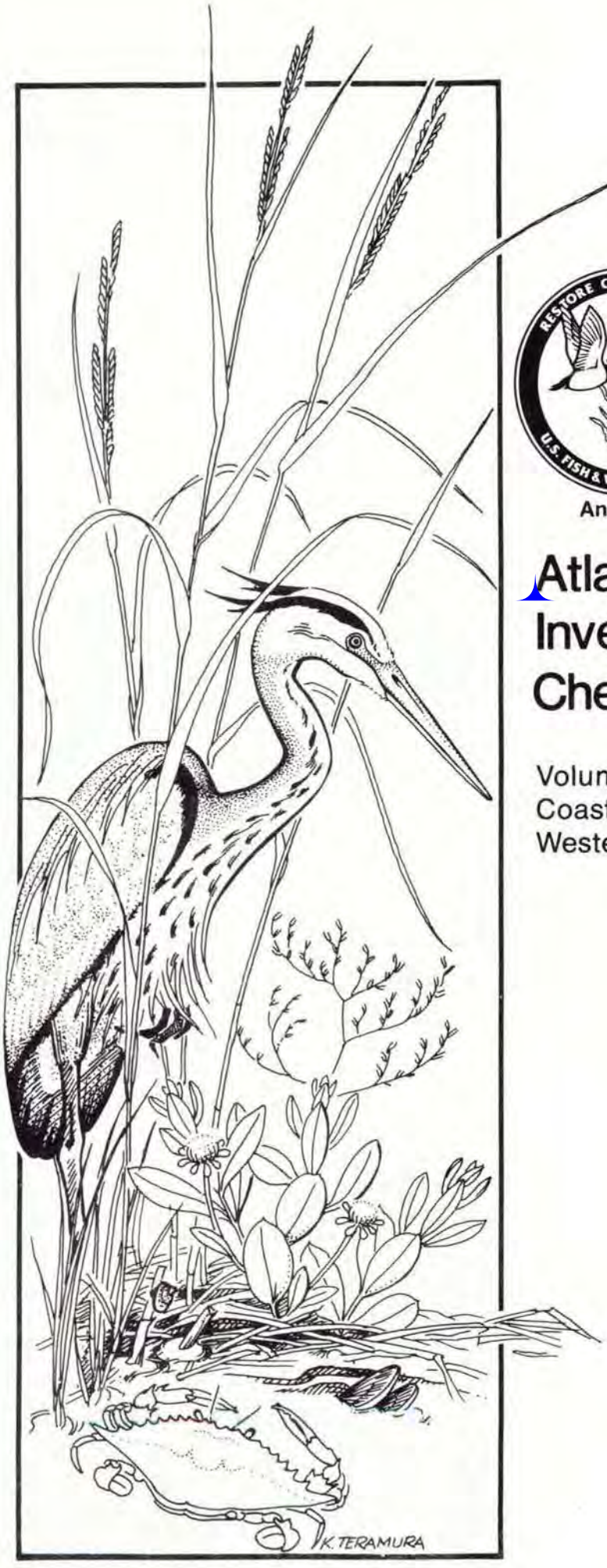

Annapolis

Atlas of National Wetlands Inventory Maps of Chesapeake Bay

Volume 3
Coastal Plain Maryland
Western Shore

ATLAS OF

NATIONAL WETLANDS INVENTORY MAPS

CHESAPEAKE BAY

Volume III of IV

COASTAL PLAIN MARYLAND--WESTERN SHORE

National Wetlands Inventory
Region 5, U. S. Fish and Wildlife Service
One Gateway Center, Suite 700
Newton Corner, Massachusetts 02158

and

Annapolis Field Office
U. S. Fish and Wildlife Service
1825 Virginia Street
Annapolis, Maryland 21401

September 1986

Chesapeake Bay Coastal Plain

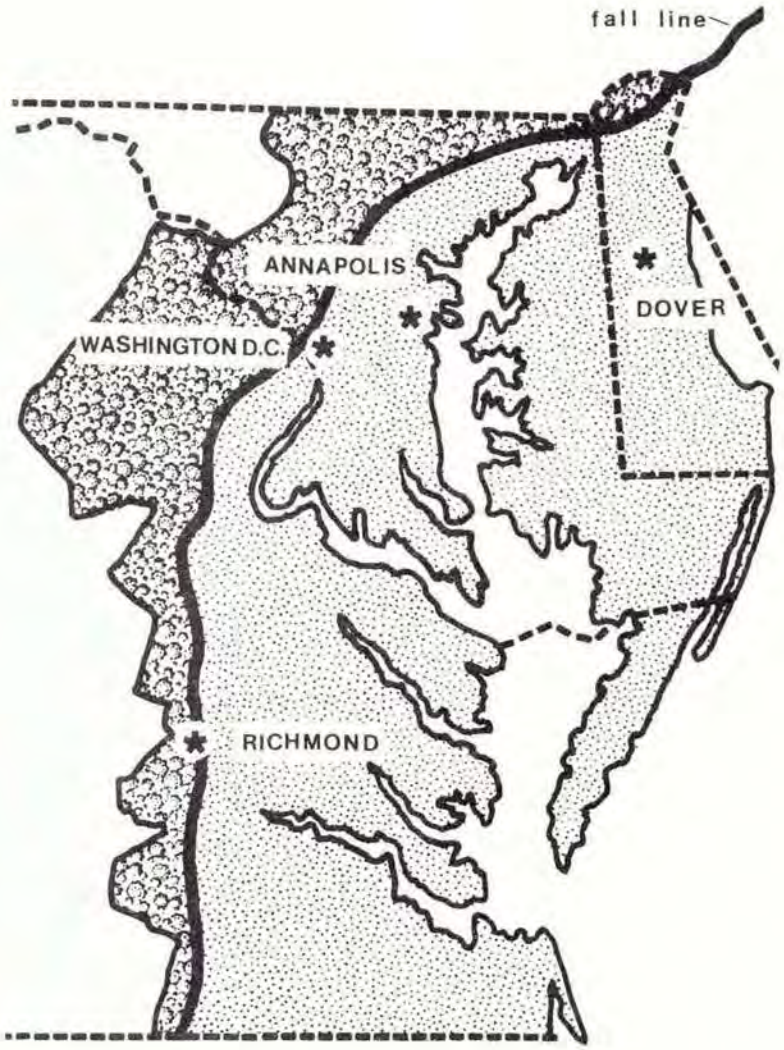

Figure 1

PREFACE

The Chesapeake Bay, America's largest estuary, is one of our Nation's most important natural resources. Man has drawn upon the Bay's abundant natural resources and wetlands for aesthetic, recreational and economic benefit. It's wetland areas provide important habitat for a wide variety of fish and wildlife. Many commercial and sport fishes thrive in the Bay, including the striped bass, bluefish, winter flounder and yellow perch. At least 90% of Atlantic coast striped bass use the Bay as spawning and nursery grounds. Bay marshes serve as important feeding and wintering sites for migrating waterfowl such as the canvasback, Canada goose, and oldsquaw. Nesting habitat is plentiful for black duck, herons and other water birds. Bay wetlands also support a diverse assemblage of turtles, snakes and amphibians, including the diamondback terrapin.

In addition to important fish and wildlife habitats, Chesapeake wetlands are valuable to the public. Often overlooked is the value of these wetlands for groundwater replenishment, flood control, absorption of pollutants and the retention of sediment from stormwater runoff. Wetlands are among the most productive ecosystems in the world, and history shows that the Bay has an enormous capacity to bring forth vast natural resources. The Chesapeake was a cradle for early American exploration and development, and continues to provide for numerous human needs and prosperity.

The value and importance of Bay habitats to fish and wildlife are at risk; their capacity to provide has been greatly diminished because of human abuse and exploitation such as over-fishing, industrial development, urban growth, toxic pollution, soil erosion, and siltation. These activities are controlled to some extent but continue to have a negative impact on the general condition of the Bay wetlands.

The U. S. Fish and Wildlife Service (FWS) is the principle Federal agency responsible for conservation, protection, and enchancement of the Nation's fish and wildlife resources for continuing human benefit. Along with other Federal, State and local governments and conservation organizations, the FWS is taking action to restore the Chesapeake Bay. Activities include investigating ways to reduce nutrient enrichment and toxic pollution inputs, promoting growth of submergent aquatic vegetation, and conducting trends assessments of living resources and their habitats, including wetlands.

The "Atlas of National Wetlands Inventory Maps--Chesapeake Bay" will be important in establishing, in a useful format, the extent of Bay wetlands within the coastal plain (Figure 1). These maps will be essential for natural resource managers in determining wetland locations, sizes and

types. Such information is necessary for Federal, State, and local government involvement in the management of wetlands, and is needed in assessing the effects that a variety of activities (e.g., drainage, filling, or other alterations) may have on wetland areas.

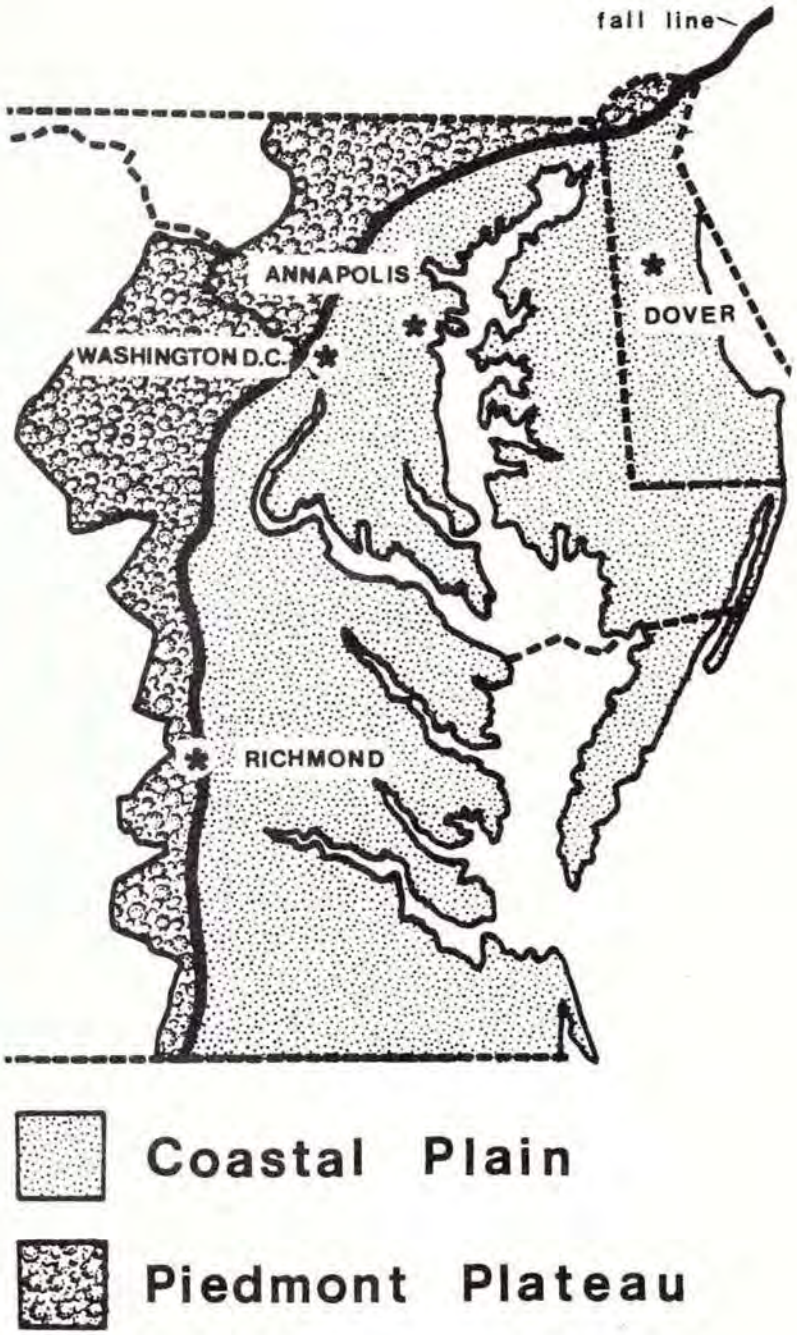

Figure 1

INTRODUCTION

The U. S. Fish and Wildlife Service (FWS) is conducting an inventory of the wetlands of the United States using aerial photography. All wetlands are classified according to the Service's official system: "Classification of Wetlands and Deepwater Habitats of the United States" (Cowardin et al. 1979). The National Wetlands Inventory (NWI) is establishing a wetland database for the country, in both map and computer forms. The present emphasis is on map production. The NWI informtion serves to identify the current status of U. S. wetlands and can be used as a reference point from which future changes in wetlands can be evaluated.

The Chesapeake Bay inventory commenced in 1979 and was completed in 1984. Wetland maps will soon be available for the entire Bay area. These maps have been incorporated into an atlas composed of four volumes:

Volume 1 Coastal Plain Virginia, Western Shore

Volume 2 Coastal Plain Virginia, Eastern Shore

Volume 3 Coastal Plain Maryland, Western Shore

Volume 4 Coastal Plain Maryland, Eastern Shore

The Atlas includes reductions of all NWI maps for the Chesapeake coastal plain. It was developed to facilitate office use of NWI information. The Atlas presents a broad picture of the distribution of wetlands within large geographic areas. **The Atlas is not intended to replace the use of NWI maps.** The original NWI maps are available at the standard U. S. Geological Survey topographic map scale of 1:24,000. These maps are the best products to use in the field for site-specific wetland evaluation.

Copies of original NWI maps for the Chesapeake Coastal Plain can be ordered from:

MARYLAND

Maryland Department of Natural Resources
Wetlands Division
Water Resources Administration
Tawes State Office Building
Annapolis, Maryland 21401
(301) 269-3871

VIRGINIA

Eastern Mapping Center-NCIC
U. S. Geological Survey
536 National Center
Reston, Virginia 22092
(703) 648-5951

Information, including a topical brief about the NWI program, can be obtained by contacting the Regional Wetland Coordinator, U. S. Fish and Wildlife Service, One Gateway Center, Newton Corner, MA 02158.

