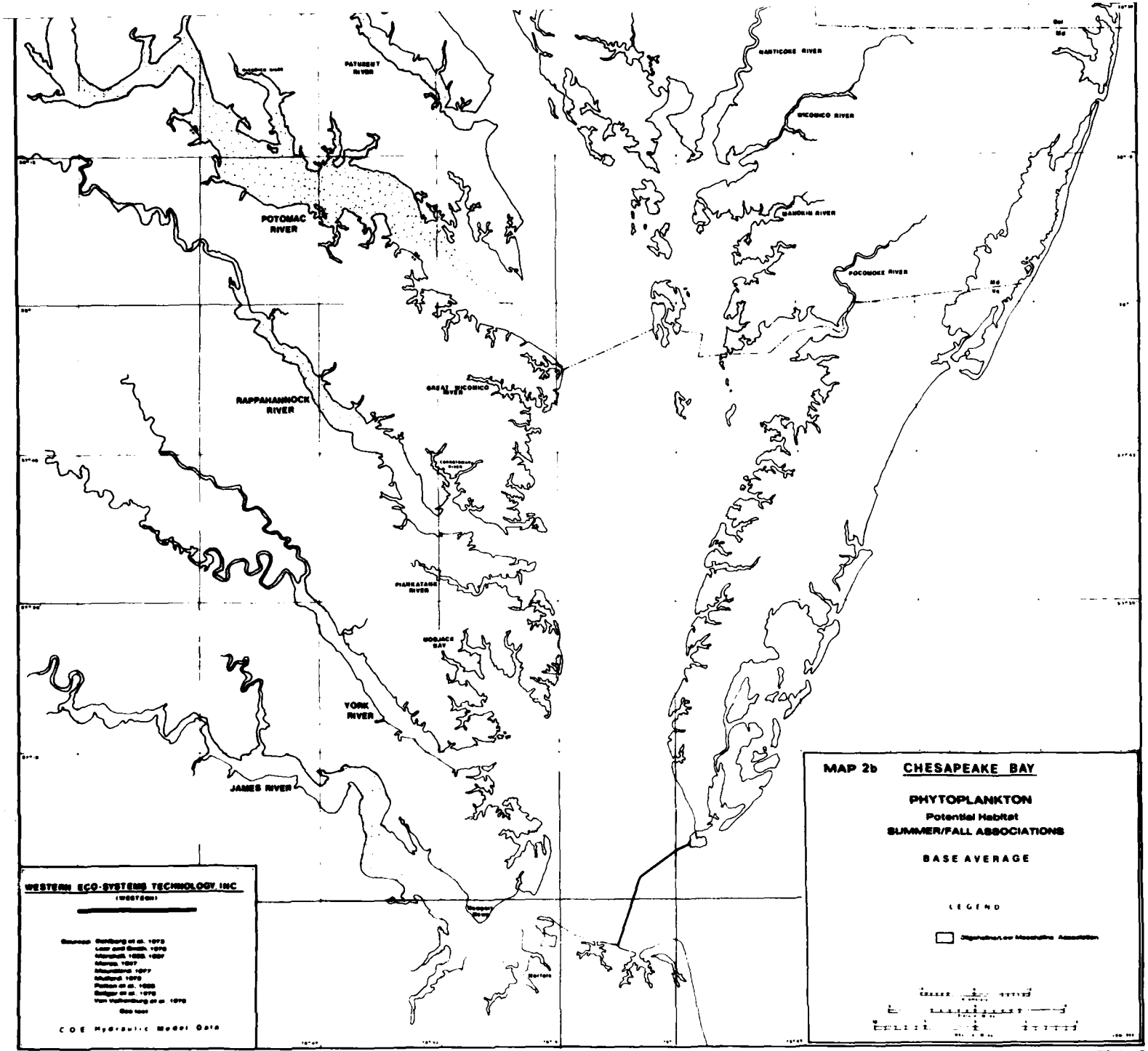
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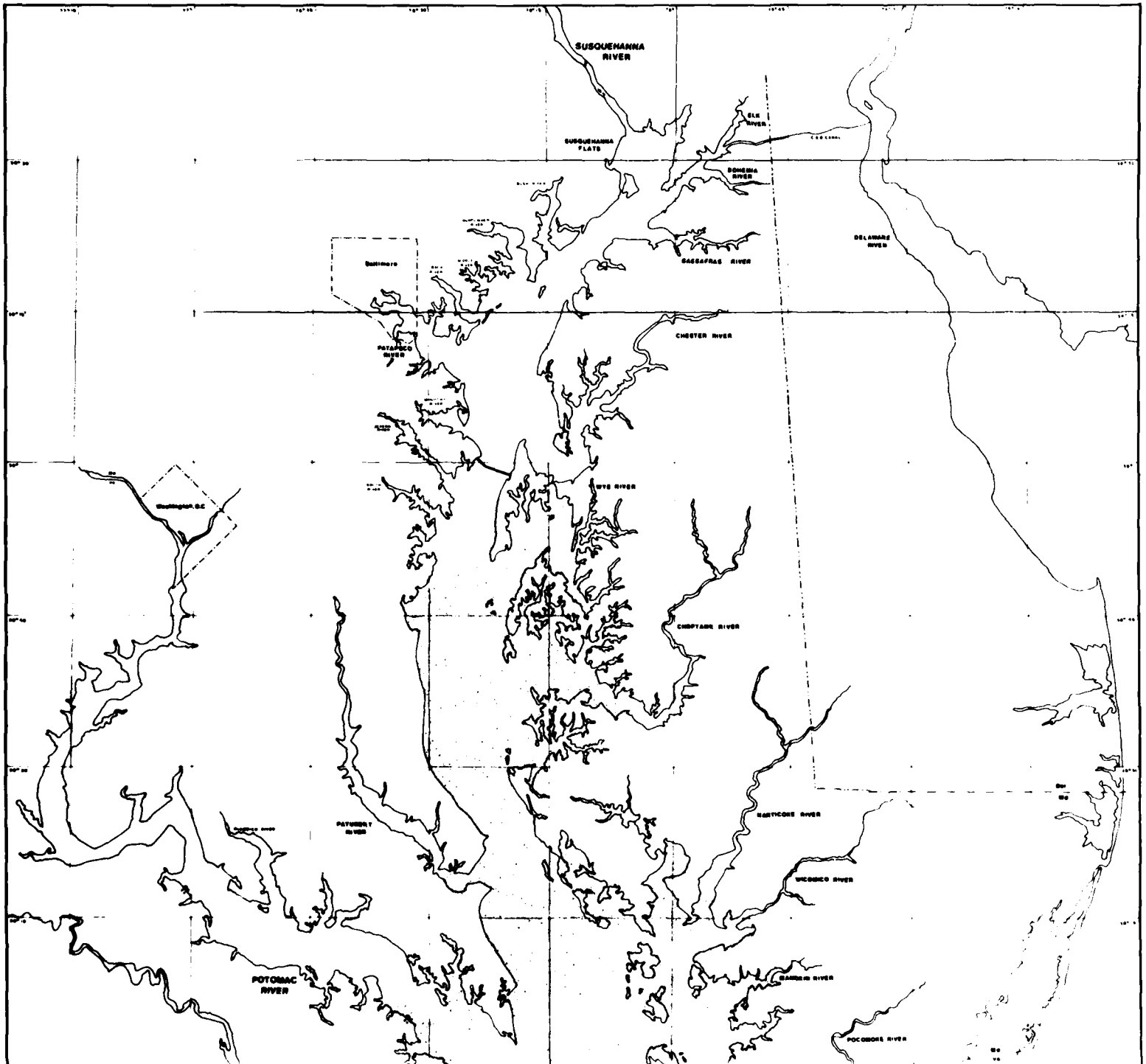
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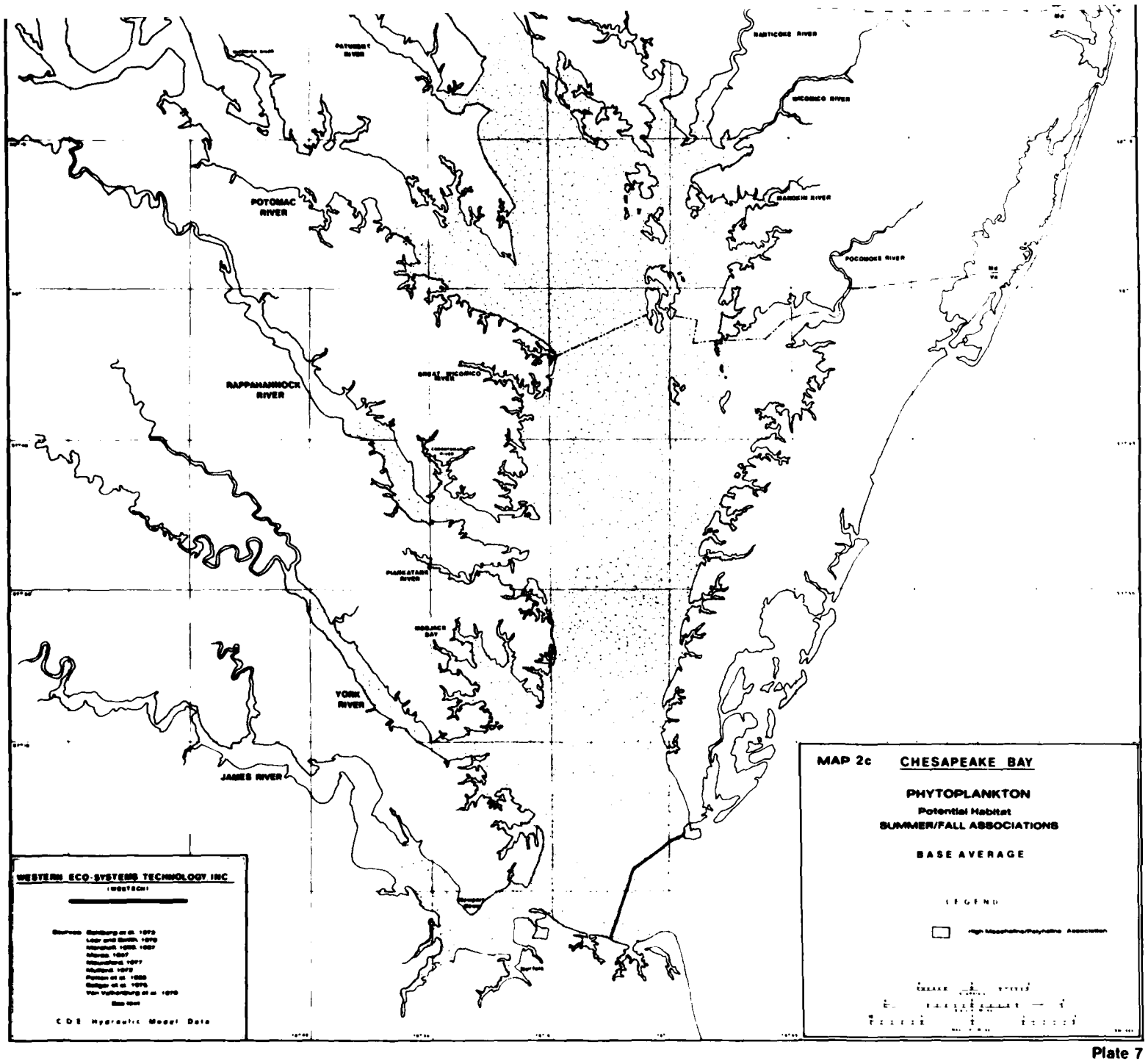
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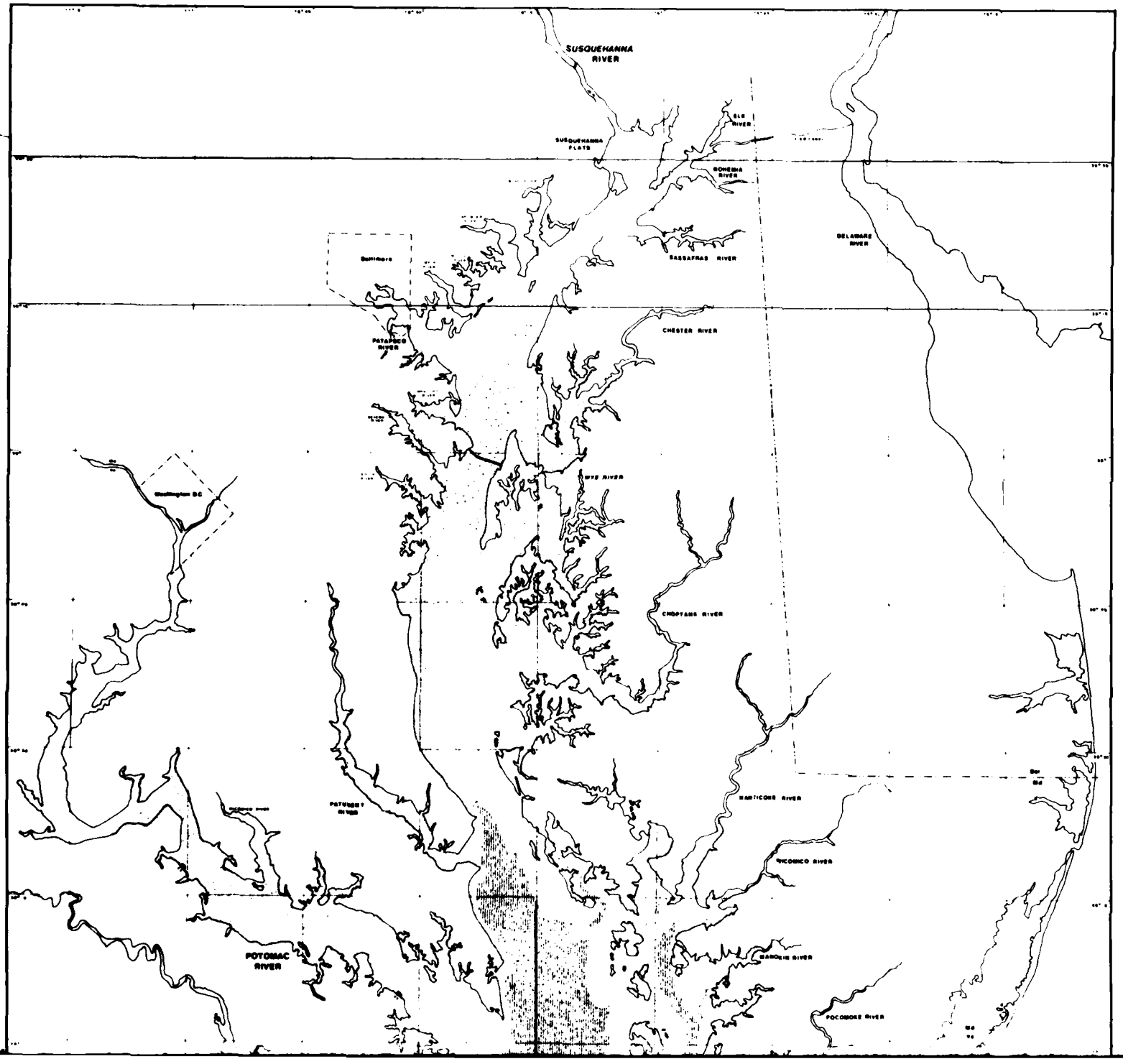
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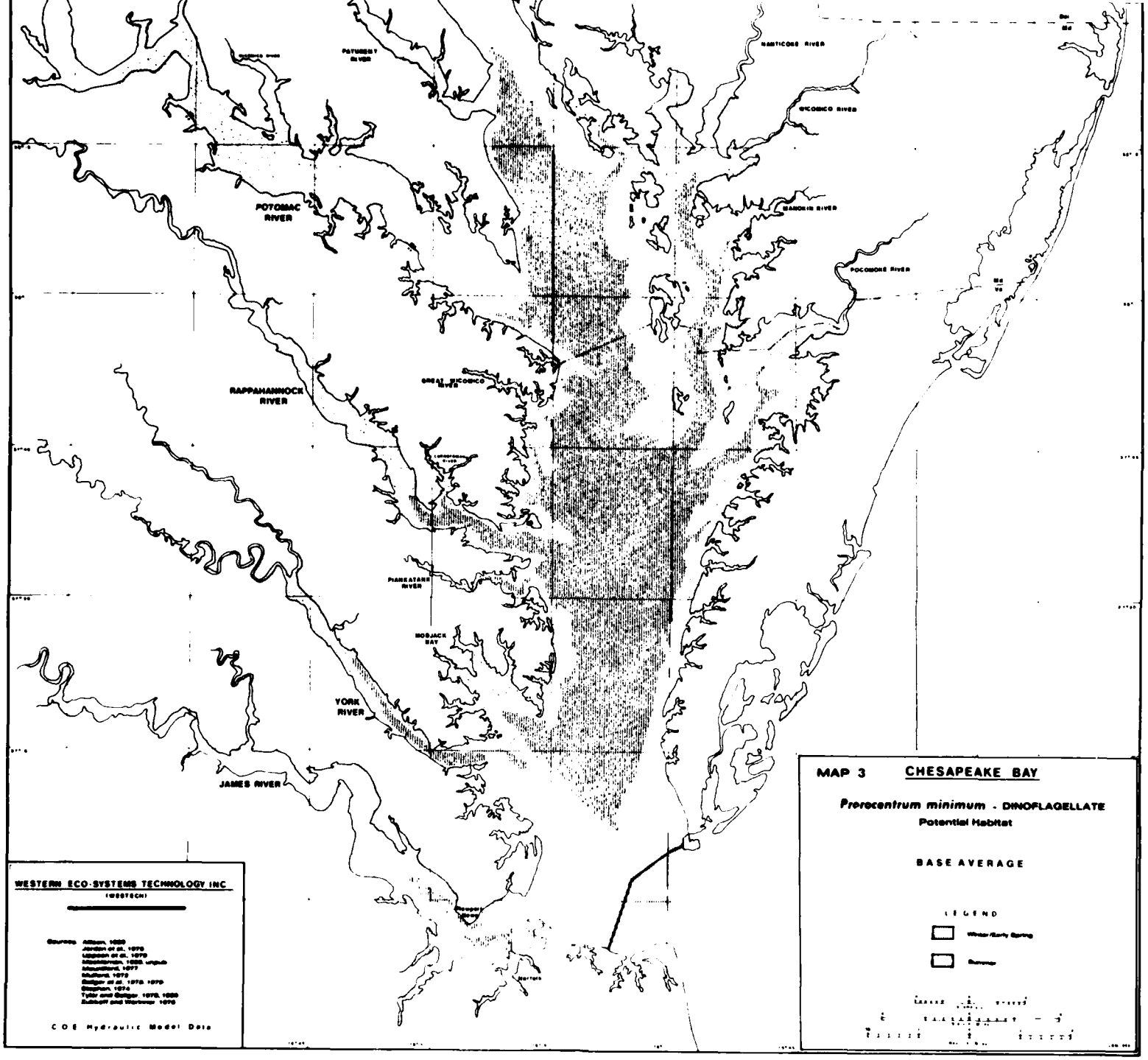
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COE Hydraulic Model Data

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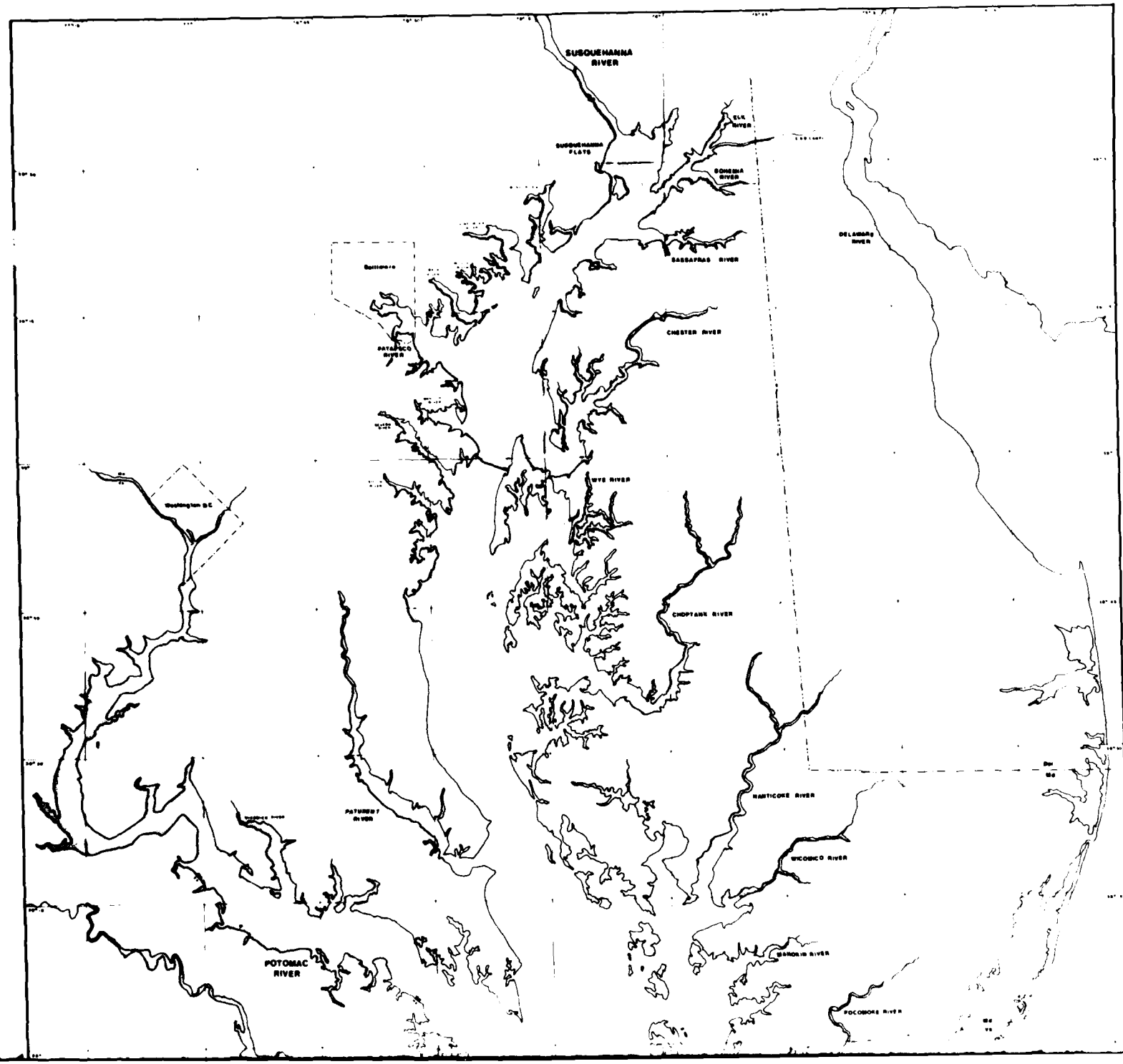
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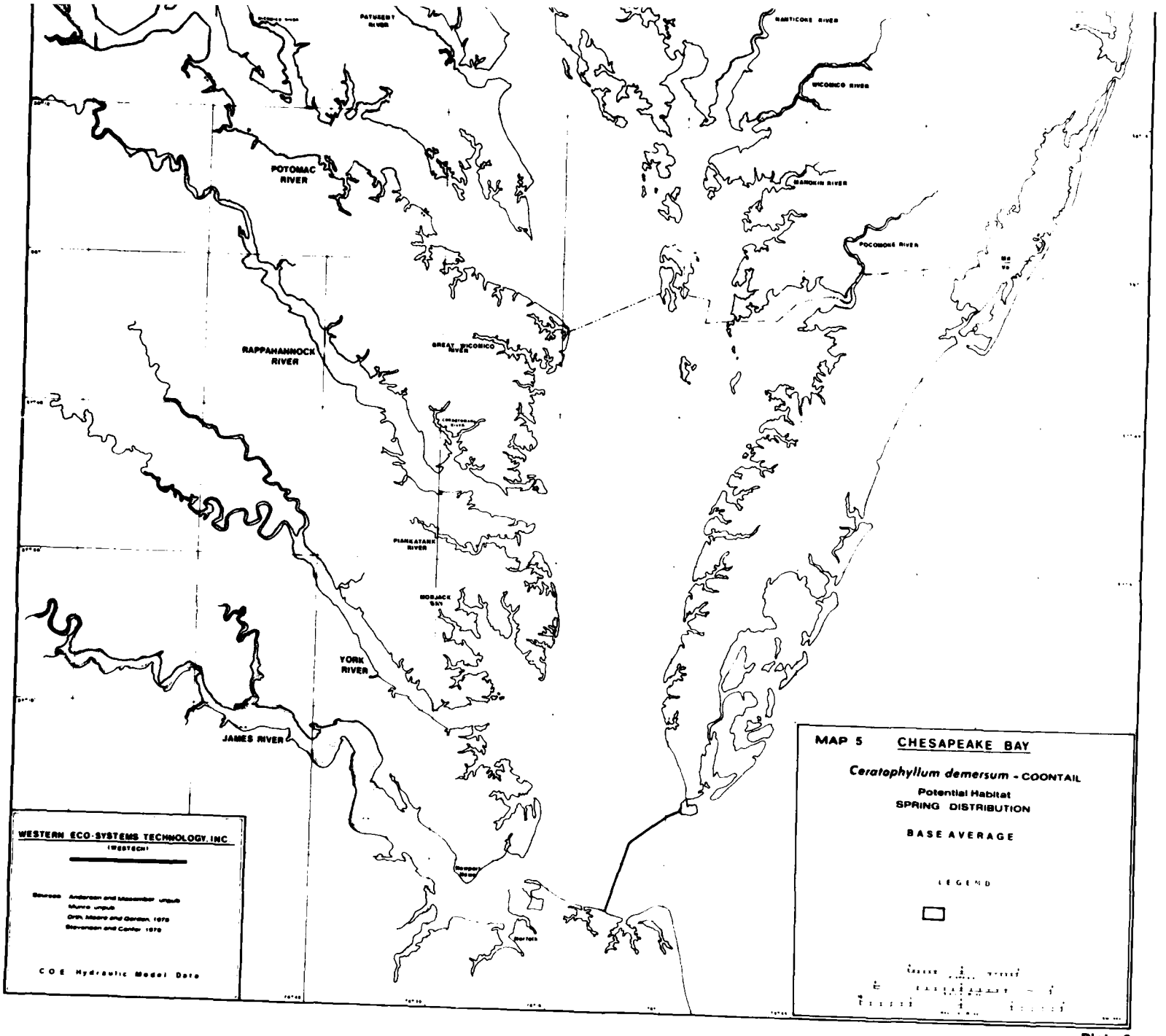
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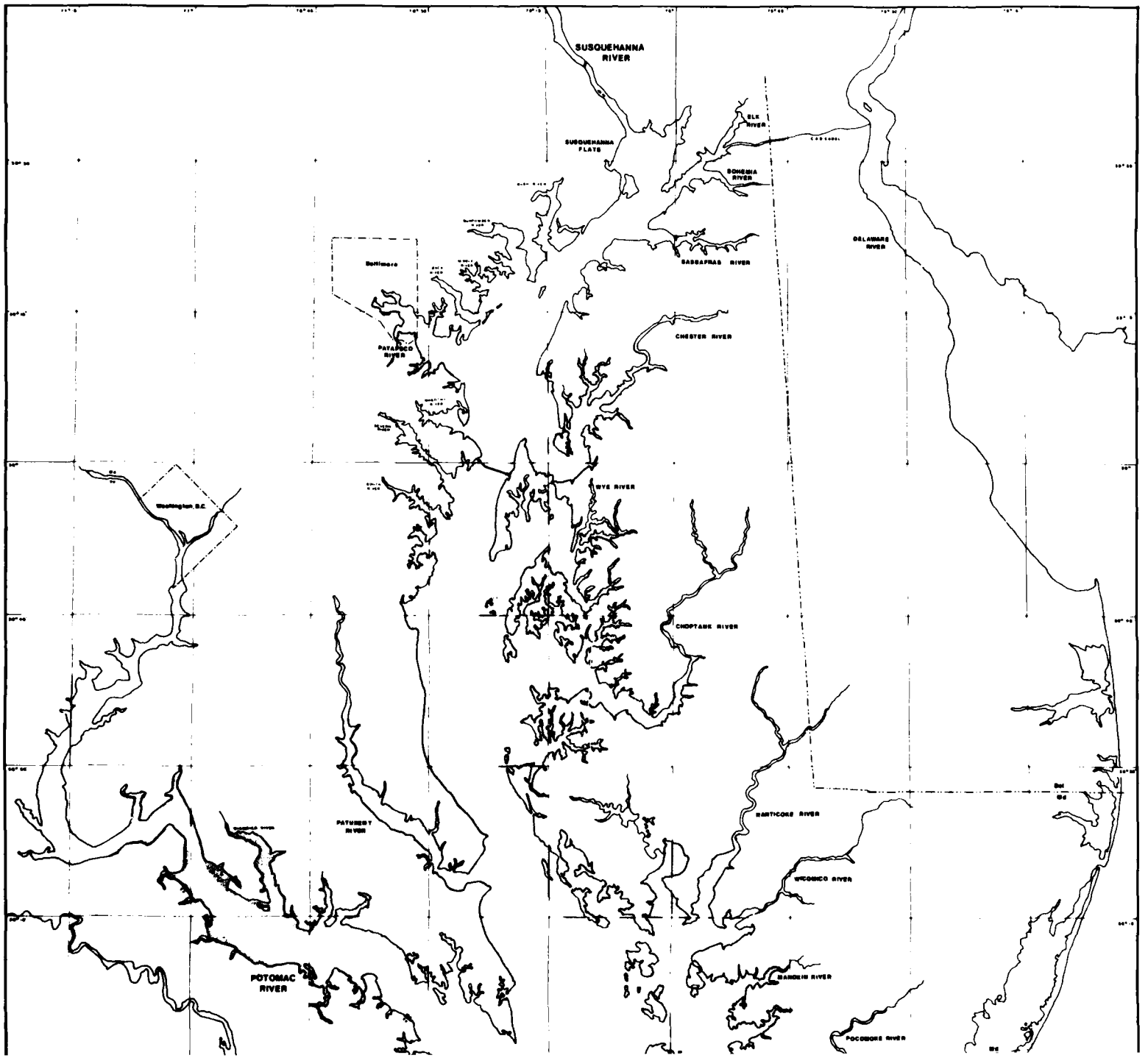
Plate 9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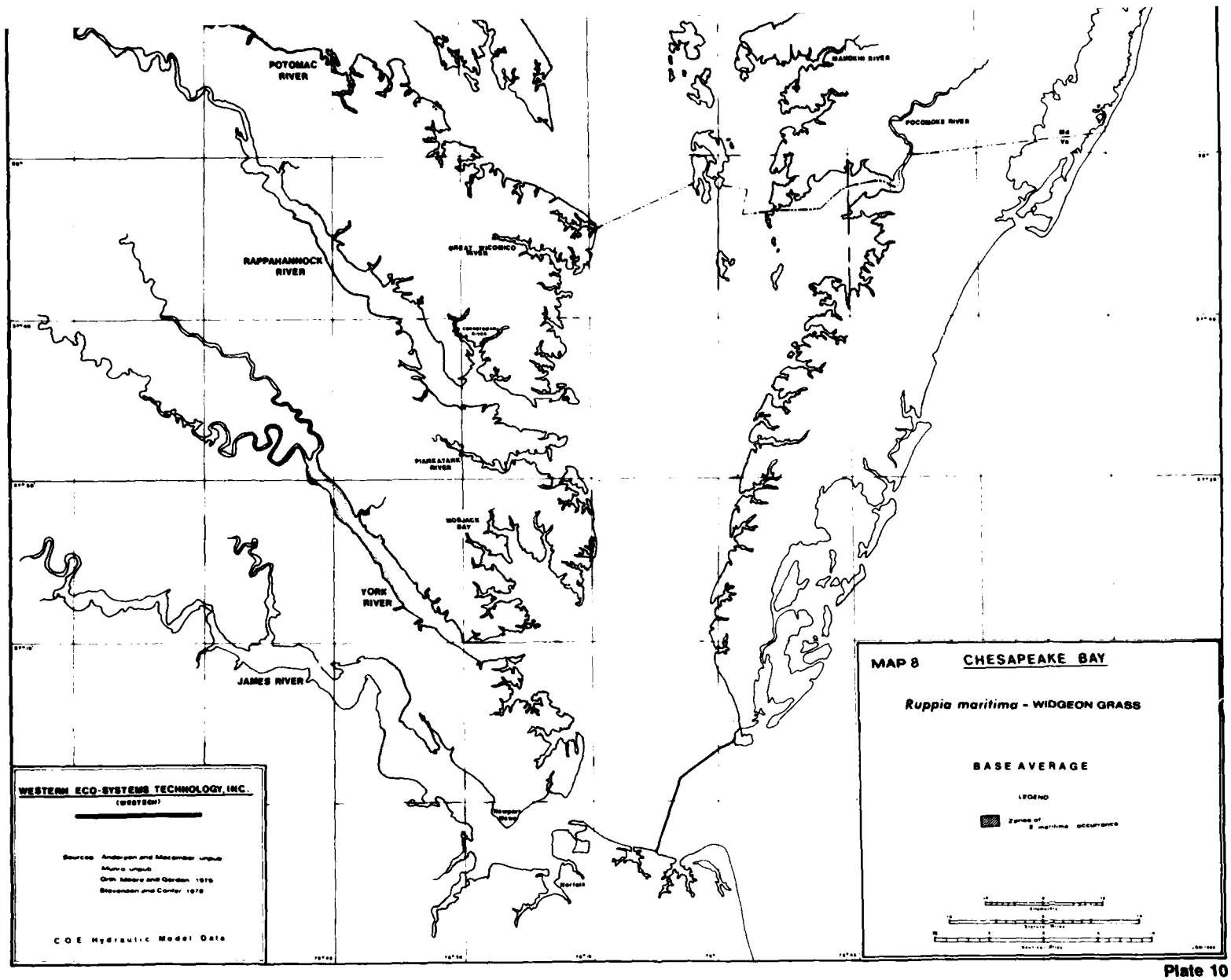
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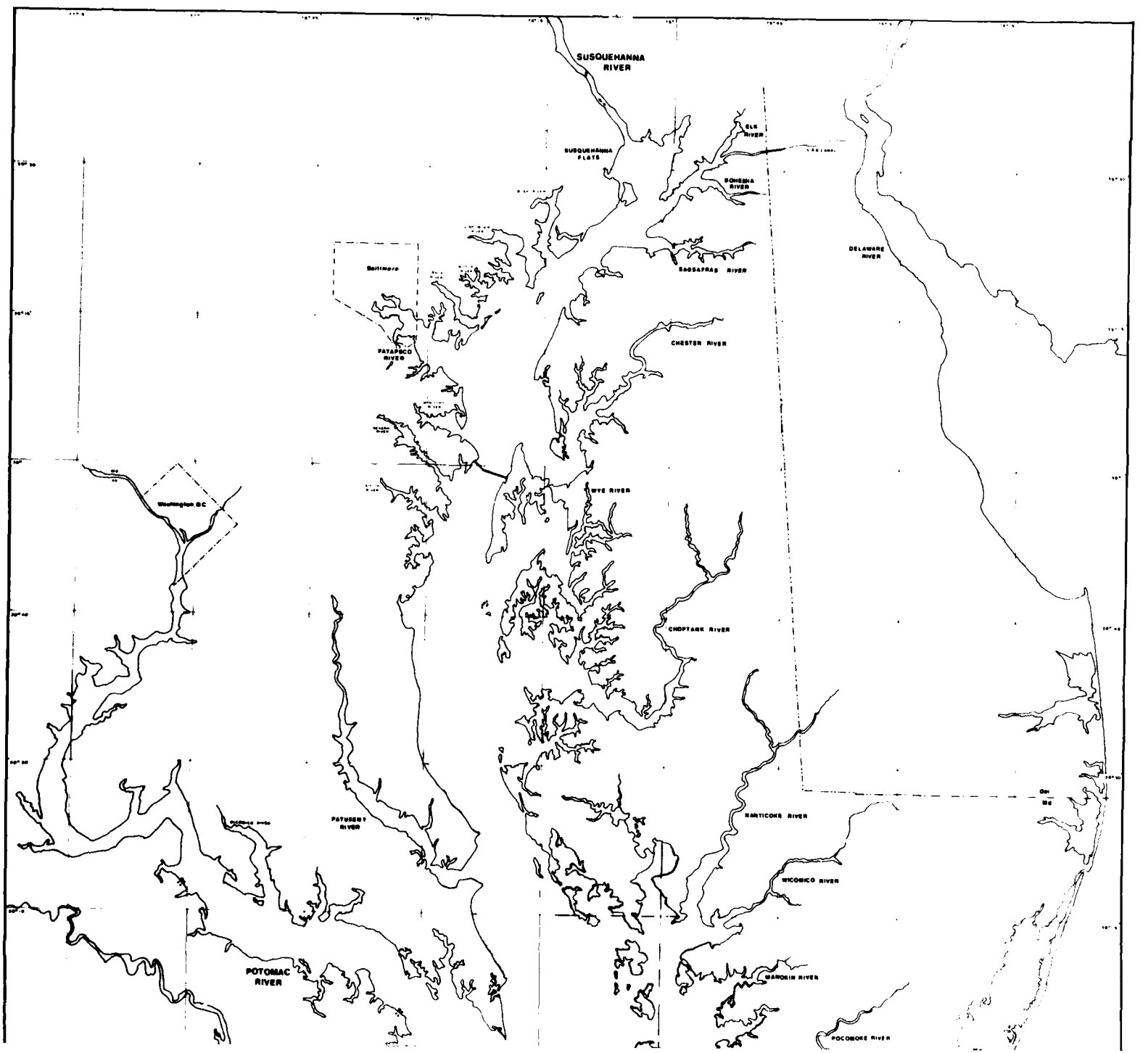
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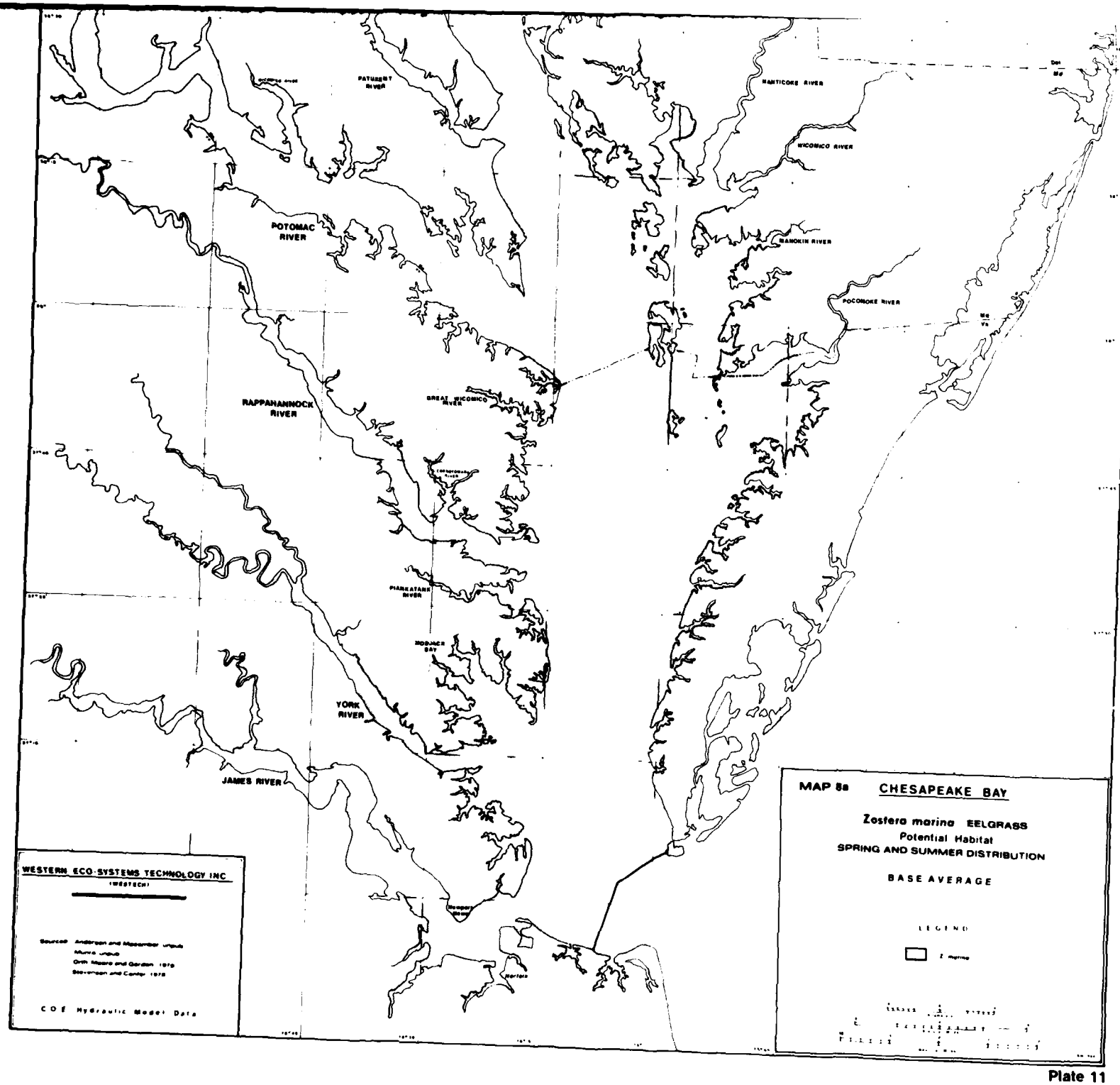
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MAP 8a CHESAPEAKE BAY
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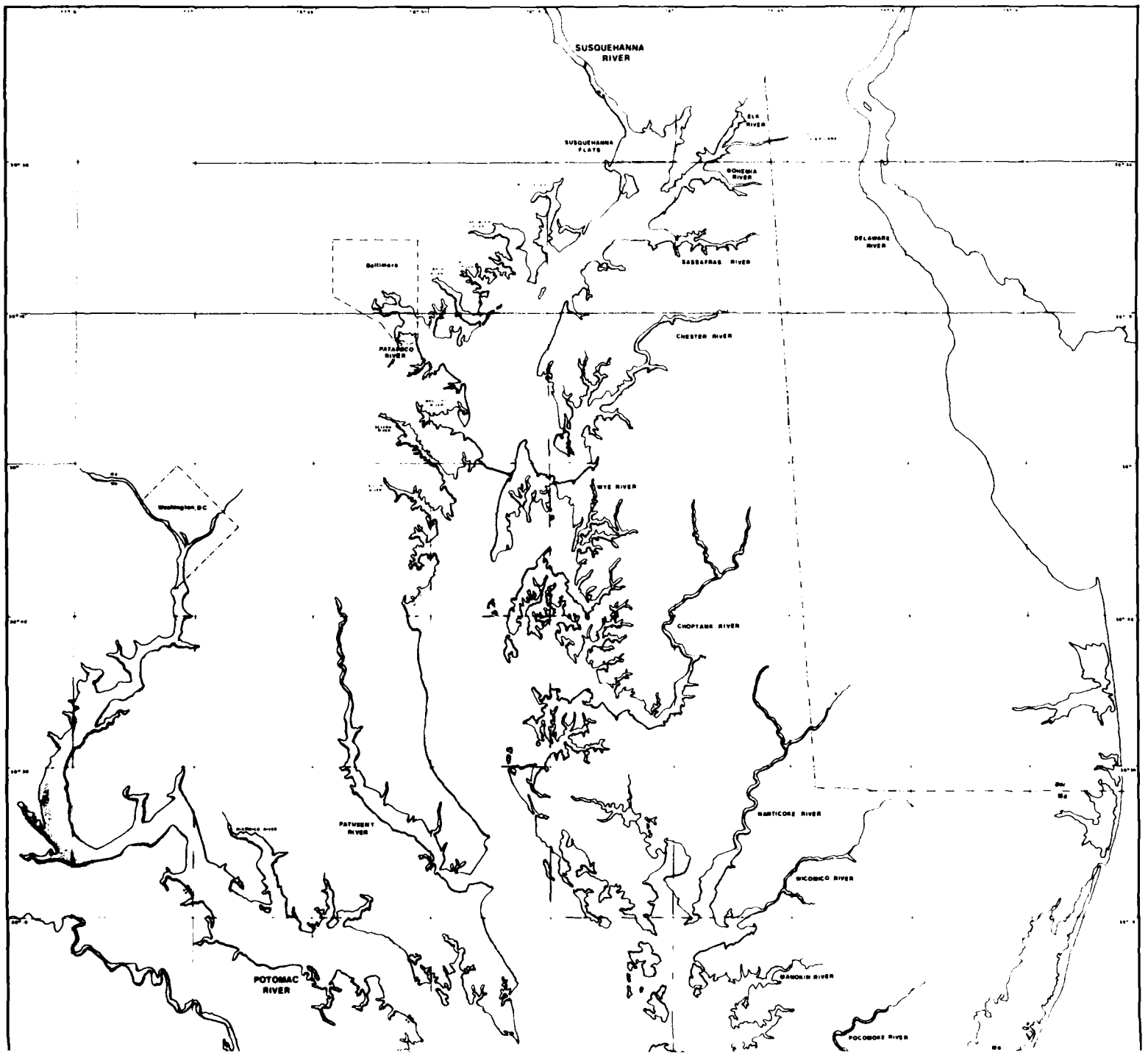
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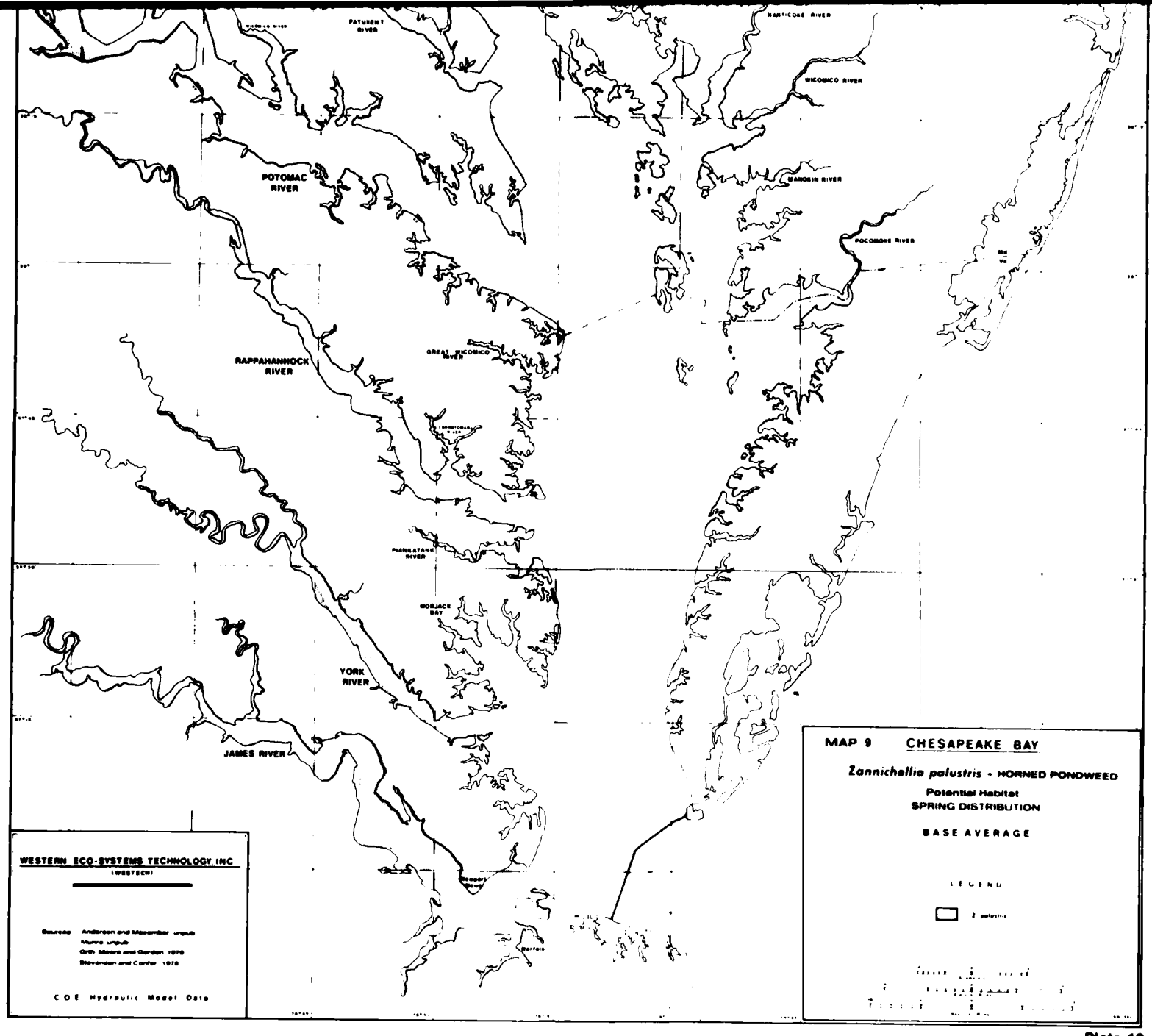
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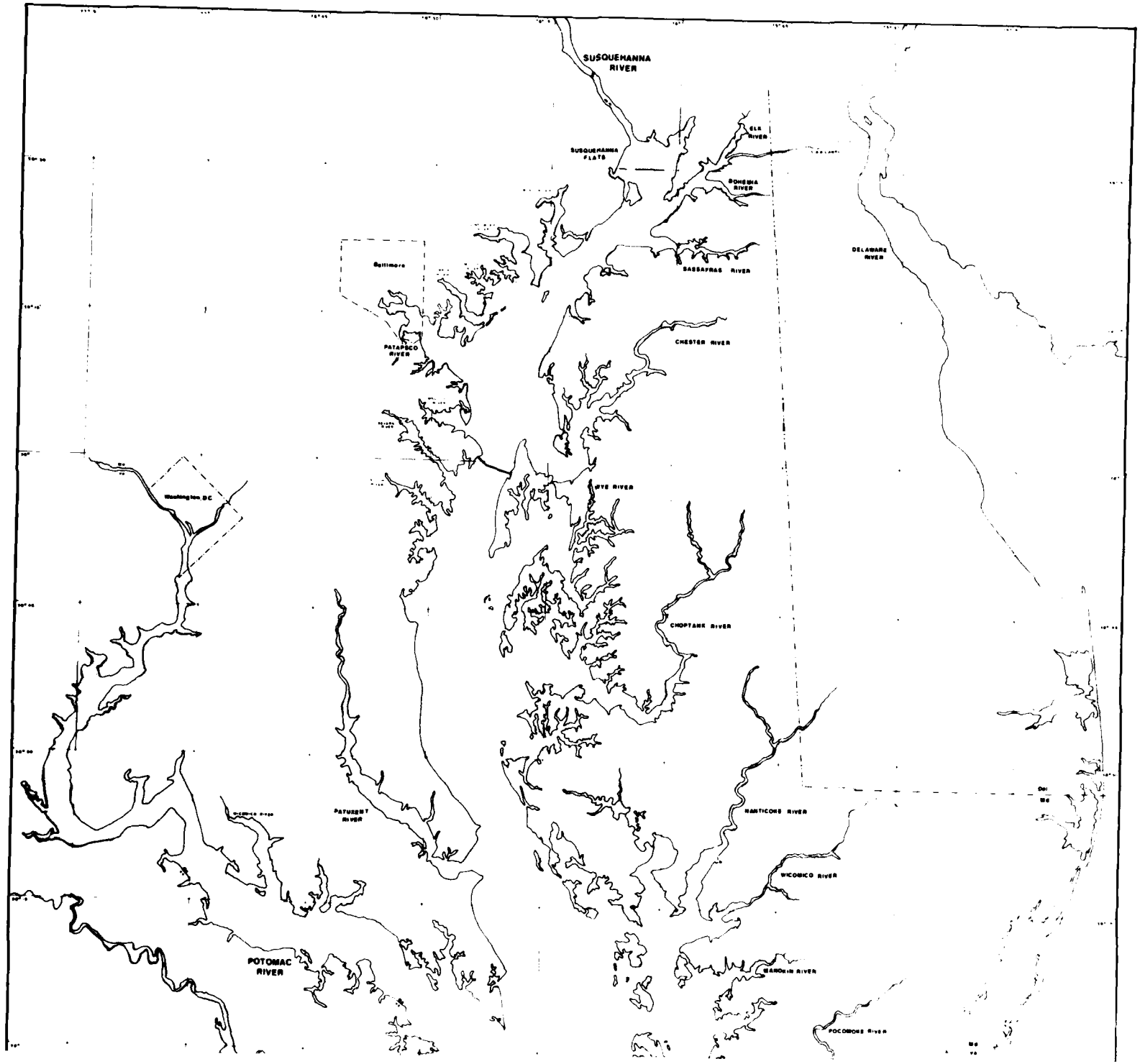
COE Hydraulic Model Data

Plate 12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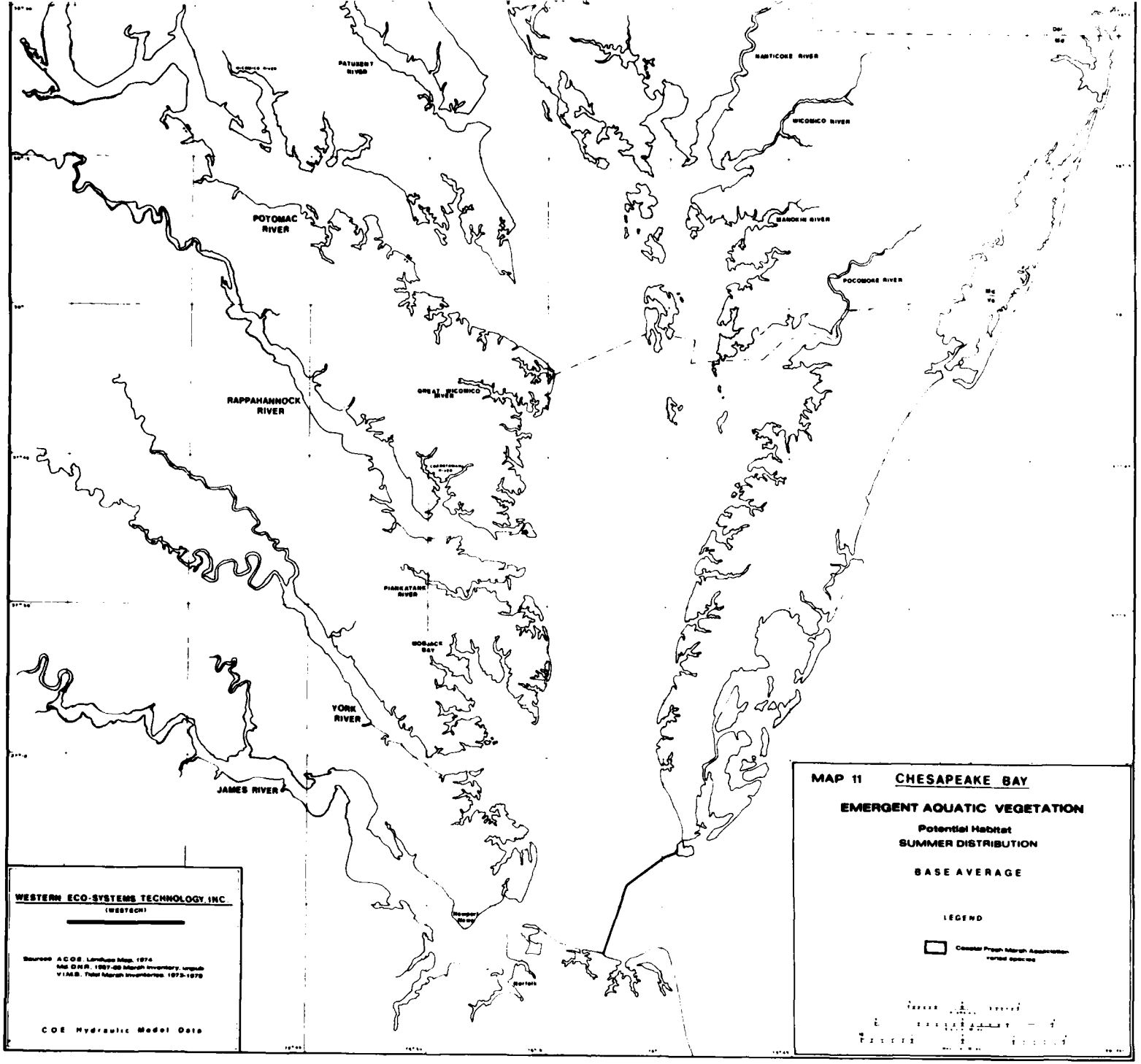
SUSQUEHANNA FLATS
ELK RIVER
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
Baltimore
PATAPSCO RIVER
CHESTER RIVER
Washington, D.C.
WYE RIVER
CHOPTANK RIVER
PATUXENT RIVER
WICOMICO RIVER
POTOMAC RIVER
POCOMOKE River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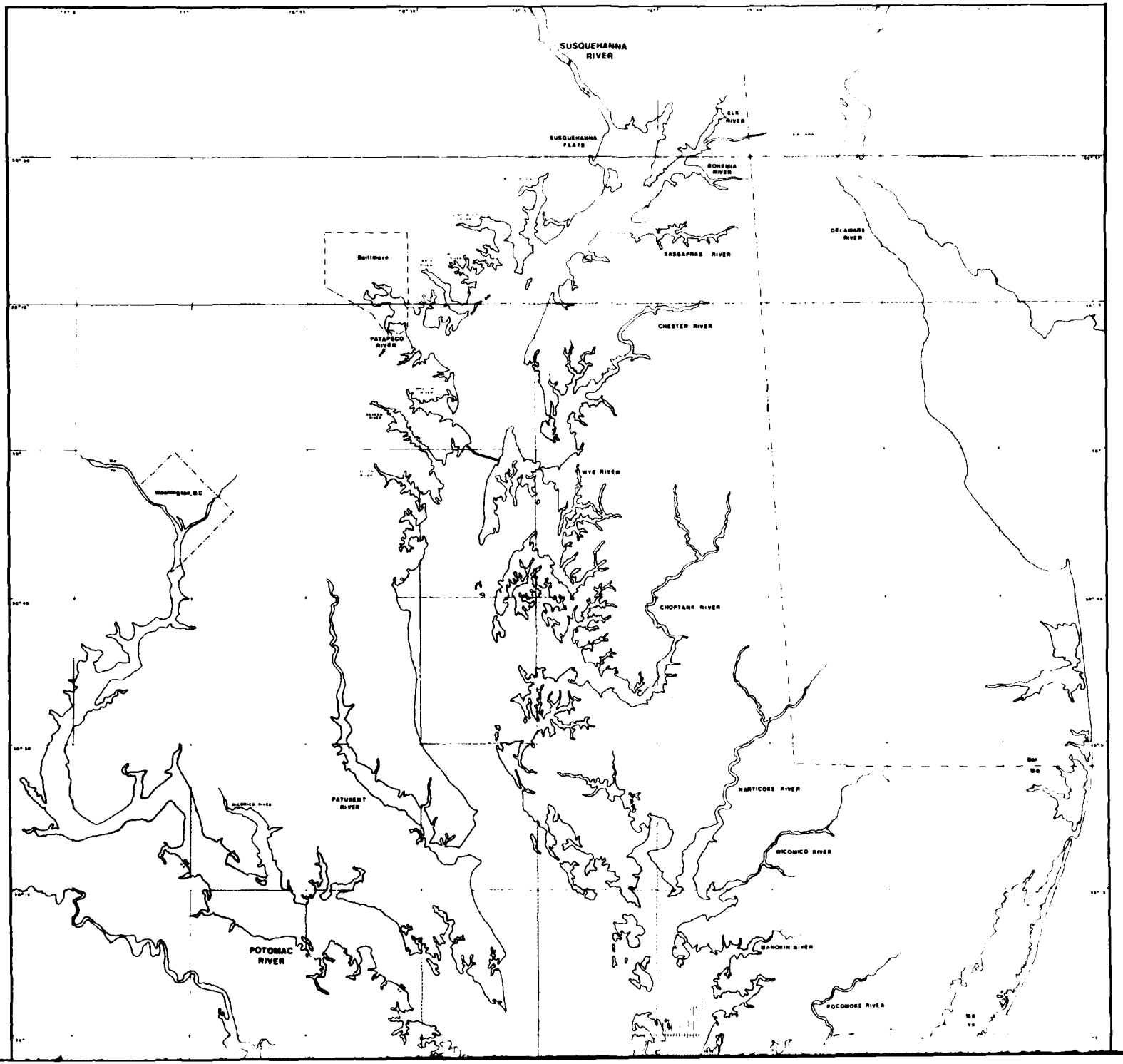
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
PATUXENT RIVER
WICOMICO RIVER
NANTICOKE RIVER
MANOKIN RIVER
POCOMOKE RIVER
GREAT WICOMICO RIVER
PIANKATANK RIVER
MOBJACK BAY
Norfolk
MAP 11 CHESAPEAKE BAY
EMERGENT AQUATIC VEGETATION
Potential Habitat
SUMMER DISTRIBUTION
BASE AVERAGE
LEGEND
WESTERN ECO-SYSTEMS TECHNOLOGY, INC
(WESTECH)
COE Hydraulic Model Data

Plate 13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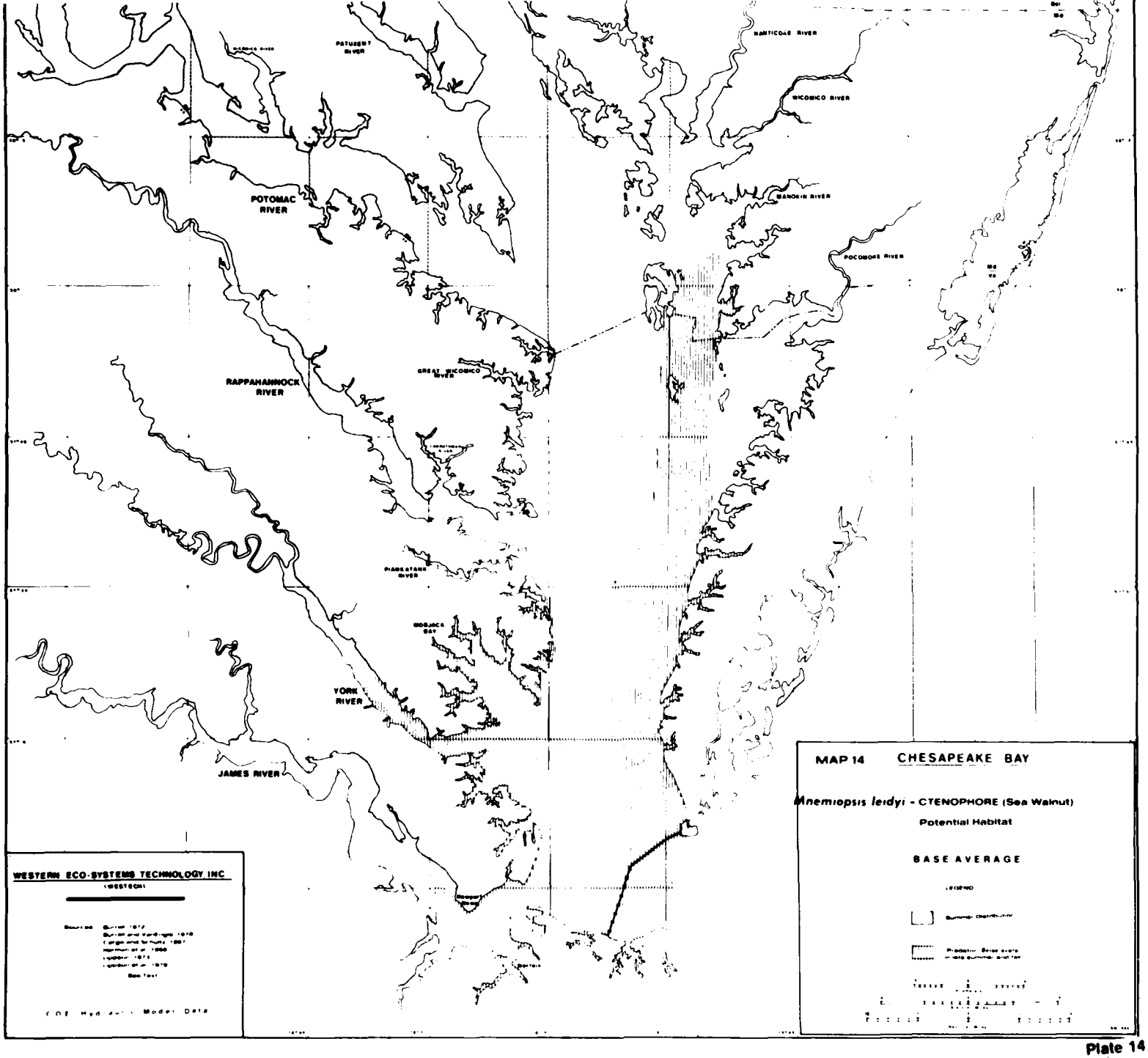
ELK RIVER
BOHEMIA RIVER
SASSAFRAS RIVER
DELAWARE RIVER
Baltimore
CHESTER RIVER
PATAPSCO RIVER
Washington, D.C.
WYE RIVER
CHOPTANK RIVER
PATUXENT RIVER
POTOMAC RIVER
NANTICOKE RIVER
WICOMICO RIVER
MANOKIN RIVER
POCOMOKE RIVER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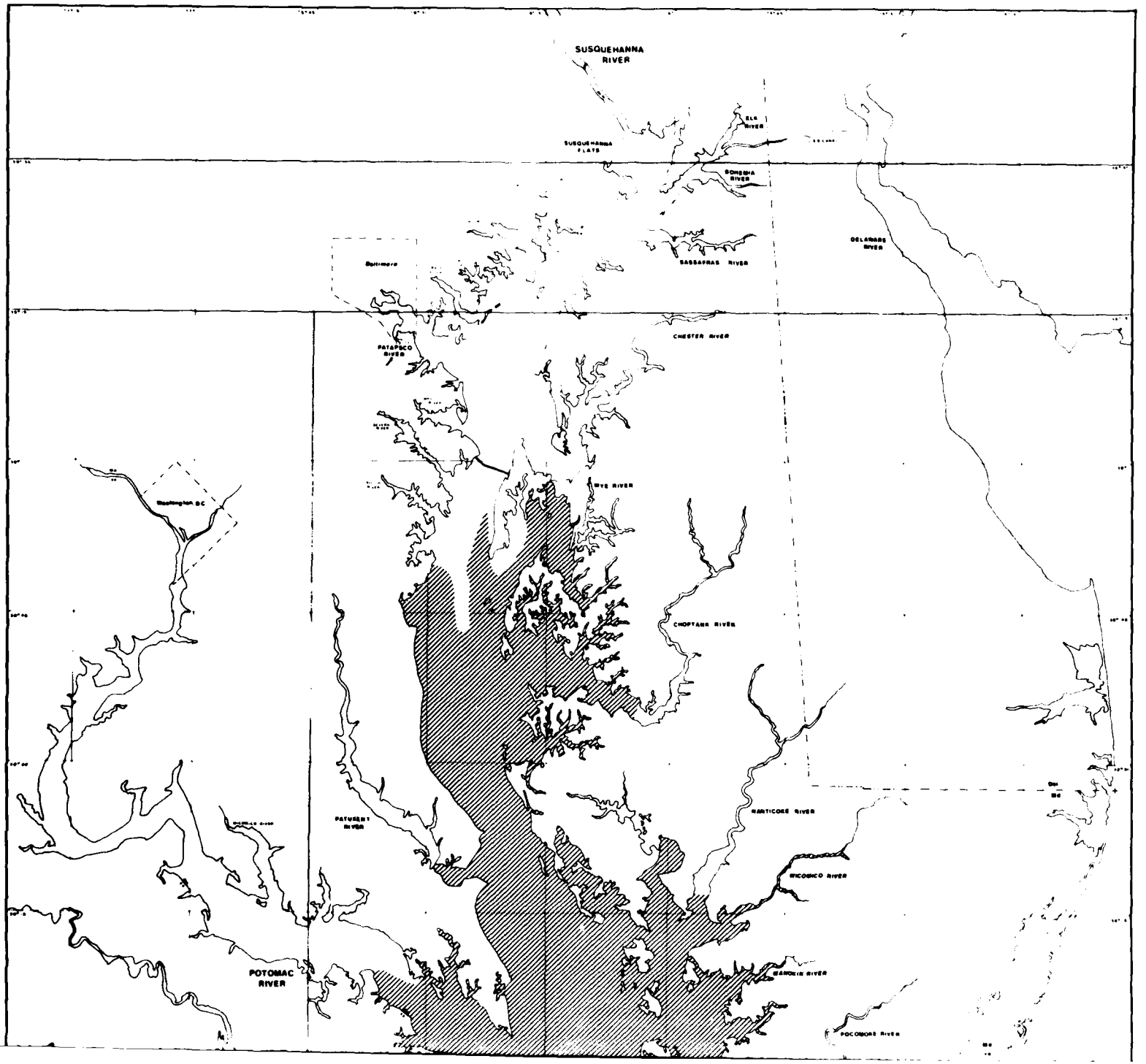
YORK RIVER
JAMES RIVER
PATUXENT RIVER
WICOMICO RIVER
MANOKIN RIVER
POCOMOKE RIVER
GREAT WICOMICO RIVER
PIANKATANK RIVER
MOBJACK BAY
WESTERN ECO-SYSTEMS TECHNOLOGY INC
(WESTECH)
COE Hydraulic Model Data
MAP 14 CHESAPEAKE BAY
Mnemiopsis leidyi - CTENOPHORE (Sea Walnut)
Potential Habitat
BASE AVERAGE

Plate 14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ELK RIVER
SUSQUEHANNA FLATS
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SASSAFRAS RIVER
DELAWARE RIVER
Baltimore
PATAPSCO RIVER
CHESTER RIVER
Washington DC
WYE RIVER
CHOPTANK RIVER
PATUXENT RIVER
MANTICOKE RIVER
WICOMICO RIVER
POTOMAC RIVER
NANTICOKE RIVER
POCOMOKE River

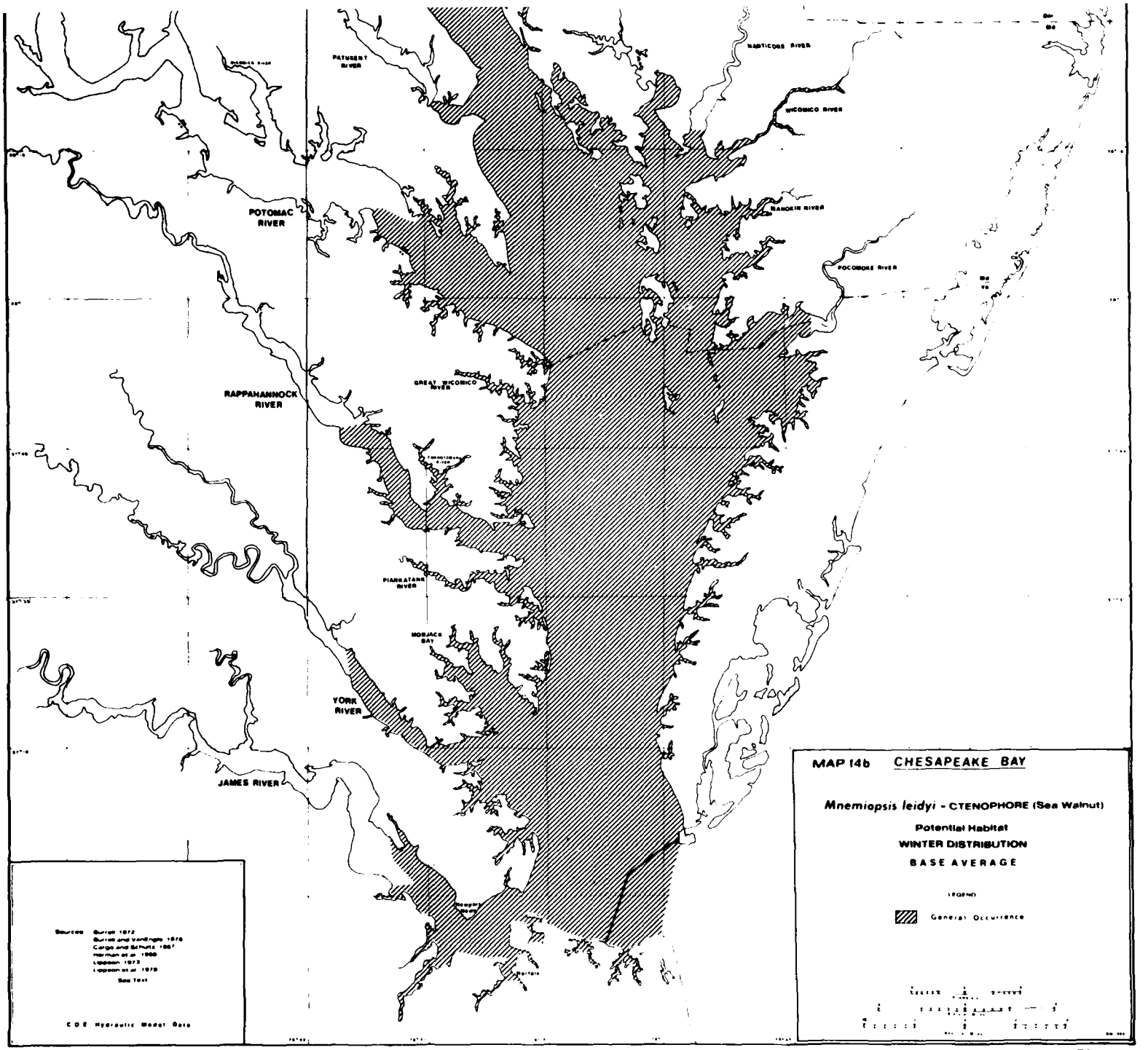
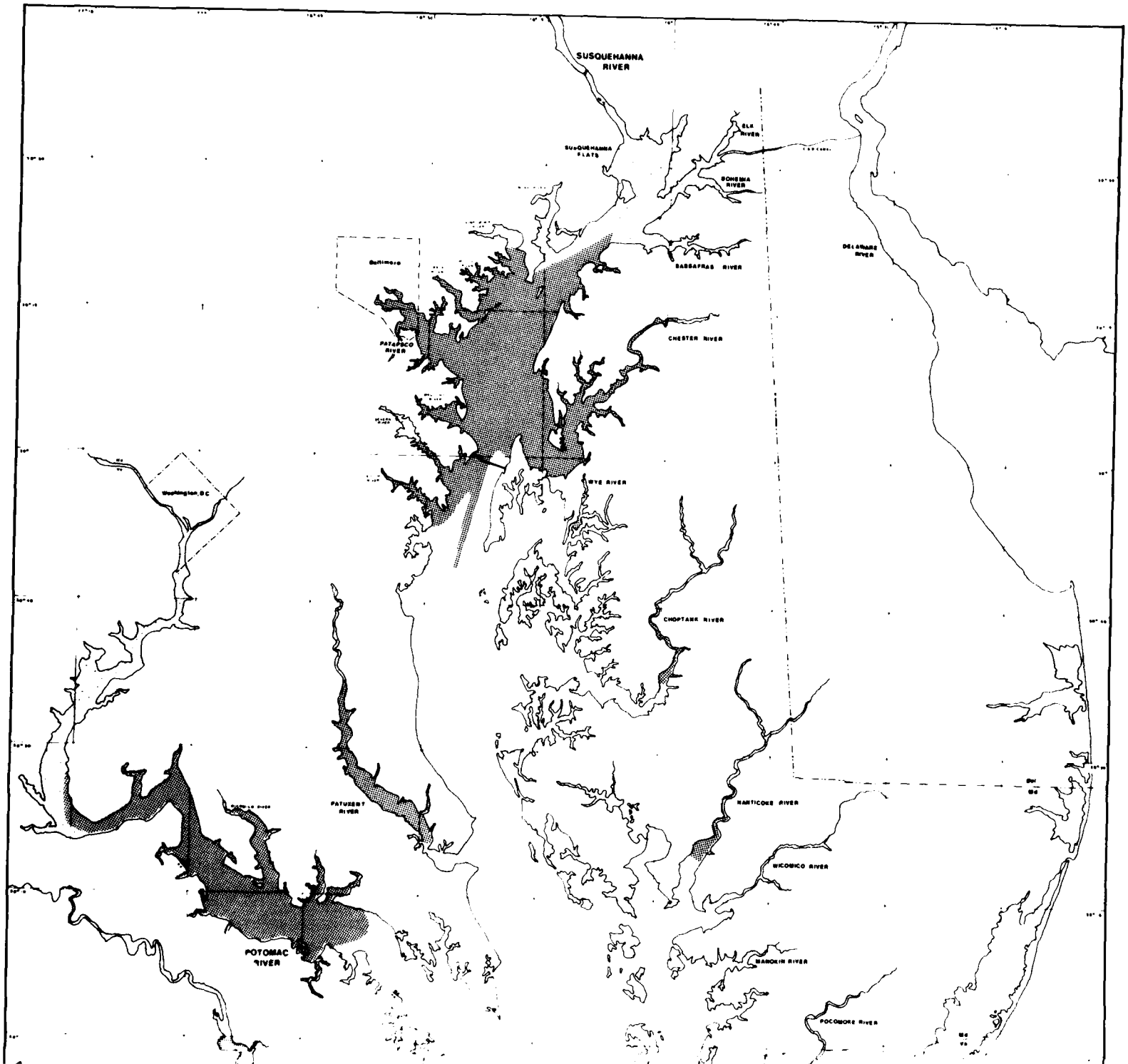

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
PATUXENT RIVER
WICOMICO RIVER
MANOKIN RIVER
POCOMOKE RIVER
GREAT WICOMICO RIVER
PIANKATANK RIVER
MOBJACK BAY
MAP 14b CHESAPEAKE BAY
Mnemiopsis leidyi - CTENOPHORE (Sea Walnut)
Potential Habitat
WINTER DISTRIBUTION
BASE AVERAGE
(LEGEND)
General Occurrence
Sources: Burton 1972
Burton and VanEngle 1976
Cargo and Schultz 1967
Herman et al. 1966
Lippson 1973
Lippson et al. 1979
Sea Test
COE Hydraulic Model Data

Plate 15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ELK RIVER
BOHEMIA RIVER
SASSAFRAS RIVER
DELAWARE RIVER
Baltimore
PATAPSCO RIVER
CHESTER RIVER
Washington, DC
WYE RIVER
CHOPTANK RIVER
PATUXENT RIVER
POTOMAC RIVER
NANTICOKE RIVER
WICOMICO RIVER
MANOKIN RIVER
POCOMOKE RIVER

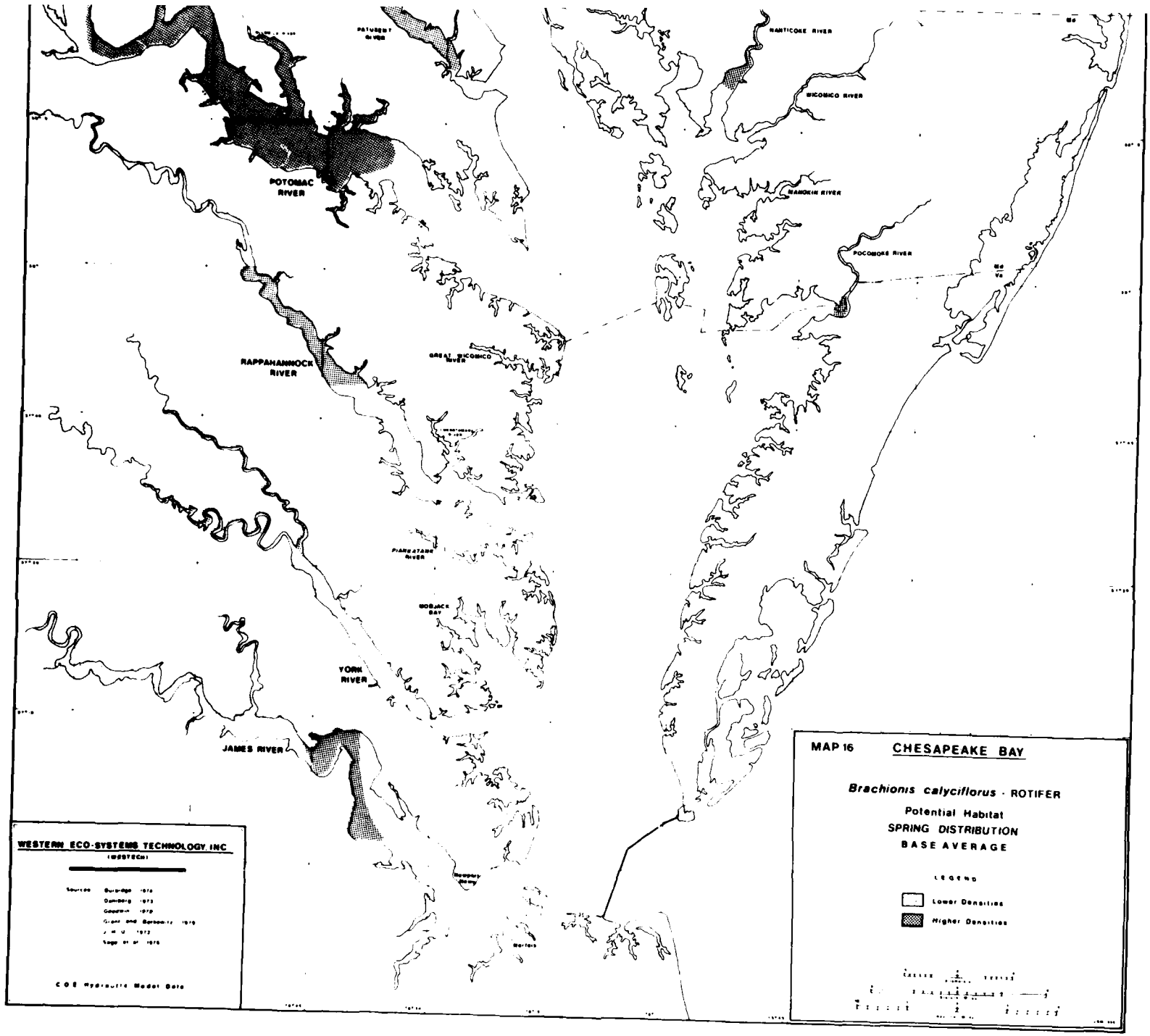
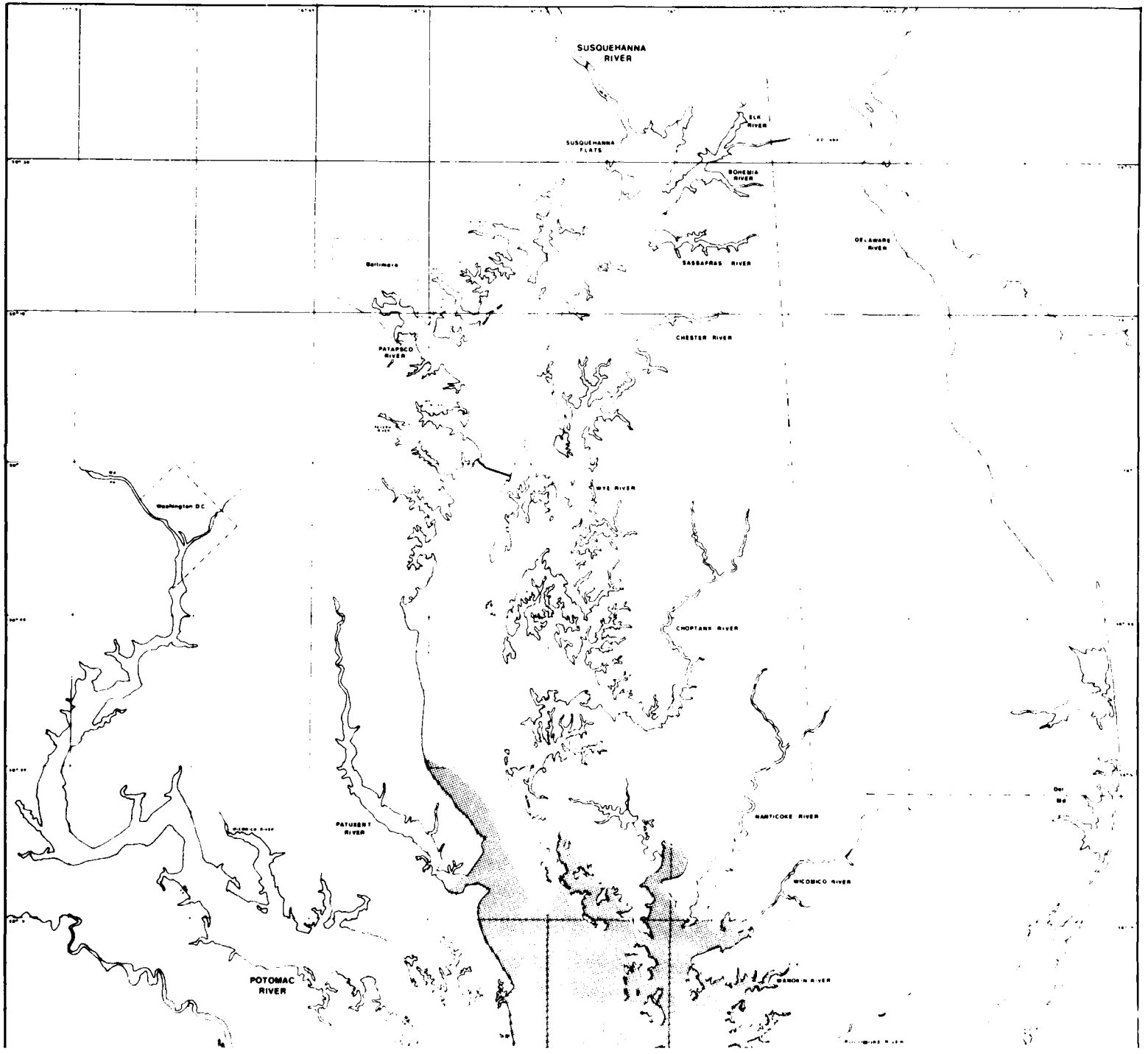

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
WICOMICO RIVER
POCOMOKE RIVER
MAP 16 CHESAPEAKE BAY
Brachionis calyciflorus - ROTIFER
Potential Habitat
SPRING DISTRIBUTION
BASE AVERAGE
Legend
Lower Densities
Higher Densities
WESTERN ECO-SYSTEMS TECHNOLOGY, INC.
COE Hydraulic Model Data

Plate 16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SUSQUEHANNA FLATS
ELK RIVER
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
Baltimore
CHESTER RIVER
PATAPSCO RIVER
WYE RIVER
Washington D.C.
CHOPTANK RIVER
PATUXENT RIVER
MANTICOKE RIVER
WICOMICO RIVER
POTOMAC RIVER

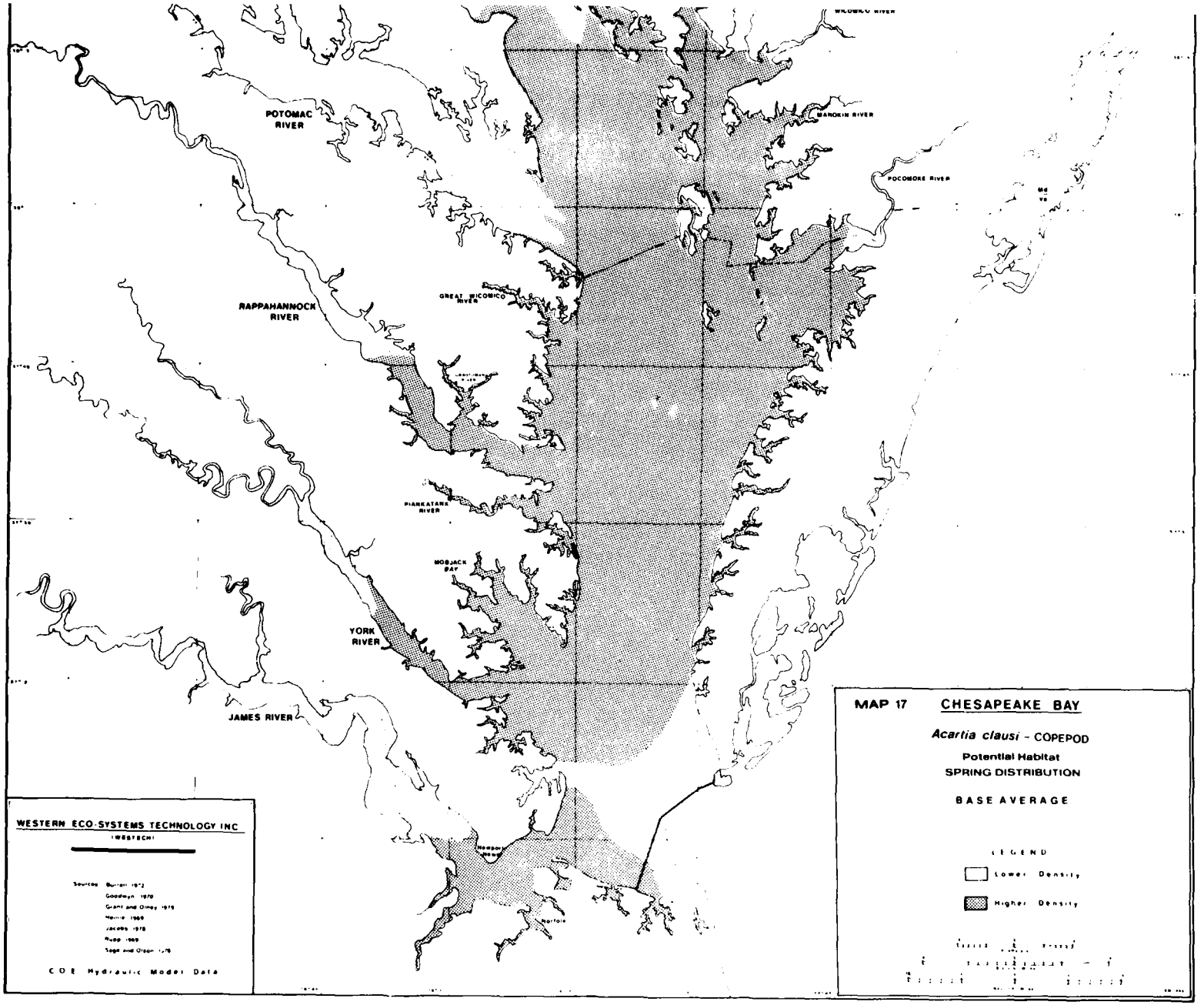
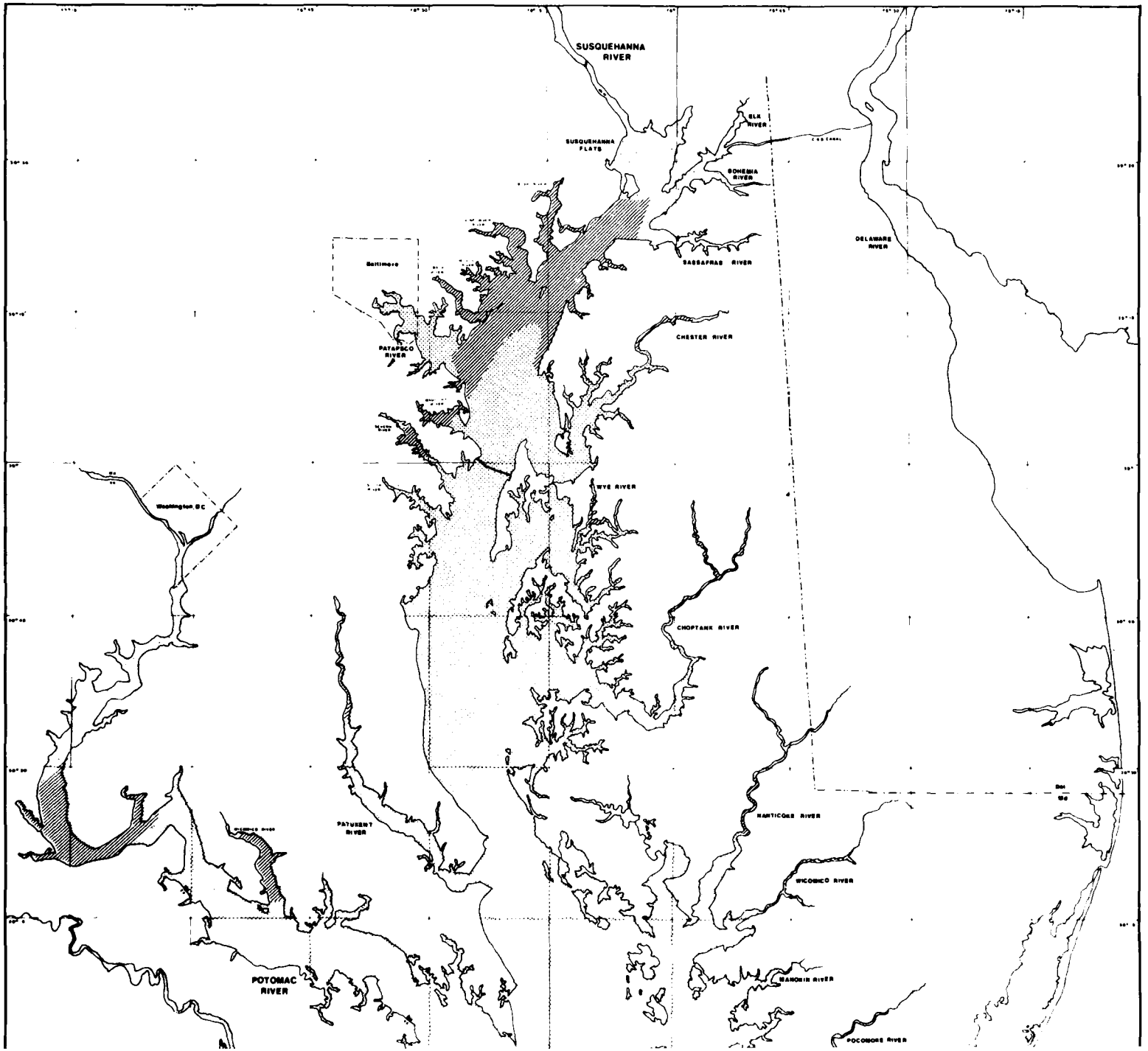

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
POCOMOKE RIVER
MAP 17 CHESAPEAKE BAY
Acartia clausi - COPEPOD
Potential Habitat
SPRING DISTRIBUTION
BASE AVERAGE
LEGEND
Lower Density
Higher Density
WESTERN ECO-SYSTEMS TECHNOLOGY INC
COE Hydraulic Model Data

Plate 17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SUSQUEHANNA FLATS
ELK RIVER
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
Baltimore
PATAPSCO RIVER
CHESTER RIVER
WYE RIVER
Washington, DC
CHOPTANK RIVER
PATUXENT RIVER
NANTICOKE RIVER
WICOMICO RIVER
POTOMAC RIVER
MANOKIN RIVER
POCOMOKE RIVER

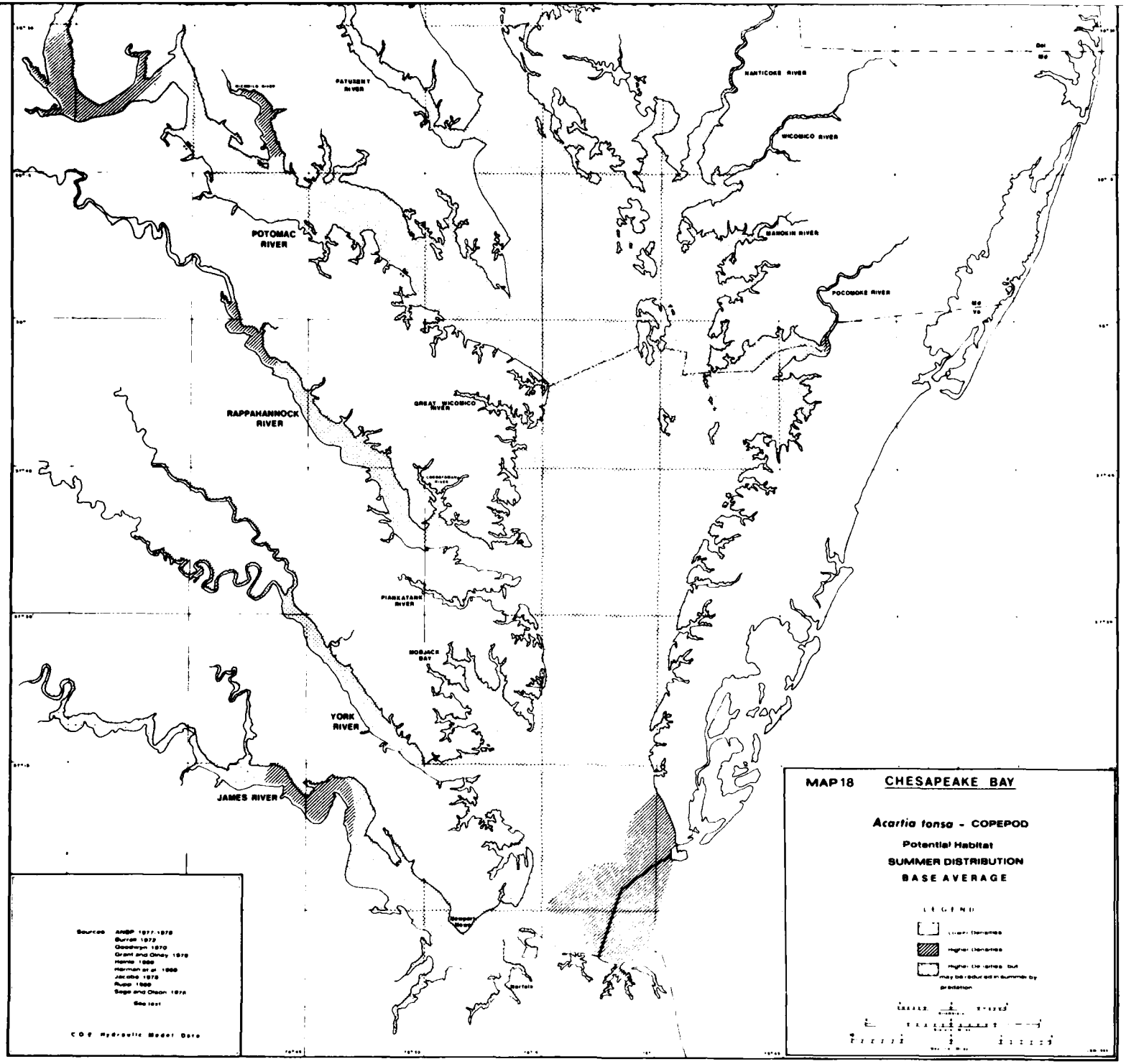
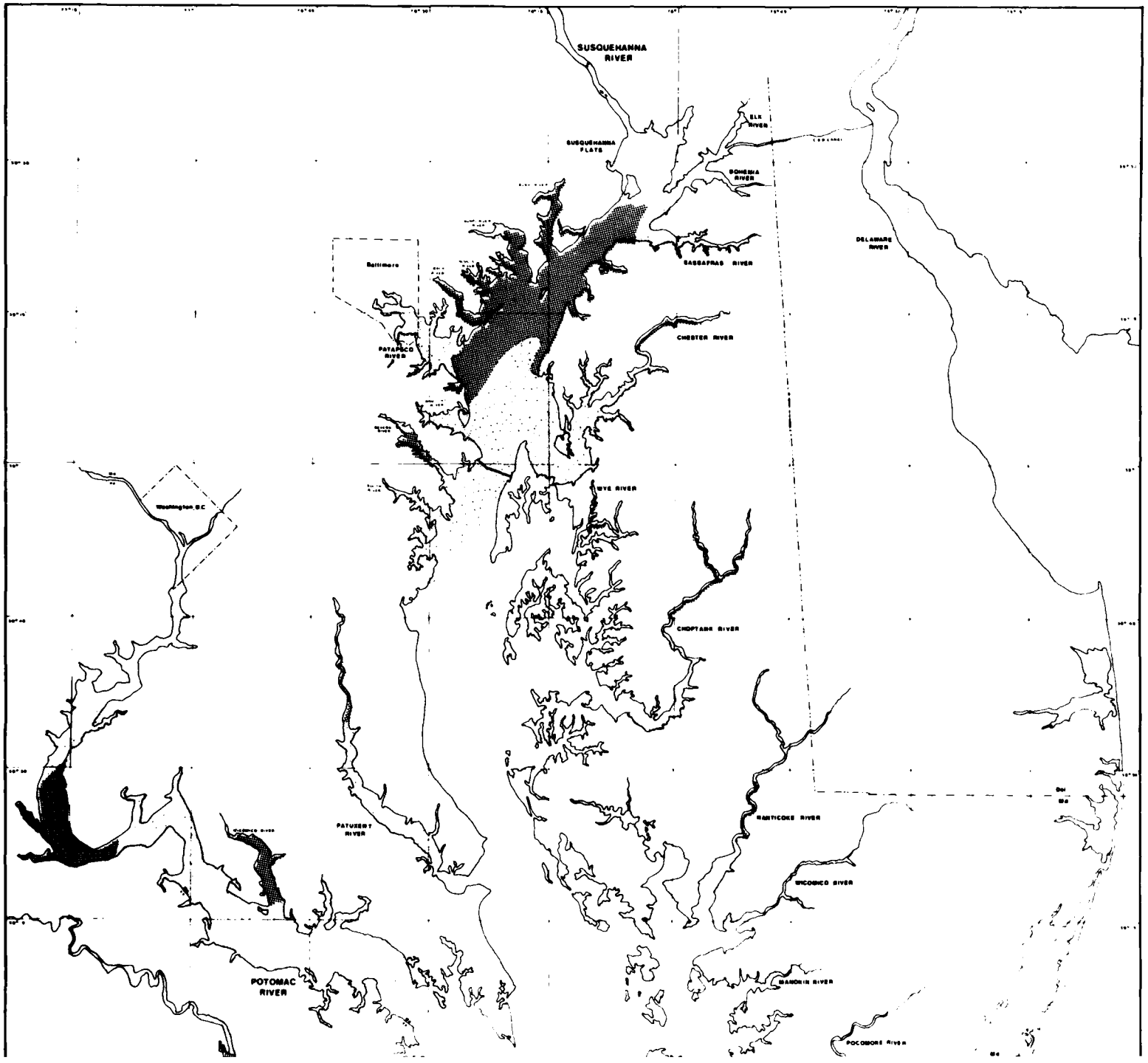

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
PIANKATANK RIVER
MOBJACK BAY
GREAT WICOMICO RIVER
PATUXENT RIVER
NANTICOKE RIVER
WICOMICO RIVER
MANOKIN RIVER
POCOMOKE RIVER
MAP 18 CHESAPEAKE BAY
Acartia tonsa - COPEPOD
Potential Habitat
SUMMER DISTRIBUTION
BASE AVERAGE
LEGEND
Higher Densities
Sources: ANSP 1977-1978
Burrell 1972
Glasgerpen 1970
Grant and Olney 1978
Hamer 1980
Heinle et al. 1980
Jacobs 1978
Rupp 1980
Sage and Olson 1978
COE Hydraulic Model Data

Plate 18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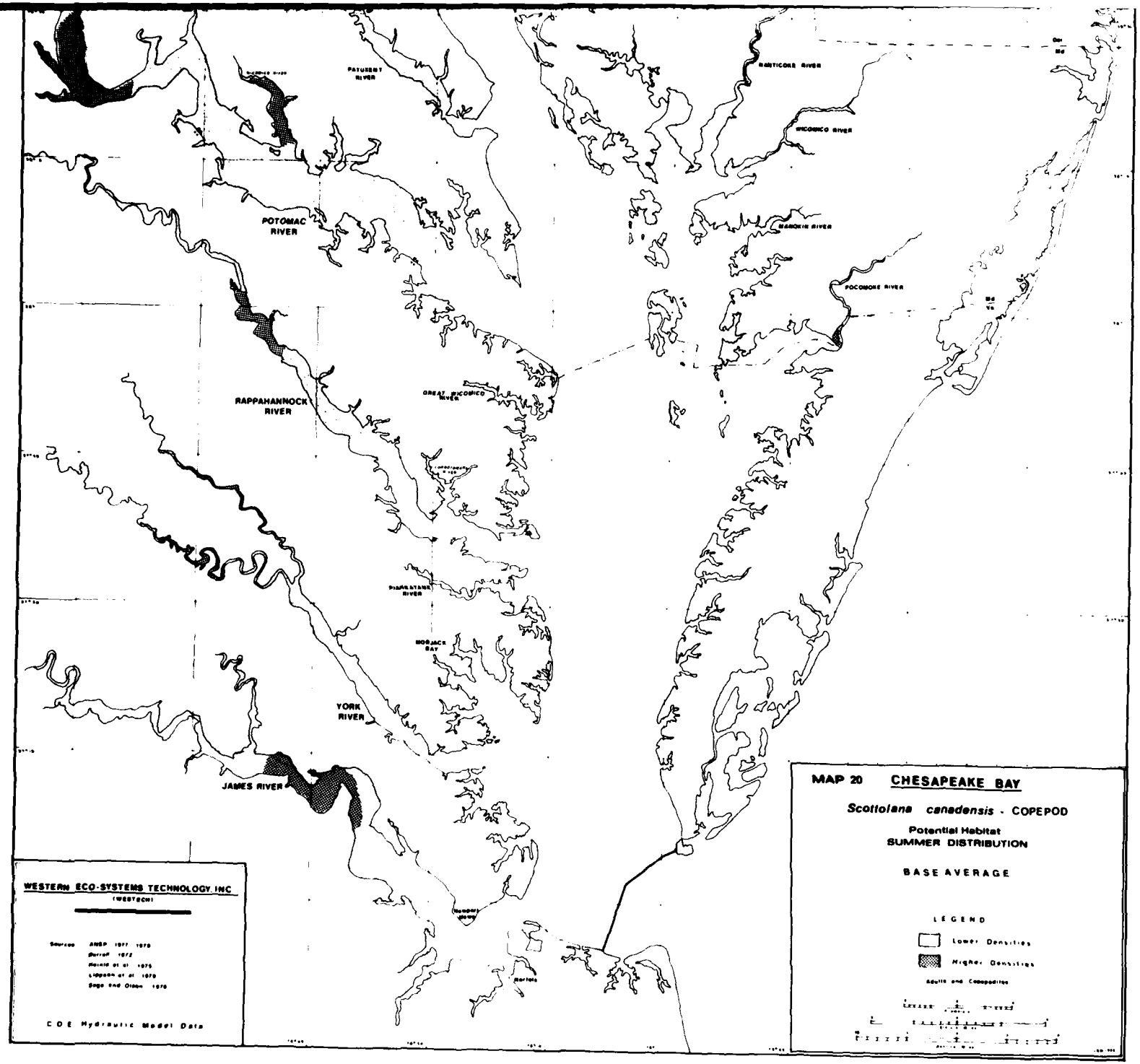
ELK RIVER
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
Baltimore
PATAPSCO RIVER
CHESTER RIVER
Washington, D.C.
CHOPTANK RIVER
PATUXENT RIVER
RANTICOKE RIVER
WICOMICO RIVER
POTOMAC RIVER
MANOKIN RIVER
POCOMOKE RIVER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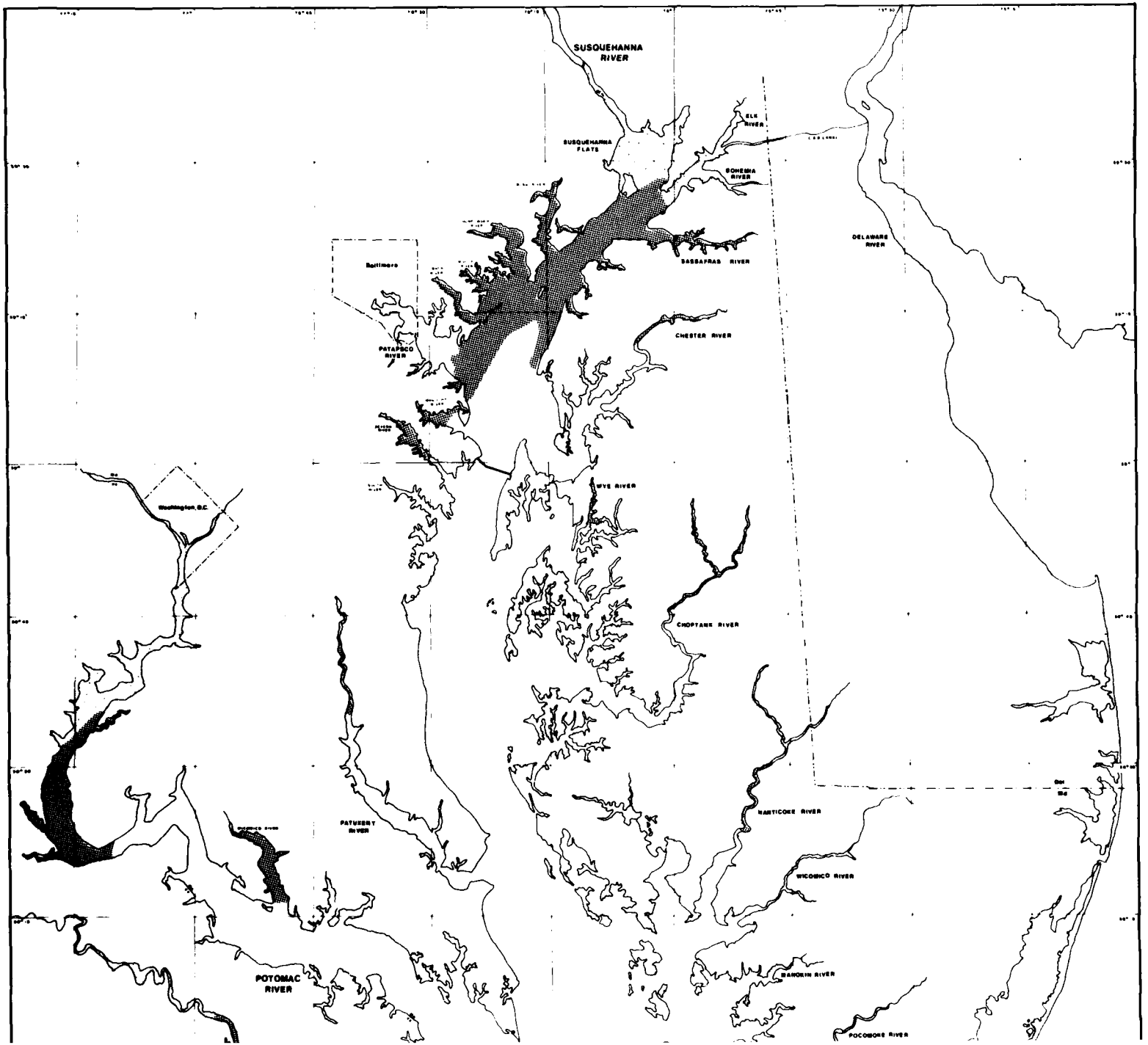
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
PATUXENT RIVER
RAPPAHANNOCK RIVER
GREAT WICOMICO RIVER
PIANKATANK RIVER
MOBJACK BAY
WICOMICO RIVER
MANOKIN RIVER
POCOMOKE RIVER
WESTERN ECO-SYSTEMS TECHNOLOGY, INC
(WESTECH)
Sources ANSP 1977, 1978
Darnell 1972
Heinle et al 1975
Lippson et al 1979
Sage and Olson 1978
COE Hydraulic Model Data
MAP 20 CHESAPEAKE BAY
Scottolana canadensis - COPEPOD
Potential Habitat
SUMMER DISTRIBUTION
BASE AVERAGE
LEGEND
Lower Densities
Higher Densities
Adults and Copepodites

Plate 19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SUSQUEHANNA FLATS
ELK RIVER
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
Baltimore
PATAPSCO RIVER
CHESTER RIVER
WYE RIVER
Washington, D.C.
CHOPTANK RIVER
PATUXENT RIVER
NANTICOKE RIVER
WICOMICO RIVER
POTOMAC RIVER
MANOKIN RIVER
POCOMOKE RIVER

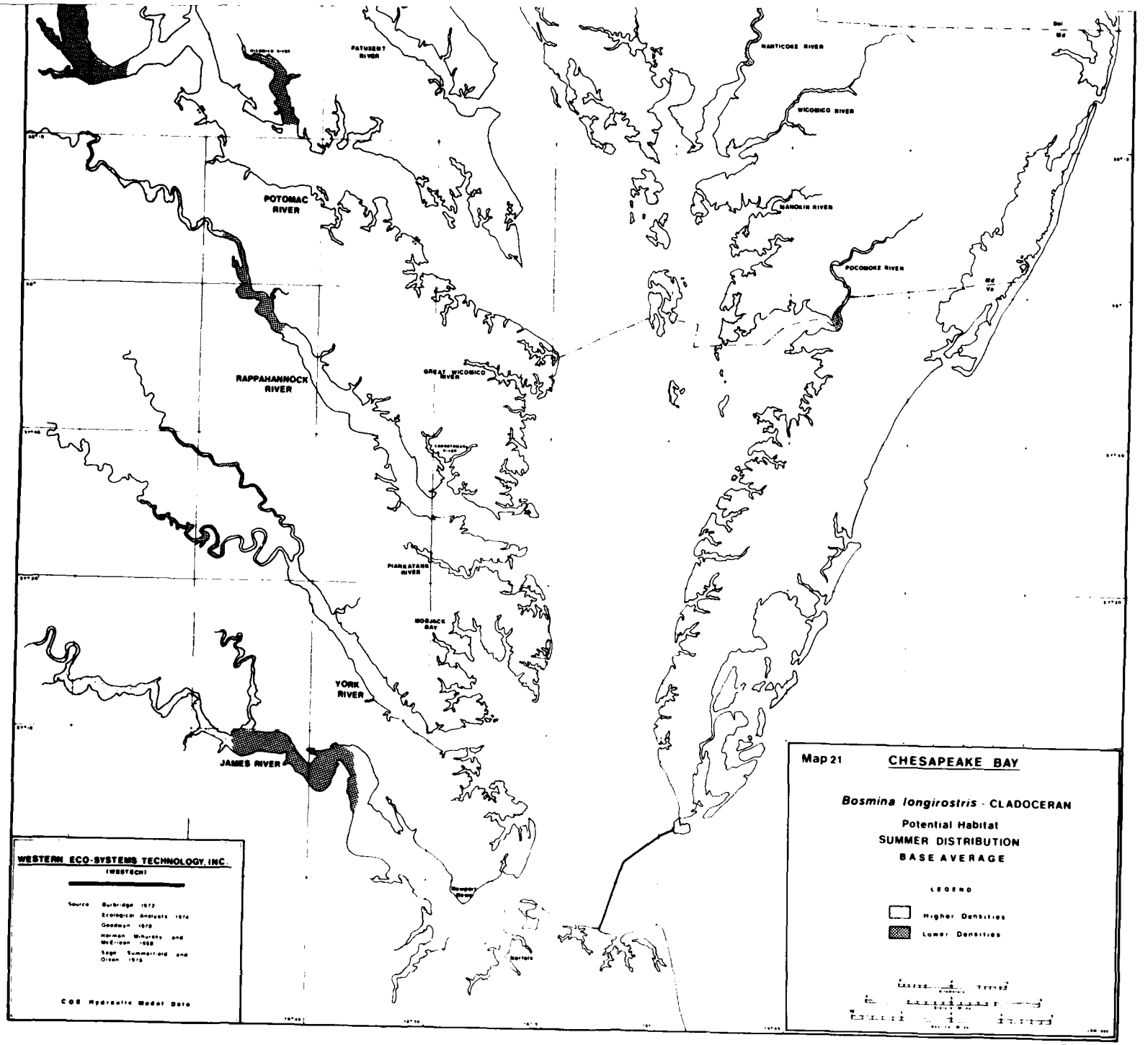
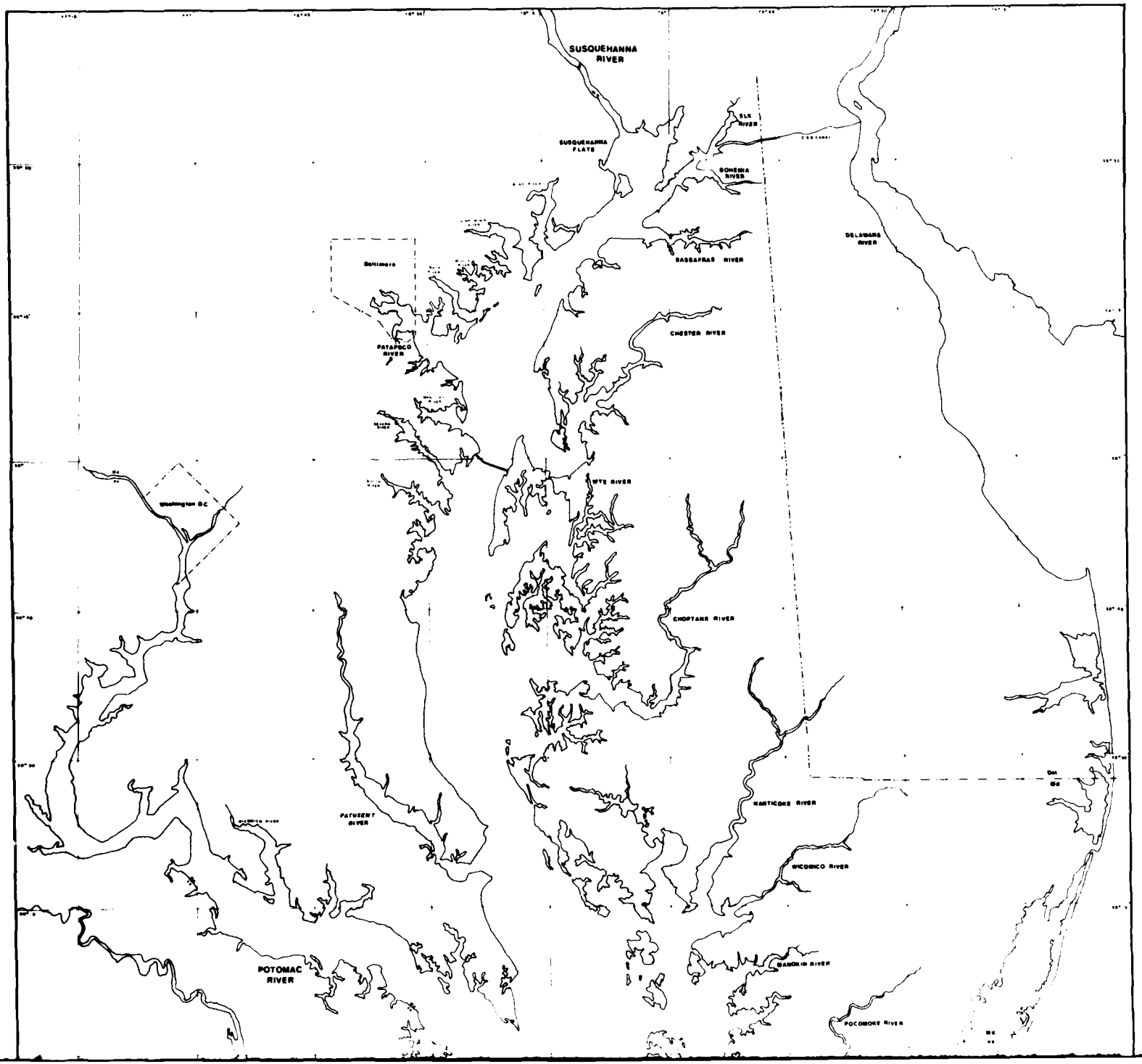

PATUXENT RIVER
NANTICOKE RIVER
WICOMICO RIVER
POTOMAC RIVER
MANOKIN RIVER
POCOMOKE RIVER
RAPPAHANNOCK RIVER
GREAT WICOMICO RIVER
PIANKATANK RIVER
MOBJACK BAY
YORK RIVER
JAMES RIVER
Norfolk
WESTERN ECO-SYSTEMS TECHNOLOGY, INC.
(WESTECH)
Source Burbridge 1972
Ecological Analysts 1974
Goodman 1970
Norman Wilhursky and McErlean 1968
Sage Summerfield and Olson 1976
COE Hydraulic Model Data
Map 21 CHESAPEAKE BAY
Bosmina longirostris - CLADOCERAN
Potential Habitat
SUMMER DISTRIBUTION
BASE AVERAGE
LEGEND
Higher Densities
Lower Densities

Plate 20


SUSQUEHANNA RIVER
SUSQUEHANNA FLATS
ELK RIVER
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
Baltimore
PATAPSCO RIVER
CHESTER RIVER
Washington DC
WYE RIVER
CHOPTANK RIVER
PATUXENT RIVER
MANTICOKE RIVER
WICOMICO RIVER
POTOMAC RIVER
ANNEMIN RIVER
POCOMOKE RIVER

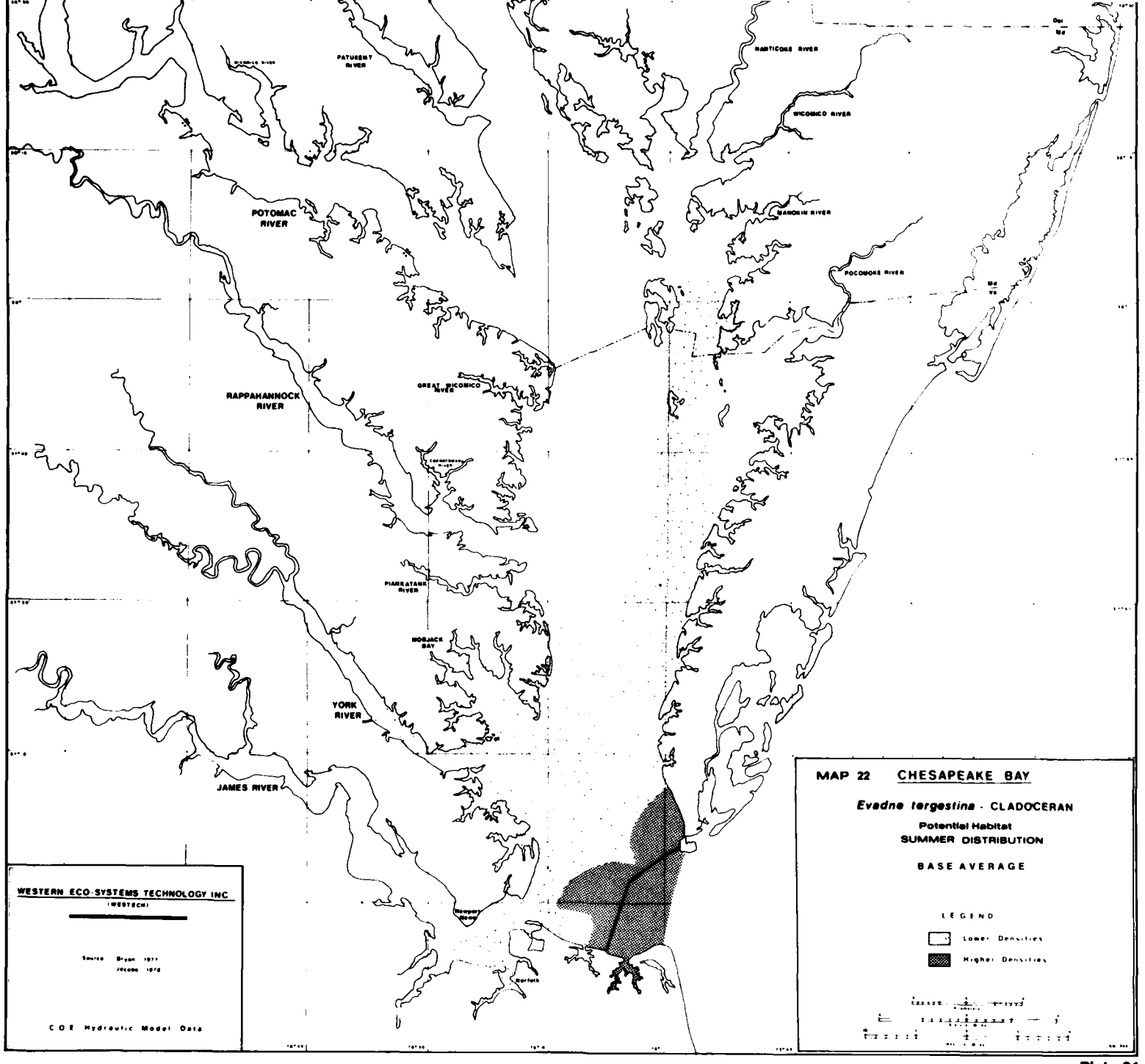
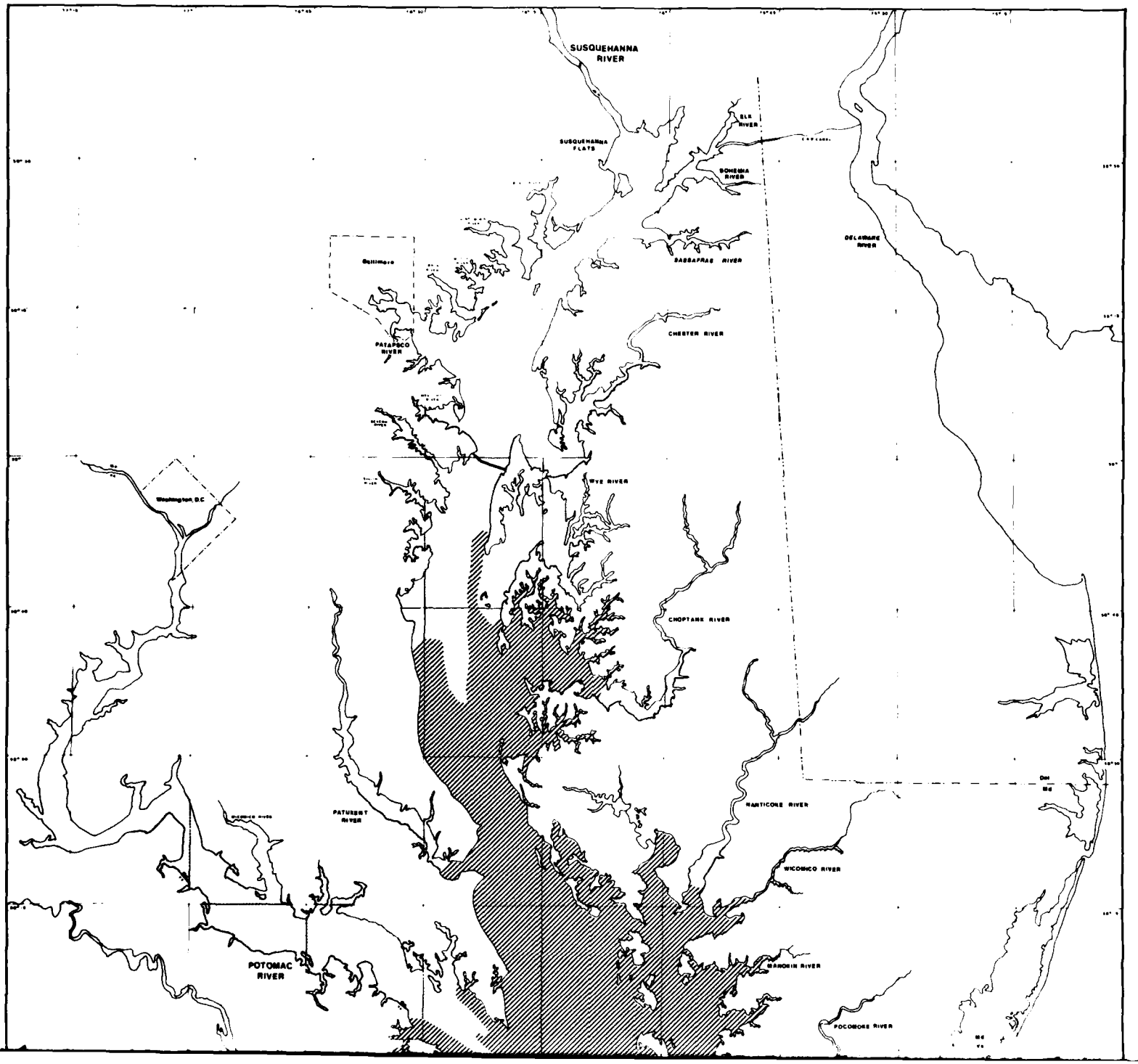

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
PIANKATANK RIVER
MOBJACK BAY
GREAT WICOMICO RIVER
PATUXENT RIVER
WICOMICO RIVER
MANOKIN RIVER
POCOMOKE RIVER
MAP 22 CHESAPEAKE BAY
Evadne tergestina - CLADOCERAN
Potential Habitat
SUMMER DISTRIBUTION
BASE AVERAGE
LEGEND
Lower Densities
Higher Densities
WESTERN ECO-SYSTEMS TECHNOLOGY INC
(WESTECH)
COE Hydraulic Model Data

Plate 21


SUSQUEHANNA RIVER
ELK RIVER
SUSQUEHANNA FLATS
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
Baltimore
CHESTER RIVER
PATAPSCO RIVER
WYE RIVER
Washington, D.C.
CHOPTANK RIVER
PATUXENT RIVER
NANTICOKE RIVER
WICOMICO RIVER
POTOMAC RIVER
MANOKIN RIVER
POCOMOKE RIVER

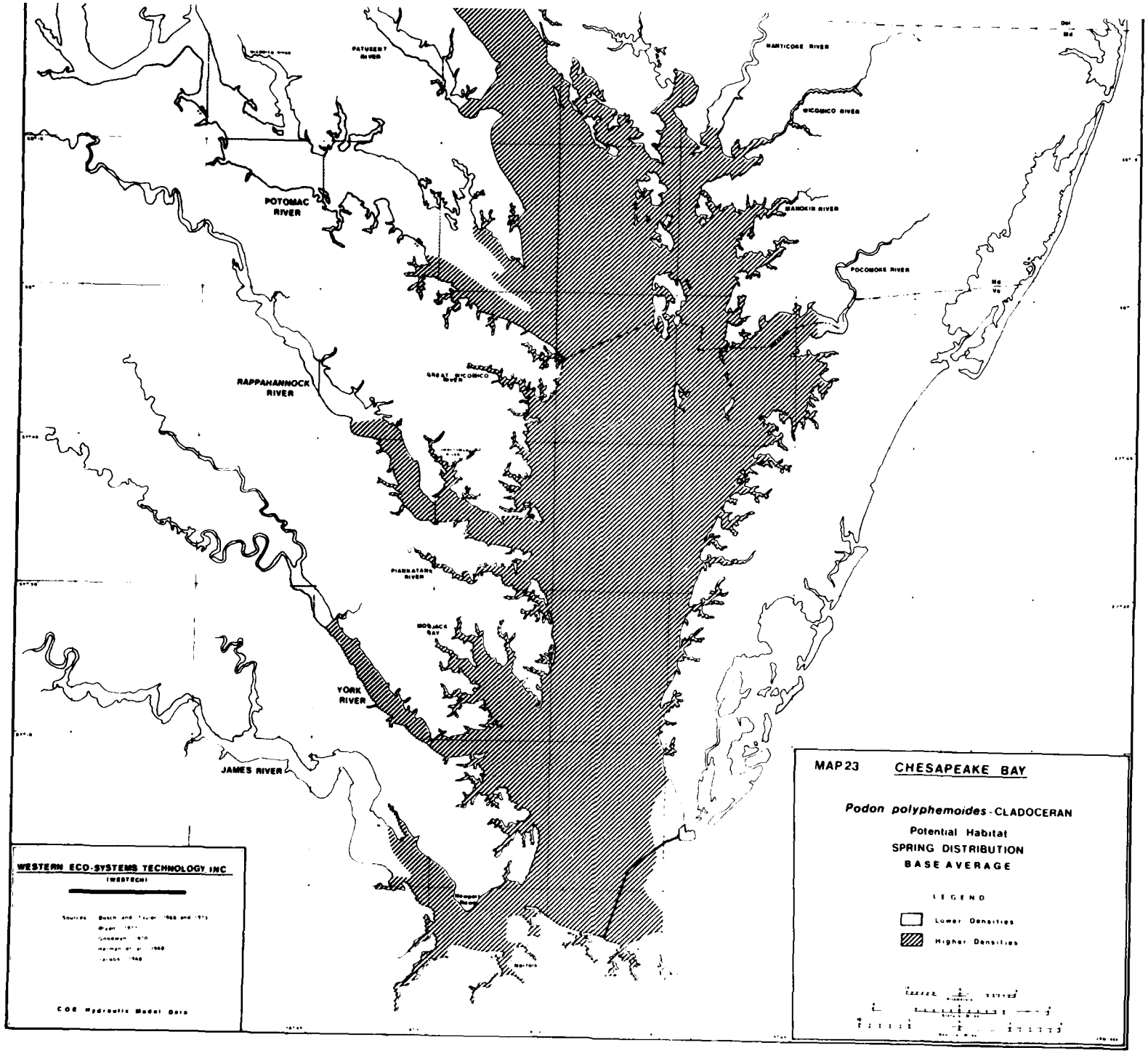
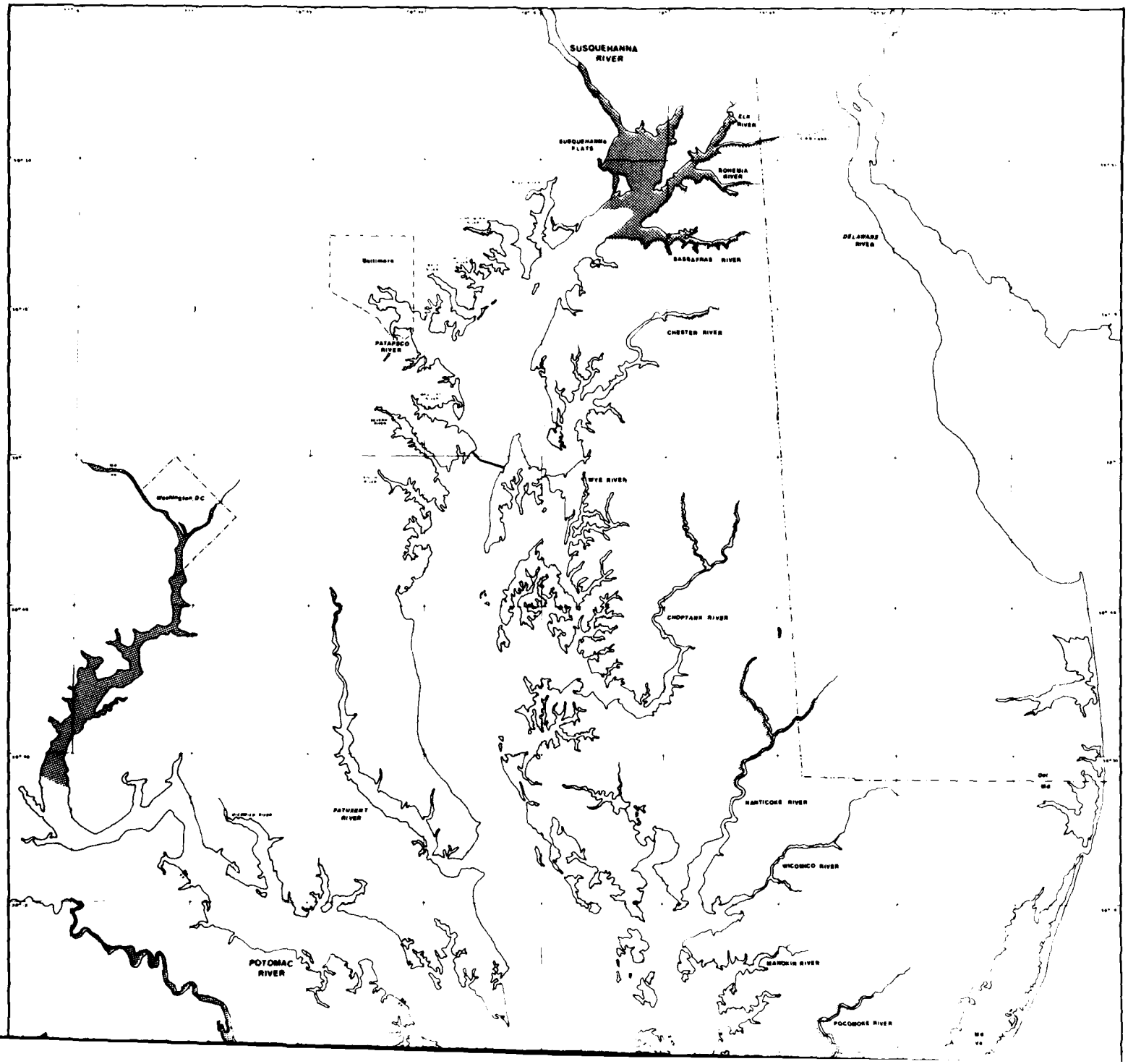

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
WICOMICO RIVER
PIANKATANK RIVER
POCOMOKE RIVER
MAP 23 CHESAPEAKE BAY
Podon polyphemoides - CLADOCERAN
Potential Habitat
SPRING DISTRIBUTION
BASE AVERAGE
LEGEND
Lower Densities
Higher Densities
WESTERN ECO-SYSTEMS TECHNOLOGY INC
(WESTECH)
COE Hydraulic Model Data

Plate 22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ELK RIVER
SUSQUEHANNA FLATS
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
CHESTER RIVER
PATAPSCO RIVER
MYE RIVER
CHOPTANK RIVER
PATUXENT RIVER
WICOMICO RIVER
MANOKIN RIVER
POCOMOKE RIVER
POTOMAC RIVER

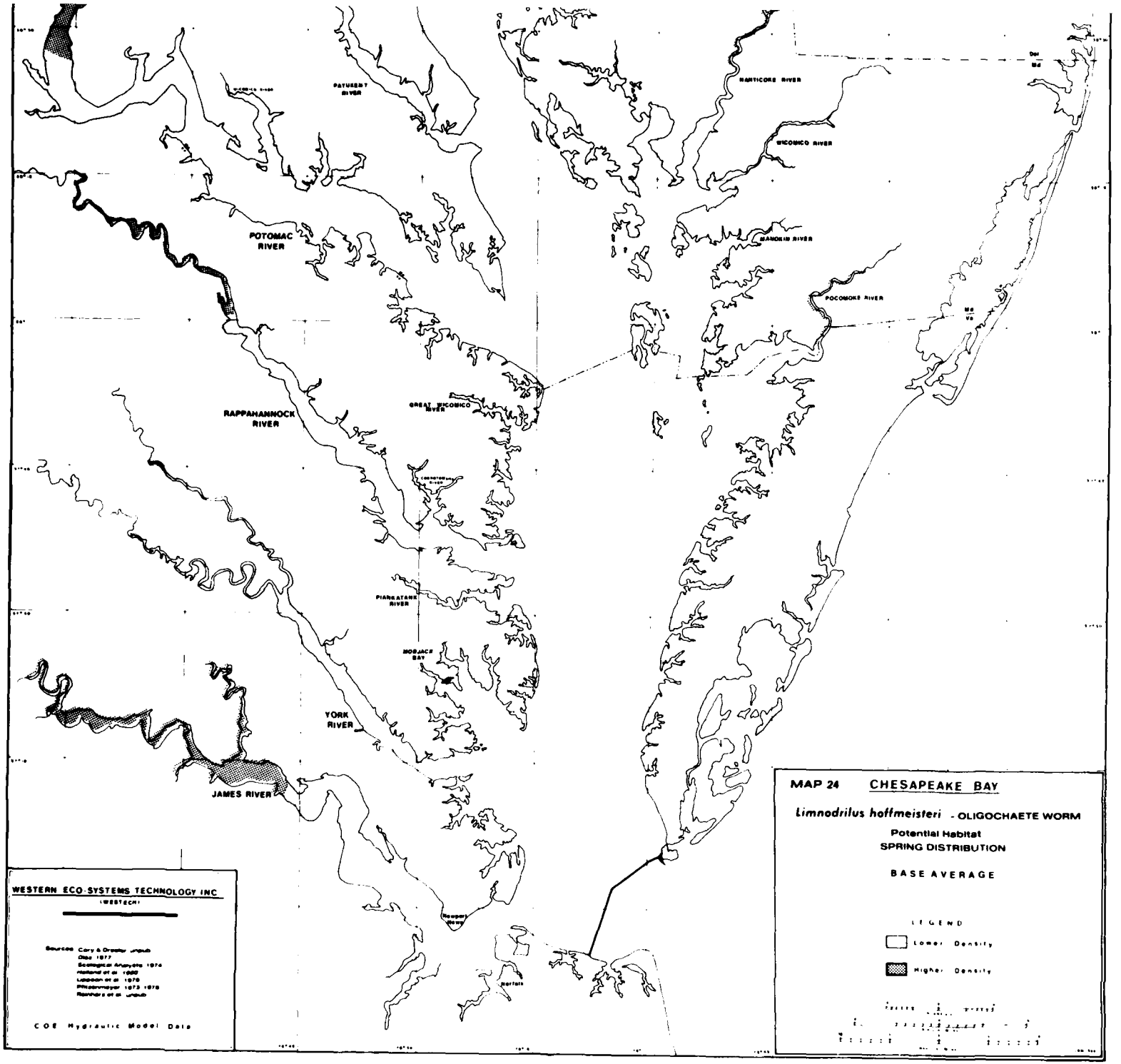

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
PIANKATANK RIVER
MOBJACK BAY
GREAT WICOMICO RIVER
PATUXENT RIVER
WICOMICO RIVER
MANOKIN RIVER
POCOMOKE RIVER
MAP 24 CHESAPEAKE BAY
Limnodrilus hoffmeisteri - OLIGOCHAETE WORM
Potential Habitat
SPRING DISTRIBUTION
BASE AVERAGE
LEGEND
Lower Density
Higher Density
WESTERN ECO-SYSTEMS TECHNOLOGY INC
(WESTECH)
COE Hydraulic Model Data

Plate 23


SUSQUEHANNA RIVER
SUSQUEHANNA FLATS
ELK RIVER
BOHEMIA RIVER
SASSAFRAS RIVER
DELAWARE RIVER
Baltimore
PATAPSCO RIVER
CHESTER RIVER
Washington, D.C.
WYE RIVER
CHOPTANK RIVER
POTOMAC RIVER
PATUXENT RIVER
MANOKIN RIVER
POCOMOKE RIVER

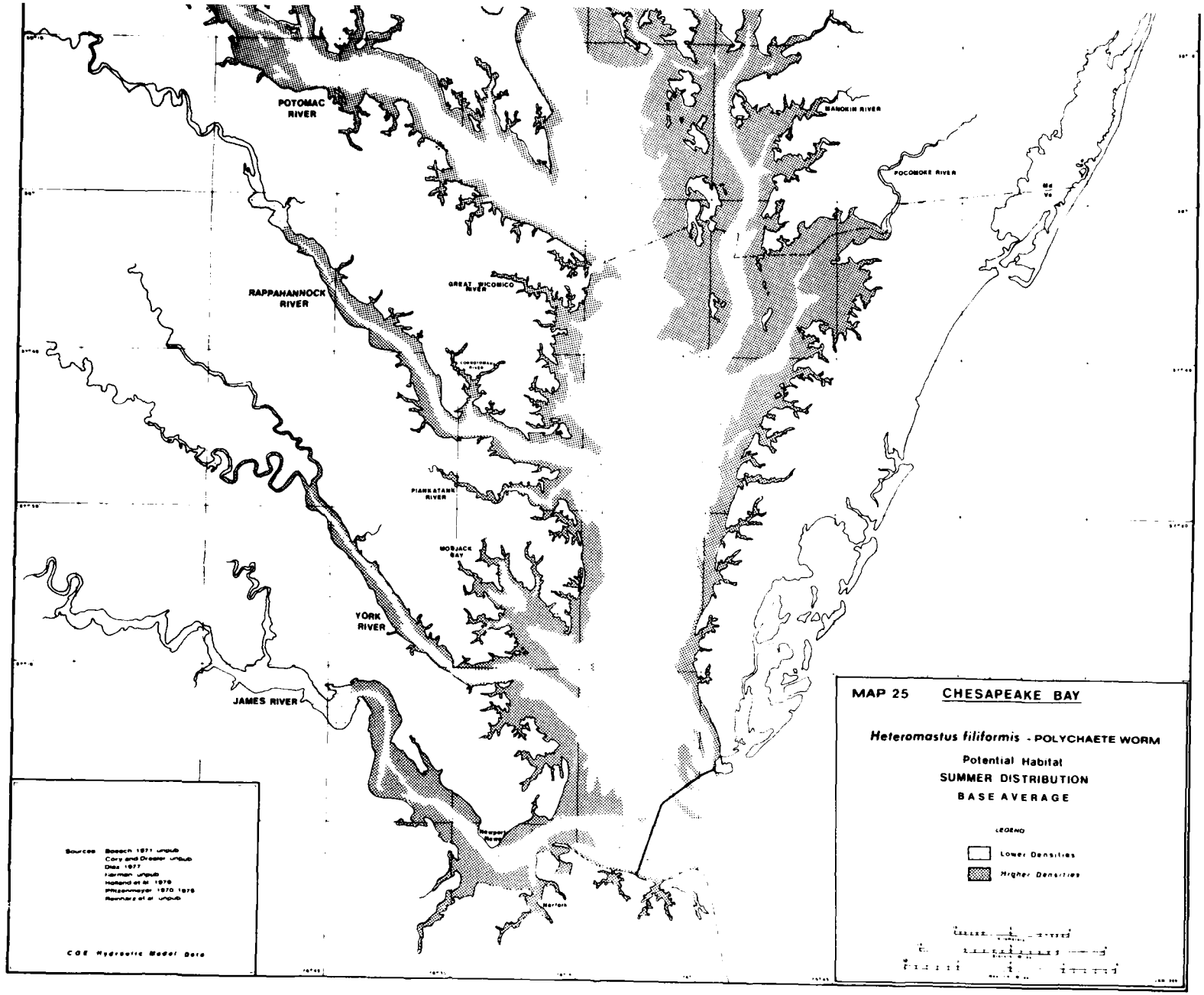
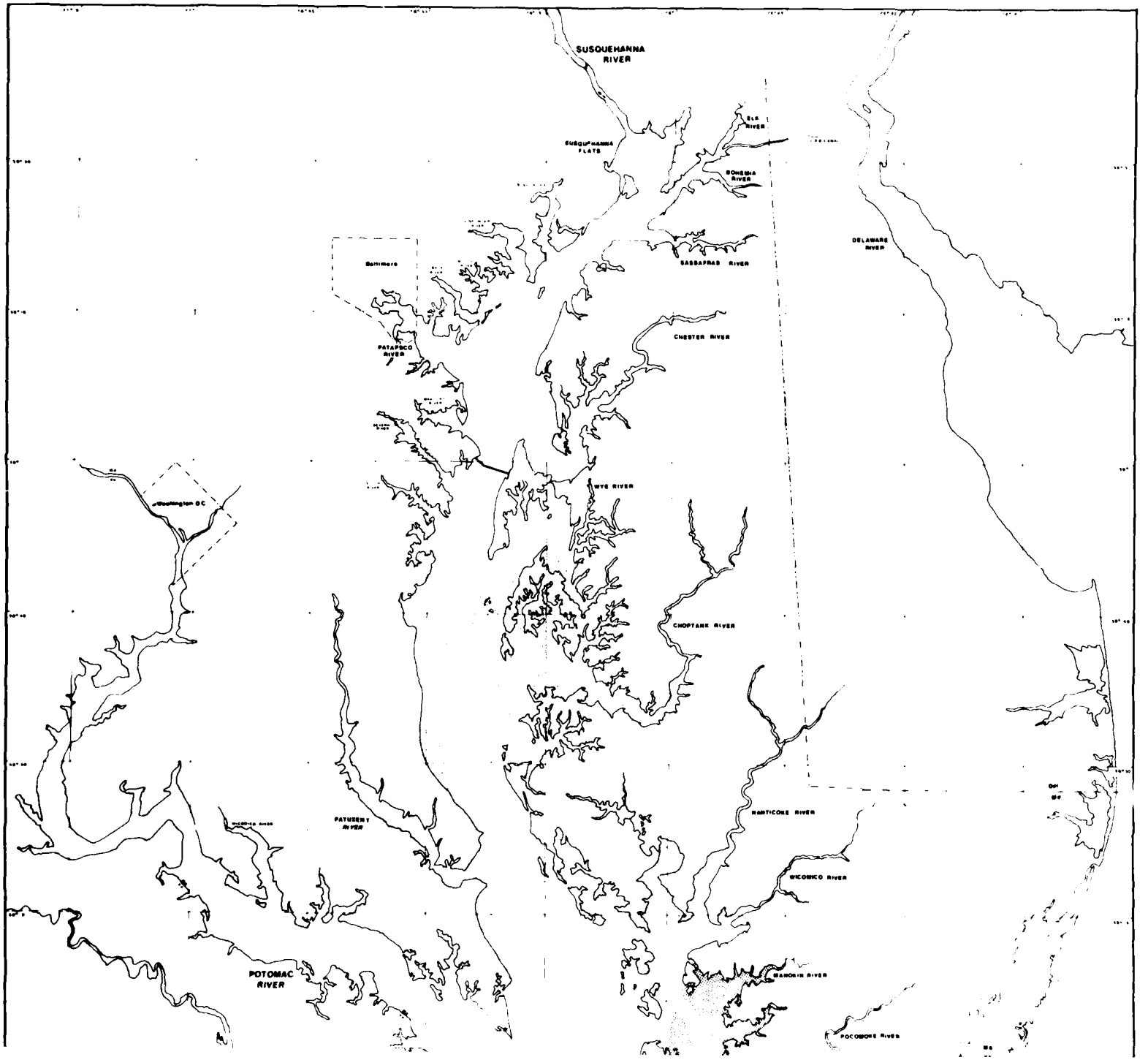

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
MAP 25 CHESAPEAKE BAY
Heteromastus filiformis - POLYCHAETE WORM
Potential Habitat
SUMMER DISTRIBUTION
BASE AVERAGE
LEGEND
Lower Densities
Higher Densities
COE Hydraulic Model Data

Plate 24


SUSQUEHANNA RIVER
ELK RIVER
SUSQUEHANNA FLATS
BOHEMIA RIVER
DELAWARE River
Baltimore
SASSAFRAS RIVER
CHESTER RIVER
PATAPSCO River
WYE RIVER
Washington DC
CHOPTANK RIVER
PATUXENT River
MANOKIN RIVER
WICOMICO River
POTOMAC RIVER
POCOMOKE River

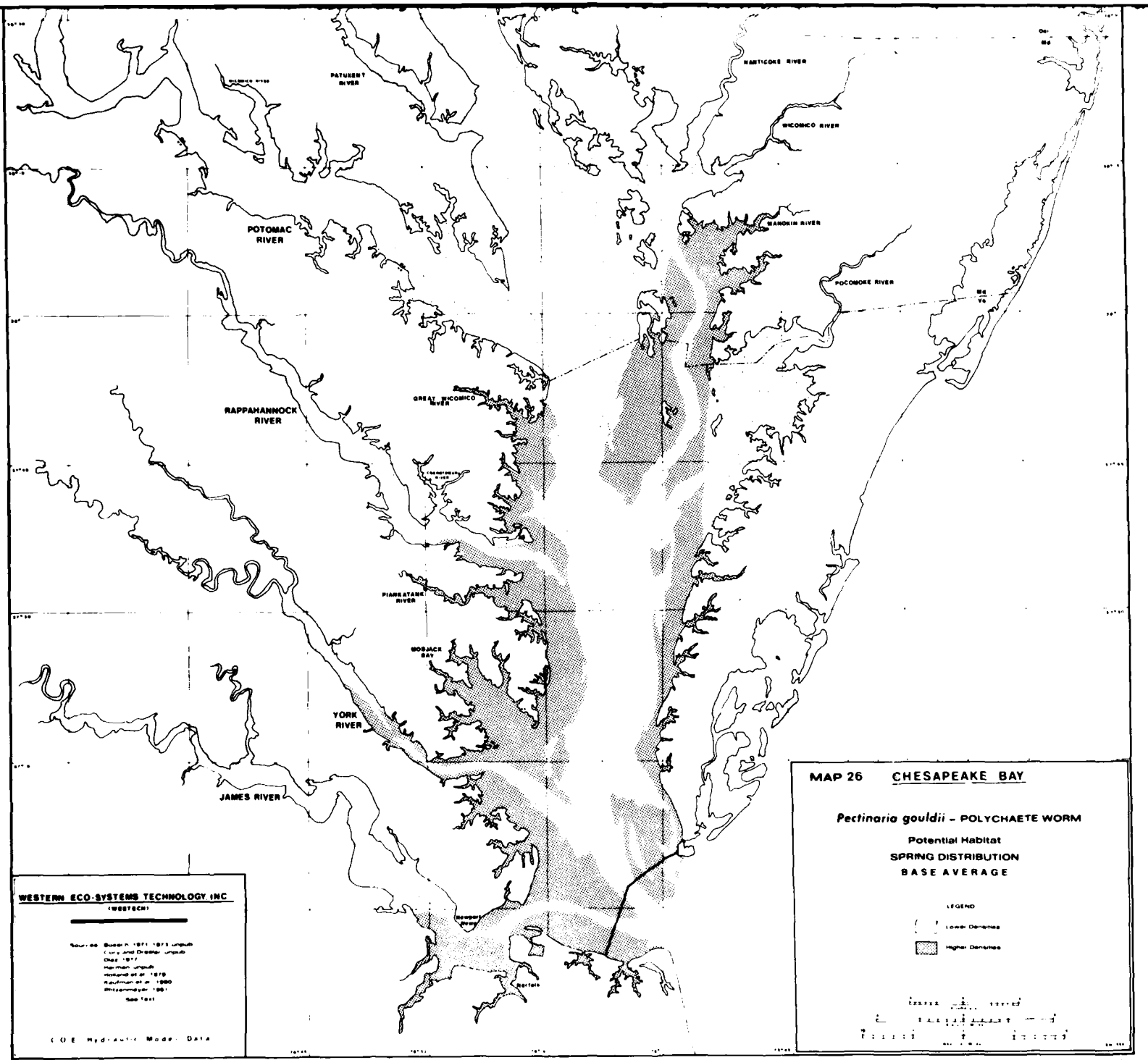
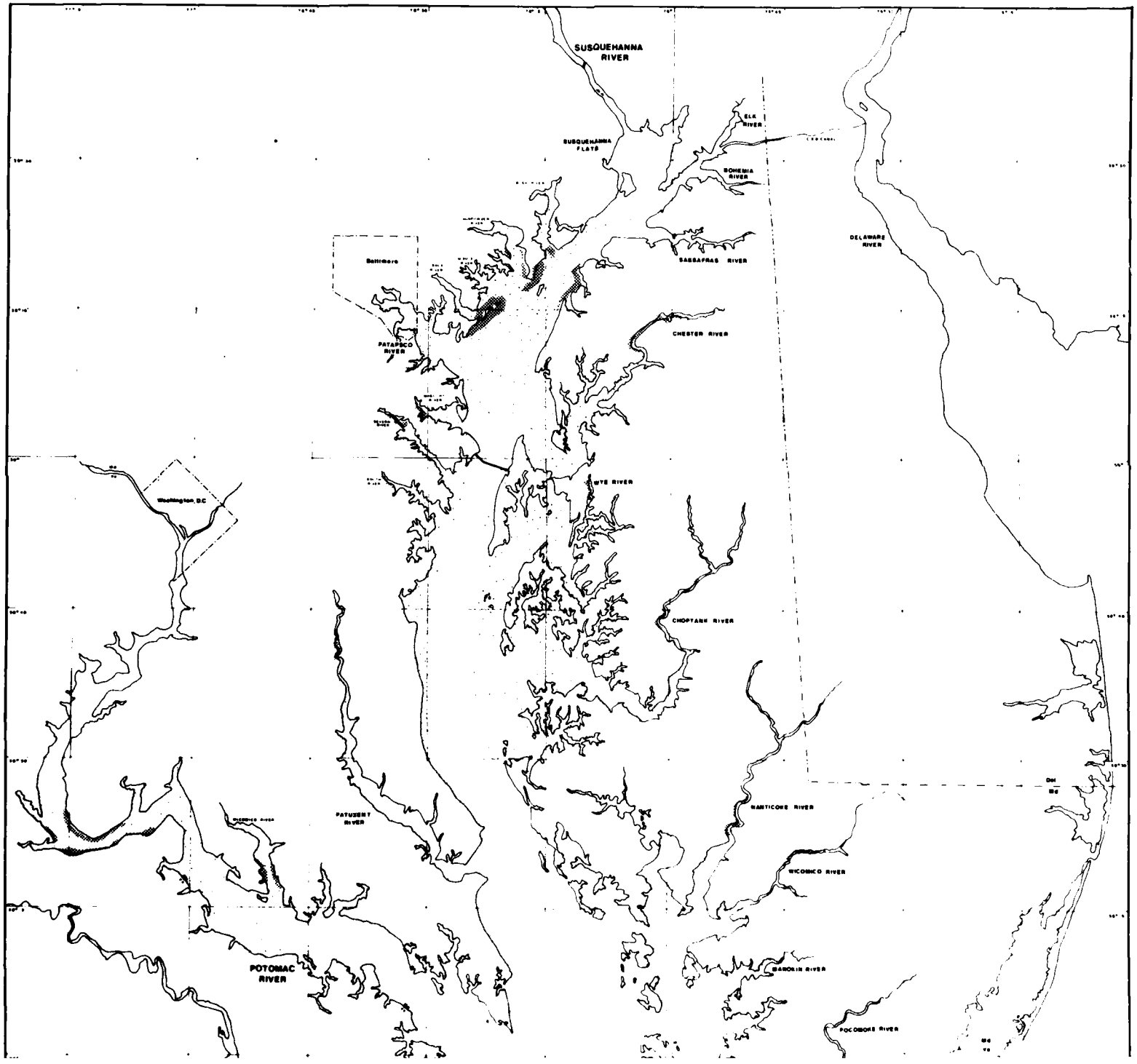

PATUXENT RIVER
NANTICOKE RIVER
WICOMICO RIVER
POTOMAC RIVER
MANOKIN RIVER
POCOMOKE RIVER
RAPPAHANNOCK RIVER
GREAT WICOMICO RIVER
PIANKATANK RIVER
MOBJACK BAY
YORK RIVER
JAMES RIVER
Norfolk
MAP 26 CHESAPEAKE BAY
Pectinaria gouldii - POLYCHAETE WORM
Potential Habitat
SPRING DISTRIBUTION
BASE AVERAGE
LEGEND
Lower Densities
Higher Densities
WESTERN ECO-SYSTEMS TECHNOLOGY, INC
(WESTECH)
COE Hydraulic Model Data

Plate 25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SUSQUEHANNA FLATS
ELK RIVER
BOHEMIA RIVER
SASSAFRAS RIVER
DELAWARE RIVER
Baltimore
PATAPSCO RIVER
CHESTER RIVER
Washington, DC
WYE RIVER
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PATUXENT RIVER
NANTICOKE RIVER
WICOMICO RIVER
POTOMAC RIVER
MANOKIN RIVER
POCOMOKE River

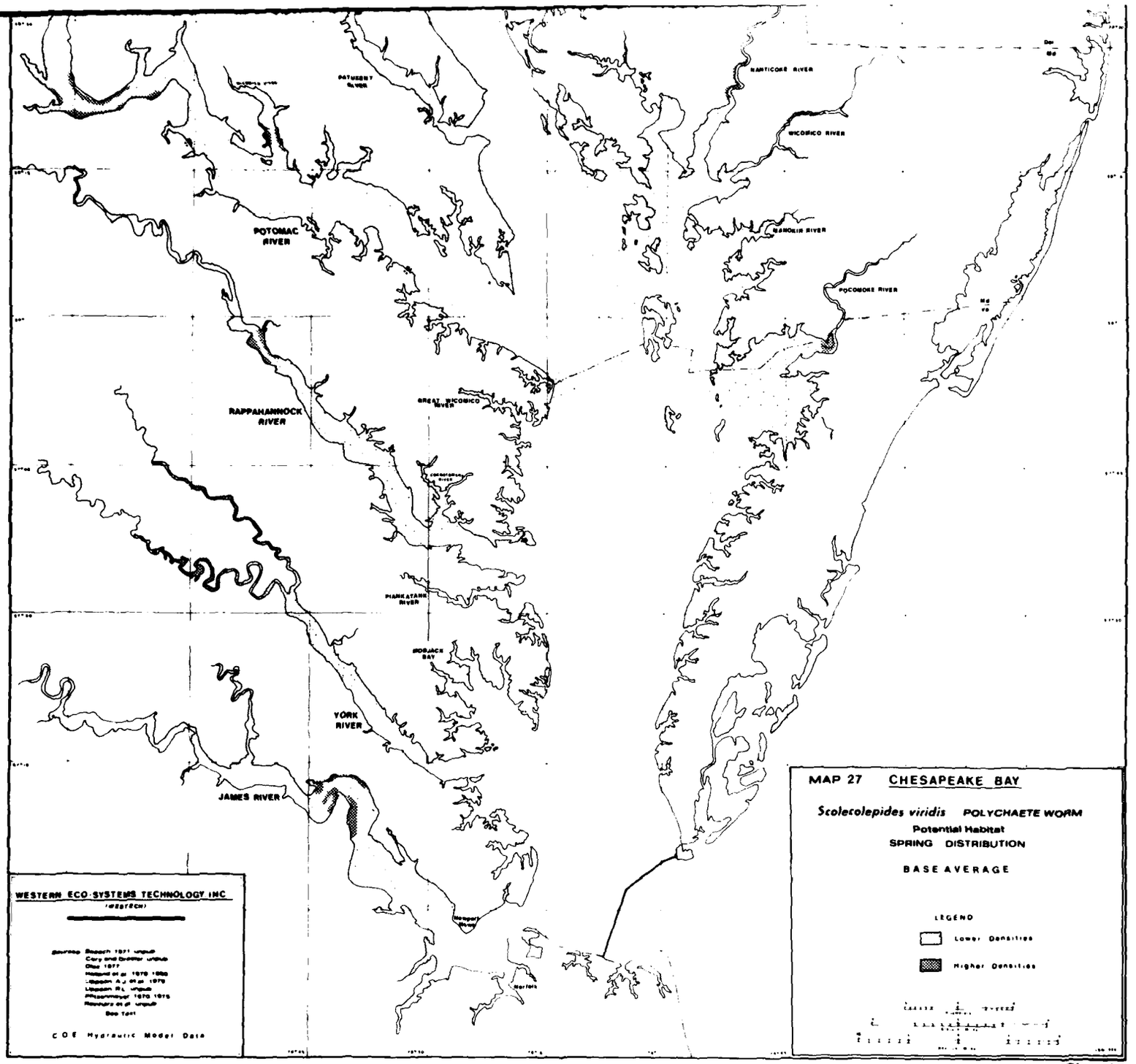
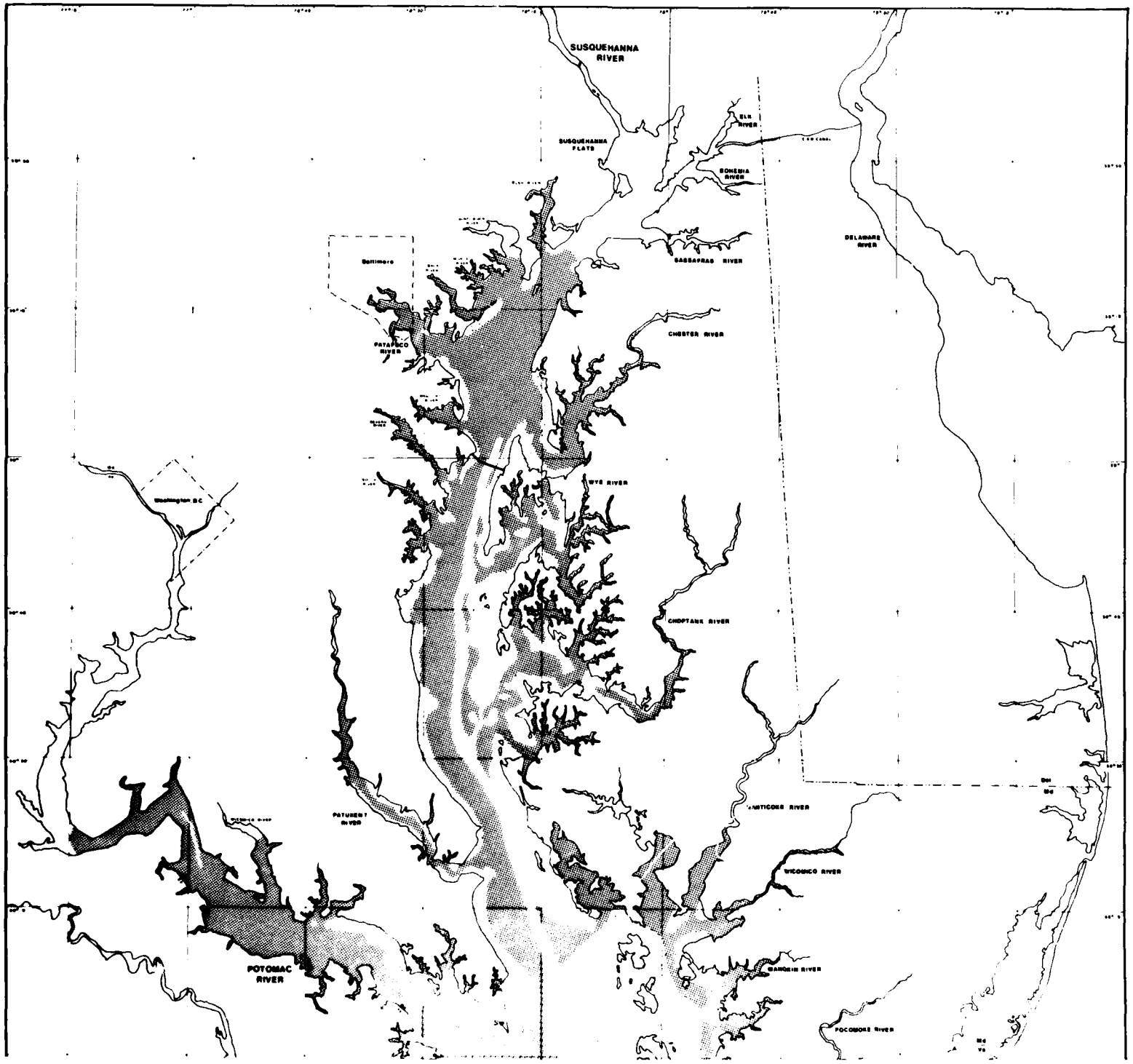

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
PIANKATANK RIVER
GREAT WICOMICO RIVER
MOBJACK BAY
PATUXENT RIVER
NANTICOKE RIVER
WICOMICO RIVER
MANOKIN RIVER
POCOMOKE RIVER
MAP 27 CHESAPEAKE BAY
Scolecolepides viridis POLYCHAETE WORM
Potential Habitat
SPRING DISTRIBUTION
BASE AVERAGE
LEGEND
Lower Densities
Higher Densities
WESTERN ECO-SYSTEMS TECHNOLOGY, INC.
(WESTECH)
COE Hydraulic Model Data

Plate 26


SUSQUEHANNA RIVER
SUSQUEHANNA FLATS
ELK RIVER
BOHEMIA RIVER
DELAWARE RIVER
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Baltimore
PATAPSCO RIVER
CHESTER RIVER
Washington D.C.
WYE RIVER
CHOPTANK RIVER
PATUXENT RIVER
WICOMICO RIVER
POTOMAC RIVER
POCOMOKE RIVER

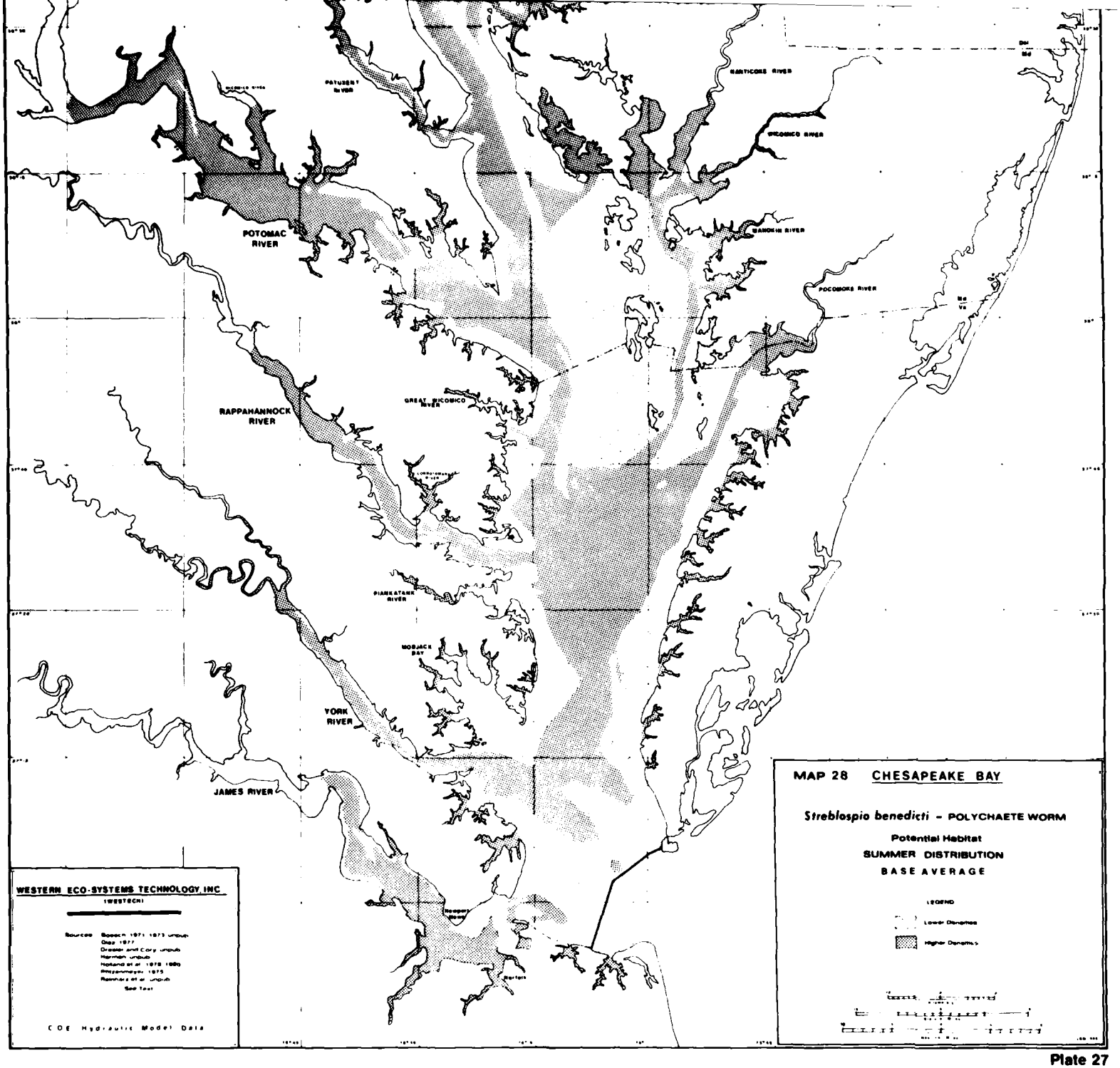
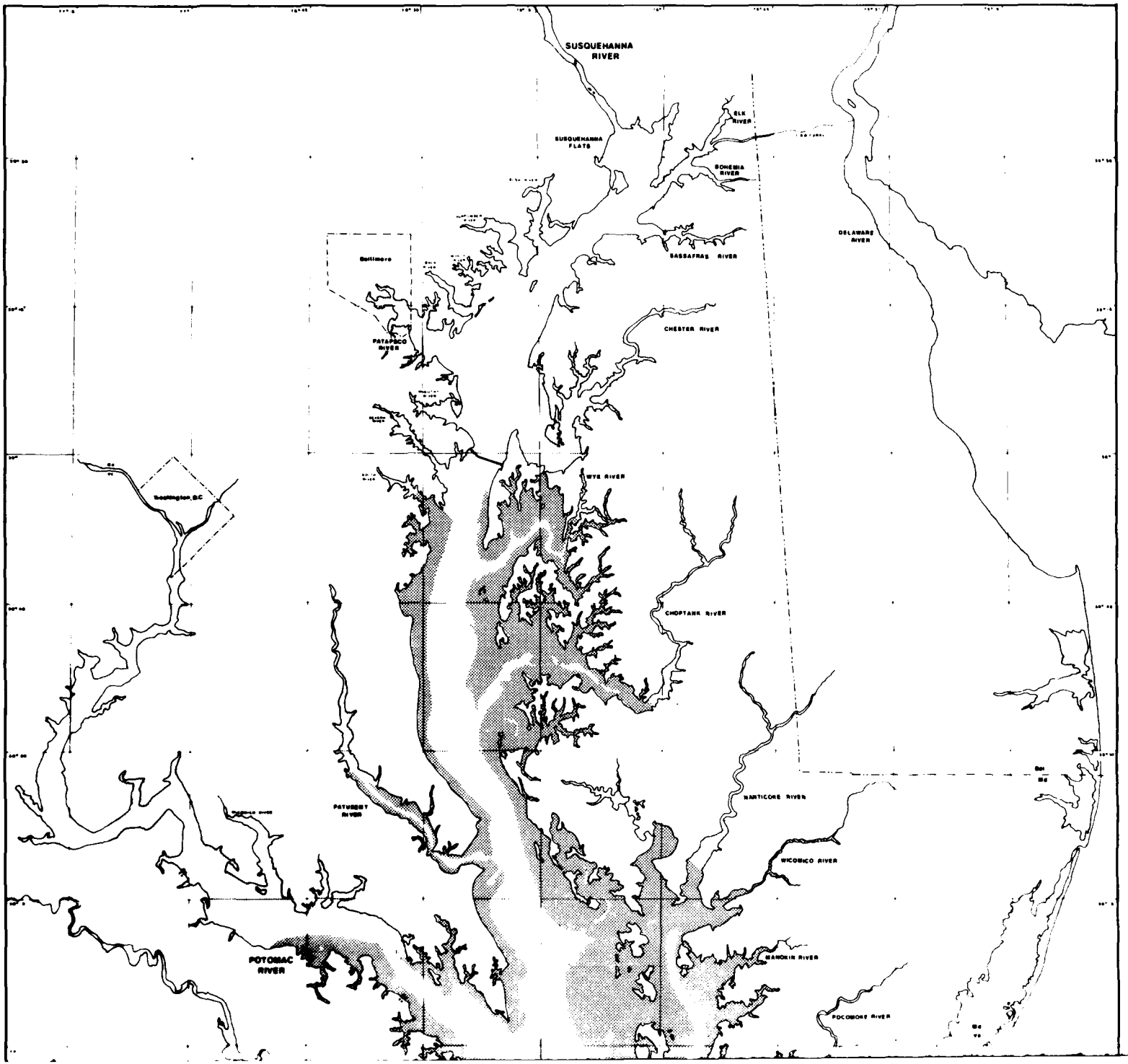

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
PIANKATANK RIVER
MOBJACK BAY
GREAT WICOMICO RIVER
PATUXENT RIVER
WICOMICO RIVER
MANOKIN RIVER
POCOMOKE RIVER
MAP 28 CHESAPEAKE BAY
Streblospio benedicti - POLYCHAETE WORM
Potential Habitat
SUMMER DISTRIBUTION
BASE AVERAGE
LEGEND
Lower Densities
Higher Densities
WESTERN ECO-SYSTEMS TECHNOLOGY, INC
(WESTECH)
Sources: Boesch 1971, 1973 unpub.
Diaz 1977
Dresler and Cory unpub.
Hermann unpub.
Holland et al. 1978, 1980
Phippenmeyer 1975
Reinhard et al. unpub.
See Text
COE Hydraulic Model Data

Plate 27


SUSQUEHANNA RIVER
ELK RIVER
SUSQUEHANNA FLATS
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
Baltimore
CHESTER RIVER
PATAPSCO RIVER
WYE RIVER
Washington, D.C.
CHOPTANK RIVER
PATUXENT RIVER
NANTICOKE RIVER
WICOMICO RIVER
POTOMAC RIVER
MANOKIN RIVER
POCOMOKE RIVER

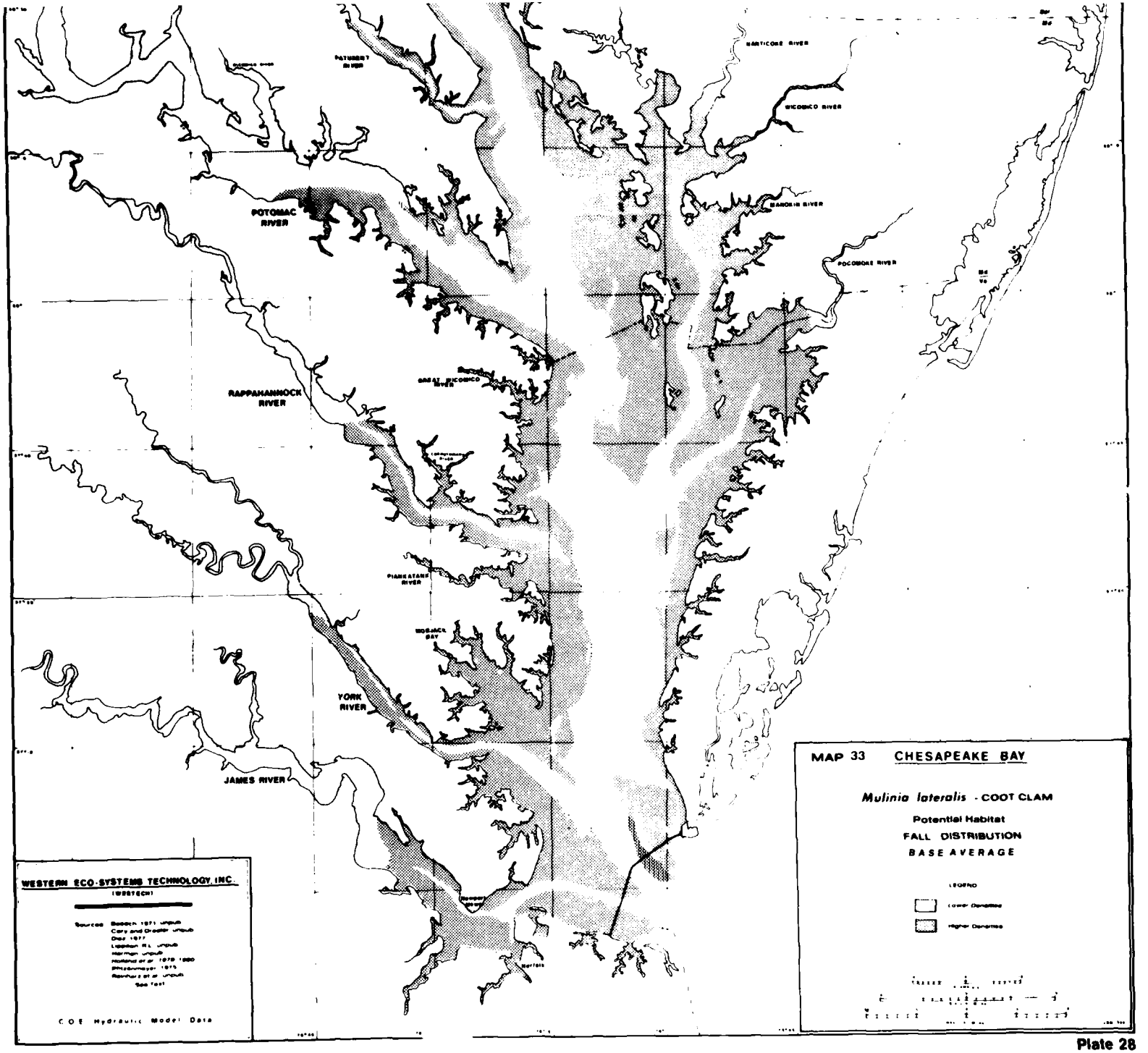
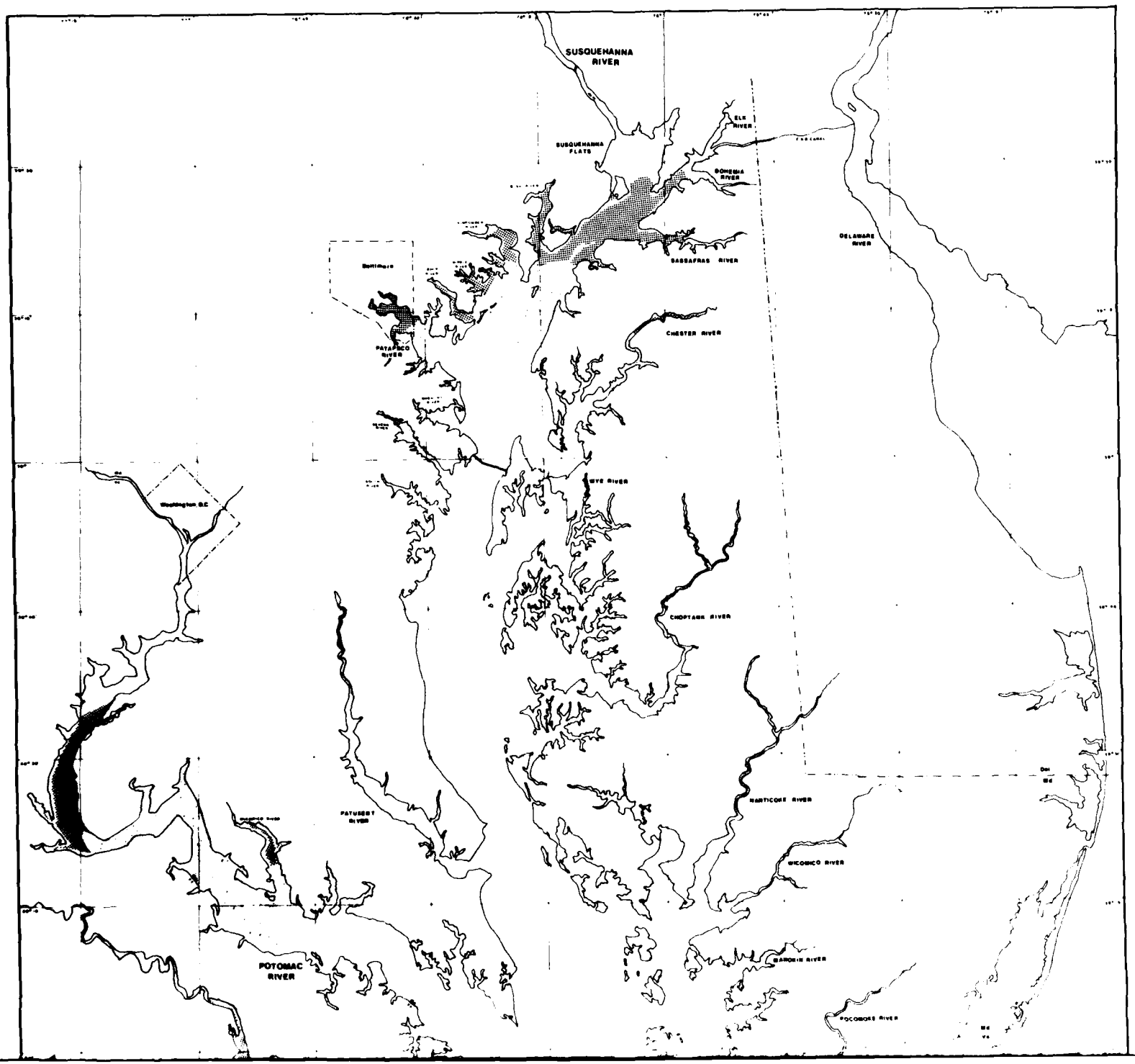

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
MAP 33 CHESAPEAKE BAY
Mulinia lateralis - COOT CLAM
Potential Habitat
FALL DISTRIBUTION
BASE AVERAGE
WESTERN ECO-SYSTEMS TECHNOLOGY, INC.
COE Hydraulic Model Data

Plate 28


SUSQUEHANNA RIVER
SUSQUEHANNA FLATS
ELK RIVER
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
CHESTER RIVER
PATAPSCO RIVER
Washington D.C.
WYE RIVER
CHOPTANK RIVER
PATUXENT RIVER
NANTICOKE RIVER
WICOMICO RIVER
POTOMAC RIVER
MANOKIN RIVER
POCOMOKE RIVER

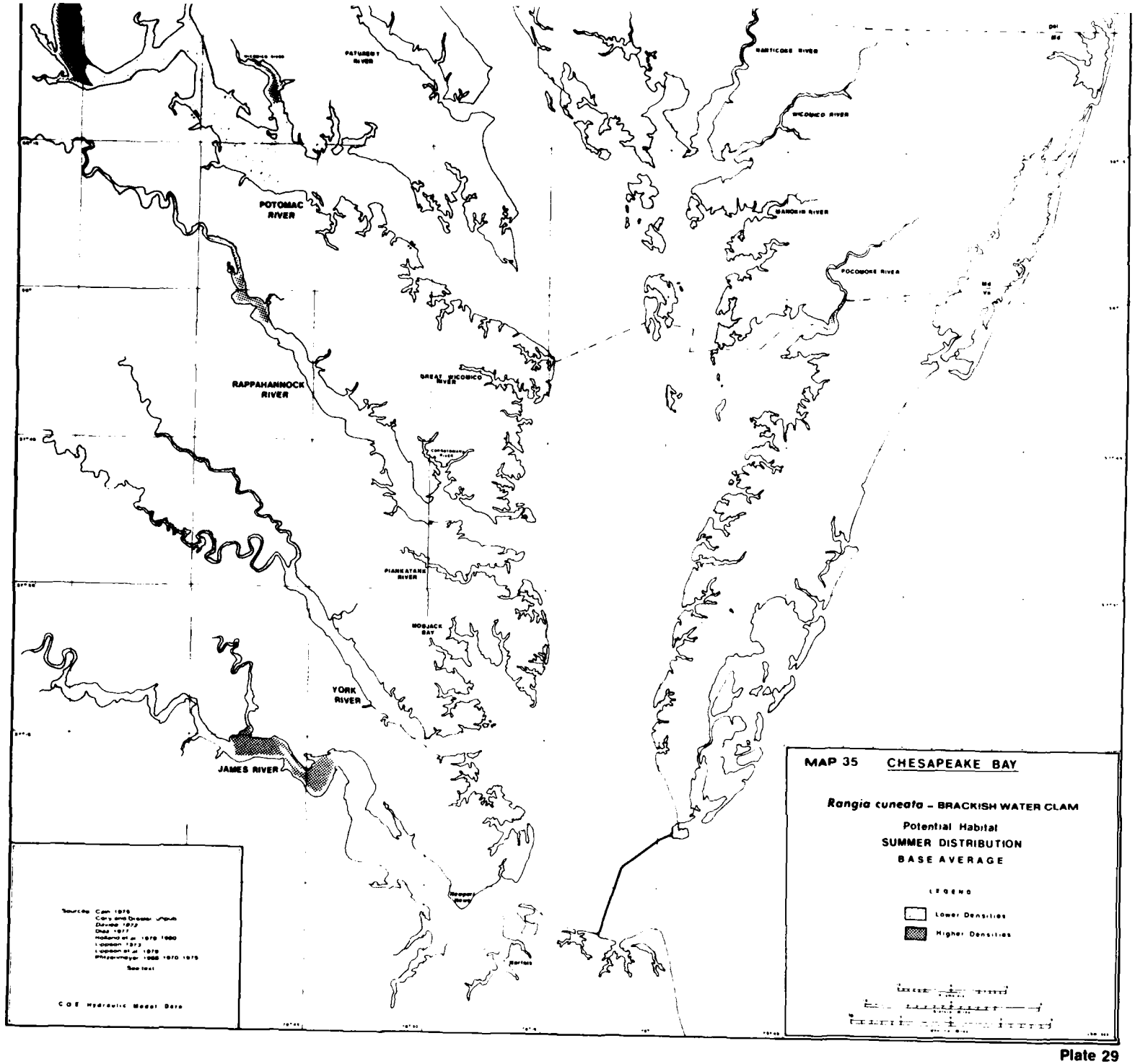
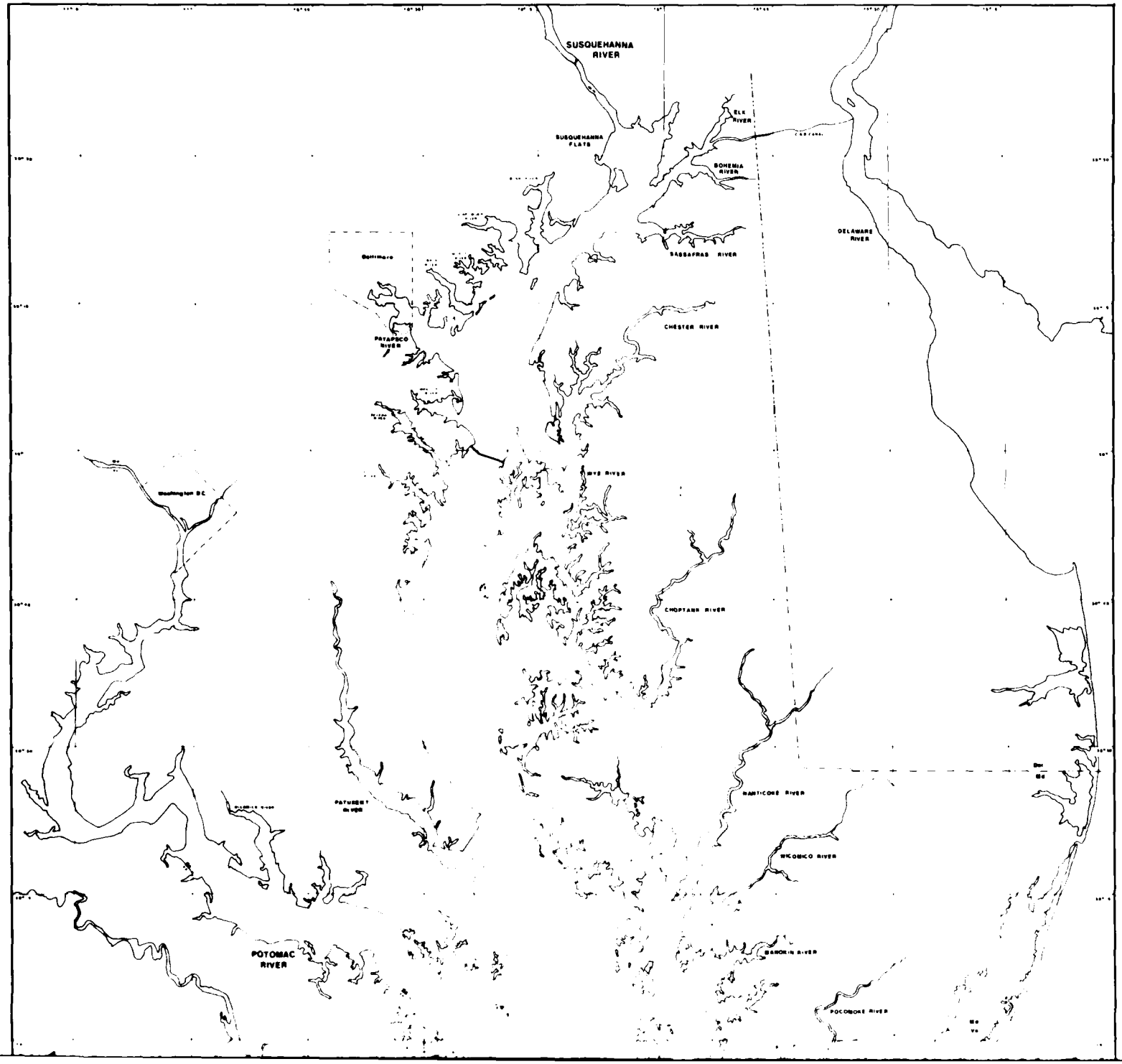