WETLAND DEFINITION

Wetlands include a variety of wet habitats commonly called marshes, bogs, and swamps. They are lands where permanent or seasonal saturation with water determines the nature of soil development and types of plants and animals living there. The Service specifically defines "wetland" as: "Wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water." For purposes of this classification wetlands must have one or more of the following three attributes: (1) at least periodically, the land supports predominantly hydrophytes; (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is nonsoil and is saturated with water or covered by shallow water at some time during the growing season of each year" (Cowardin et al. 1979).

HYDRIC SOILS

The presence of undrained hydric soil is one of the three major criteria used to define wetlands (Cowardin et al. 1979). Hydric soils are either: (1) saturated at or near the soil surface with water that is virtually lacking free oxygen for significant periods during the growing season or (2) flooded frequently for long periods during the growing season (U.S.D.A. Soil Conservation Service 1982). The Soil Conservation Service has prepared a preliminary list of hydric soils to accompany the Fish and Wildlife Service's wetland classification system. Table 1 is a list of hydric soils for Maryland and Table 2 is a list of hydric soils for Virginia.

Specific information regarding hydric soils in Maryland and Virginia can be obtained from the respective State Soil Scientist, U.S.D.A. Soil Conservation Service:

MARYLAND

State Soil Scientist
U. S. Soil Conservation Service
4321 Hartwick Road
College Park, Maryland 20740

VIRGINIA

State Soil Scientist
U. S. Soil Conservation Service
Federal Building, Room 9201
400 North Eighth Street
Richmond, Virginia 23240

Table 1. Preliminary List Hydric Soils for Maryland (August 1985)

Andover
Andover, Stony
Armagh
Armagh, Stony
Atkins
Atsion
Atsion, Tide Flooded
Axis
Baile
Barbour
Bayboro
Bayboro, Ponded
Berryland
Bibb
Bladen
Bladen, Ponded
Bowmansville
Brinkerton
Brinkerton, Stony
Colemantown
Croton
Croton, Stony
Dunning
Elkins
Elkton
Fallsington
Guthrie
Guthrie, Ponded
Hatboro
Hyde
Ipswich
Johnston
Kingsland
Kinkora
Lantz
Lenoir
Leon
Leon, Flooded
Leonardtown
Lickdale
Lickdale, Stony
Loysville
Markes
Melvin
Melvin, Cool
Melvin, Ponded
Nolo
Nolo, Stony
Osier
Osier, Flooded
Osier, Ponded
Othello
Plummer
Plummer, Ponded
Pocomoke, Drained
Pocomoke, Ponded
Portsmouth
Purdy
Roanoke
Roanoke, Ponded
Robertsville
Rutlege
Rutlege, Ponded
Shrewsbury
St. Johns
St. Johns, Depressional
Warners
Warners, Nonflooded
Watchung
Watchung, Stony
Wehadkee
Westbrook
Worsham

Table 2. Preliminary List of Hydric Soils for Virginia (August 1985)

Acredale
Aden
Albano
Argent
Atkins
Axis
Backbay
Baile
Bayboro
Bayboro, Ponded
Belhaven
Bethera
Bethera, Flooded
Bibb
Bladen
Bladen, Ponded
Blago
Bohicket
Bowmansville
Cartecay, Ponded
Carteret
Chastain
Chatuge
Chenneby, Ponded
Chickahominy
Chincoteaque
Clearbrook
Coxville
Croton
Croton,Stony
Daleville
Dawhoo
Deloss
Dorovan
Dunning
Elbert
Elkton
Emory, Ponded
Evansham
Fallsington
Featherstone
Forestdale
Hatboro
Hyde
Johnston
Kinkora
Kinston
Lanexa
Leaf
Leaksville
Lenoir
Leon
Leon, Flooded
Levy
Lickdale
Lickdale, Stony
Lumbee
Magotha
Mattan
Maurertown
Meggett
Melvin
Melvin, Cool
Melvin, Ponded
Muckalee
Myatt
Nawney
Nawney, Ponded
Newark, Ponded
Newark, Ponded, Cool
Nimmo
Nolin
Nolin, Summer Flooding
Osier
Osier, Flooded
Osier, Ponded
Othello
Pamlico
Pamlico, Flooded
Pamlico, Loamy
Pamlico, Ponded
Partlow
Pasquotank
Plummer
Plummer, Ponded
Pocaty
Pocomoke, Drained
Pocomoke, Ponded
Polawana
Pooler
Pooler, Ponded
Portsmouth
Pouncey
Pungo
Purdy
Rains
Rains, Flooded
Rappahannock
Roanoke
Roanoke, Ponded
Robertsville
Toddstav
Tomotley
Torhunta
Toxaway
Waxpool
Weeksville
Wehadkee
Weston
Worsham

WETLAND COMMUNITIES

The FWS is preparing a list of wetland plants (i.e., hydrophytes) to help identify wetlands. Hydrophytes are defined as any plant growing in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content (Cowardin et al. 1979). A final list for Maryland and Virginia should be published in late 1986. Specific information concerning the wetland plants list for Maryland and Virginia can be obtained from:

Wetland Ecology Group
U.S. Fish and Wildlife Service
Monroe Building, Suite 101
9720 Executive Center Drive
St. Petersburg, FL 33702

Table 3 displays a list of major wetland plant communities observed during inventory work in the Chesapeake coastal plain. Map symbols are also given. Where identified they reflect dominant vegetative life form and water regimes (i.e., the degree of flooding and/or soil saturation).

MAP PREPARATION

Large-scale (1:24,000) wetland maps were produced for the entire Chesapeake coastal plain. The NWI employs conventional aerial photo interpretation techniques (i.e., high-altitude photography) to map wetlands and deepwater habitats. Wetlands were identified on aerial photographs based on vegetation, visible hydrology, and topography in accordance with the FWS wetland definition and classification system (Cowardin et al. 1977). Due to inherent error in the use of aerial photographs, wetland delineation remains subject to revision through detailed on-the-ground surveys. Maps should, therefore, be used to locate the presence of wetlands and not to identify precise boundaries between wetlands and uplands.

Aerial Photography Used:

Most of the photography used was 1:60,000 color infrared transparencies. The dates of the photography ranged from the spring of 1973 to the spring of 1983.

Collateral Data Sources

(1) U. S. Geological Survey topographic maps
(2) U. S. Soil Conservation Service soil surveys
(3) U. S. Department of Commerce coastal and geodetic survey maps
(4) Extent of Brackish Water in the Tidal Rivers of Maryland (Webb and Heidel 1970)
(5) Reports of tidal marsh inventories for Virginia counties, G. M. Silverhorn, Virginia Institute of Marine Science, Gloucester, Virginia
(6) The Chesapeake Bay - An Atlas of Natural Resources (Lippson 1973)
(7) Environmental Atlas of the Potomac Estuary (Lippson et al. 1980)

TABLE 3. Examples of major Chesapeake Bay region wetland plant communities. Note: This is not a comprehensive list, but is based on actual field observations. Plant names generally follow Gray's Manual of Botany (Fernald 1970).

WETLAND TYPE AND MAPPING SYMBOL	DOMINANCE TYPES SCIENTIFIC NAME	COMMON NAME	WATER REGIME
ESTUARINE EMERGENT WETLANDS			
E2EM5N	Spartina alterniflora (tall form)	smooth cordgrass	regularly flooded
E2EM5P	Spartina patens	marsh hay	irregularly flooded
	Distichlis spicata	Spike grass	
	Spartina alterniflora (short form)	smooth cordgrass	
	Panicum virgatum	switchgrass	
	Juncus roemerianus	black needlerush	
	Spartina cynosuroides	giant cordgrass	
E2EM1P	Phragmites australis	reed	irregularly flooded
E2EM2N6	Peltandra virginica	arrow-arum	regularly flooded
E2EM5P6	Typha angustifolia	narrow-leaved cattail	irregularly flooded
	Spartina cynosuroides	giant cordgrass	
RIVERINE TIDAL WETLANDS			
R1EM2N	Nuphar advena	spatterdock	regularly flooded
	Peltandra virginica	arrow-arum	
	Zizania aquatica	wild rice	
	Acorus calamus	sweet flag	
PALUSTRINE TIDAL WETLANDS			
PEM5R	Typha angustifolia	narrow-leaved cattail	seasonally flooded-tidal
	Spartina cynosuroides	giant cordgrass	
PSS3R	Myrica cerifera	wax myrtle	
PF01R	Acer rubrum/ Fraxinus pennsylvanica	red maple/green ash	

TABLE 3 (cont.)

WETLAND TYPE AND MAPPING SYMBOL	DOMINANCE TYPES SCIENTIFIC NAME	COMMON NAME	WATER REGIME
PALUSTRINE EMERGENT WETLANDS			
PEM5E	Leersia oryzoides	rice cutgrass	seasonally flooded
	Juncus effusus	soft rush	
	Typha latifolia	broad-leaved cattail	
	Phragmites australis	reed	
PALUSTRINE SCRUB-SHRUB WETLANDS			
PSS1F	Cephalanthus occidentalis	buttonbush	semipermanently flooded
PSS1E	Salix spp.	willows	seasonally flooded
	Alnus sp.	alder	
	Acer rubrum	red maple	
PALUSTRINE FORESTED WETLANDS			
PFO1A	Platanus occidentalis/ Salix nigra/ Liquidambar styraciflua	sycamore/ black willow/ sweet gum	temporarily flooded
	Acer rubrum/ Betula nigra/ Platanus occidentalis	red maple/ river birch/ sycamore	
	Fraxinus pennsylvanica/ Acer negundo/ Quercus palustris/ Liquidambar styraciflua	green ash/ box elder/ pin oak/ sweet gum	
PFO1C	Acer rubrum/ Quercus michauxii	red maple/ basket oak	seasonally flooded
	Quercus lyrata/ Q.michauxii/ Q. falcata/ Q. phellos	overcup oak/ basket oak/ Spanish oak/ willow oak	
PFO1E	Acer rubrum/ Liquidambar styraciflua	red maple/ sweet gum	
PFO2E	Taxodium distichum	bald cypress	semipermanently flooded
PFO4A	Pinus taeda	loblolly pine	temporarily flooded
PFO4E	Chamaecyparis thyoides	Atlantic white cedar	seasonally flooded

Minimum Mapping Unit:

The minimum mapping unit is generally one to three acres, although wetlands less than one acre are commonly mapped.

Reviewers of Draft Maps:

(1) U. S. Fish and Wildlife Service, Annapolis Field Office
(2) U. S. Army Corps of Engineers, Baltimore and Norfolk Districts
(3) U. S. Soil Conservation Service
(4) U. S. Environmental Protection Agency (Region III)
(5) National Marine Fisheries Service
(6) Maryland Department of Natural Resources, Tidewater Administration
(7) Maryland Department of Natural Resources, Water Resources Administration
(8) Virginia Commission of Game and Inland Fisheries
(9) Virginia Institute of Marine Science

Financial Contributors

The Maryland Department of Natural Resources, Tidewater Administration, provided financial support to produce the National Wetlands Inventory maps for Maryland. The State is providing funds for creating the statewide computerized wetland database.

PHOTO INTERPRETATION PROBLEMS

Wetland photo interpretation, although extremely efficient and accurate for inventorying wetlands, does have certain limitations. Consequently, some problems arose during the course of the survey. Additional field work or use of collateral data was necessary to overcome these constraints. These problems and their resolution are discussed below.

1. **Brackish/freshwater and tidal/nontidal breaks and associated wetland classification.** Field checks were conducted and reports on the extent of brackish waters in the Bay region (Webb and Heidel 1970, Lippson 1973, Lippson et al. 1980) were consulted to make these breaks. Boundaries should be considered approximate.

2. **Water regime determination and wetland/upland breaks in forested areas.** The history of soil drainage for agriculture in Maryland and Virginia has resulted in the loss of hydric characteristics in many forested bottomlands. Differentiating soil drainage in woodlands initially posed a problem. Subtle photo signatures verified through field checking and reference to soil surveys were used to determine water regimes and wetlands boundaries.

3. **Delineation of intertidal flats.** The photography used was not tide-coordinated, so not all intertidal flats were visible. Collateral tide-coordinated photography was available for a few quadrangles, and

was used to delineate the intertidal zone. The remainder of the tidal flats were identified from coastal and geodetic survey maps and U.S.G.S. topographic maps.

4. **Problems associated with tidal flooding.** Photography used for this survey was not tide-coordinated, therefore, on rare occasions, some emergent wetlands may have been obscured by flood waters. In these situations, undetected emergent wetlands may be included as part of the open water class in estuarine and riverine (tidal) systems.

5. **Identification of freshwater aquatic beds.** Due to use of spring photography in many areas, aquatic beds in freshwater ponds and lakes were not identifiable. These wetlands were therefore, classified as open water. Maps, however, do show some aquatic beds where observed during field investigations.

6. **Inclusion of small upland areas within wetland boundaries.** Small islands of higher elevations and better drained upland areas naturally exist within many wetlands. Due to the minimum mapping unit, small upland areas may have been included within designated wetlands. Field inspections and/or use of larger-scale photography is recommended to refine wetland boundaries when necessary.

WETLAND ACREAGE STATISTICS

Wetland acreage summaries have not been generated for all Maryland and Virginia counties. These data will be compiled as funding permits and, with the availability of final NWI maps and other information collected during the inventory, will allow the Service to prepare state wetland reports. These reports will present the findings of the NWI for each state. Current plans call for the Maryland state report to be available in 1987-88, and as yet, there are no immediate plans for producing the Virginia report since wetland mapping is still in progress. The state wetland report for Delaware, entitled Wetlands of Delaware, is available from the Delaware Department of Natural Resources and Environmental Control, Wetlands Section, P.O. Box 1401, Dover, DE 19903. This report describes wetland communities similar to those associated with the Eastern Shore of Maryland and Virginia.

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U.S.D.A. Soil Consercation Service. 1985. Hydric Soils of the State of Virginia, 1985. National Technical Committee for Hydric Soils. 1985.

U.S.D.A. Soil Conservation Service. 1982. Soils - Hydric Soils of the United States. National Bulletin No. 430-2-7.

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HOW TO USE THIS ATLAS

The Atlas contains reductions of all 1:24,000 National Wetlands Inventory maps. Maps appear in alphabetical order. Map names can be located on the index map (Figure 2). Each map shows the configuration, location and type of wetlands and deepwater habitats found within a given area.