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
PIANKATANK RIVER
MOBJACK BAY
GREAT WICOMICO RIVER
POCOMOKE RIVER
MAP 35 CHESAPEAKE BAY
Rangia cuneata - BRACKISH WATER CLAM
Potential Habitat
SUMMER DISTRIBUTION
BASE AVERAGE
LEGEND
Lower Densities
Higher Densities
COE Hydraulic Model Data

Plate 29


SUSQUEHANNA RIVER
ELK RIVER
SUSQUEHANNA FLATS
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
CHESTER RIVER
PATAPSCO RIVER
MYE RIVER
CHOPTANK RIVER
PATUXENT RIVER
WICOMICO RIVER
POTOMAC RIVER
POCOMOKE RIVER

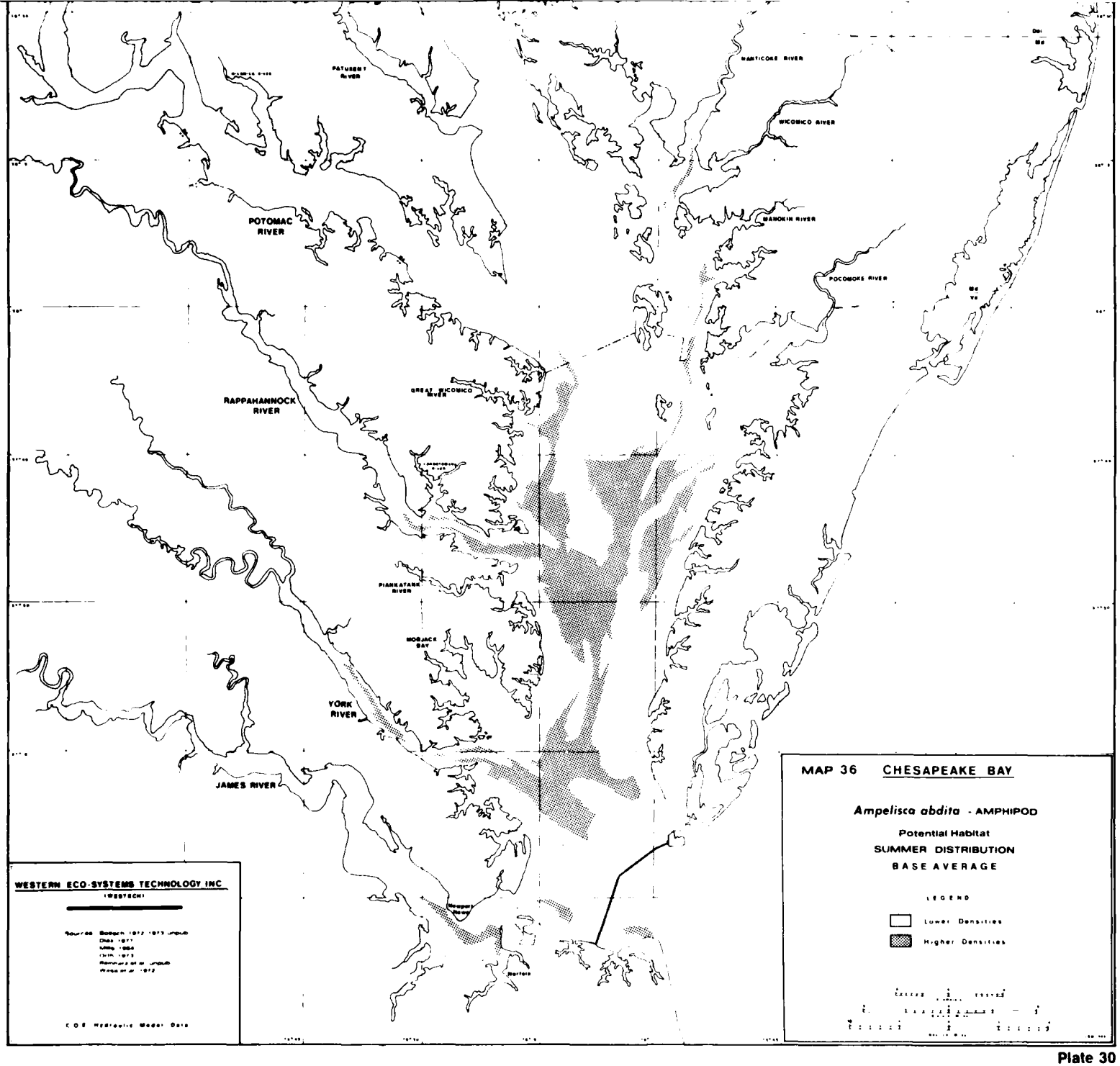
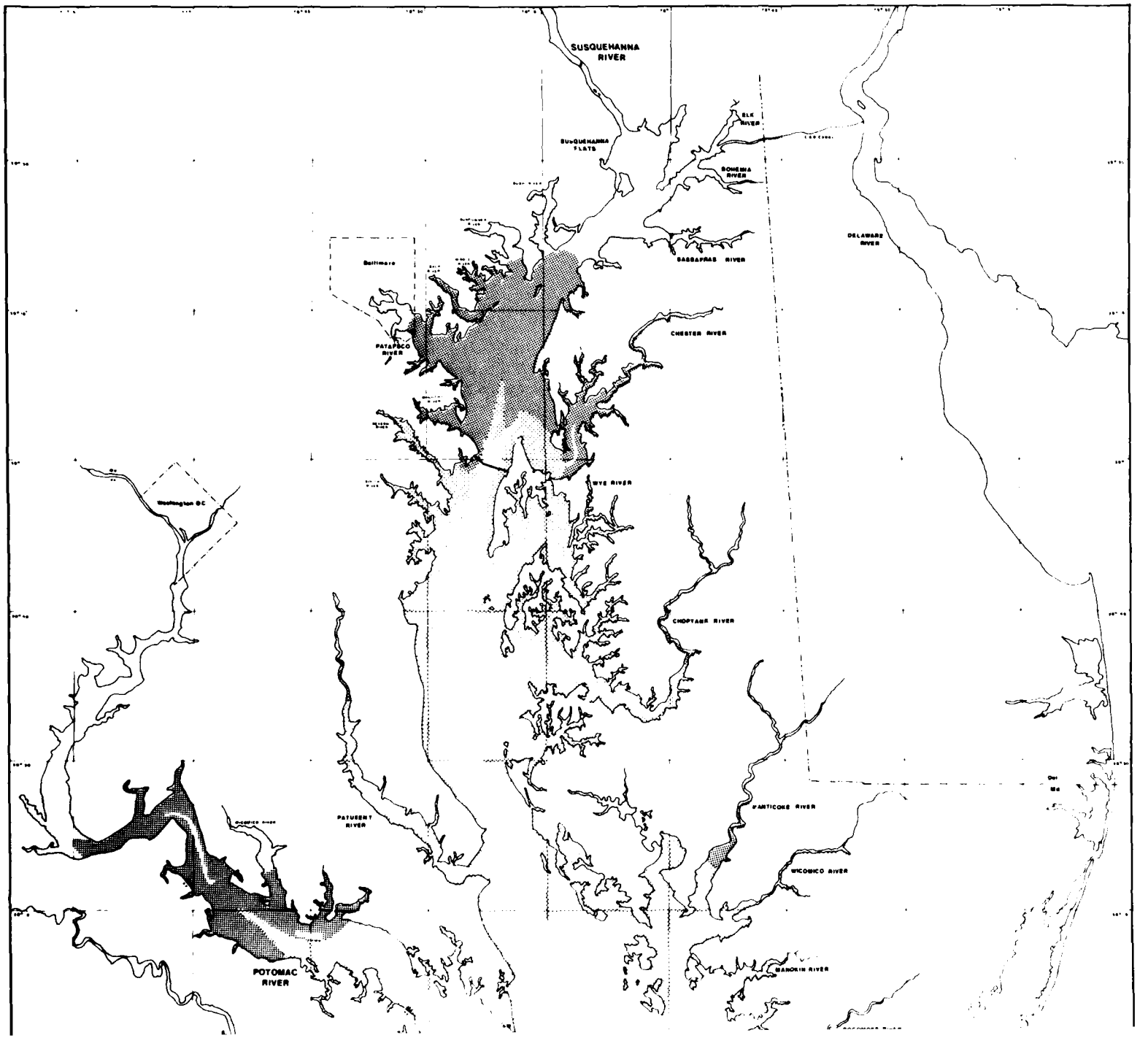

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
MARTICORE RIVER
WICOMICO RIVER
MANOKIN RIVER
POCOMOKE RIVER
GREAT WICOMICO RIVER
PIANKATANK RIVER
MOBJACK BAY
MAP 36 CHESAPEAKE BAY
Ampelisca abdita - AMPHIPOD
Potential Habitat
SUMMER DISTRIBUTION
BASE AVERAGE
LEGEND
Lower Densities
Higher Densities
WESTERN ECO-SYSTEMS TECHNOLOGY INC
COE Hydraulic Model Data

Plate 30


SUSQUEHANNA RIVER
ELK RIVER
SUSQUEHANNA FLATS
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
Baltimore
PATAPSCO RIVER
CHESTER RIVER
MYE RIVER
Washington DC
CHOPTANK RIVER
PATUXENT RIVER
WICOMICO RIVER
MANOKIN RIVER
POTOMAC RIVER

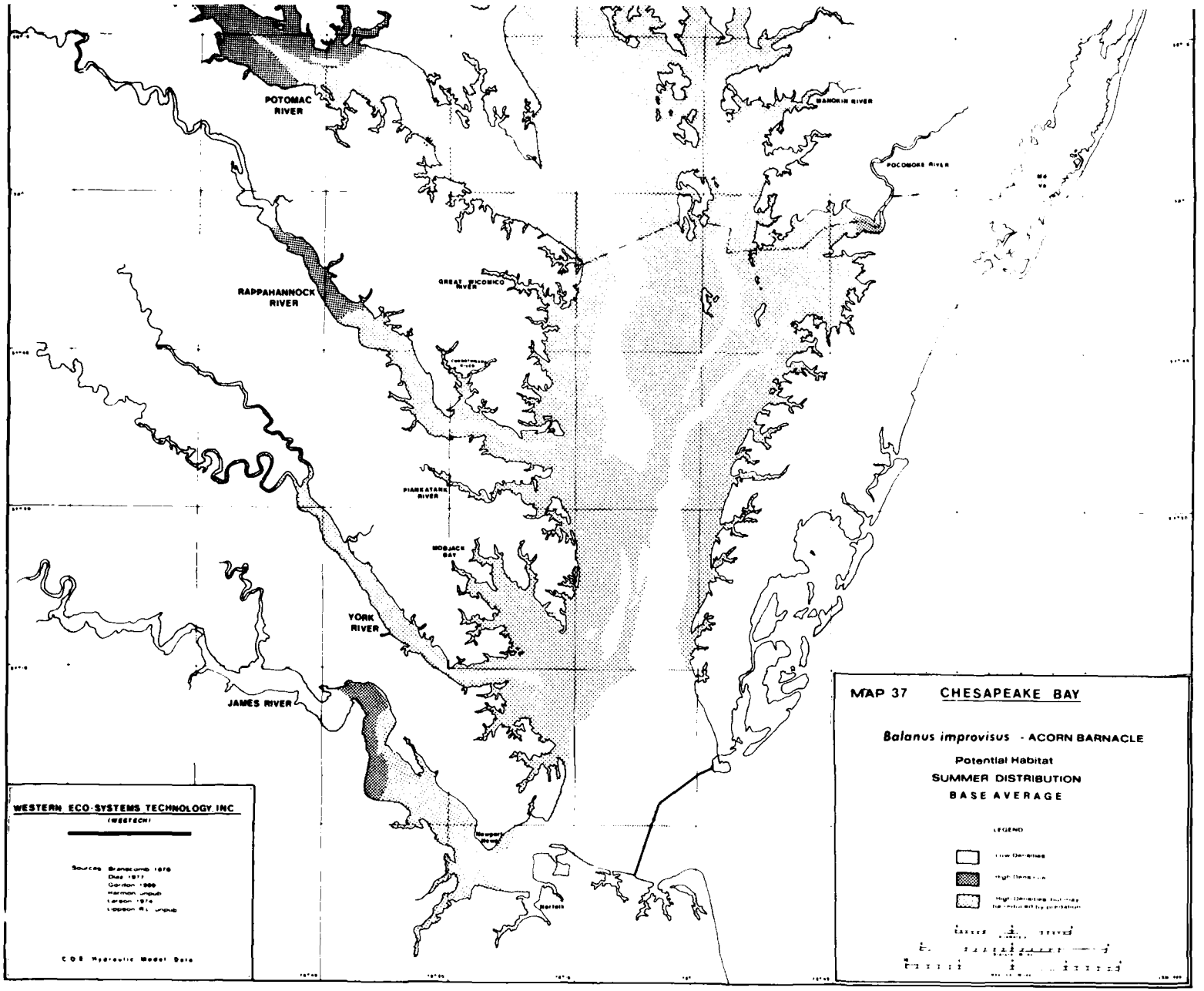
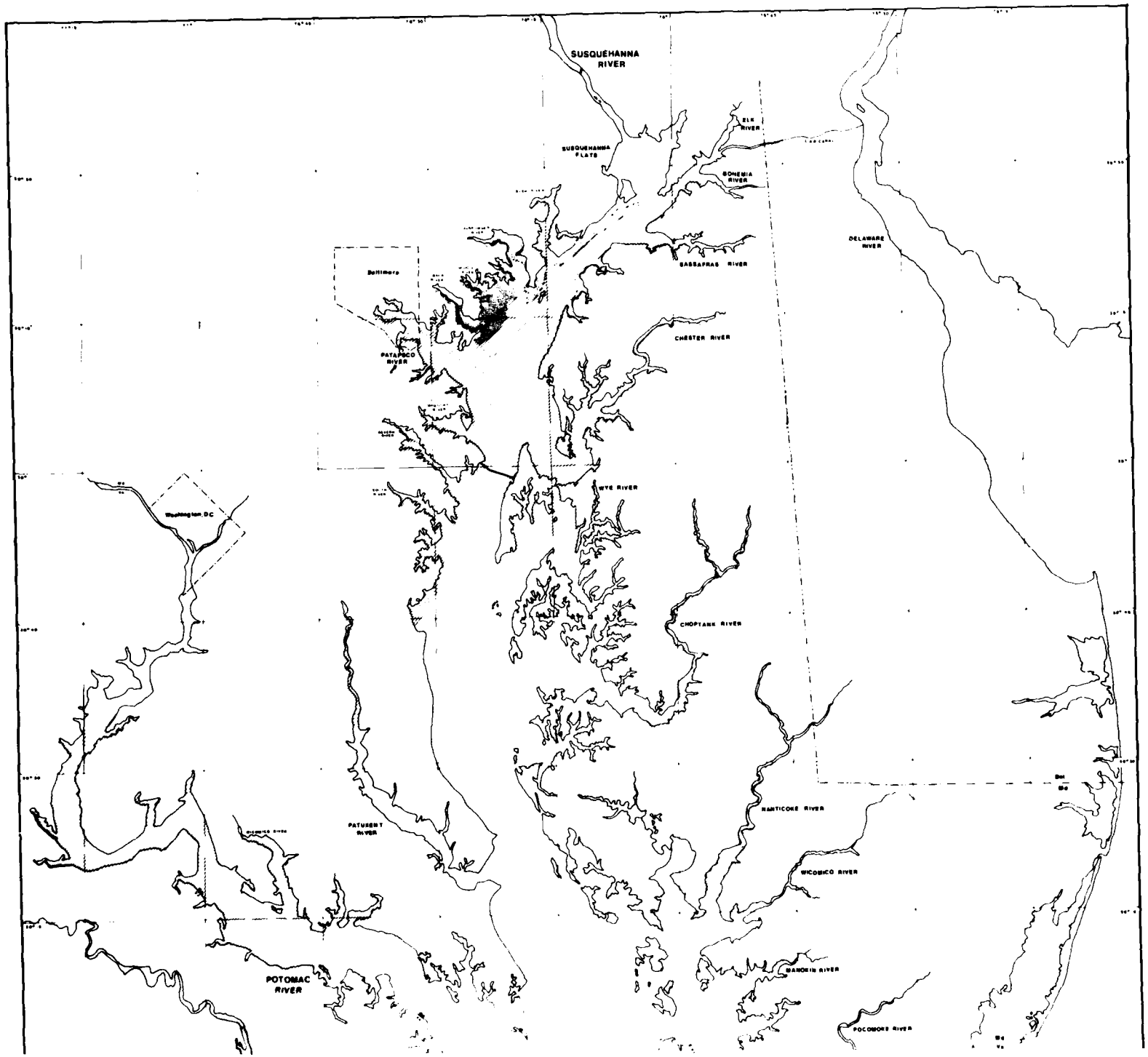

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
MAP 37 CHESAPEAKE BAY
Balanus improvisus - ACORN BARNACLE
Potential Habitat
SUMMER DISTRIBUTION
BASE AVERAGE
LEGEND
WESTERN ECO-SYSTEMS TECHNOLOGY INC
(WESTECH)
COE Hydraulic Model Data

Plate 31


SUSQUEHANNA RIVER
SUSQUEHANNA FLATS
ELK RIVER
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
Baltimore
CHESTER RIVER
PATAPSCO RIVER
WYE RIVER
Washington, D.C.
CHOPTANK RIVER
PATUXENT RIVER
RANTICOKE RIVER
WICOMICO RIVER
POTOMAC RIVER
MANOKIN RIVER
POCOMOKE RIVER

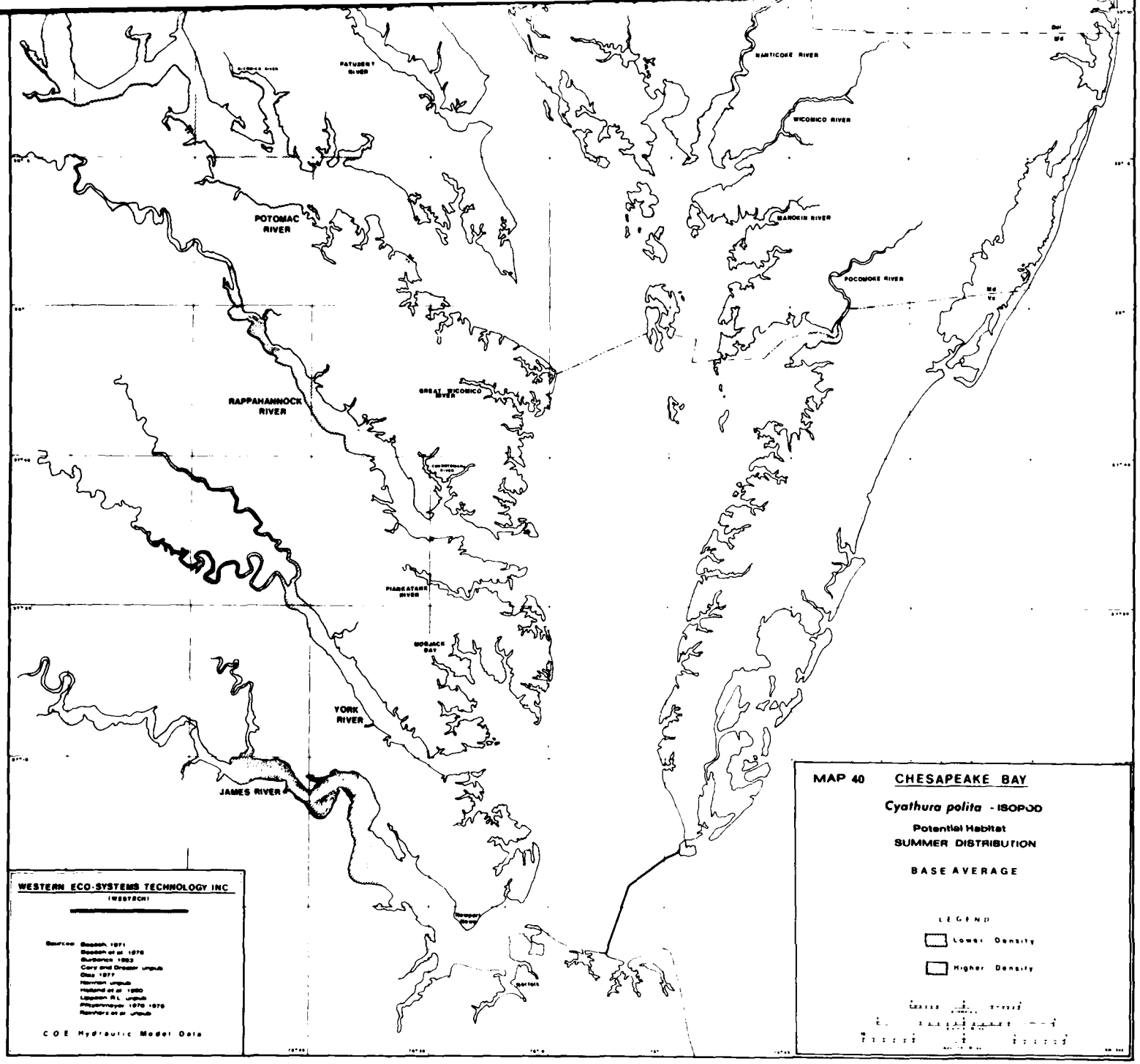
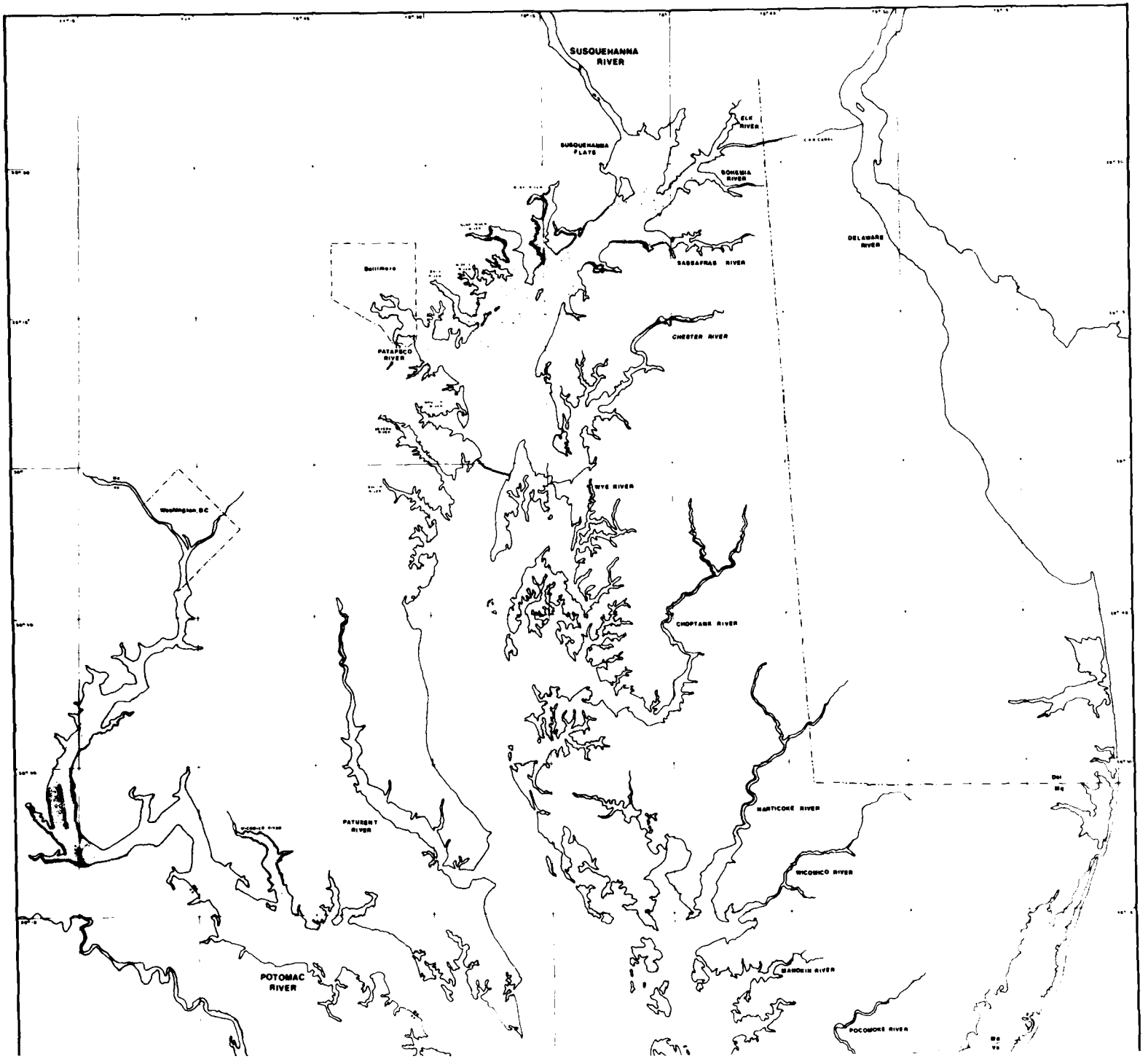

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
PIANKATANK RIVER
MOBJACK BAY
GREAT WICOMICO RIVER
PATUXENT RIVER
NANTICOKE RIVER
WICOMICO RIVER
MANOKIN RIVER
POCOMOKE RIVER
MAP 40 CHESAPEAKE BAY
Cyathura polita - ISOPOD
Potential Habitat
SUMMER DISTRIBUTION
BASE AVERAGE
LEGEND
Lower Density
Higher Density
WESTERN ECO-SYSTEMS TECHNOLOGY INC
(WESTECH)
COE Hydraulic Model Data

Plate 32


SUSQUEHANNA RIVER
SUSQUEHANNA FLATS
ELK RIVER
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
Baltimore
CHESTER RIVER
PATAPSCO RIVER
WYE RIVER
Washington, D.C.
CHOPTANK RIVER
PATUXENT RIVER
NANTICOKE RIVER
WICOMICO RIVER
POTOMAC RIVER
MANOKIN RIVER
POCOMOKE RIVER

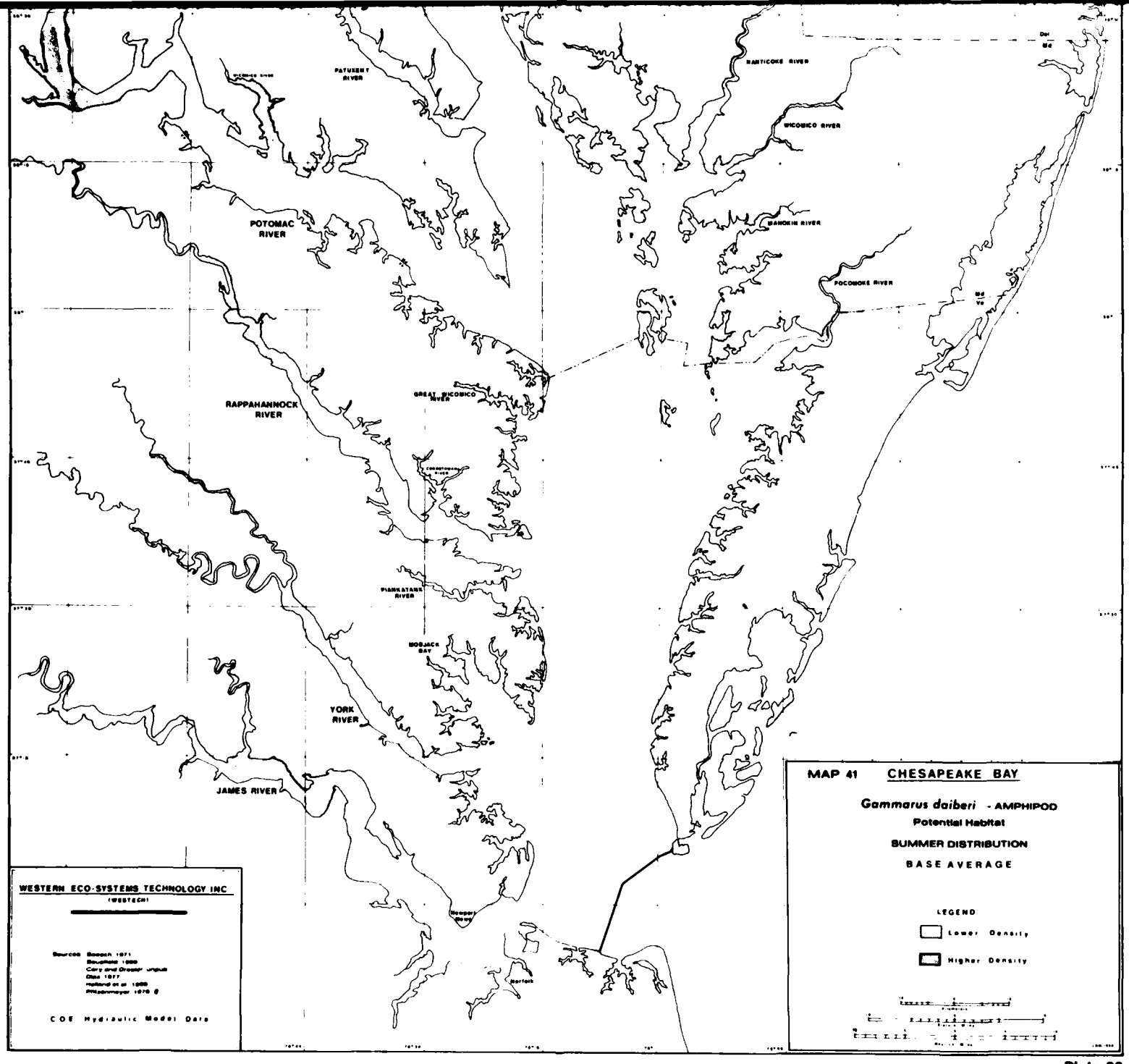
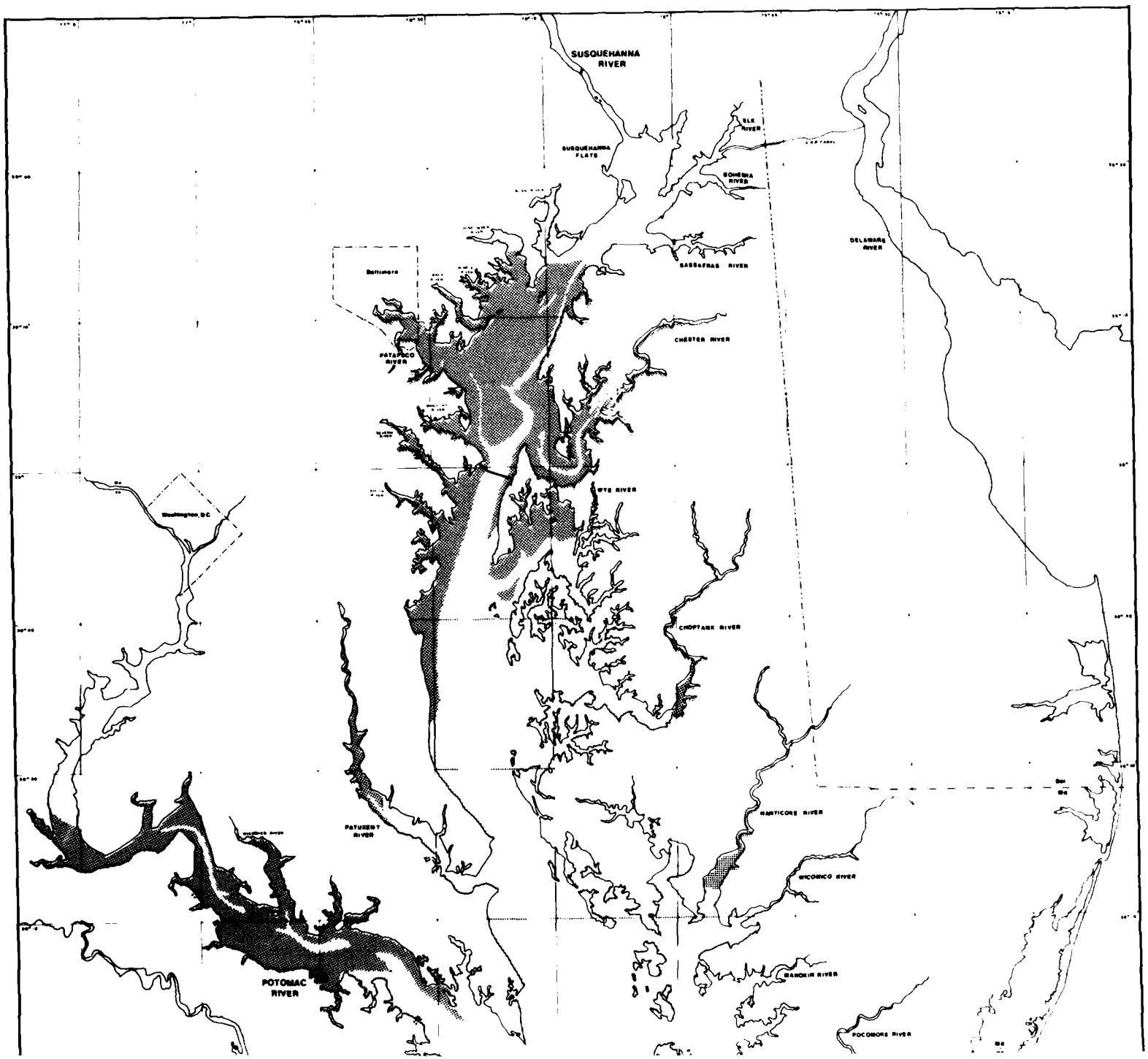

PATUXENT RIVER
WICOMICO RIVER
POTOMAC RIVER
RAPPAHANNOCK RIVER
GREAT WICOMICO RIVER
YORK RIVER
JAMES RIVER
MAP 41 CHESAPEAKE BAY
Gammarus daiberi - AMPHIPOD
Potential Habitat
SUMMER DISTRIBUTION
BASE AVERAGE
LEGEND
Lower Density
Higher Density
WESTERN ECO-SYSTEMS TECHNOLOGY INC
(WESTECH)
COE Hydraulic Model Data

Plate 33


SUSQUEHANNA RIVER
SUSQUEHANNA FLATS
ELK RIVER
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
Baltimore
PATAPSCO RIVER
CHESTER RIVER
MYE RIVER
Washington, DC
CHOPTANK RIVER
PATUXENT RIVER
MANTICOKE RIVER
WICOMICO RIVER
POTOMAC RIVER
MANOKIN RIVER
POCOMOKE RIVER

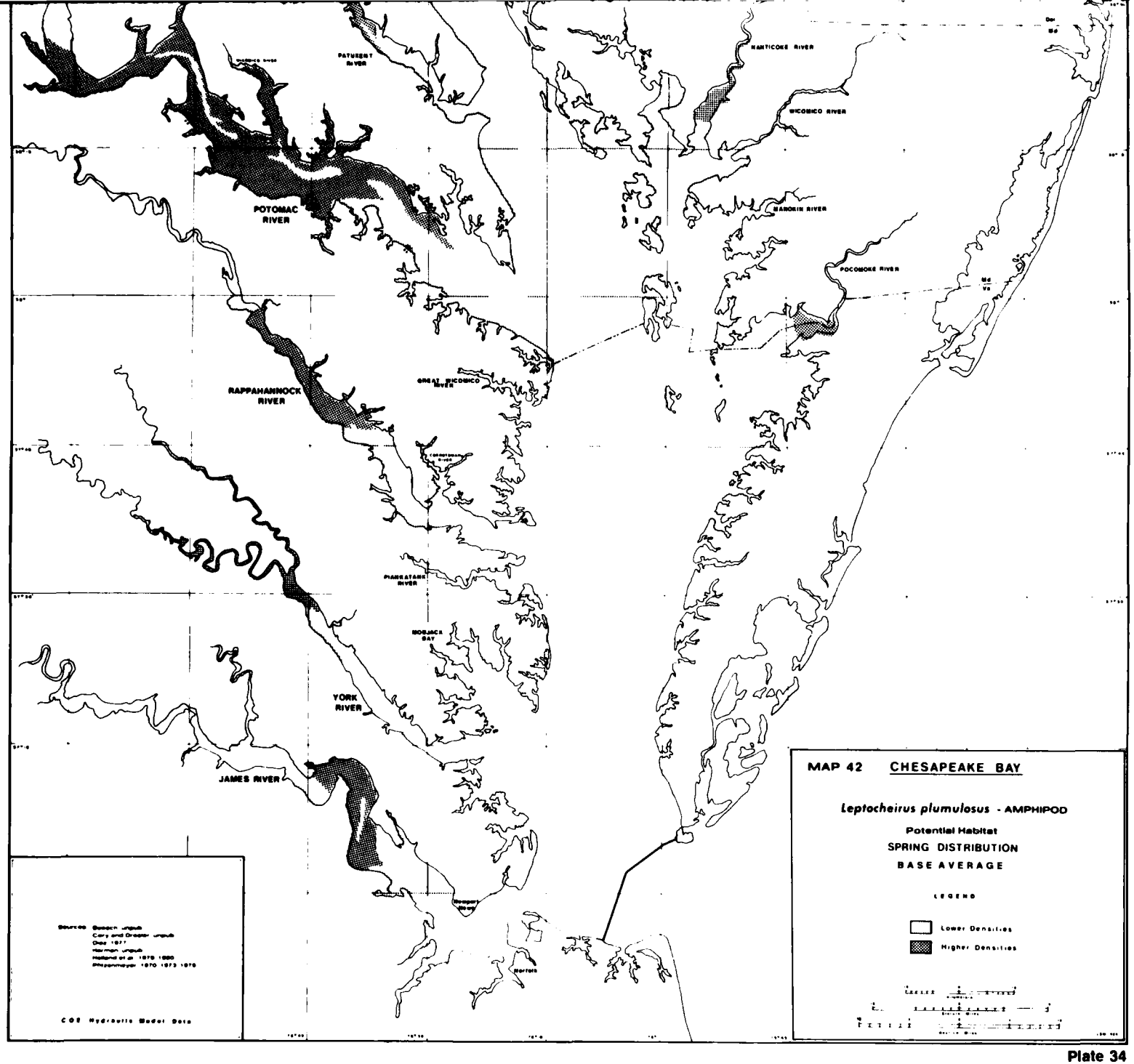
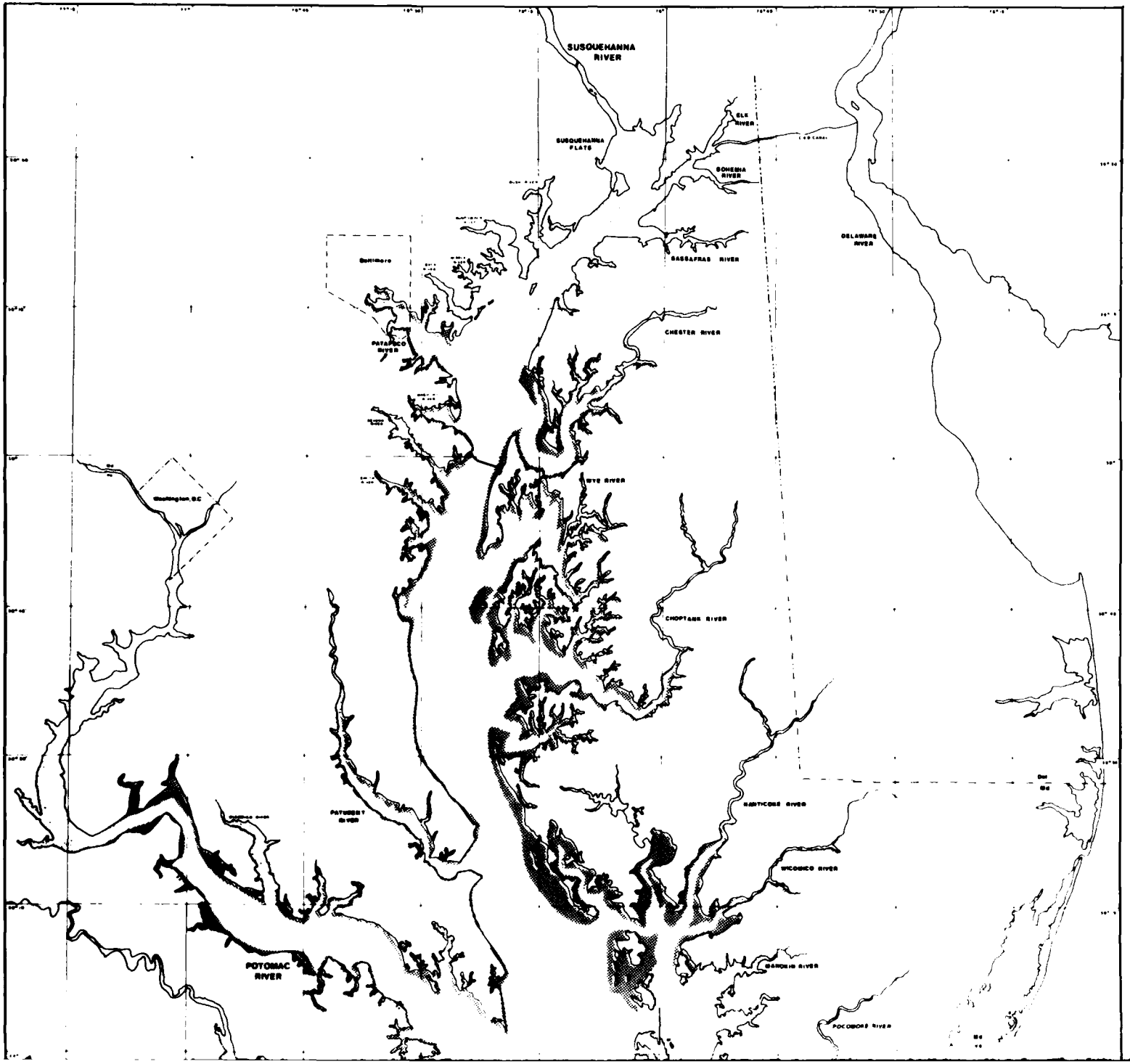

PATUXENT RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
POCOMOKE RIVER
POTOMAC RIVER
MAP 42 CHESAPEAKE BAY
Leptocheirus plumulosus - AMPHIPOD
Potential Habitat
SPRING DISTRIBUTION
BASE AVERAGE
LEGEND
Lower Densities
Higher Densities
COE Hydraulic Model Data

Plate 34


SUSQUEHANNA RIVER
ELK RIVER
SUSQUEHANNA FLATS
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
CHESTER RIVER
PATAPSCO RIVER
Washington, DC
MYE RIVER
CHOPTANK RIVER
PATUXENT RIVER
RANTICOKE RIVER
WICOMICO RIVER
POTOMAC RIVER
MANOKIN RIVER
POCOMOKE RIVER

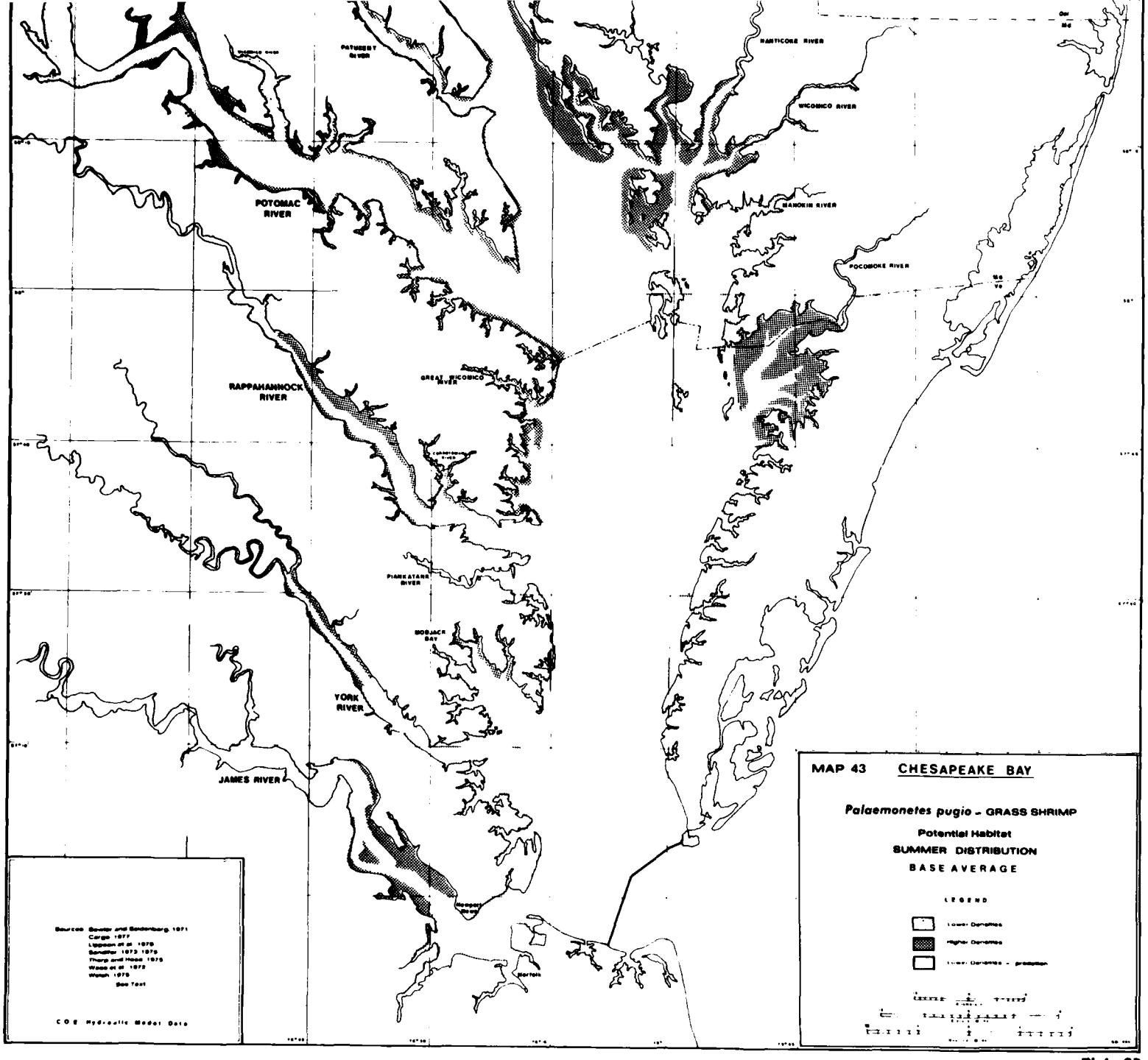
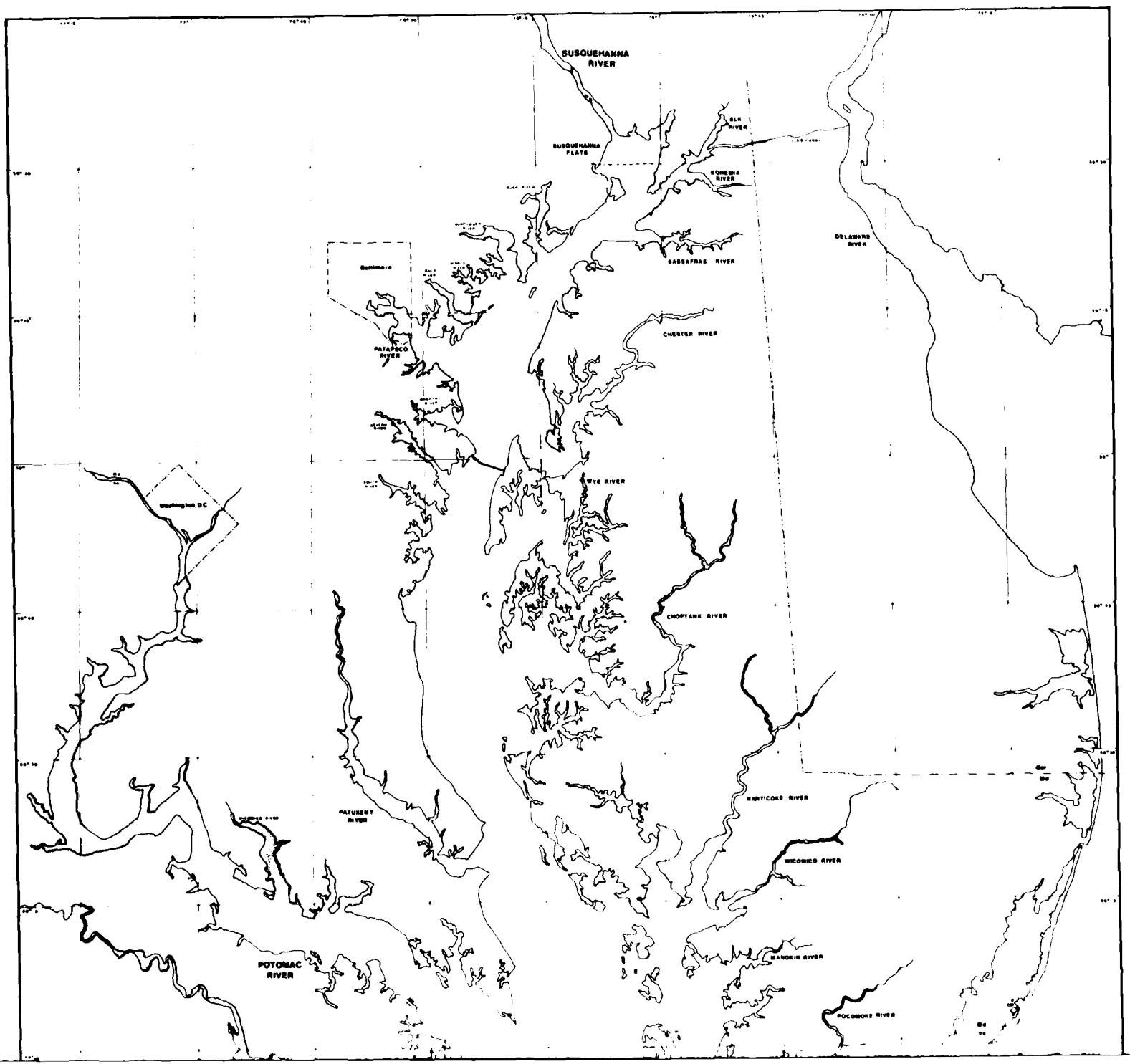

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
RAPPAHANNOCK RIVER
WICOMICO RIVER
MANOKIN RIVER
POCOMOKE RIVER
GREAT WICOMICO RIVER
PIANKATANK RIVER
MOBJACK BAY
MAP 43 CHESAPEAKE BAY
Palaemonetes pugio - GRASS SHRIMP
Potential Habitat
SUMMER DISTRIBUTION
BASE AVERAGE
LEGEND
COE Hydraulic Model Data

Plate 35


SUSQUEHANNA RIVER
ELK RIVER
SUSQUEHANNA FLATS
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
Baltimore
CHESTER RIVER
PATAPSCO RIVER
WYE RIVER
Washington, D.C.
CHOPTANK RIVER
RAPPAHANNOCK RIVER
PATUXENT RIVER
WICOMICO RIVER
POTOMAC RIVER
MANOKIN RIVER
POCOMOKE RIVER

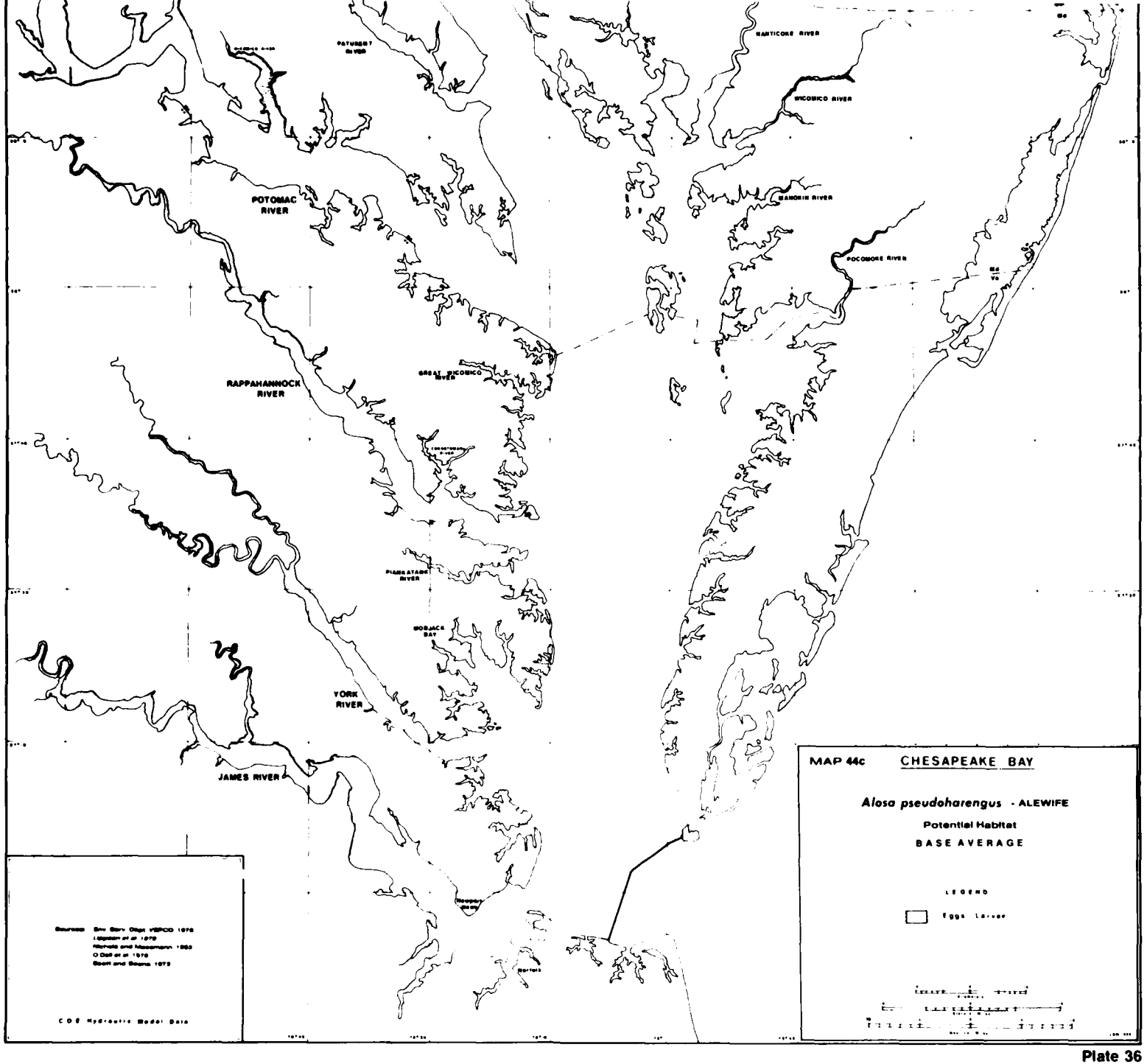
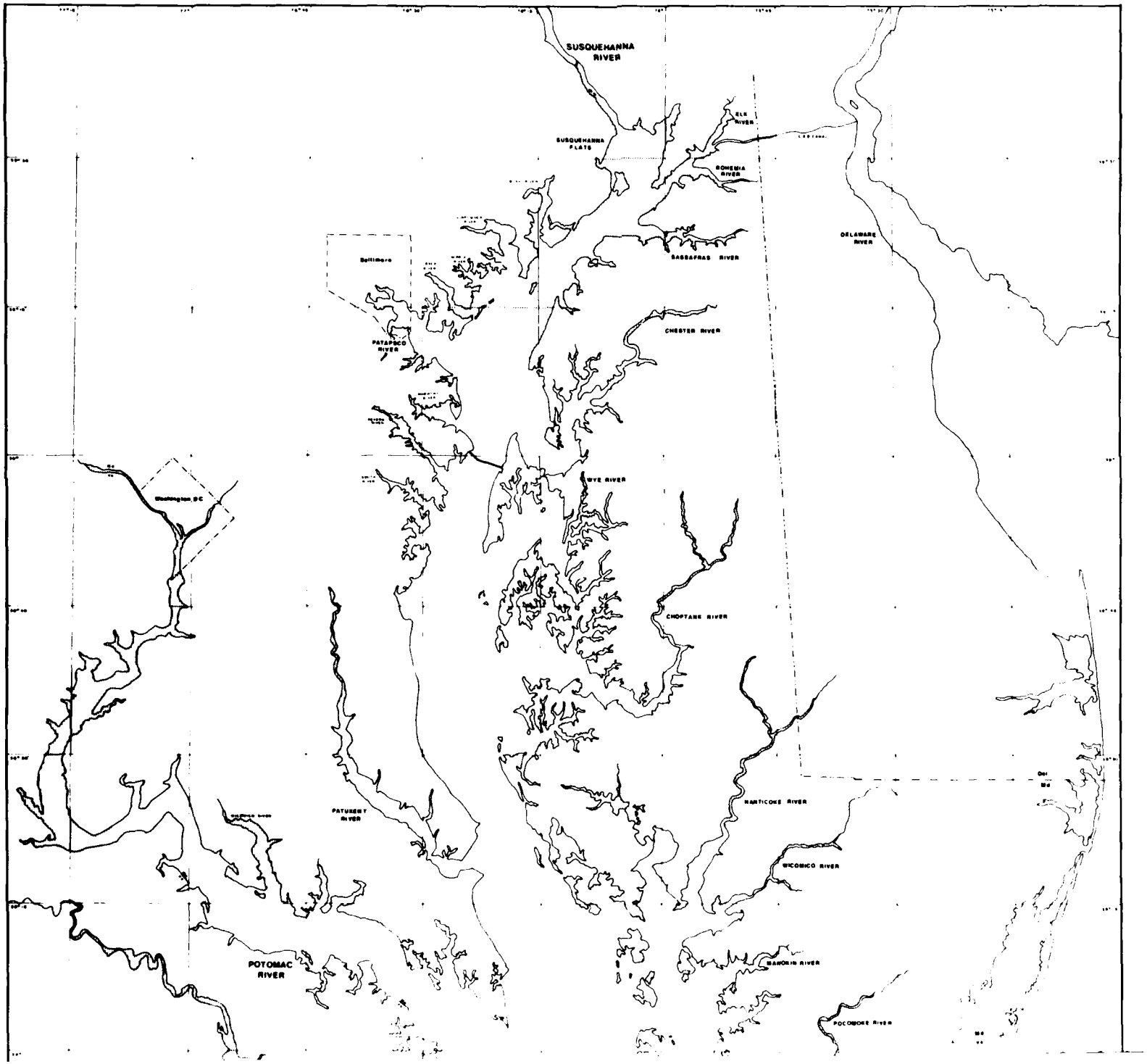

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
MAP 44c CHESAPEAKE BAY
Alosa pseudoharengus - ALEWIFE
Potential Habitat
BASE AVERAGE
LEGEND
Eggs Larvae

Plate 36


SUSQUEHANNA RIVER
SUSQUEHANNA FLATS
ELK RIVER
BOHEMIA RIVER
SASSAFRAS RIVER
DELAWARE RIVER
Baltimore
PATAPSCO RIVER
CHESTER RIVER
Washington DC
WYE RIVER
CHOPTANK RIVER
PATUXENT RIVER
POTOMAC RIVER
NANTICOKE RIVER
WICOMICO RIVER
MANOKIN RIVER
POCOMOKE RIVER

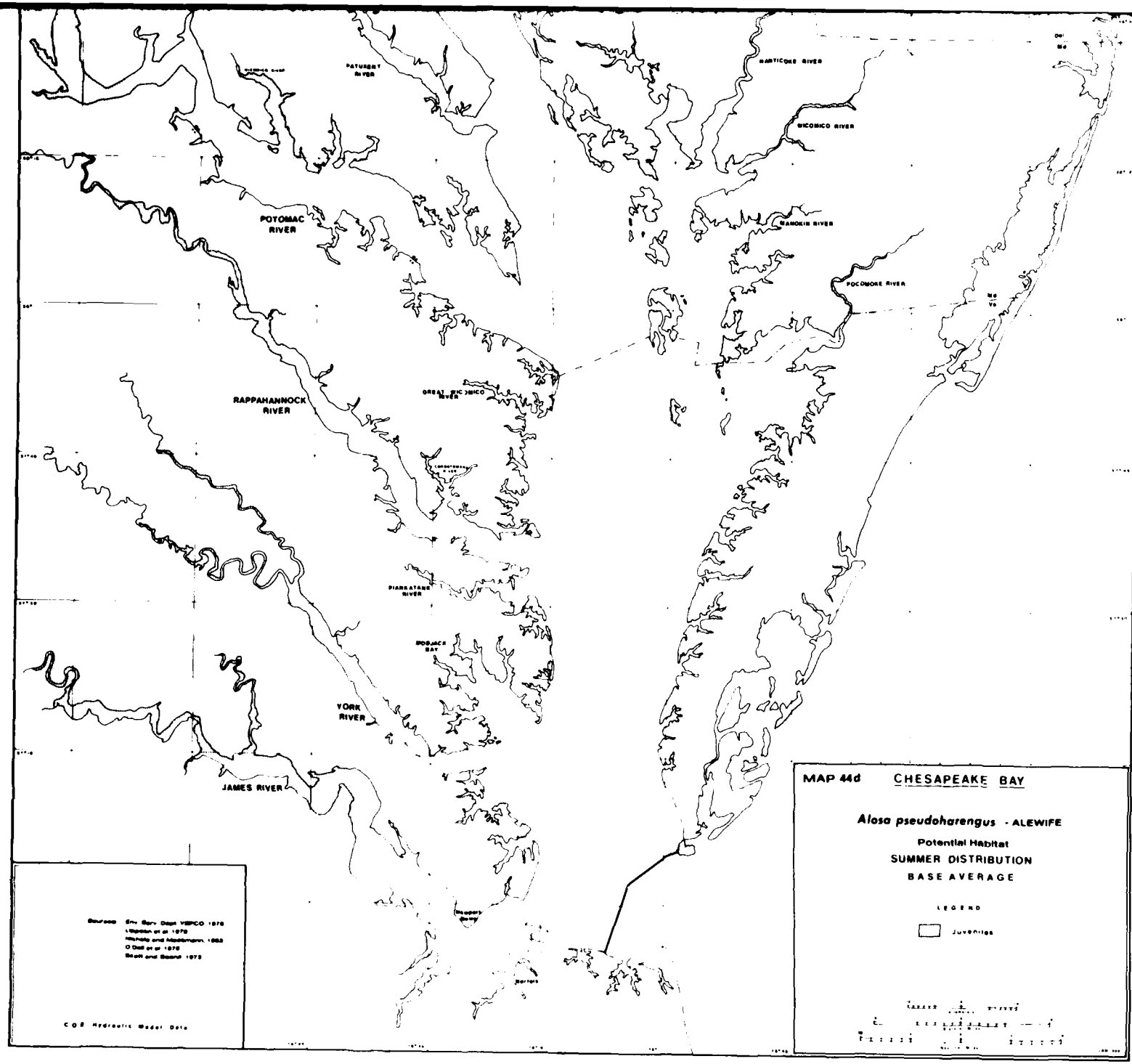
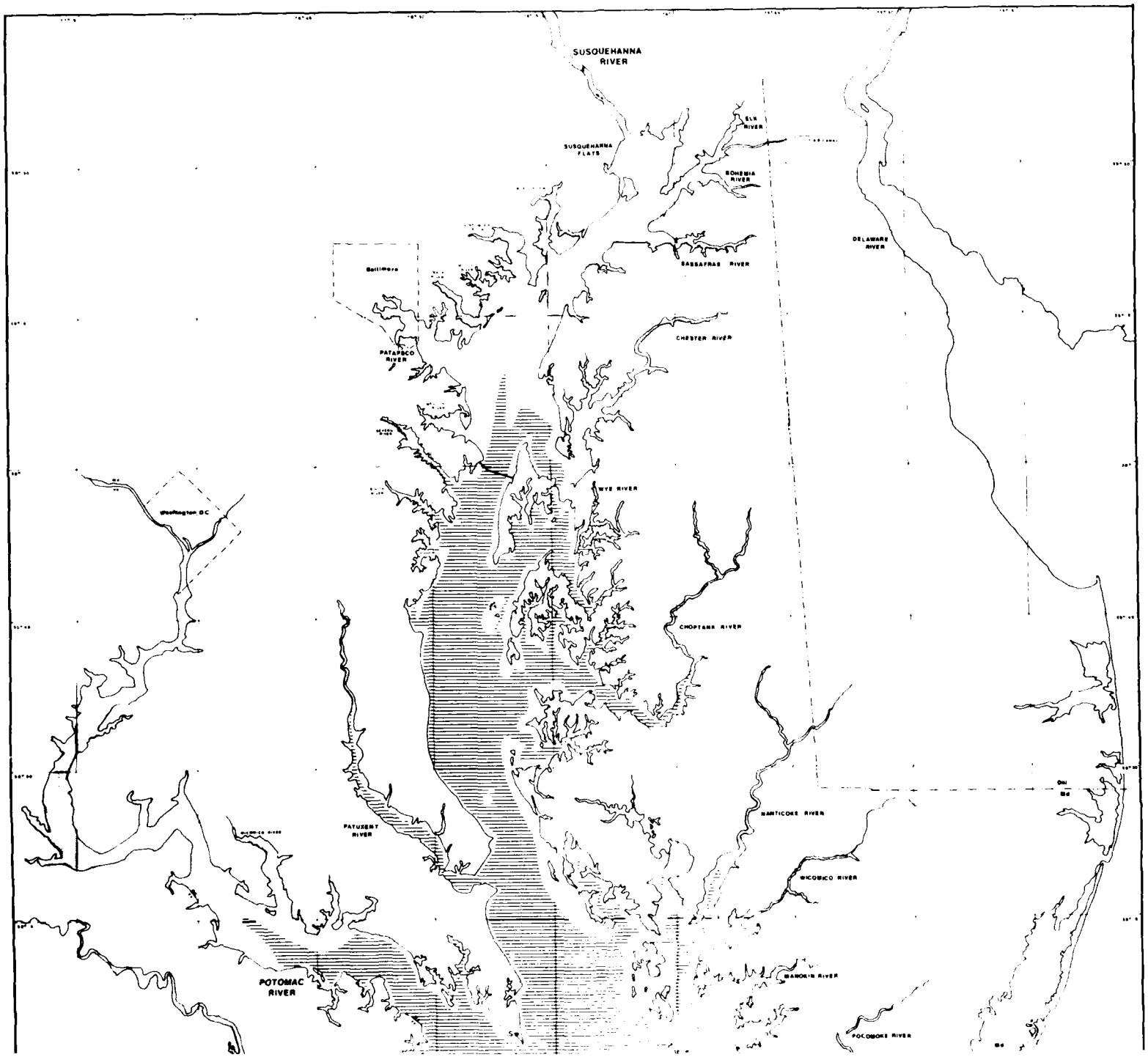

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
PATUXENT RIVER
WICOMICO RIVER
POCOMOKE RIVER
MANOKIN RIVER
PIANKATANK RIVER
MAP 44d CHESAPEAKE BAY
Alosa pseudoharengus - ALEWIFE
Potential Habitat
SUMMER DISTRIBUTION
BASE AVERAGE
LEGEND
Juveniles
COE Hydraulic Model Data

Plate 37


SUSQUEHANNA RIVER
ELK RIVER
SUSQUEHANNA FLATS
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
Baltimore
CHESTER RIVER
PATAPSCO RIVER
WYE RIVER
Washington DC
CHOPTANK RIVER
PATUXENT RIVER
WICOMICO RIVER
POTOMAC RIVER
MANOKIN RIVER
POCOMOKE RIVER

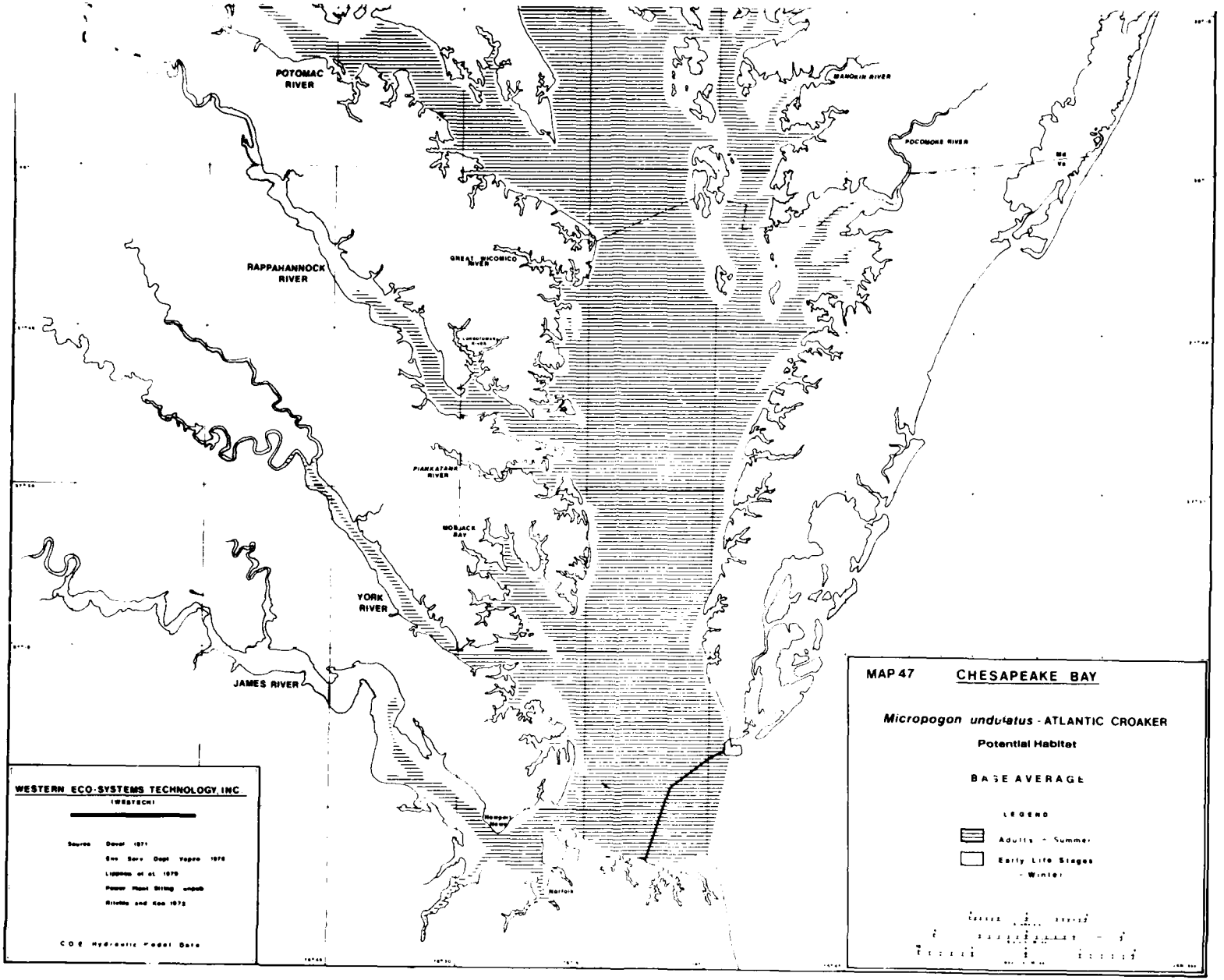
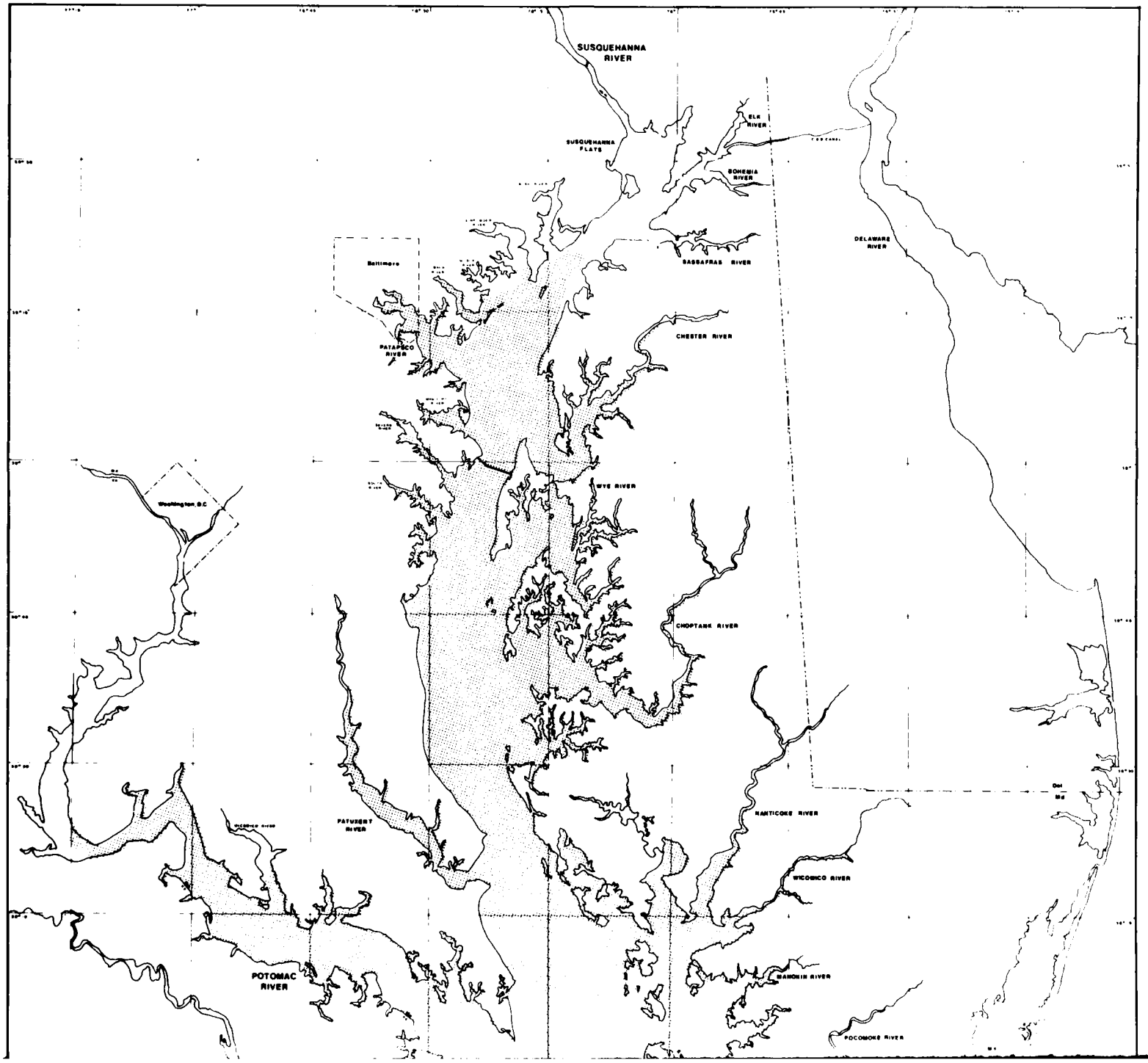

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
PIANKATANK RIVER
POCOMOKE RIVER
MAP 47 CHESAPEAKE BAY
Micropogon undulatus - ATLANTIC CROAKER
Potential Habitat
BASE AVERAGE
LEGEND
Adults - Summer
Early Life Stages - Winter
WESTERN ECO-SYSTEMS TECHNOLOGY, INC
(WESTECH)
COE Hydraulic Model Data

Plate 38


SUSQUEHANNA RIVER
ELK RIVER
SUSQUEHANNA FLATS
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
Baltimore
PATAPSCO RIVER
CHESTER RIVER
WYE RIVER
Washington, D.C.
CHOPTANK RIVER
PATUXENT RIVER
NANTICOKE RIVER
WICOMICO RIVER
POTOMAC RIVER
MANOKIN RIVER
POCOMOKE RIVER

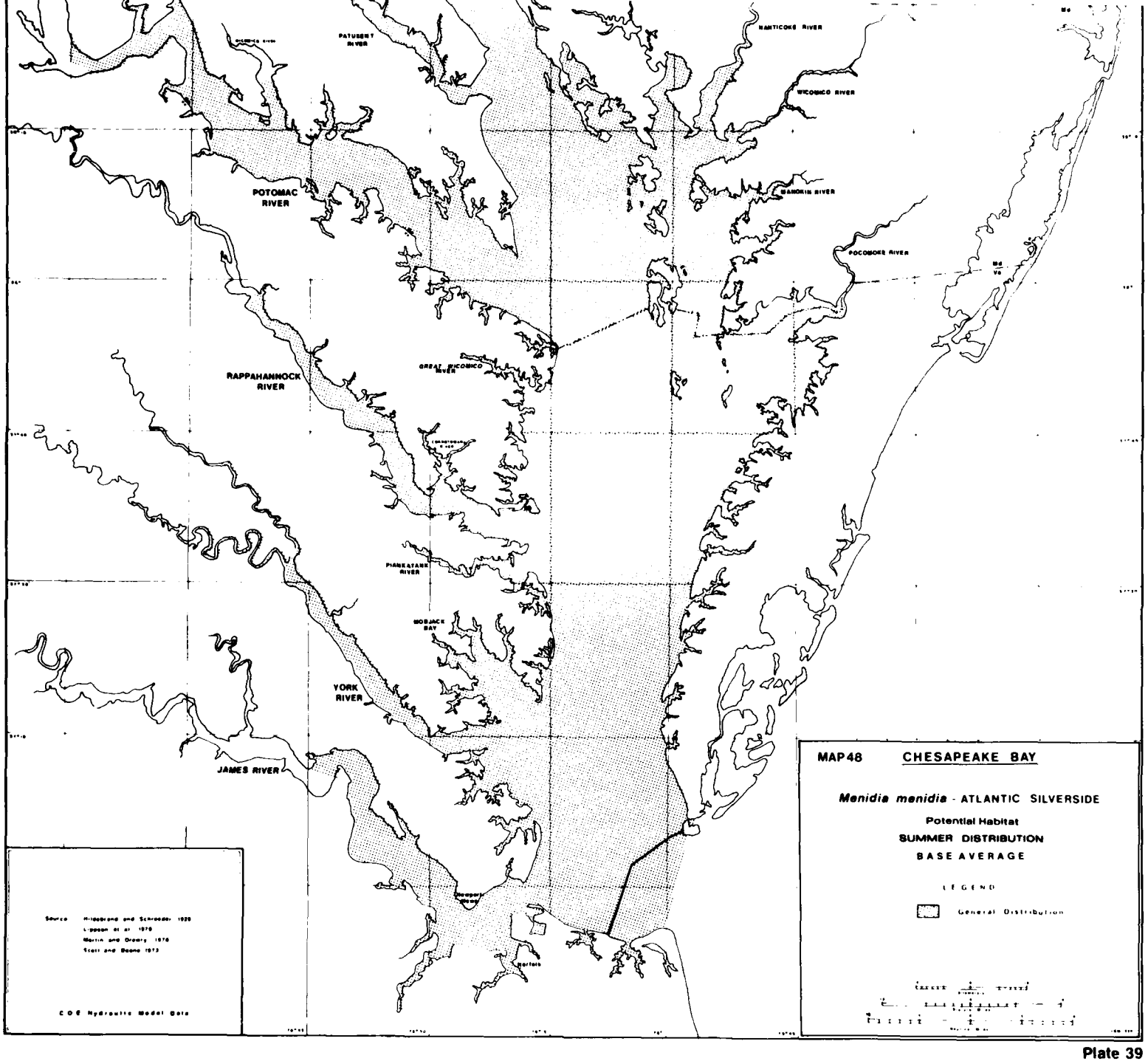
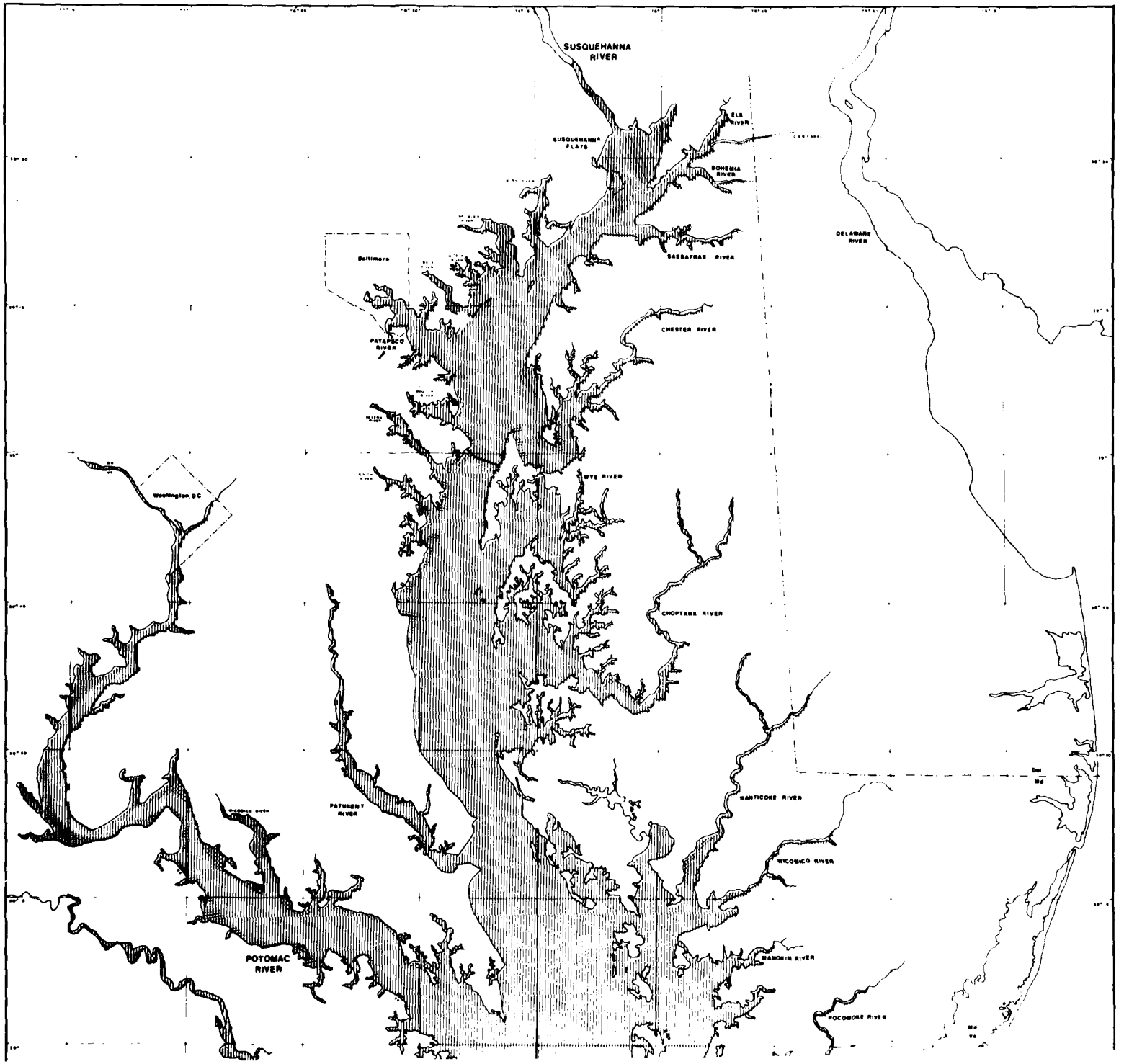

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
PATUXENT RIVER
NANTICOKE RIVER
WICOMICO RIVER
MANOKIN RIVER
POCOMOKE RIVER
GREAT WICOMICO RIVER
PIANKATANK RIVER
MOBJACK BAY
MAP48 CHESAPEAKE BAY
Menidia menidia - ATLANTIC SILVERSIDE
Potential Habitat
SUMMER DISTRIBUTION
BASE AVERAGE
LEGEND
General Distribution
Source Hildebrand and Schroeder 1928
Lippson et al 1979
Merrin and Drewry 1976
Scott and Boone 1973
COE Hydraulic Model Data

Plate 39


SUSQUEHANNA RIVER
ELK RIVER
SUSQUEHANNA FLATS
BOHEMIA RIVER
DELAWARE RIVER
Baltimore
SASSAFRAS RIVER
CHESTER RIVER
PATAPSCO RIVER
Washington DC
SYE RIVER
CHOPTANK RIVER
PATUXENT RIVER
NANTICOKE RIVER
WICOMICO RIVER
POTOMAC RIVER
MANOKIN RIVER
POCOMOKE RIVER

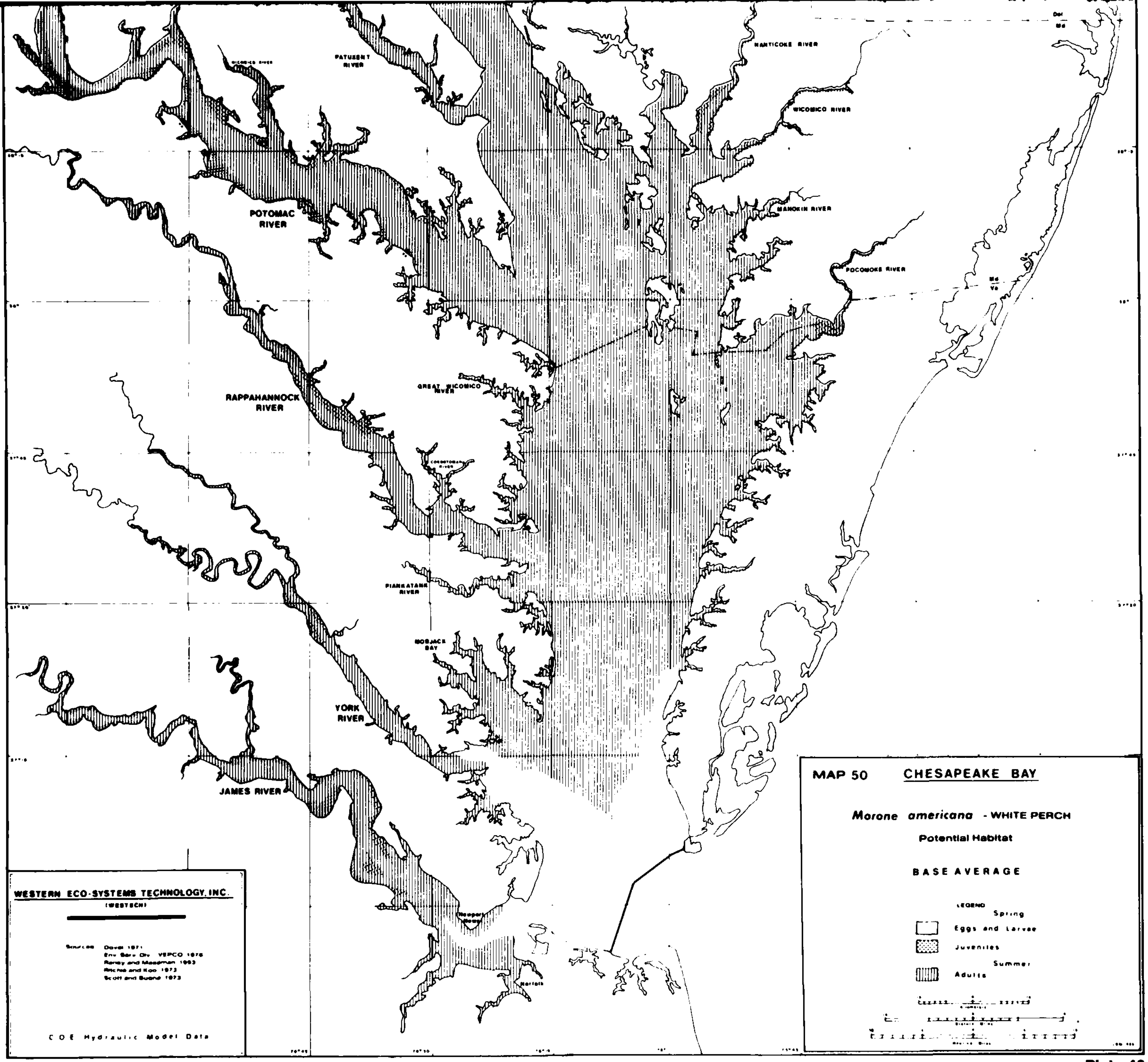
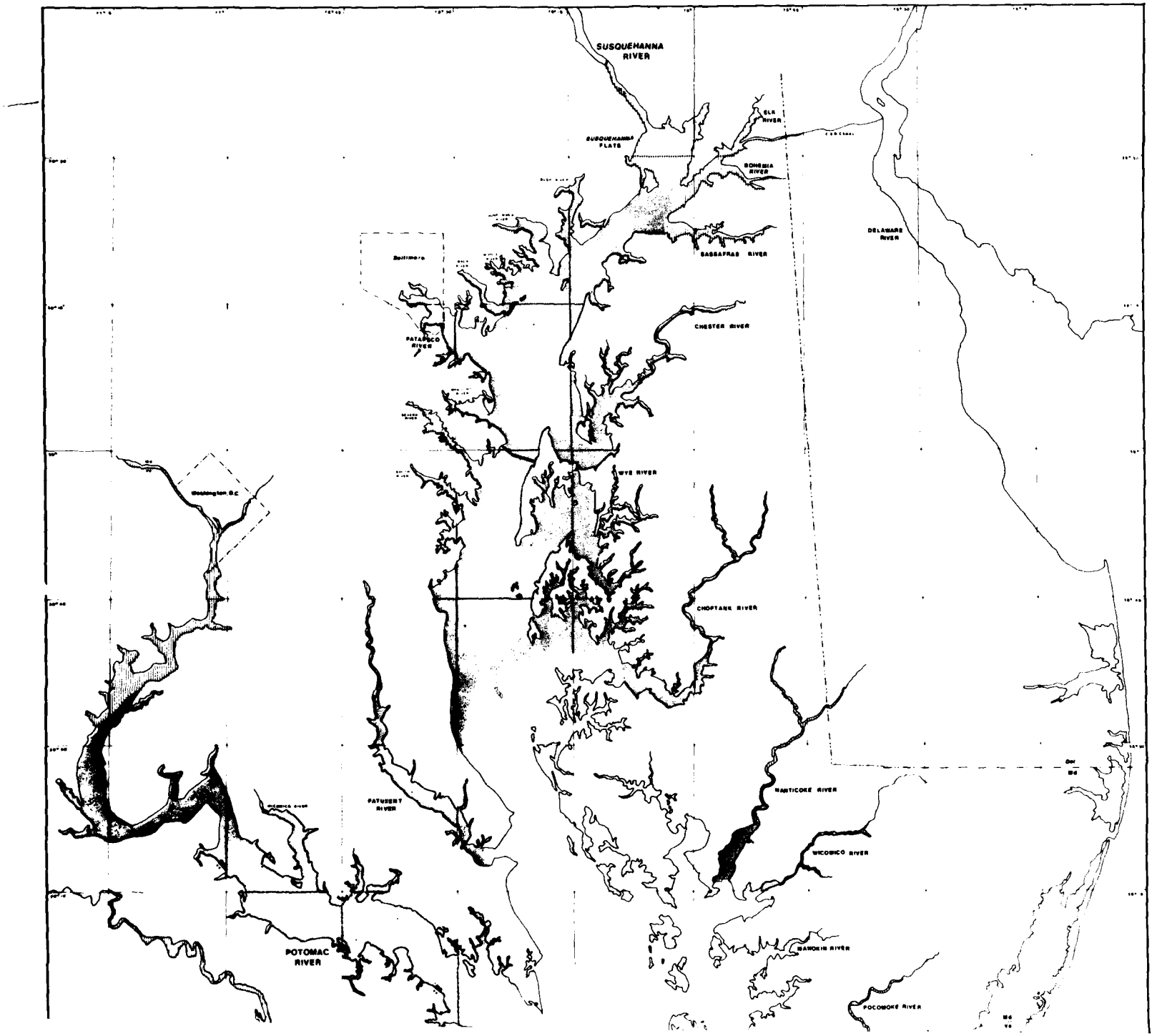