WETLAND LEGEND

Wetland data are displayed on maps by a series of letters and numbers (alpha-numerics). Mixing of classes and subclasses are represented by a diagonal line. The more common symbols are shown below; uncommon symbols have been omitted for simplicity. For identifying these latter symbols, the reader must refer to an actual NWI map legend.

SYMBOLOGY

Systems and Subsystems:

M 1 = Marine Subtidal
M 2 = Marine Intertidal
E 1 = Estuarine Subtidal
E 2 = Estuarine Intertidal
R 1 = Riverine Tidal
R 2 = Riverine Lower Perennial
R 3 = Riverine Upper Perennial
R 4 = Riverine Intermittent
L 1 = Lacustrine Limnetic
L 2 = Lacustrine Littoral
P = Palustrine
U = Upland

Classes and Subclasses:

AB = Aquatic Bed
BB = Beach/Bar
EM1 = Emergent Wetland, Persistent
EM2 = Emergent Wetland, Nonpersistent
EM5 = Emergent Wetland, Narrow-leaved Persistent
FL = Flat
FO1 = Forested Wetland, Broad-leaved Deciduous
FO2 = Forested Wetland, Needle-leaved Deciduous
FO4 = Forested Wetland, Needle-leaved Evergreen
OW = Open Water/Unknown Bottom
SS1 = Scrub-Shrub Wetland, Broad-leaved Deciduous
SS3 = Scrub-Shrub Wetland, Broad-leaved Evergreen
SS4 = Scrub-Shrub Wetland, Needle-leaved Evergreen
UB = Unconsolidated Bottom

Water Regimes:

TIDAL		NONTIDAL	
L	Subtidal	A	Temporarily Flooded
M	Irregularly Exposed	C	Seasonally Flooded
N	Regularly Flooded	E	Seasonally Flooded-Saturated
P	Irregularly Flooded	F	Semipermanently Flooded
R	Seasonally Flooded-Tidal	H	Permanently Flooded
V	Permanently Flooded-Tidal	K	Artificially Flooded
		Z	Permanently Flooded/ Intermittently Exposed

Examples:

Alpha-numerics

E2EM5P6d =	Estuarine (E)	SYSTEM
	Intertidal (2)	SUBSYSTEM
	Emergent Wetland (EM)	CLASS
	Narrow Leaved Persistent (5)	SUBCLASS
	Irregularly Flooded (P)	WATER REGIME
	Oligohaline (6)	WATER CHEMISTRY
	Ditched (d)	SPECIAL MODIFIER

E2FLN = Estuarine (E), Intertidal (2), Flat (FL), Regularly Flooded (N)

PFO1E = Palustrine (P), Forested Wetland (FO), Broad-leaved Deciduous (1), Seasonally Flooded-Saturated (E)

PEM/OWH = Palustrine (P), Emergent Wetland/Open Water (EM/OW), Permanently Flooded (H)

PFO/SSIA = Palustrine (P), Forested Wetland/Scrub-Shrub Wetland (FO/SS), Broad-leaved Deciduous (1), Temporarily Flooded (A)