MAP 50
CHESAPEAKE BAY
Morone americana - WHITE PERCH
Potential Habitat
BASE AVERAGE
LEGEND
Spring
Eggs and Larvae
Juveniles
Summer
Adults
WESTERN ECO-SYSTEMS TECHNOLOGY, INC.
(WESTECH)
Sources Dovel 1971
Env Serv Div VEPCO 1976
Renay and Moopman 1963
Ritchie and Koo 1973
Scott and Boone 1973
COE Hydraulic Model Data
NANTICOKE RIVER
WICOMICO RIVER
MANOKIN RIVER
POCOMOKE RIVER
PATUXENT RIVER
POTOMAC RIVER
GREAT WICOMICO RIVER
RAPPAHANNOCK RIVER
CORROTOMAN RIVER
PIANKATANK RIVER
MOBJACK BAY
YORK RIVER
JAMES RIVER
Norfolk
Md
Va
Del
Md

Plate 40


SUSQUEHANNA RIVER
SUSQUEHANNA FLATS
ELK RIVER
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
CHESTER RIVER
PATAPSCO RIVER
WYE RIVER
CHOPTANK RIVER
PATUXENT RIVER
WANTICOKE RIVER
WICOMICO RIVER
POTOMAC RIVER
MANOKIN RIVER
POCOMOKE RIVER

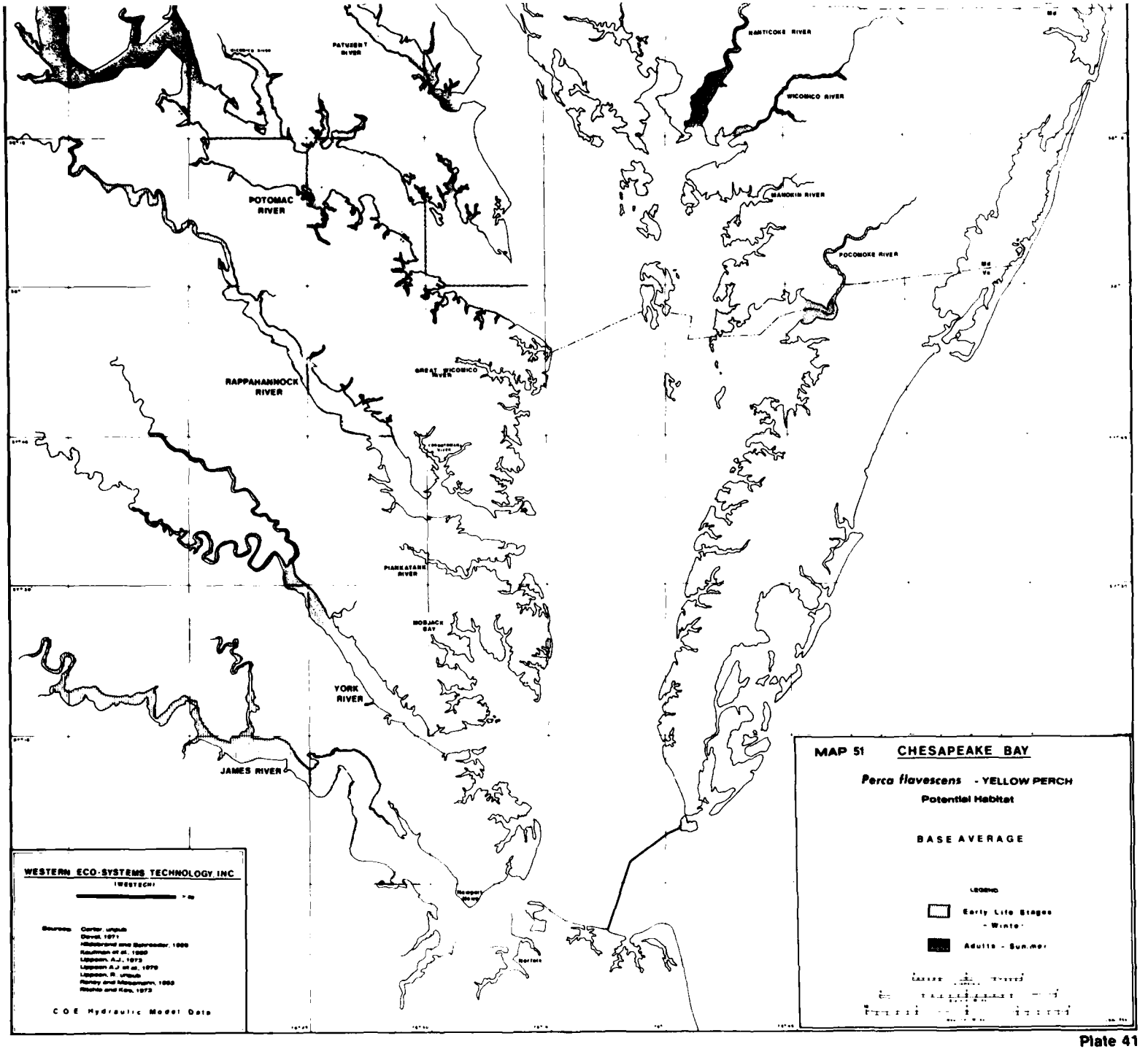
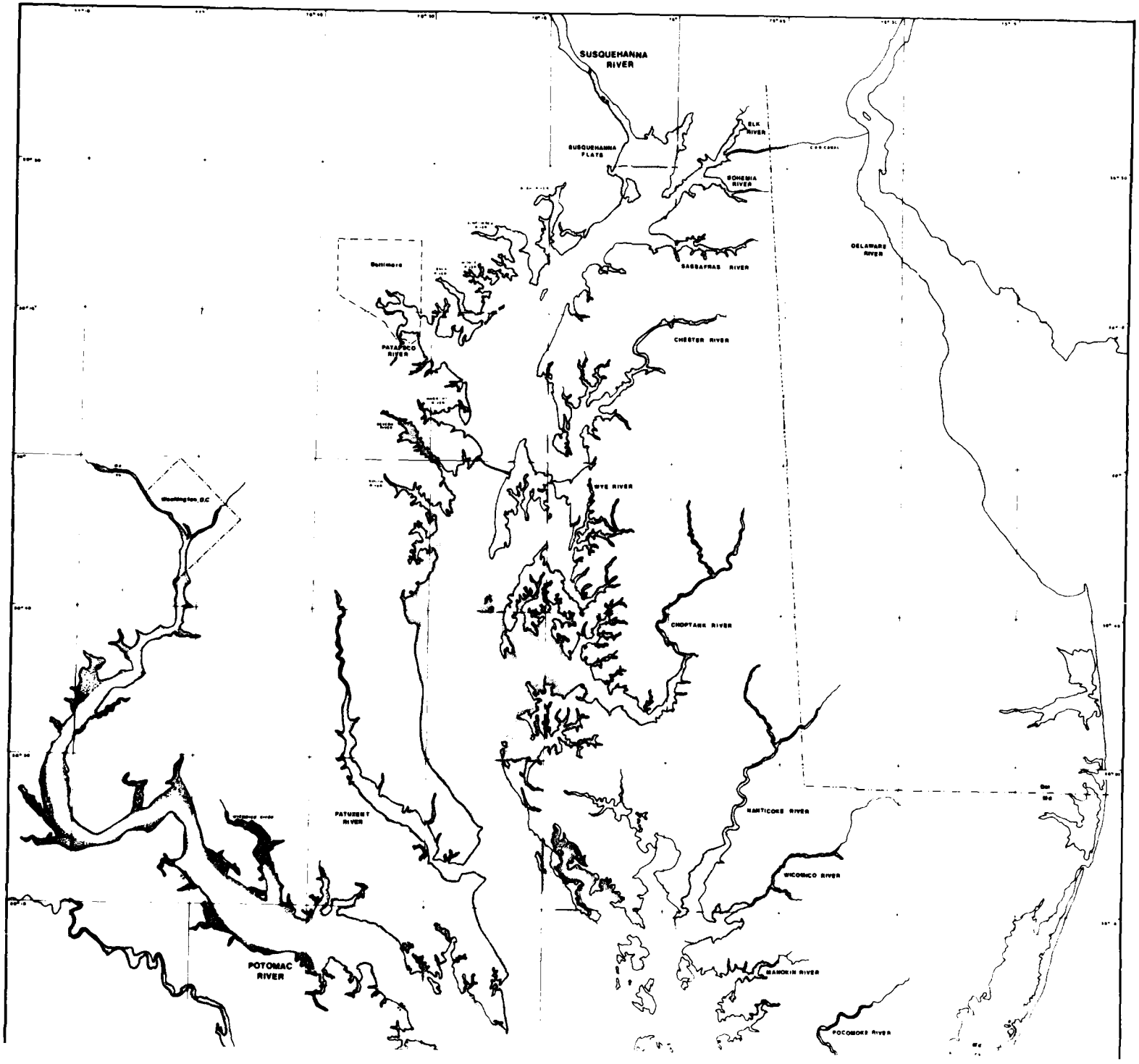

POTOMAC RIVER
PATUXENT RIVER
RAPPAHANNOCK RIVER
GREAT WICOMICO RIVER
PIANKATANK RIVER
YORK RIVER
JAMES RIVER
MOBJACK BAY
NANTICOKE RIVER
WICOMICO RIVER
MANOKIN RIVER
POCOMOKE RIVER
MAP 51 CHESAPEAKE BAY
Perca flavescens - YELLOW PERCH
Potential Habitat
BASE AVERAGE
LEGEND
Early Life Stages
- Winte -
Adults - Sum.mer
WESTERN ECO-SYSTEMS TECHNOLOGY, INC
(WESTECH)
COE Hydraulic Model Data

Plate 41


SUSQUEHANNA RIVER
SUSQUEHANNA FLATS
ELK RIVER
BOHEMIA RIVER
SASSAFRAS RIVER
DELAWARE RIVER
Baltimore
PATAPSCO RIVER
CHESTER RIVER
Washington, D.C.
SEVE RIVER
CHOPTANK RIVER
PATUXENT RIVER
POTOMAC RIVER
WICOMICO RIVER
MANOKIN RIVER
POCOMOKE River

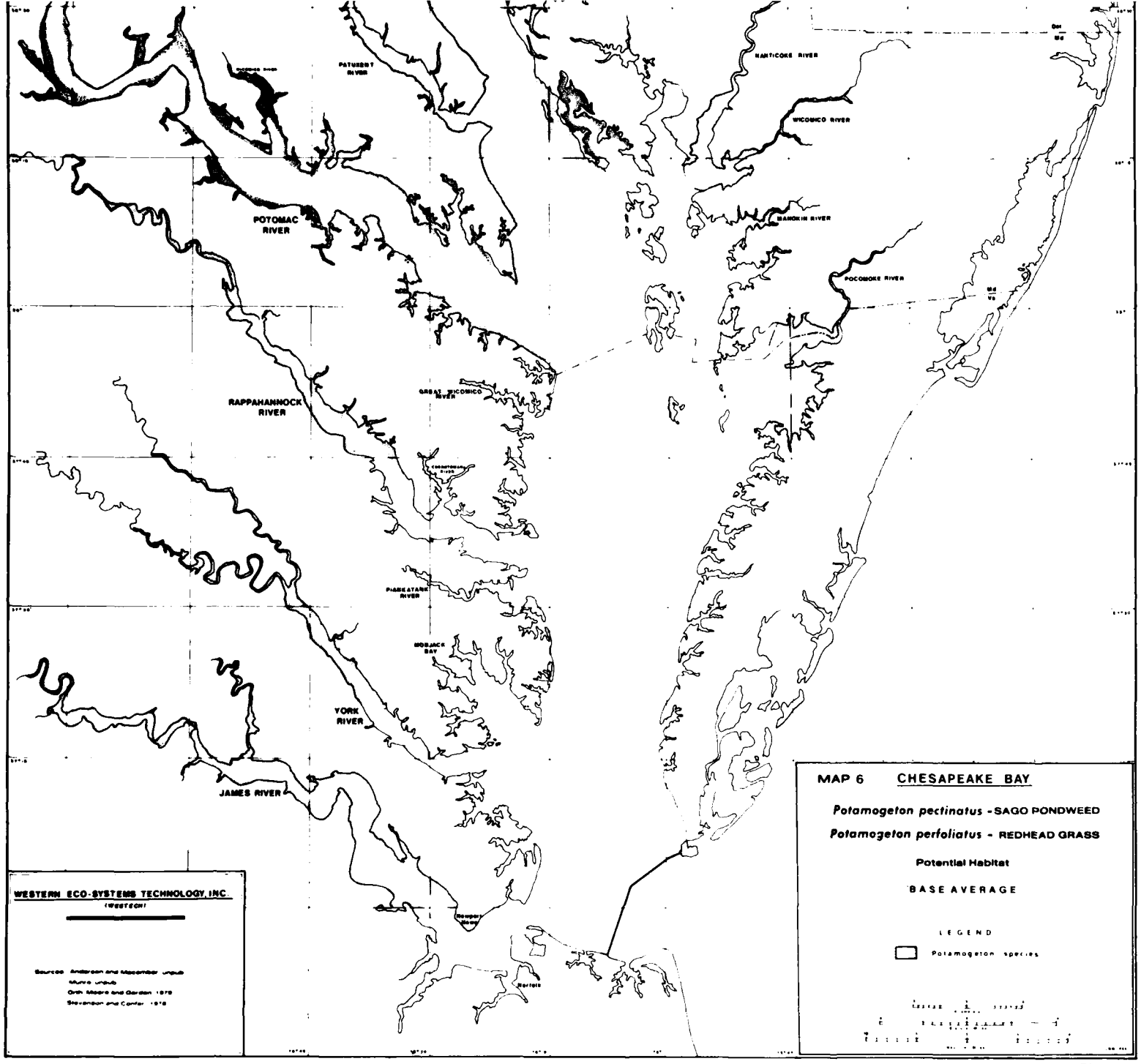

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
PATUXENT RIVER
NANTICOKE RIVER
WICOMICO RIVER
MANOKIN RIVER
POCOMOKE RIVER
GREAT WICOMICO RIVER
PIANKATANK RIVER
MOBJACK BAY
Norfolk
MAP 6 CHESAPEAKE BAY
Potamogeton pectinatus - SAGO PONDWEED
Potamogeton perfoliatus - REDHEAD GRASS
Potential Habitat
BASE AVERAGE
LEGEND
Potamogeton species
WESTERN ECO-SYSTEMS TECHNOLOGY, INC.
(WESTECH)

Plate 42


SUSQUEHANNA RIVER
SUSQUEHANNA FLATS
ELK RIVER
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
Baltimore
PATAPSCO RIVER
CHESTER RIVER
Washington, D.C.
PATUXENT RIVER
CHOPTANK RIVER
WICOMICO RIVER
POTOMAC RIVER
POCOMOKE RIVER

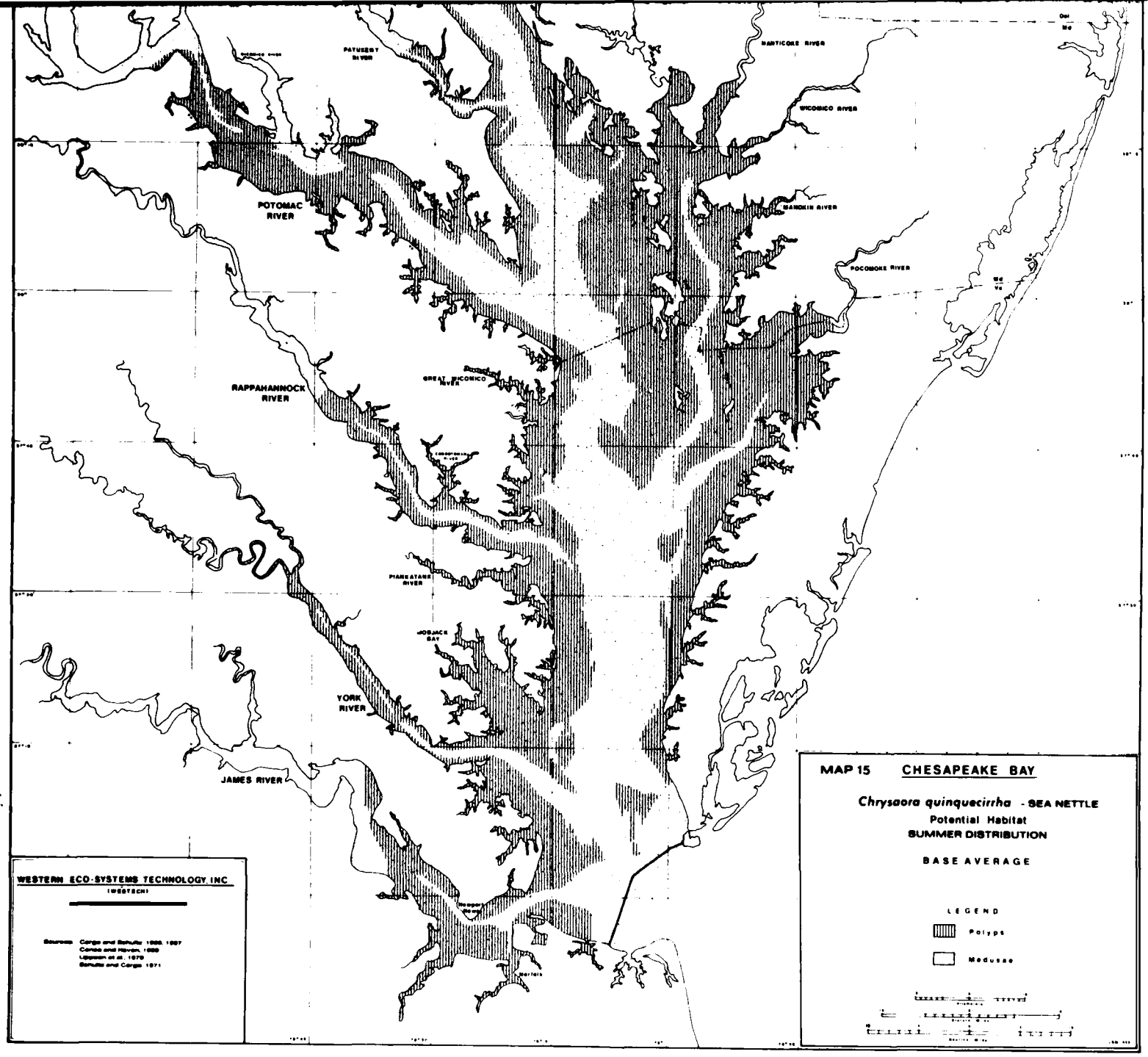
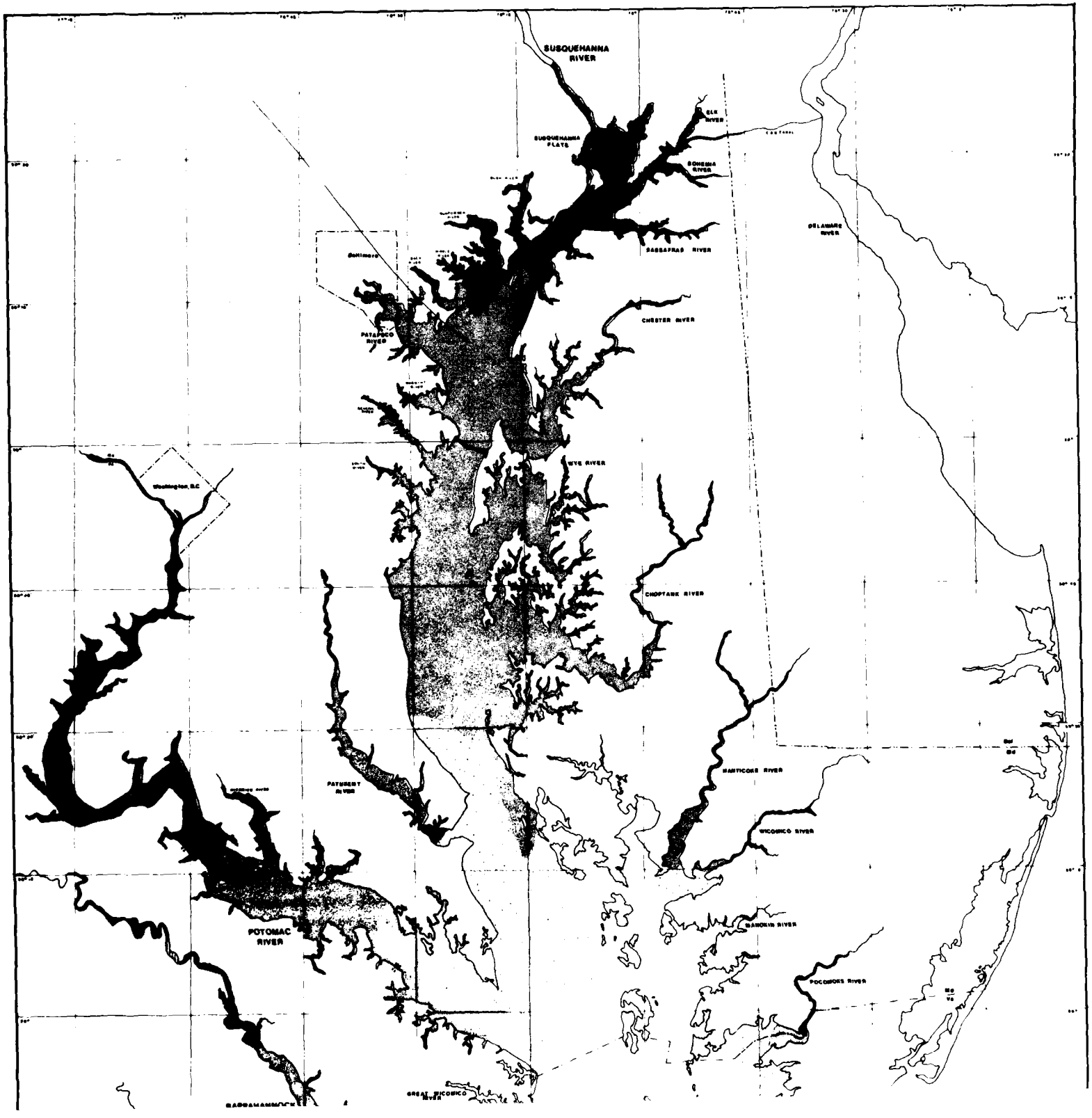

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
PIANKATANK RIVER
GREAT WICOMICO RIVER
WICOMICO RIVER
MANOKIN RIVER
POCOMOKE RIVER
MAP 15 CHESAPEAKE BAY
Chrysaora quinquecirrha - SEA NETTLE
Potential Habitat
SUMMER DISTRIBUTION
BASE AVERAGE
LEGEND
Polyps
Medusae
WESTERN ECO-SYSTEMS TECHNOLOGY, INC
(WESTECH)

Plate 43


SUSQUEHANNA RIVER
ELK RIVER
SUSQUEHANNA FLATS
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
CHESTER RIVER
PATAPSCO RIVER
WYE RIVER
CHOPTANK RIVER
PATUXENT RIVER
MANTICOKE RIVER
WICOMICO RIVER
POTOMAC RIVER
ANNEMIN RIVER
POCOMOKE RIVER
GREAT PICOMICO RIVER

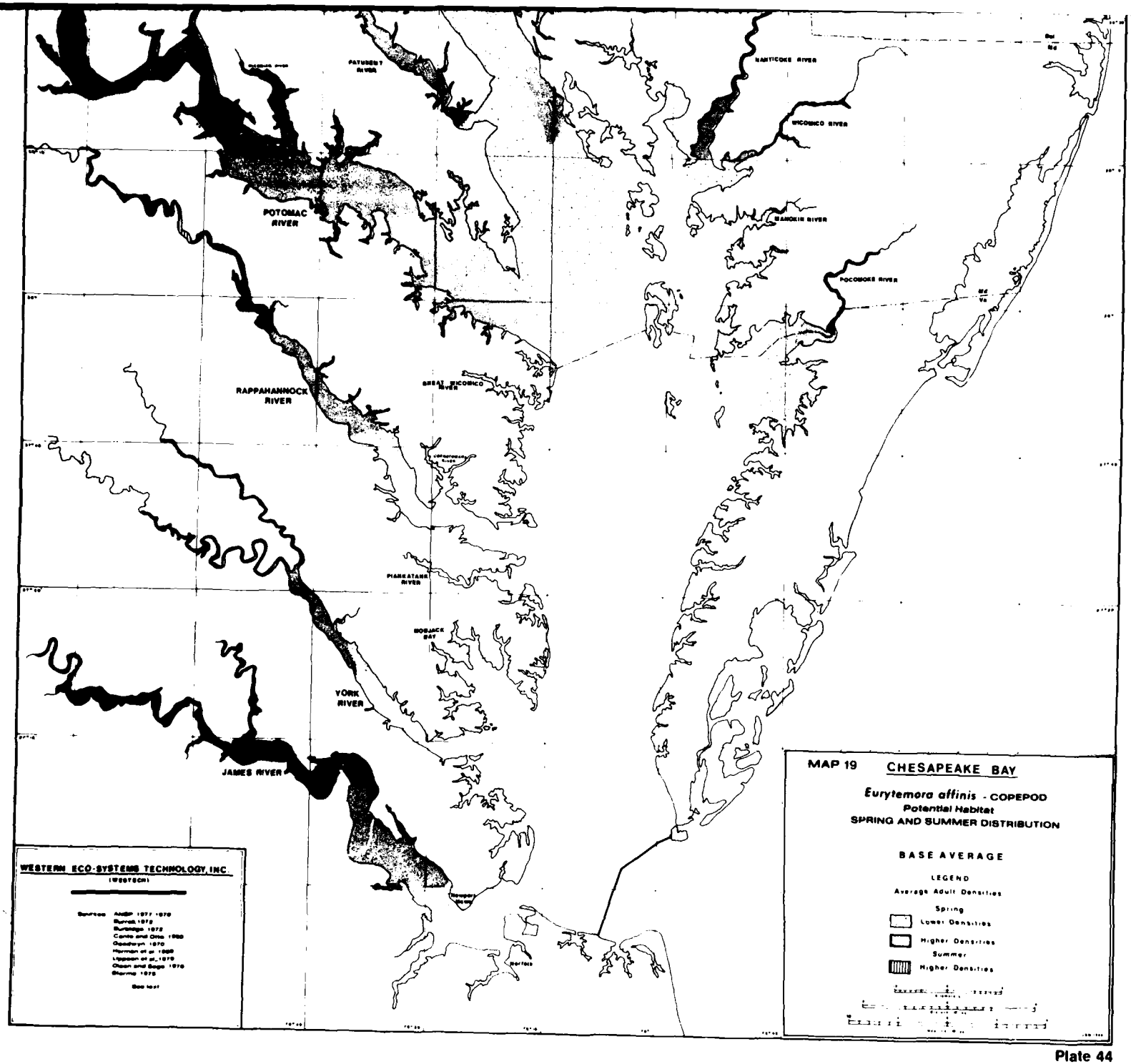
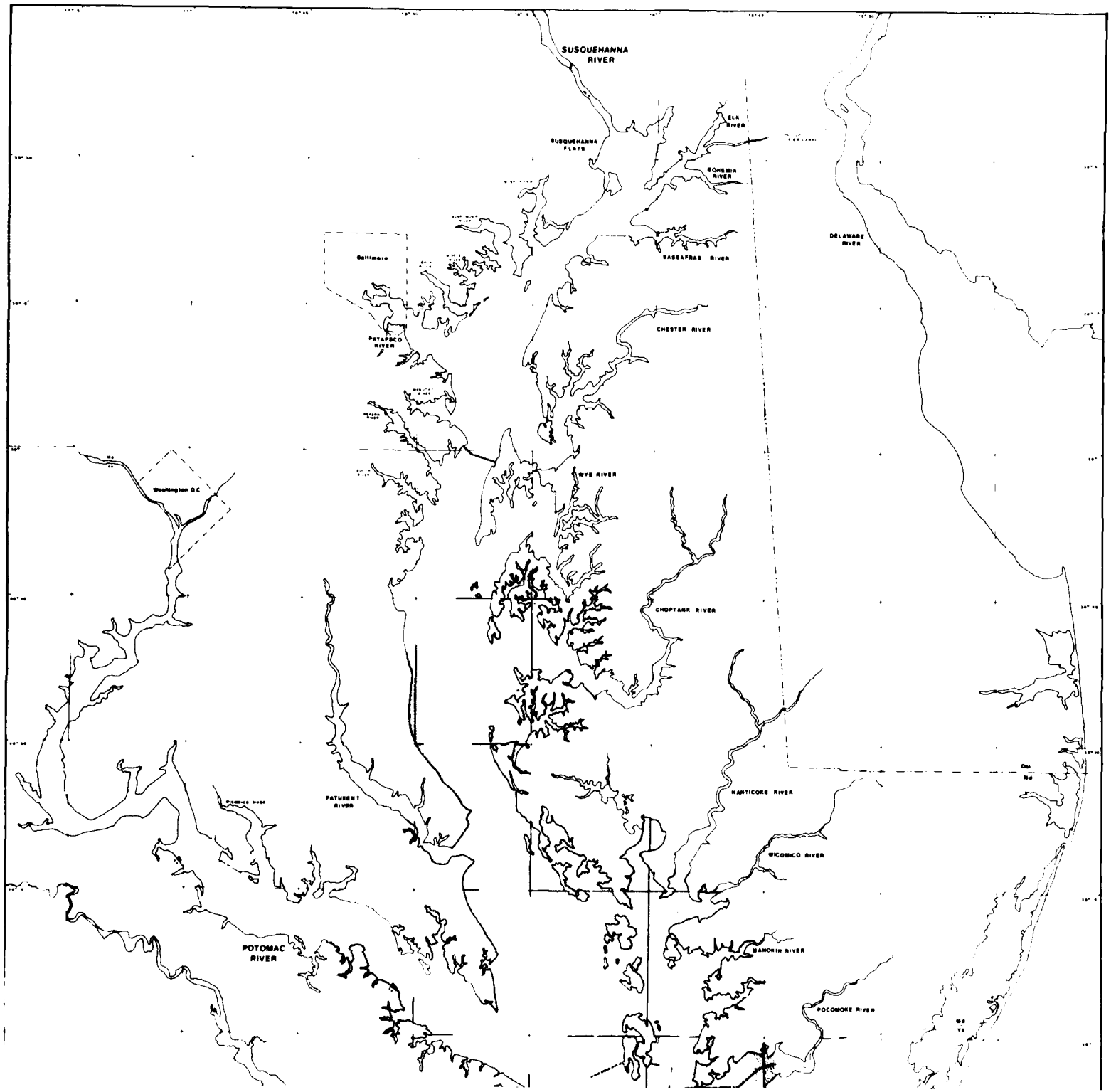
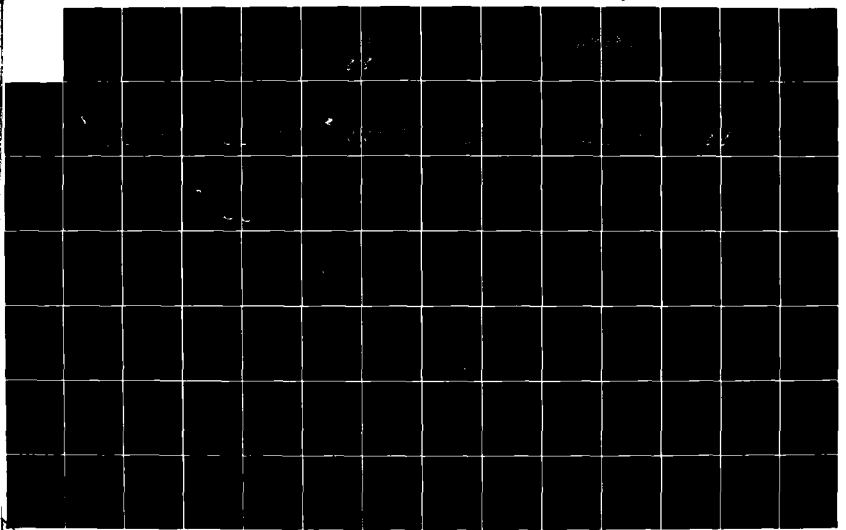

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
PIANKATANK RIVER
MOBJACK BAY
GREAT WICOMICO RIVER
PATUXENT RIVER
NANTICOKE RIVER
WICOMICO RIVER
MANOKIN RIVER
POCOMOKE RIVER
WESTERN ECO-SYSTEMS TECHNOLOGY, INC.
(WESTECH)
MAP 19 CHESAPEAKE BAY
Eurytemora affinis - COPEPOD
Potential Habitat
SPRING AND SUMMER DISTRIBUTION
BASE AVERAGE
LEGEND
Average Adult Densities
Spring
Lower Densities
Higher Densities
Summer
Higher Densities

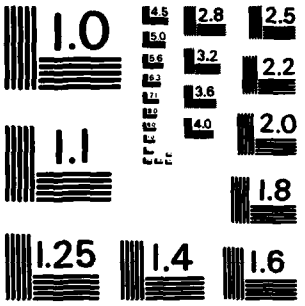
Plate 44


SUSQUEHANNA RIVER
ELK RIVER
SUSQUEHANNA FLATS
BOHEMIA RIVER
DELAWARE RIVER
Baltimore
SASSAFRAS RIVER
CHESTER RIVER
PATAPSCO RIVER
WYE RIVER
Washington D.C.
CHOPTANK RIVER
PATUXENT RIVER
NANTICOKE RIVER
WICOMICO RIVER
POTOMAC RIVER
MANOKIN RIVER
POCOMOKE RIVER

AD-A125 154 CHESAPEAKE BAY LOW FRESHWATER INFLOW STUDY PHASE II BIOTA ASSESSMENT MAP..(U) WESTERN ECO-SYSTEMS TECHNOLOGY INC BOTHELL WA G B MACKIERNAN ET AL. MAY 82

UNCLASSIFIED DACW31-79-C-0056 F/G 6/6 NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS - 1963 - A

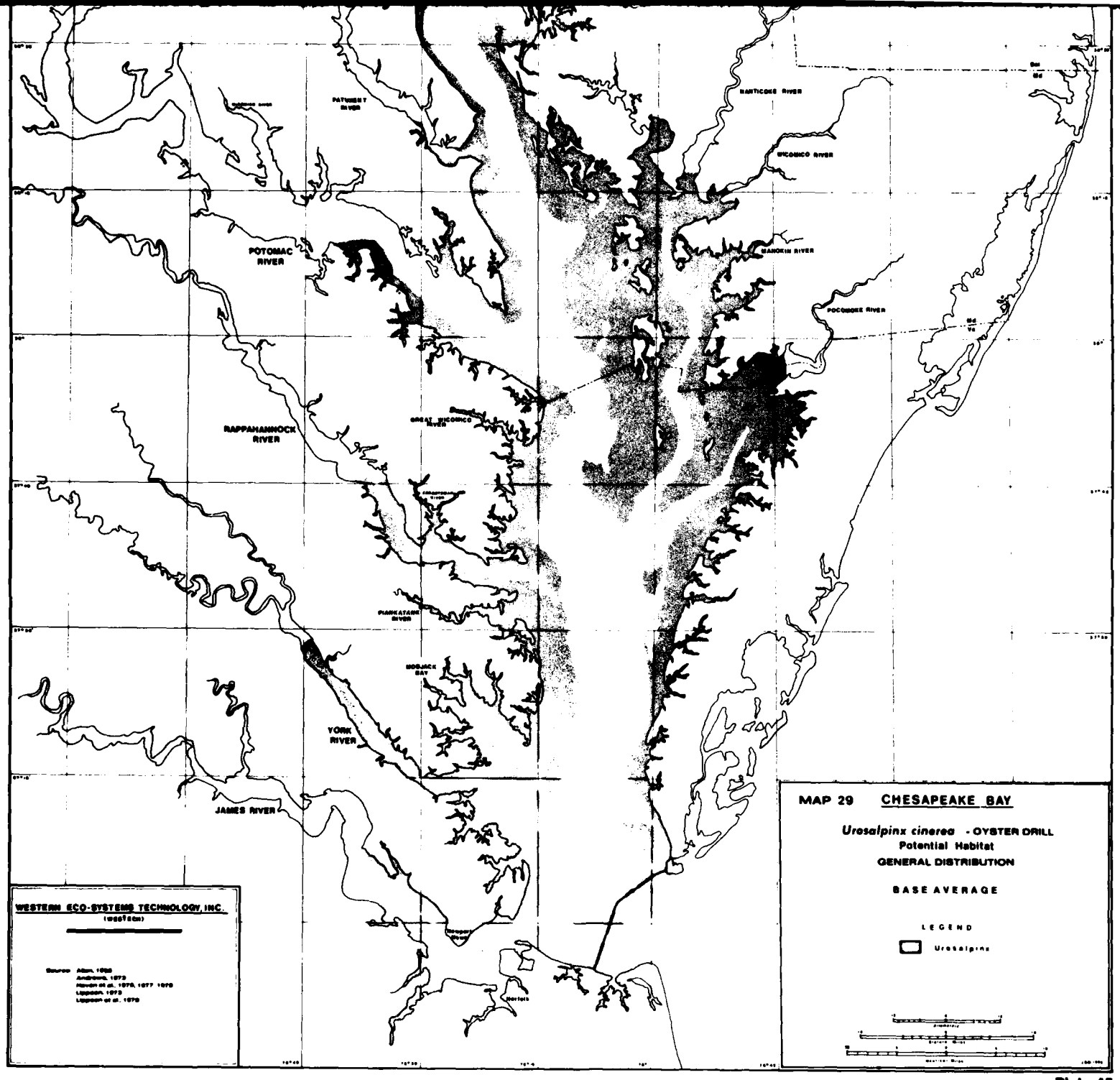
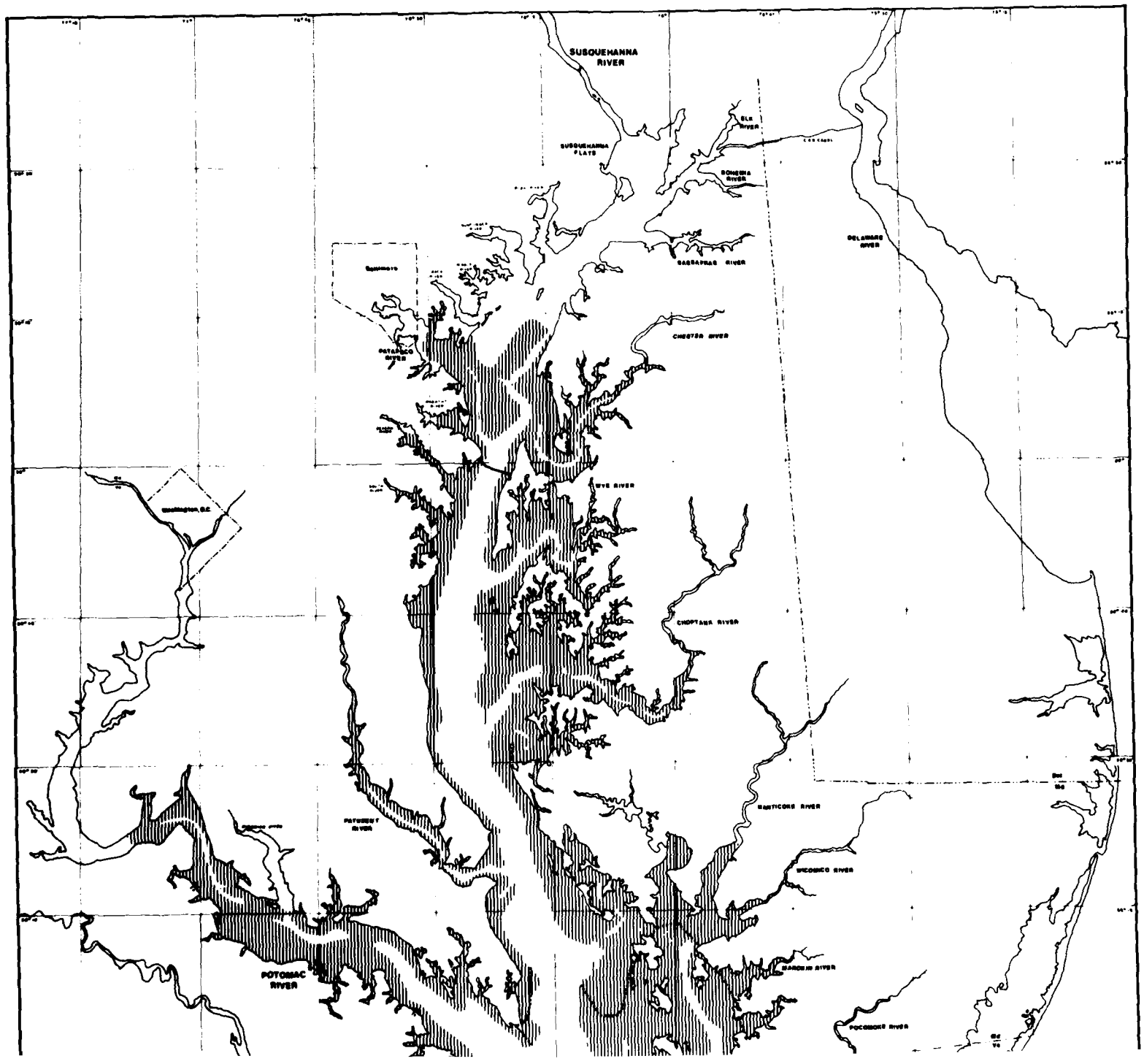

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
MAP 29 CHESAPEAKE BAY
Urosalpinx cinerea - OYSTER DRILL
Potential Habitat
GENERAL DISTRIBUTION
BASE AVERAGE
LEGEND
Urosalpinx
WESTERN ECO-SYSTEMS TECHNOLOGY, INC.

Plate 45


SUSQUEHANNA RIVER
SUSQUEHANNA FLATS
ELK RIVER
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
CHESTER RIVER
PATAPSCO RIVER
WYE RIVER
CHOPTANK RIVER
PATUXENT RIVER
MANOKIN RIVER
POCOMOKE RIVER
POTOMAC RIVER

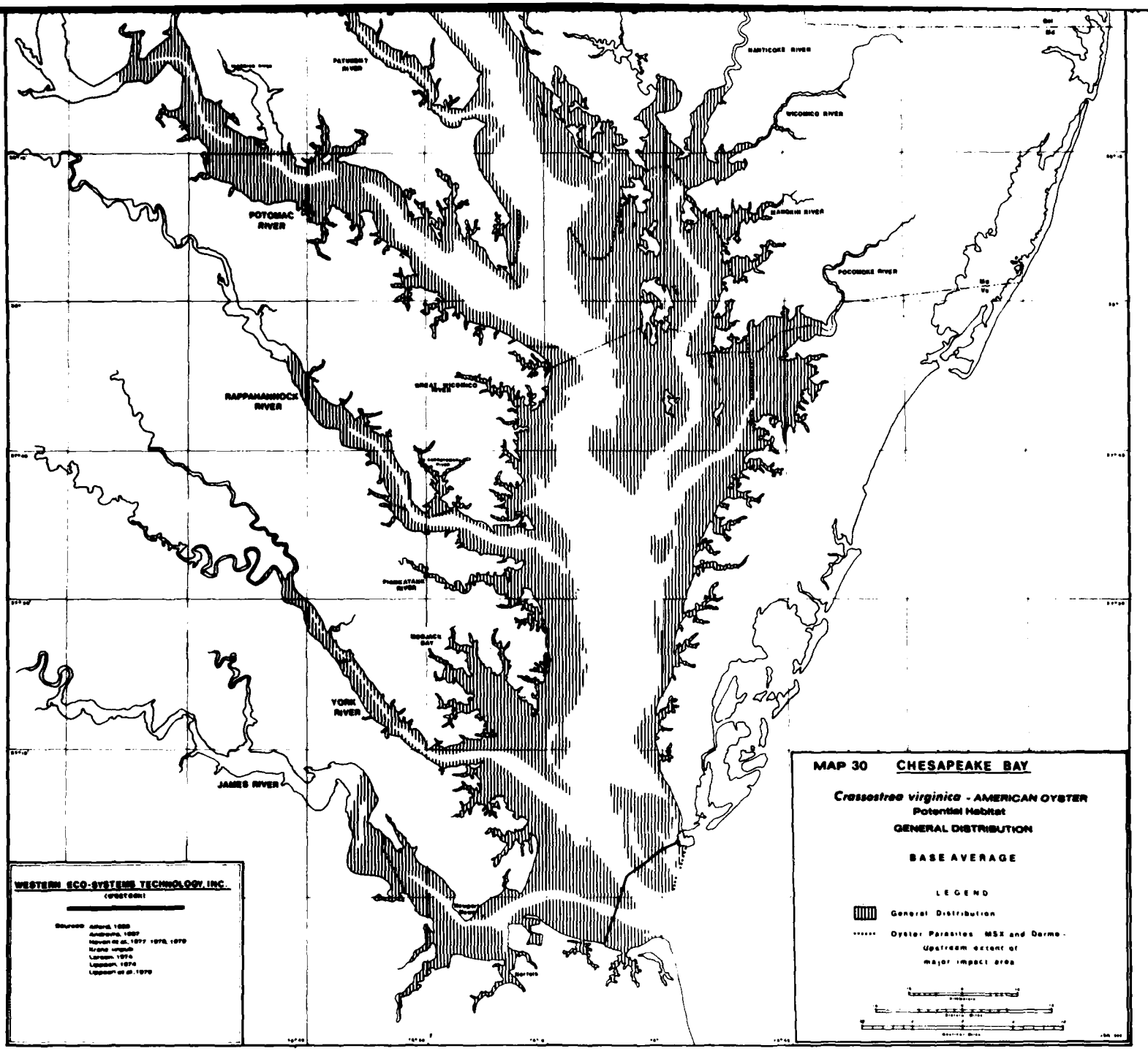
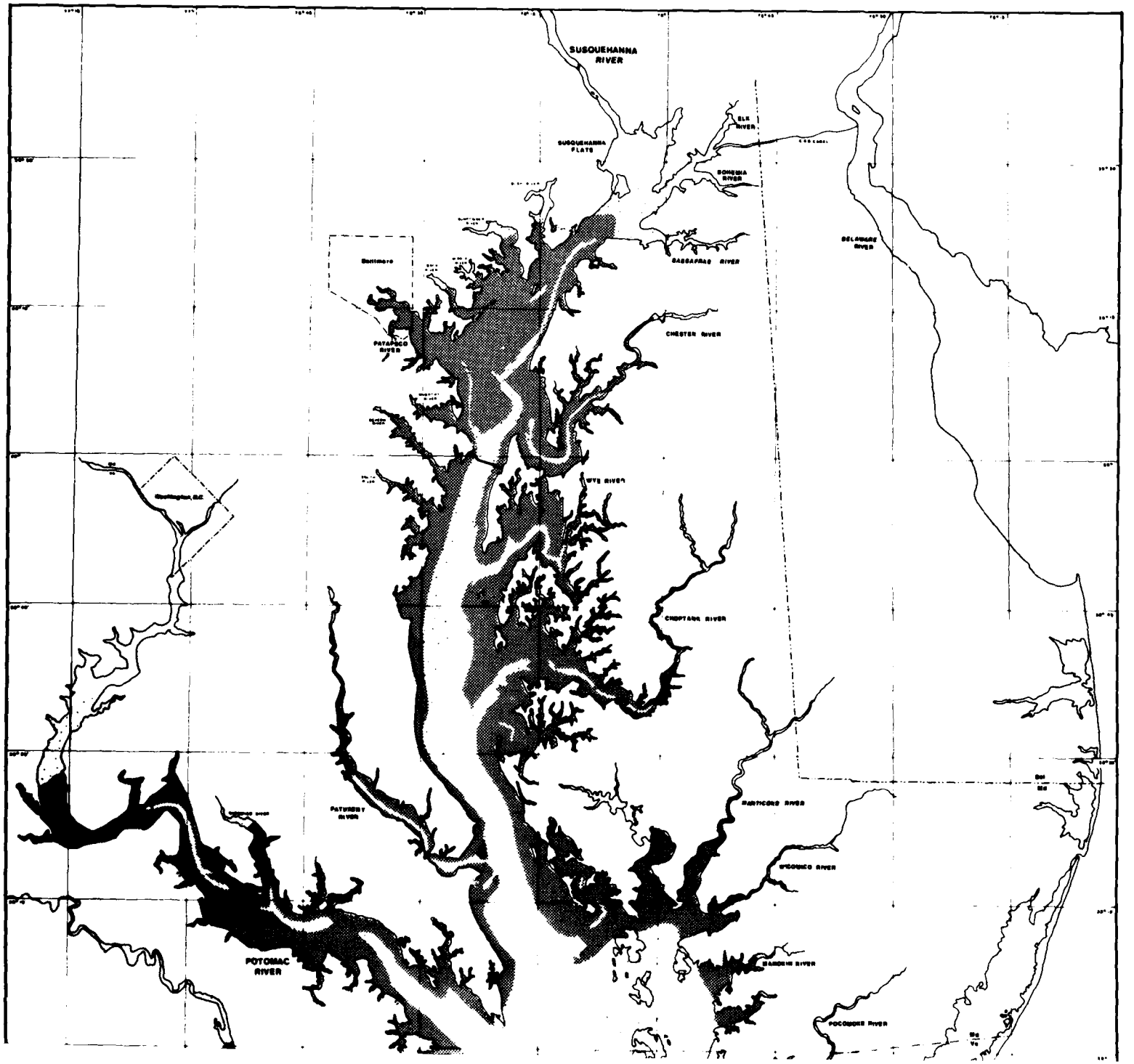

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
MAP 30 CHESAPEAKE BAY
Crassostrea virginica - AMERICAN OYSTER
Potential Habitat
GENERAL DISTRIBUTION
BASE AVERAGE
LEGEND
General Distribution
Oyster Parasites MSX and Dermo -
Upstream extent of
major impact area
WESTERN ECO-SYSTEMS TECHNOLOGY, INC.

Plate 46


SUSQUEHANNA RIVER
SUSQUEHANNA FLATS
ELK RIVER
BOHEMIA RIVER
SASSAFRAS RIVER
DELAWARE RIVER
CHESTER RIVER
WYE RIVER
CHOPTANK RIVER
PATUXENT RIVER
MANOKIN RIVER
POCOMOKE RIVER
POTOMAC RIVER

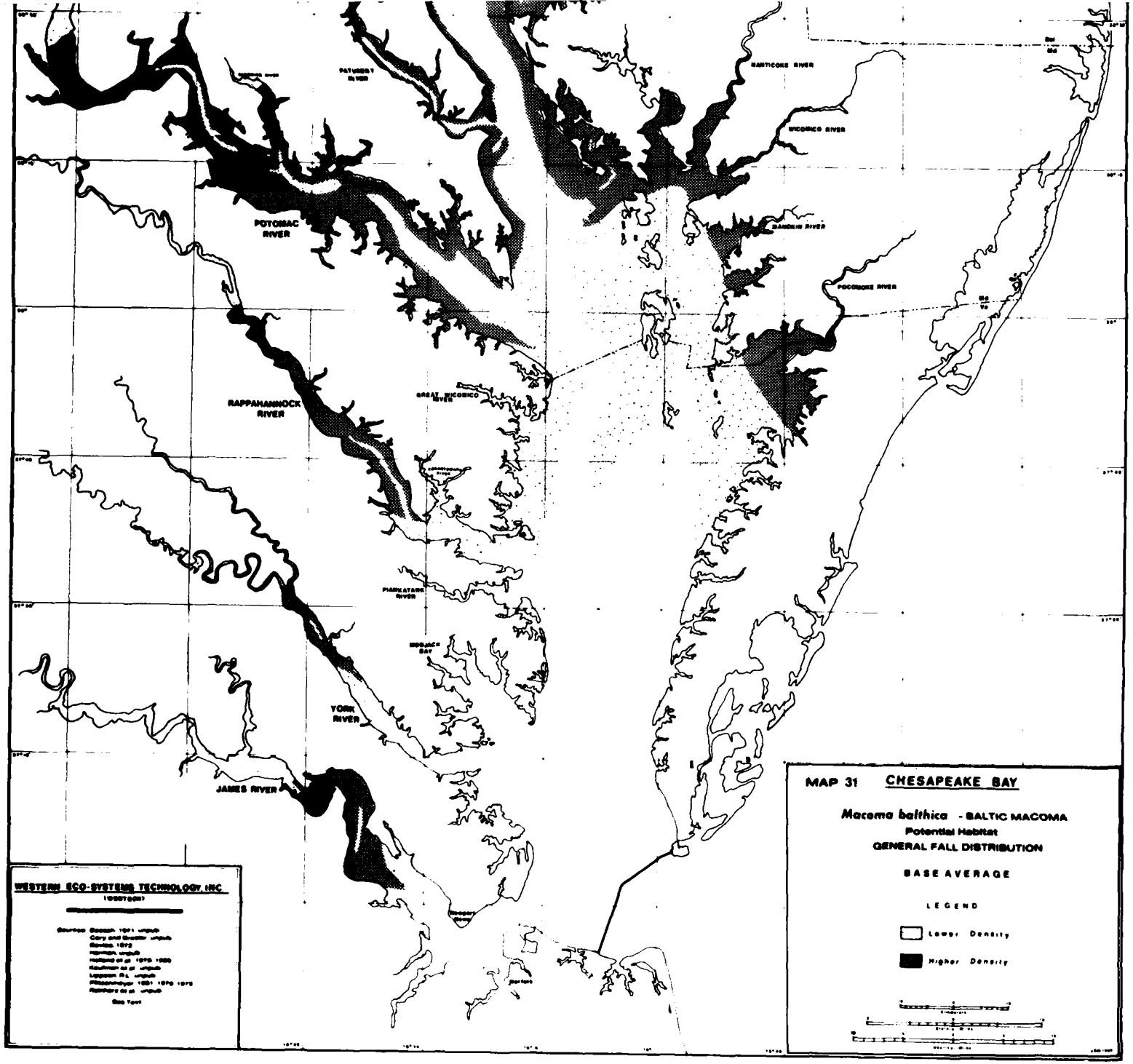
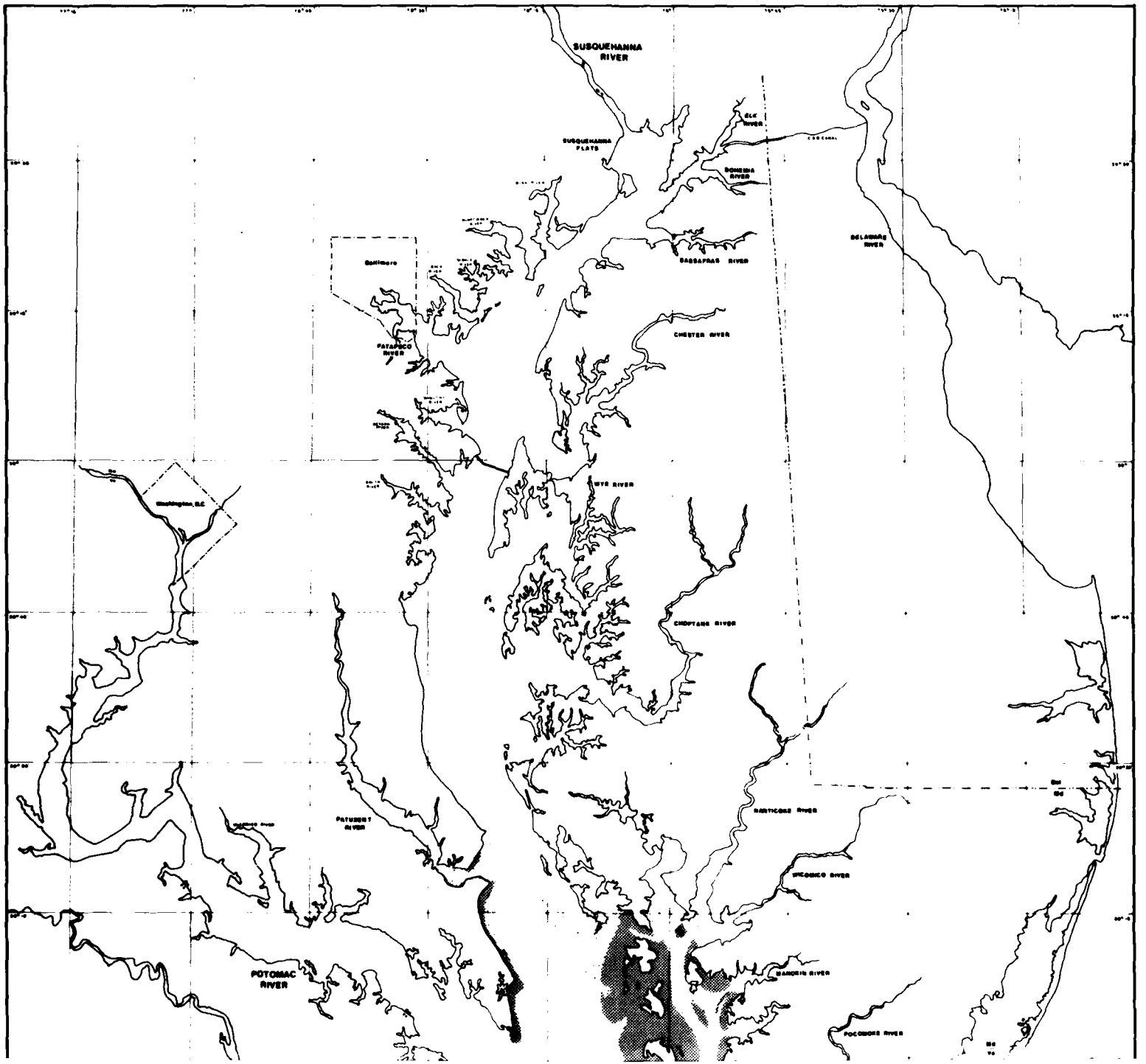

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
RANTICOKE RIVER
WICOMICO RIVER
MANOKIN RIVER
POCOMOKE RIVER
MAP 31 CHESAPEAKE BAY
Macoma balthica - BALTIC MACOMA
Potential Habitat
GENERAL FALL DISTRIBUTION
BASE AVERAGE
LEGEND
Lower Density
Higher Density
WESTERN ECO-SYSTEMS TECHNOLOGY, INC.

Plate 47


SUSQUEHANNA RIVER
ELK RIVER
SUSQUEHANNA FLATS
BOHEMIA RIVER
BASSAPRAS RIVER
DELAWARE RIVER
CHESTER RIVER
PATAPSCO RIVER
WYE RIVER
CHOPTANK RIVER
NANTICOKE RIVER
WICOMICO RIVER
POCOMOKE RIVER
POTOMAC RIVER
PATUXENT RIVER

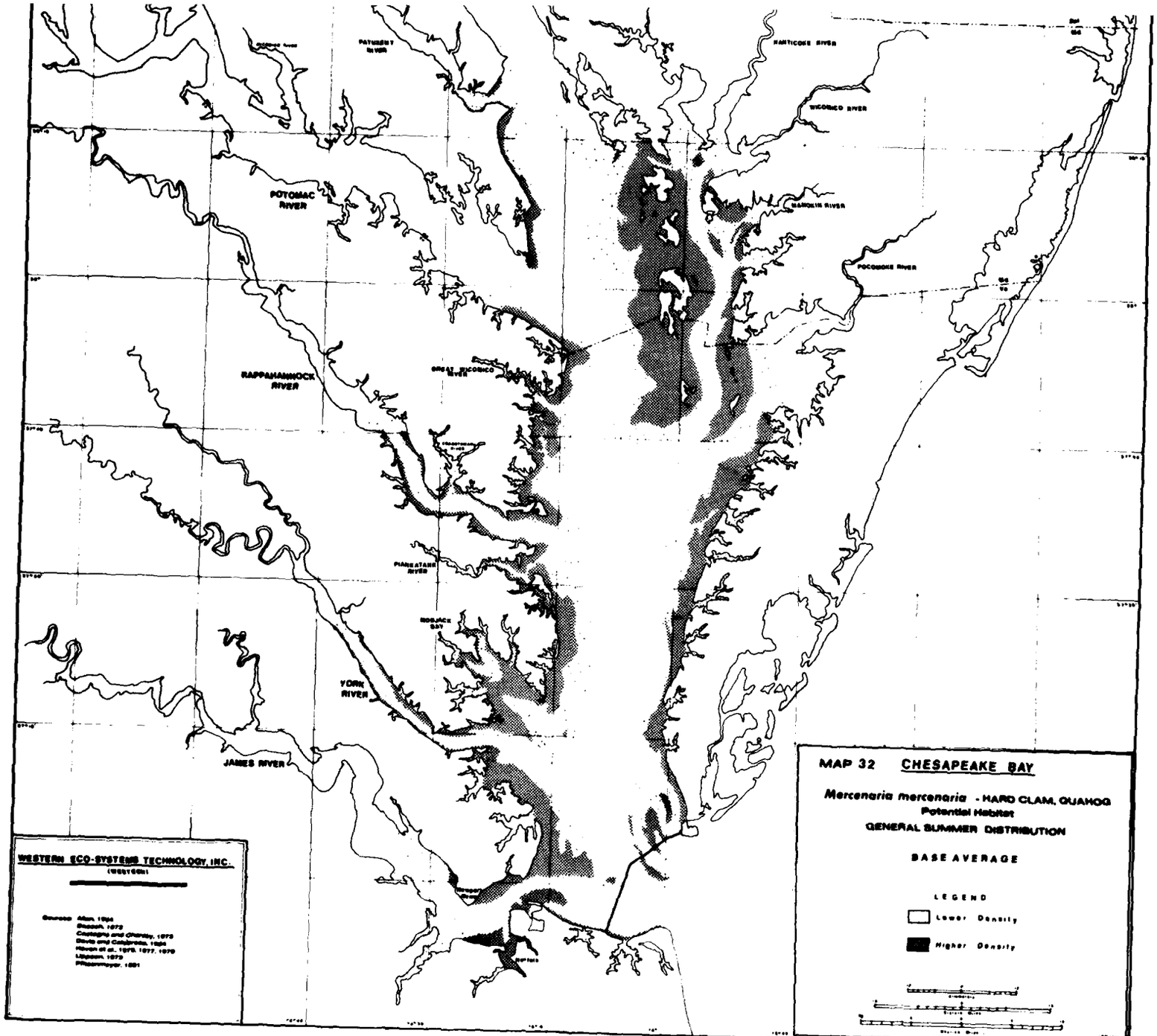
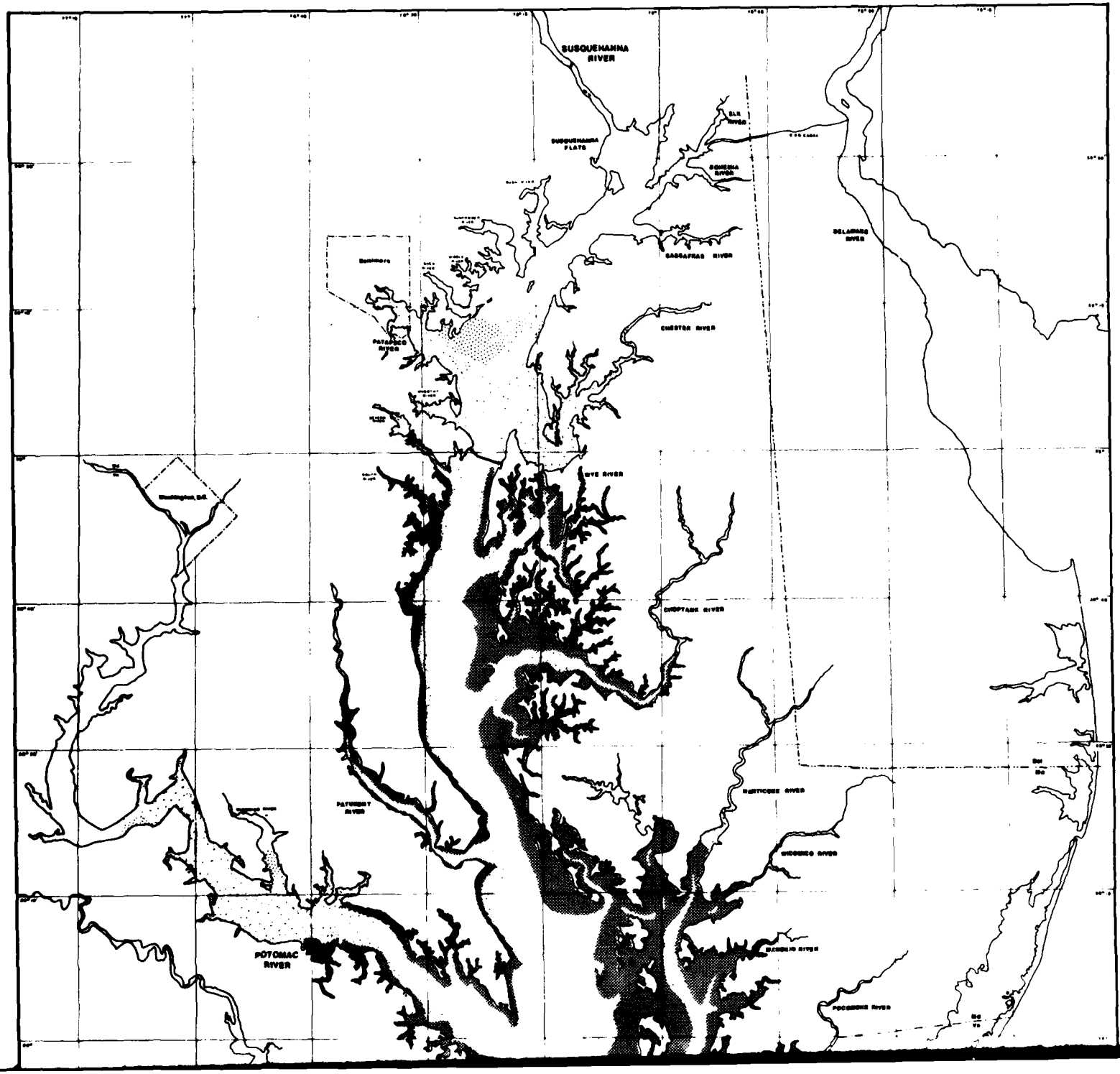

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
MAP 32 CHESAPEAKE BAY
Mercenaria mercenaria - HARD CLAM, QUAHOG
Potential Habitat
GENERAL SUMMER DISTRIBUTION
BASE AVERAGE
LEGEND
Lower Density
Higher Density
WESTERN ECO-SYSTEMS TECHNOLOGY, INC.

Plate 48


SUSQUEHANNA RIVER
SUSQUEHANNA FLATS
ELK RIVER
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
CHESTER RIVER
PATAPSCO RIVER
EASTERN BAY
CHOPTANK RIVER
PATUXENT RIVER
WICOMICO RIVER
POCOMOKE RIVER
POTOMAC RIVER

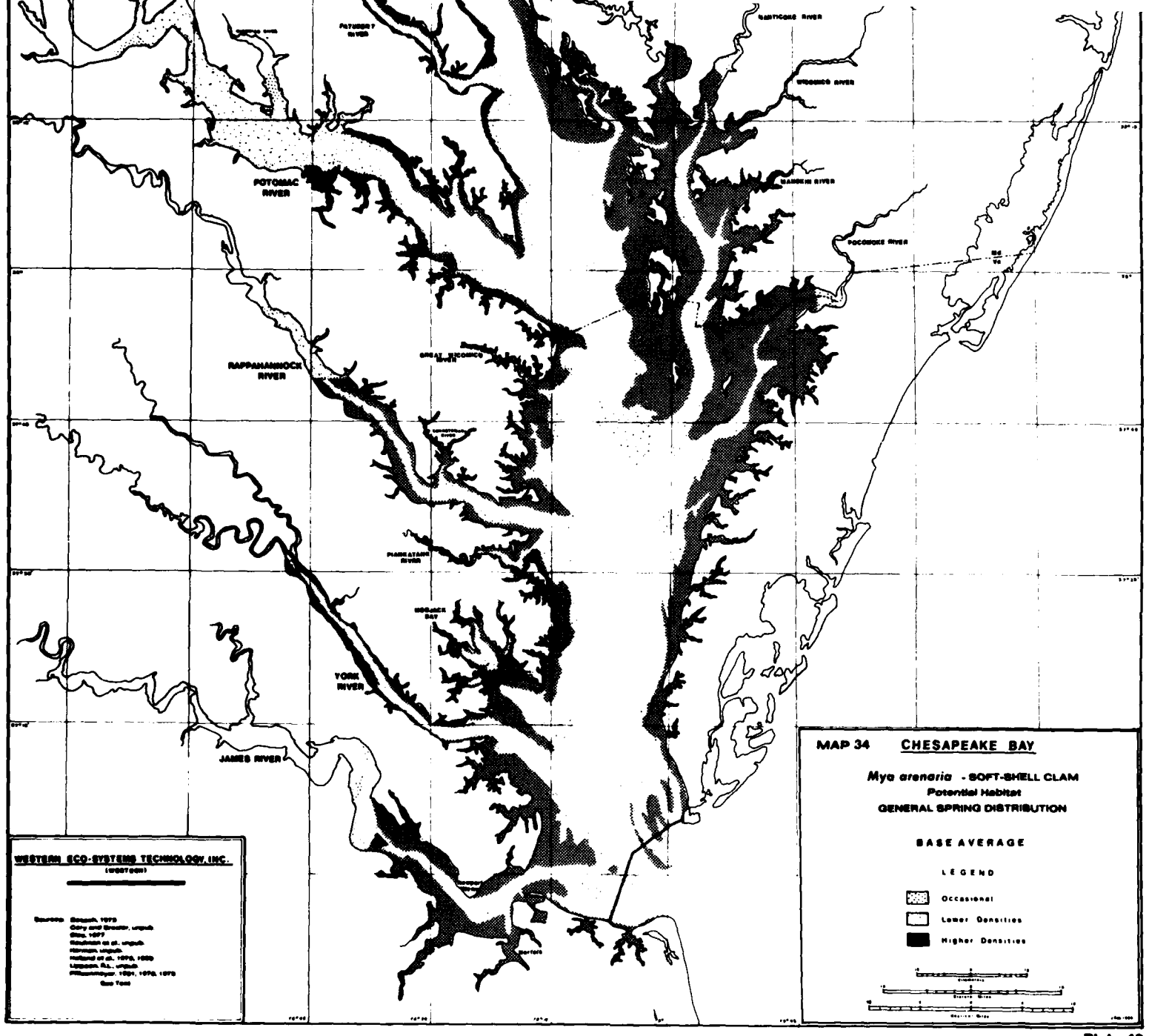
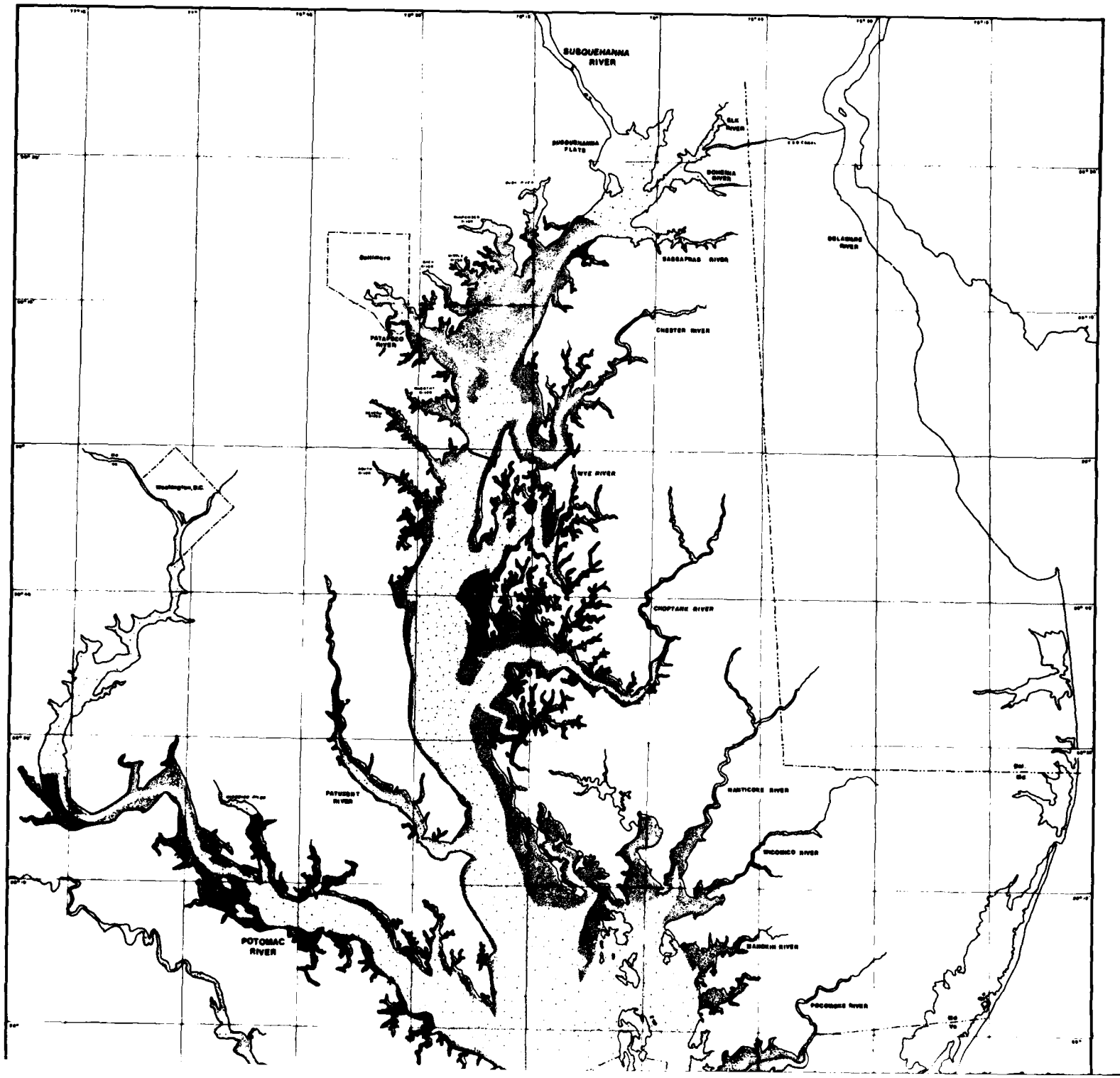

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
MAP 34 CHESAPEAKE BAY
Mya arenaria - SOFT-SHELL CLAM
Potential Habitat
GENERAL SPRING DISTRIBUTION
BASE AVERAGE
LEGEND
Occasional
Lower Densities
Higher Densities
WESTERN ECO-SYSTEMS TECHNOLOGY, INC.

Plate 49


SUSQUEHANNA RIVER
SUSQUEHANNA FLATS
ELK RIVER
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
CHESTER RIVER
WYE RIVER
CHOPTANK RIVER
PATUXENT RIVER
POTOMAC RIVER
WICOMICO RIVER
PANTICOKE RIVER
MANOKIN RIVER
POCOMOKE RIVER

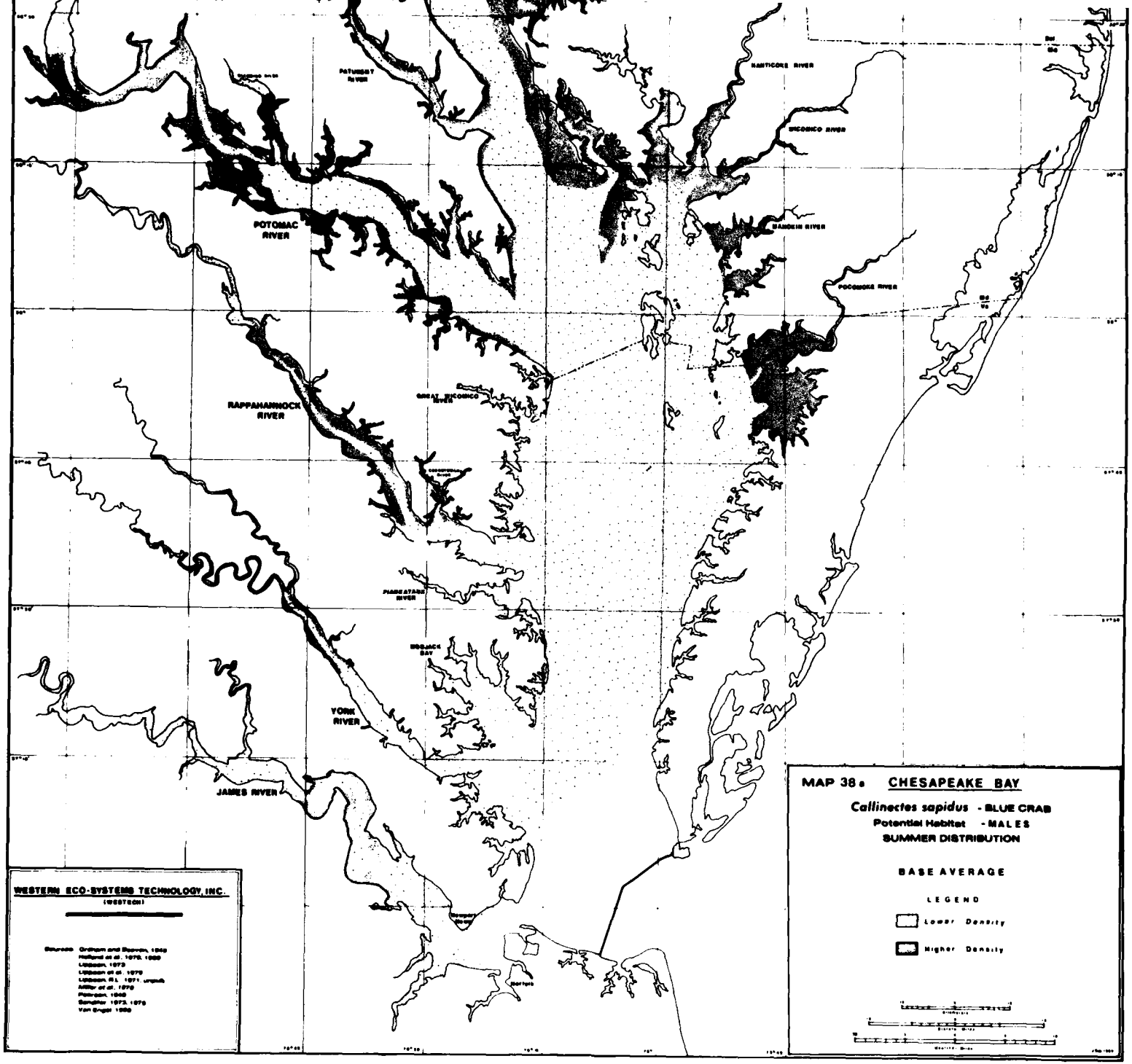
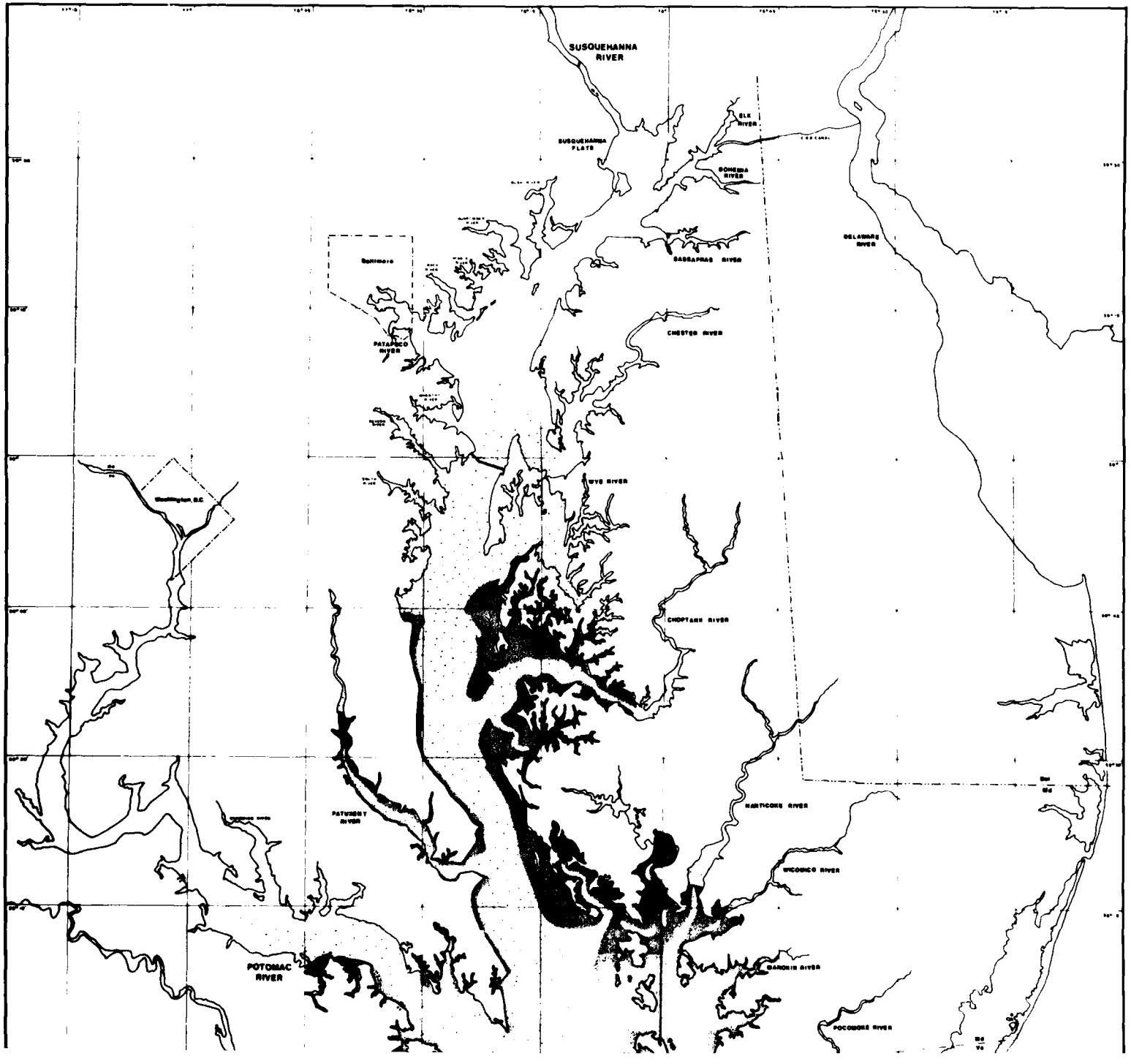

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
MAP 38 e CHESAPEAKE BAY
Callinectes sapidus - BLUE CRAB
Potential Habitat - MALES
SUMMER DISTRIBUTION
BASE AVERAGE
LEGEND
Lower Density
Higher Density
WESTERN ECO-SYSTEMS TECHNOLOGY, INC.