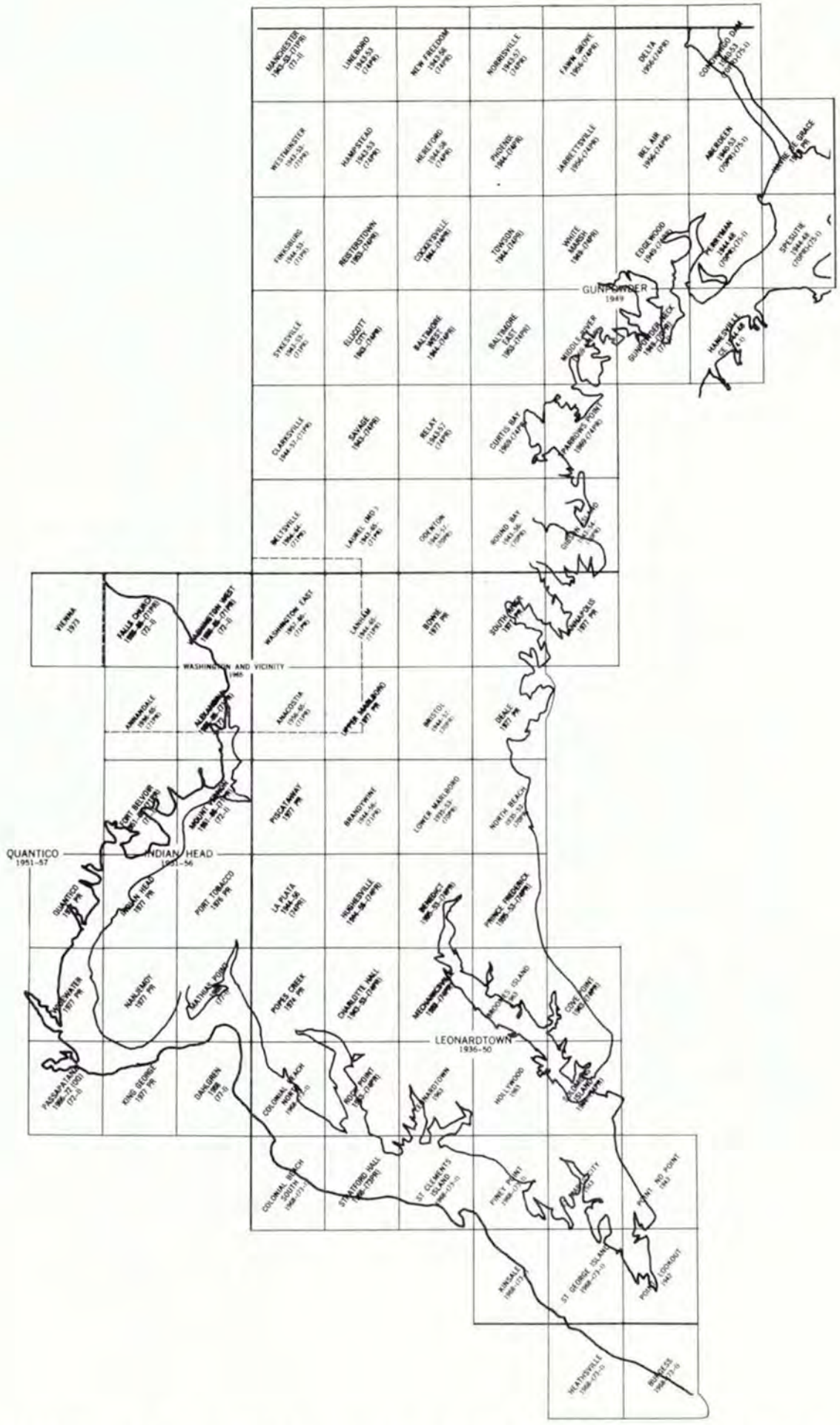


Figure 2 Map index for Maryland Coastal Plain, Western Shore

NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR

NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR

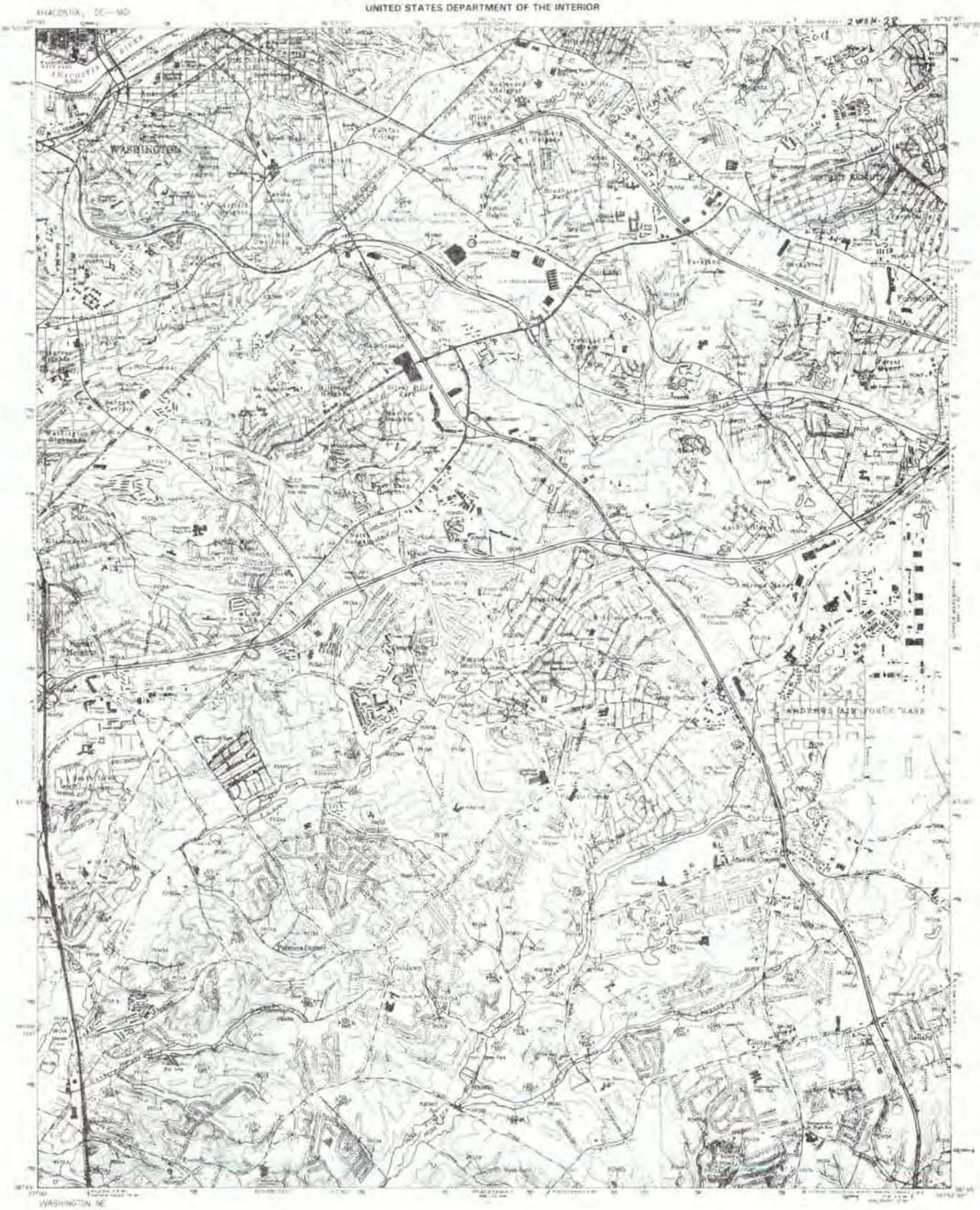
ALEXANDRIA, VA—DC—MD

WASHINGTON NW
WASHINGTON WEST

ALEXANDRIA, VA–DC–MD

NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR

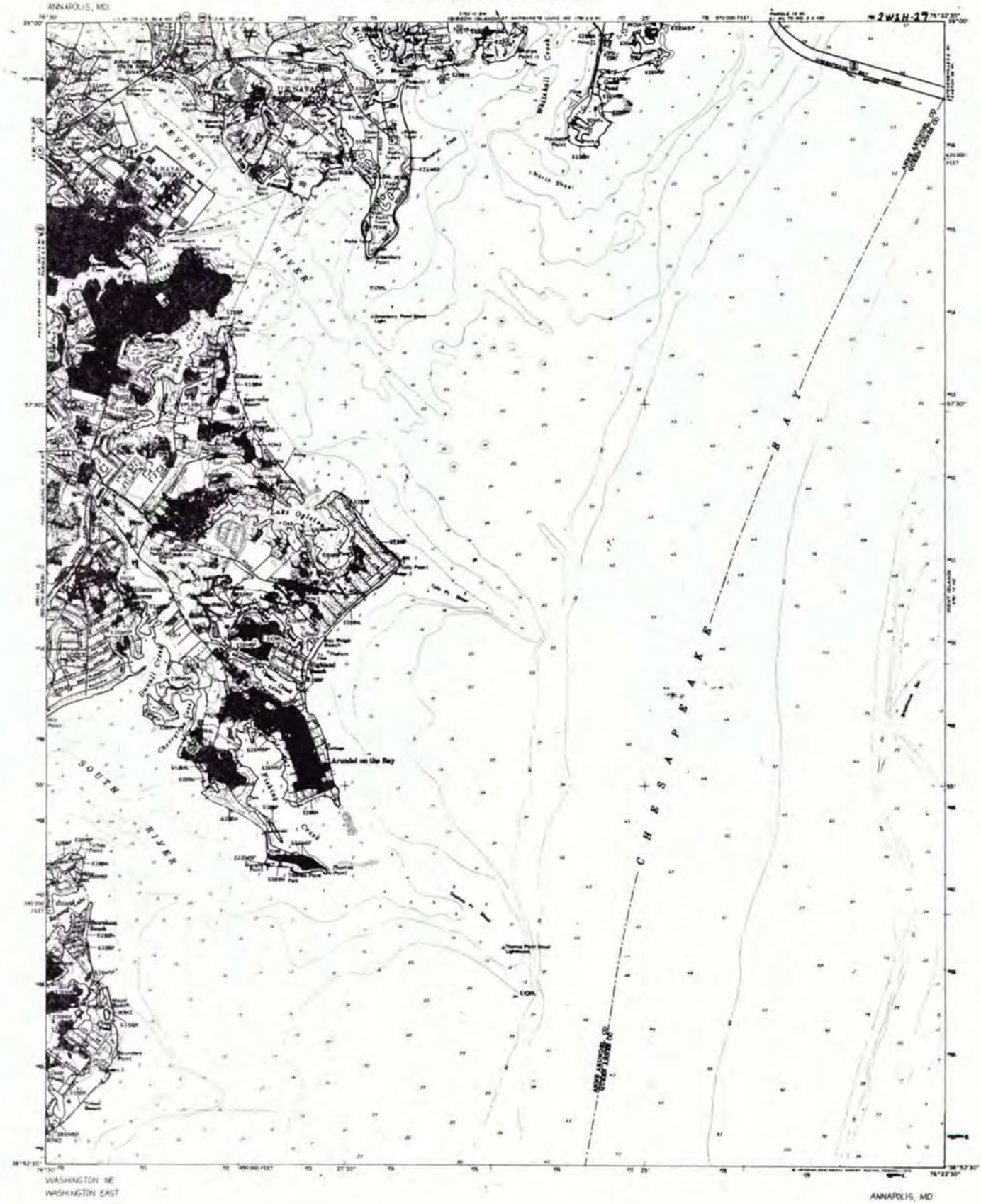


WASHINGTON NE
WASHINGTON EAST

ANACOSTIA, DC—MD

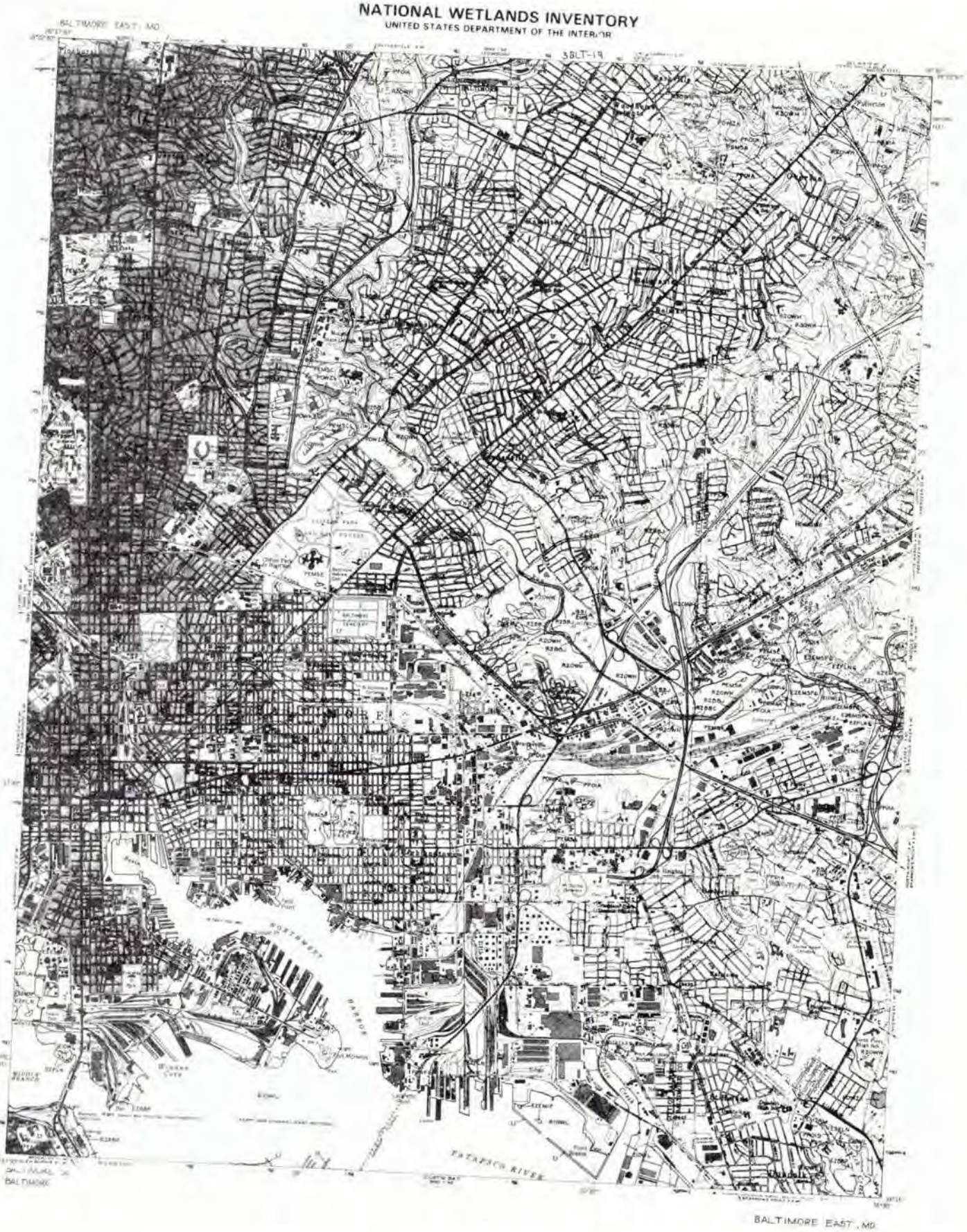
NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR



NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR



BALTIMORE EAST, MD.

NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR

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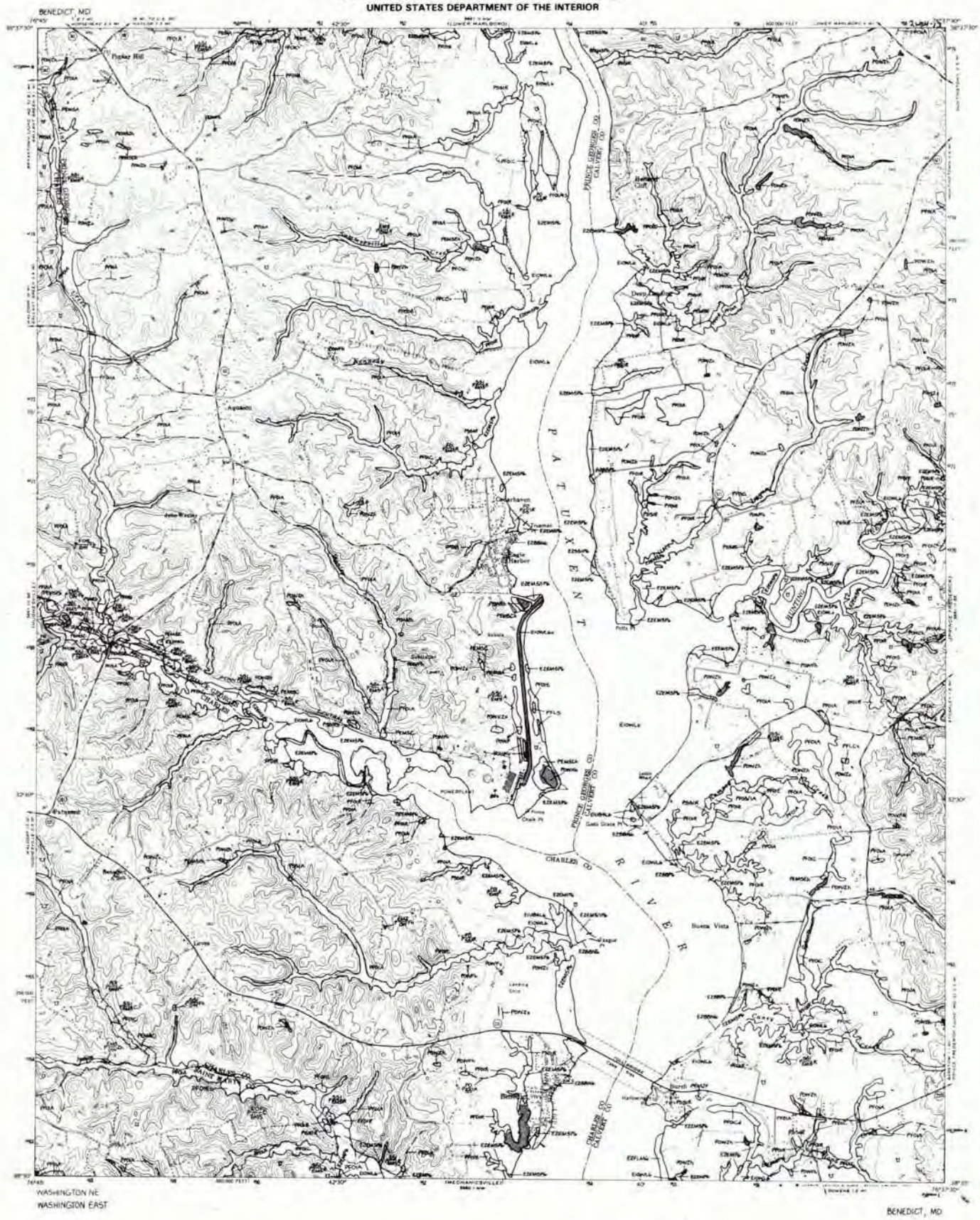

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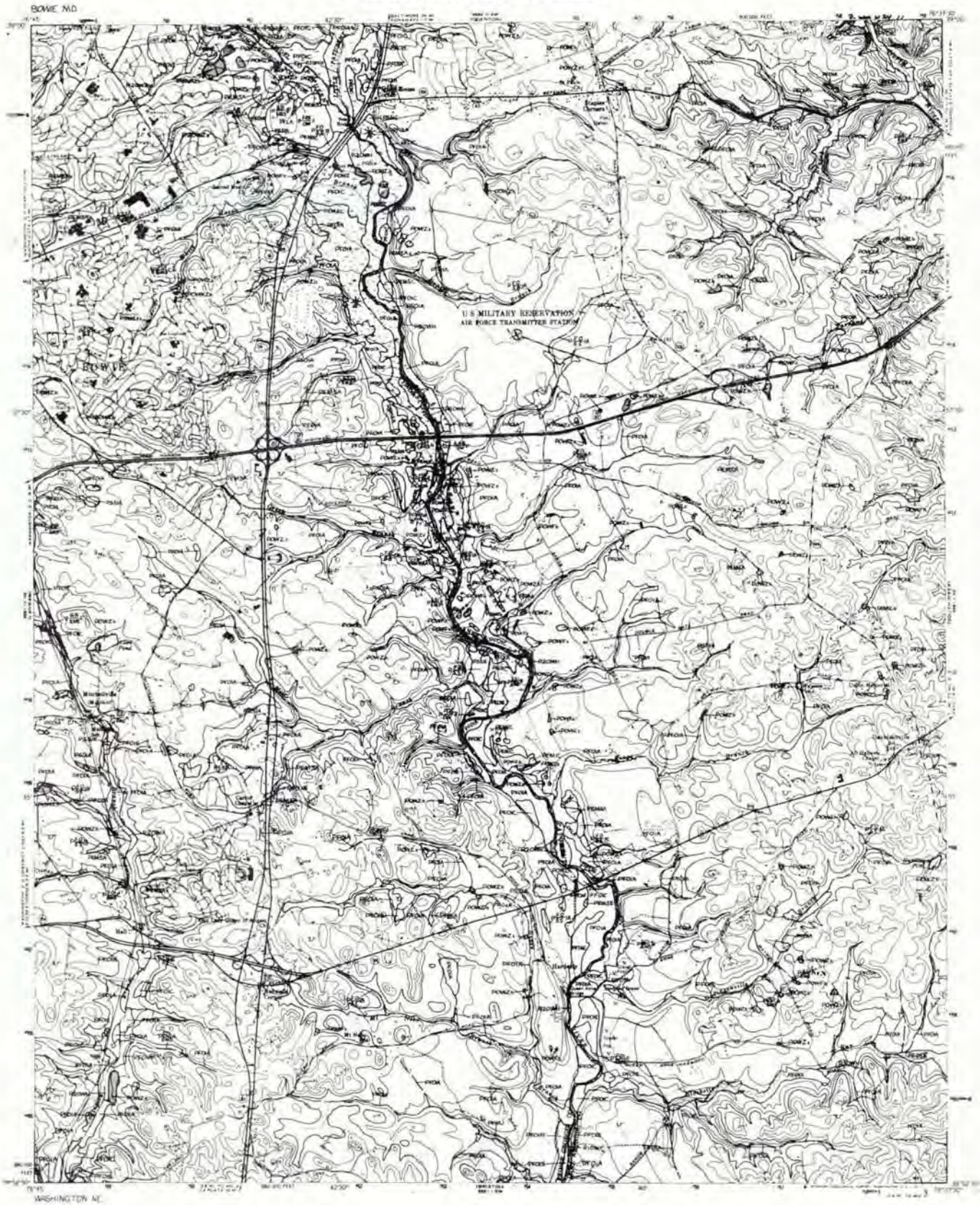
UNITED STATES DEPARTMENT OF THE INTERIOR



NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR

NATIONAL WETLANDS INVENTORY

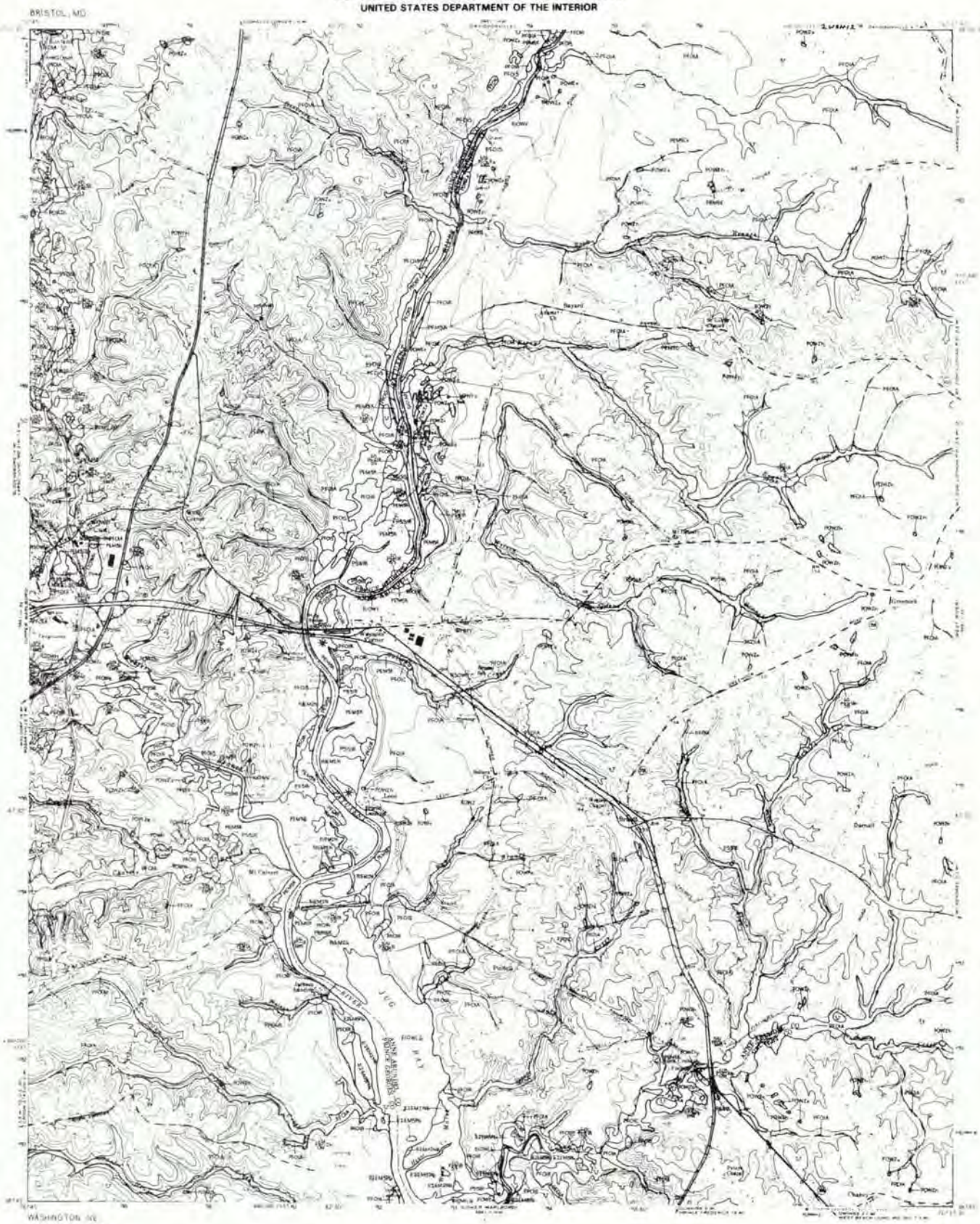
UNITED STATES DEPARTMENT OF THE INTERIOR