Plate 50


SUSQUEHANNA RIVER
ELK RIVER
SUSQUEHANNA FLATS
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
Baltimore
PATAPSCO RIVER
CHESTER RIVER
Washington, D.C.
WYE RIVER
CHOPTANK RIVER
PATUXENT RIVER
MANOKIN RIVER
WICOMICO RIVER
POTOMAC RIVER
ANNAMESSEX RIVER
POCOMOKE RIVER

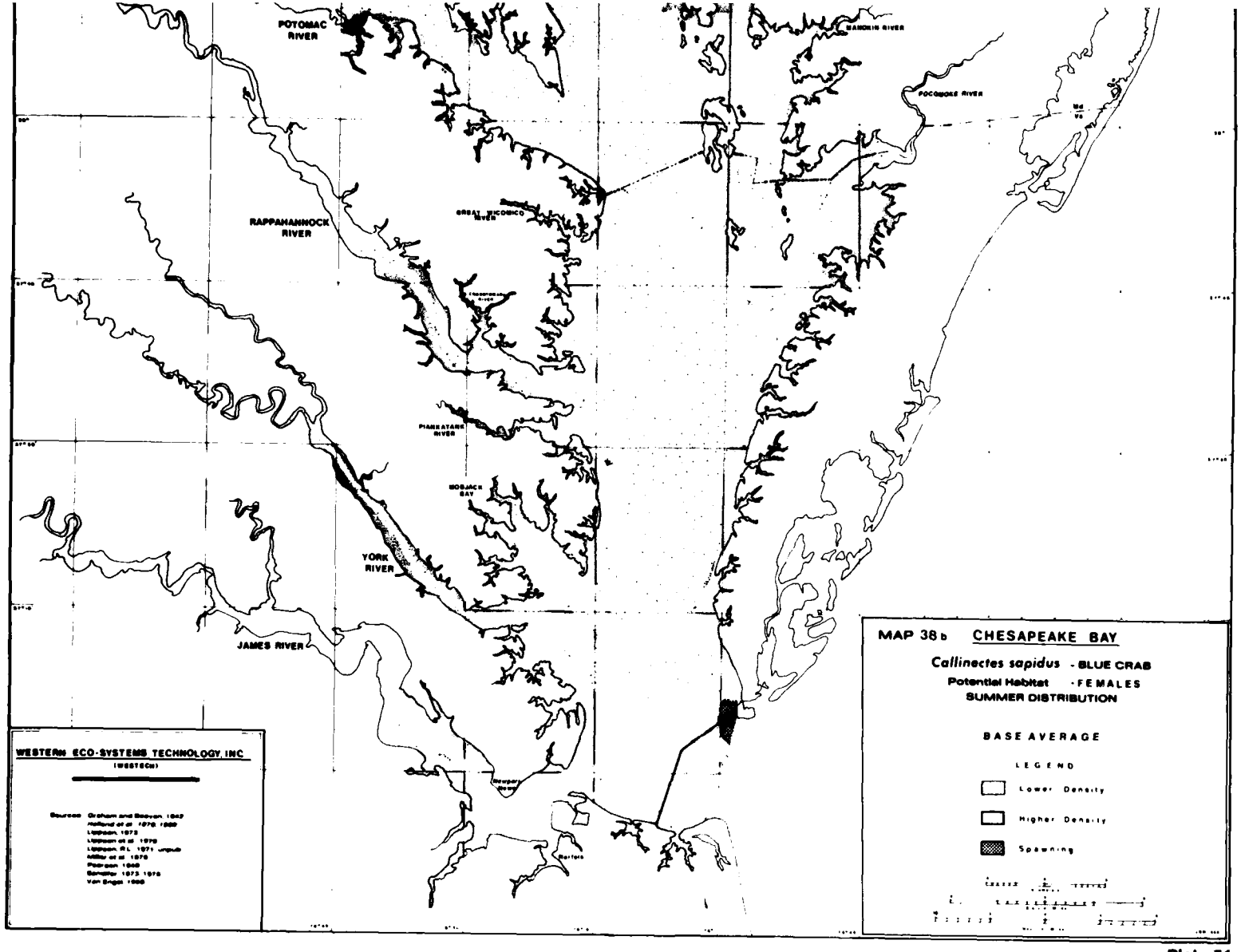
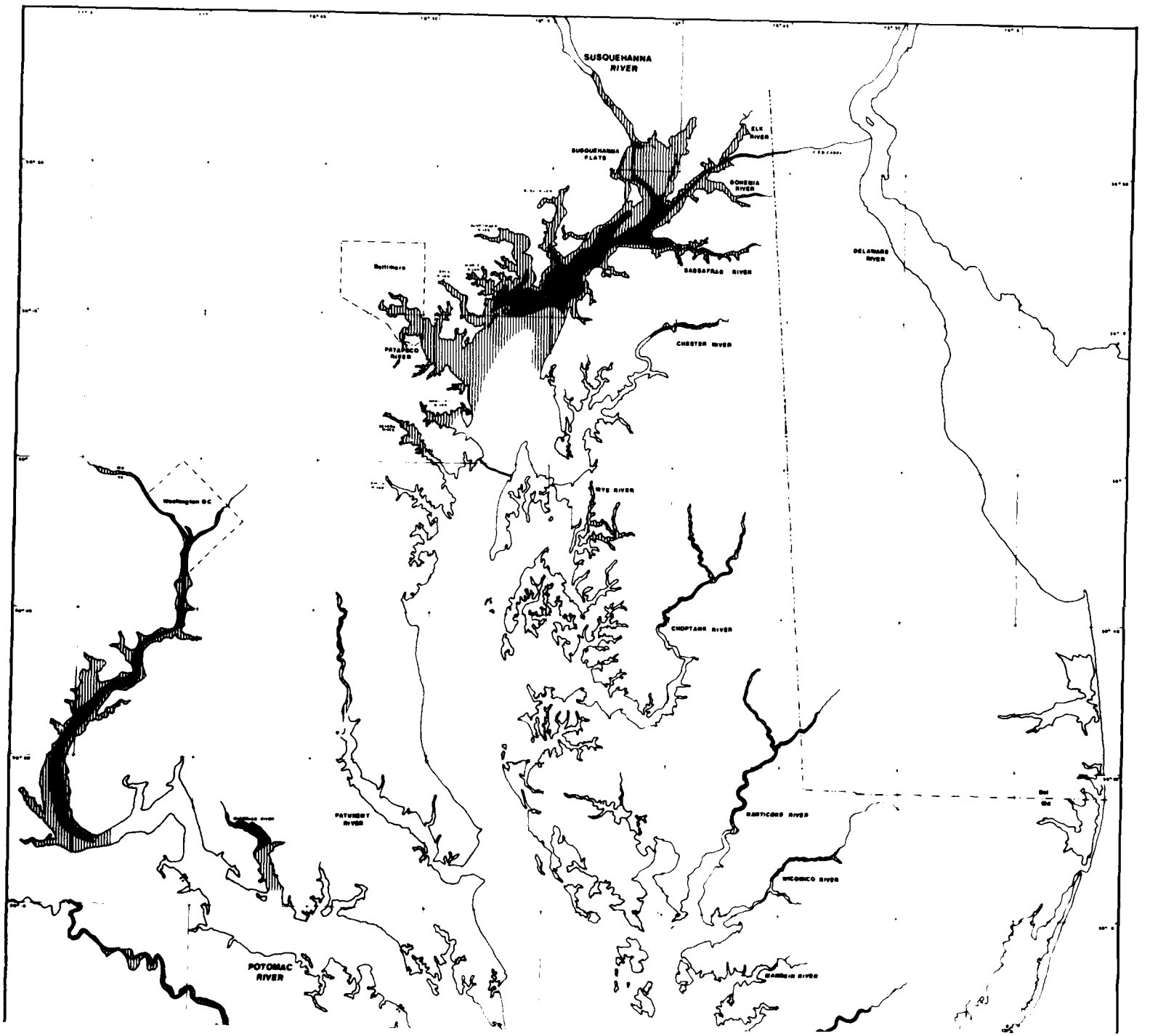

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
PIANKATANK RIVER
MOBJACK BAY
POCOMOKE RIVER
MAP 38 b CHESAPEAKE BAY
Callinectes sapidus - BLUE CRAB
Potential Habitat - FEMALES
SUMMER DISTRIBUTION
BASE AVERAGE
LEGEND
Lower Density
Higher Density
Spawning
WESTERN ECO-SYSTEMS TECHNOLOGY, INC

Plate 51


SUSQUEHANNA RIVER
SUSQUEHANNA FLATS
ELK RIVER
BOHEMIA RIVER
SASSAFRAS RIVER
DELAWARE RIVER
Baltimore
PATAPSCO RIVER
CHESTER RIVER
Washington D.C.
WYE RIVER
CHOPTANK RIVER
PATUXENT RIVER
MANOKIN RIVER
WICOMICO RIVER
POTOMAC RIVER
PANTICO RIVER

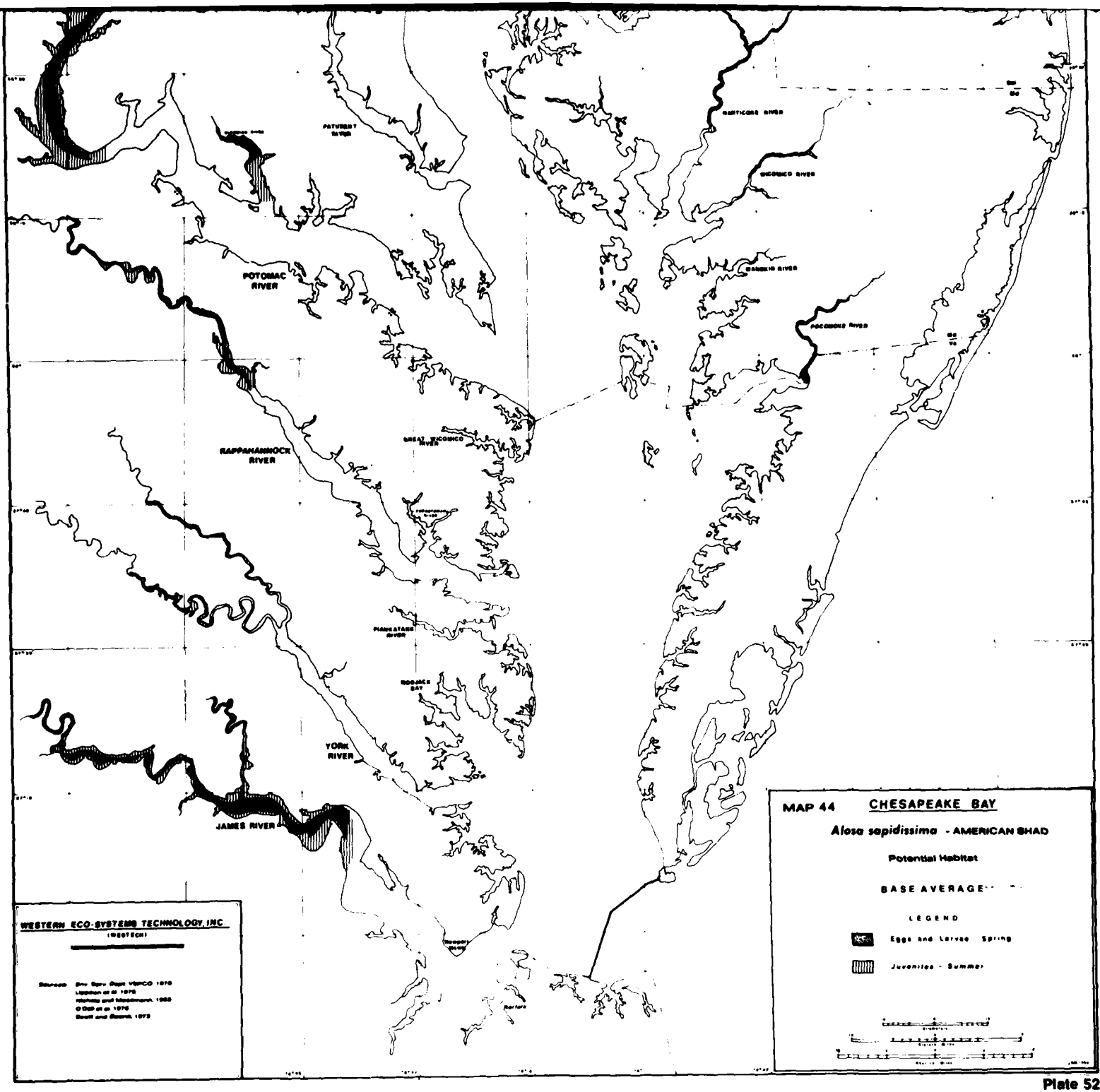
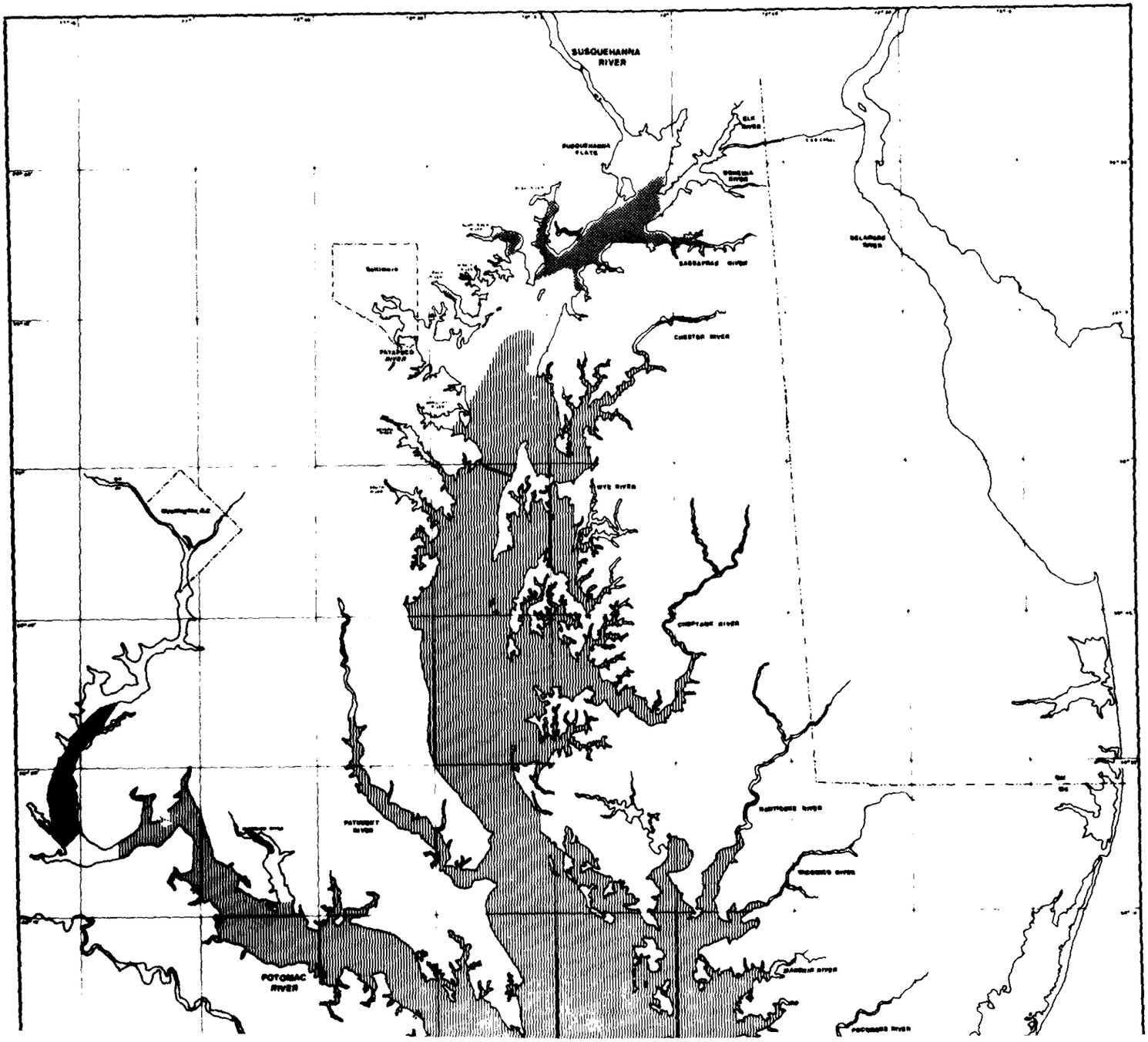

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
MAP 44 CHESAPEAKE BAY
Alosa sapidissima - AMERICAN SHAD
Potential Habitat
BASE AVERAGE
LEGEND
Eggs and Larvae - Spring
Juveniles - Summer
WESTERN ECO-SYSTEMS TECHNOLOGY, INC.
(WESTECH)

Plate 52


SUSQUEHANNA RIVER
POTOMAC RIVER

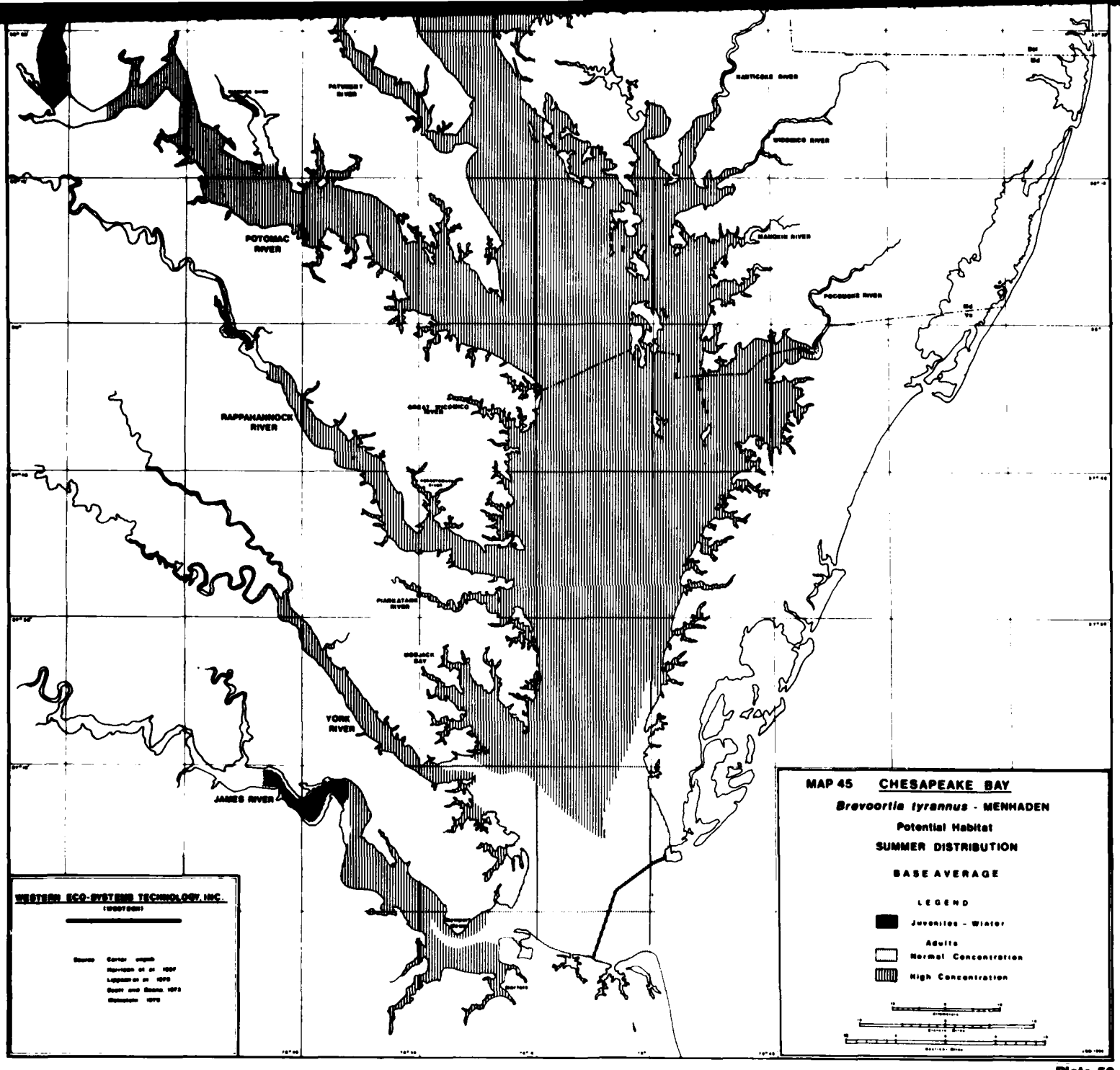
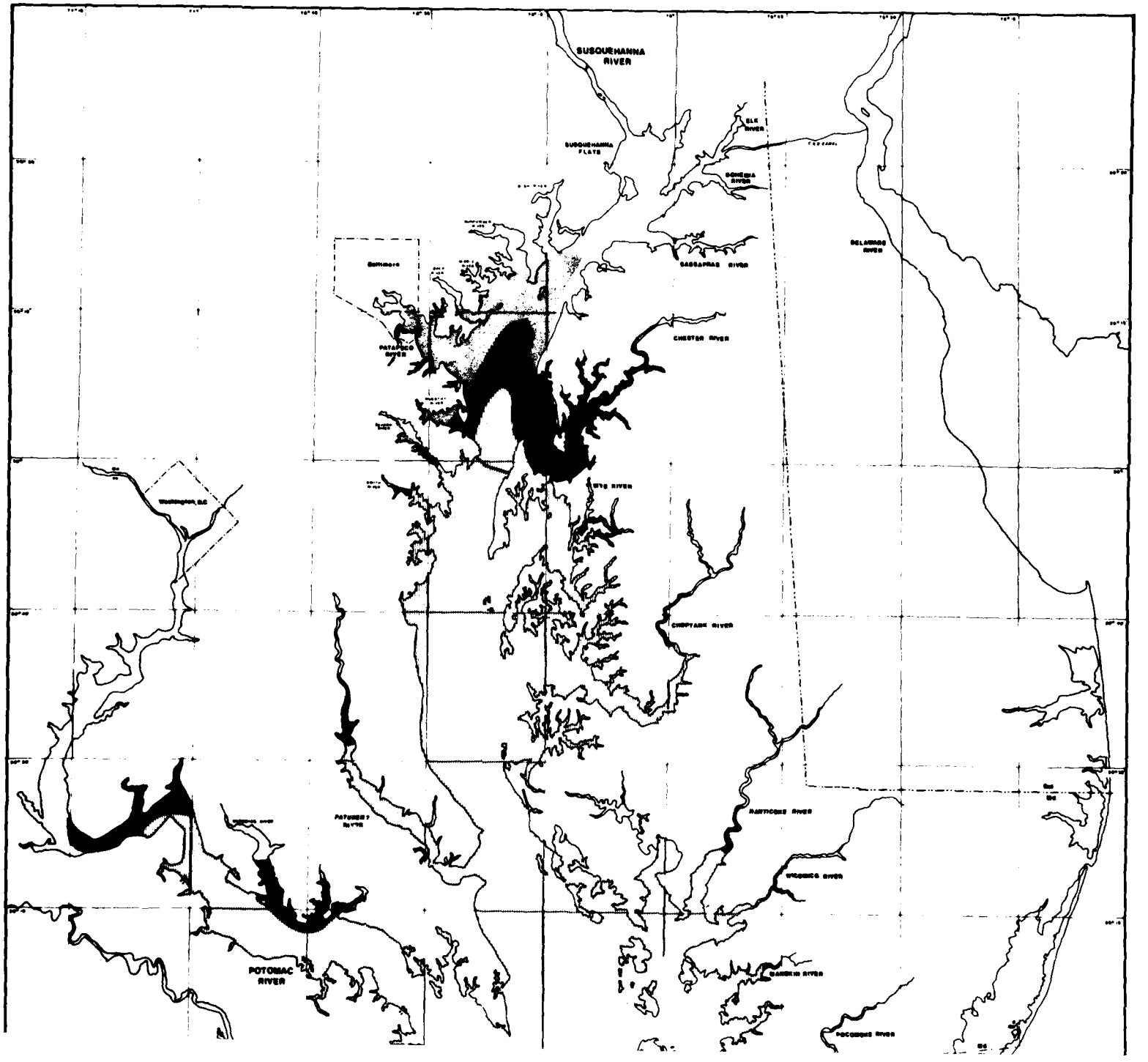

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
MAP 45 CHESAPEAKE BAY
Brevoortia tyrannus - MENHADEN
Potential Habitat
SUMMER DISTRIBUTION
BASE AVERAGE
LEGEND
Juveniles - Winter
Adults
Normal Concentration
High Concentration
WESTERN ECO-SYSTEMS TECHNOLOGY, INC.

Plate 53


SUSQUEHANNA RIVER
ELK RIVER
SUSQUEHANNA FLATS
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
CHESTER RIVER
PATAPSCO RIVER
SEVERN RIVER
CHOPTANK RIVER
PATUXENT RIVER
ANNAMESSEX RIVER
WICOMICO RIVER
POTOMAC RIVER
MANOKIN RIVER
PocoMoke RIVER

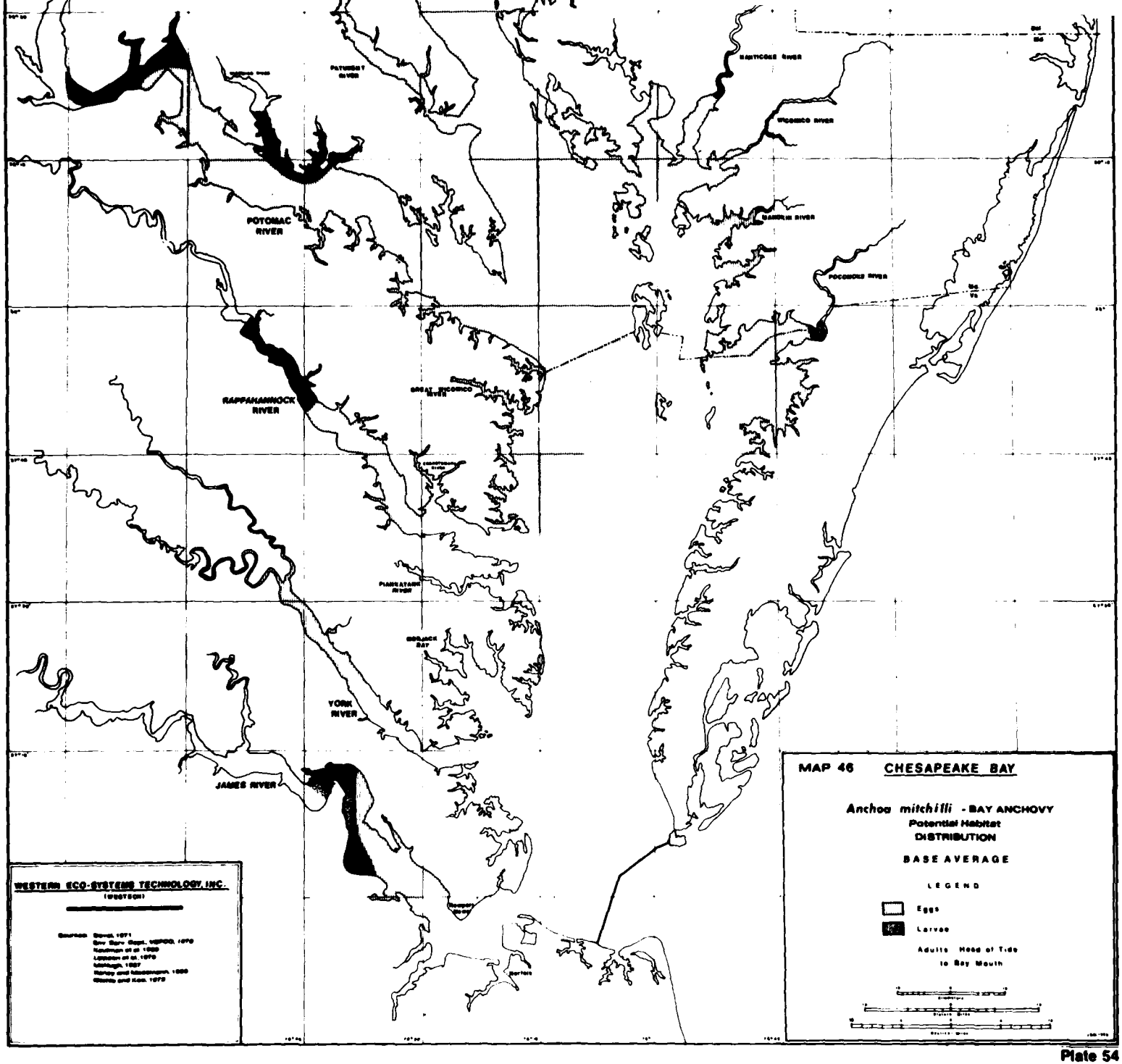

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
MAP 46 CHESAPEAKE BAY
Anchoa mitchilli - BAY ANCHOVY
Potential Habitat
DISTRIBUTION
BASE AVERAGE
LEGEND
Eggs
Larvae
Adults Head of Tide
to Bay Mouth
WESTERN ECO-SYSTEMS TECHNOLOGY, INC.

Plate 54

SUSQUEHANNA RIVER
POTOMAC RIVER

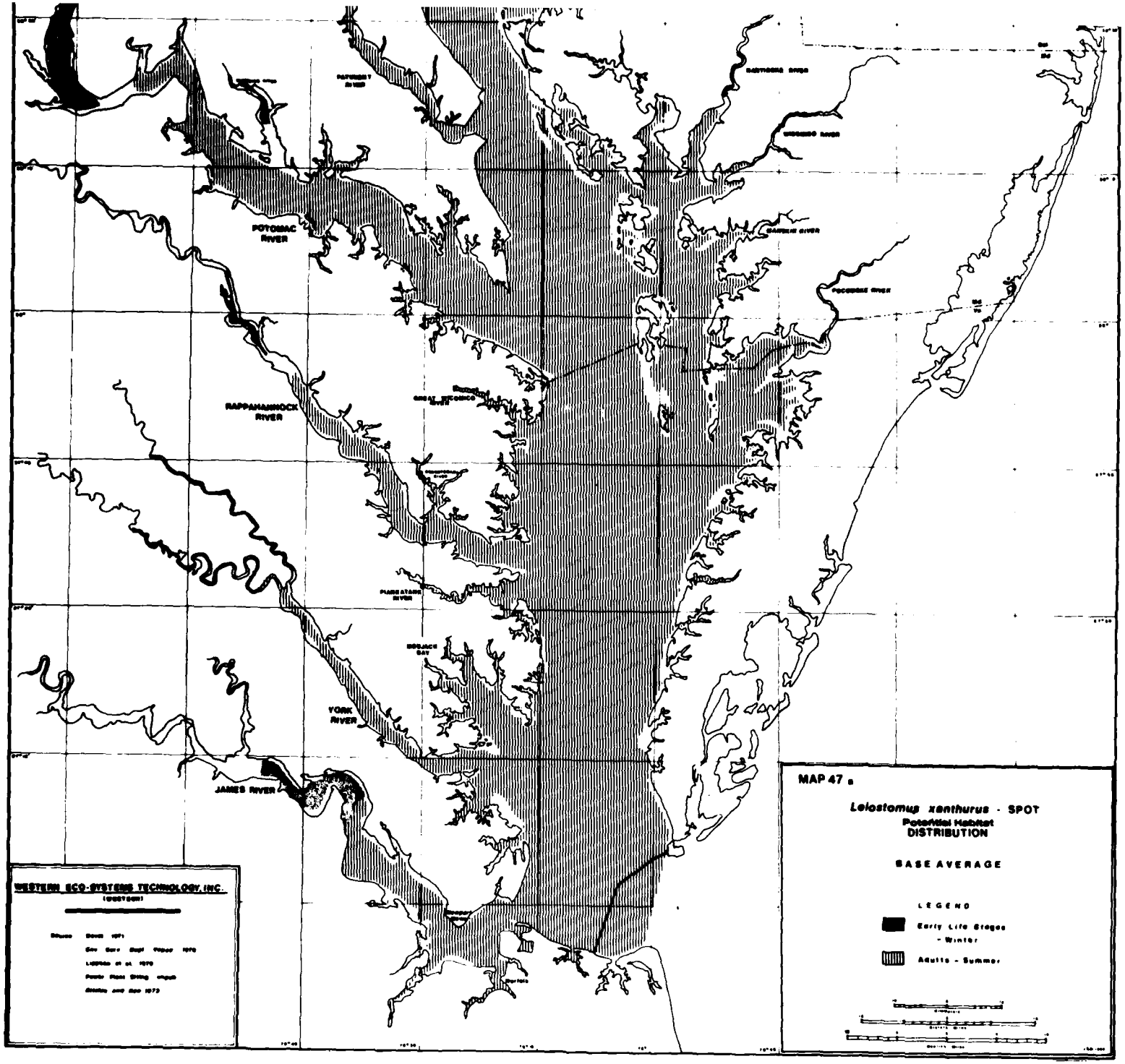
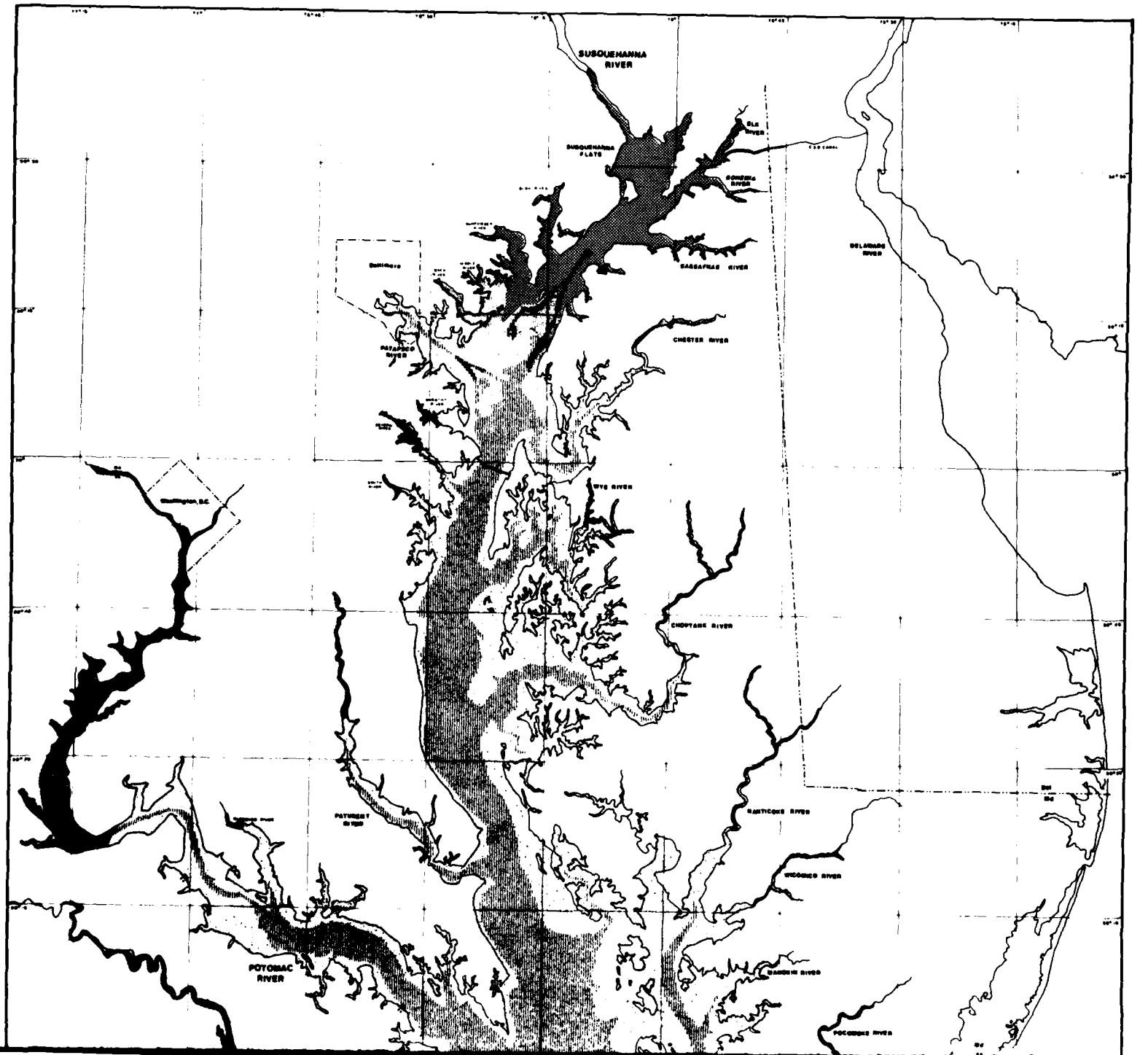

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
MAP 47 a
Leiostomus xanthurus - SPOT
Potential Habitat
DISTRIBUTION
BASE AVERAGE
LEGEND
Early Life Stages - Winter
Adults - Summer
WESTERN ECO-SYSTEMS TECHNOLOGY, INC.

Plate 55


SUSQUEHANNA RIVER
ELK RIVER
SUSQUEHANNA FLATS
SASSAFRAS RIVER
DELAWARE RIVER
CHESTER RIVER
PATAPSCO RIVER
WYE RIVER
CHOPTANK RIVER
NANTICOKE RIVER
WICOMICO RIVER
POCOMOKE RIVER
POTOMAC RIVER

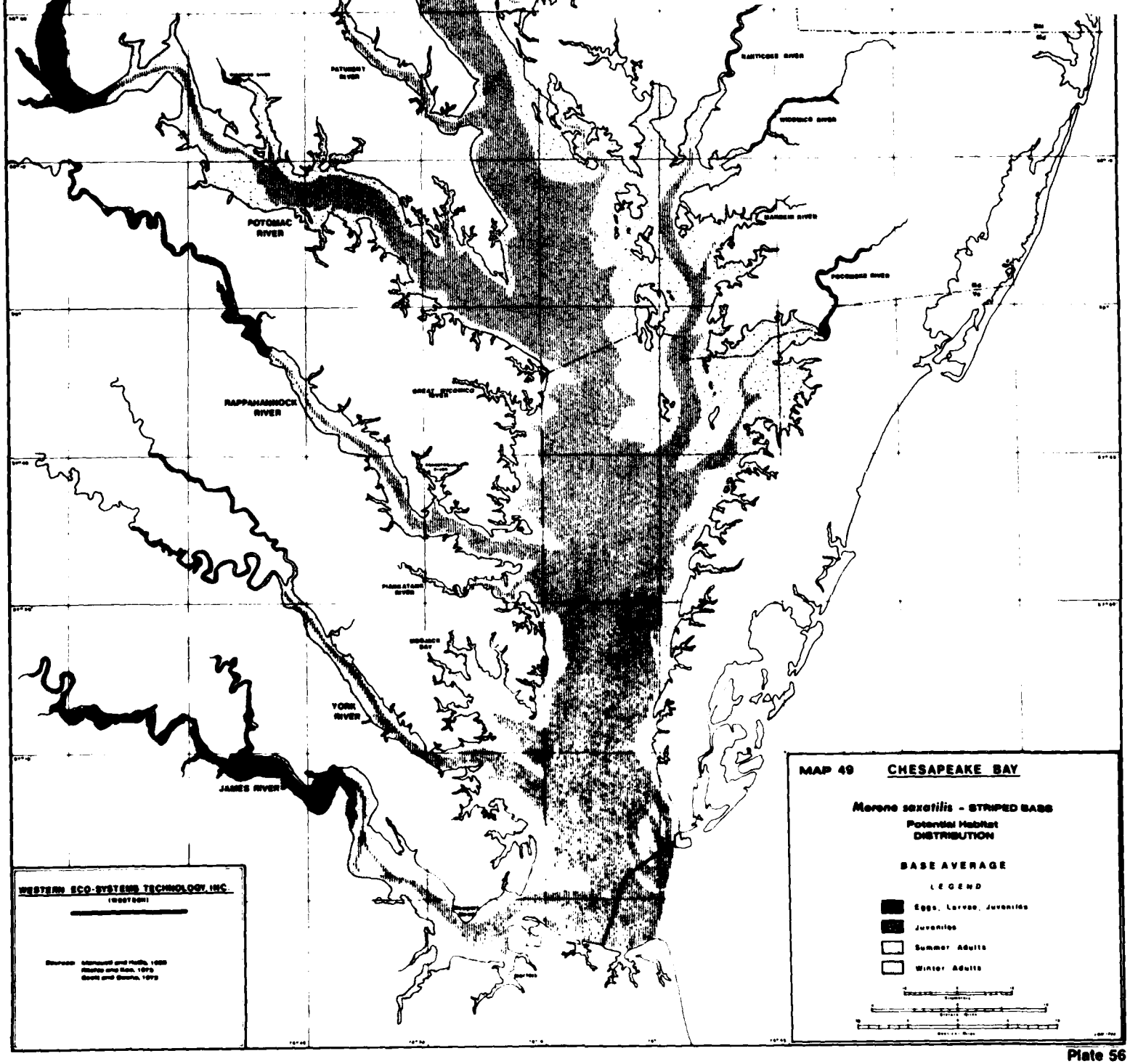
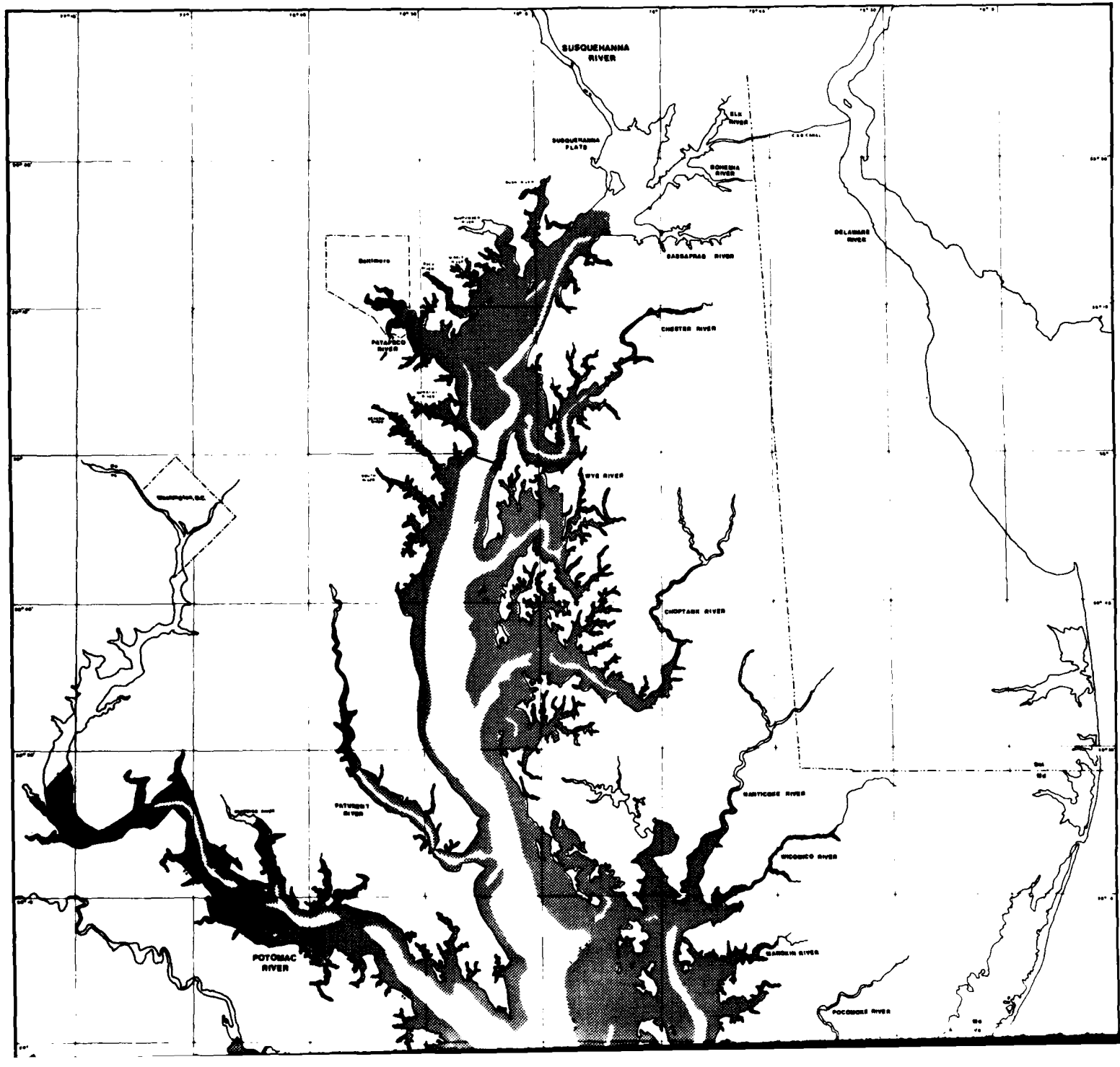

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
MAP 49 CHESAPEAKE BAY
Morone saxatilis - STRIPED BASS
Potential Habitat
DISTRIBUTION
BASE AVERAGE
LEGEND
Eggs, Larvae, Juveniles
Juveniles
Summer Adults
Winter Adults
WESTERN ECO-SYSTEMS TECHNOLOGY, INC.

Plate 56


SUSQUEHANNA RIVER
SUSQUEHANNA FLATS
ELK RIVER
BOHEMIA RIVER
C & D CANAL
SASSAFRAS RIVER
DELAWARE RIVER
CHESTER RIVER
PATAPSCO RIVER
WYE RIVER
CHOPTANK RIVER
PATUXENT RIVER
NANTICOKE RIVER
WICOMICO RIVER
POTOMAC RIVER
MANOKIN RIVER
POCOMOKE RIVER

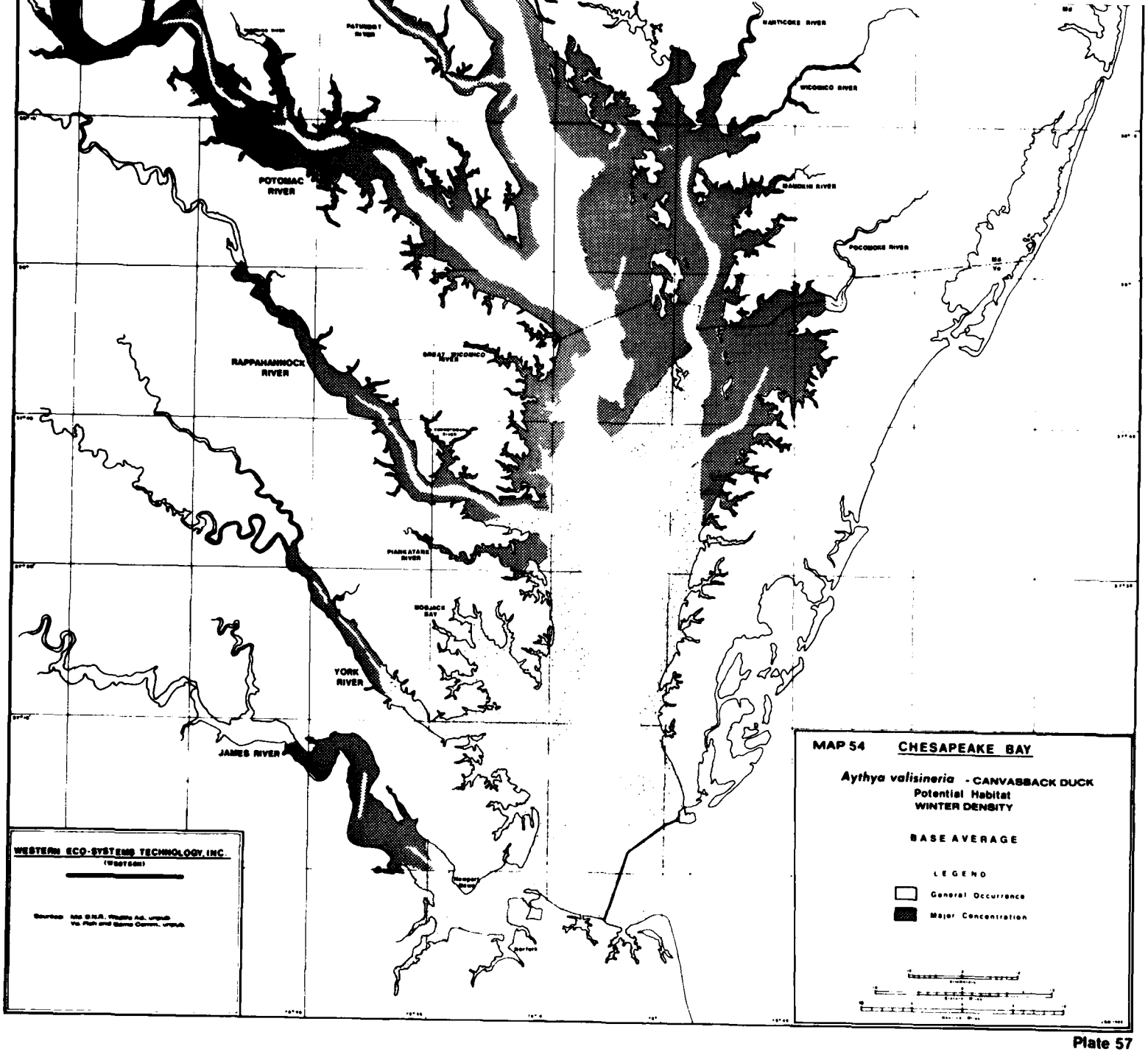
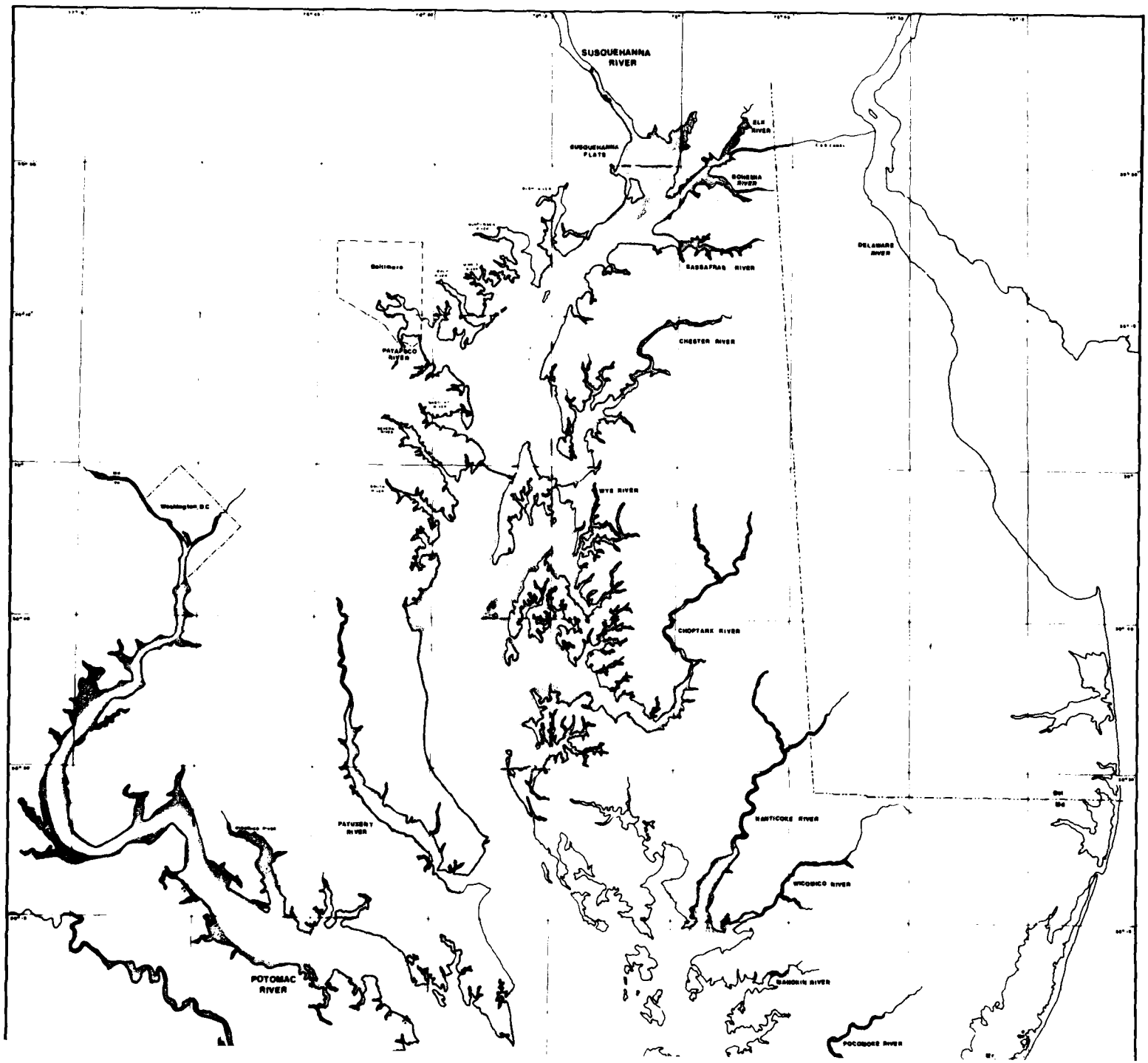

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
MAP 54 CHESAPEAKE BAY
Aythya valisineria - CANVASBACK DUCK
Potential Habitat
WINTER DENSITY
BASE AVERAGE
LEGEND
General Occurrence
Major Concentration
WESTERN ECO-SYSTEMS TECHNOLOGY, INC.

Plate 57


SUSQUEHANNA RIVER
SUSQUEHANNA FLATS
ELK RIVER
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
Baltimore
PATAPSCO RIVER
CHESTER RIVER
Washington, D.C.
WYE RIVER
CHOPTANK RIVER
PATUXENT RIVER
POTOMAC RIVER
NANTICOKE RIVER
WICOMICO RIVER
MANOKIN RIVER
POCOMOKE RIVER

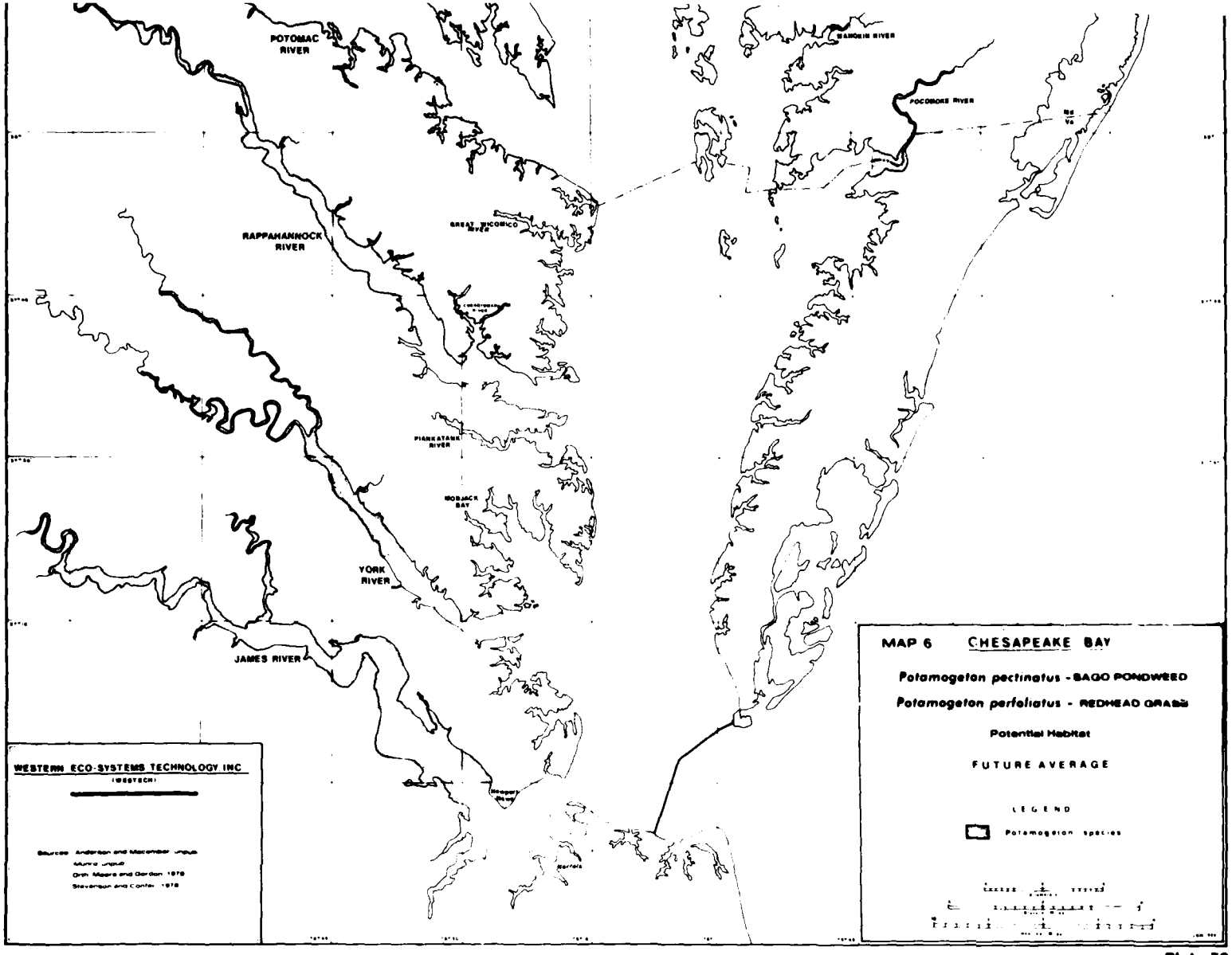
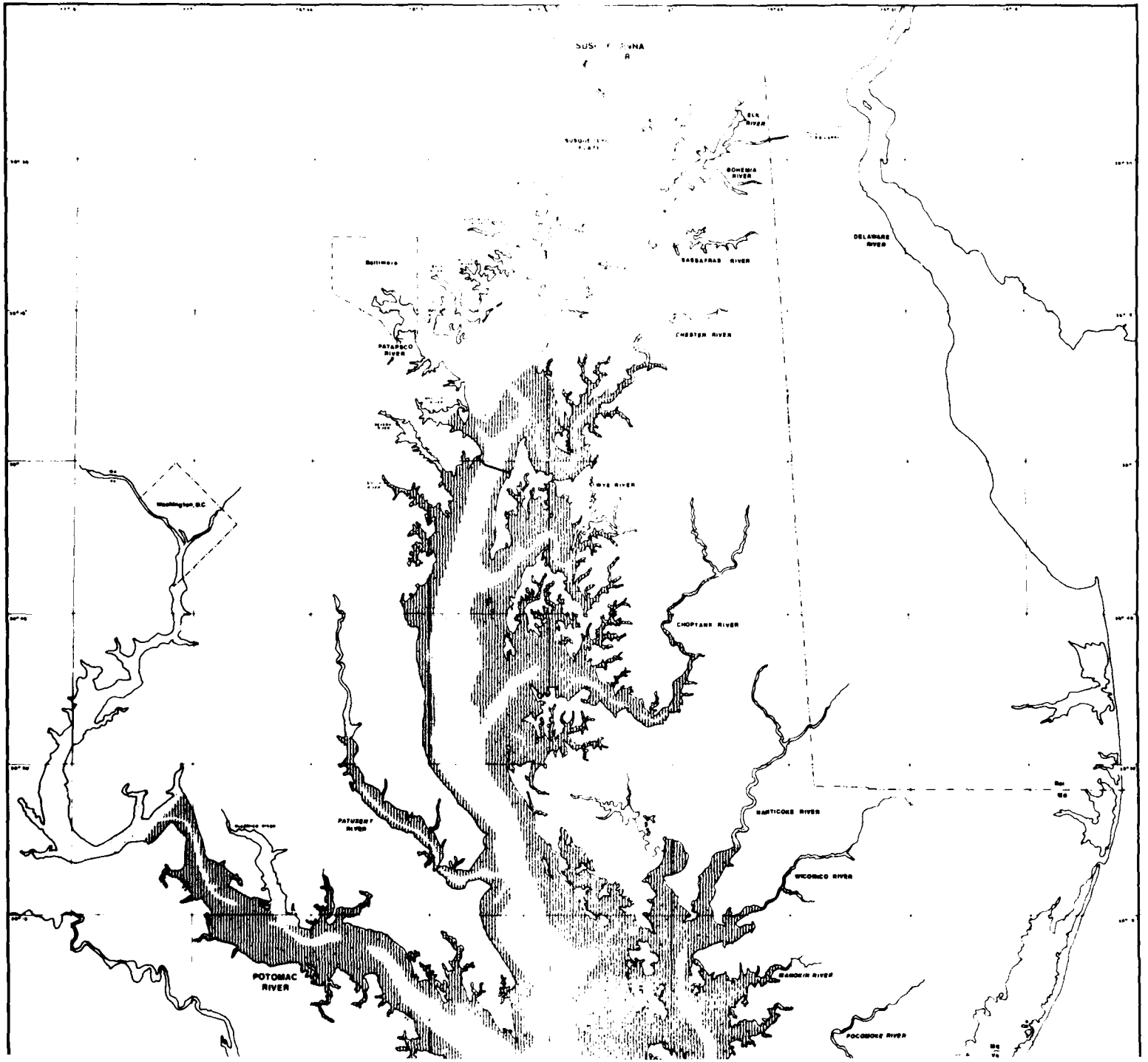

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
MAP 6 CHESAPEAKE BAY
Potamogeton pectinatus - SAGO PONDWEED
Potamogeton perfoliatus - REDHEAD GRASS
Potential Habitat
FUTURE AVERAGE
LEGEND
Potamogeton species
WESTERN ECO-SYSTEMS TECHNOLOGY INC

Plate 58


SUSQUEHANNA
ELK RIVER
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
Baltimore
CHESTER RIVER
PATAPSCO RIVER
Washington, D.C.
CHOPTANK RIVER
MANOKIN RIVER
POCOMOKE RIVER
POTOMAC RIVER

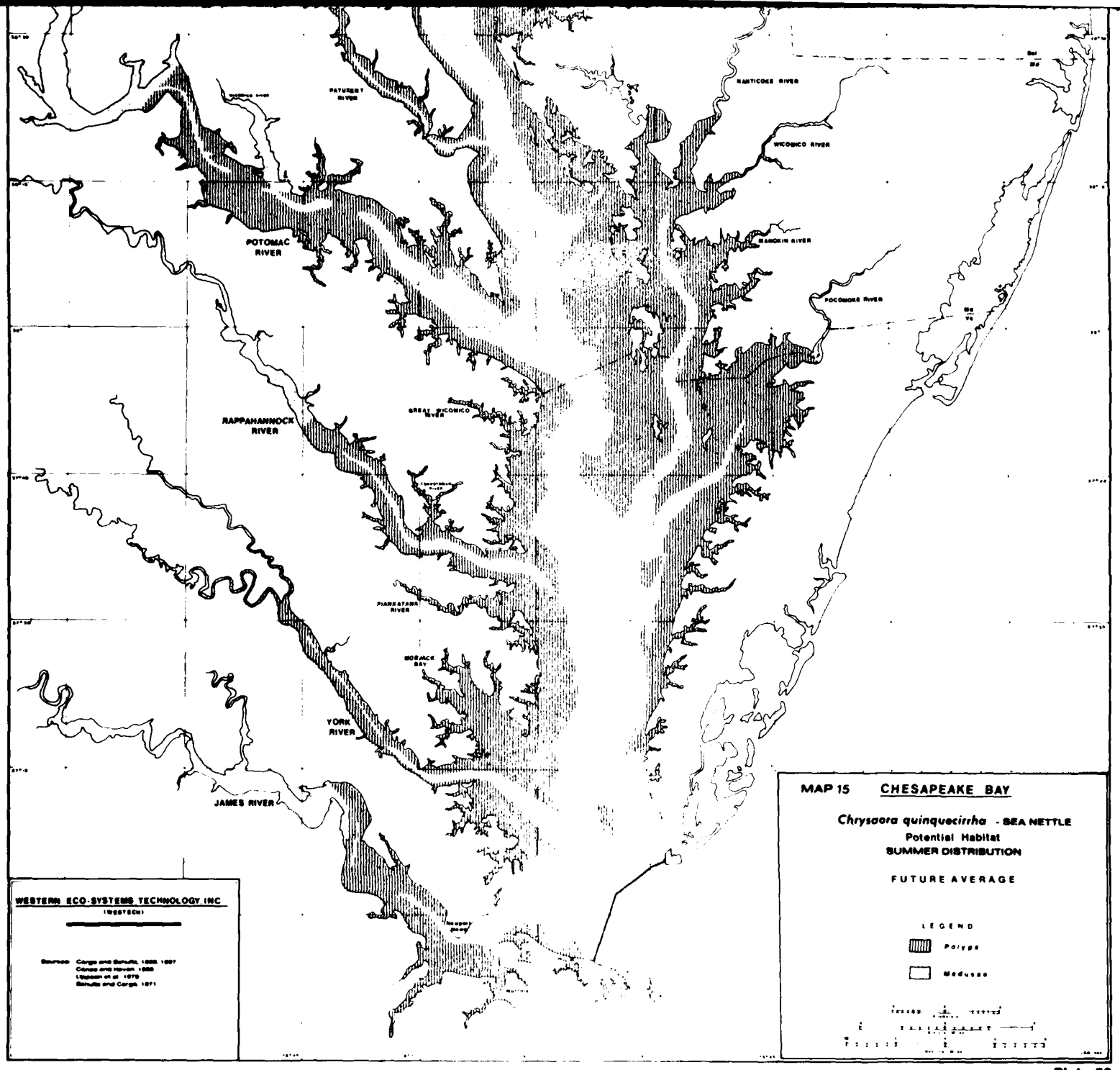
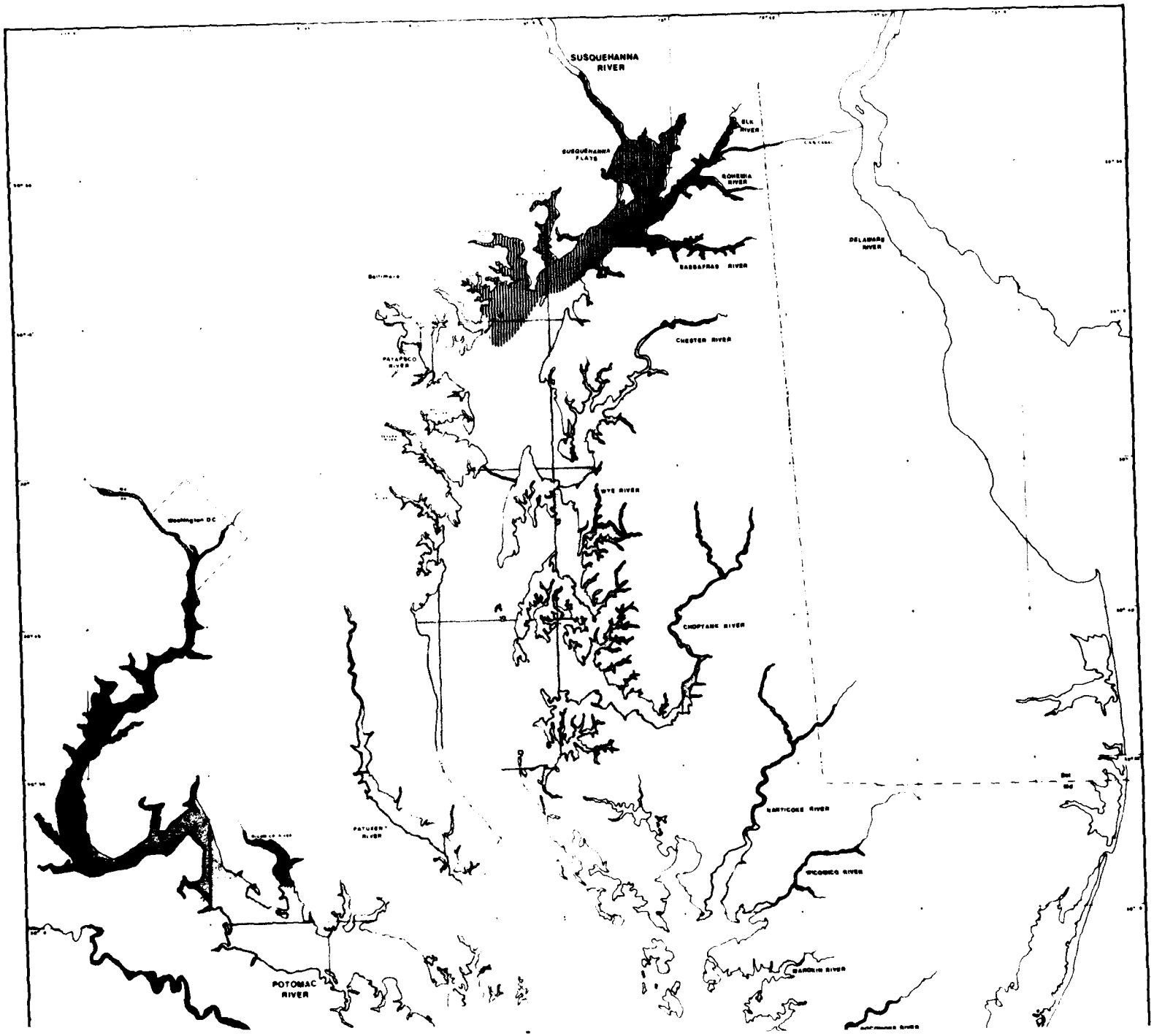

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
RAPPAHANNOCK RIVER
WICOMICO RIVER
PIANKATANK RIVER
MOBJACK BAY
MAP 15 CHESAPEAKE BAY
Chrysaora quinquecirrha - SEA NETTLE
Potential Habitat
SUMMER DISTRIBUTION
FUTURE AVERAGE
LEGEND
Polyps
Medusae
WESTERN ECO-SYSTEMS TECHNOLOGY, INC

Plate 59


SUSQUEHANNA RIVER
ELK RIVER
SUSQUEHANNA FLATS
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
CHESTER RIVER
PATAPSCO RIVER
WYE RIVER
CHOPTANK RIVER
PATUXENT RIVER
WICOMICO RIVER
POTOMAC RIVER

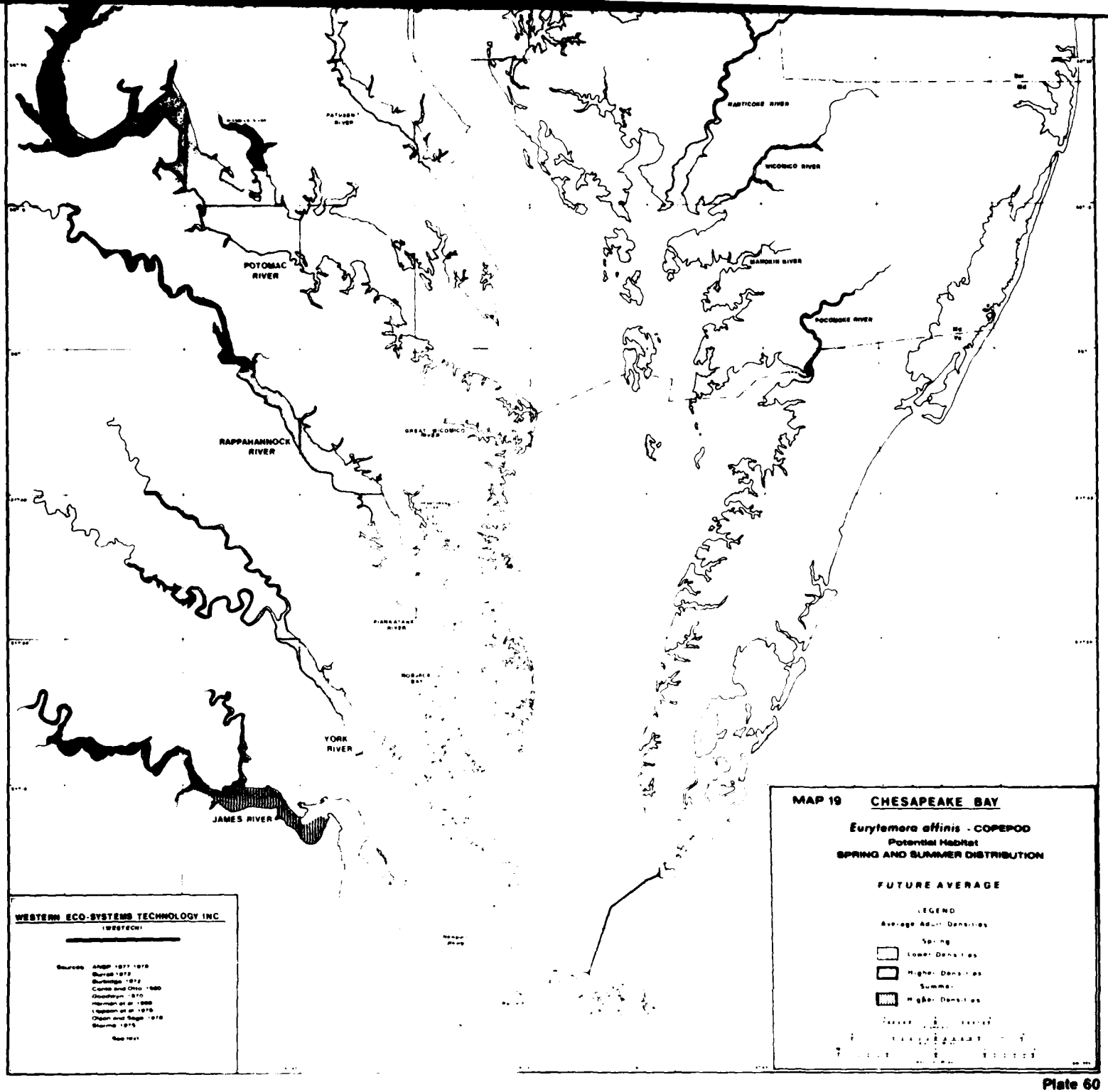
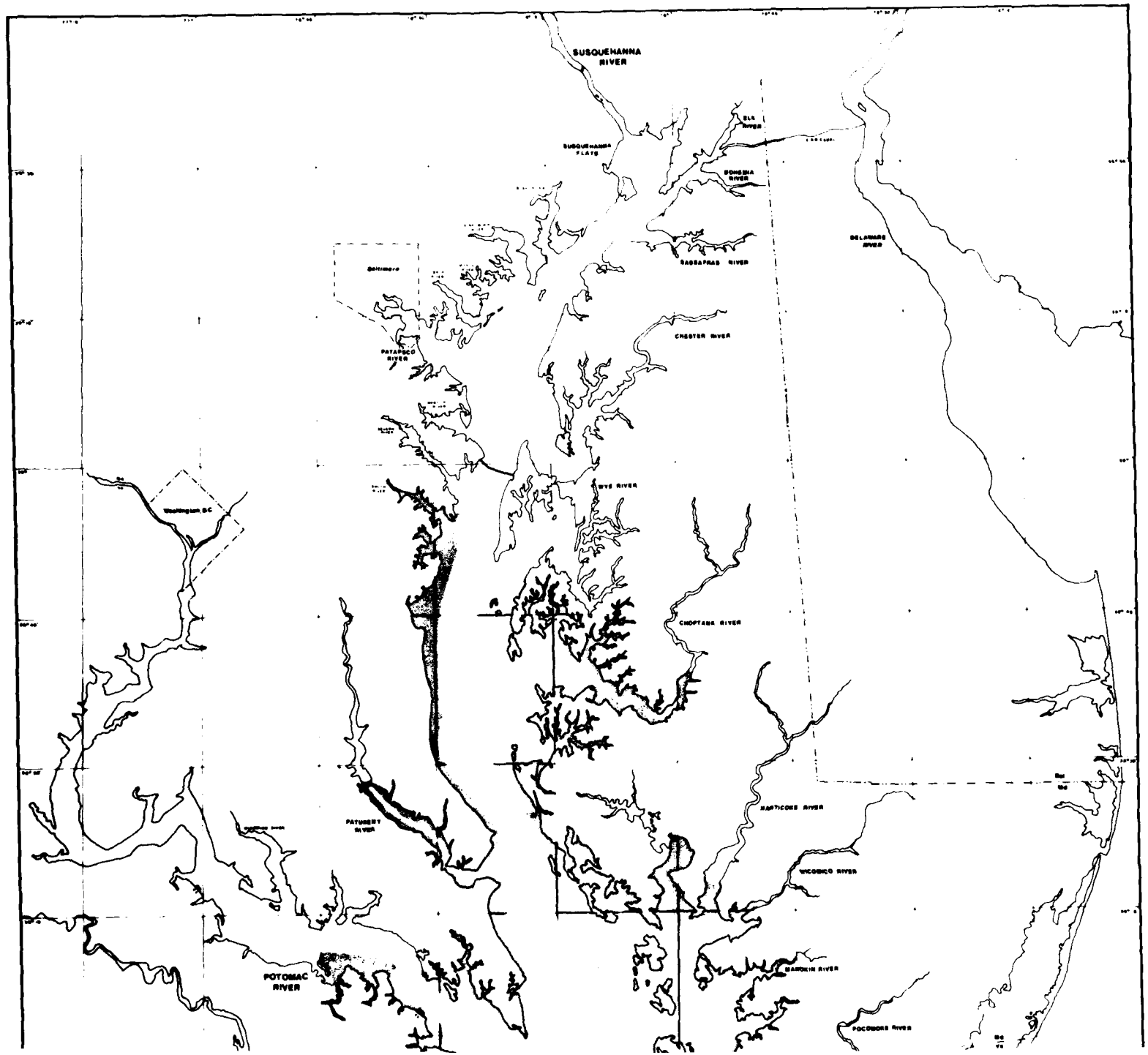

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
RAPPAHANNOCK RIVER
WICOMICO RIVER
POCOMOKE RIVER
MAP 19 CHESAPEAKE BAY
Eurytemora affinis - COPEPOD
Potential Habitat
SPRING AND SUMMER DISTRIBUTION
FUTURE AVERAGE
LEGEND
Average Adult Densities
Spring
Lower Densities
Higher Densities
Summer
Higher Densities
WESTERN ECO-SYSTEMS TECHNOLOGY INC
(WESTECH)

Plate 60


SUSQUEHANNA RIVER
SUSQUEHANNA FLATS
ELK RIVER
BOHEMIA RIVER
SASSAFRAS RIVER
CHESTER RIVER
PATAPSCO RIVER
CHOPTANK RIVER
PATUXENT RIVER
POTOMAC RIVER
WICOMICO RIVER
POCOMOKE RIVER

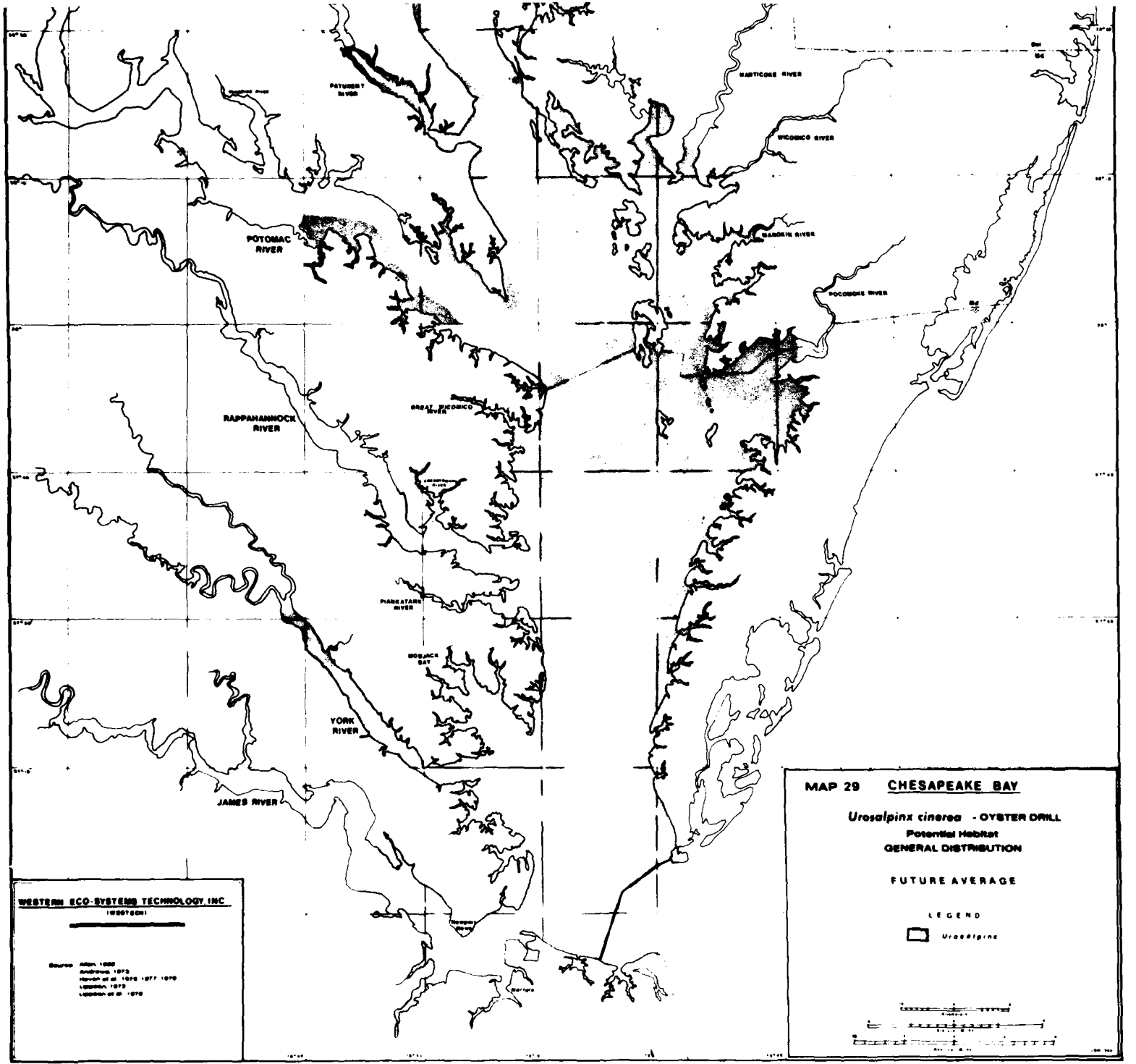
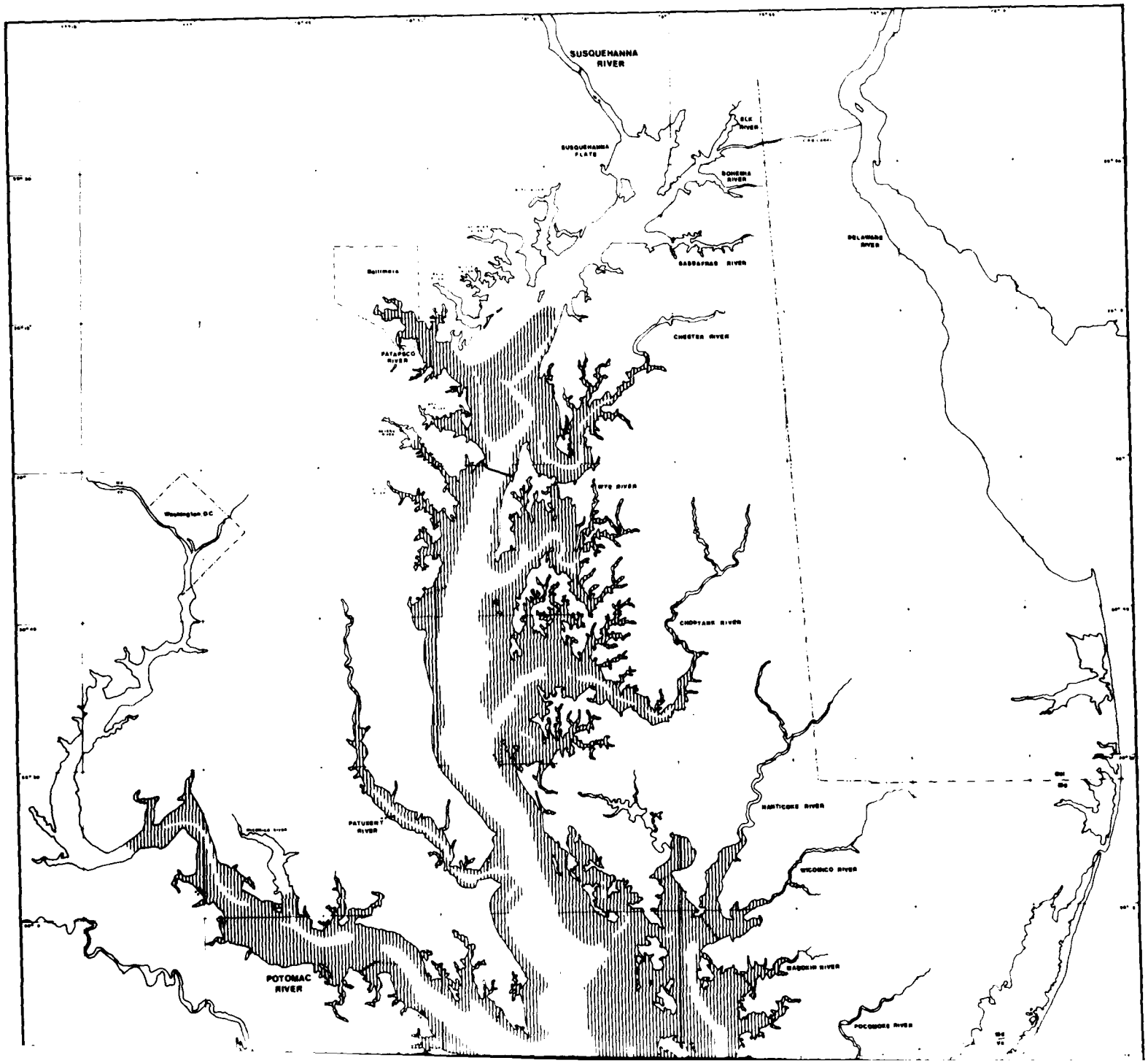

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
MAP 29 CHESAPEAKE BAY
Urosalpinx cinerea - OYSTER DRILL
Potential Habitat
GENERAL DISTRIBUTION
FUTURE AVERAGE
LEGEND
WESTERN ECO-SYSTEMS TECHNOLOGY, INC

Plate 61


SUSQUEHANNA RIVER
ELK RIVER
SUSQUEHANNA FLATS
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
Baltimore
CHESTER RIVER
PATAPSCO River
Washington DC
SEVE RIVER
CHOPTANK RIVER
PATUXENT River
RANTICOKE RIVER
WICOMICO RIVER
POTOMAC RIVER
MANOKIN RIVER
POCOMOKE RIVER

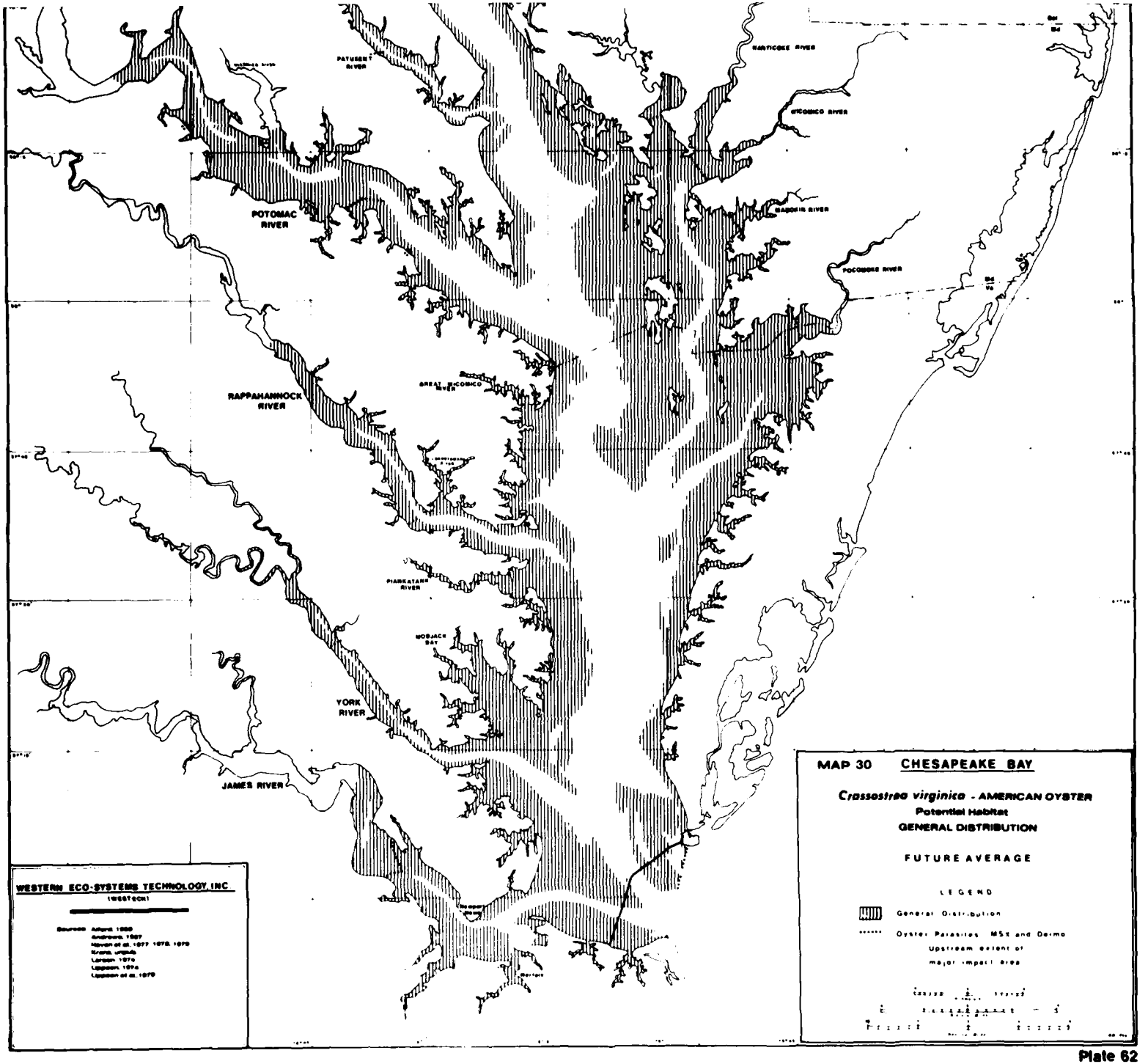

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
PATUXENT RIVER
NANTICOKE RIVER
WICOMICO RIVER
MANOKIN RIVER
POCOMOKE RIVER
GREAT WICOMICO RIVER
PIANKATANK RIVER
MOBJACK BAY
WESTERN ECO-SYSTEMS TECHNOLOGY, INC.
(WESTECH)
MAP 30 CHESAPEAKE BAY
Crassostrea virginica - AMERICAN OYSTER
Potential Habitat
GENERAL DISTRIBUTION
FUTURE AVERAGE
LEGEND
General Distribution
Oyster Parasites MSX and Dermo
Upstream extent of
major impact area

Plate 62


SUSQUEHANNA RIVER
SUSQUEHANNA FLATS
ELK RIVER
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
Baltimore
PATAPSCO RIVER
CHESTER RIVER
Washington DC
CHOPTANK RIVER
PATUXENT RIVER
RAPPAHANNOCK RIVER
YEOCOMICO RIVER
POTOMAC RIVER
MANOKIN RIVER
POCOMOKE RIVER

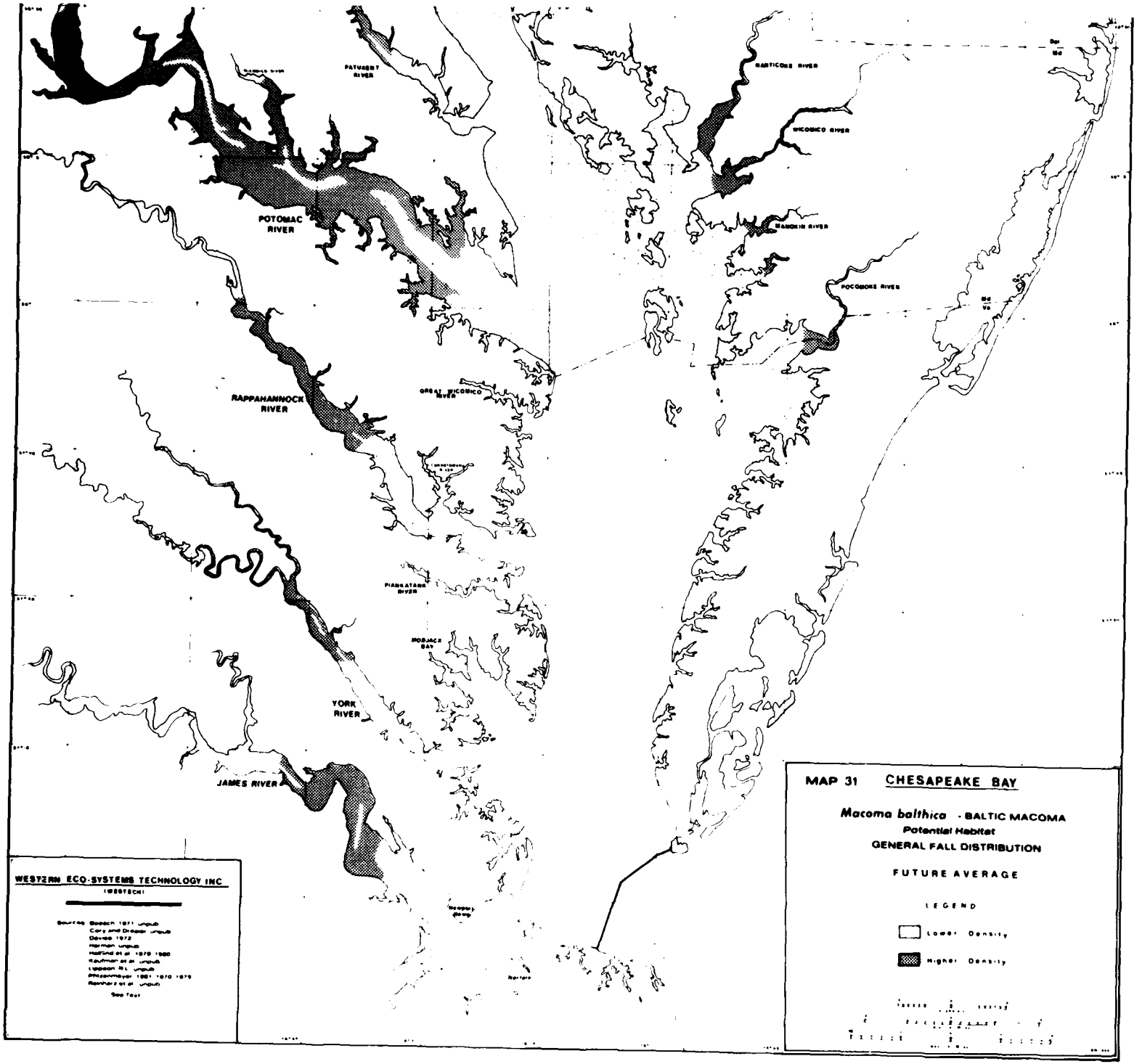
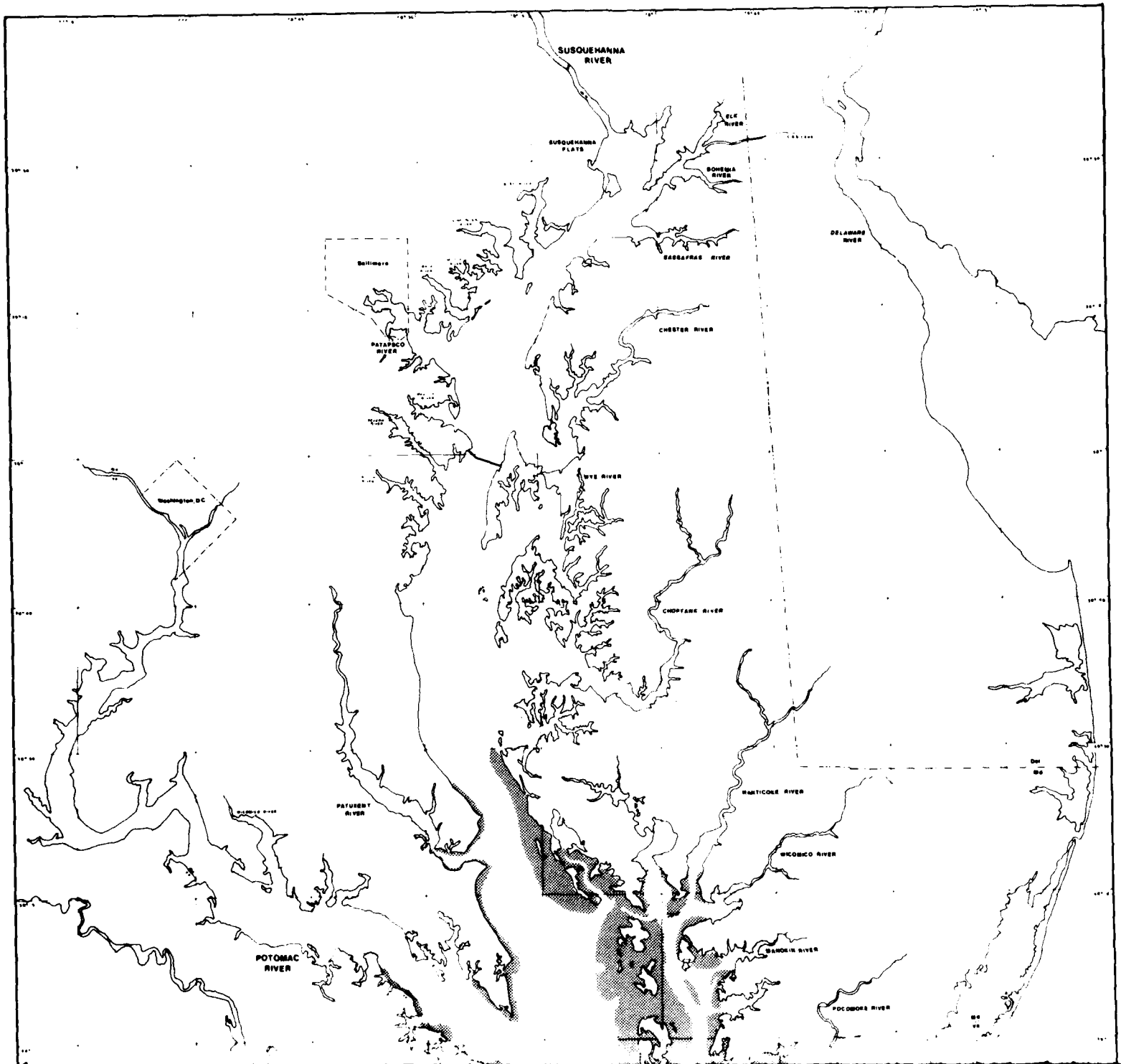

PATUXENT RIVER
POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
MOBJACK BAY
PIANKATANK RIVER
WICOMICO RIVER
POCOMOKE RIVER
MAP 31 CHESAPEAKE BAY
Macoma balthica - BALTIC MACOMA
Potential Habitat
GENERAL FALL DISTRIBUTION
FUTURE AVERAGE
LEGEND
Lower Density
Higher Density
WESTERN ECO-SYSTEMS TECHNOLOGY INC

Plate 63


SUSQUEHANNA RIVER
SUSQUEHANNA FLATS
ELK RIVER
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
Baltimore
CHESTER RIVER
PATAPSCO RIVER
Washington, DC
CHOPTANK RIVER
PATUXENT RIVER
WICOMICO RIVER
POCOMOKE RIVER
POTOMAC RIVER

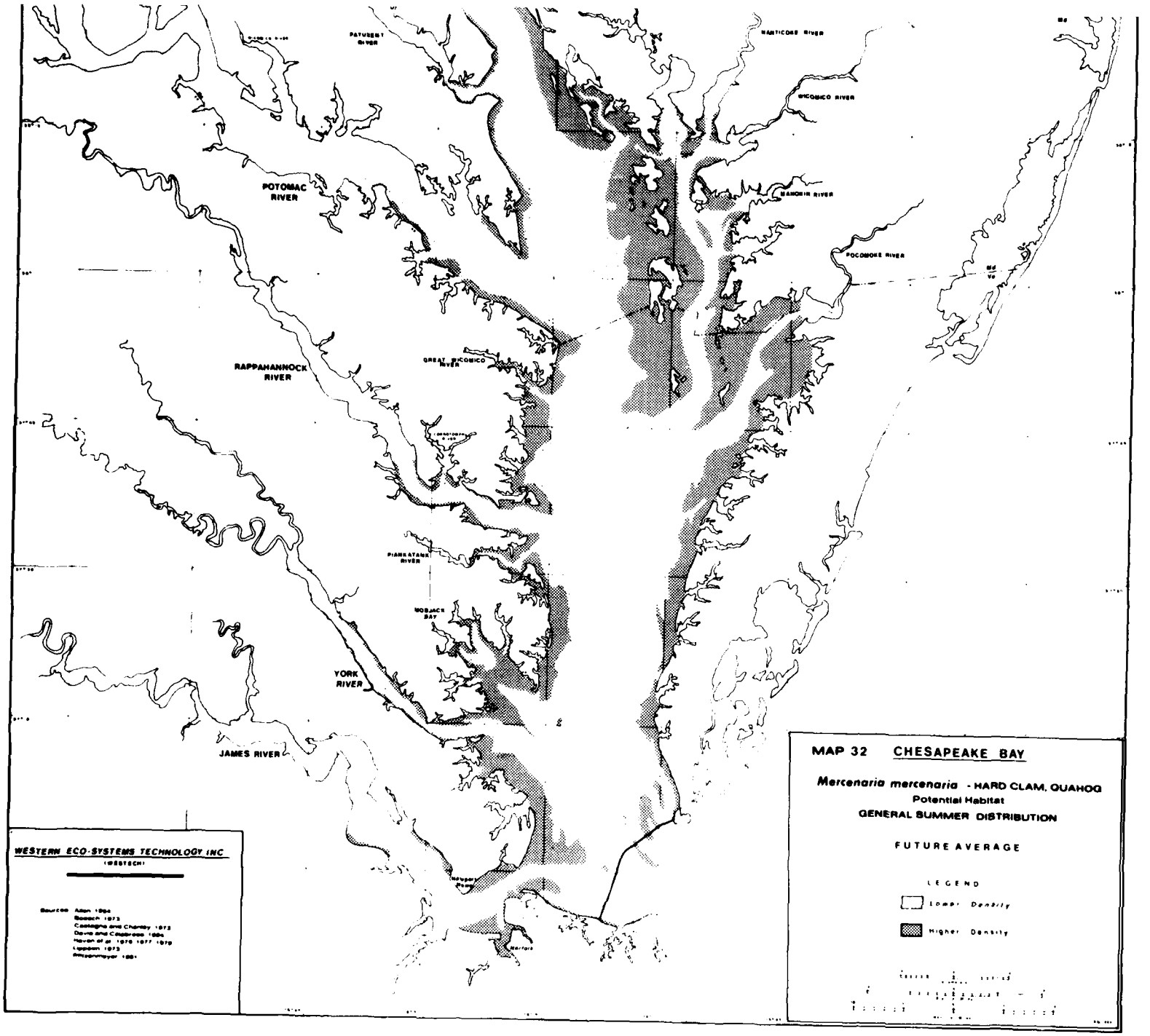

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
MAP 32 CHESAPEAKE BAY
Mercenaria mercenaria - HARD CLAM, QUAHOG
Potential Habitat
GENERAL SUMMER DISTRIBUTION
FUTURE AVERAGE
LEGEND
Lower Density
Higher Density
WESTERN ECO-SYSTEMS TECHNOLOGY INC

Plate 64


SUSQUEHANNA RIVER
ELK RIVER
SUSQUEHANNA FLATS
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
Baltimore
CHESTER RIVER
PATAPSCO RIVER
WYE RIVER
Washington DC
CHOPTANK RIVER
PATUXENT RIVER
POTOMAC RIVER