WASHINGTON SE
LEONARDTOWN

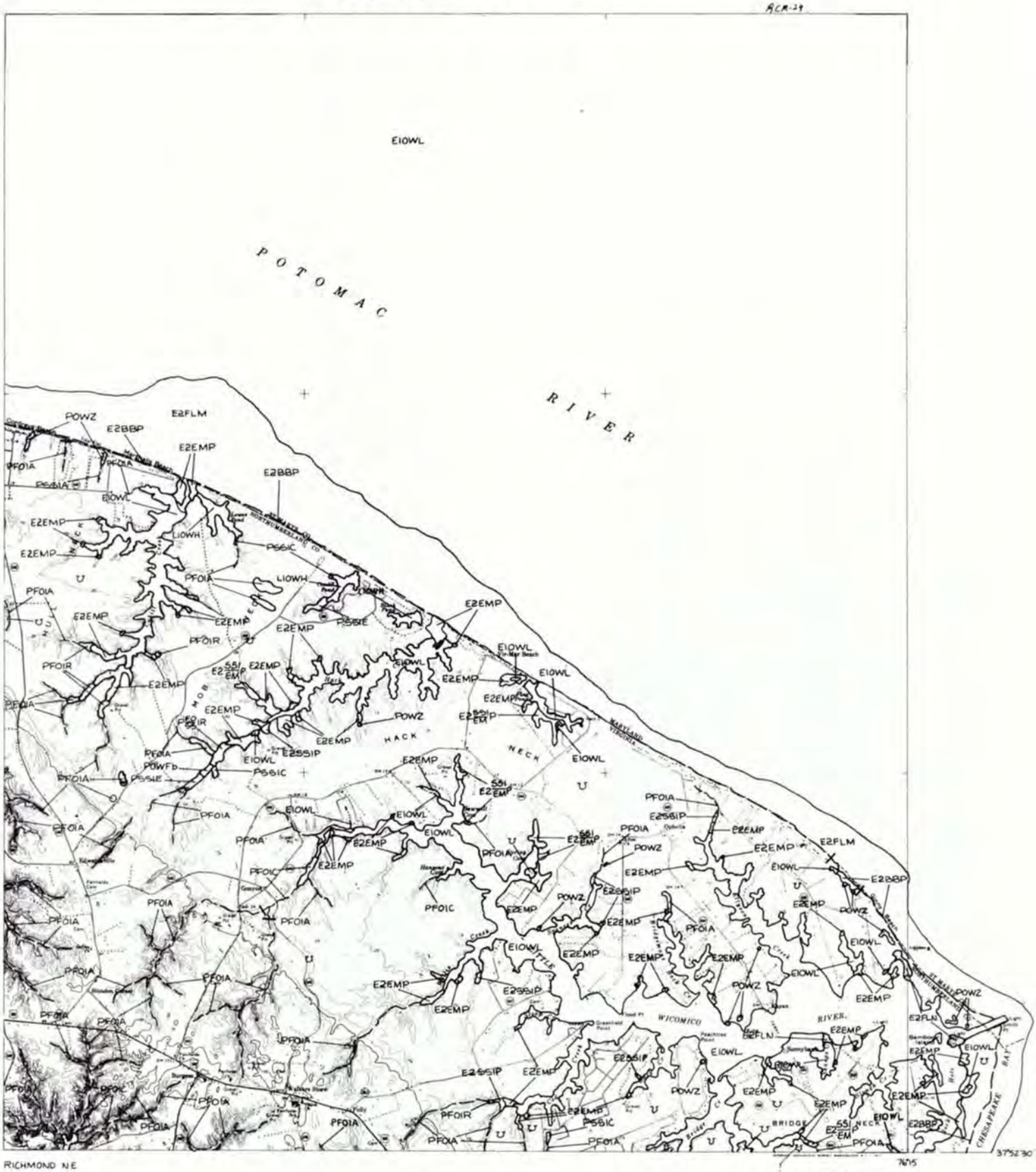
BROOMES ISLAND, MD

NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR



NATIONAL WETLANDS INVENTORY
UNITED STATES DEPARTMENT OF THE INTERIOR



RICHMOND N E
TAPPAHANNOCK

BURGESS, VA. - MD.

NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR

WASHINGTON SE
LEONARDTOWN

CHARLOTTE HALL, MD

NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR

NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR

COCKEYSVILLE, MD

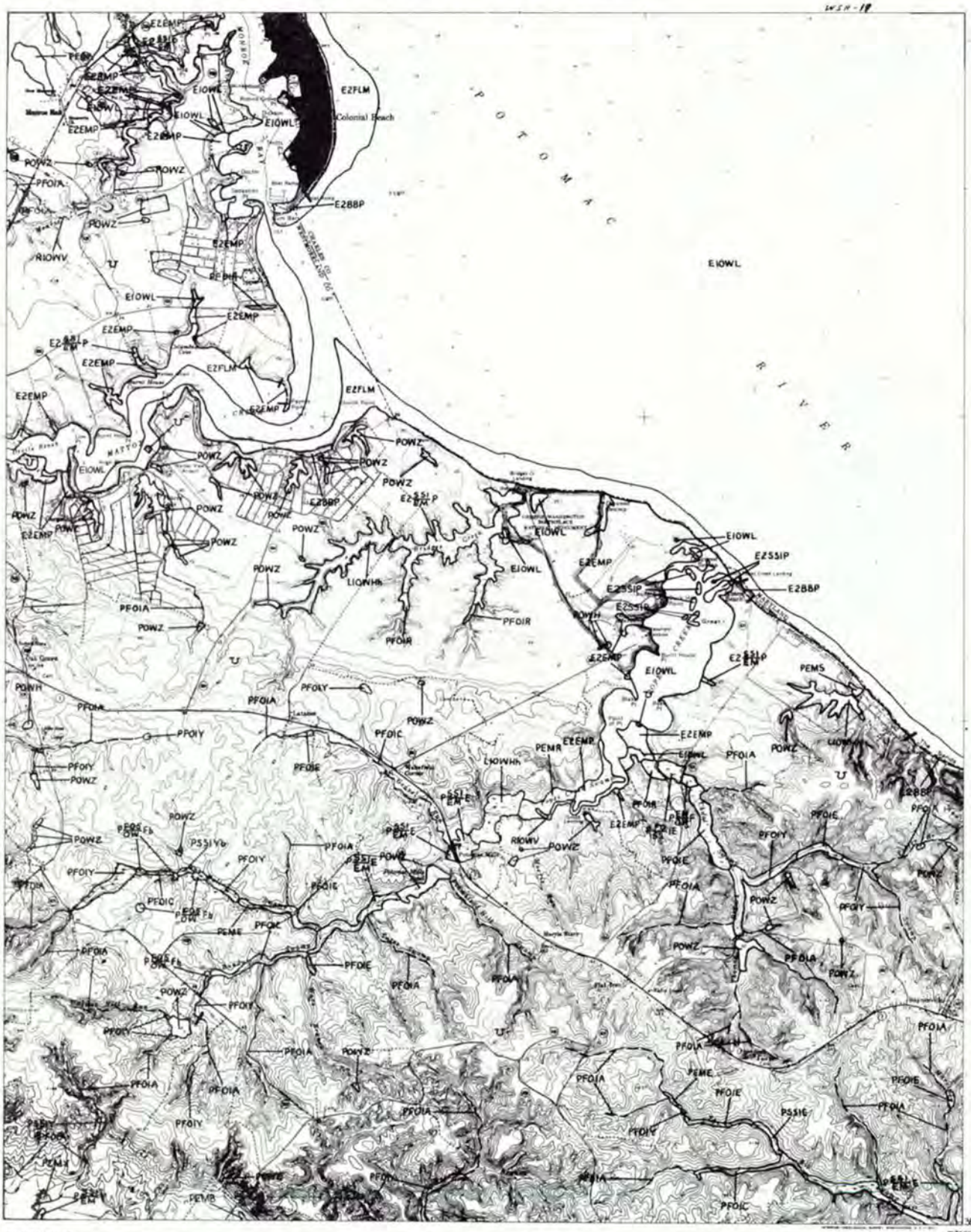
BALTIMORE SE

BALTIMORE

COCKEYSVILLE, MD

NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR



WASHINGTON SE
LEONARDTOWN

COLONIAL BEACH SOUTH VA-MD

NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR

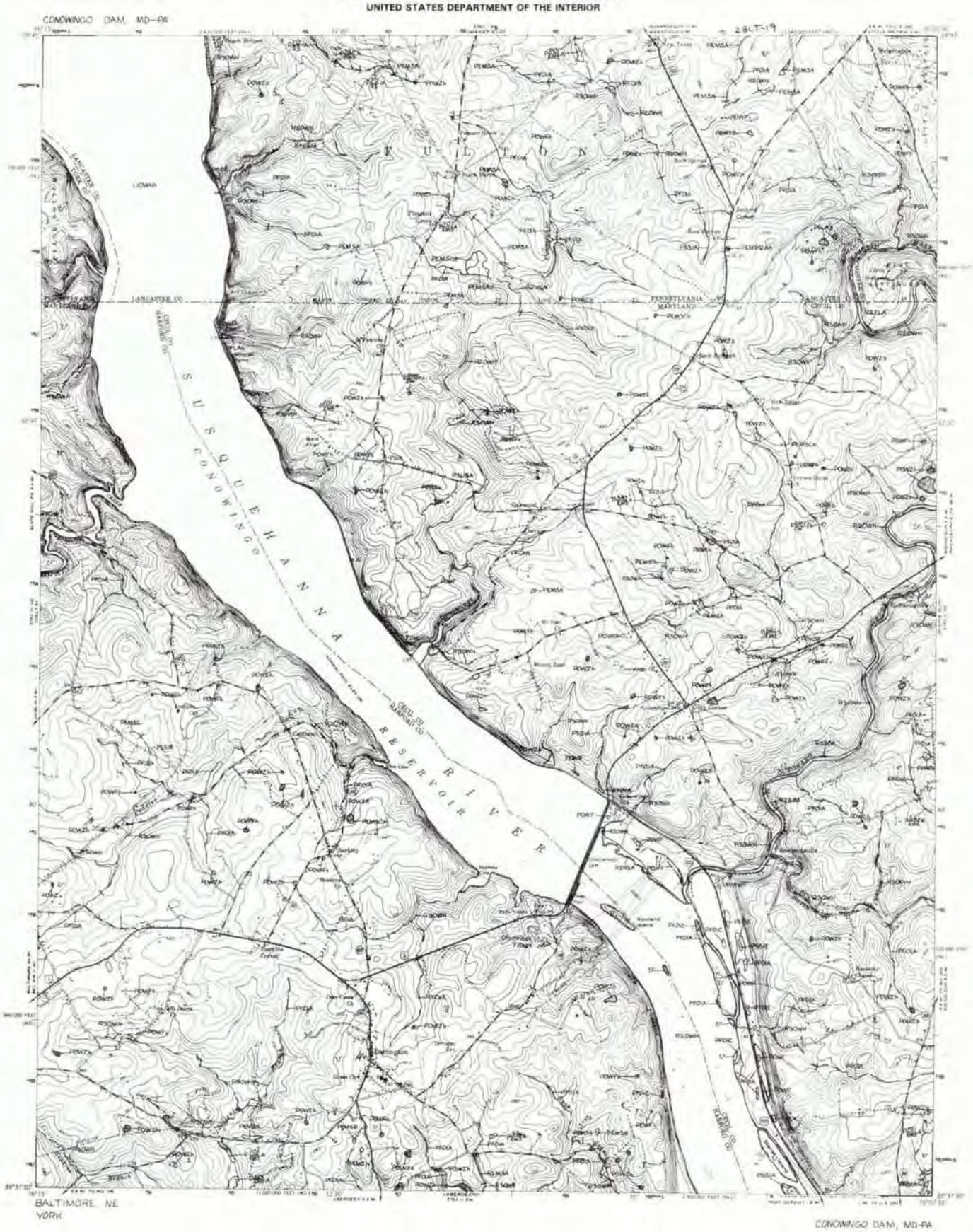
WASHINGTON SE
LEONARDTOWN

38'15
76°52'30"