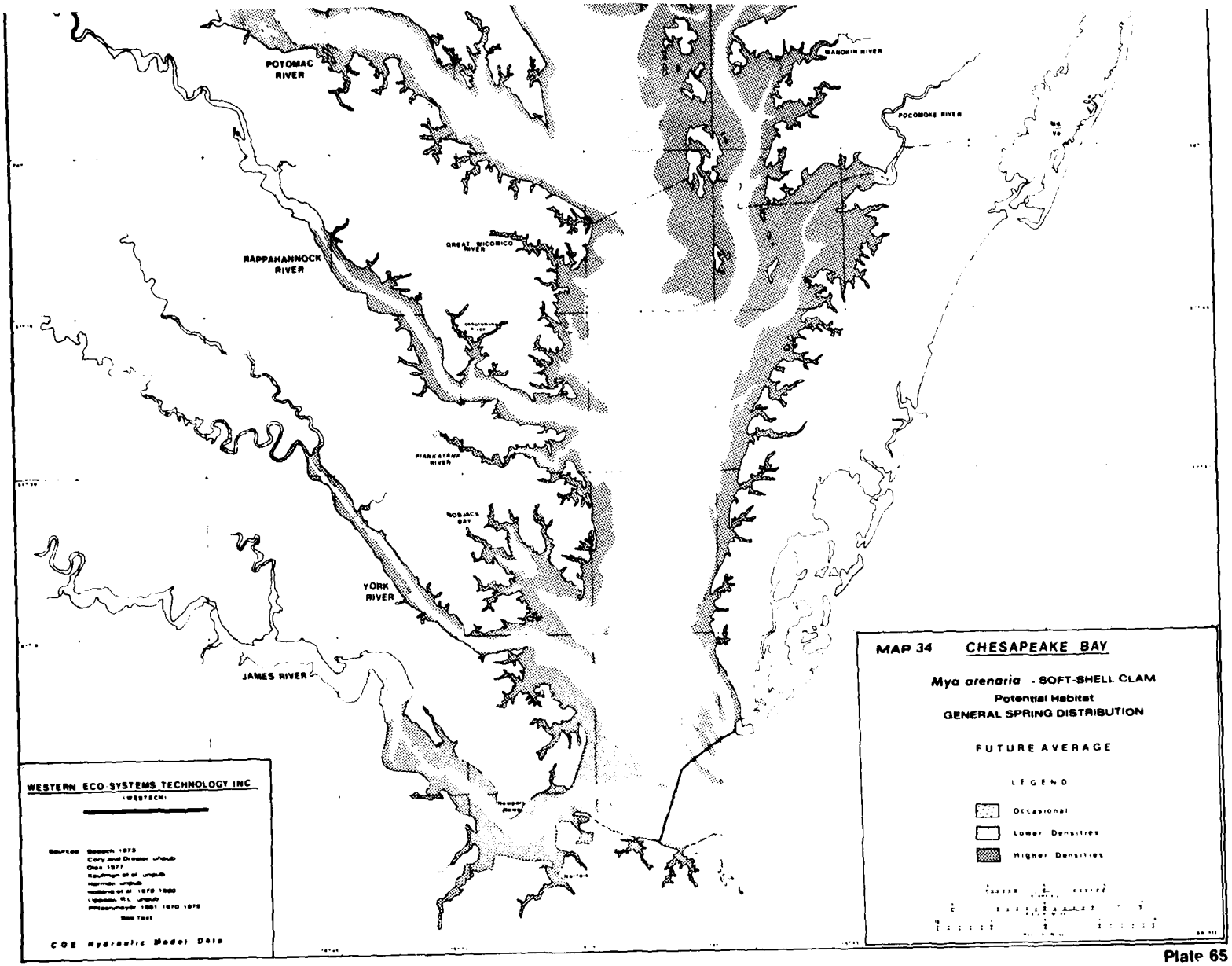
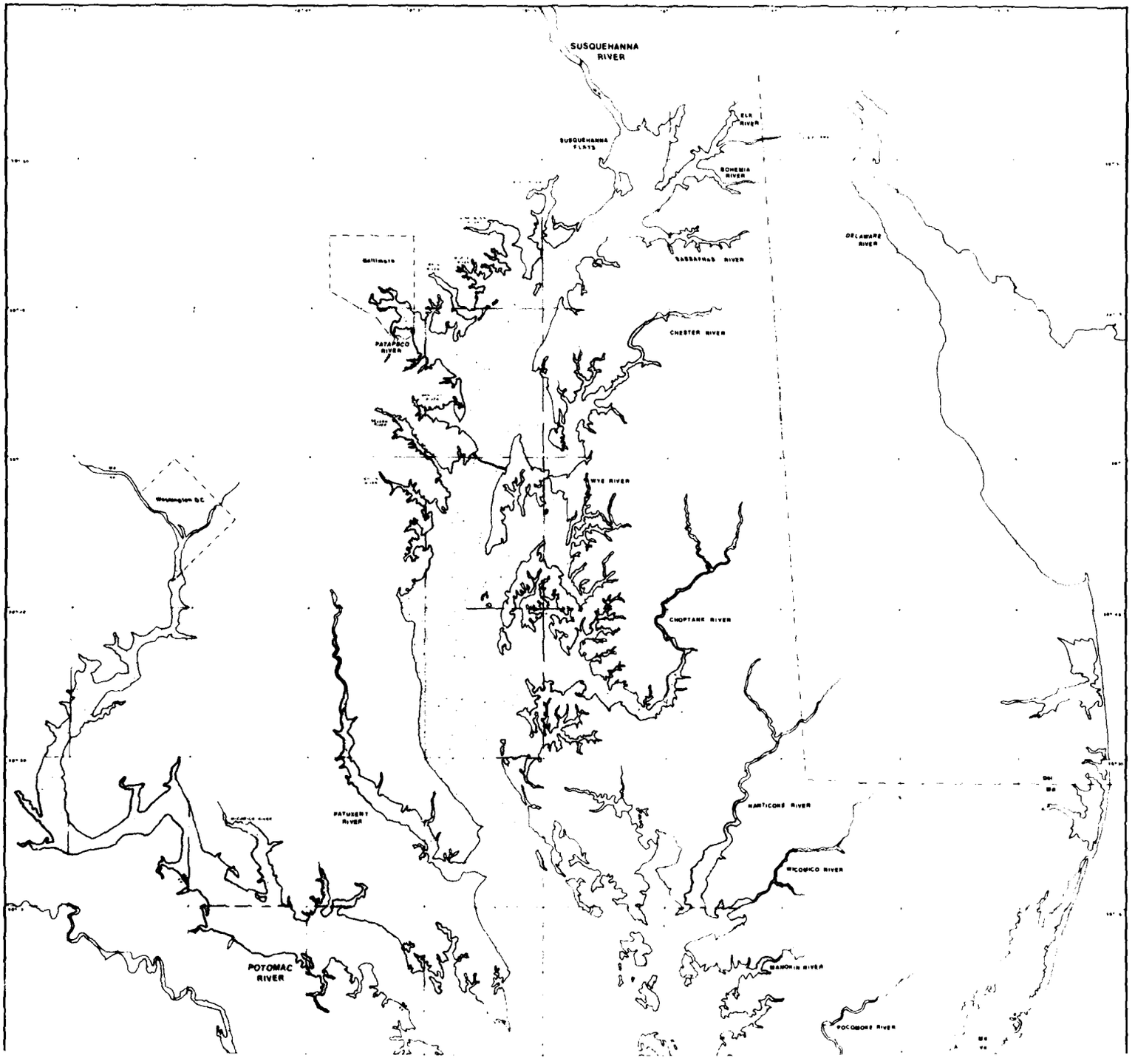

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
POCOMOKE RIVER
MAP 34 CHESAPEAKE BAY
Mya arenaria - SOFT-SHELL CLAM
Potential Habitat
GENERAL SPRING DISTRIBUTION
FUTURE AVERAGE
LEGEND
Occasional
Lower Densities
Higher Densities
WESTERN ECO SYSTEMS TECHNOLOGY INC
COE Hydraulic Model Data

Plate 65


SUSQUEHANNA RIVER
ELK RIVER
SUSQUEHANNA FLATS
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
Baltimore
PATAPSCO RIVER
CHESTER RIVER
Washington D.C.
WYE RIVER
CHOPTANK RIVER
PATUXENT RIVER
ANNAPOLIS RIVER
WICOMICO RIVER
POTOMAC RIVER
MANOKIN RIVER
POCOMOKE RIVER

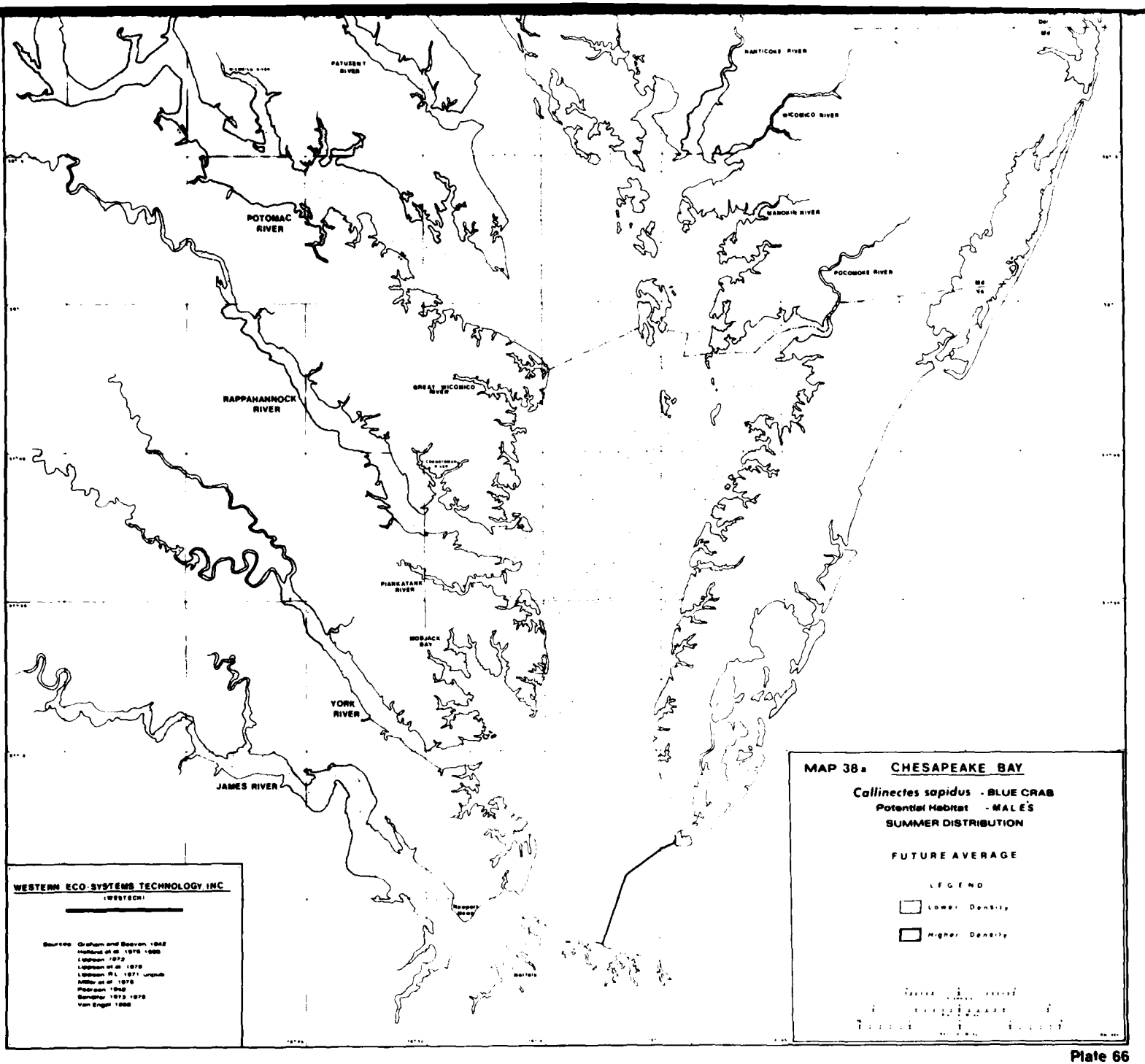
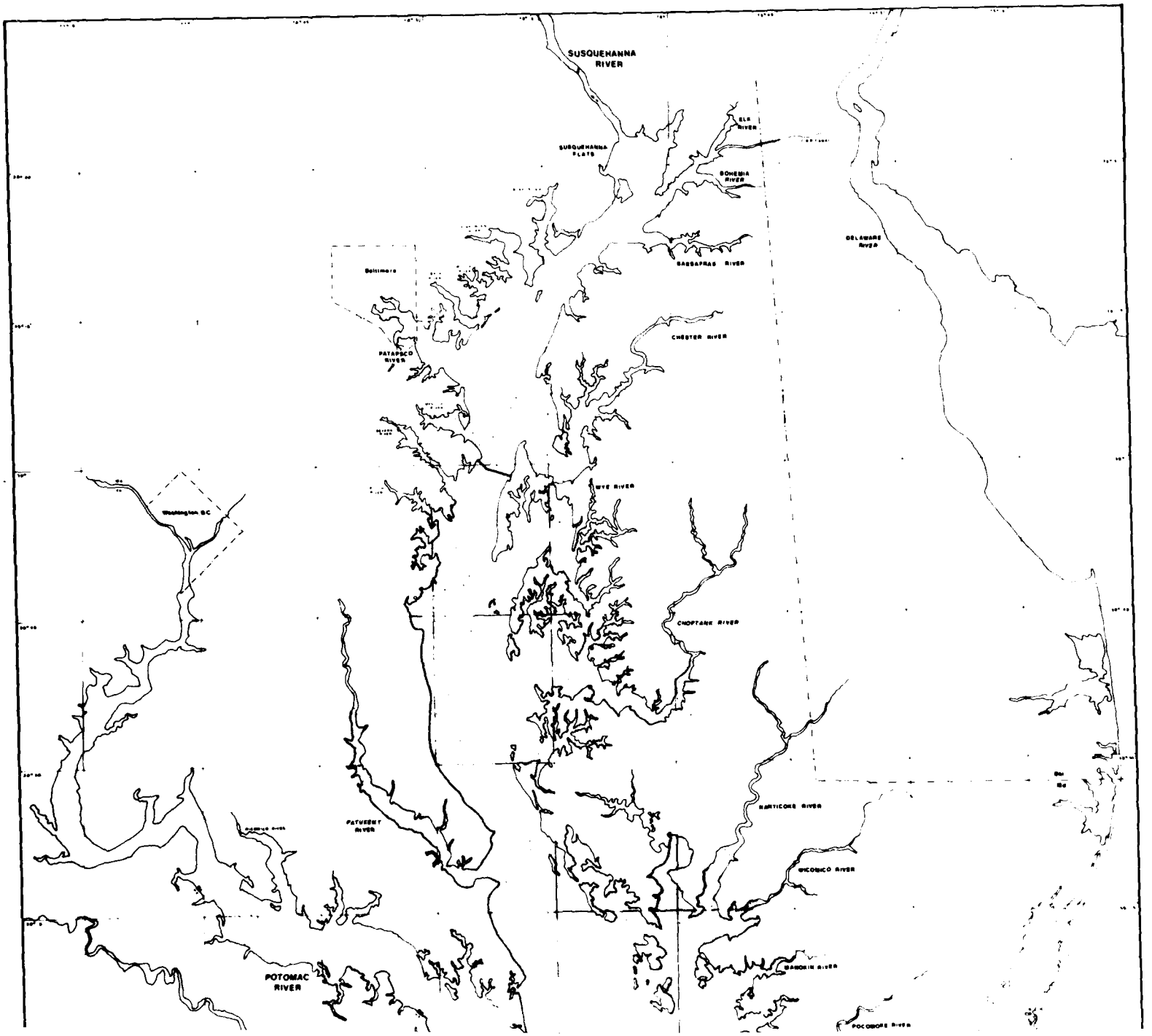

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
PIANKATANK RIVER
MOBJACK BAY
GREAT WICOMICO RIVER
PATUXENT RIVER
NANTICOKE RIVER
WICOMICO RIVER
MANOKIN RIVER
POCOMOKE RIVER
MAP 38a CHESAPEAKE BAY
Callinectes sapidus - BLUE CRAB
Potential Habitat - MALES
SUMMER DISTRIBUTION
FUTURE AVERAGE
LEGEND
Lower Density
Higher Density
WESTERN ECO-SYSTEMS TECHNOLOGY INC
(WESTECH)

Plate 66


SUSQUEHANNA RIVER
ELK RIVER
SUSQUEHANNA FLATS
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
Baltimore
CHESTER RIVER
PATAPSCO RIVER
Washington DC
CHOPTANK RIVER
PATUXENT RIVER
WICOMICO RIVER
POTOMAC RIVER
POCOMOKE River

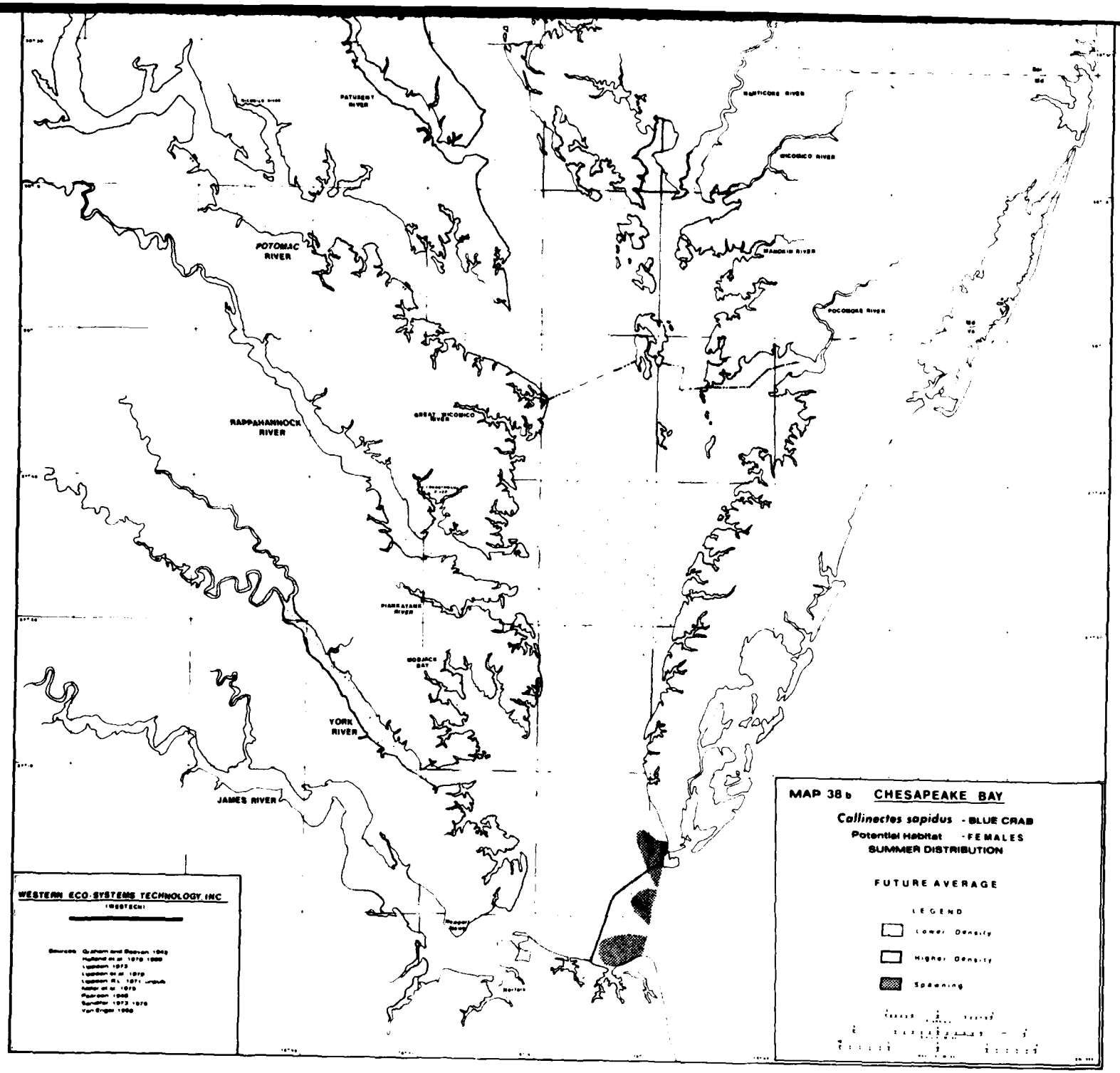

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
WESTERN ECO-SYSTEMS TECHNOLOGY INC
MAP 38 b CHESAPEAKE BAY
Callinectes sapidus - BLUE CRAB
Potential Habitat - FEMALES
SUMMER DISTRIBUTION
FUTURE AVERAGE
LEGEND
Lower Density
Higher Density
Spawning

Plate 67

DELAWARE RIVER
ELK RIVER
BOHEMIA RIVER
SASSAFRAS RIVER
CHESTER RIVER
CHOPTANK RIVER
TUCKAHOE RIVER
WICOMICO RIVER
MANOKIN RIVER
POCOMOKE River
SUSQUEHANNA RIVER
SUSQUEHANNA FLATS
Baltimore
PATAPSCO RIVER
PATUXENT RIVER
POTOMAC RIVER
Washington, D.C.

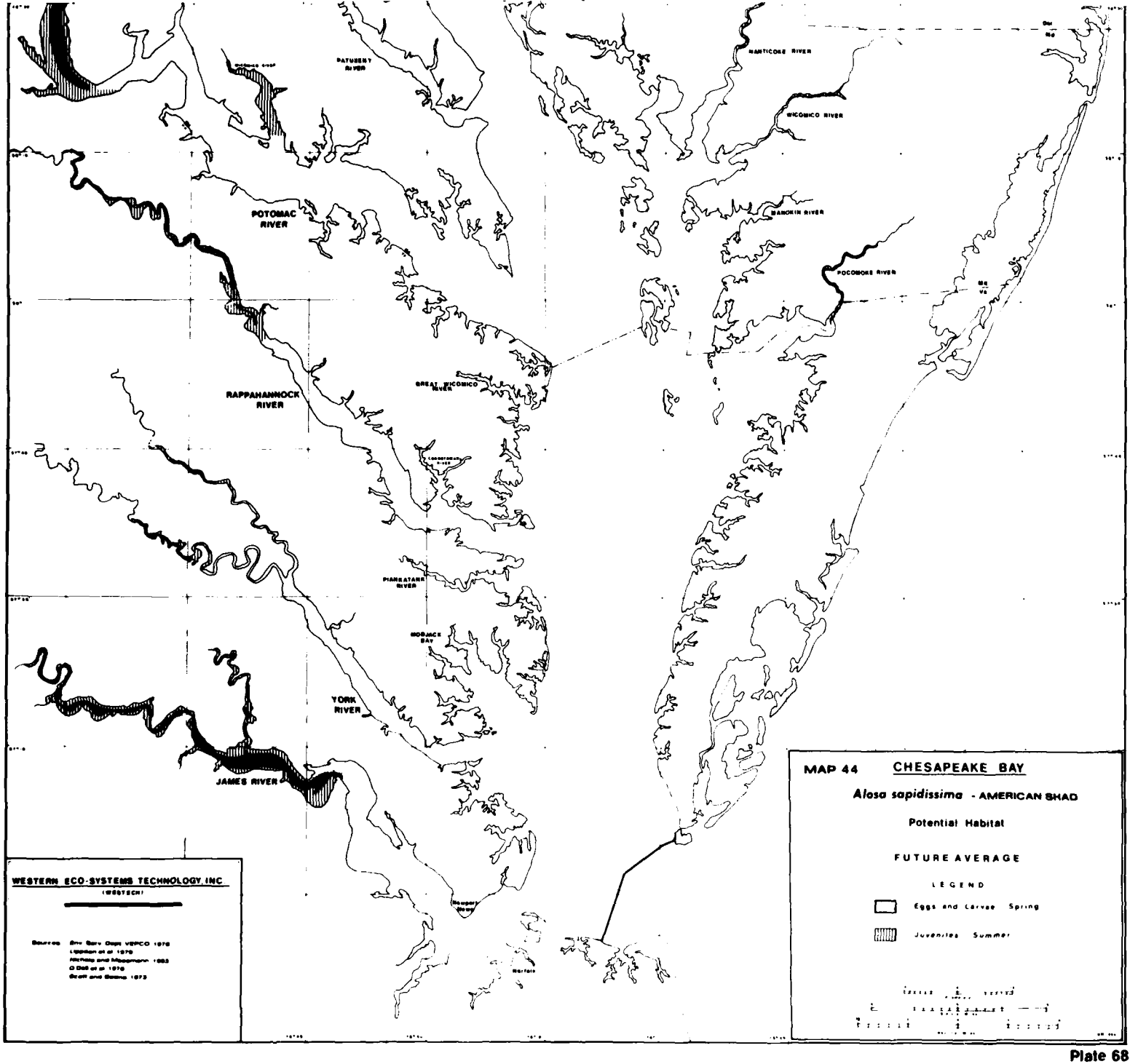
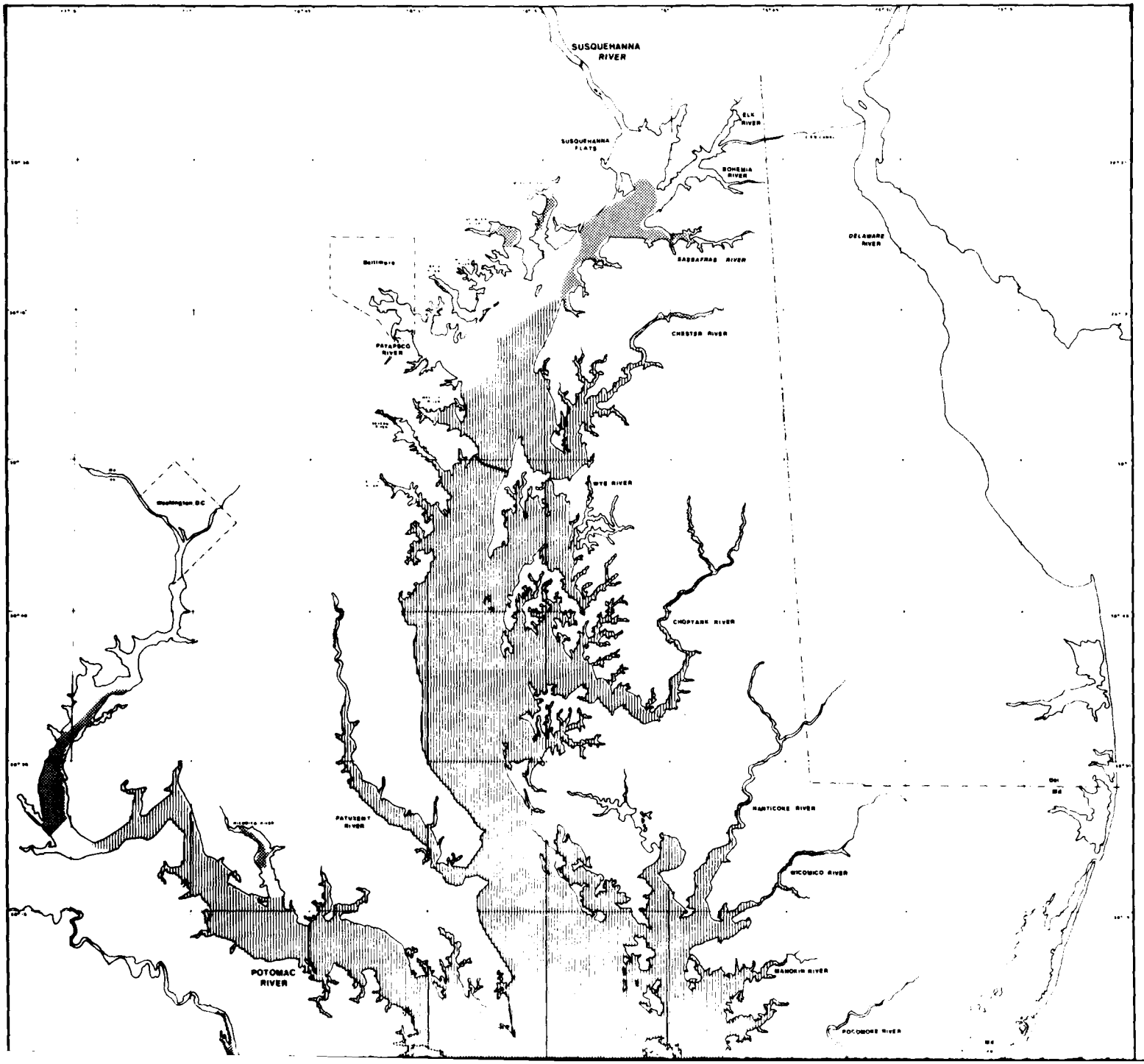

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
PIANKATANK RIVER
MOBJACK BAY
GREAT WICOMICO RIVER
RAPPAHANNOCK RIVER
PATUXENT RIVER
WICOMICO RIVER
MANOKIN RIVER
POCOMOKE RIVER
MAP 44 CHESAPEAKE BAY
Alosa sapidissima - AMERICAN SHAD
Potential Habitat
FUTURE AVERAGE
LEGEND
Eggs and Larvae Spring
Juveniles Summer
WESTERN ECO-SYSTEMS TECHNOLOGY, INC.
(WESTECH)

Plate 68


SUSQUEHANNA RIVER
SUSQUEHANNA FLATS
ELK RIVER
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
Baltimore
PATAPSCO RIVER
CHESTER RIVER
Washington DC
WYE RIVER
CHOPTANK RIVER
PATUXENT RIVER
MANOKIN RIVER
POTOMAC RIVER

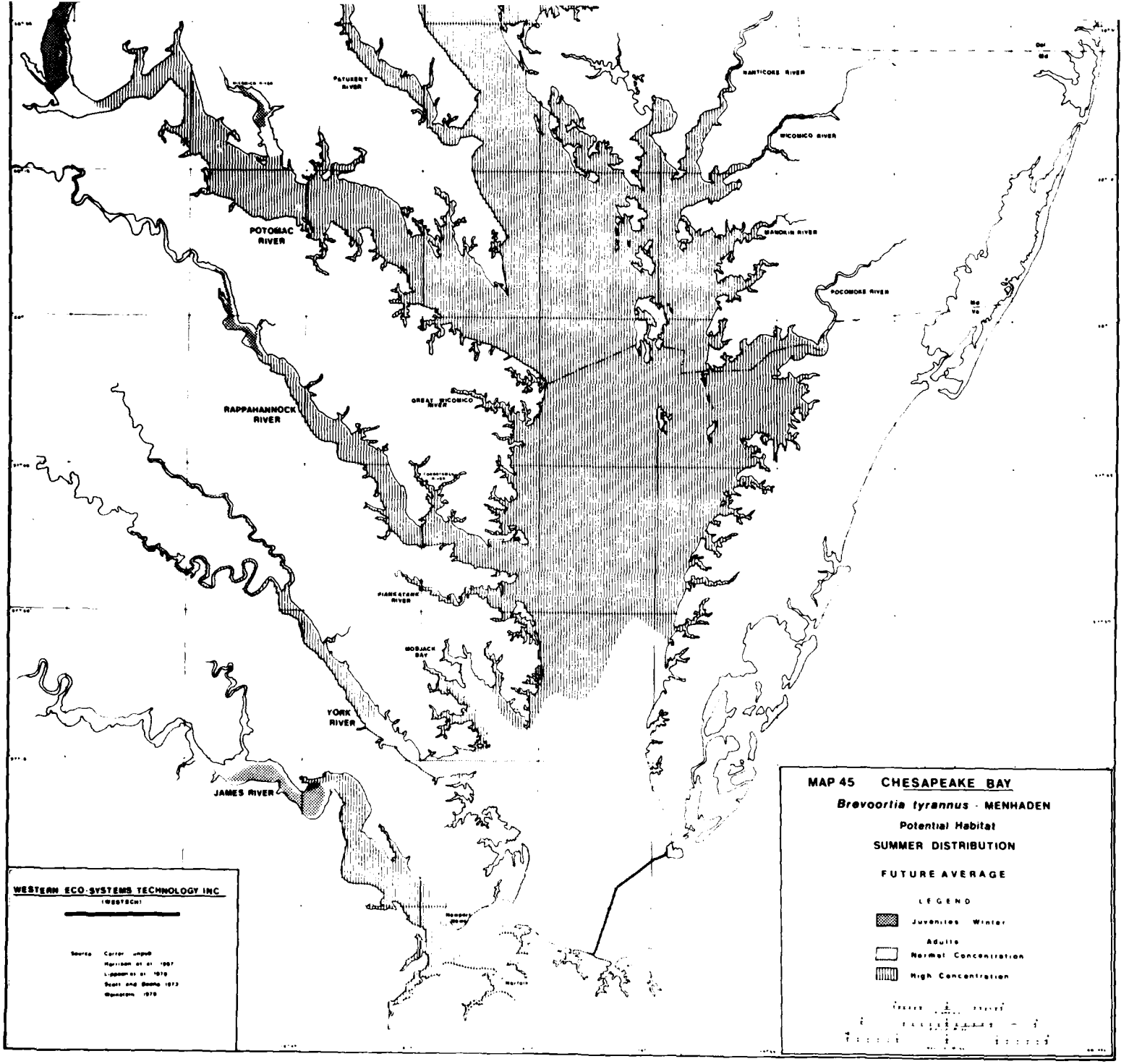
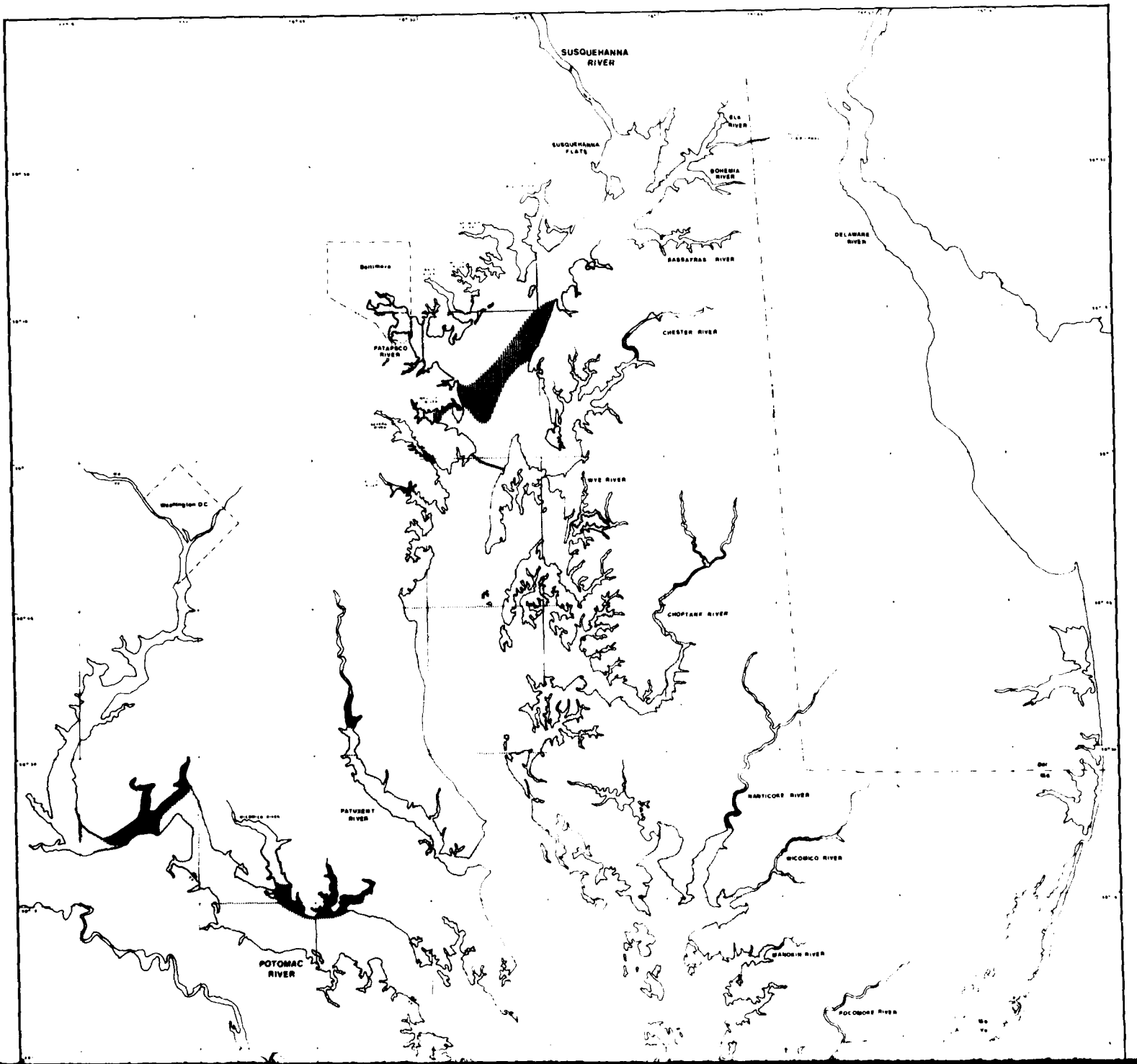

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
MOBJACK BAY
GREAT WICOMICO RIVER
PIANKATANK RIVER
RAPPAHANNOCK RIVER
WICOMICO RIVER
MANOKIN RIVER
POCOMOKE RIVER
WESTERN ECO-SYSTEMS TECHNOLOGY INC
MAP 45 CHESAPEAKE BAY
Brevoortia tyrannus - MENHADEN
Potential Habitat
SUMMER DISTRIBUTION
FUTURE AVERAGE
LEGEND
Juveniles Winter
Adults
Normal Concentration
High Concentration

Plate 69


SUSQUEHANNA RIVER
ELK RIVER
SUSQUEHANNA FLATS
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
Baltimore
PATAPSCO RIVER
CHESTER RIVER
WYE RIVER
Washington DC
CHOPTANK RIVER
PATUXENT RIVER
NANTICOKE RIVER
WICOMICO RIVER
POTOMAC RIVER
MANOKIN RIVER
POCOMOKE RIVER

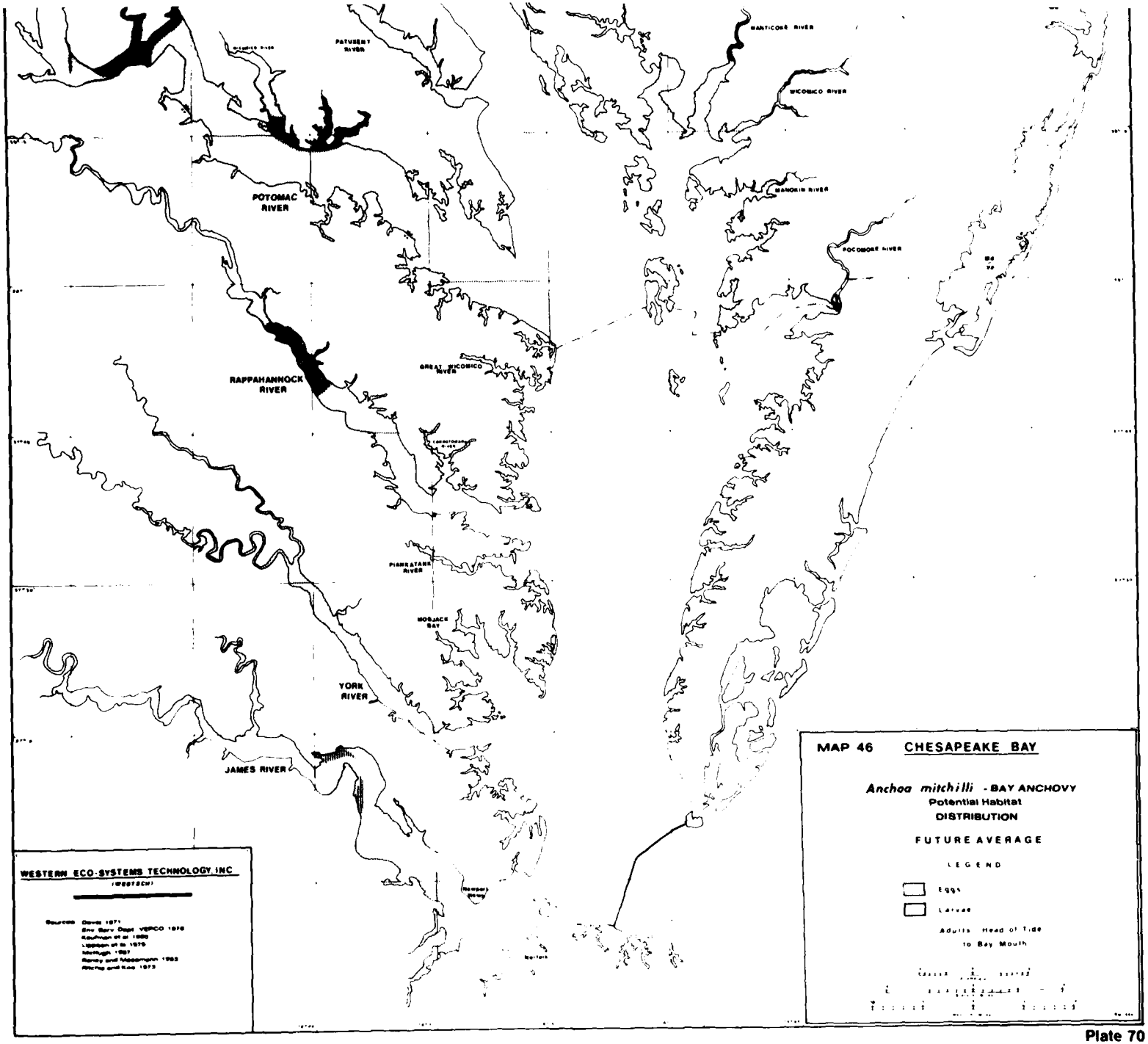

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
MOBJACK BAY
GREAT WICOMICO RIVER
PIANKATANK RIVER
WICOMICO RIVER
MANOKIN RIVER
POCOMOKE RIVER
WESTERN ECO-SYSTEMS TECHNOLOGY, INC.
MAP 46 CHESAPEAKE BAY
Anchoa mitchilli - BAY ANCHOVY
Potential Habitat
DISTRIBUTION
FUTURE AVERAGE
LEGEND
Eggs
Larvae
Adults Head of Tide to Bay Mouth

Plate 70


SUSQUEHANNA RIVER
SUSQUEHANNA FLATS
ELK RIVER
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
Baltimore
PATAPSCO RIVER
CHESTER RIVER
Washington DC
WYE RIVER
CHOPTANK RIVER
PATUXENT RIVER
MANOKIN RIVER
POTOMAC RIVER

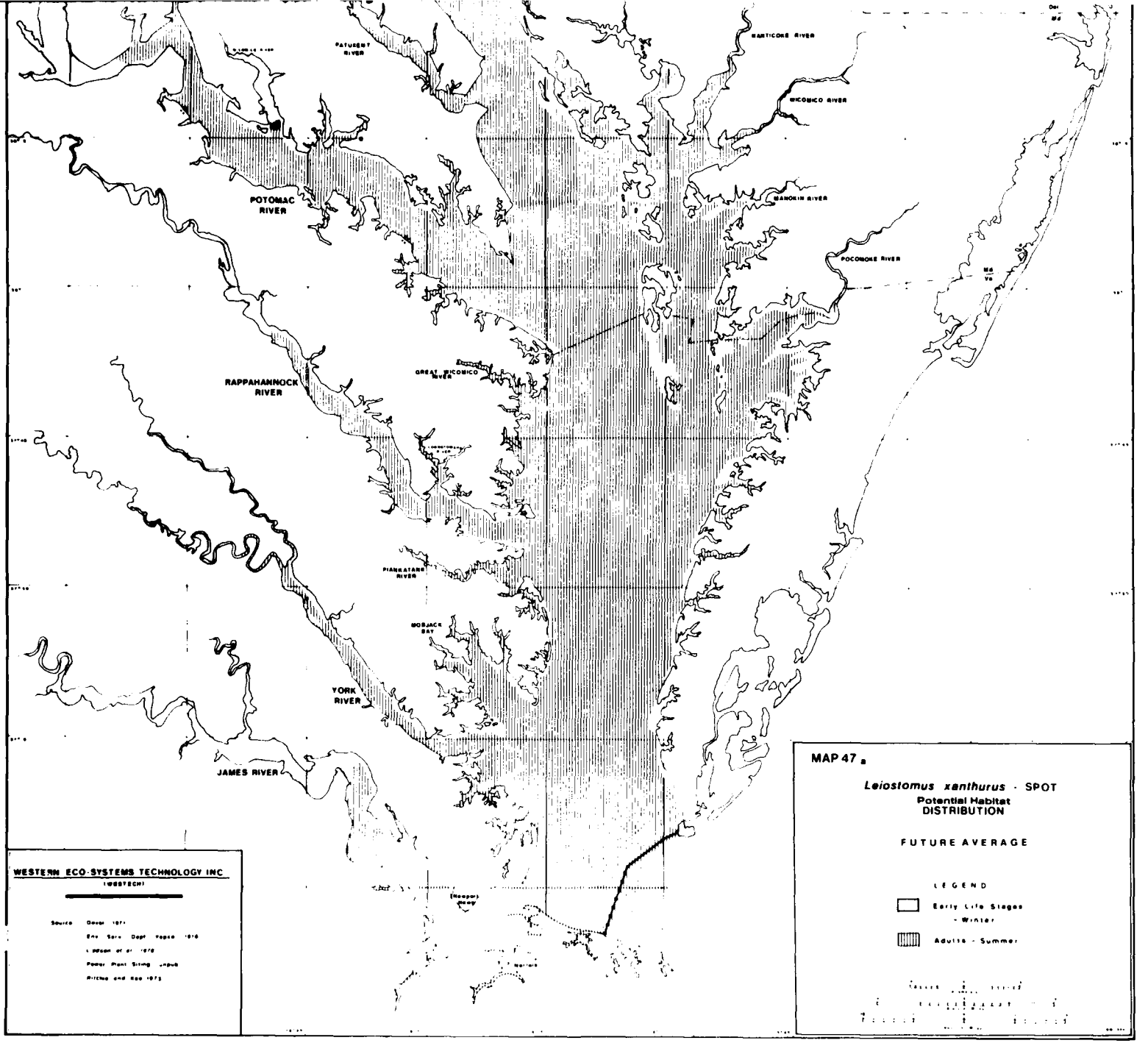
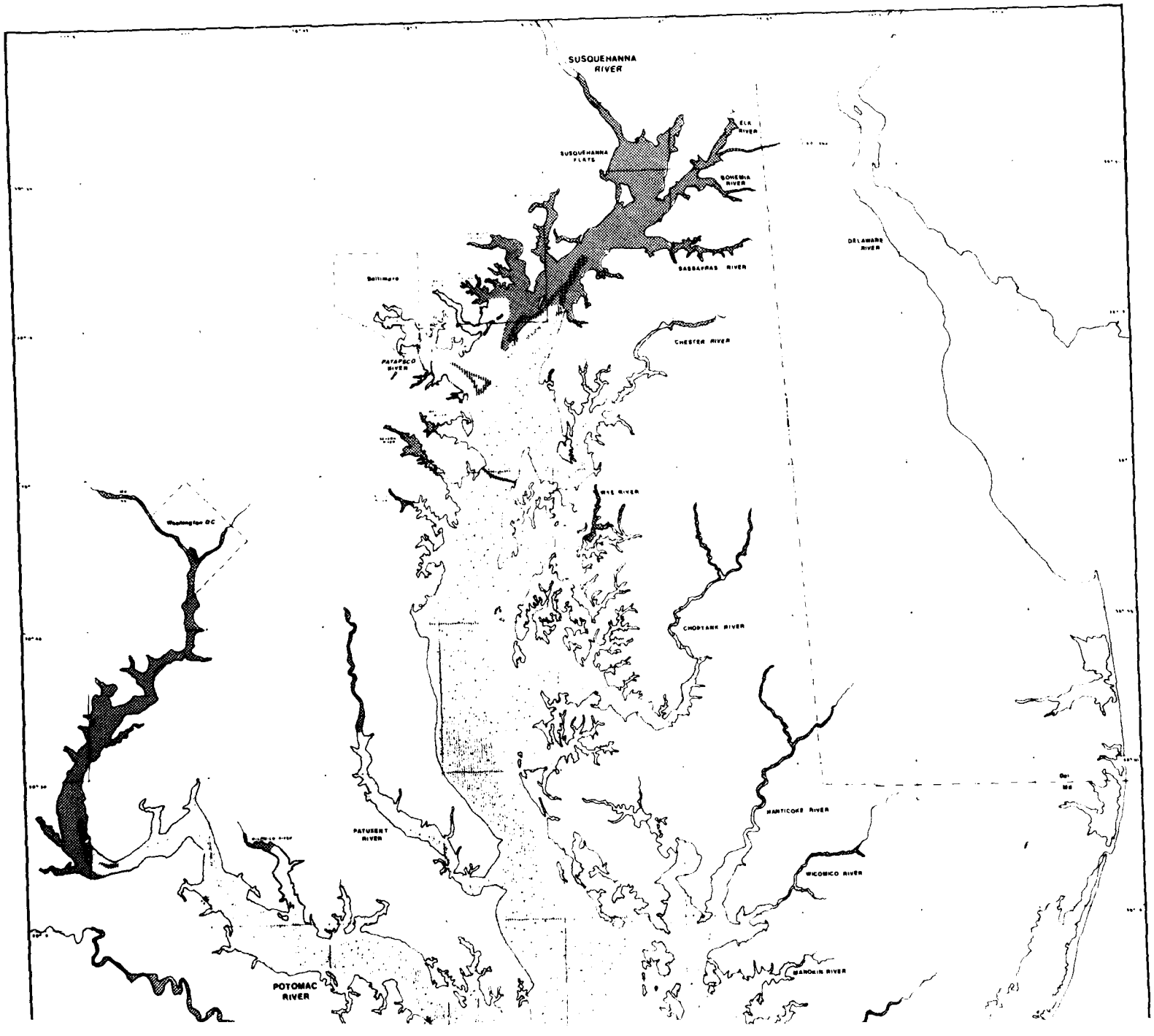

PATUXENT RIVER
POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
PIANKATANK RIVER
MOBJACK BAY
GREAT WICOMICO RIVER
RAPPAHANNOCK RIVER
WICOMICO RIVER
MANOKIN RIVER
POCOMOKE RIVER
MAP 47
Leiostomus xanthurus - SPOT
Potential Habitat
DISTRIBUTION
FUTURE AVERAGE
LEGEND
Early Life Stages - Winter
Adults - Summer
WESTERN ECO-SYSTEMS TECHNOLOGY INC
(WESTECH)

Plate 71


SUSQUEHANNA RIVER
ELK RIVER
SUSQUEHANNA FLATS
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
Baltimore
CHESTER RIVER
PATAPSCO RIVER
MILL RIVER
Washington DC
CHOPTANK RIVER
PATUXENT RIVER
MANOKIN RIVER
WICOMICO RIVER
POTOMAC RIVER

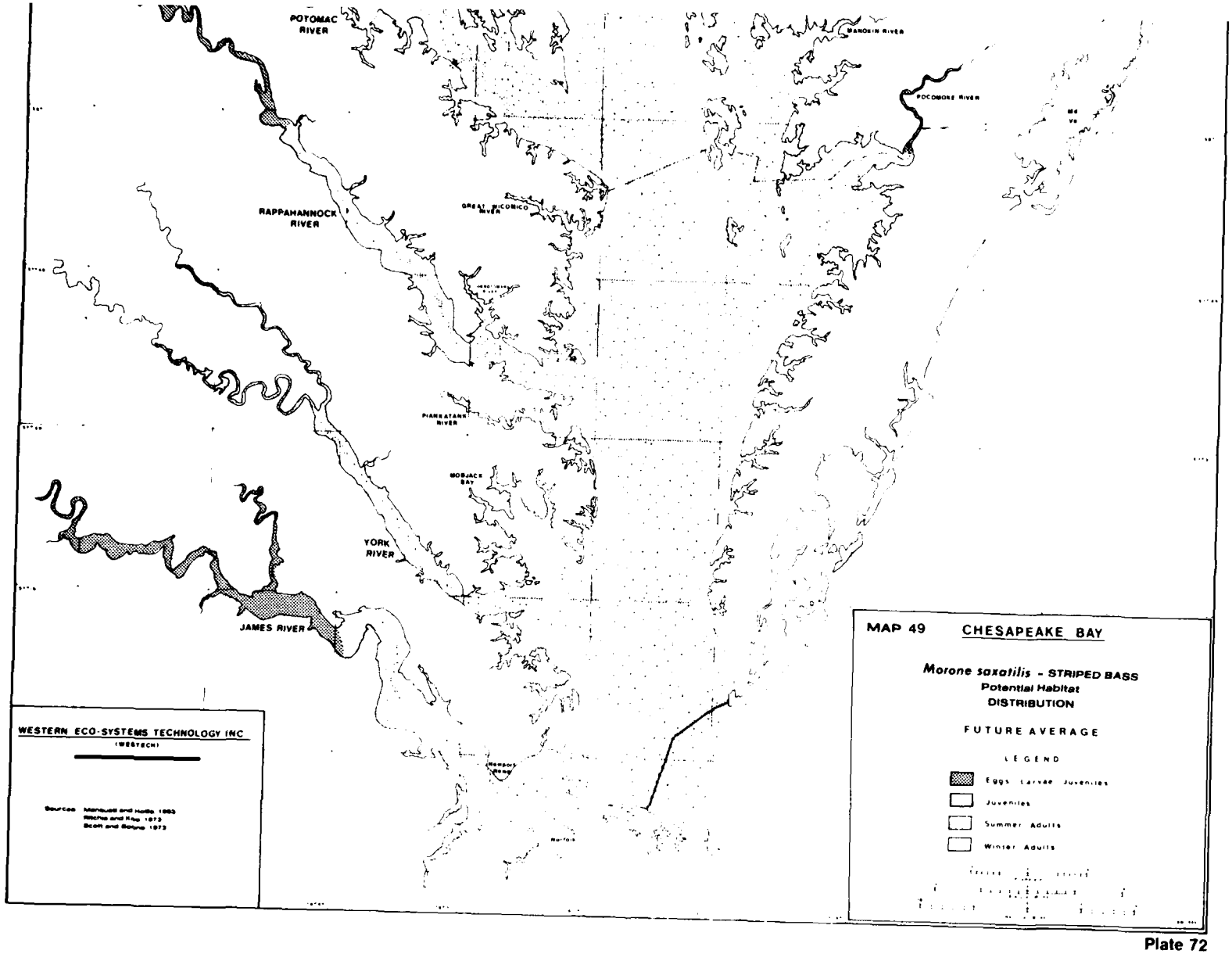

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
MOBJACK BAY
POCOMOKE RIVER
MAP 49 CHESAPEAKE BAY
Morone saxatilis - STRIPED BASS
Potential Habitat
DISTRIBUTION
FUTURE AVERAGE
LEGEND
Eggs Larvae Juveniles
Juveniles
Summer Adults
Winter Adults
WESTERN ECO-SYSTEMS TECHNOLOGY INC
(WESTECH)

Plate 72


SUSQUEHANNA RIVER
SUSQUEHANNA FLATS
ELK RIVER
BOHEMIA RIVER
DELAWARE RIVER
Baltimore
SASSAFRAS RIVER
PATAPSCO RIVER
CHESTER RIVER
Washington D.C.
WYE RIVER
CHOPTANK RIVER
PATUXENT RIVER
NANTICOKE RIVER
WICOMICO RIVER
POTOMAC RIVER
MANOKIN RIVER
POCOMOKE RIVER

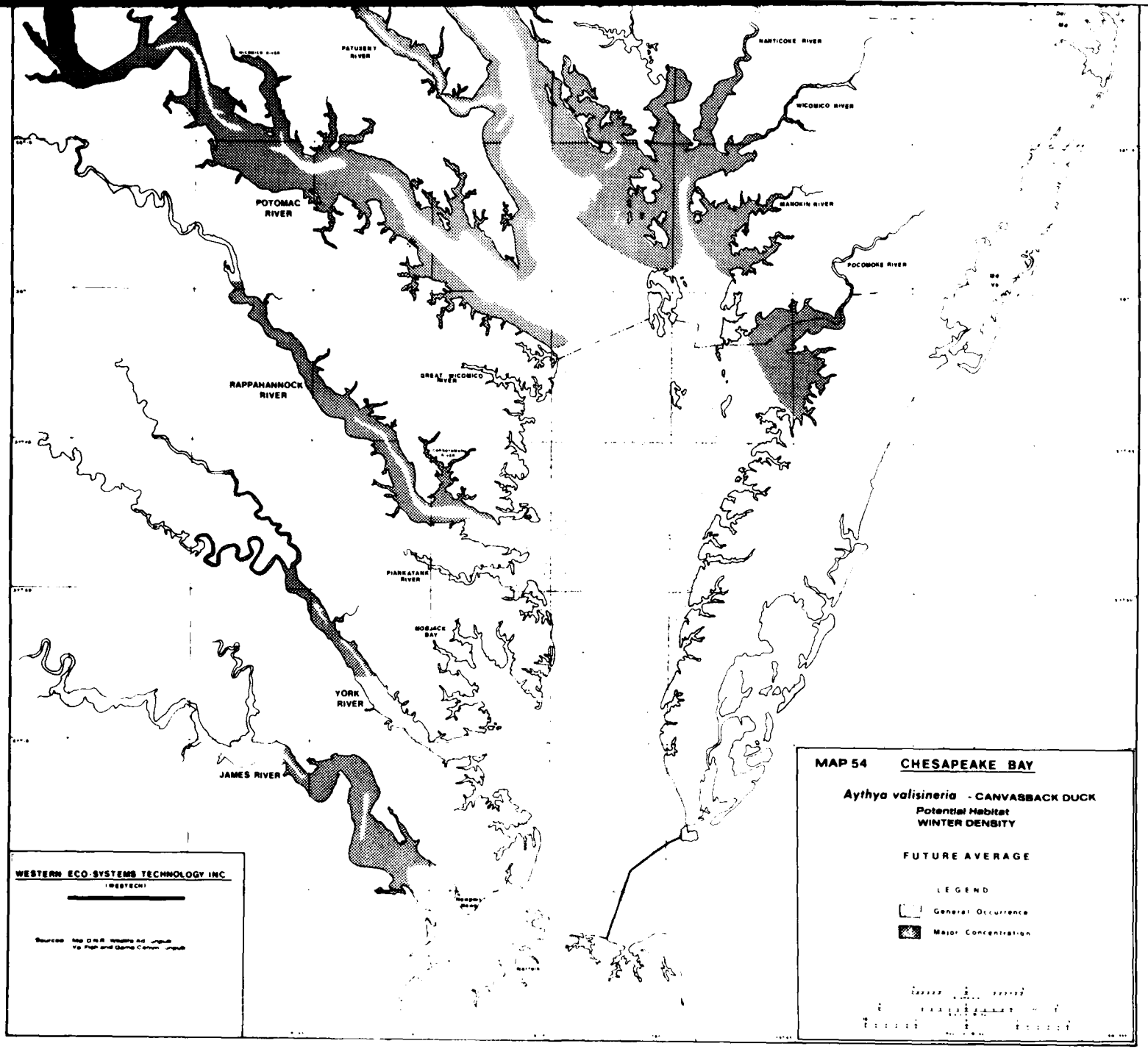
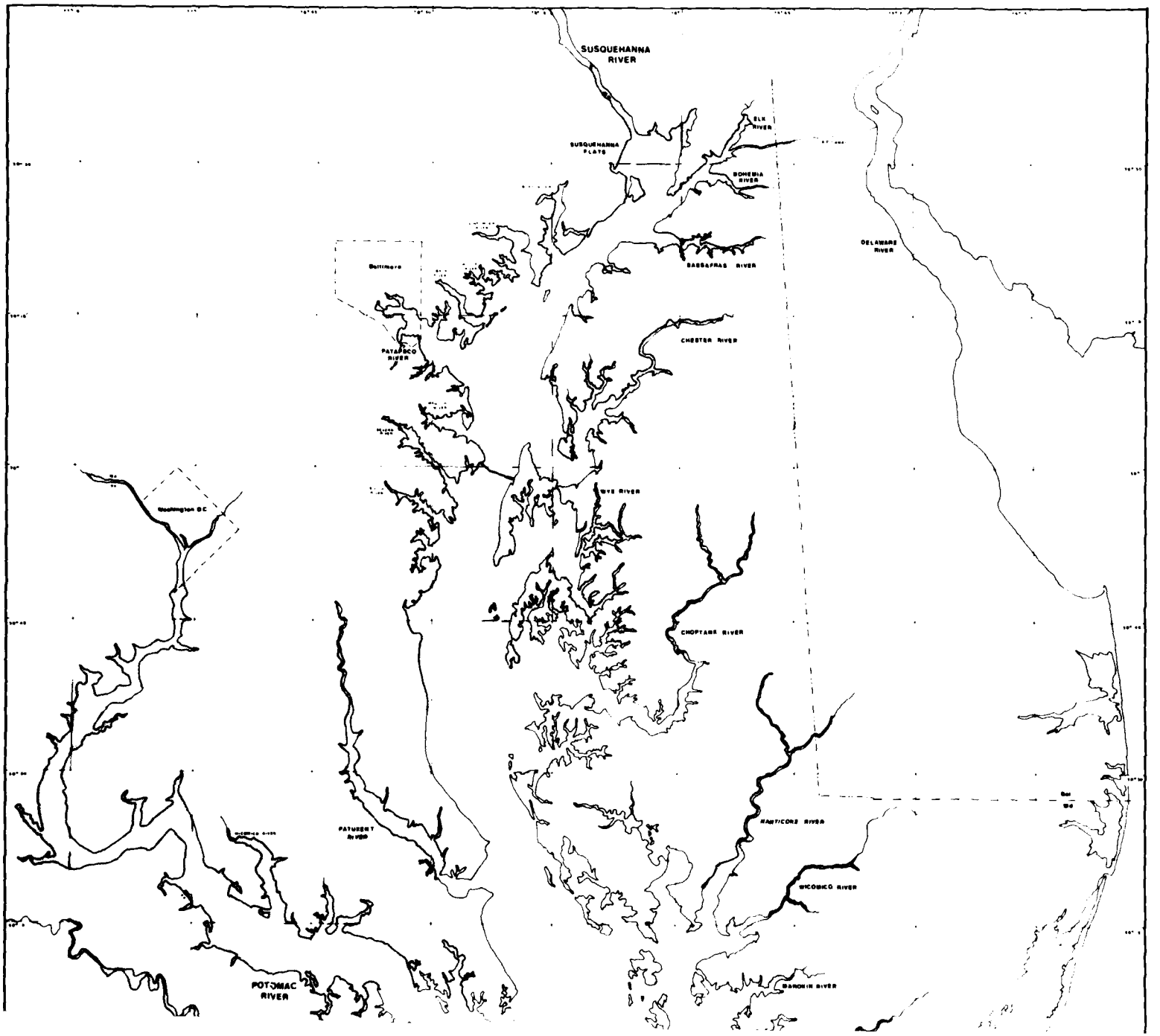

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
PATUXENT RIVER
WICOMICO RIVER
POCOMOKE RIVER
MANOKIN RIVER
GREAT WICOMICO RIVER
PIANKATANK RIVER
MOBJACK BAY
WESTERN ECO-SYSTEMS TECHNOLOGY INC
(WESTECH)
MAP 54 CHESAPEAKE BAY
Aythya valisineria - CANVASBACK DUCK
Potential Habitat
WINTER DENSITY
FUTURE AVERAGE
LEGEND
General Occurrence
Major Concentration

Plate 73


SUSQUEHANNA RIVER
ELK RIVER
SUSQUEHANNA FLATS
BOHEMIA RIVER
DELAWARE RIVER
Baltimore
SASSAFRAS RIVER
PATAPSCO RIVER
CHESTER RIVER
Washington D.C.
WYE RIVER
CHOPTANK RIVER
PATUXENT RIVER
HANTICOKE RIVER
WICOMICO RIVER
POTOMAC RIVER
MANOKIN RIVER

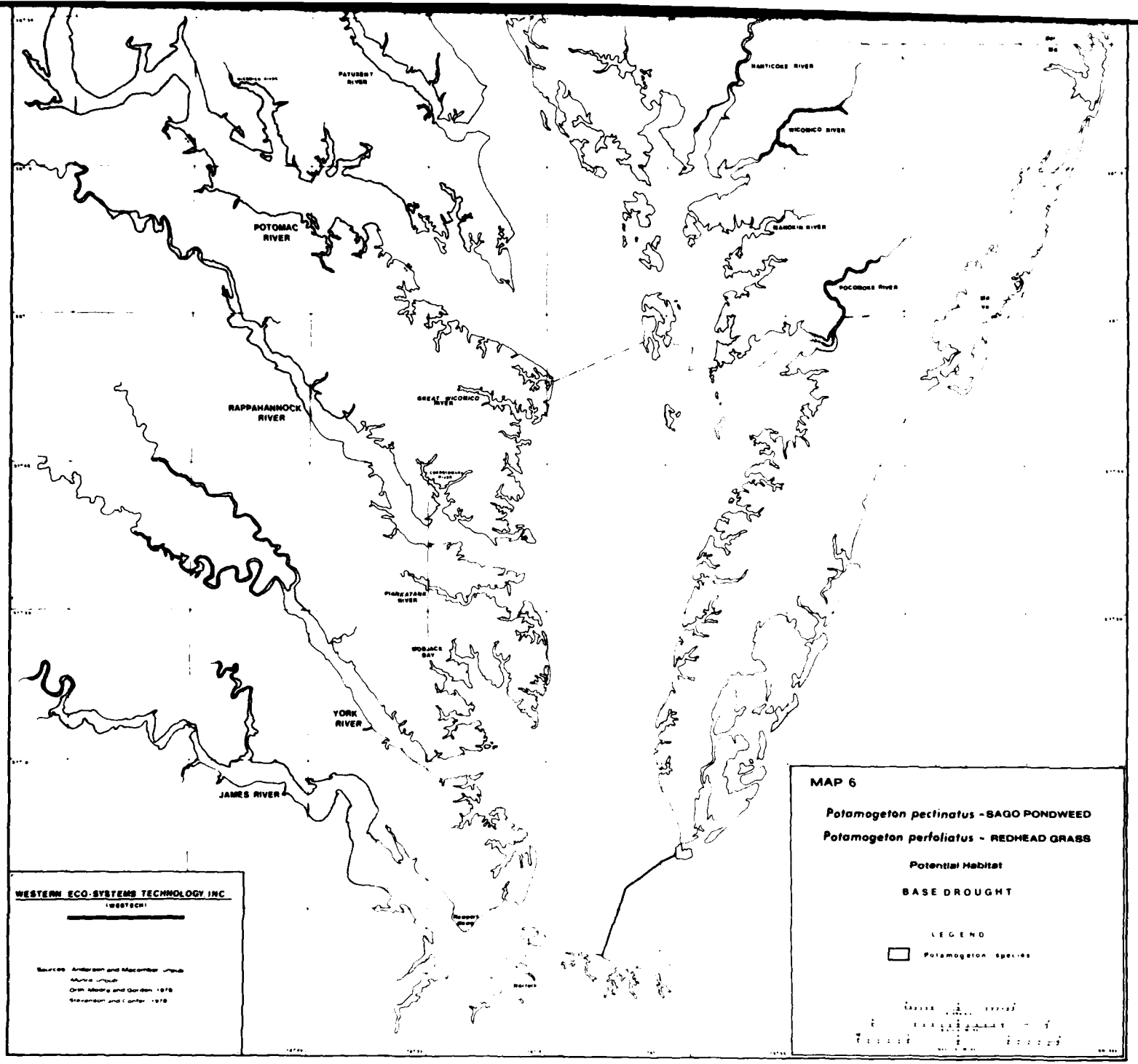
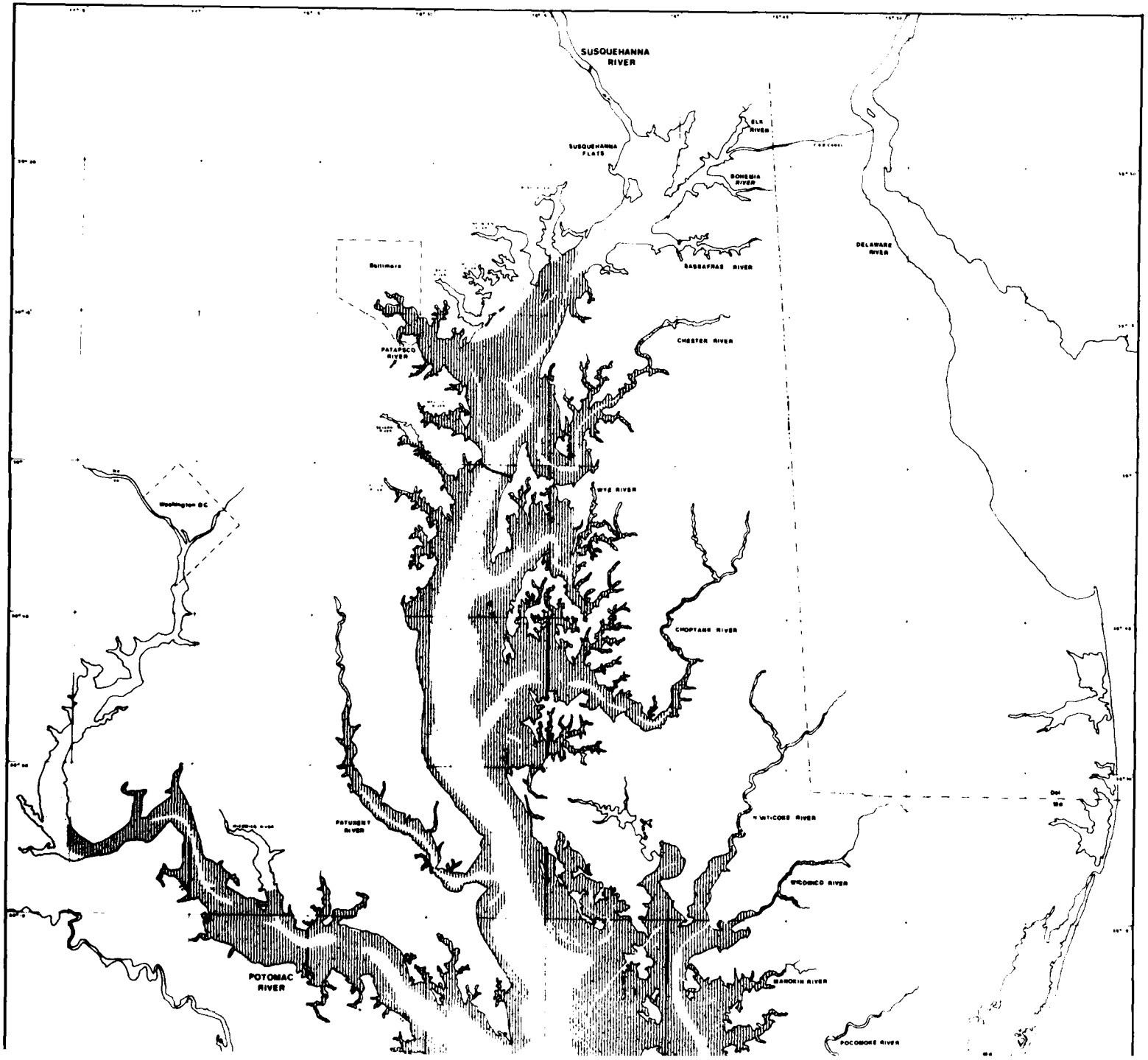

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
MAP 6
Potamogeton pectinatus - SAGO PONDWEED
Potamogeton perfoliatus - REDHEAD GRASS
Potential Habitat
BASE DROUGHT
LEGEND
Potamogeton species
WESTERN ECO-SYSTEMS TECHNOLOGY INC

Plate 74


SUSQUEHANNA RIVER
SUSQUEHANNA FLATS
ELK RIVER
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
Baltimore
PATAPSCO RIVER
CHESTER RIVER
WYE RIVER
Washington DC
CHOPTANK RIVER
PATUXENT RIVER
WICOMICO RIVER
POTOMAC RIVER
MANOKIN RIVER
POCOMOKE RIVER

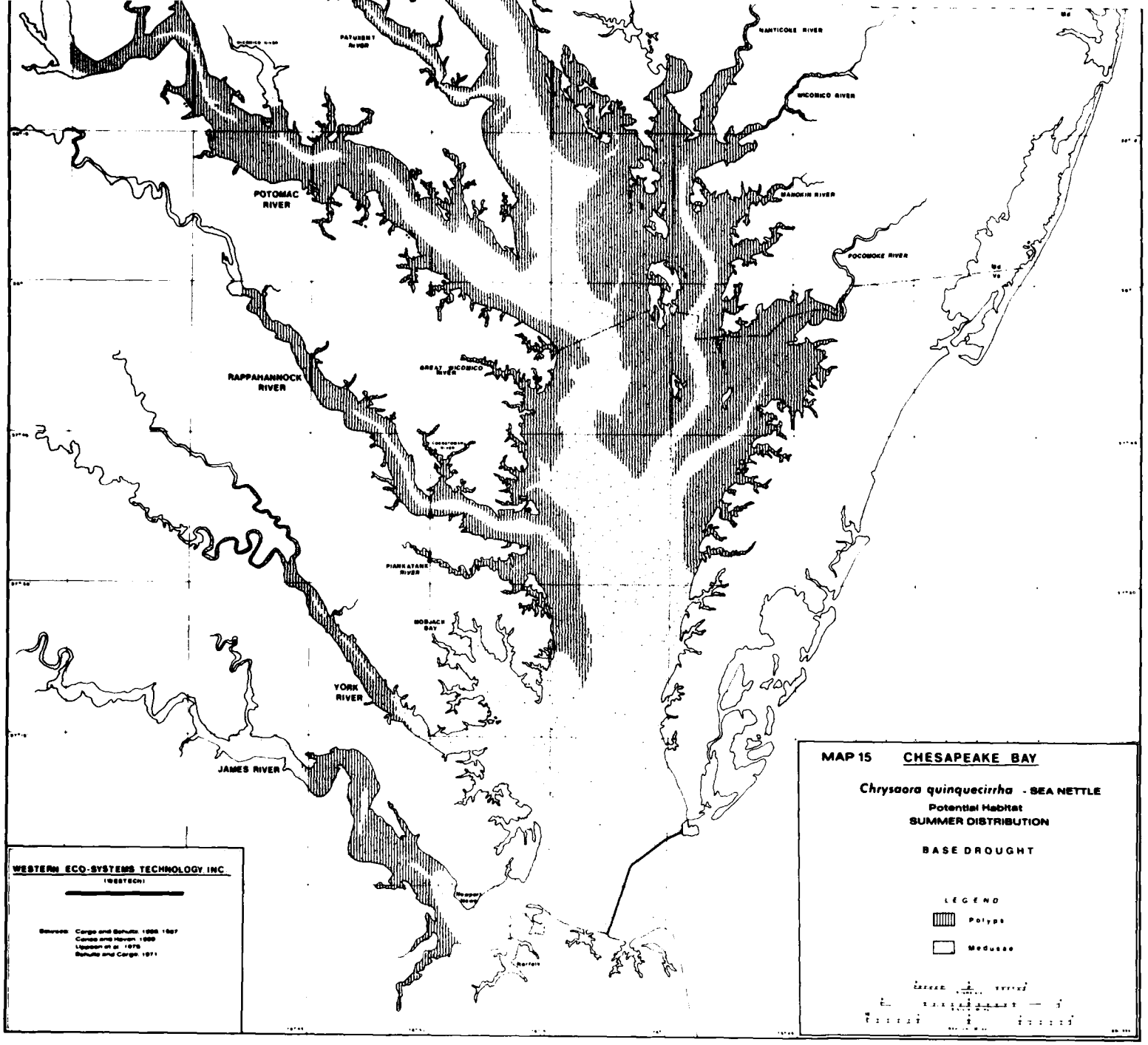
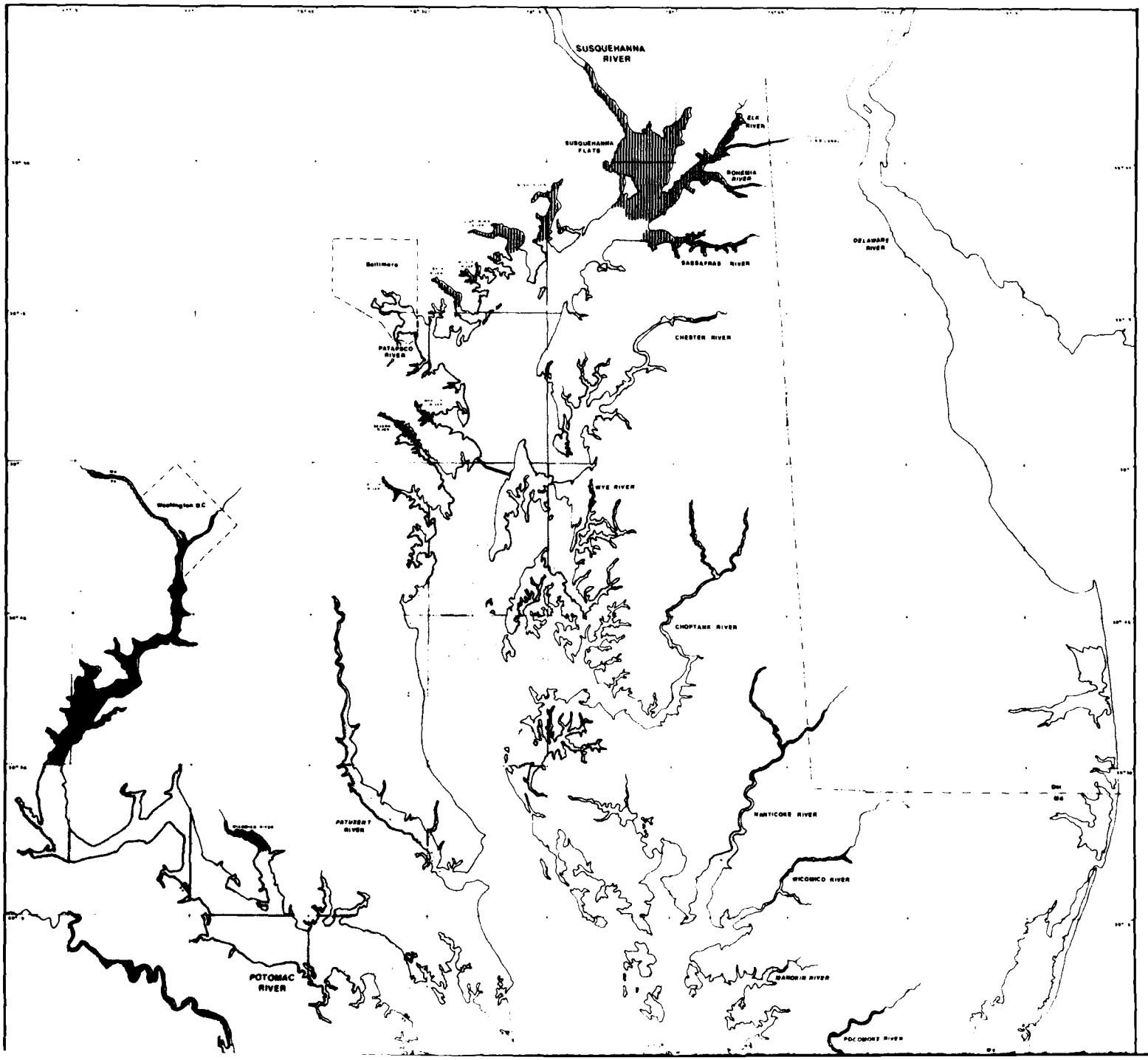

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
PIANKATANK RIVER
MOBJACK BAY
GREAT WICOMICO RIVER
MANOKIN RIVER
POCOMOKE RIVER
WESTERN ECO-SYSTEMS TECHNOLOGY INC.
MAP 15 CHESAPEAKE BAY
Chrysaora quinquecirrha - SEA NETTLE
Potential Habitat
SUMMER DISTRIBUTION
BASE DROUGHT
LEGEND
Polyps
Medusae

Plate 75


SUSQUEHANNA RIVER
ELK RIVER
SUSQUEHANNA FLATS
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
Baltimore
PATAPSCO RIVER
CHESTER RIVER
WYE RIVER
Washington D.C.
CHOPTANK RIVER
PATUXENT RIVER
NANTICOKE RIVER
WICOMICO RIVER
POTOMAC RIVER
MANOKIN RIVER
POCOMOKE RIVER

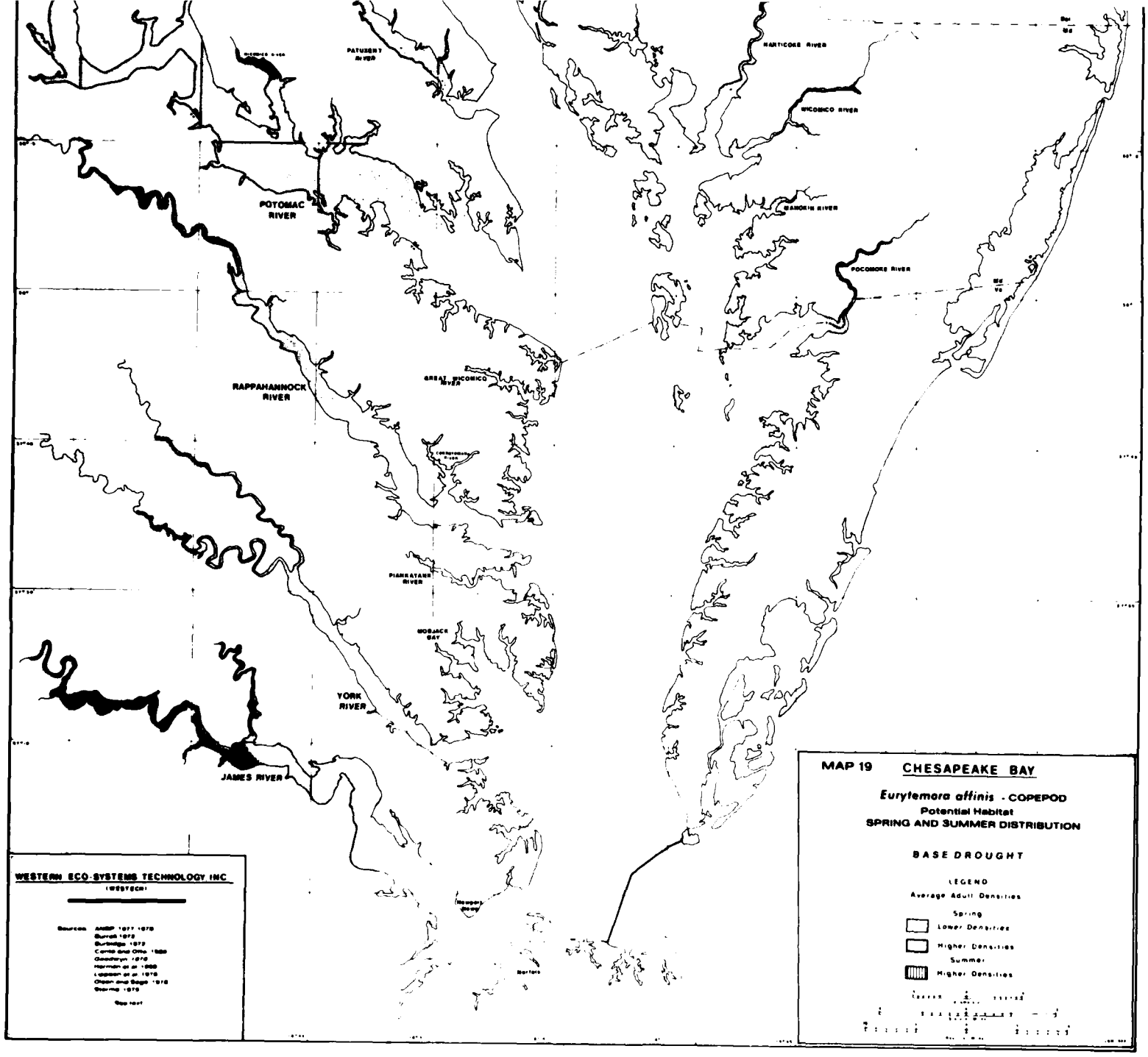
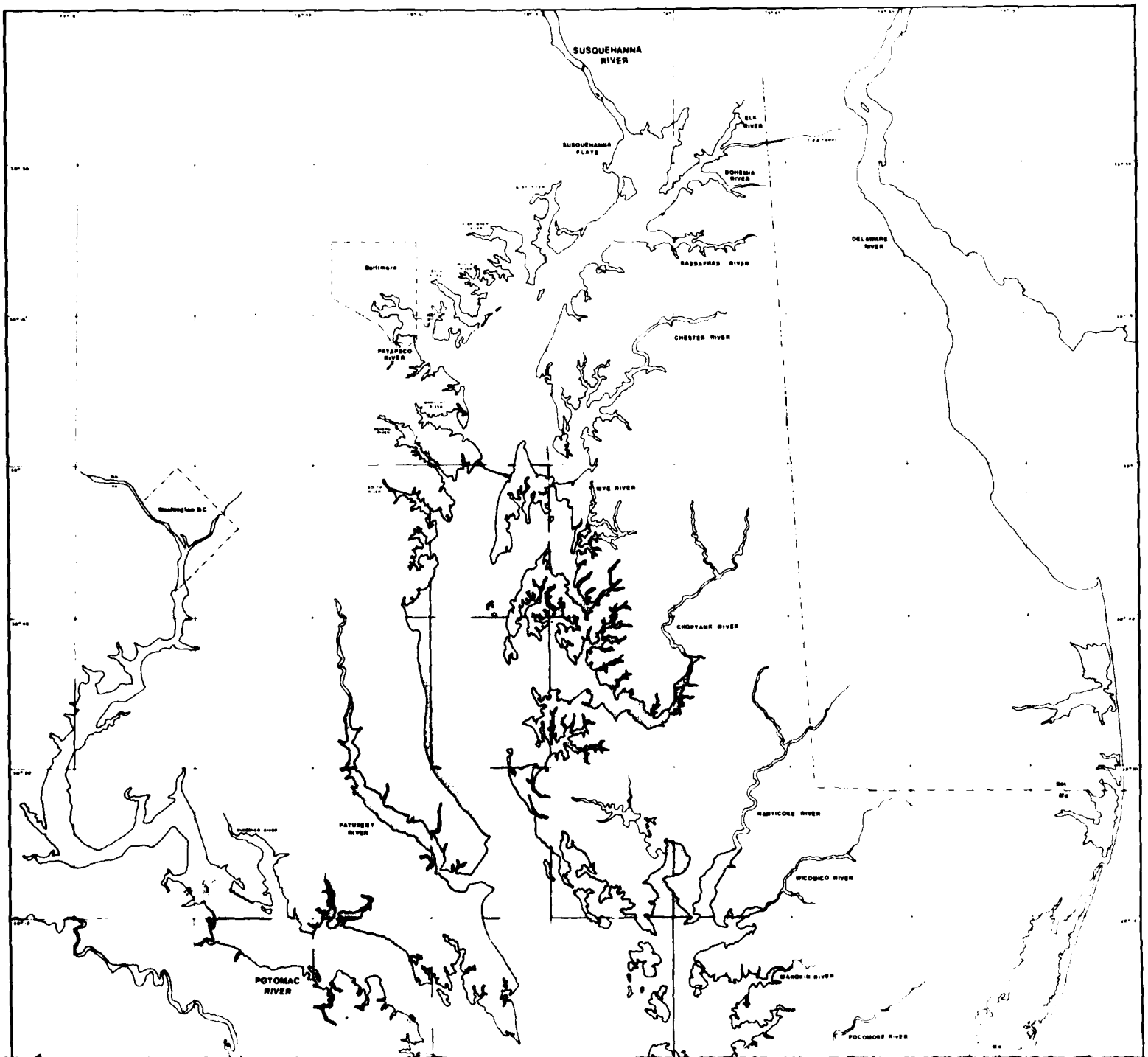

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
PIANKATANK RIVER
MOBJACK BAY
NANTICOKE River
WICOMICO RIVER
MANOKIN RIVER
POCOMOKE RIVER
WESTERN ECO-SYSTEMS TECHNOLOGY INC
MAP 19 CHESAPEAKE BAY
Eurytemora affinis - COPEPOD
Potential Habitat
SPRING AND SUMMER DISTRIBUTION
BASE DROUGHT
LEGEND
Average Adult Densities
Spring
Lower Densities
Higher Densities
Summer
Higher Densities

Plate 76


SUSQUEHANNA RIVER
ELK RIVER
SUSQUEHANNA FLATS
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
CHESTER RIVER
PATAPSCO RIVER
MYE RIVER
CHOPTANK RIVER
PATUXENT RIVER
RANTICOKE RIVER
WICOMICO RIVER
POTOMAC RIVER
MANOKIN RIVER
POCOMOKE RIVER

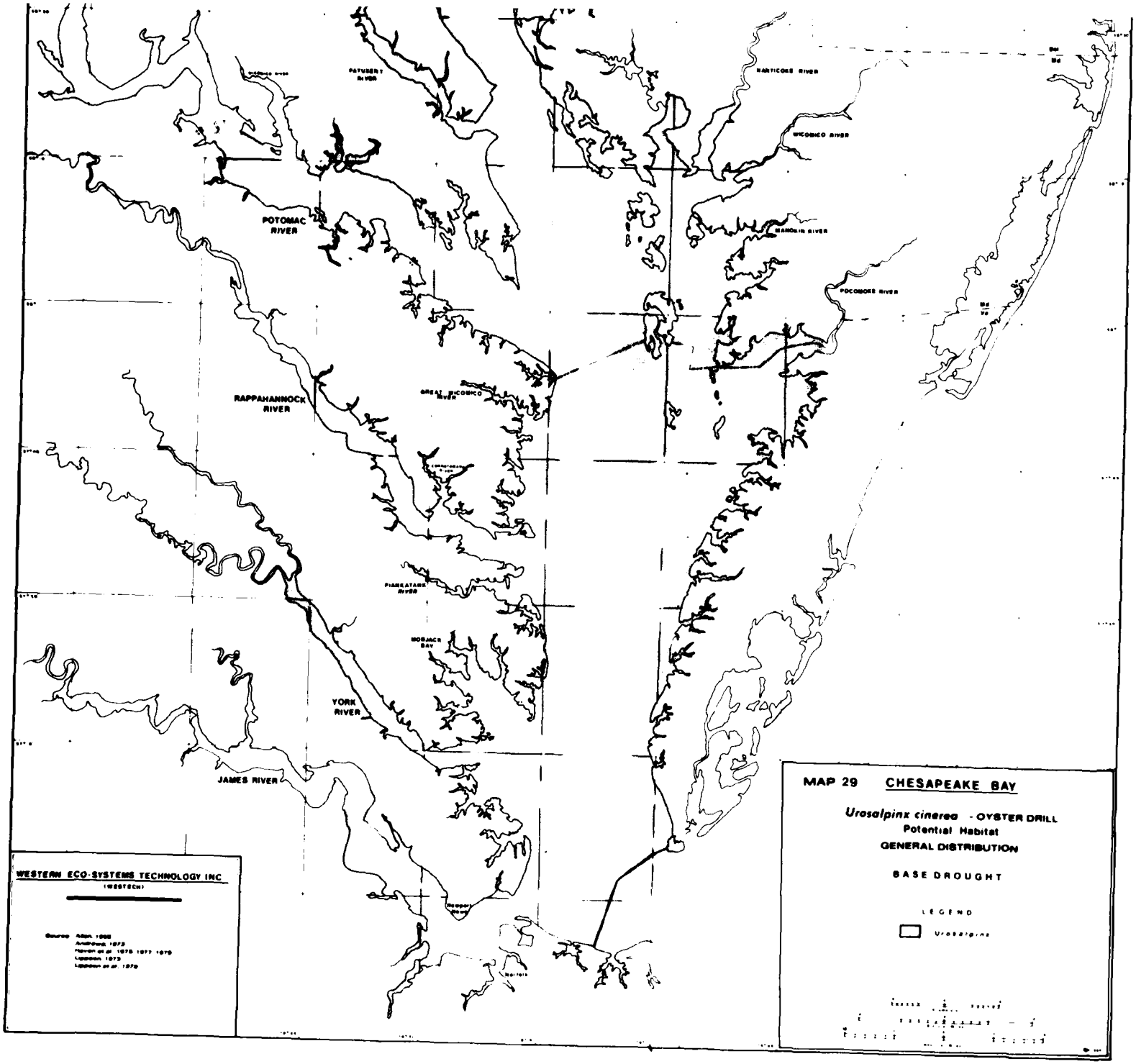

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
WESTERN ECO-SYSTEMS TECHNOLOGY INC
(WESTECH)
MAP 29 CHESAPEAKE BAY
Urosalpinx cinerea - OYSTER DRILL
Potential Habitat
GENERAL DISTRIBUTION
BASE DROUGHT
LEGEND
Urosalpinx

Plate 77


SUSQUEHANNA RIVER
ELK RIVER
SUSQUEHANNA FLATS
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
Baltimore
CHESTER RIVER
PATAPSCO RIVER
WYE RIVER
Washington DC
CHOPTANK RIVER
PATUXENT RIVER
MANTICOKE RIVER
WICOMICO RIVER
POTOMAC RIVER
ANNEMESSEX RIVER
POCOMOKE RIVER