COLONIAL BEACH NORTH, MD-VA

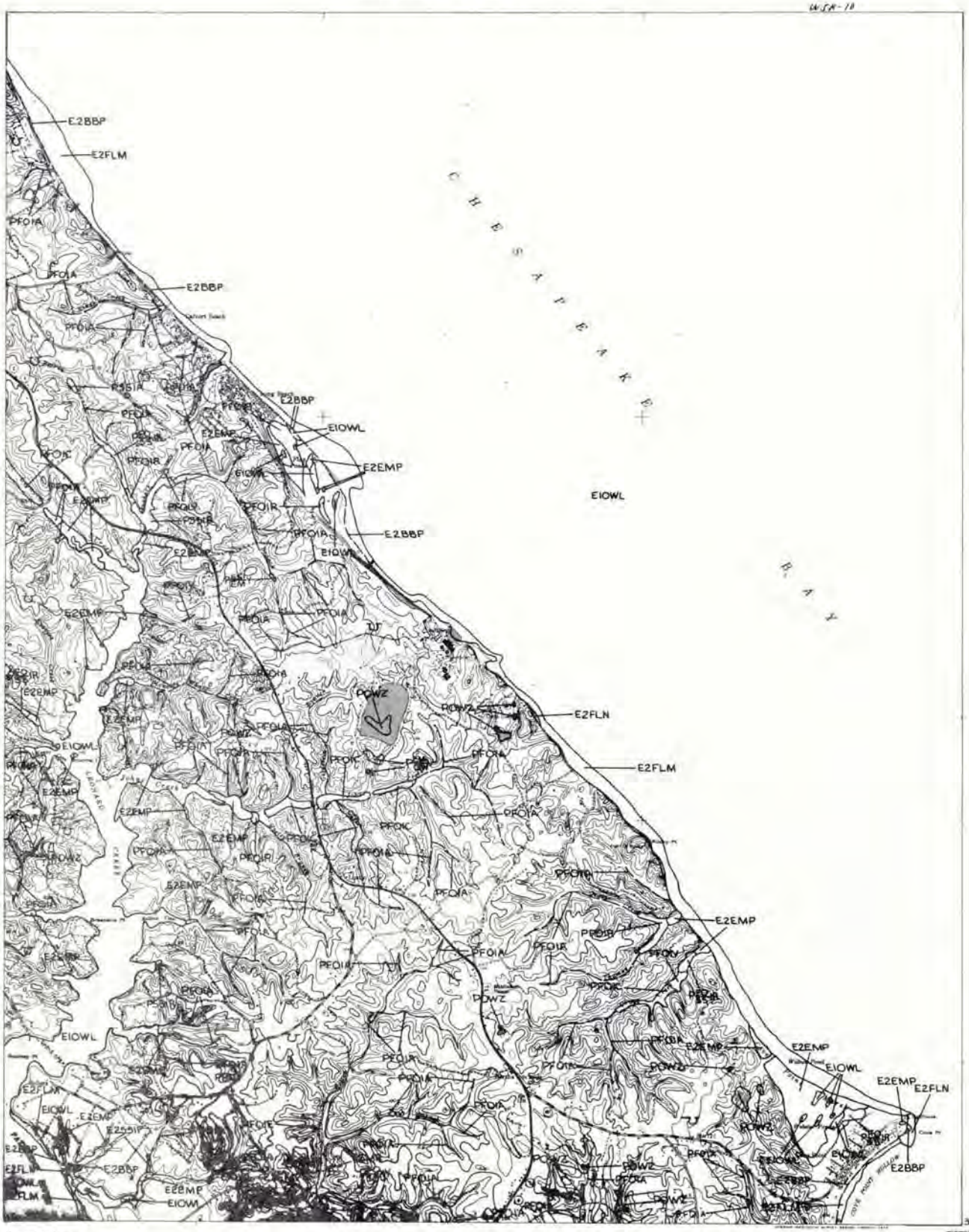
NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR



NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR



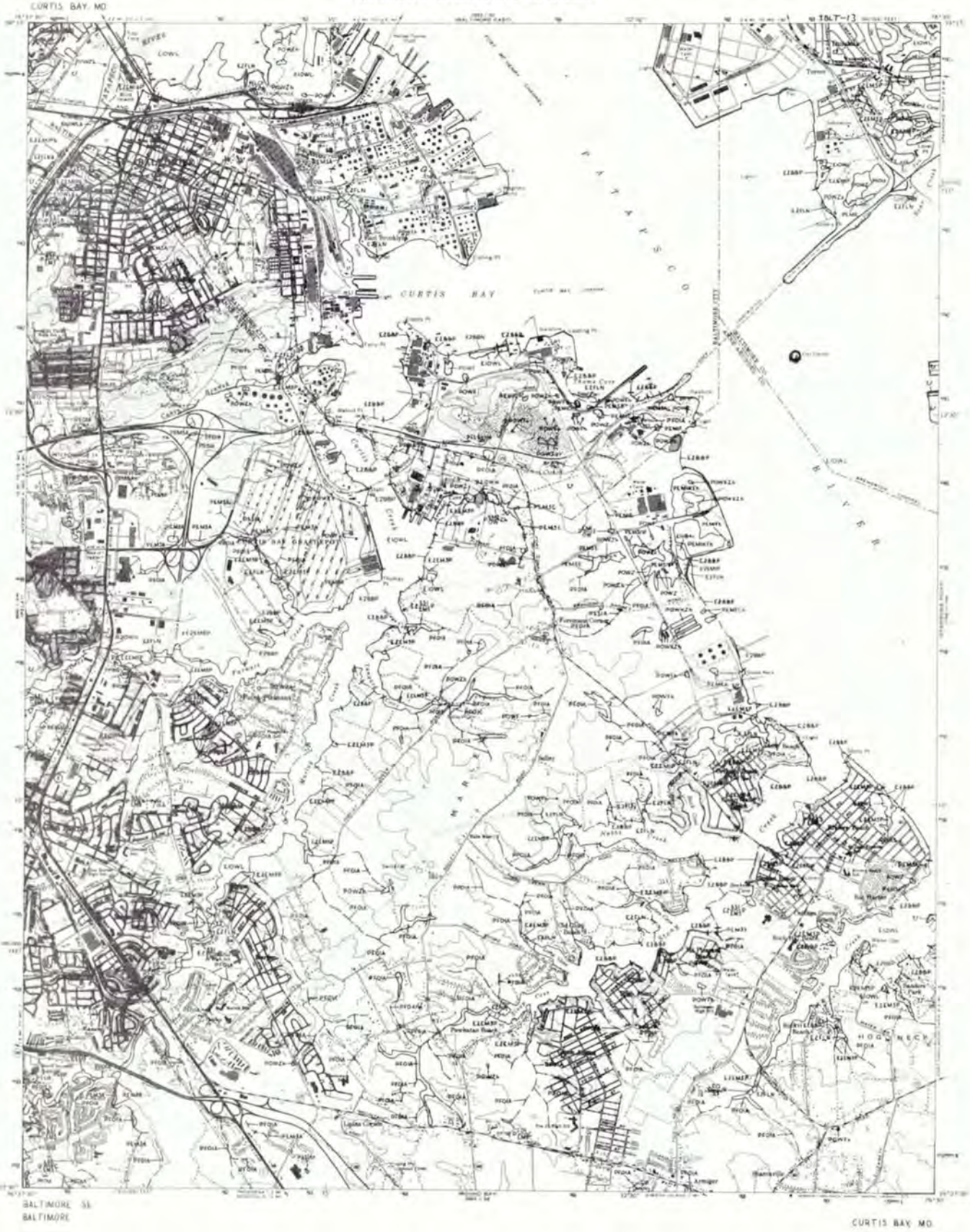
WASHINGTON SE
LEONARDTOWN

38°22'30"
76°22'30"

COVE POINT, MD.

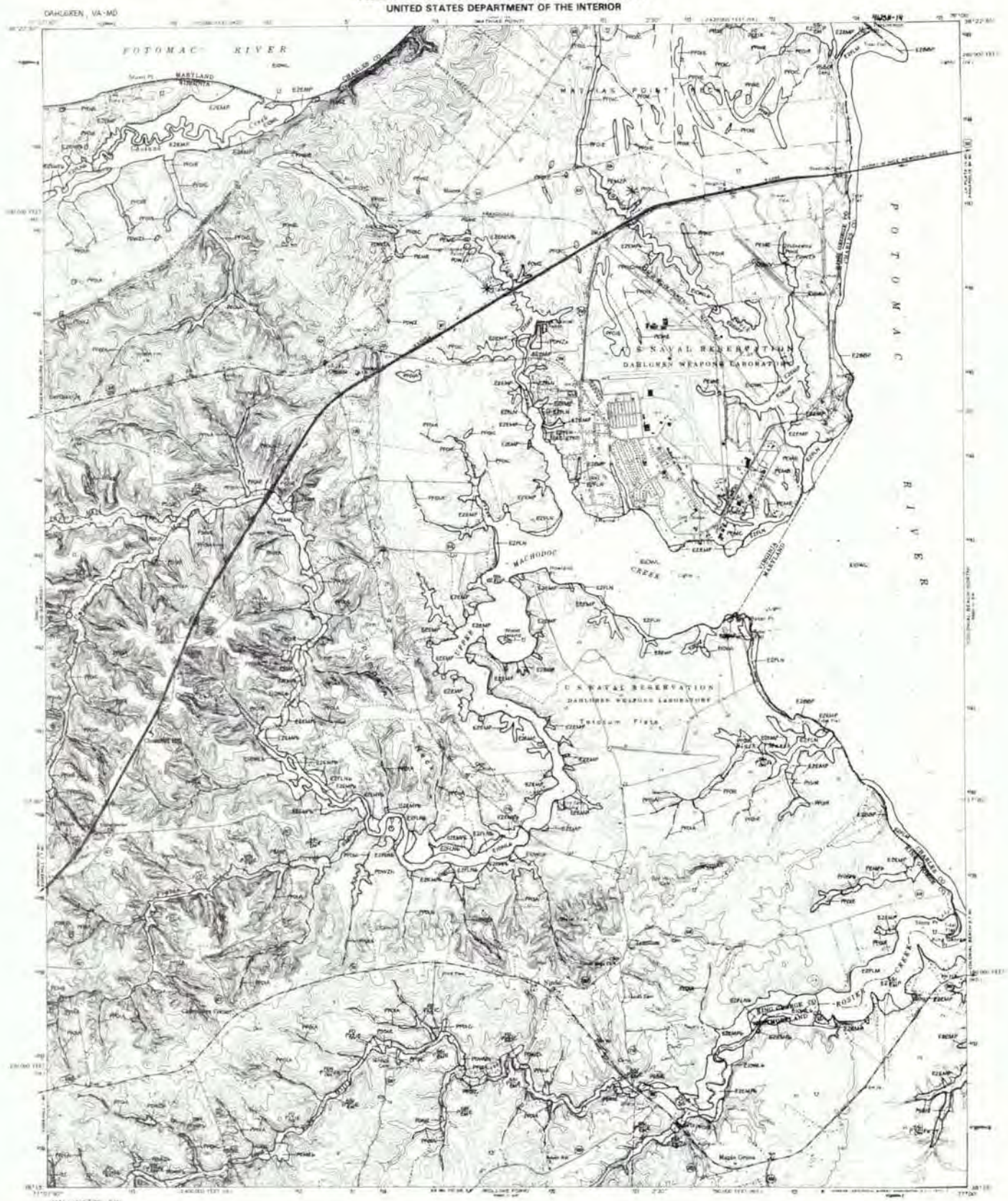
NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR



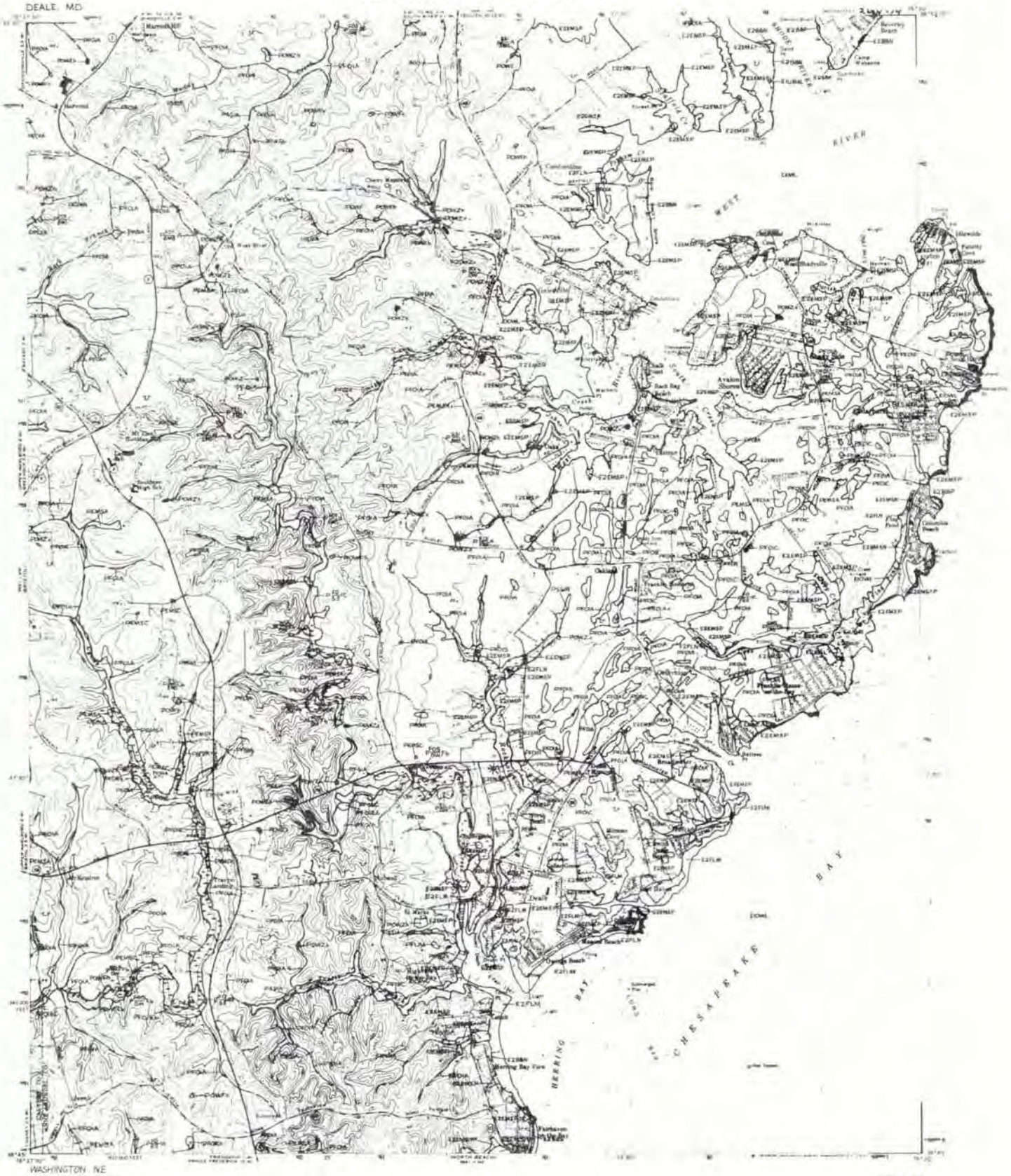
NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR



NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR

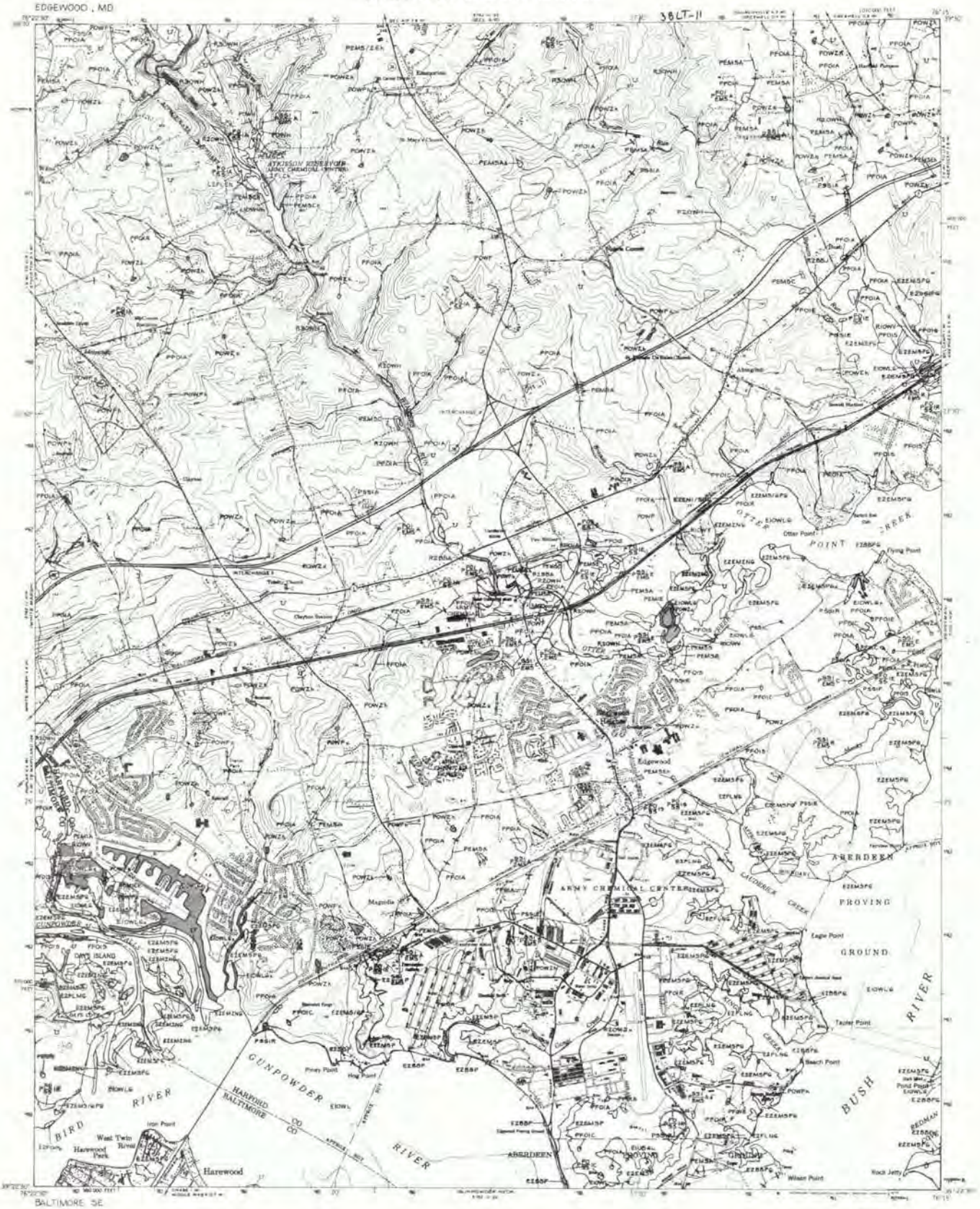


NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR

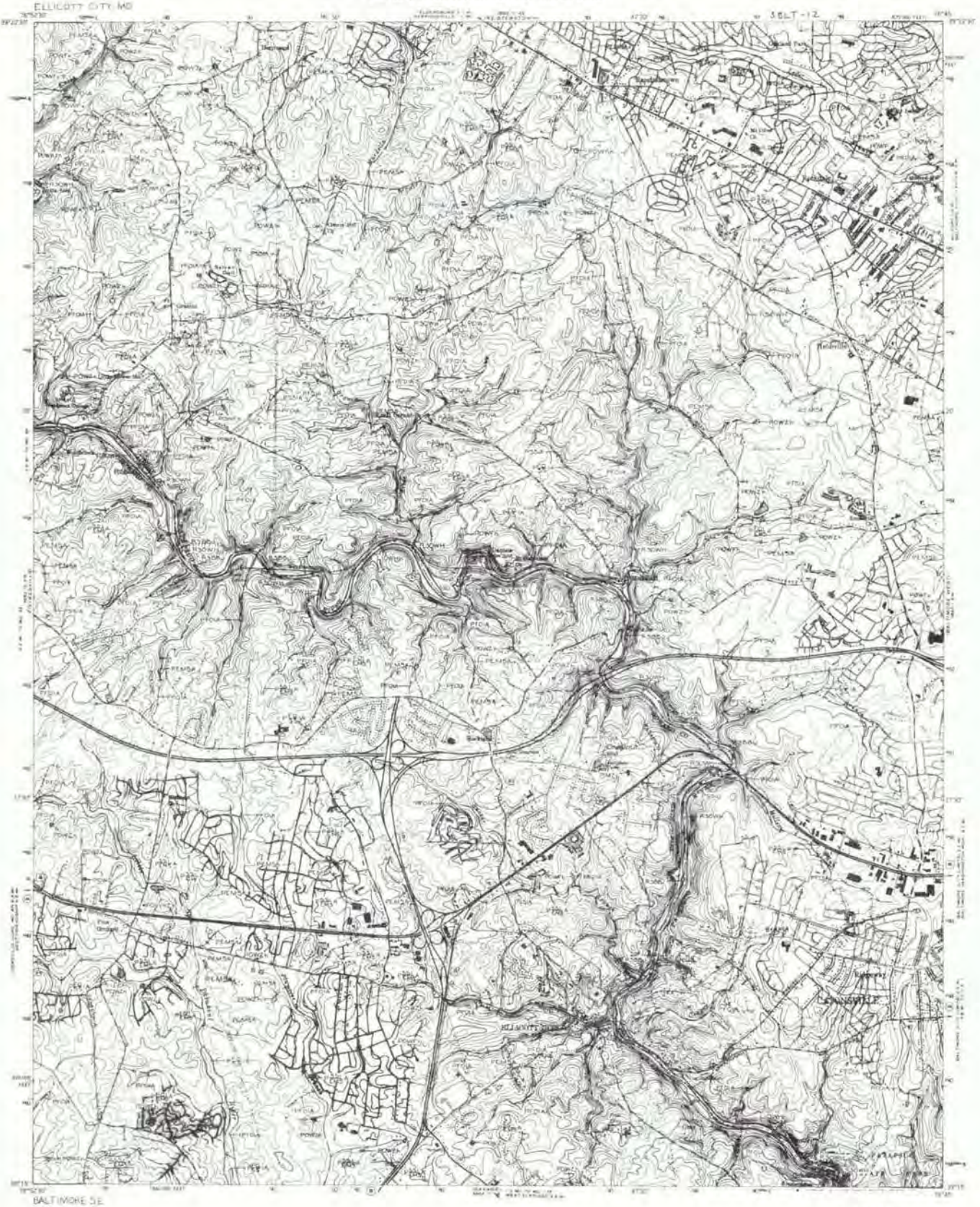
NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR



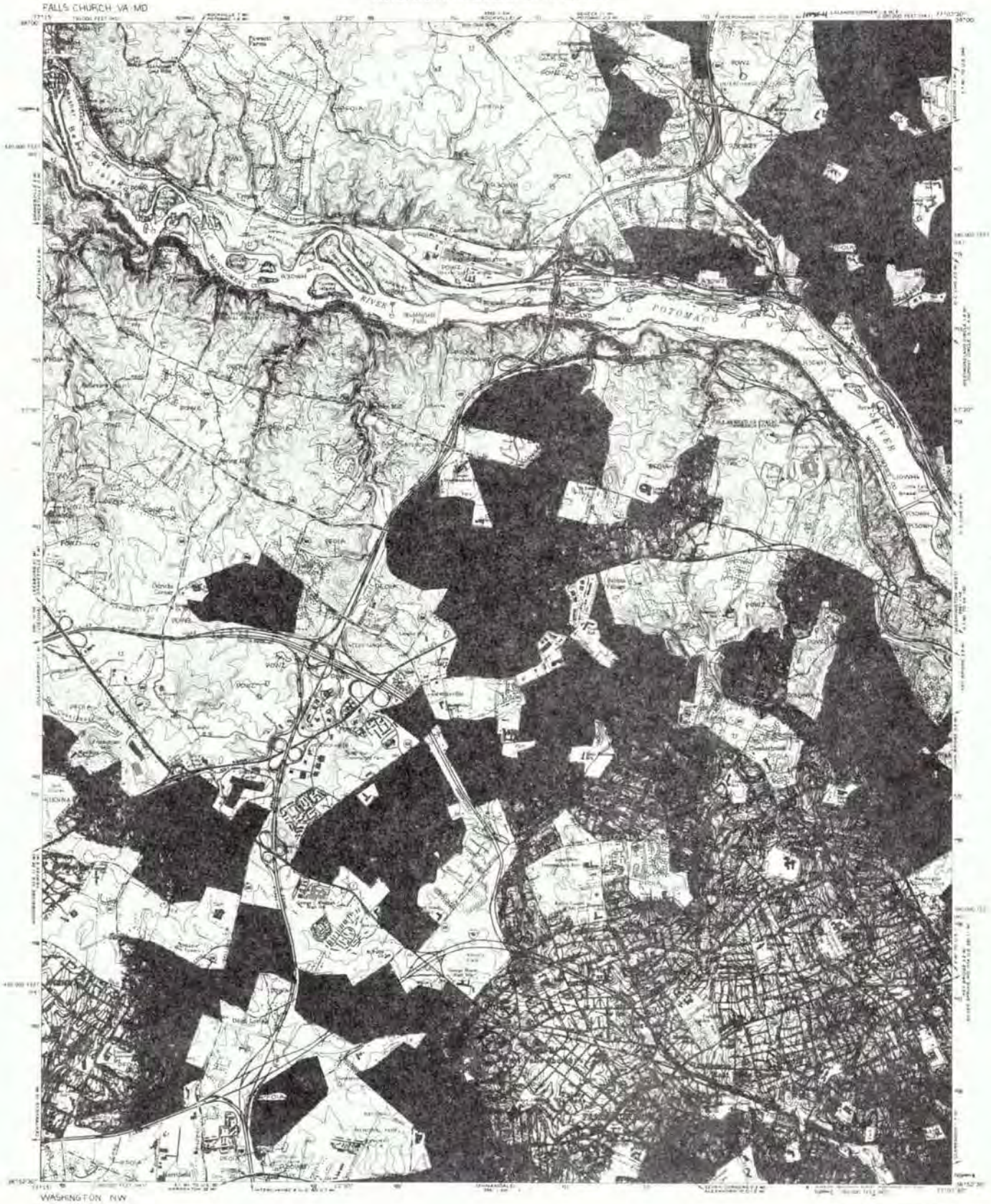
NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR