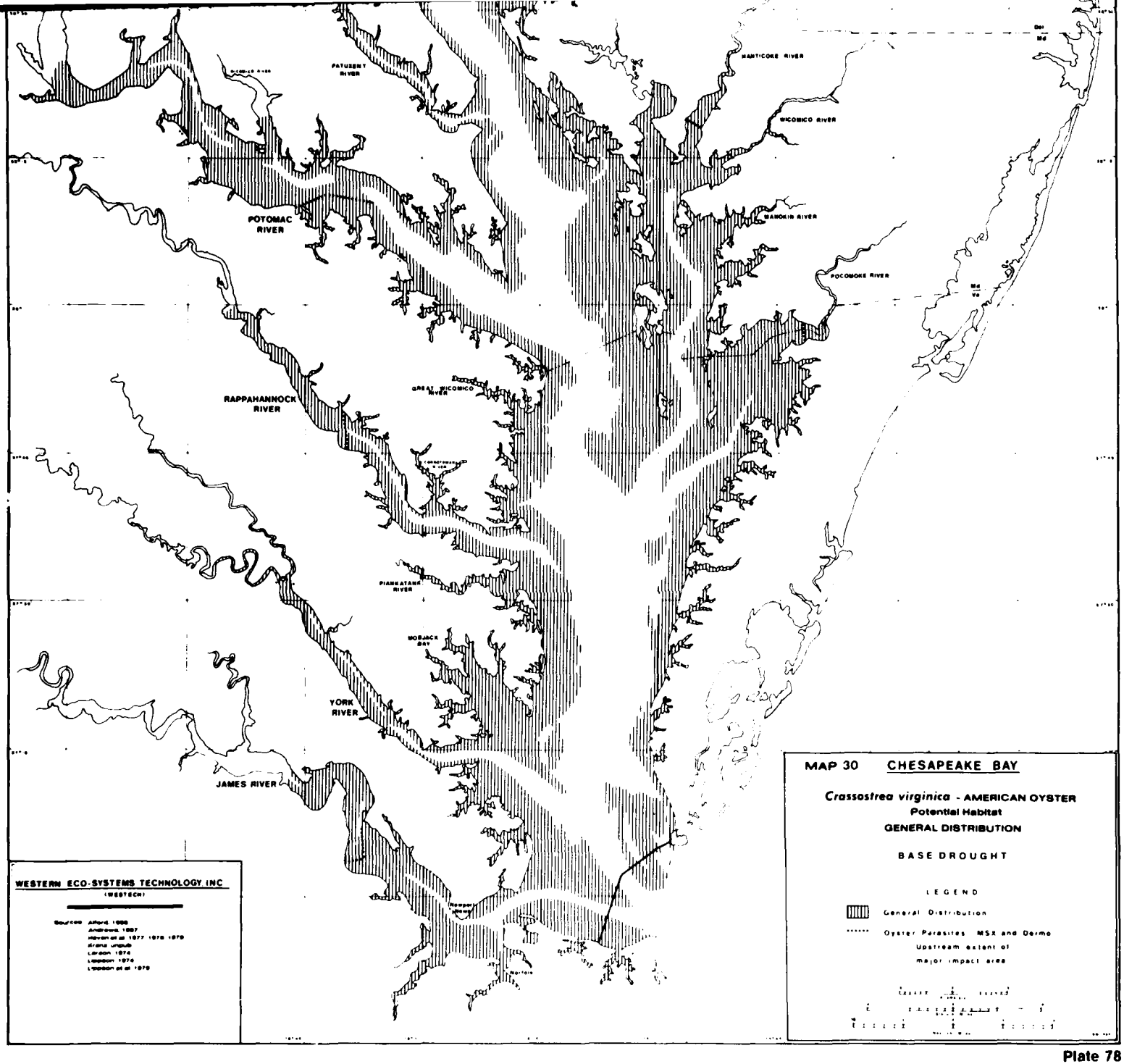

PATUXENT RIVER
MATTAPONI RIVER
PIANKATANK RIVER
POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
MOBJACK BAY
WESTERN ECO-SYSTEMS TECHNOLOGY INC
(WESTECH)
MAP 30 CHESAPEAKE BAY
Crassostrea virginica - AMERICAN OYSTER
Potential Habitat
GENERAL DISTRIBUTION
BASE DROUGHT
LEGEND
General Distribution
Oyster Parasites MSX and Dermo
Upstream extent of
major impact area

Plate 78


SUSQUEHANNA RIVER
ELK RIVER
SUSQUEHANNA FLATS
BOHEMIA RIVER
DELAWARE RIVER
Baltimore
SASSAFRAS RIVER
CHESTER RIVER
PATAPSCO RIVER
WYE RIVER
Washington DC
CHOPTANK RIVER
PATUXENT RIVER
MANOKIN RIVER
WICOMICO RIVER
POTOMAC RIVER
POCOMOKE River

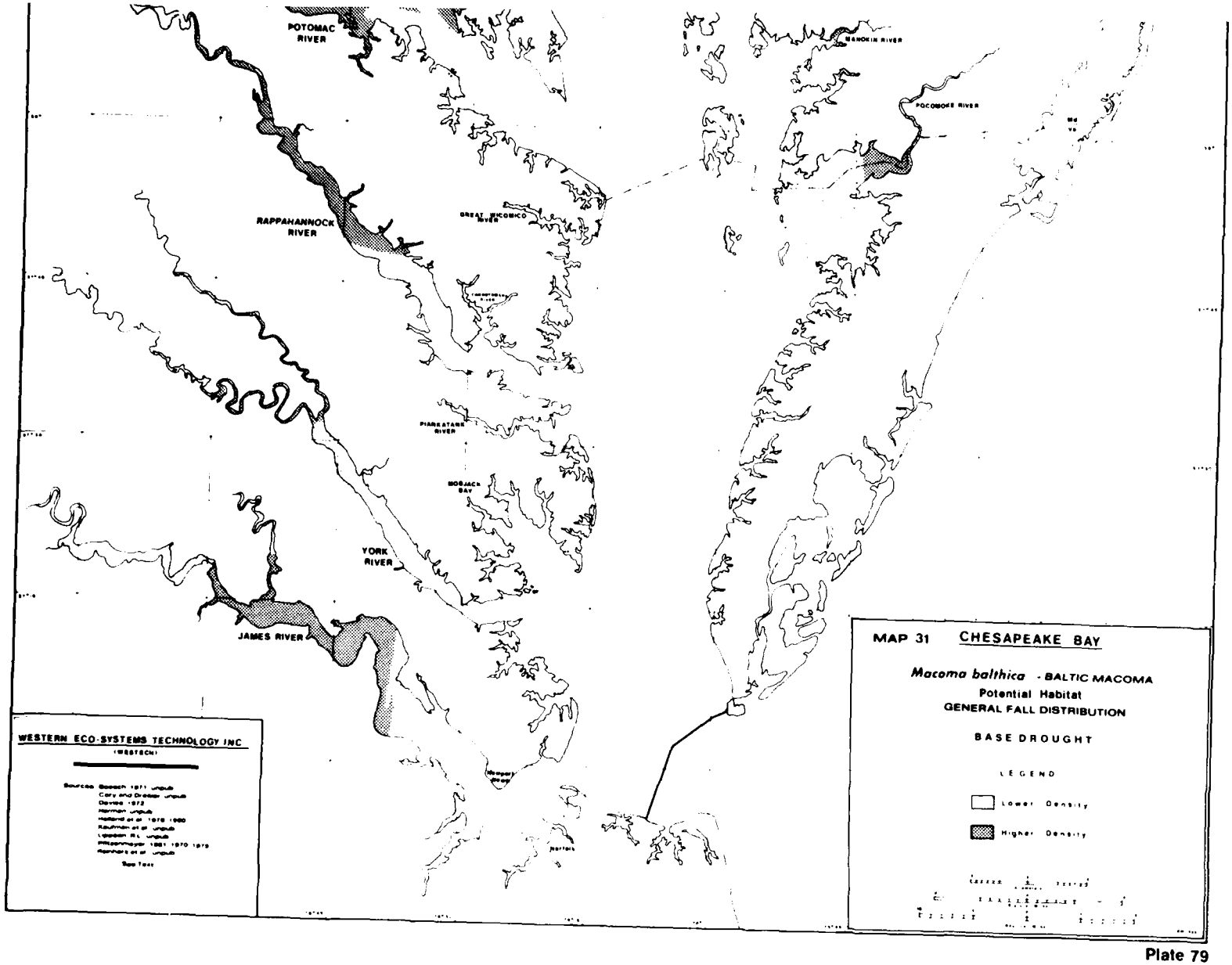
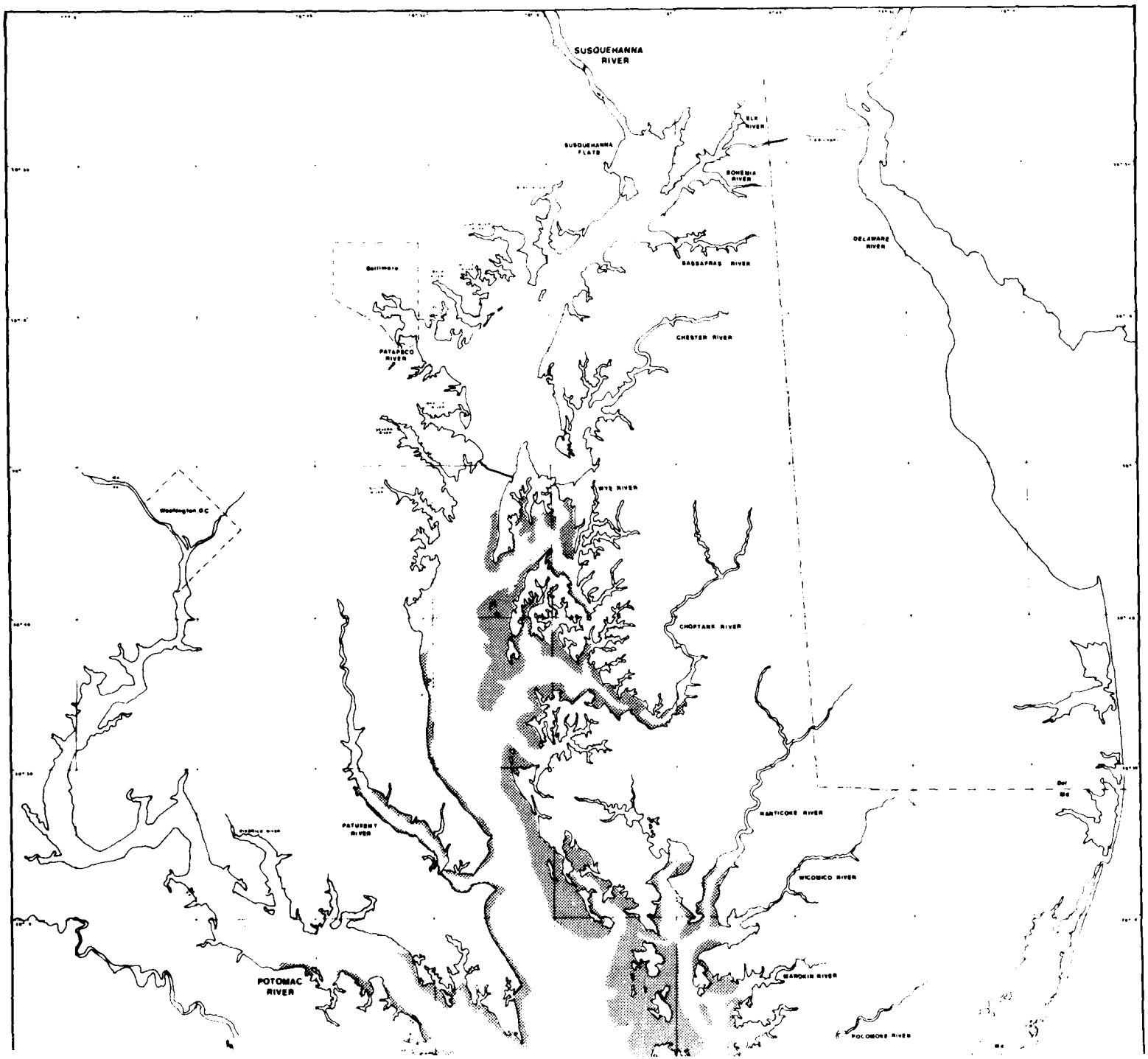

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
PIANKATANK RIVER
MOBJACK BAY
POCOMOKE RIVER
WESTERN ECO-SYSTEMS TECHNOLOGY INC
MAP 31 CHESAPEAKE BAY
Macoma balthica - BALTIC MACOMA
Potential Habitat
GENERAL FALL DISTRIBUTION
BASE DROUGHT
LEGEND
Lower Density
Higher Density

Plate 79


SUSQUEHANNA RIVER
SUSQUEHANNA FLATS
ELK RIVER
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
CHESTER RIVER
PATAPSCO RIVER
Washington D.C.
CHOPTANK RIVER
PATUXENT RIVER
NANTICOKE RIVER
WICOMICO RIVER
POTOMAC RIVER
MANOKIN RIVER
POCOMOKE RIVER

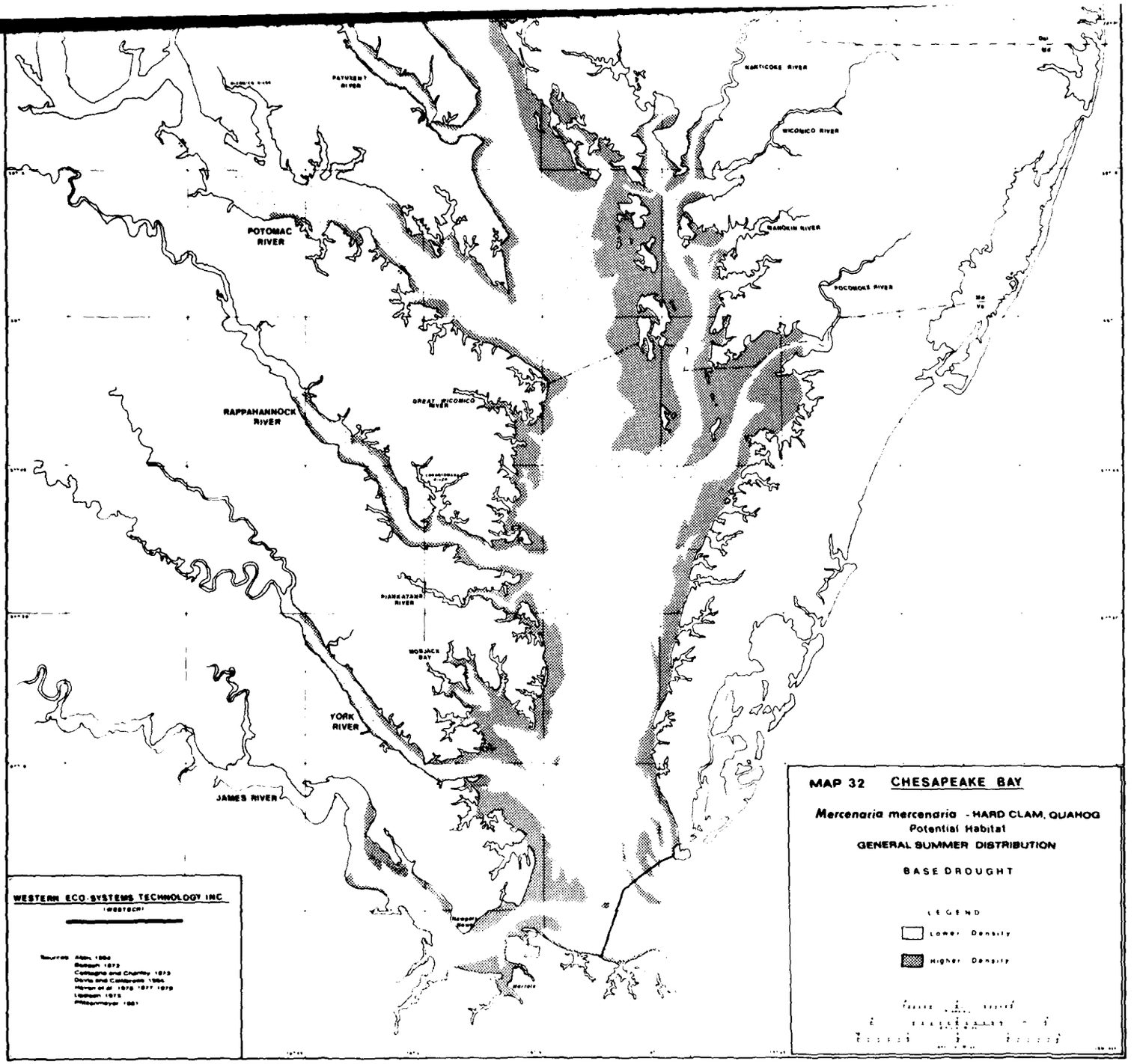
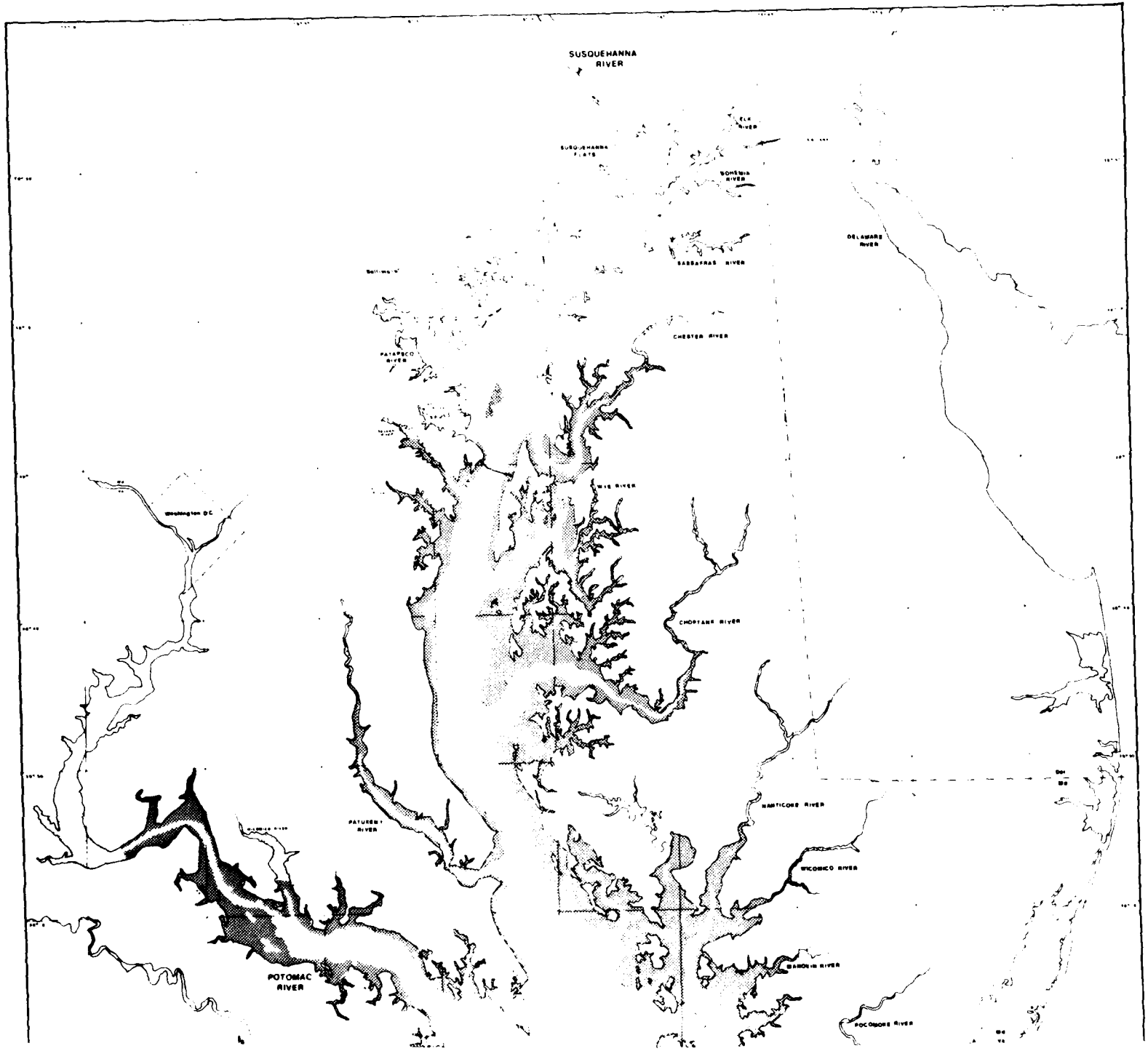

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
WICOMICO RIVER
MAP 32 CHESAPEAKE BAY
Mercenaria mercenaria - HARD CLAM, QUAHOG
Potential Habitat
GENERAL SUMMER DISTRIBUTION
BASE DROUGHT
LEGEND
Lower Density
Higher Density
WESTERN ECO-SYSTEMS TECHNOLOGY INC.

Plate 80


SUSQUEHANNA RIVER
ELK RIVER
SUSQUEHANNA FLATS
SASSAFRAS RIVER
CHESTER RIVER
PATAPSCO RIVER
MID RIVER
CHOPTANK RIVER
PATUXENT RIVER
POTOMAC RIVER
WICOMICO RIVER
POCOMOKE RIVER

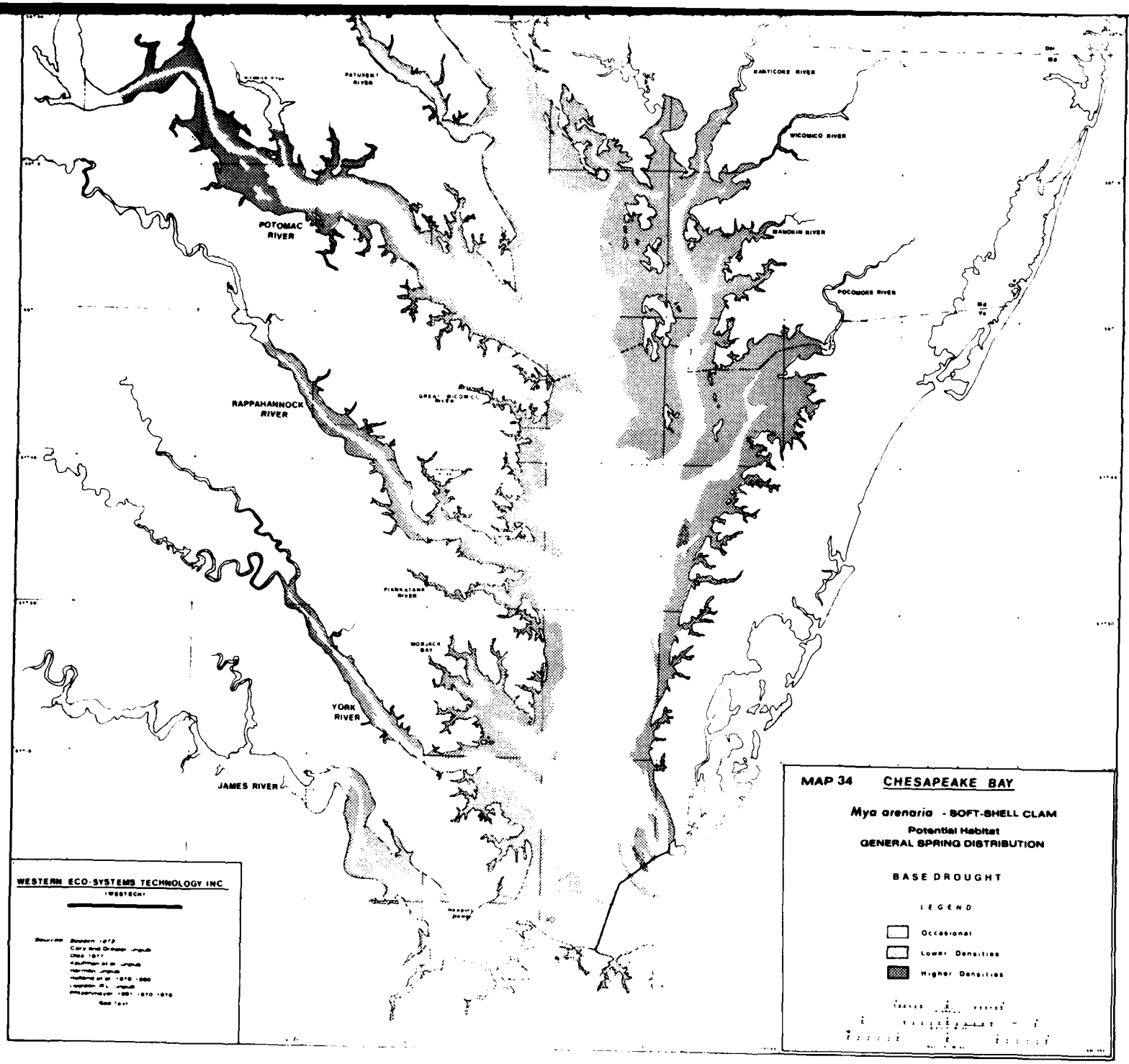

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
PATUXENT RIVER
WICOMICO RIVER
MANOKIN RIVER
POCOMOKE RIVER
MAP 34 CHESAPEAKE BAY
Mya arenaria - SOFT-SHELL CLAM
Potential Habitat
GENERAL SPRING DISTRIBUTION
BASE DROUGHT
LEGEND
Occasional
Lower Densities
Higher Densities
WESTERN ECO-SYSTEMS TECHNOLOGY INC

Plate 81


SUSQUEHANNA RIVER
ELK RIVER
SUSQUEHANNA FLATS
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
Baltimore
PATAPSCO RIVER
CHESTER RIVER
Washington, D.C.
WYE RIVER
CHOPTANK RIVER
PATUXENT RIVER
HANTICOKE RIVER
WICOMICO RIVER
POTOMAC RIVER
MANOKIN RIVER
POCOMOKE RIVER

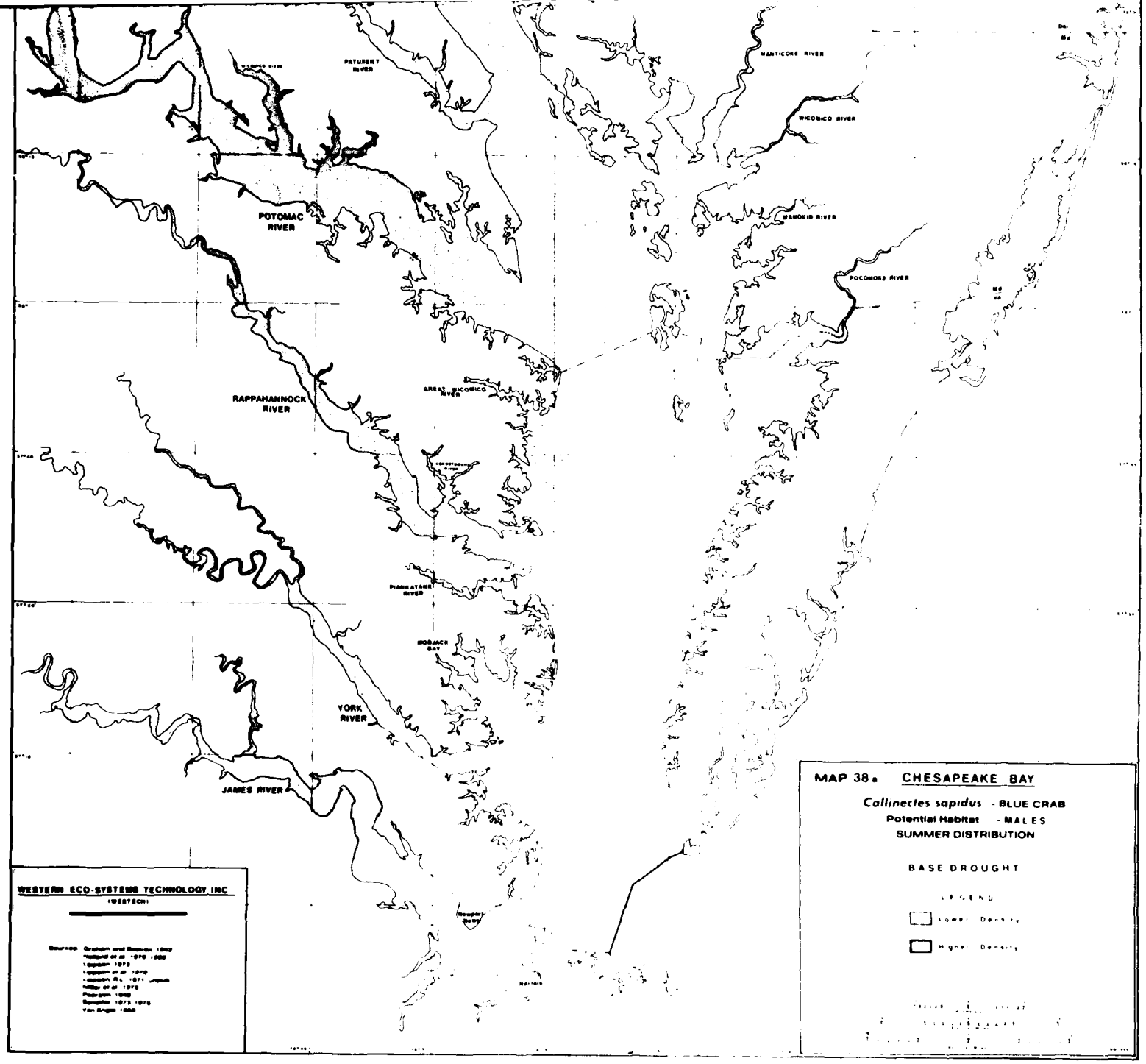
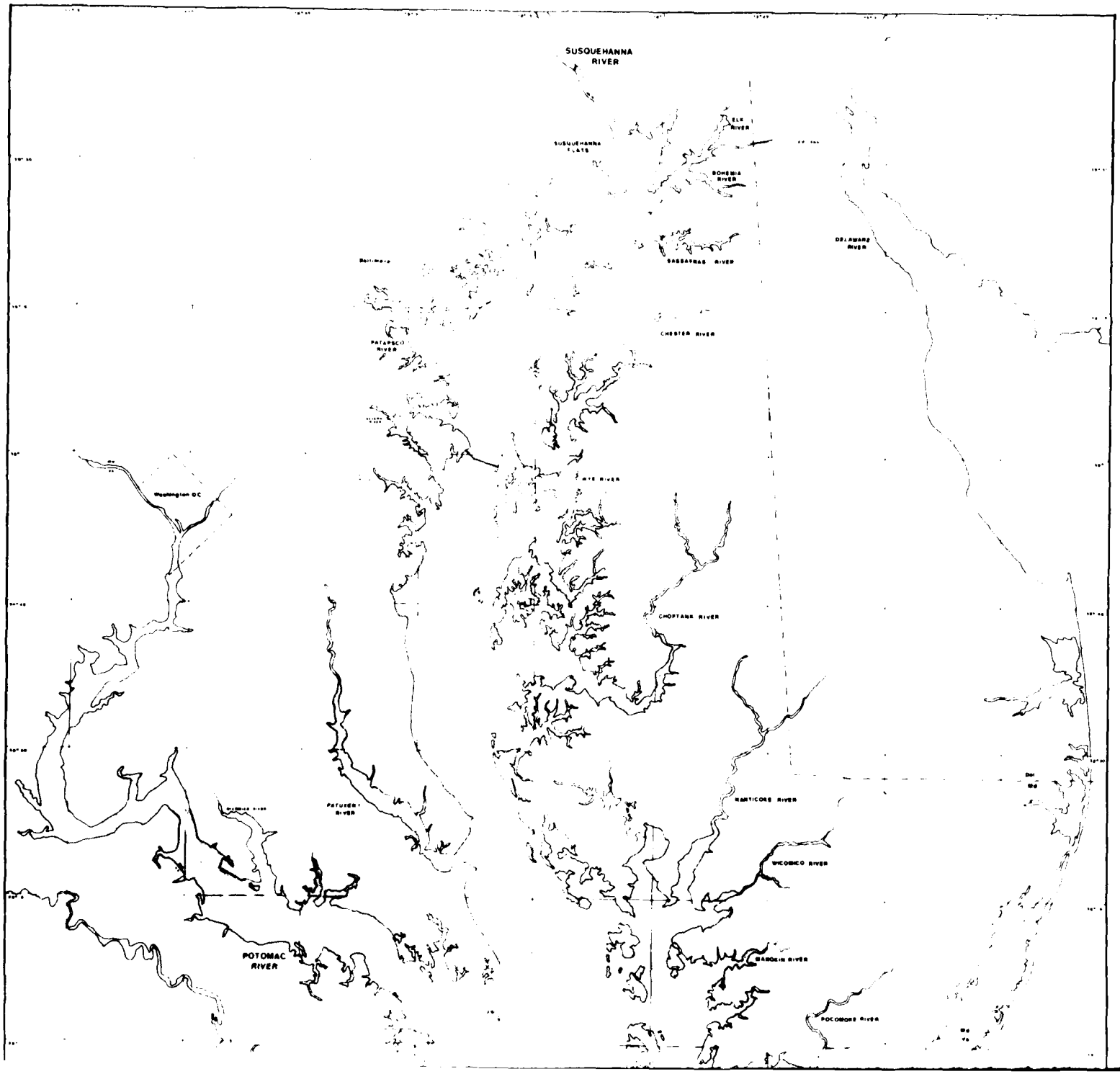

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
PATUXENT RIVER
WICOMICO RIVER
MANOKIN RIVER
POCOMOKE RIVER
MOBJACK BAY
WESTERN ECO-SYSTEMS TECHNOLOGY, INC.
(WESTECH)
MAP 38a CHESAPEAKE BAY
Callinectes sapidus - BLUE CRAB
Potential Habitat - MALES
SUMMER DISTRIBUTION
BASE DROUGHT
LEGEND

Plate 82


SUSQUEHANNA RIVER
ELK RIVER
SUSQUEHANNA FLATS
BOHEMIA RIVER
SASSAFRAS RIVER
DELAWARE RIVER
CHESTER RIVER
PATAPSCO RIVER
Washington DC
CHOPTANK RIVER
RAPPAHANNOCK RIVER
WICOMICO RIVER
POTOMAC RIVER
MANOKIN RIVER
POCOMOKE RIVER

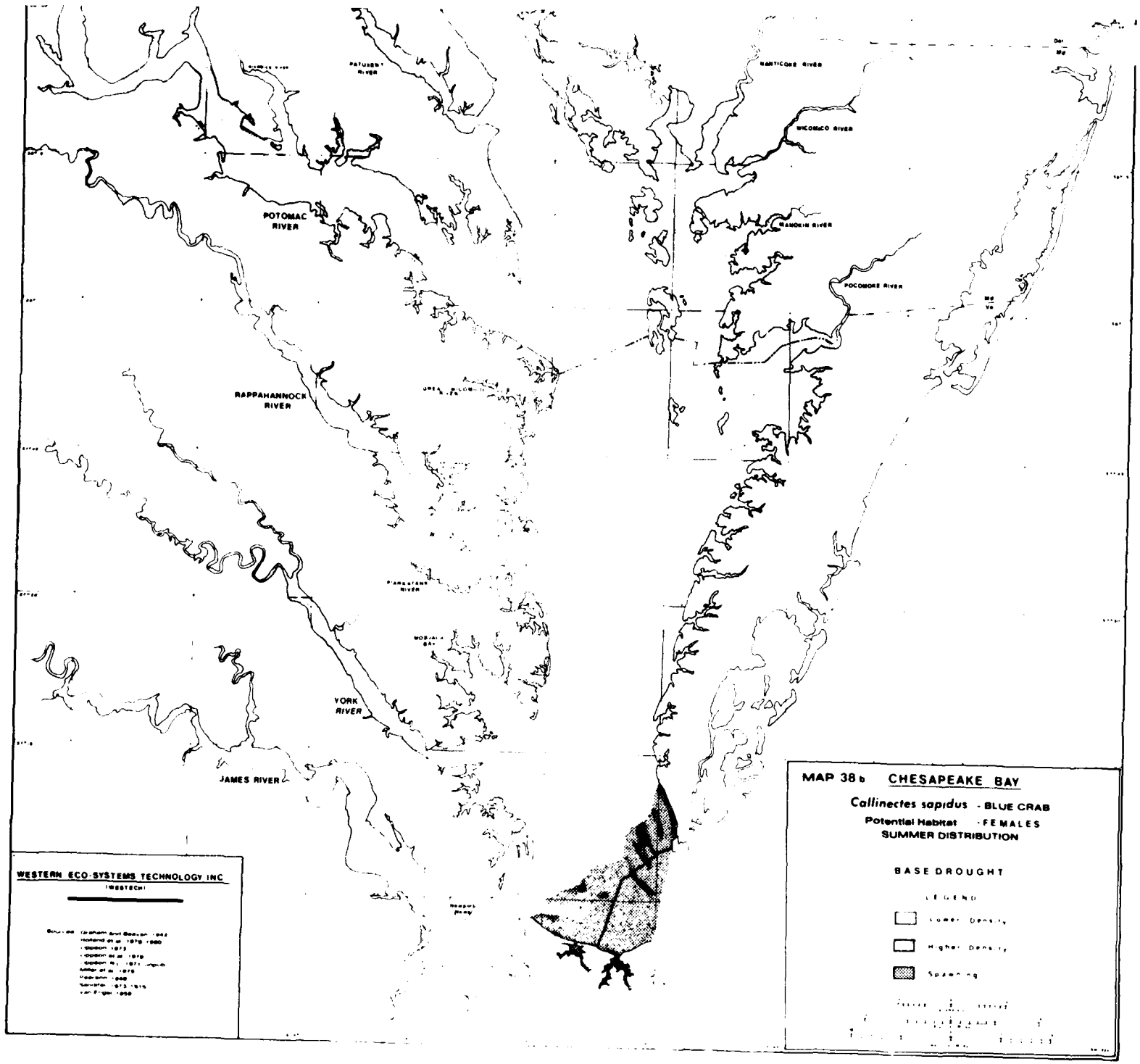
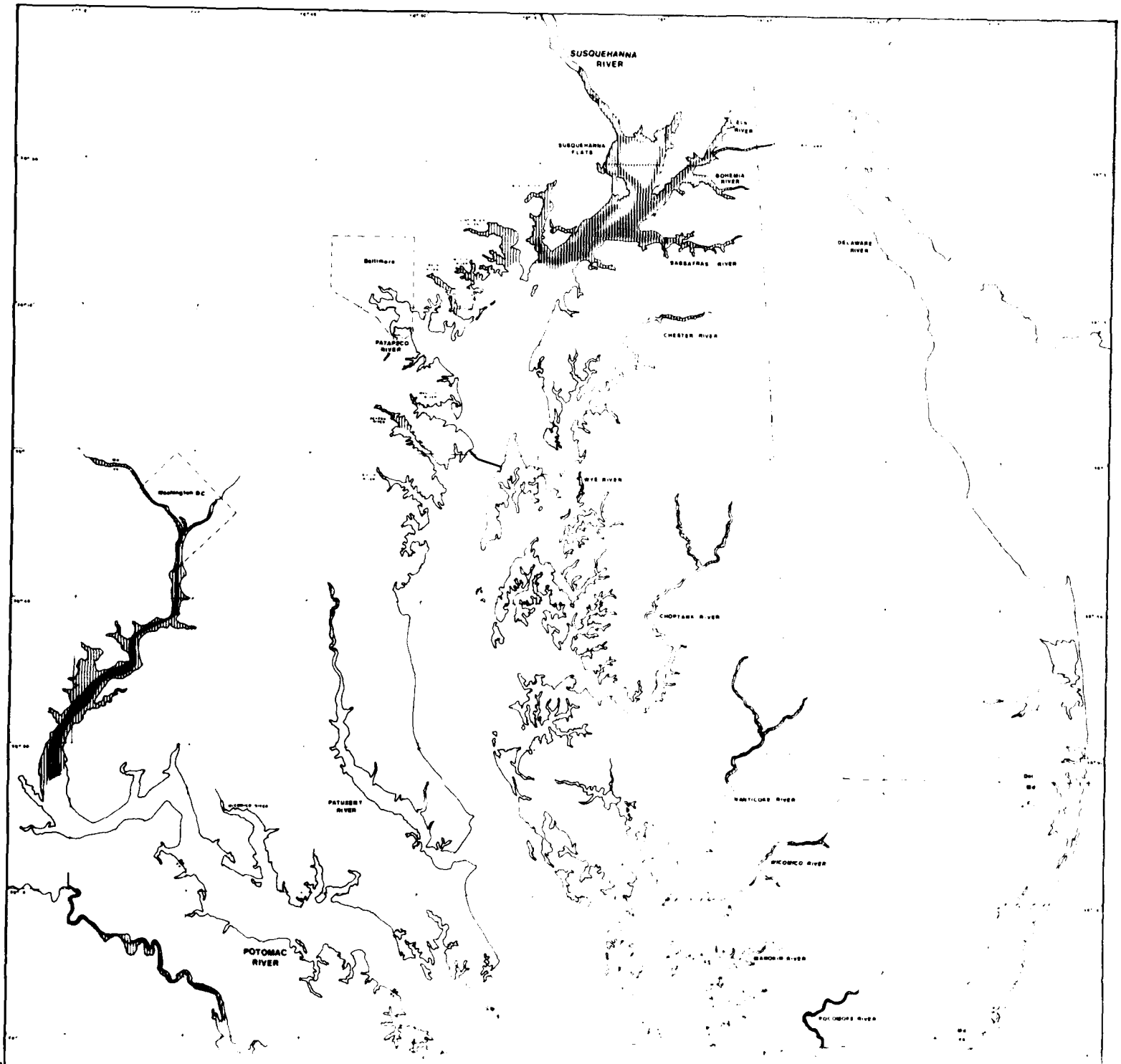

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
WICOMICO RIVER
POCOMOKE RIVER
MAP 38 b CHESAPEAKE BAY
Callinectes sapidus - BLUE CRAB
Potential Habitat - FEMALES
SUMMER DISTRIBUTION
BASE DROUGHT
LEGEND
Lower Density
Higher Density
Spawning
WESTERN ECO-SYSTEMS TECHNOLOGY INC
(WESTECH)

Plate 83


SUSQUEHANNA RIVER
SUSQUEHANNA FLATS
ELK RIVER
BOHEMIA RIVER
SASSAFRAS RIVER
DELAWARE RIVER
Baltimore
PATAPSCO River
CHESTER RIVER
Washington DC
WYE RIVER
CHOPTANK RIVER
PATUXENT RIVER
WICOMICO RIVER
POCOMOKE RIVER
POTOMAC RIVER

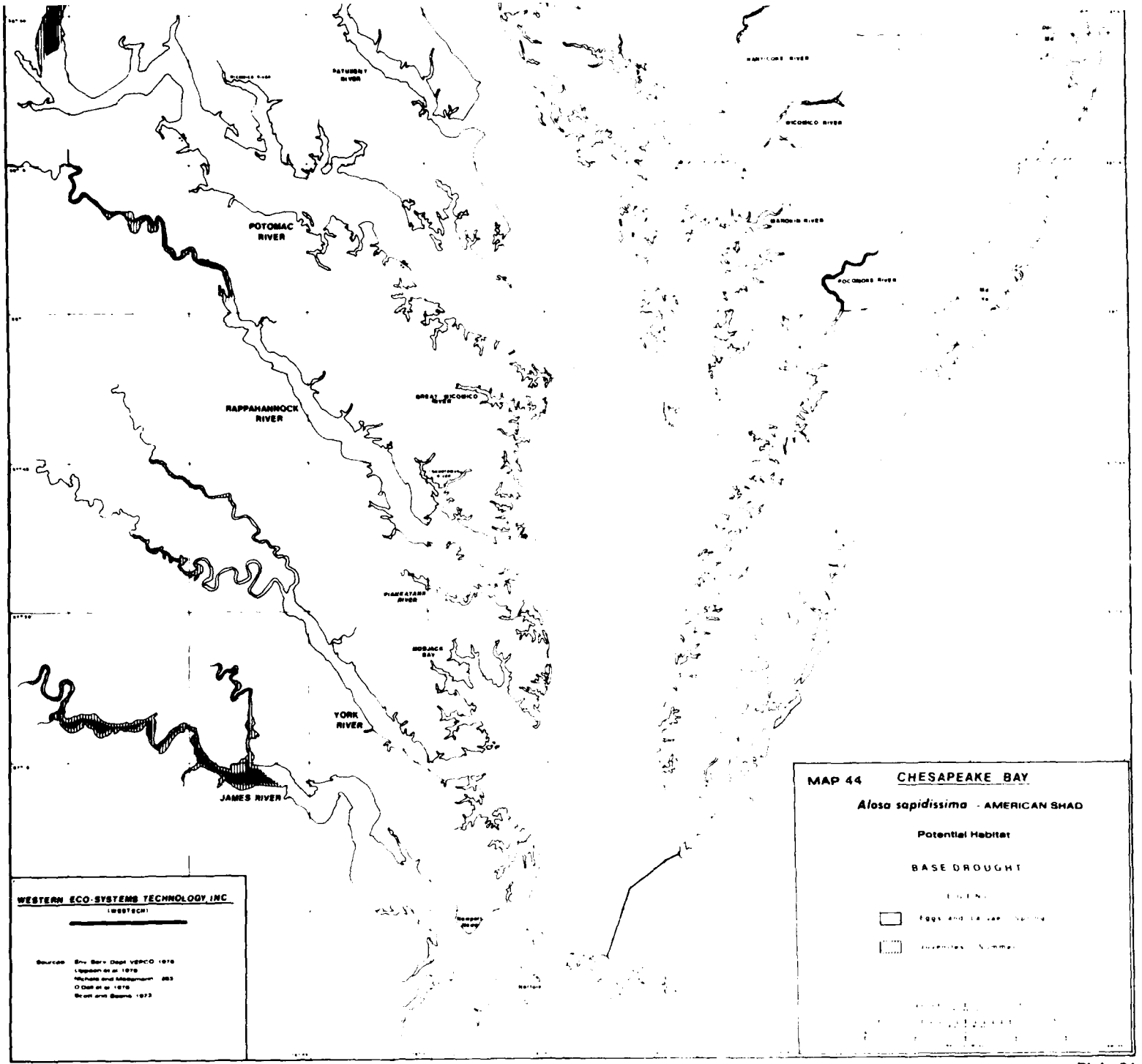
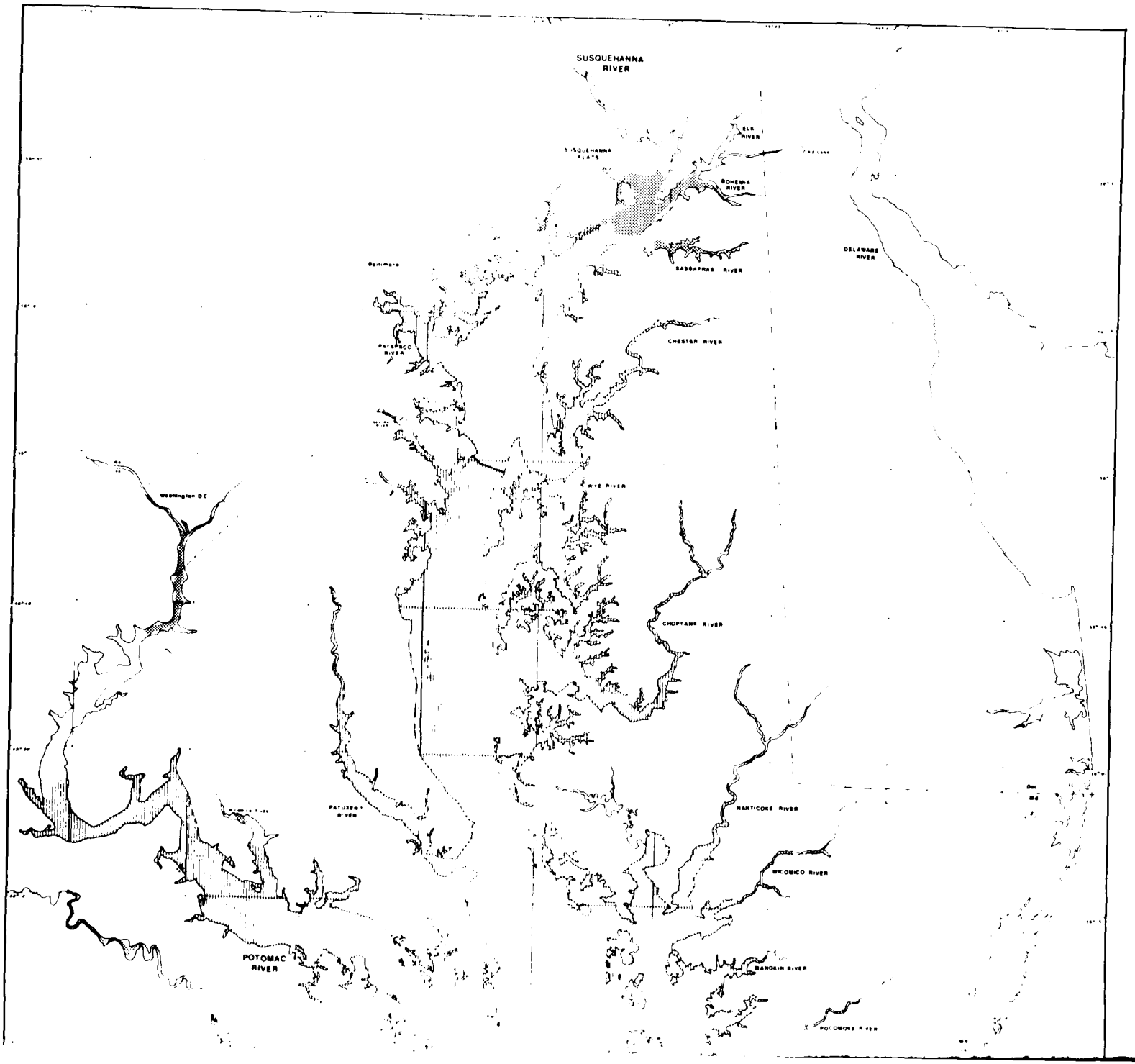

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
MAP 44 CHESAPEAKE BAY
Alosa sapidissima - AMERICAN SHAD
Potential Habitat
BASE DROUGHT
WESTERN ECO-SYSTEMS TECHNOLOGY, INC.
(WESTECH)

Plate 84


SUSQUEHANNA RIVER
ELK RIVER
SUSQUEHANNA FLATS
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
Baltimore
PATAPSCO RIVER
CHESTER RIVER
Washington DC
CHOPTANK RIVER
PATUXENT RIVER
NANTICOKE RIVER
WICOMICO RIVER
POTOMAC RIVER
MANOKIN RIVER
POCOMOKE RIVER

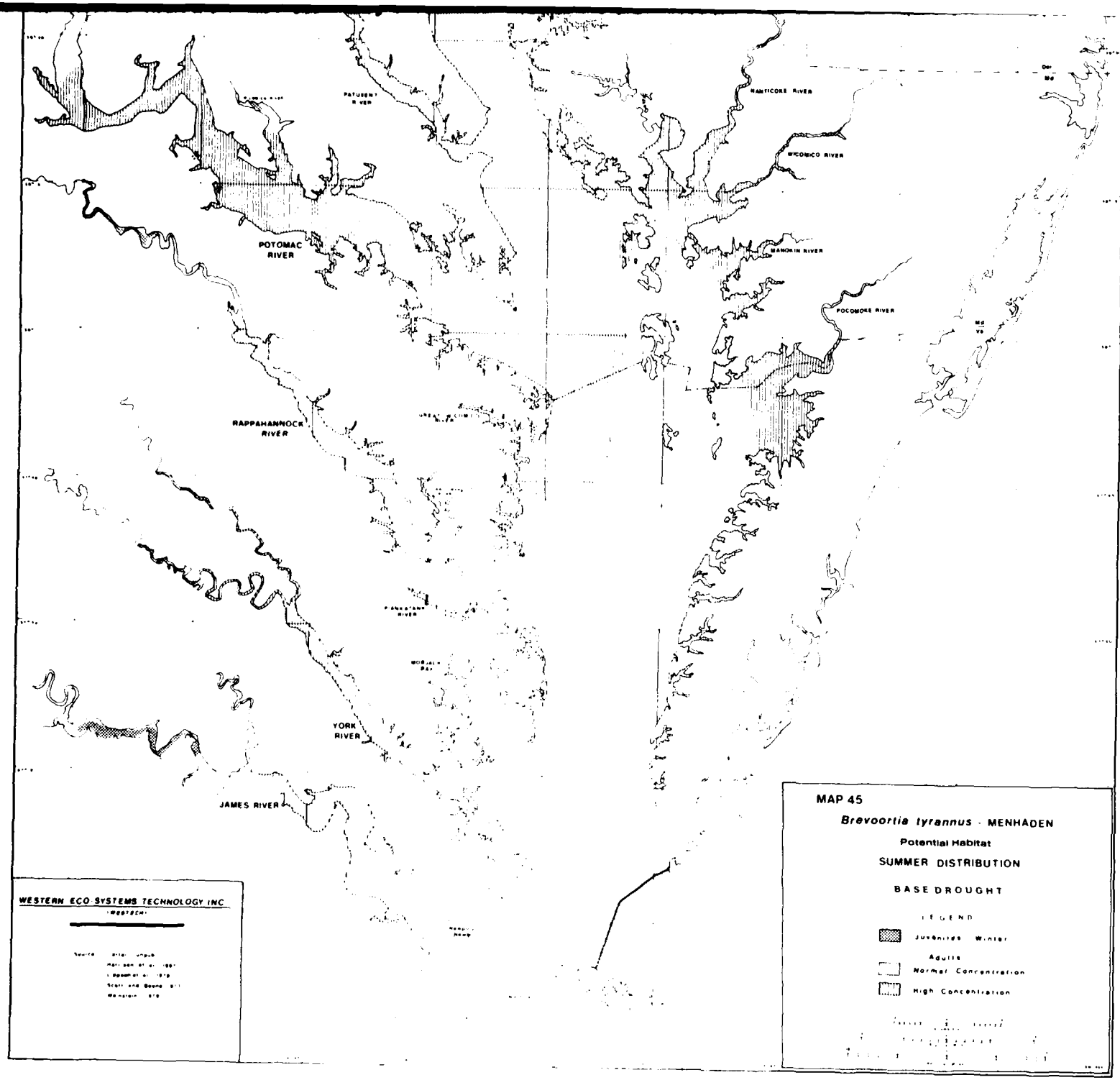
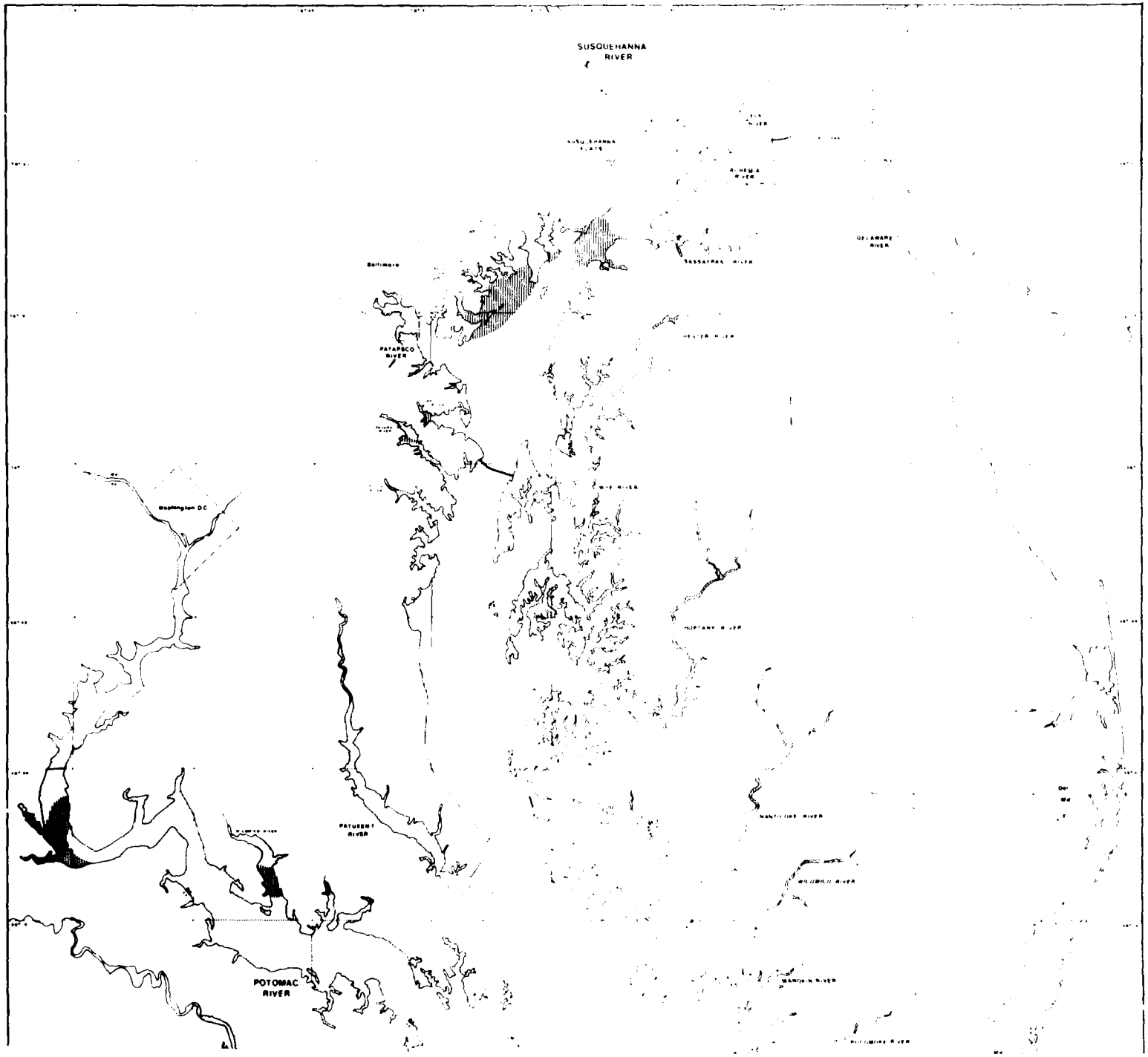

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
NANTICOKE RIVER
WICOMICO RIVER
MANOKIN RIVER
POCOMOKE RIVER
WESTERN ECO SYSTEMS TECHNOLOGY INC
MAP 45
Brevoortia tyrannus - MENHADEN
Potential Habitat
SUMMER DISTRIBUTION
BASE DROUGHT
LEGEND
Juveniles Winter
Adults
Normal Concentration
High Concentration

Plate 85


SUSQUEHANNA RIVER
Baltimore
PATAPSCO RIVER
Washington DC
POTOMAC RIVER
PATUXENT RIVER
DELAWARE RIVER

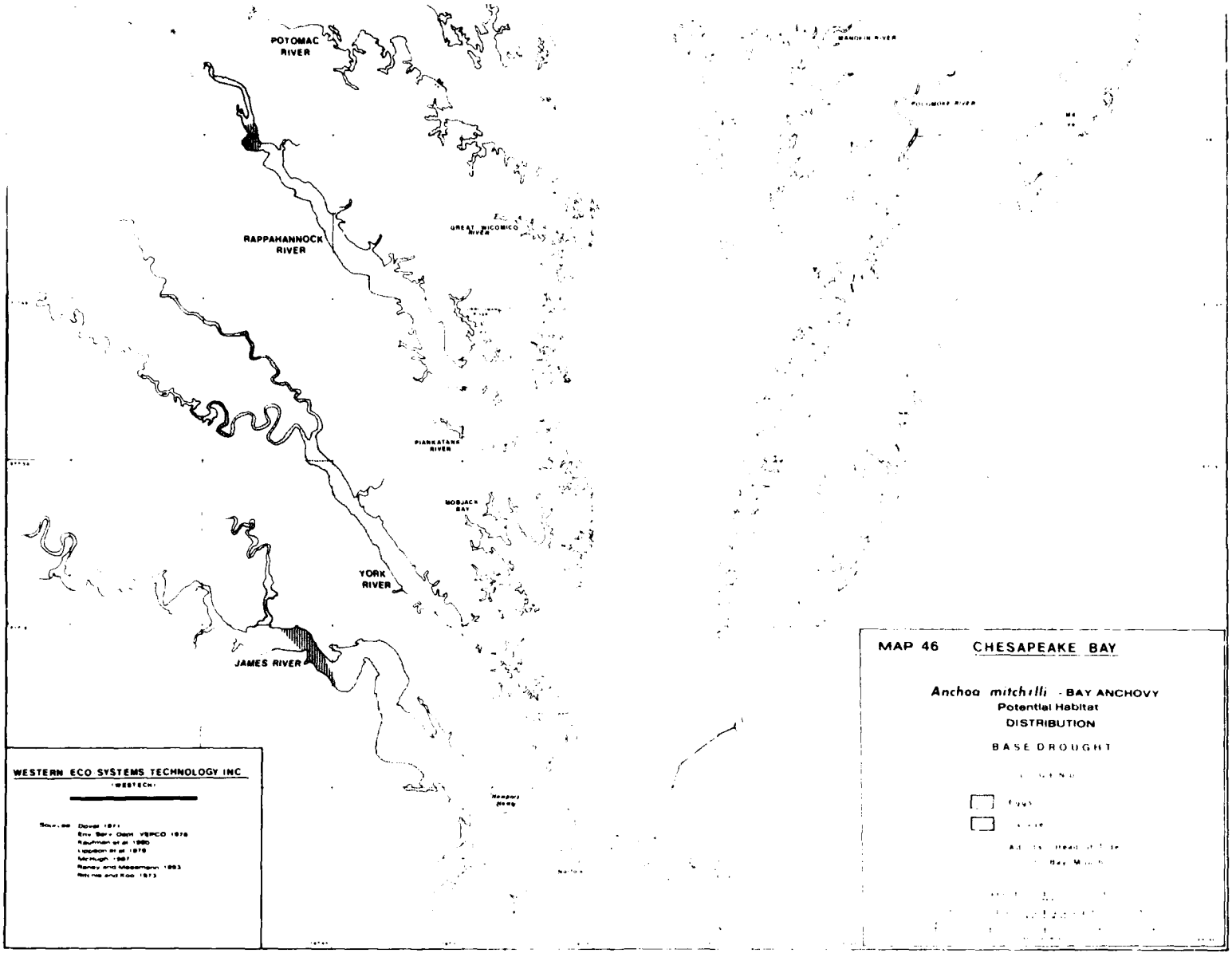
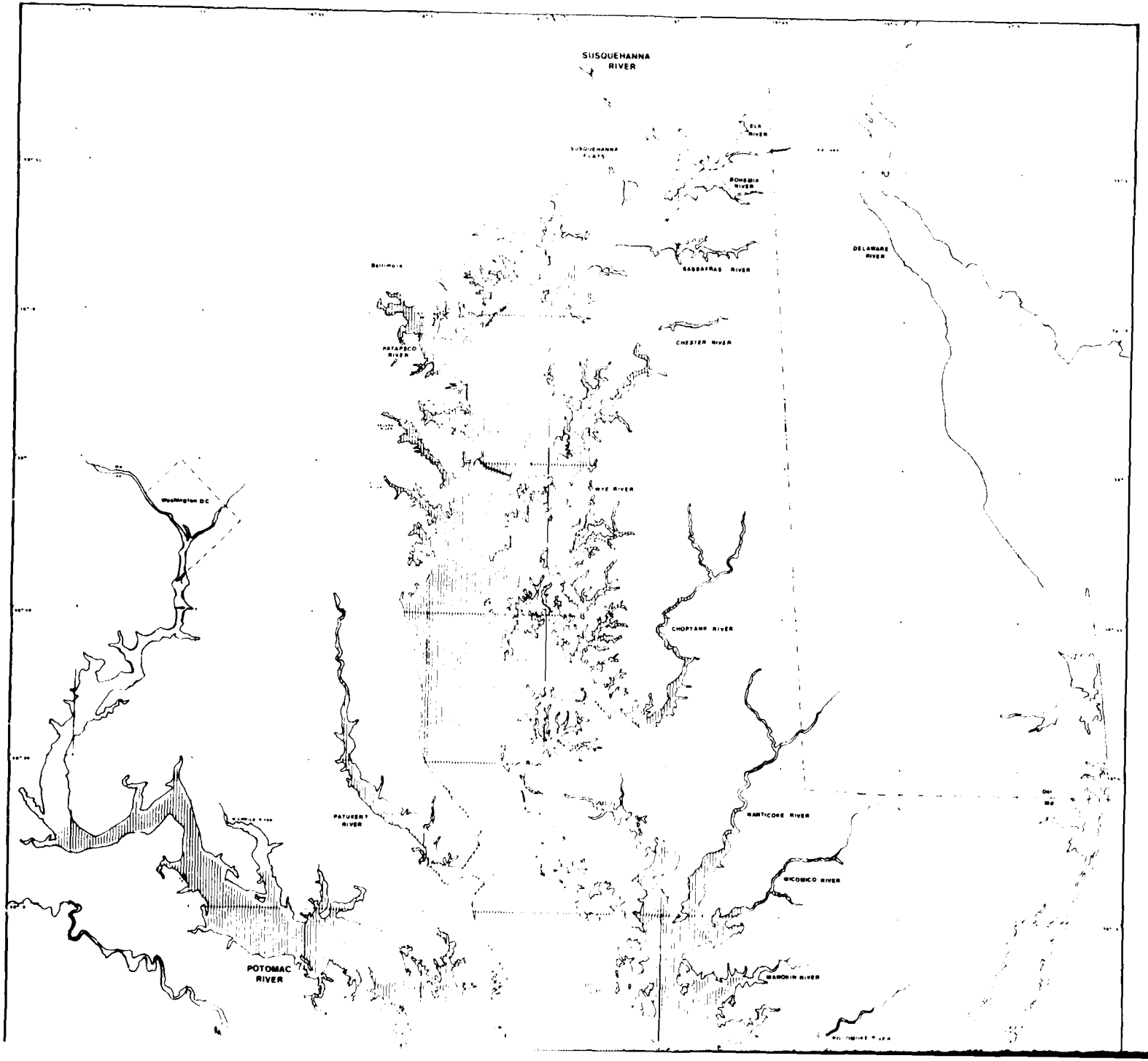

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
MAP 46 CHESAPEAKE BAY
Anchoa mitchilli - BAY ANCHOVY
Potential Habitat
DISTRIBUTION
BASE DROUGHT
WESTERN ECO SYSTEMS TECHNOLOGY INC

Plate 86


SUSQUEHANNA RIVER
ELK RIVER
SUSQUEHANNA FLATS
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
Baltimore
CHESTER RIVER
PATAPSCO RIVER
WYE RIVER
Washington DC
CHOPTANK RIVER
PATUXENT RIVER
RAPPAHANNOCK RIVER
WICOMICO RIVER
POTOMAC RIVER
PIANKATANK RIVER

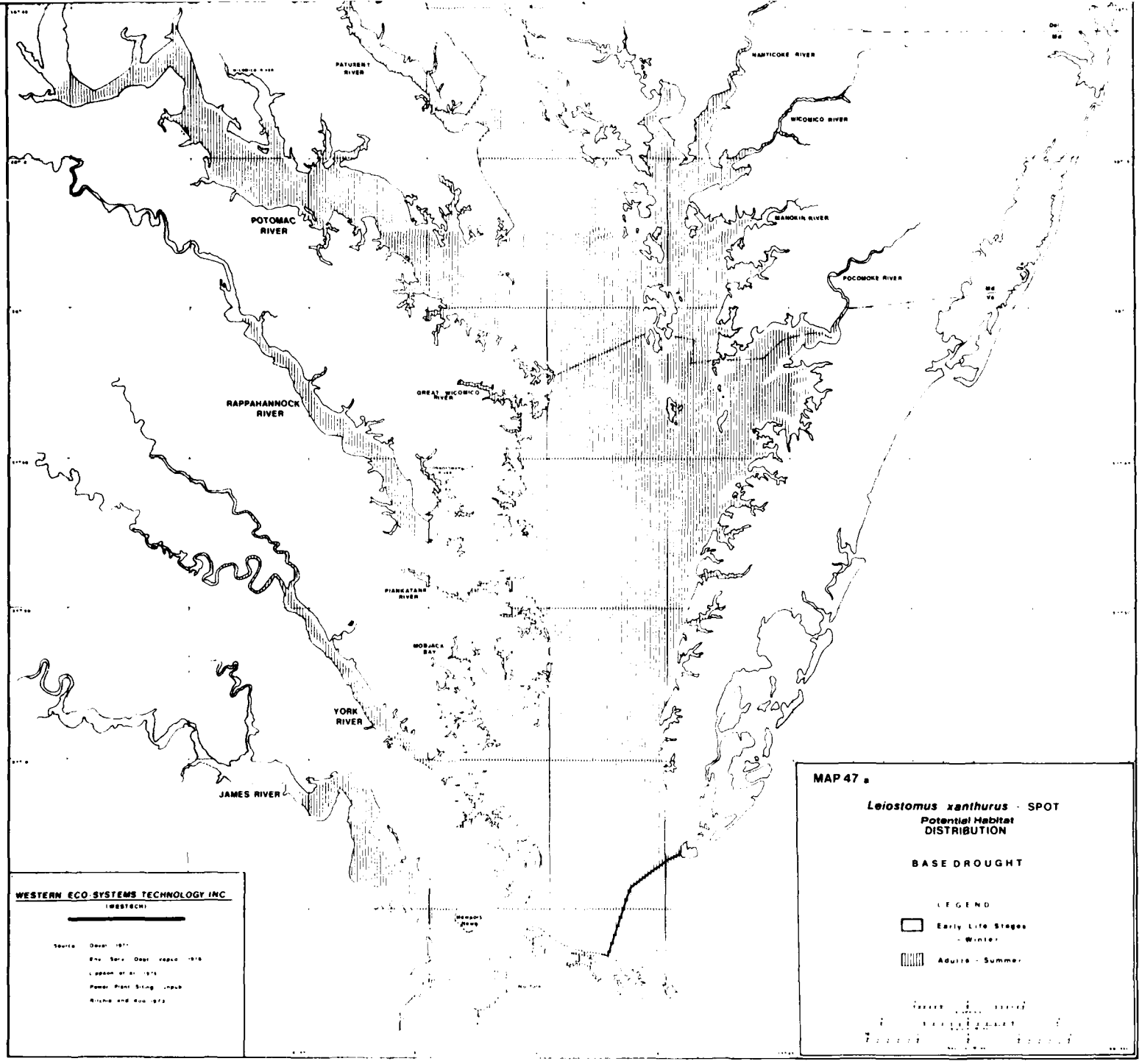
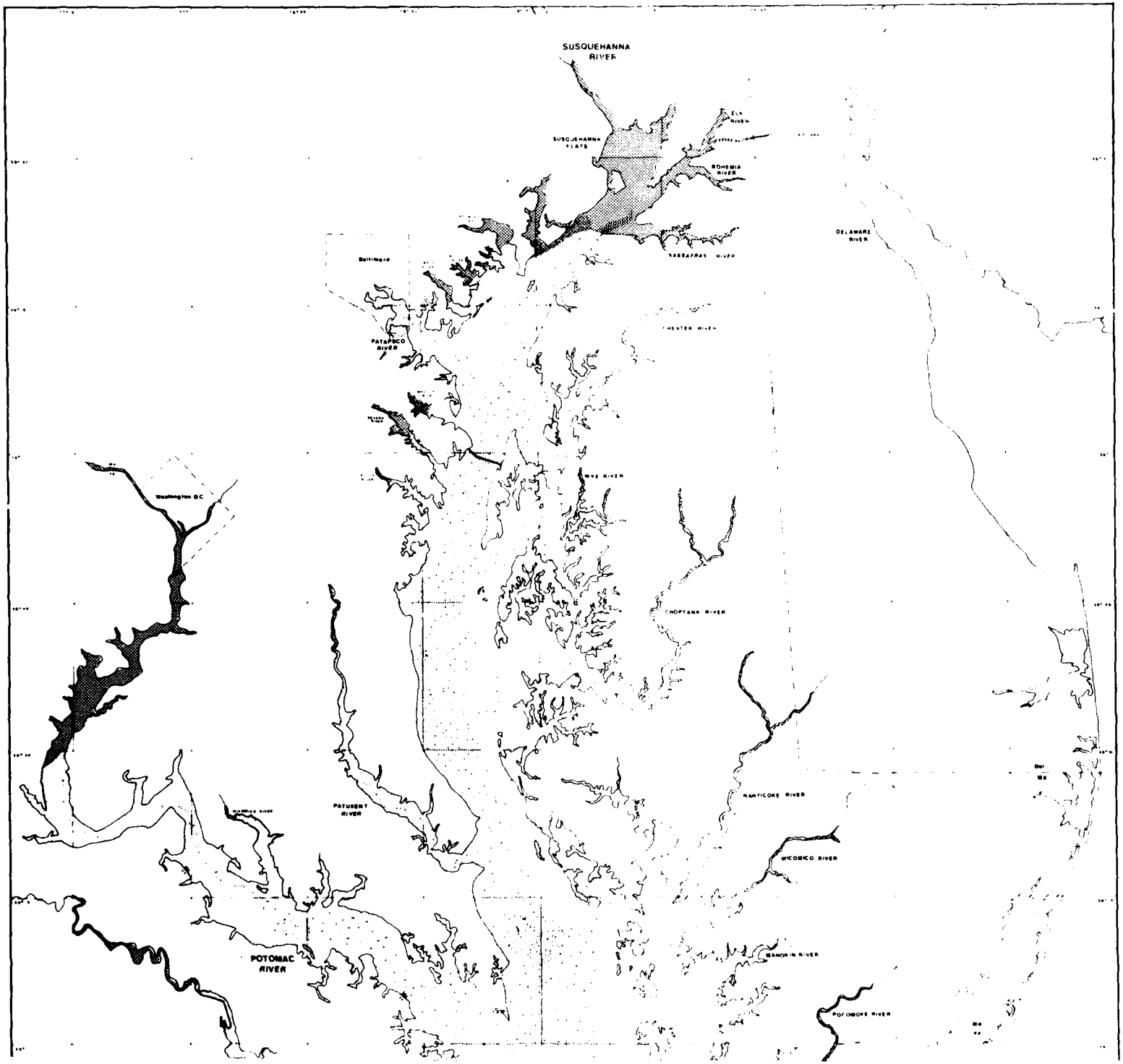

PATUXENT RIVER
NANTICOKE RIVER
WICOMICO RIVER
POTOMAC RIVER
MANOKIN RIVER
POCOMOKE RIVER
RAPPAHANNOCK RIVER
GREAT WICOMICO RIVER
PIANKATANK RIVER
MOBJACK BAY
YORK RIVER
JAMES RIVER
MAP 47 a
Leiostomus xanthurus - SPOT
Potential Habitat
DISTRIBUTION
BASE DROUGHT
LEGEND
Early Life Stages - Winter
Adults - Summer
WESTERN ECO-SYSTEMS TECHNOLOGY INC
(WESTECH)

Plate 87


SUSQUEHANNA RIVER
SUSQUEHANNA FLATS
ELK RIVER
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
Baltimore
PATAPSCO RIVER
CHESTER RIVER
Washington D.C.
CHOPTANK RIVER
PATUXENT RIVER
NANTICOKE RIVER
WICOMICO RIVER
POTOMAC RIVER
MANOKIN RIVER
POCOMOKE RIVER

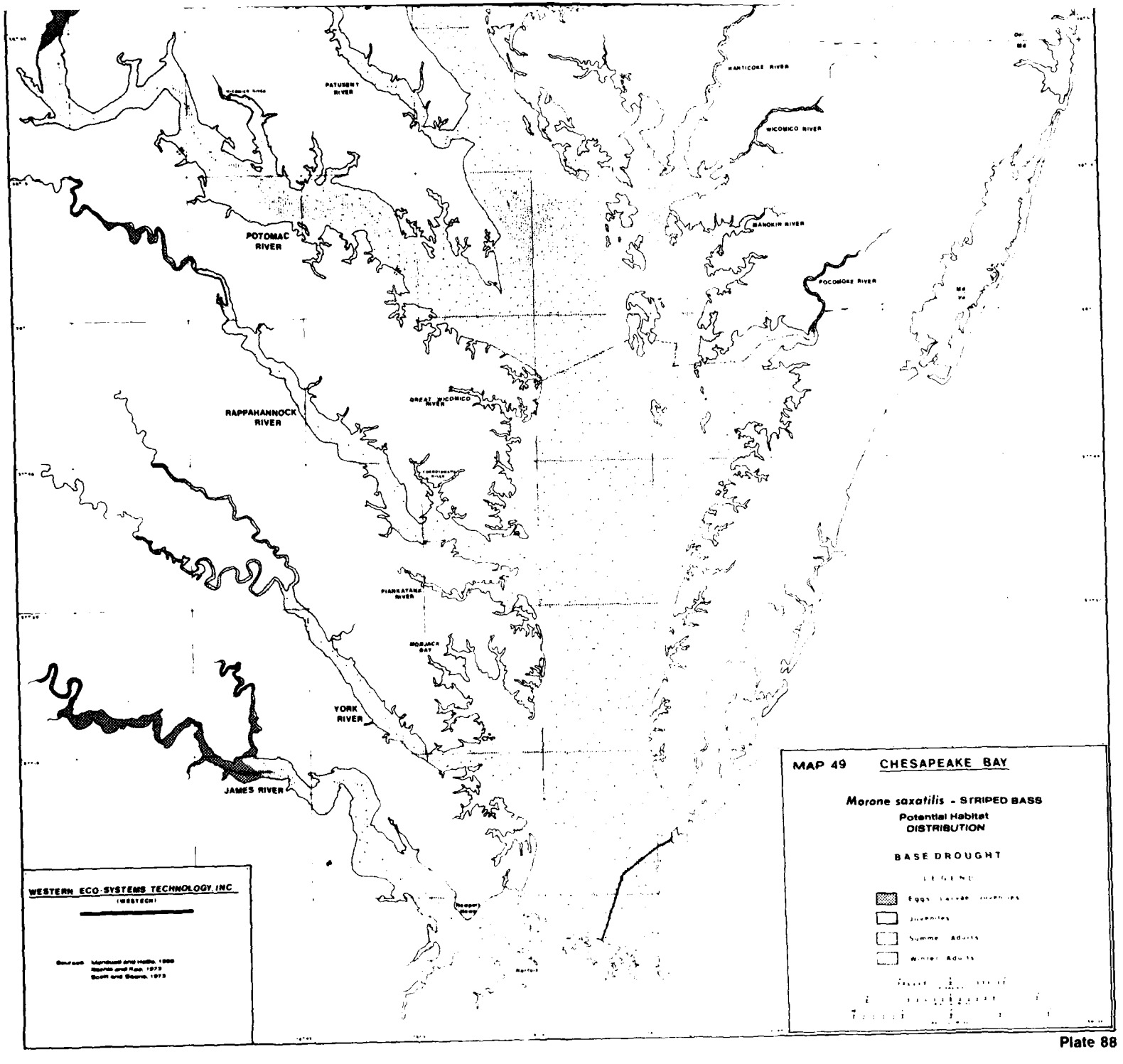

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
PATUXENT RIVER
WICOMICO RIVER
POCOMOKE RIVER
MAP 49 CHESAPEAKE BAY
Morone saxatilis - STRIPED BASS
Potential Habitat
DISTRIBUTION
BASE DROUGHT
WESTERN ECO-SYSTEMS TECHNOLOGY, INC.

Plate 88


SUSQUEHANNA RIVER
SUSQUEHANNA FLATS
ELK RIVER
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
Baltimore
PATAPSCO RIVER
CHESTER RIVER
Washington DC
WYE RIVER
CHOPTANK RIVER
PATUXENT RIVER
NANTICOKE RIVER
WICOMICO RIVER
POTOMAC RIVER
MANOKIN RIVER
POCOMOKE River

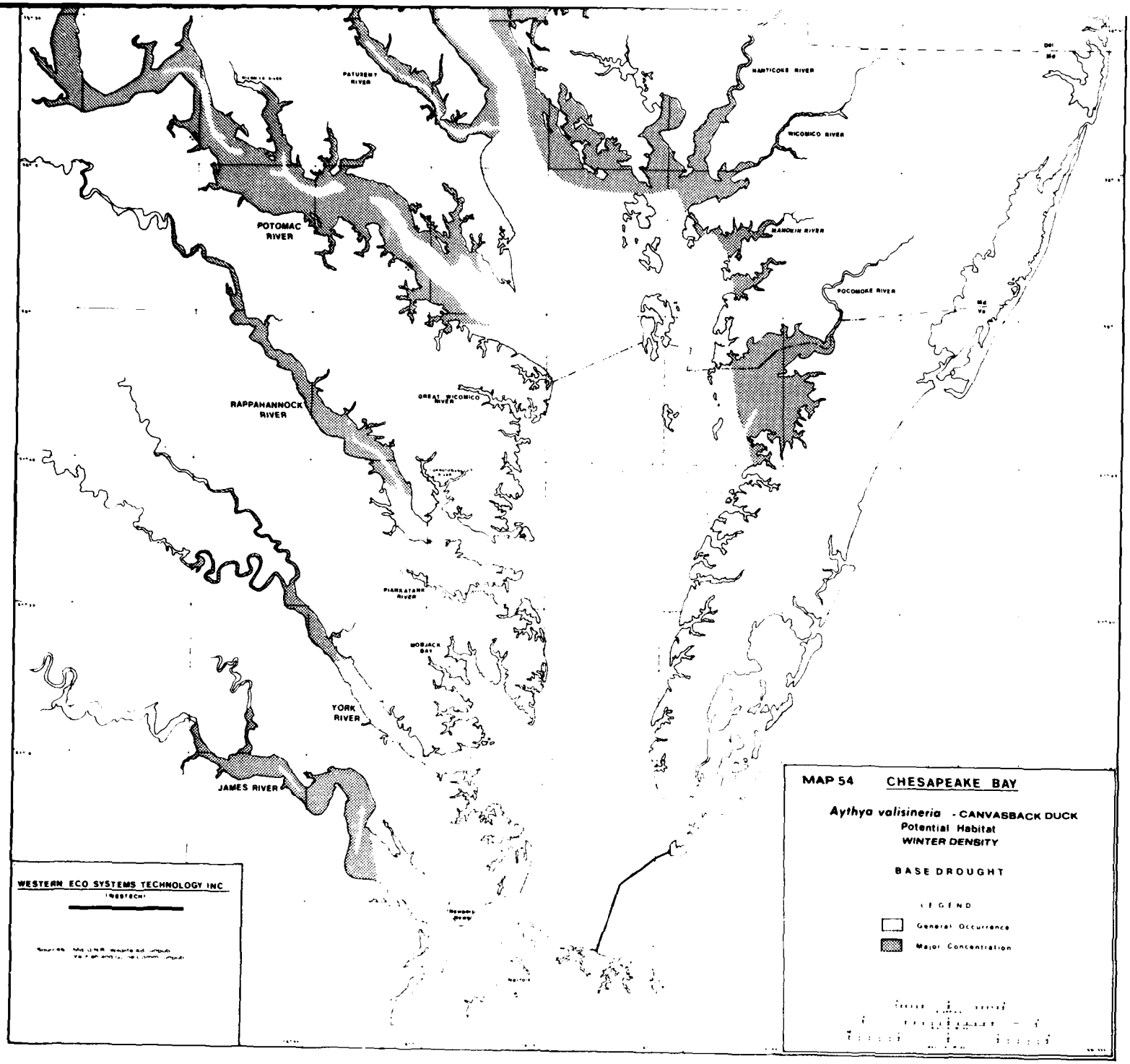

PATUXENT RIVER
NANTICOKE RIVER
WICOMICO RIVER
POTOMAC RIVER
MANOKIN RIVER
POCOMOKE RIVER
RAPPAHANNOCK RIVER
GREAT WICOMICO RIVER
PIANKATANK RIVER
MOBJACK BAY
YORK RIVER
JAMES RIVER
WESTERN ECO SYSTEMS TECHNOLOGY INC
MAP 54 CHESAPEAKE BAY
Aythya valisineria - CANVASBACK DUCK
Potential Habitat
WINTER DENSITY
BASE DROUGHT
LEGEND
General Occurrence
Major Concentration

Plate 89


SUSQUEHANNA RIVER
SUSQUEHANNA FLATS
ELK RIVER
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
Baltimore
PATAPSCO RIVER
CHESTER RIVER
WYE RIVER
Washington DC
CHOPTANK RIVER
PATUXENT RIVER
NANTICOKE RIVER
WICOMICO RIVER
POTOMAC RIVER
MANOKIN RIVER
POCOMOKE River

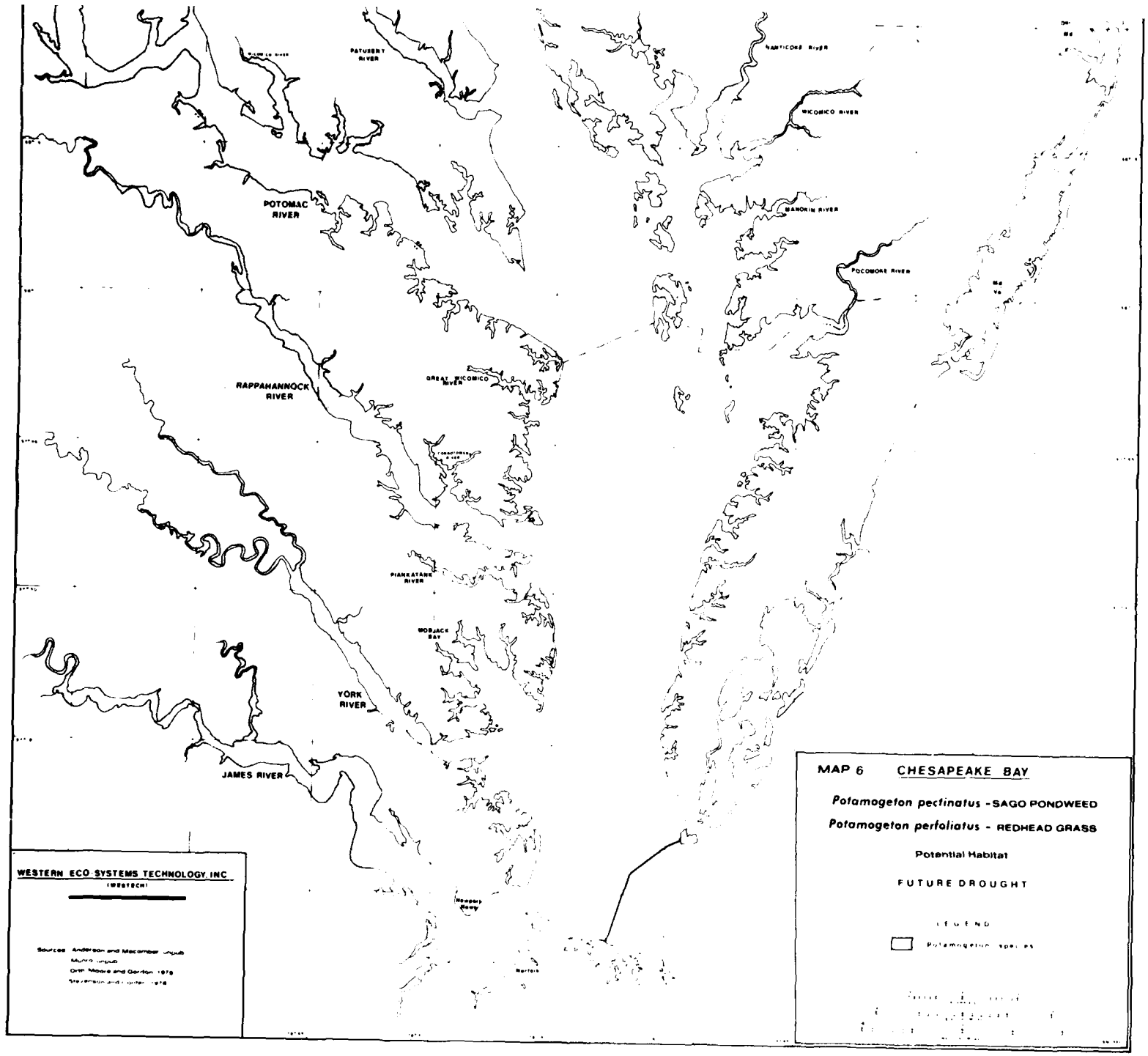
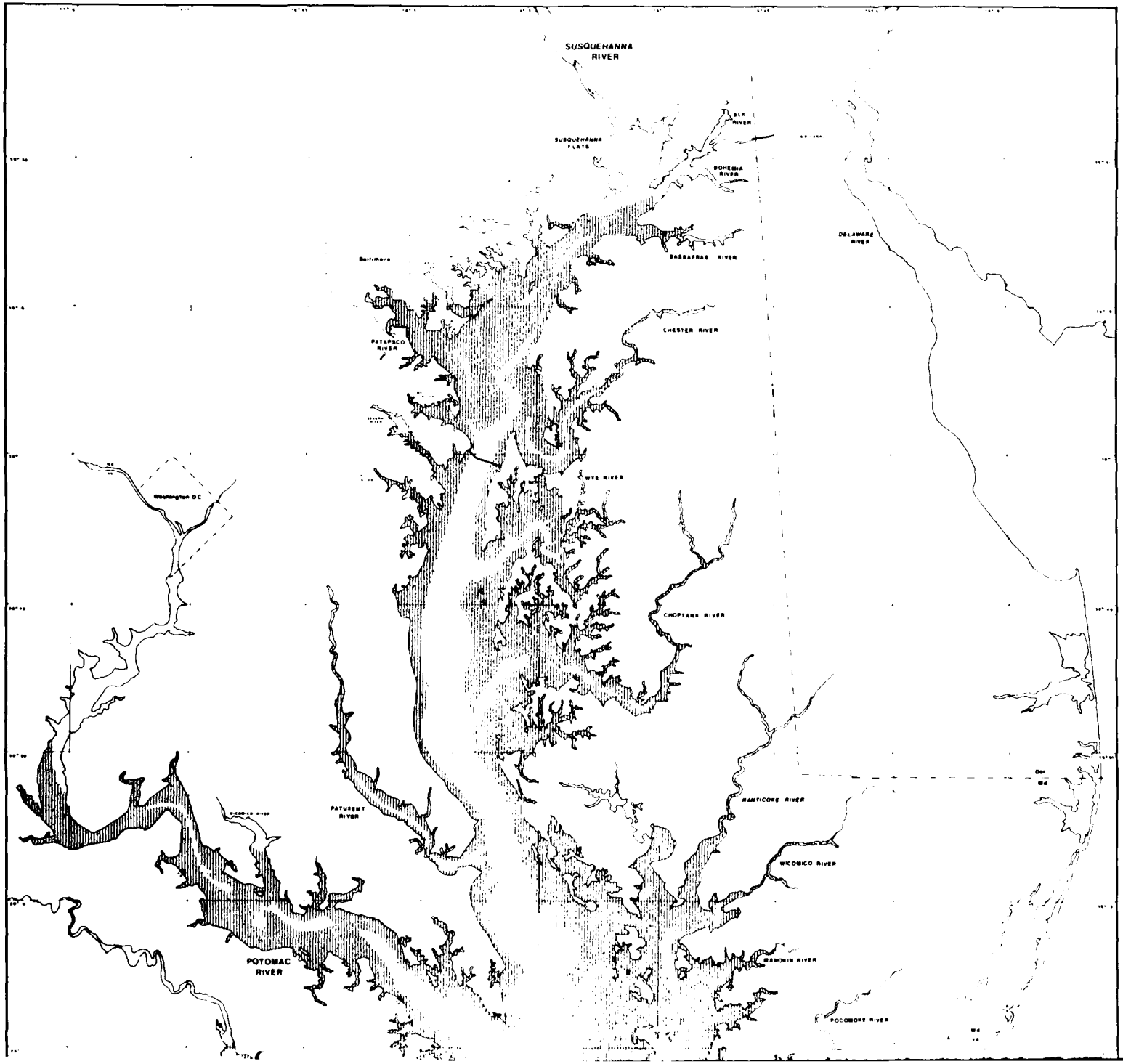

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
PATUXENT RIVER
WICOMICO RIVER
MANOKIN RIVER
POCOMOKE RIVER
PIANKATANK RIVER
MOBJACK BAY
GREAT WICOMICO RIVER
MAP 6 CHESAPEAKE BAY
Potamogeton pectinatus - SAGO PONDWEED
Potamogeton perfoliatus - REDHEAD GRASS
Potential Habitat
FUTURE DROUGHT
LEGEND
WESTERN ECO-SYSTEMS TECHNOLOGY, INC
(WESTECH)

Plate 90


SUSQUEHANNA RIVER
ELK RIVER
SUSQUEHANNA FLATS
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
Baltimore
CHESTER RIVER
PATAPSCO RIVER
WYE RIVER
Washington DC
CHOPTANK RIVER
PATUXENT RIVER
RAPPAHANNOCK RIVER
WICOMICO RIVER
POTOMAC RIVER
PANOMIN RIVER
POCOMOKE RIVER

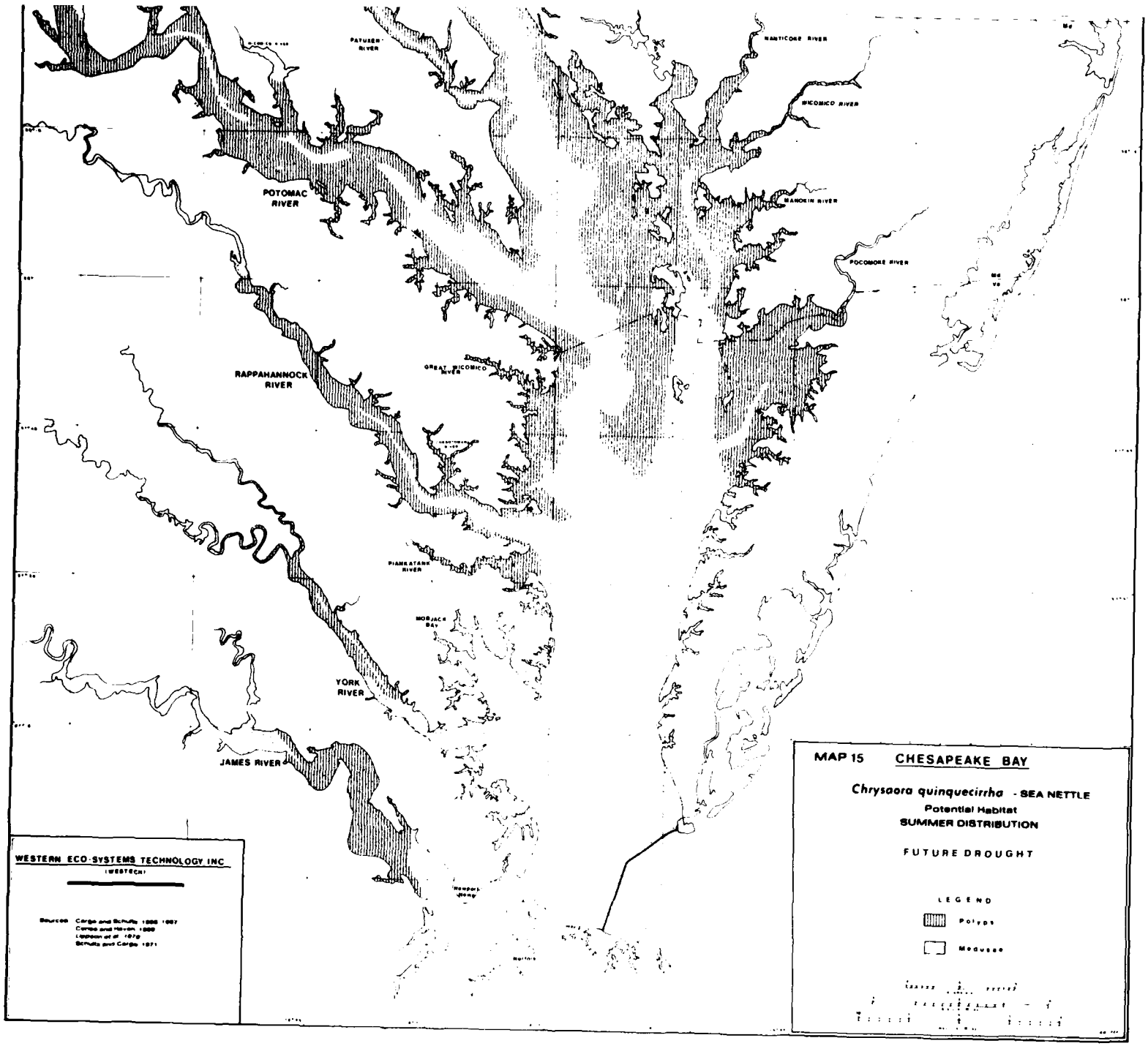
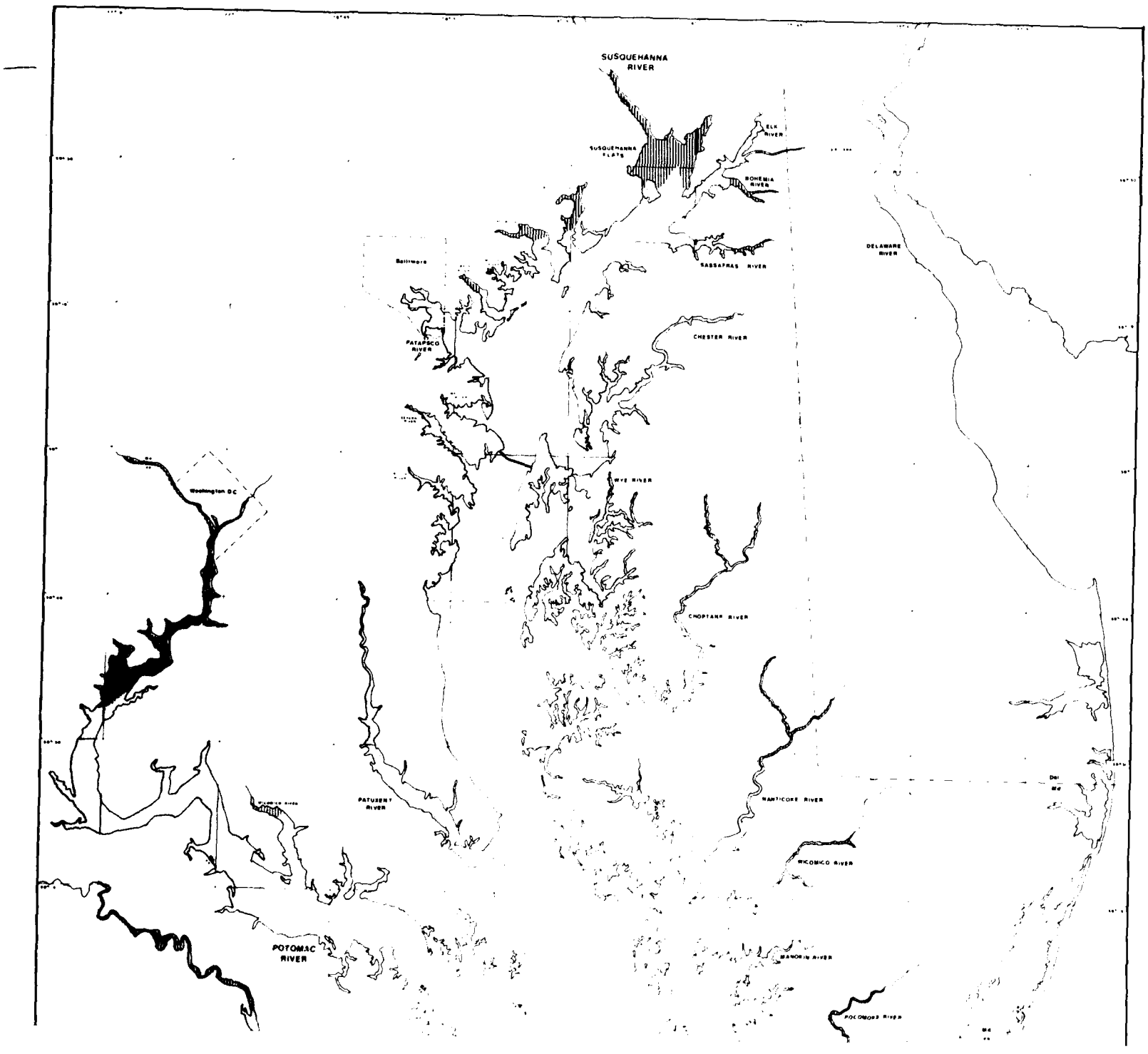

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
PIANKATANK RIVER
MOBJACK BAY
GREAT WICOMICO RIVER
PATUXENT RIVER
NANTICOKE RIVER
WICOMICO RIVER
MANOKIN RIVER
POCOMOKE RIVER
MAP 15 CHESAPEAKE BAY
Chrysaora quinquecirrha - SEA NETTLE
Potential Habitat
SUMMER DISTRIBUTION
FUTURE DROUGHT
LEGEND
Polyps
Medusae
WESTERN ECO-SYSTEMS TECHNOLOGY INC
(WESTECH)
Sources: Cargo and Schultz 1966, 1967
Cargo and Haven 1969
Lippson et al. 1979
Schultz and Cargo 1971

Plate 91


SUSQUEHANNA RIVER
SUSQUEHANNA FLATS
ELK RIVER
BOHEMIA RIVER
SASSAFRAS RIVER
DELAWARE RIVER
Baltimore
PATAPSCO RIVER
CHESTER RIVER
Washington DC
WYE RIVER
CHOPTANK RIVER
PATUXENT RIVER
NANTICOKE RIVER
WICOMICO RIVER
POTOMAC RIVER
MANOKIN RIVER
POCOMOKE RIVER

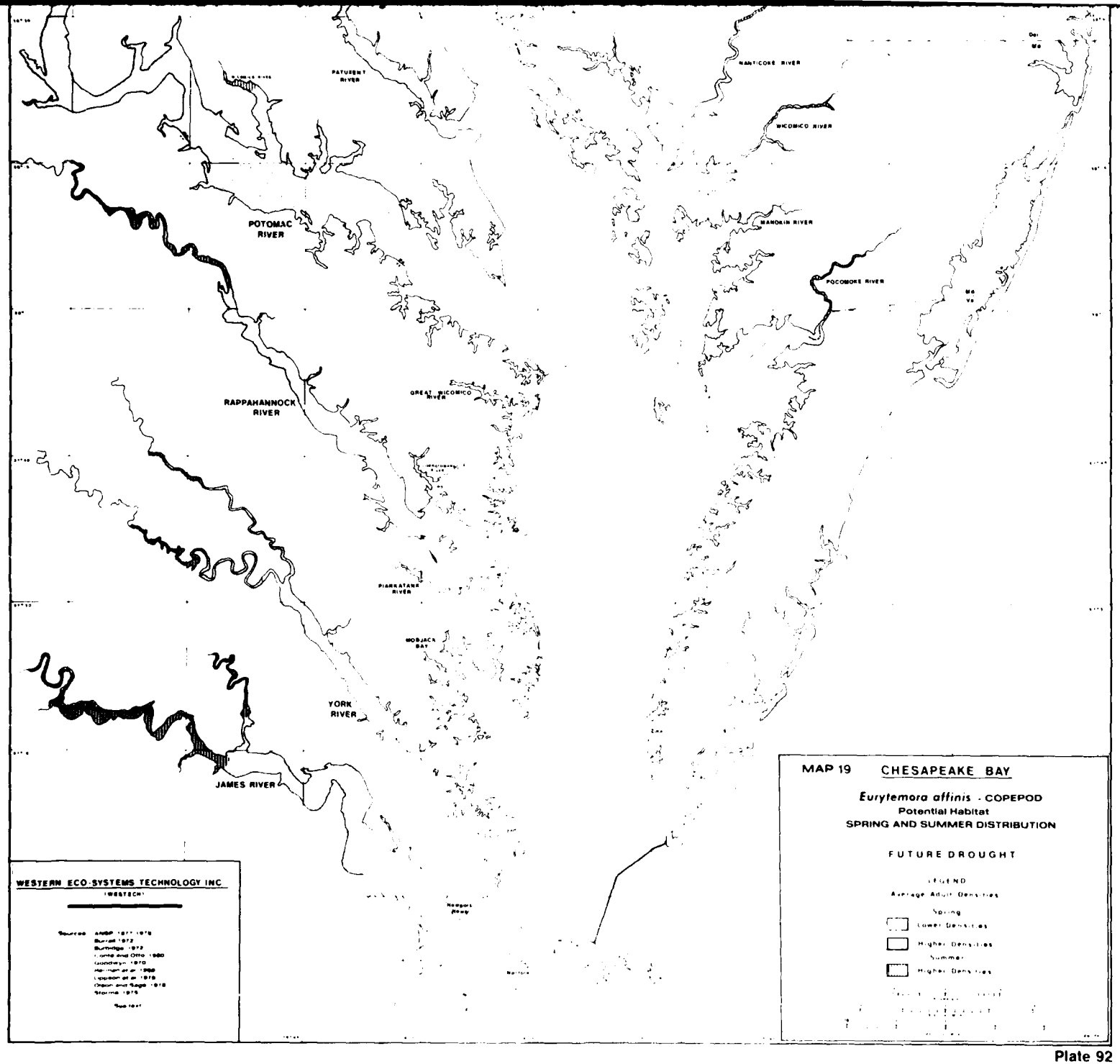
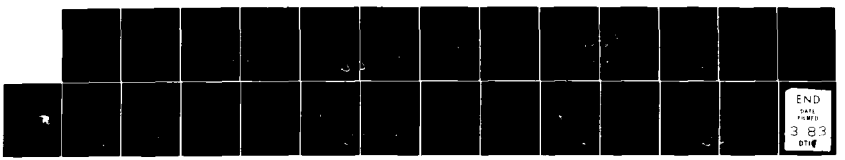
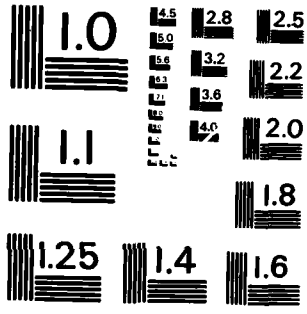

PATUXENT RIVER
NANTICOKE RIVER
WICOMICO RIVER
POTOMAC RIVER
MANOKIN RIVER
POCOMOKE RIVER
RAPPAHANNOCK RIVER
GREAT WICOMICO RIVER
PIANKATANK RIVER
MOBJACK BAY
YORK RIVER
JAMES RIVER
Newport News
WESTERN ECO-SYSTEMS TECHNOLOGY INC
(WESTECH)
MAP 19 CHESAPEAKE BAY
Eurytemora affinis - COPEPOD
Potential Habitat
SPRING AND SUMMER DISTRIBUTION
FUTURE DROUGHT
LEGEND
Average Adult Densities
Spring
Lower Densities
Higher Densities
Summer
Higher Densities

Plate 92


SUSQUEHANNA RIVER
ELK RIVER
SUSQUEHANNA FLATS
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
CHESTER RIVER
WYE RIVER
CHOPTANK RIVER
PATUXENT RIVER
NANTICOKE RIVER
WICOMICO RIVER
POTOMAC RIVER
MANOKIN RIVER

AD-A125 154 CHESAPEAKE BAY LOW FRESHWATER INFLOW STUDY PHASE II 2/2
BIOTA ASSESSMENT MAP..(U) WESTERN ECO-SYSTEMS
TECHNOLOGY INC BOTHELL WA G B MACKIERNAN ET AL. MAY 82
UNCLASSIFIED DACW31-79-C-0056 F/G 6/6 NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS - 1963 - A

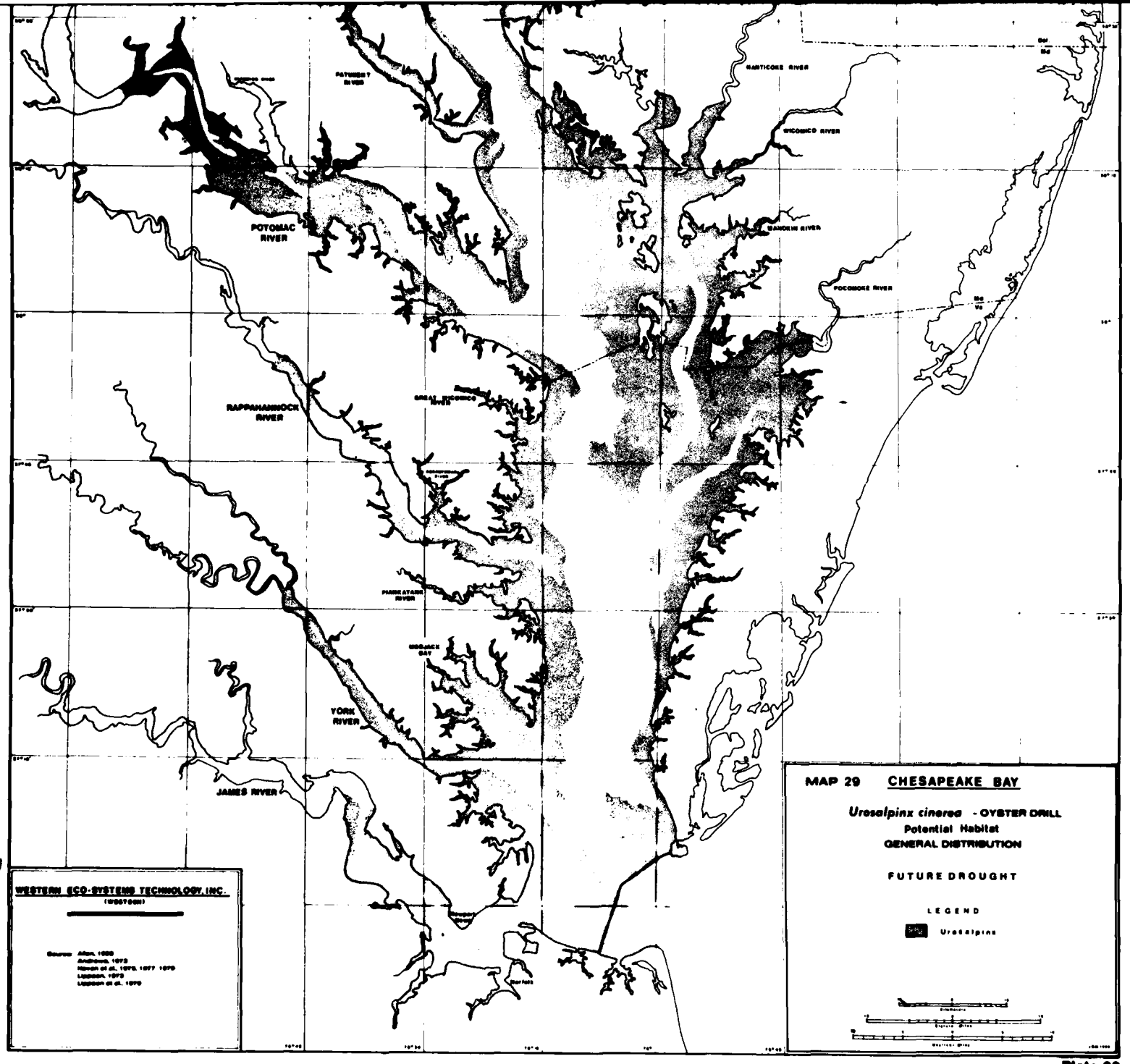
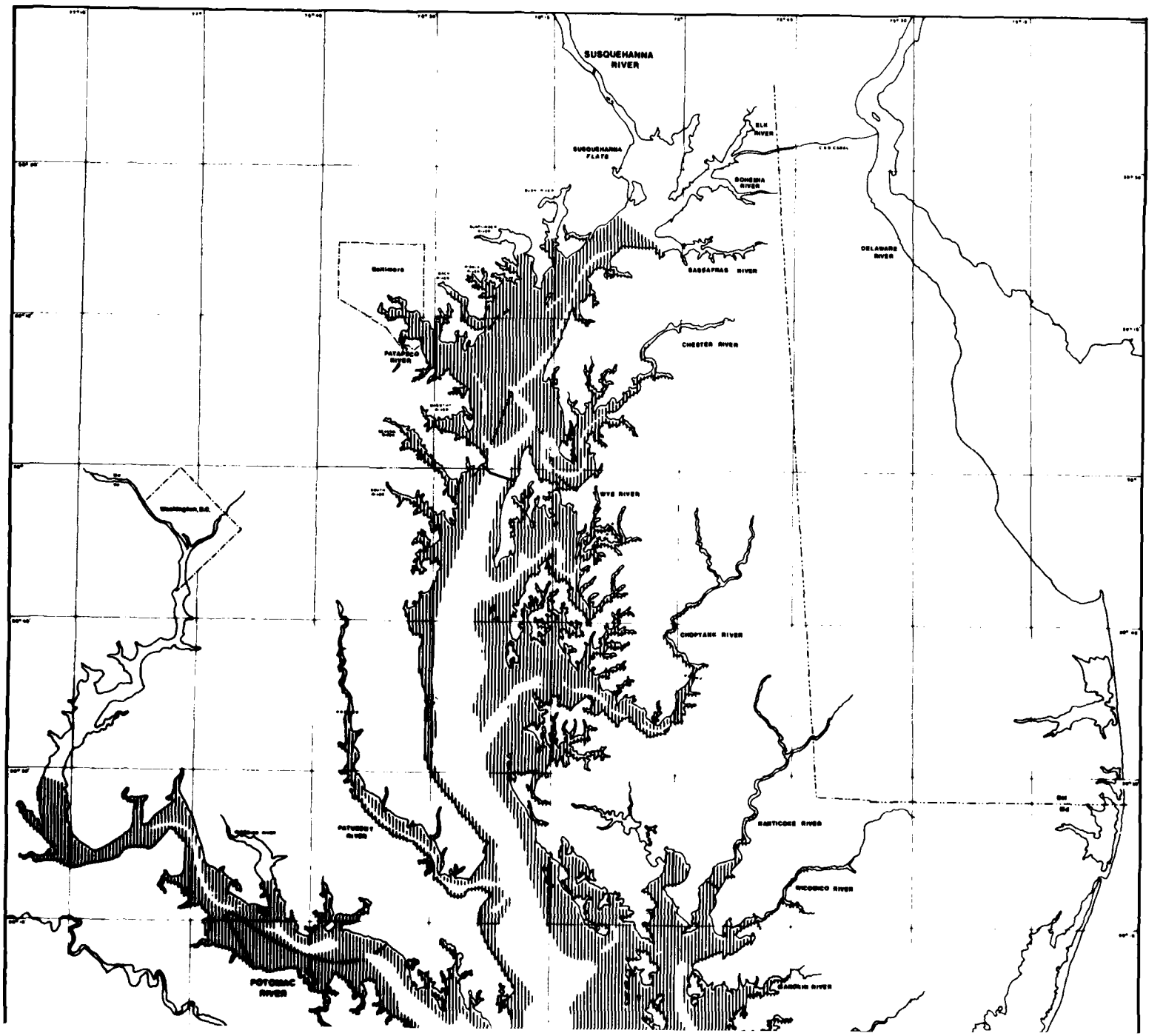

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
MAP 29 CHESAPEAKE BAY
Urosalpinx cinerea - OYSTER DRILL
Potential Habitat
GENERAL DISTRIBUTION
FUTURE DROUGHT
LEGEND
Urosalpinx
WESTERN ECO-SYSTEMS TECHNOLOGY, INC.

Plate 93


SUSQUEHANNA RIVER
SUSQUEHANNA FLATS
ELK RIVER
BOHEMIA RIVER
C&D CANAL
DELAWARE RIVER
SASSAFRAS RIVER
CHESTER RIVER
PATAPSCO RIVER
WYE RIVER
CHOPTANK RIVER
TRANSQUAKING RIVER
NANTICOKE RIVER
WICOMICO RIVER
POCOMOKE RIVER
POTOMAC RIVER

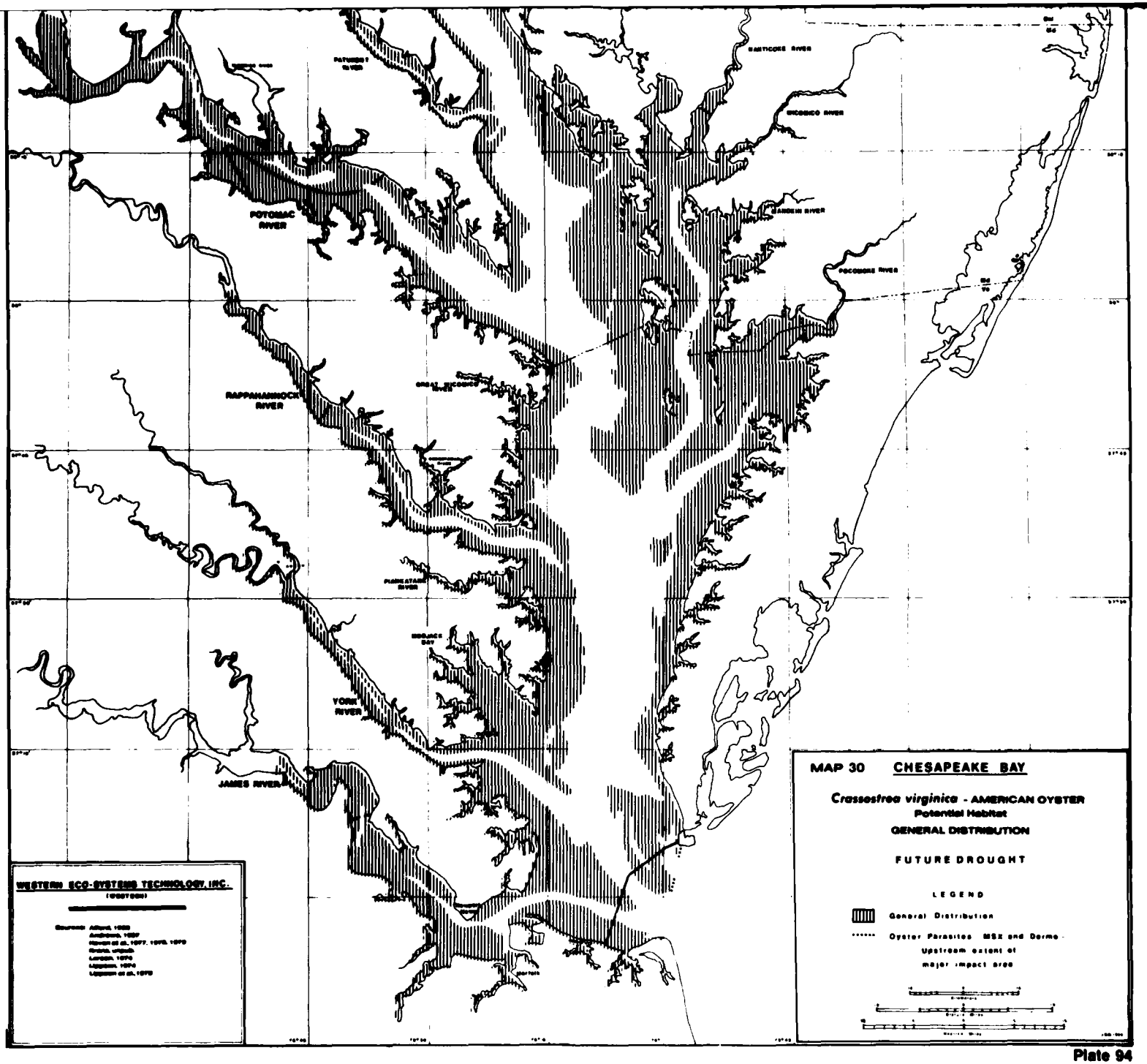

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
MAP 30 CHESAPEAKE BAY
Crassostrea virginica - AMERICAN OYSTER
Potential Habitat
GENERAL DISTRIBUTION
FUTURE DROUGHT
LEGEND
General Distribution
Oyster Parasites MSX and Dermo - Upstream extent of major impact area
WESTERN ECO-SYSTEMS TECHNOLOGY, INC.

Plate 94

SUSQUEHANNA RIVER
POTOMAC RIVER

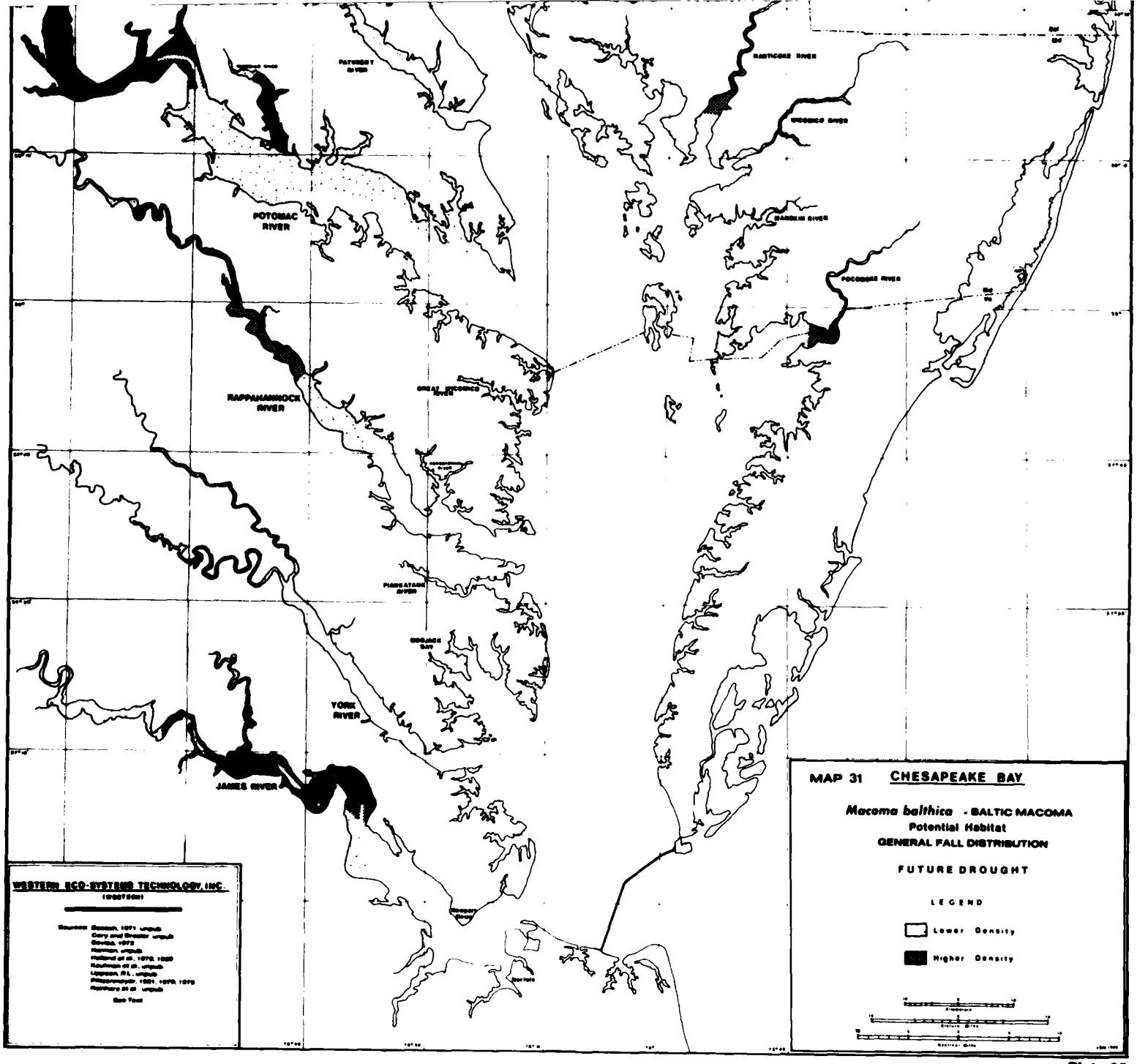
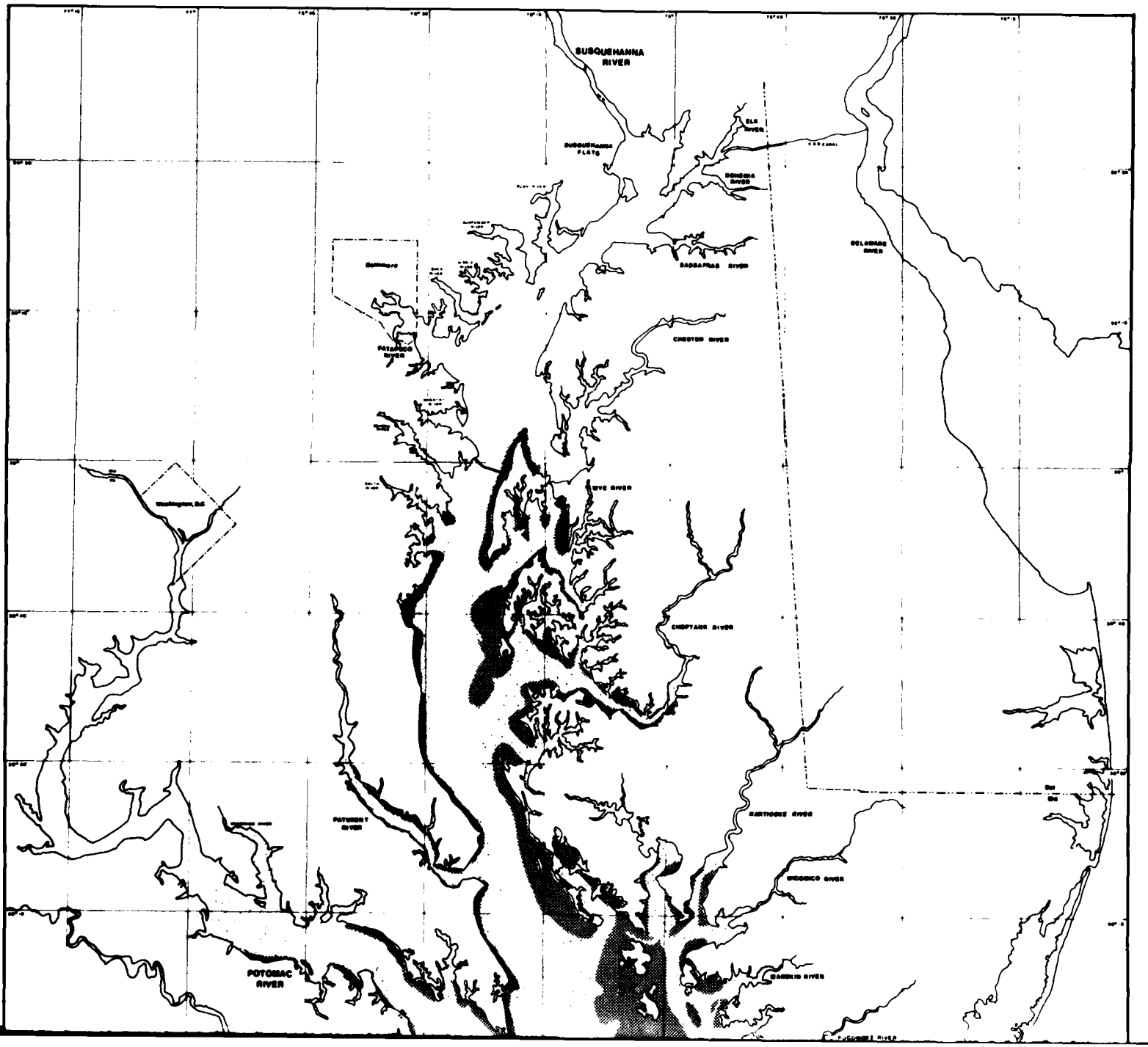

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
MAP 31 CHESAPEAKE BAY
Macoma balthica - BALTIC MACOMA
Potential Habitat
GENERAL FALL DISTRIBUTION
FUTURE DROUGHT
LEGEND
Lower Density
Higher Density
WESTERN ECO-SYSTEMS TECHNOLOGY, INC.

Plate 95


SUSQUEHANNA RIVER
POTOMAC RIVER

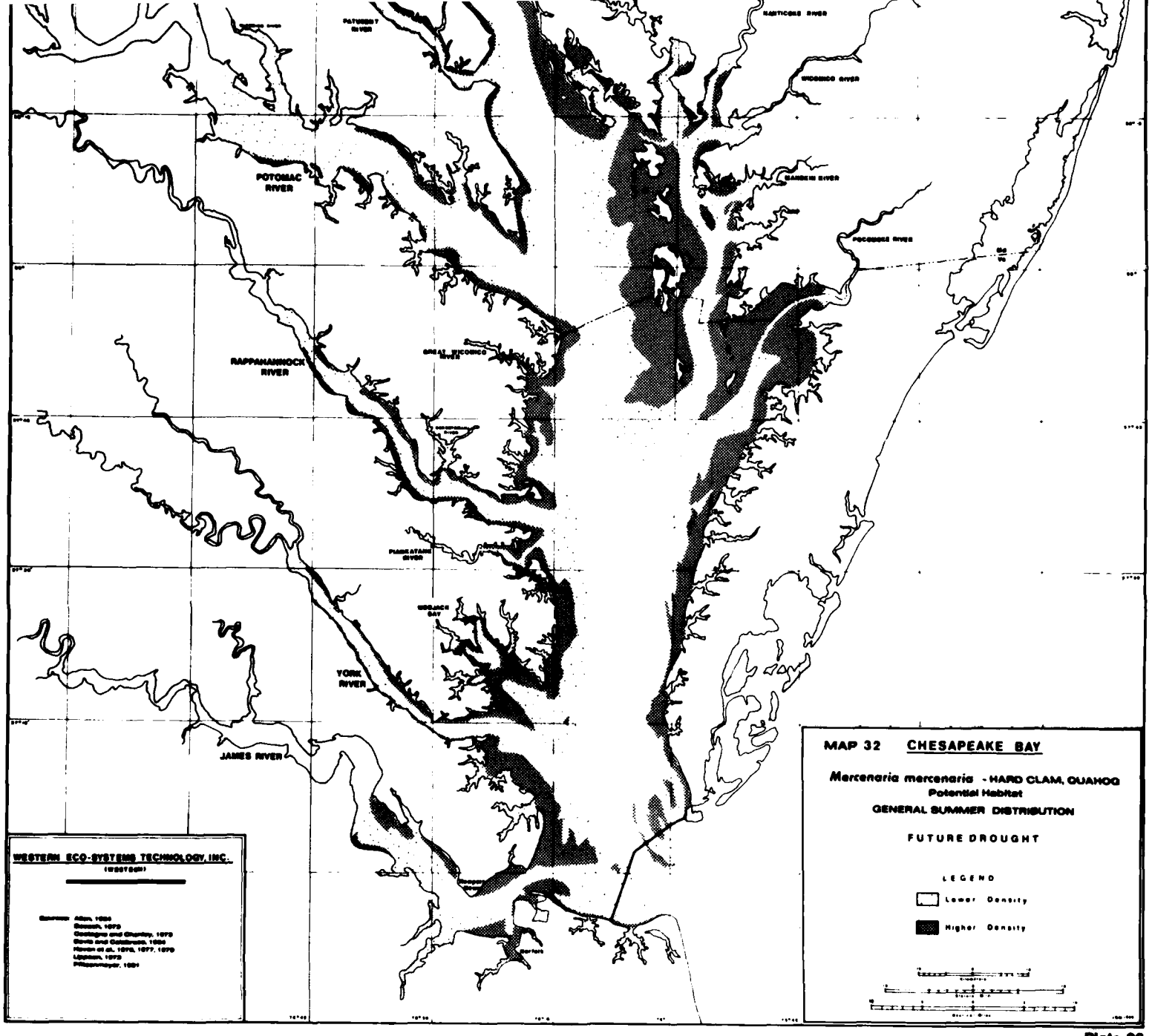
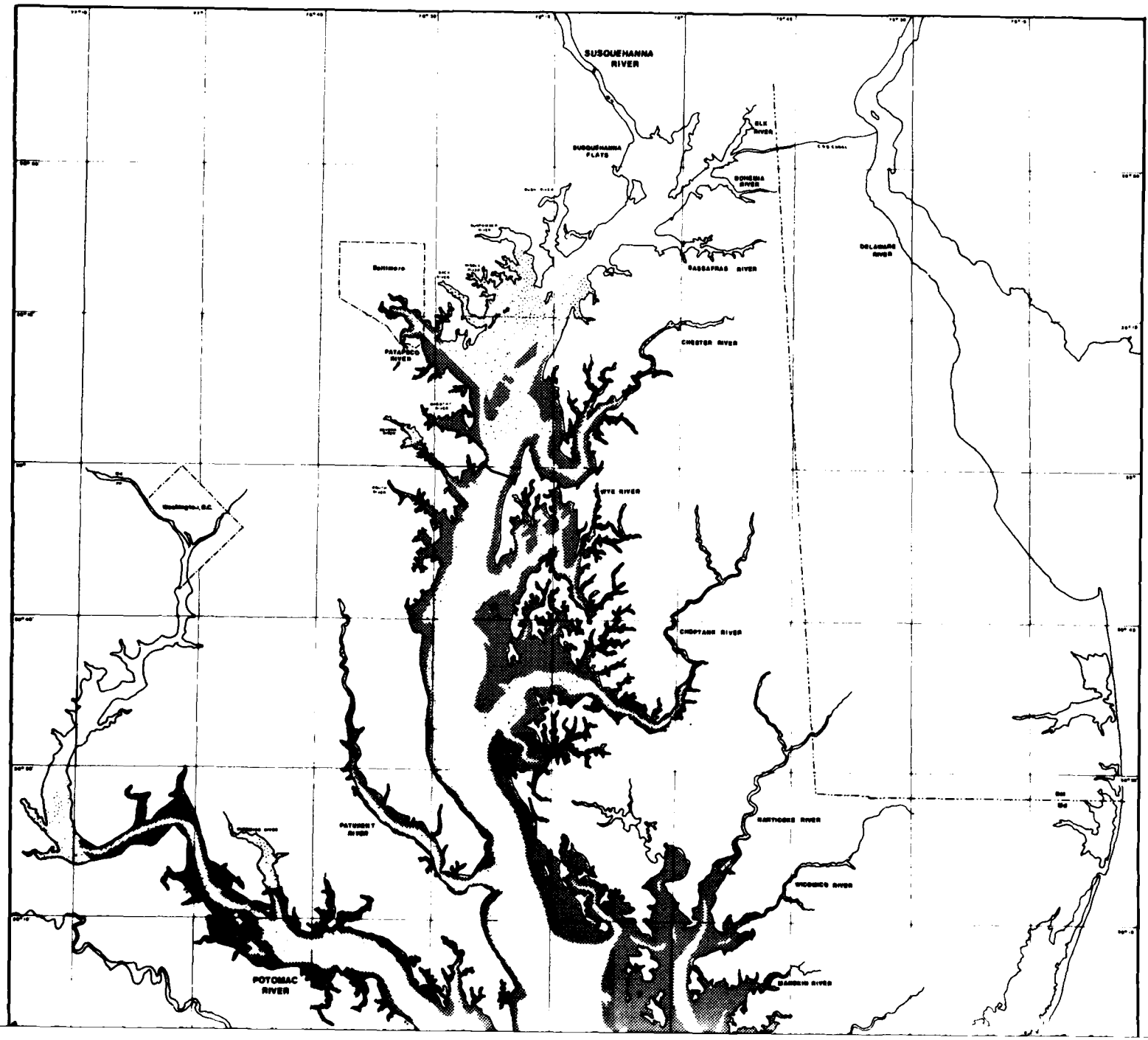

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
MAP 32 CHESAPEAKE BAY
Mercenaria mercenaria - HARD CLAM, QUAHOG
Potential Habitat
GENERAL SUMMER DISTRIBUTION
FUTURE DROUGHT
LEGEND
Lower Density
Higher Density
WESTERN ECO-SYSTEMS TECHNOLOGY, INC.

Plate 96


SUSQUEHANNA RIVER
SUSQUEHANNA FLATS
ELK RIVER
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
CHESTER RIVER
PATAPSCO RIVER
WYE RIVER
CHOPTANK RIVER
PATUXENT RIVER
NANTICOKE RIVER
WICOMICO RIVER
POTOMAC RIVER

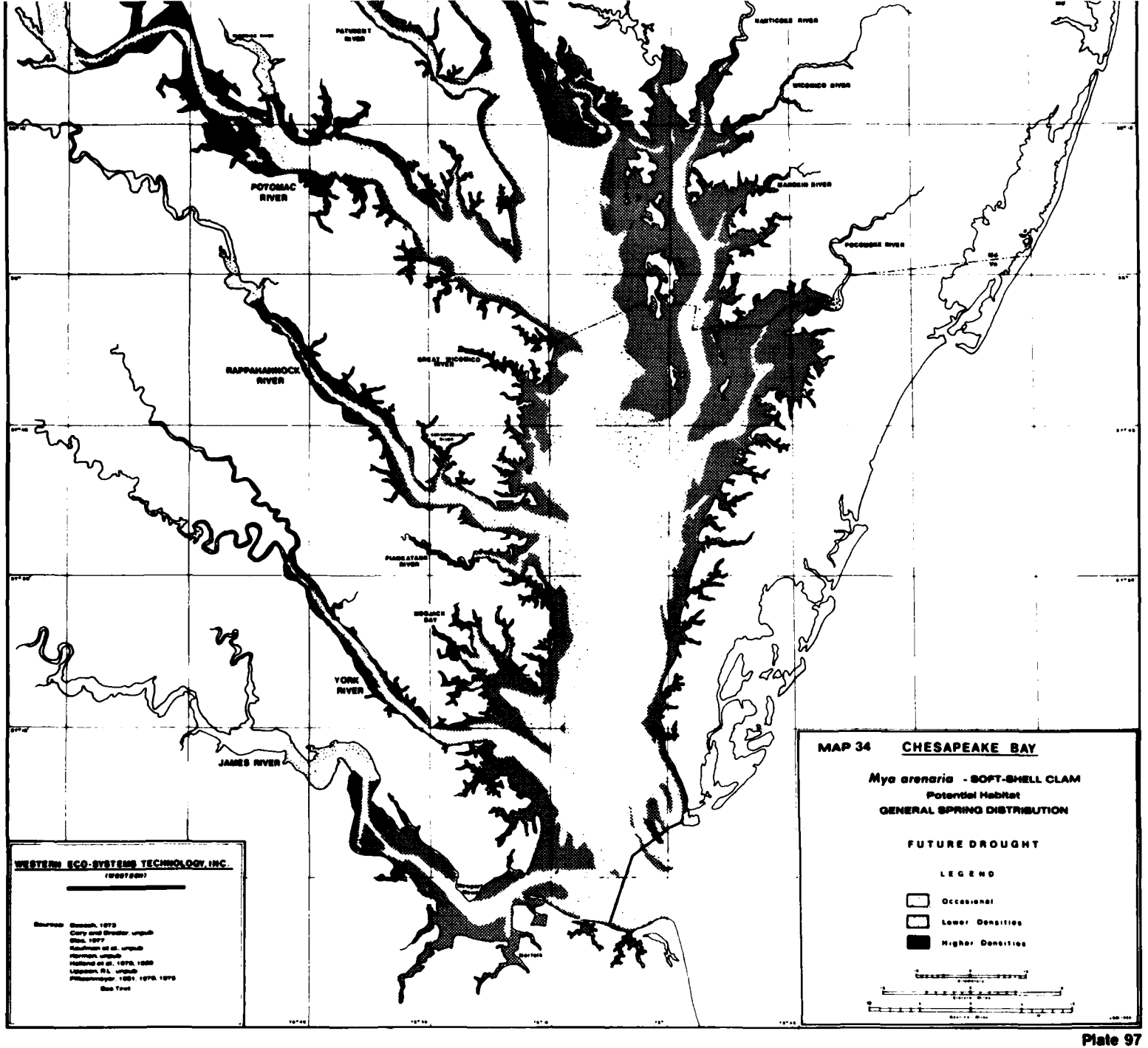

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
MAP 34 CHESAPEAKE BAY
Mya arenaria - SOFT-SHELL CLAM
Potential Habitat
GENERAL SPRING DISTRIBUTION
FUTURE DROUGHT
LEGEND
Occasional
Lower Densities
Higher Densities
WESTERN ECO-SYSTEMS TECHNOLOGY, INC.

Plate 97

DELAWARE RIVER
SUSQUEHANNA RIVER
SUSQUEHANNA FLATS
ELK RIVER
CHESTER RIVER
CHOPTANK RIVER
PATUXENT RIVER
POTOMAC RIVER

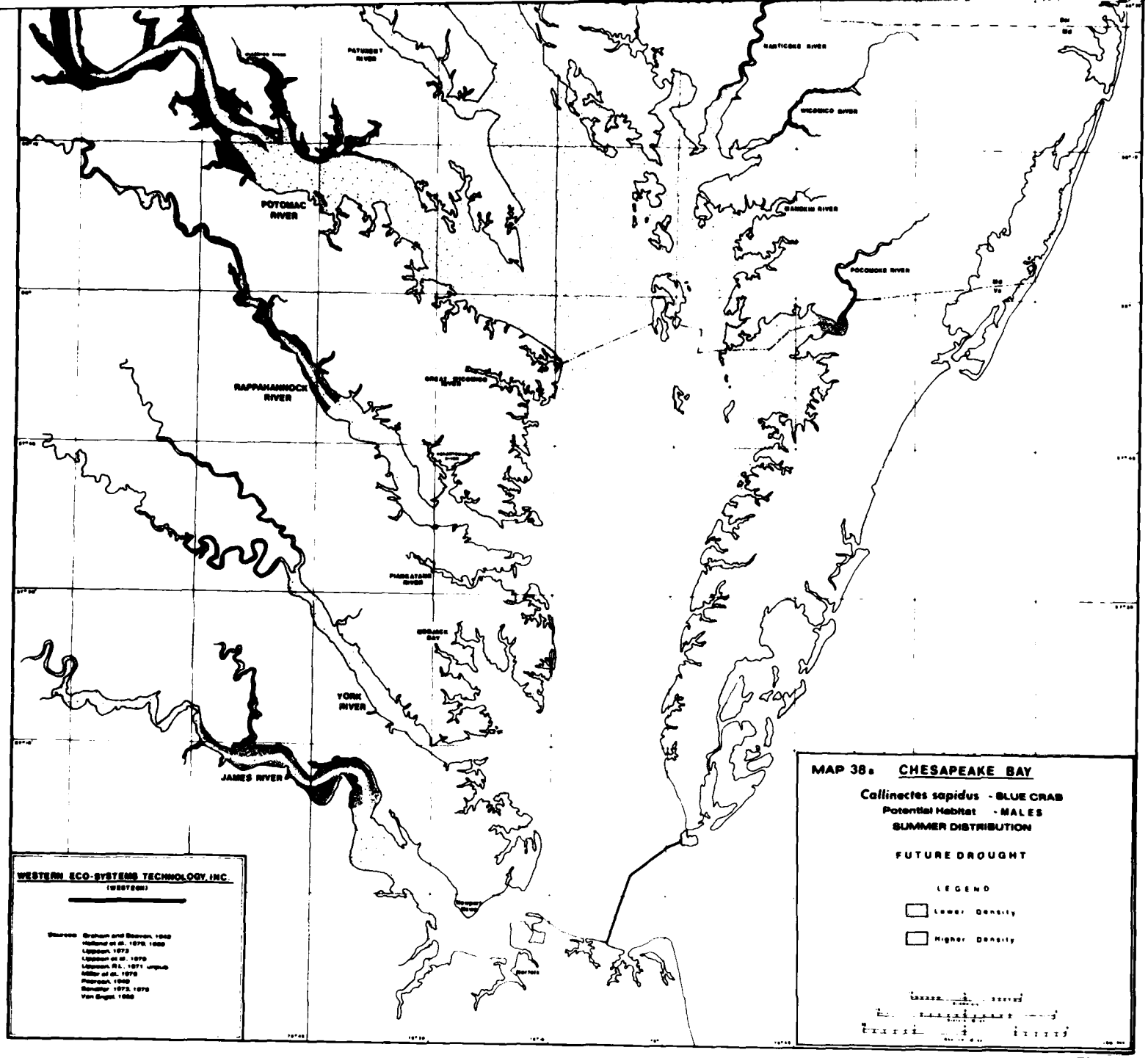
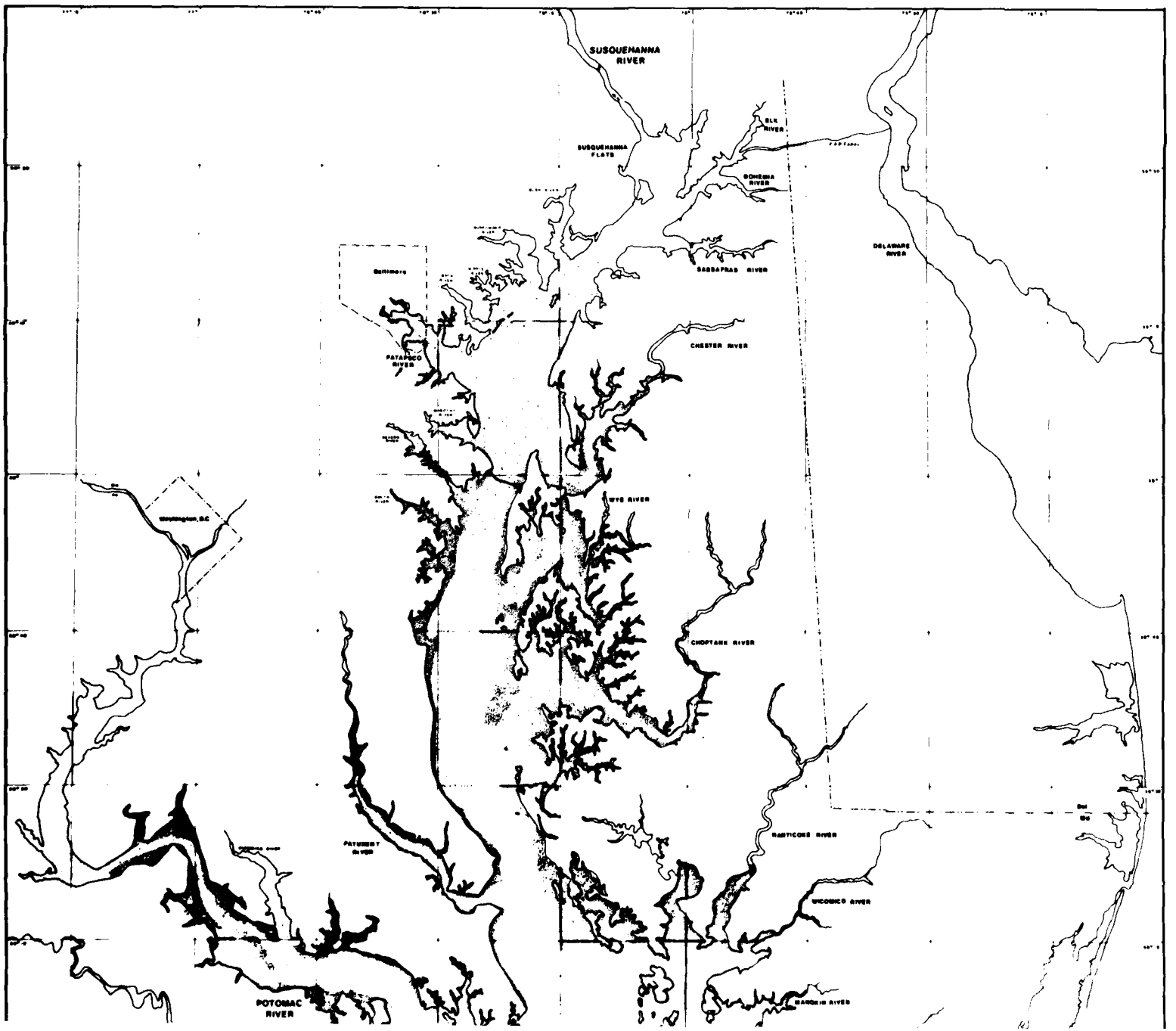

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
MAP 38a CHESAPEAKE BAY
Callinectes sapidus - BLUE CRAB
Potential Habitat - MALES
SUMMER DISTRIBUTION
FUTURE DROUGHT
LEGEND
Lower Density
Higher Density
WESTERN ECO-SYSTEMS TECHNOLOGY, INC.
(WESTECH)

Plate 98


SUSQUEHANNA RIVER
SUSQUEHANNA FLATS
ELK RIVER
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
CHESTER RIVER
PATAPSCO RIVER
MYE RIVER
CHOPTANK RIVER
RANTICOKE RIVER
WICOMICO RIVER
POTOMAC RIVER

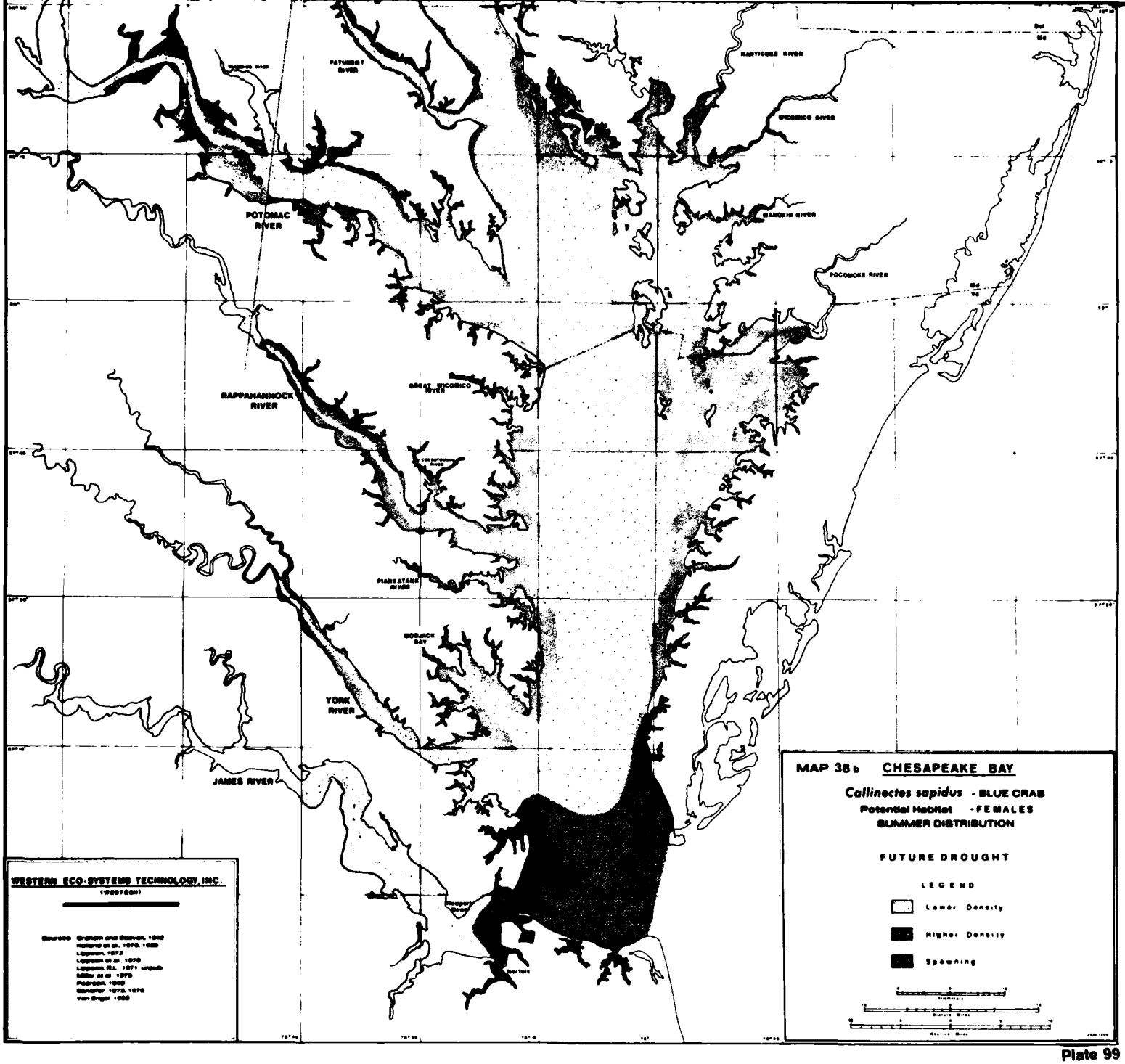

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
PATUXENT RIVER
WICOMICO RIVER
MANOKIN RIVER
POCOMOKE RIVER
MAP 38 b CHESAPEAKE BAY
Callinectes sapidus - BLUE CRAB
Potential Habitat - FEMALES
SUMMER DISTRIBUTION
FUTURE DROUGHT
LEGEND
Lower Density
Higher Density
Spawning
WESTERN ECO-SYSTEMS TECHNOLOGY, INC.

Plate 99

SUSQUEHANNA RIVER
POTOMAC RIVER

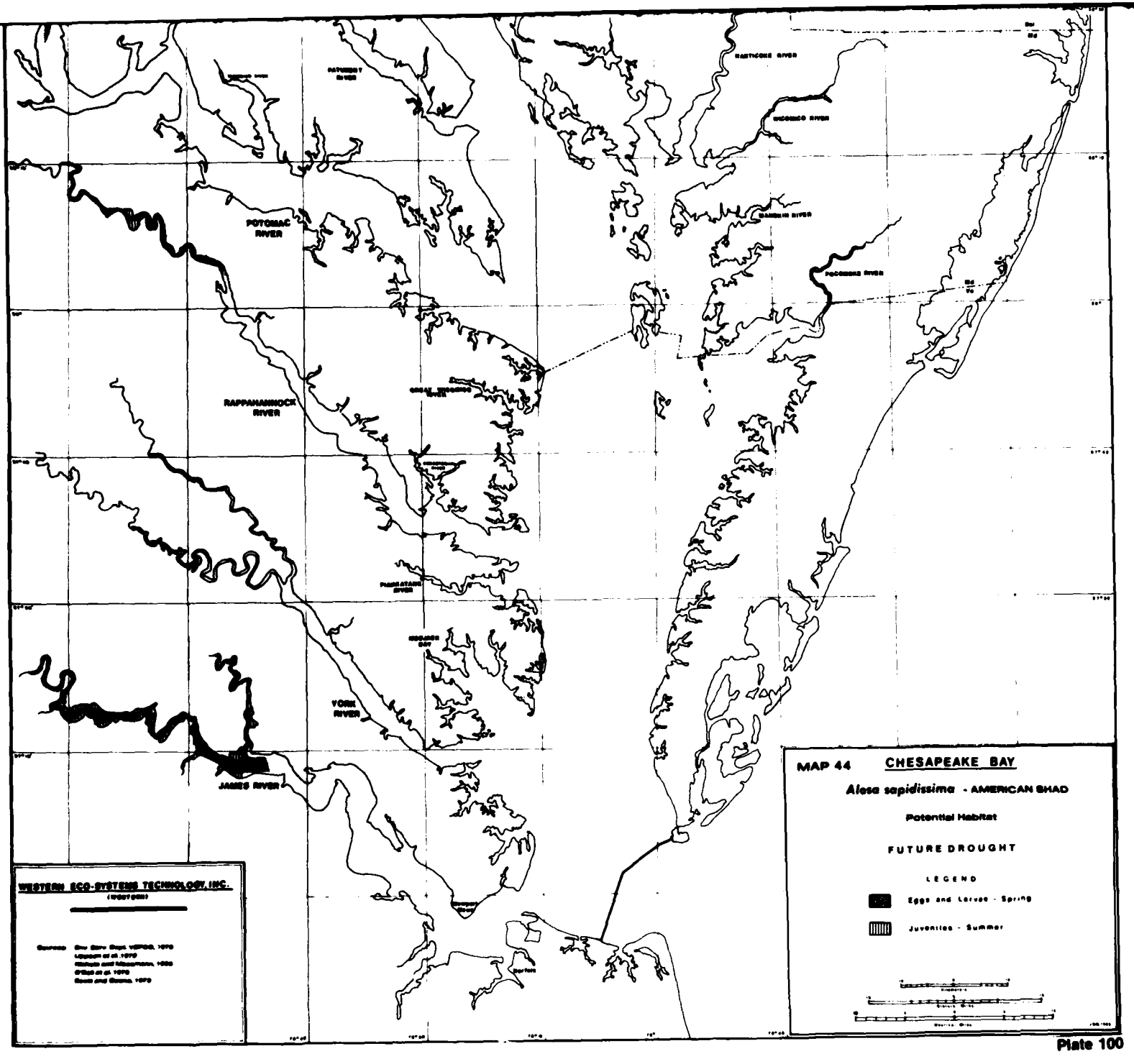

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
MAP 44 CHESAPEAKE BAY
Alosa sapidissima - AMERICAN SHAD
Potential Habitat
FUTURE DROUGHT
LEGEND
Eggs and Larvae - Spring
Juveniles - Summer
WESTERN ECO-SYSTEMS TECHNOLOGY, INC.

Plate 100

SUSQUEHANNA RIVER
POTOMAC RIVER

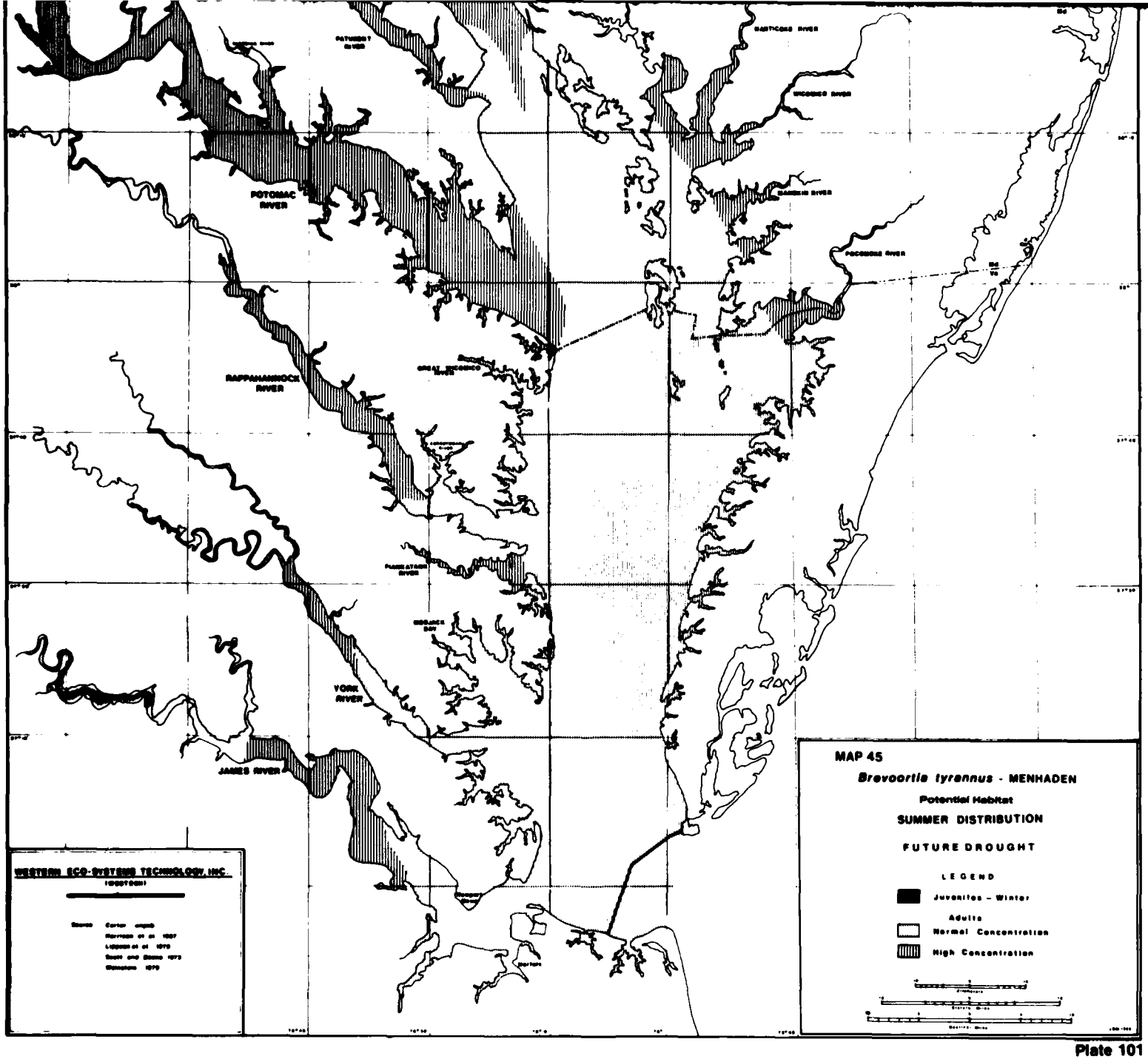
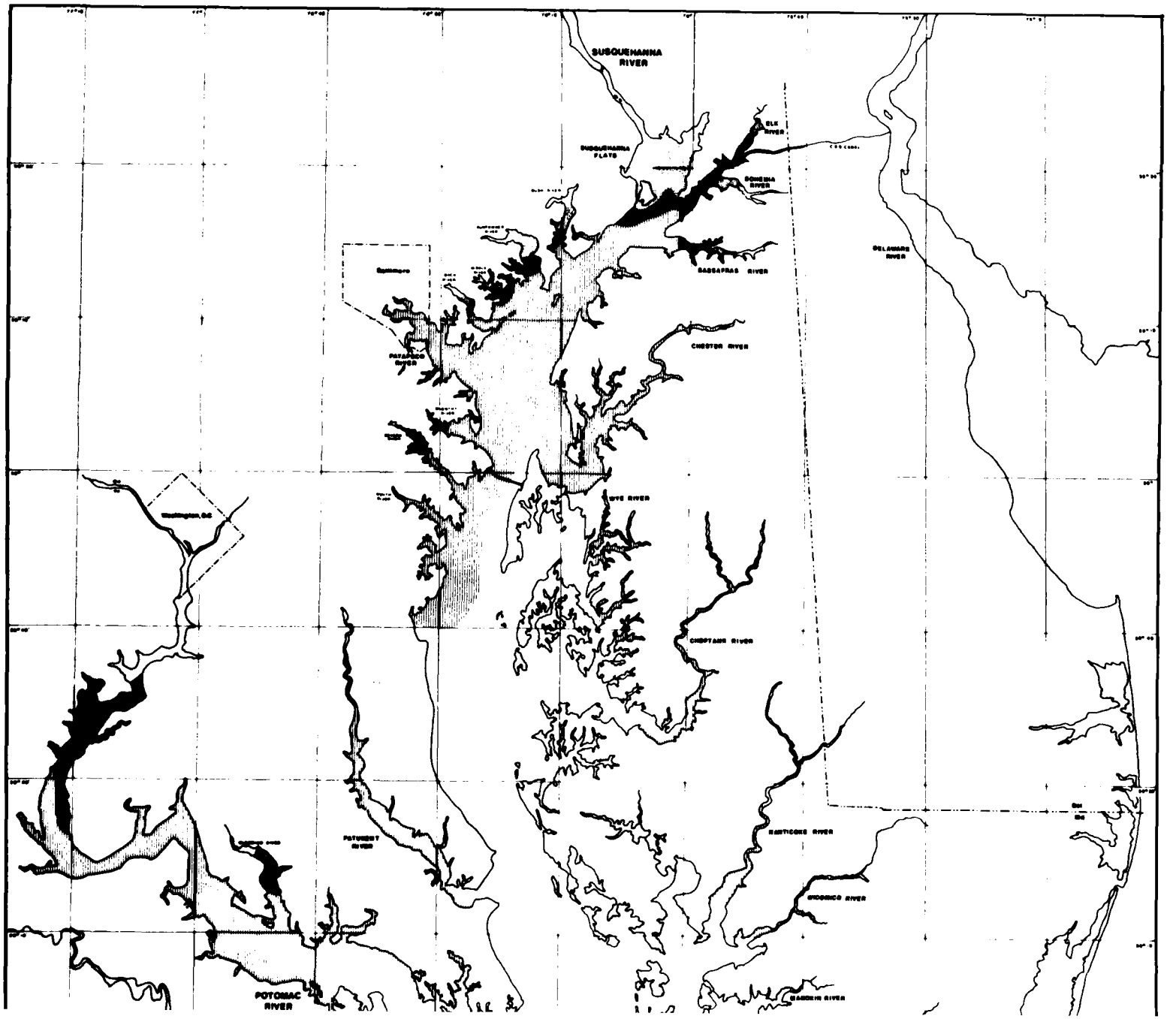

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
MAP 45
Brevoortia tyrannus - MENHADEN
Potential Habitat
SUMMER DISTRIBUTION
FUTURE DROUGHT
LEGEND
Juveniles - Winter
Adults
Normal Concentration
High Concentration
WESTERN ECO-SYSTEMS TECHNOLOGY, INC.

Plate 101


SUSQUEHANNA RIVER
ELK RIVER
SASSAFRAS RIVER
DELAWARE RIVER
CHESTER RIVER
CHOPTANK RIVER
POTOMAC RIVER

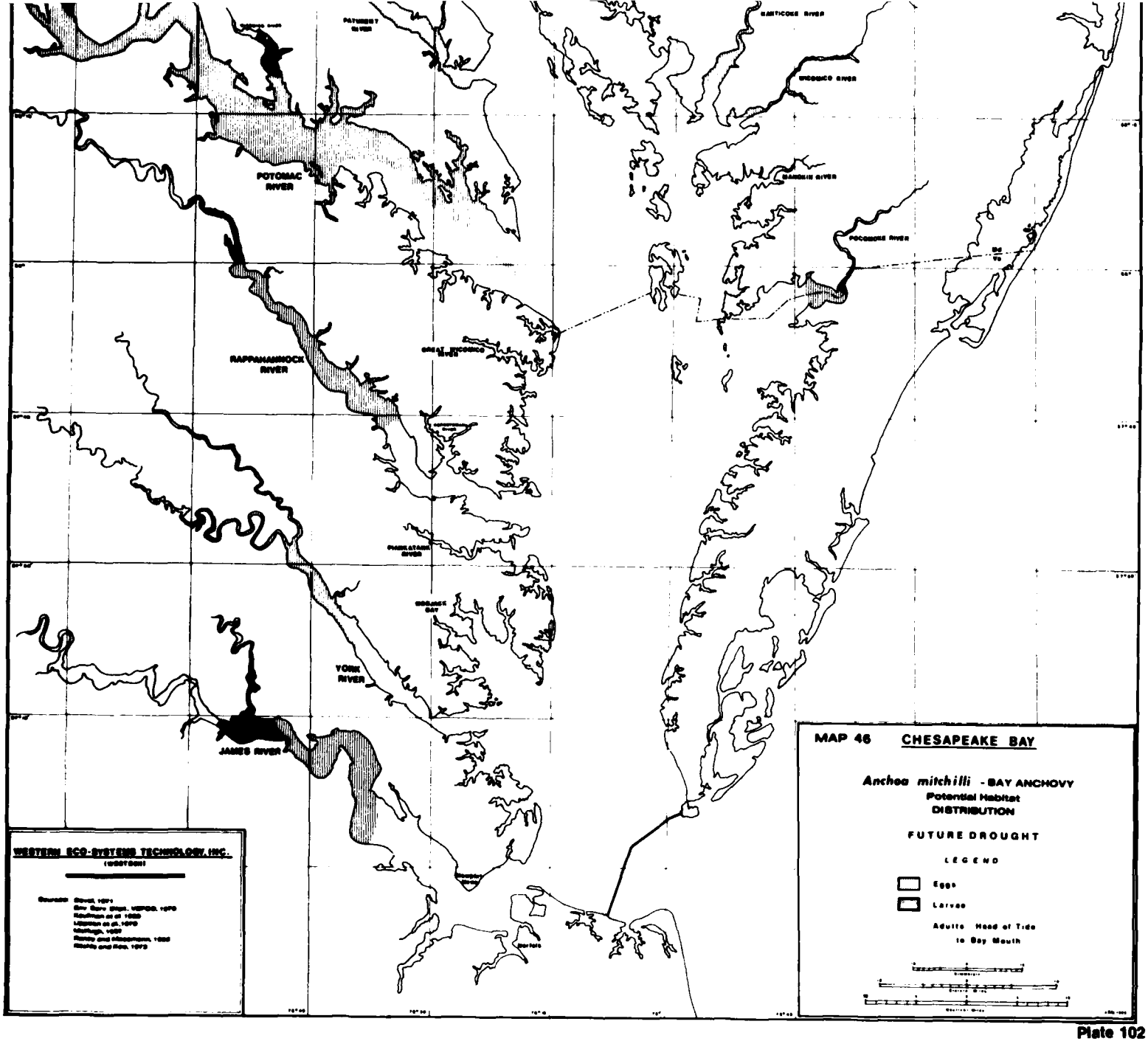

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
MAP 46 CHESAPEAKE BAY
Anchoa mitchilli - BAY ANCHOVY
Potential Habitat
DISTRIBUTION
FUTURE DROUGHT
LEGEND
Eggs
Larvae
Adults Head of Tide to Bay Mouth
WESTERN ECO-SYSTEMS TECHNOLOGY, INC.

Plate 102

SUSQUEHANNA RIVER
POTOMAC RIVER

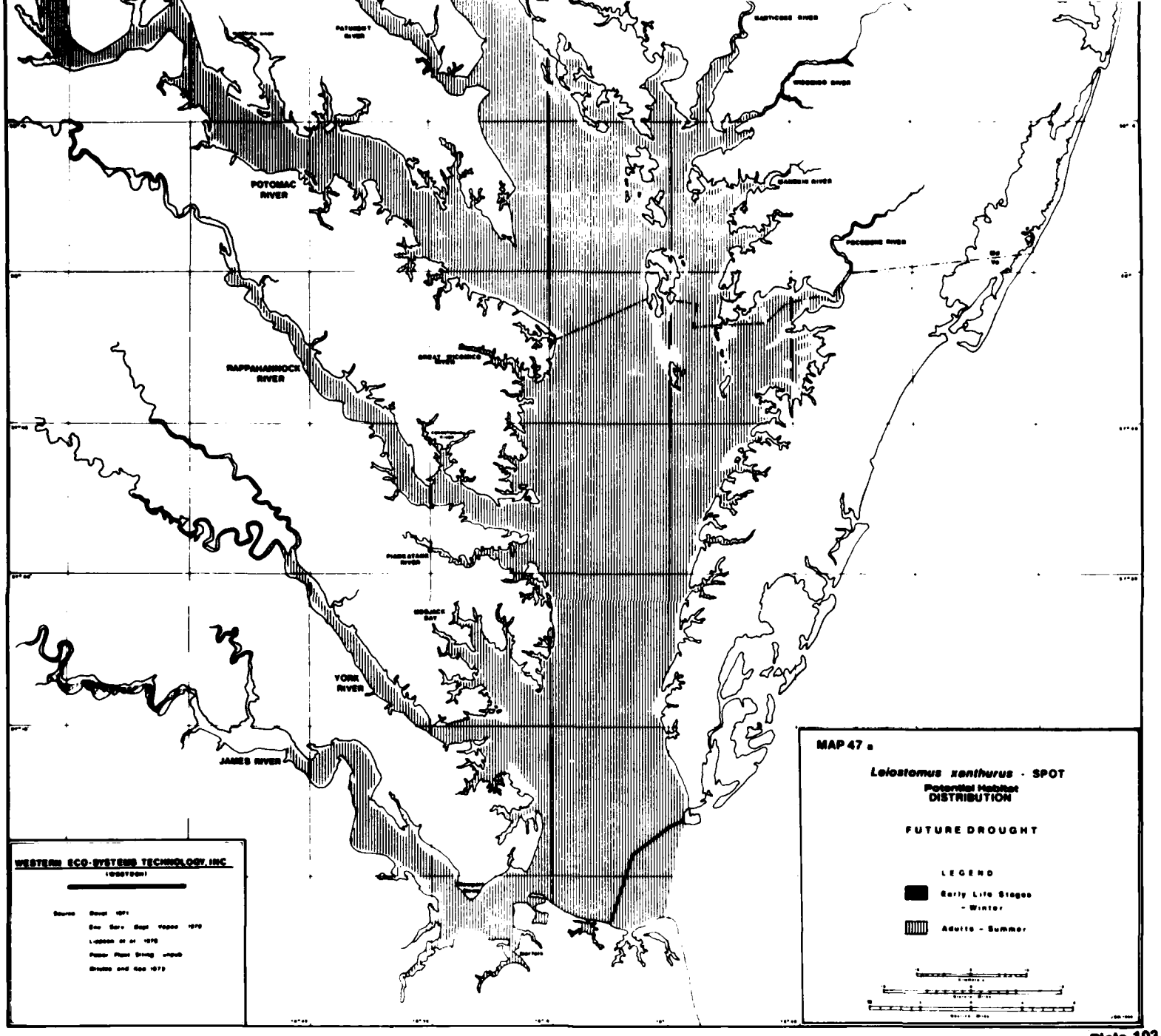
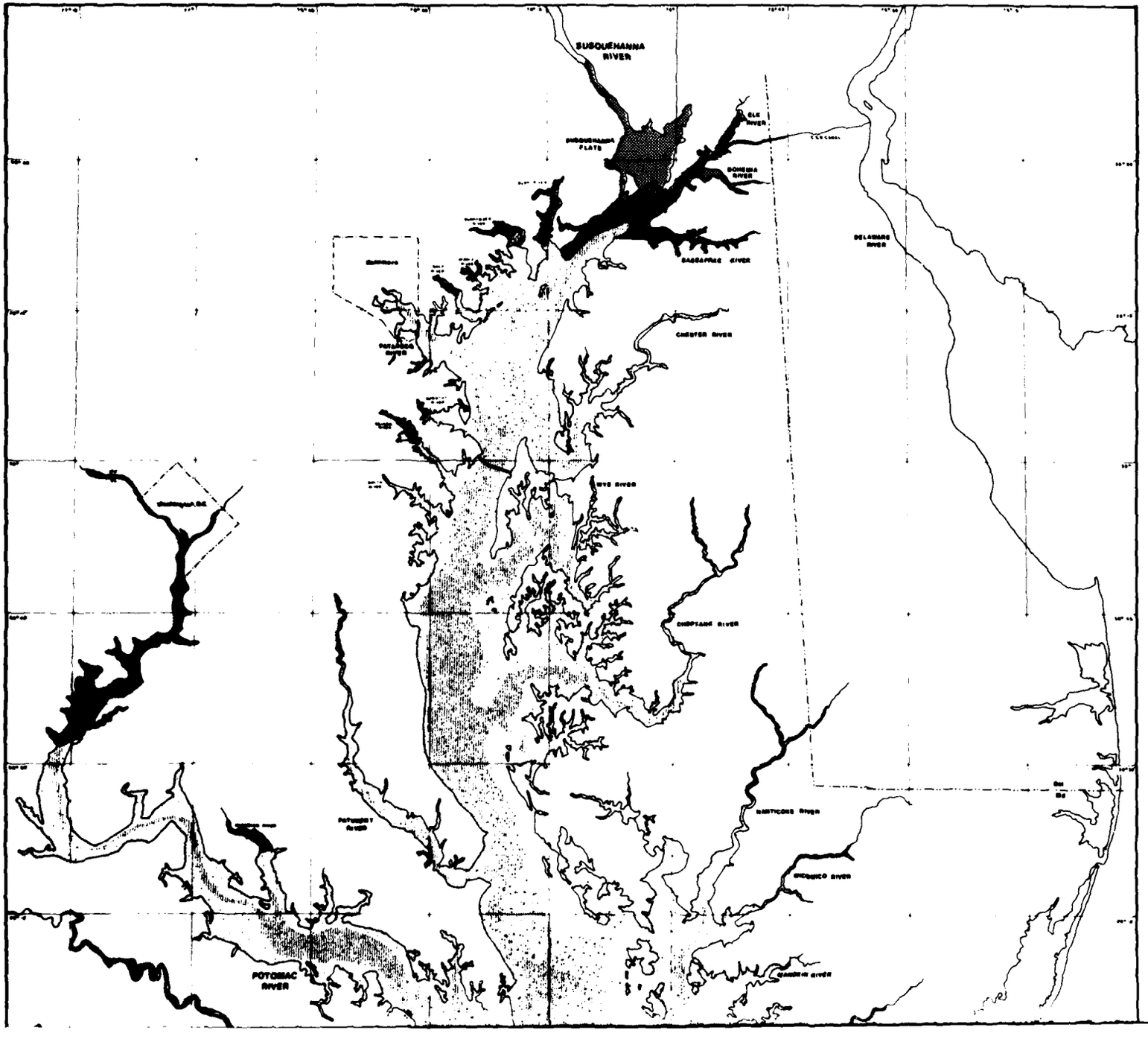

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
MAP 47 a
Leiostomus xanthurus - SPOT
Potential Habitat
DISTRIBUTION
FUTURE DROUGHT
LEGEND
Early Life Stages - Winter
Adults - Summer
WESTERN ECO-SYSTEMS TECHNOLOGY, INC.

Plate 103


SUSQUEHANNA RIVER
ELK RIVER
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
CHESTER RIVER
CHOPTANK RIVER
POTOMAC RIVER

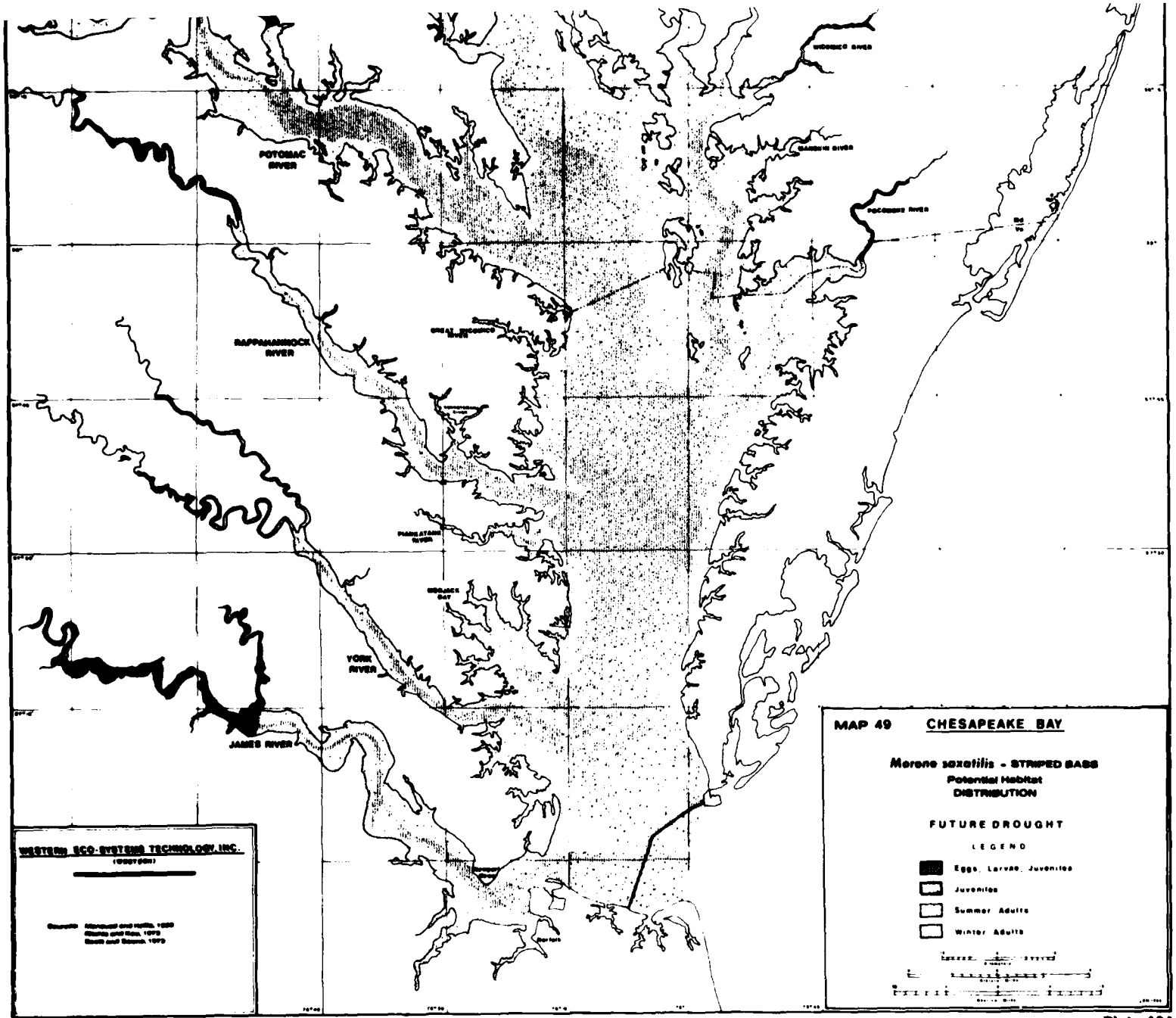
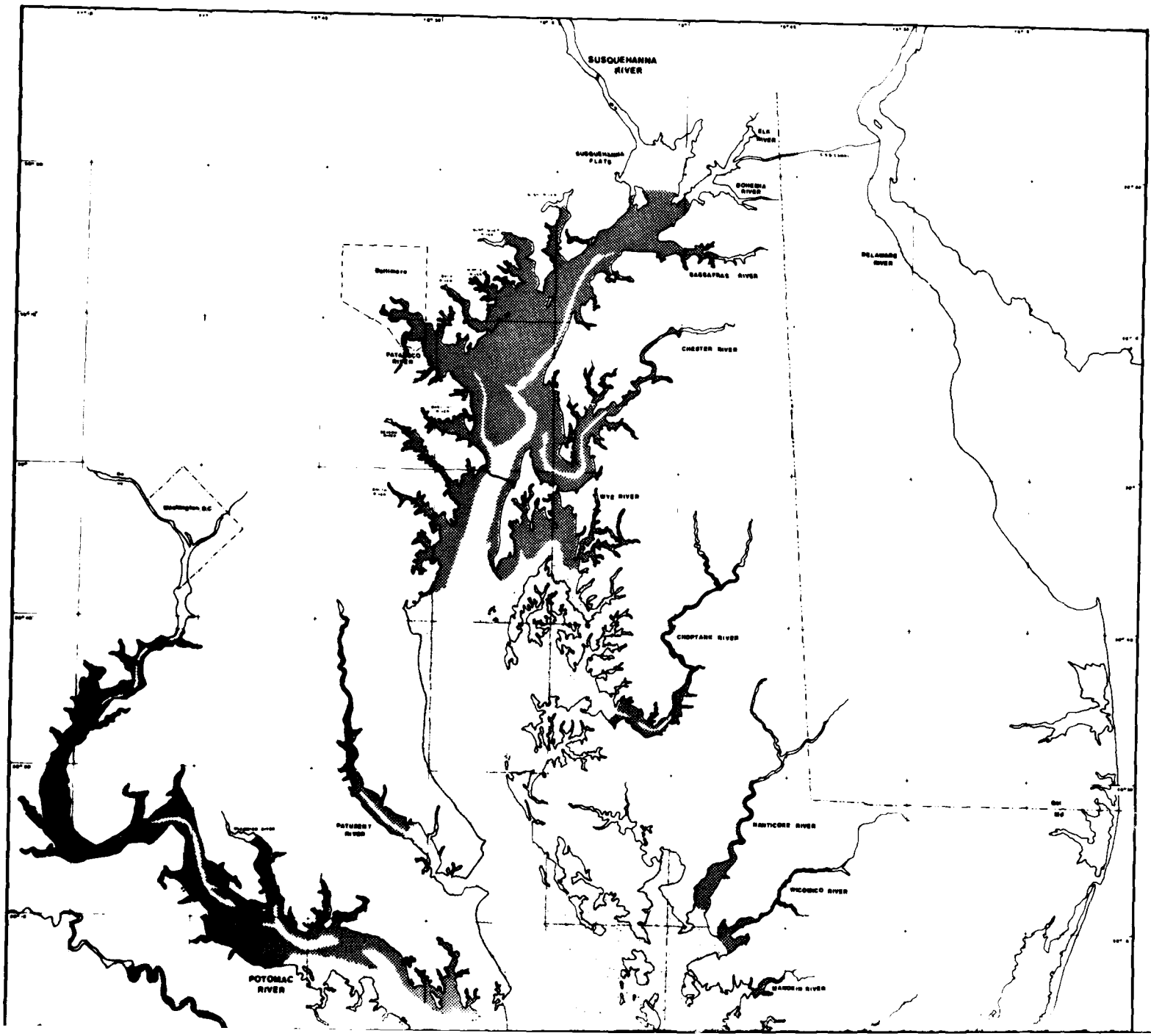

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
MAP 49 CHESAPEAKE BAY
Morone saxatilis - STRIPED BASS
Potential Habitat
DISTRIBUTION
FUTURE DROUGHT
LEGEND
Eggs, Larvae, Juveniles
Juveniles
Summer Adults
Winter Adults
WESTERN ECO-SYSTEMS TECHNOLOGY, INC.

Plate 104


SUSQUEHANNA RIVER
ELK RIVER
SUSQUEHANNA FLATS
BOHEMIA RIVER
DELAWARE RIVER
SASSAFRAS RIVER
CHESTER RIVER
PATAPSCO RIVER
WYE RIVER
CHOPTANK RIVER
PATUXENT RIVER
ANNAMESSEX RIVER
WICOMICO RIVER
MANOKIN RIVER
POTOMAC RIVER

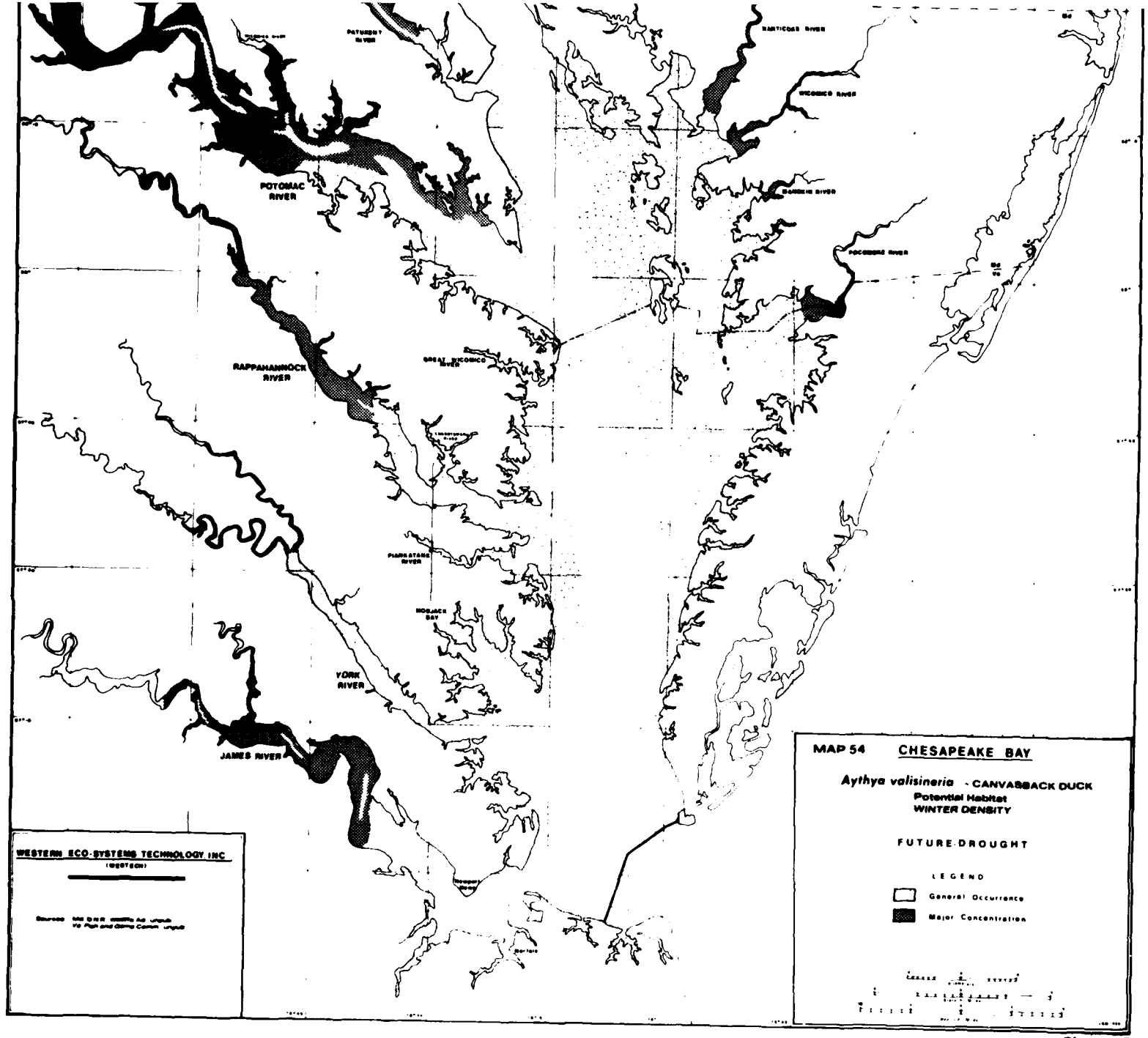

POTOMAC RIVER
RAPPAHANNOCK RIVER
YORK RIVER
JAMES RIVER
MAP 54 CHESAPEAKE BAY
Aythya valisineria - CANVASBACK DUCK
Potential Habitat
WINTER DENSITY
FUTURE-DROUGHT
LEGEND
General Occurrence
Major Concentration
WESTERN ECO-SYSTEMS TECHNOLOGY INC

Plate 105

END

DATE
FILMED

3-83

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