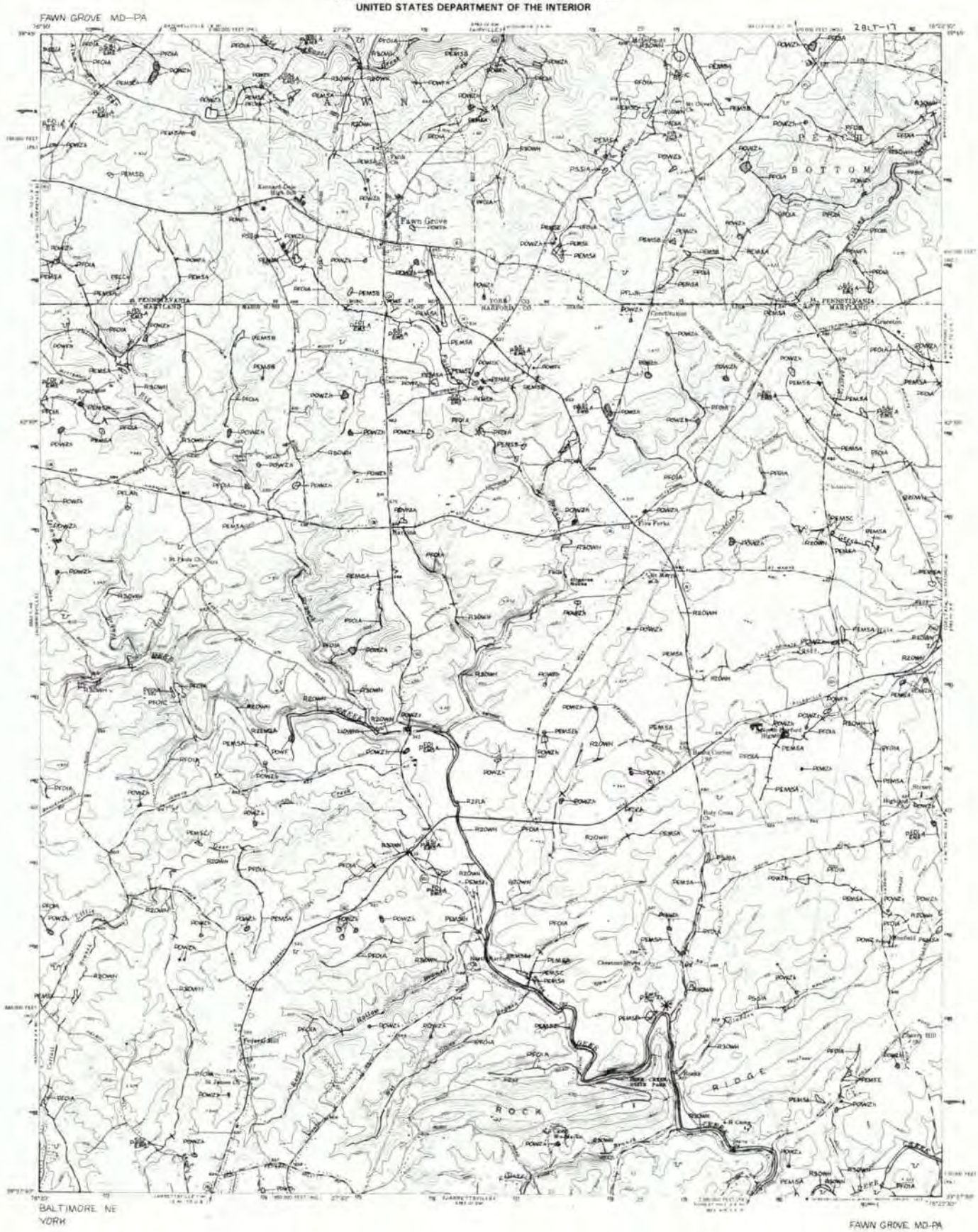
NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR



NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR



NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR

NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR

NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR

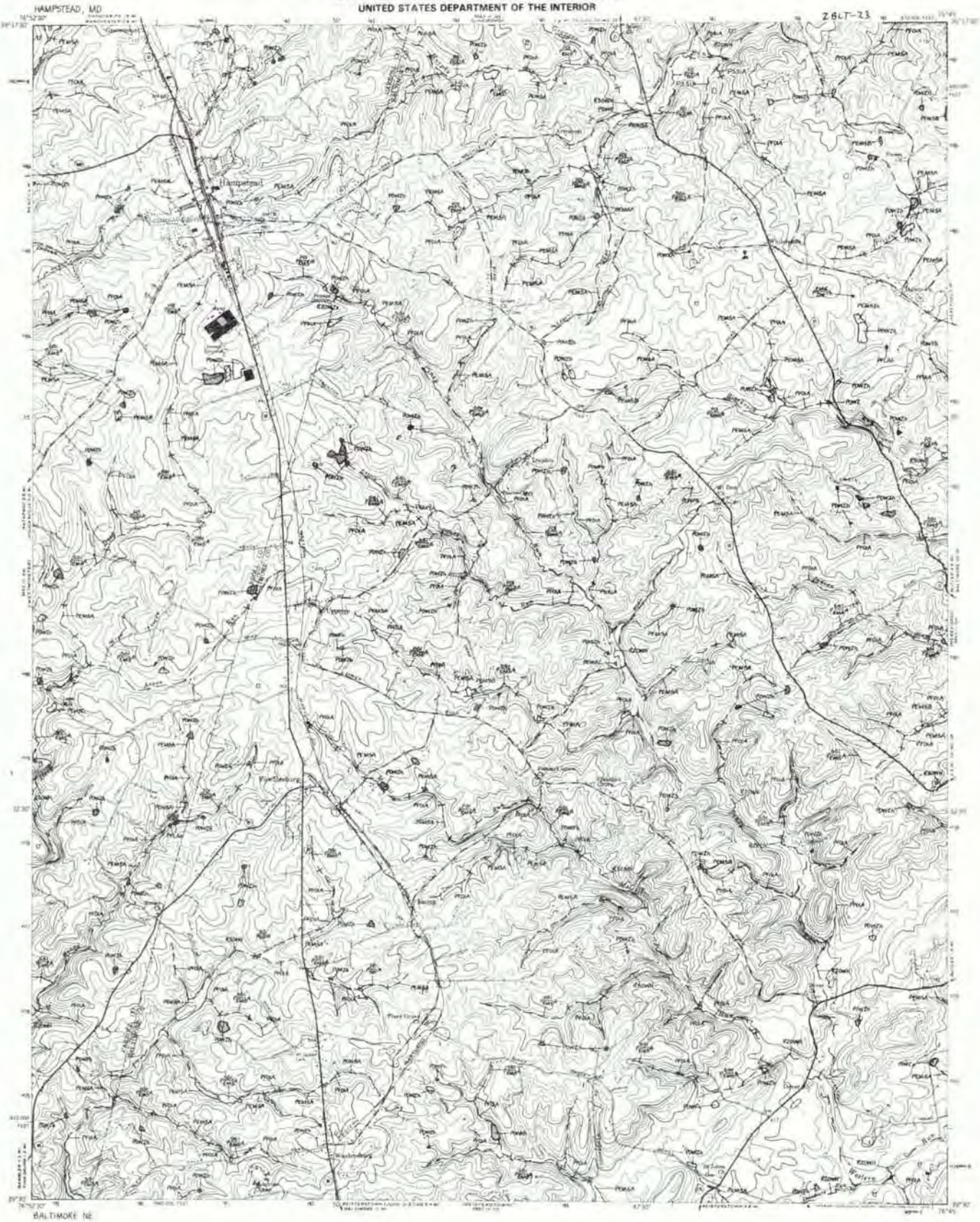

NATIONAL WETLANDS INVENTORY
UNITED STATES DEPARTMENT OF THE INTERIOR
GUNPOWDER NECK, MD
30LT-9
BUSH RIVER
GUNPOWDER RIVER
ABERDEEN PROVING GROUND
SALTPETER CREEK
DUNDEE CREEK
BALTIMORE HARFORD
CHESAPEAKE BAY
Maxwell Point
Oliver Point
Battery Point
Marshy Point
Bengies Point
Carroll Point
Lower Island Point
Pooles Island
BALTIMORE
GUNPOWDER NECK, MD

NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR

HAMPSTEAD, MD

Z6LT-23



BALTIMORE NE

YORK

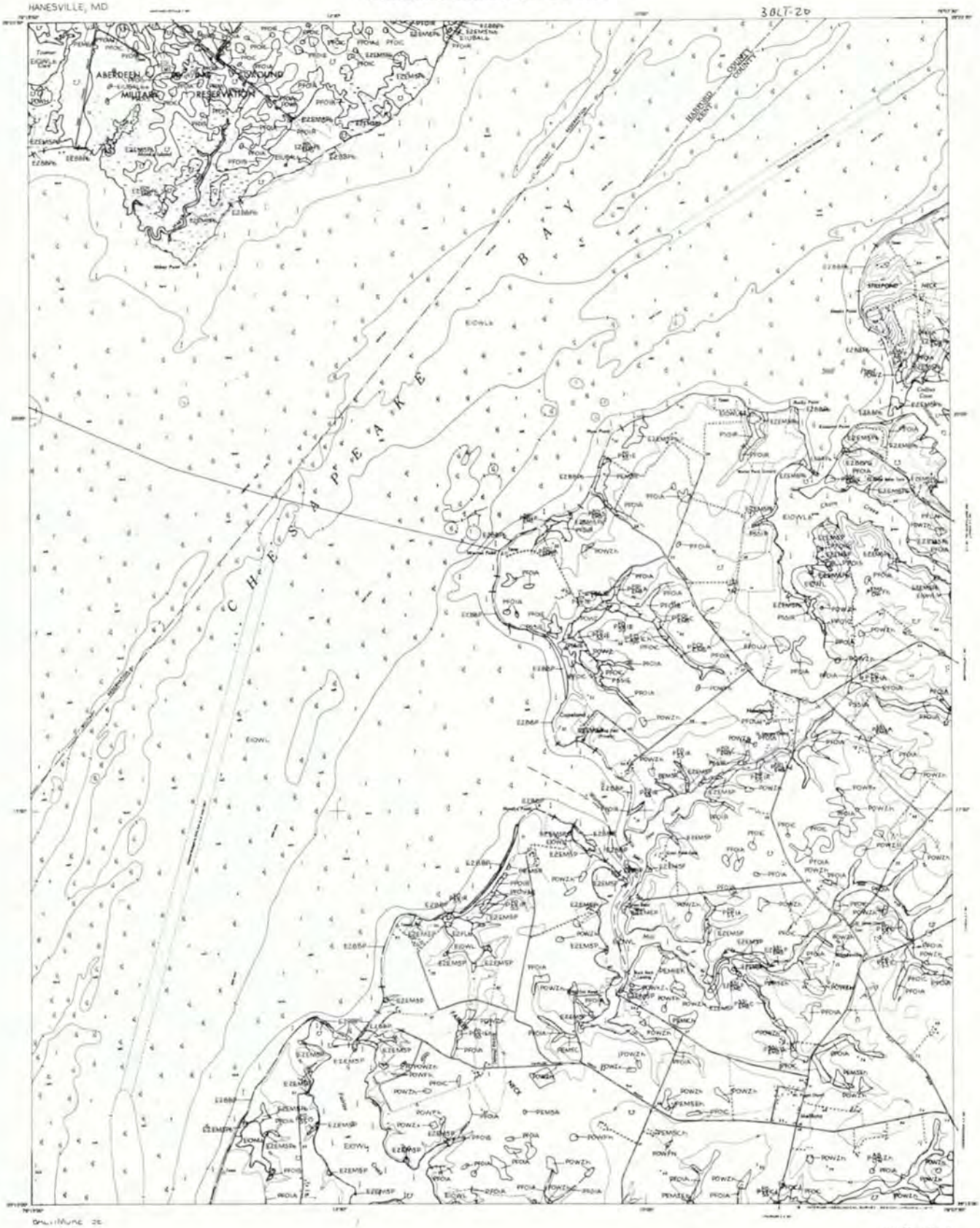
HAMPSTEAD, MD

NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR

HANESVILLE, MD

38LT-20

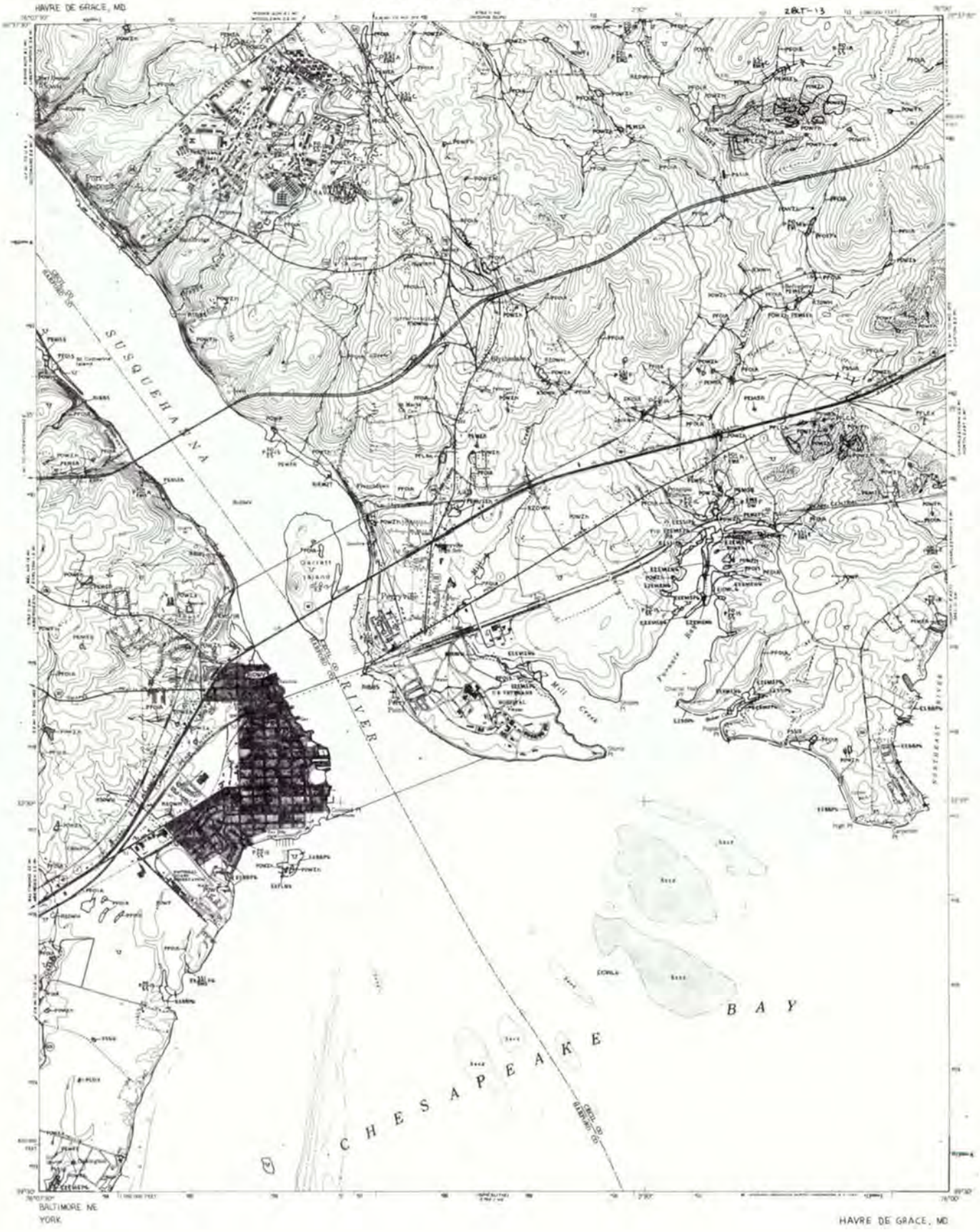


BALTIMORE

HANESVILLE, MD

NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR



NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR

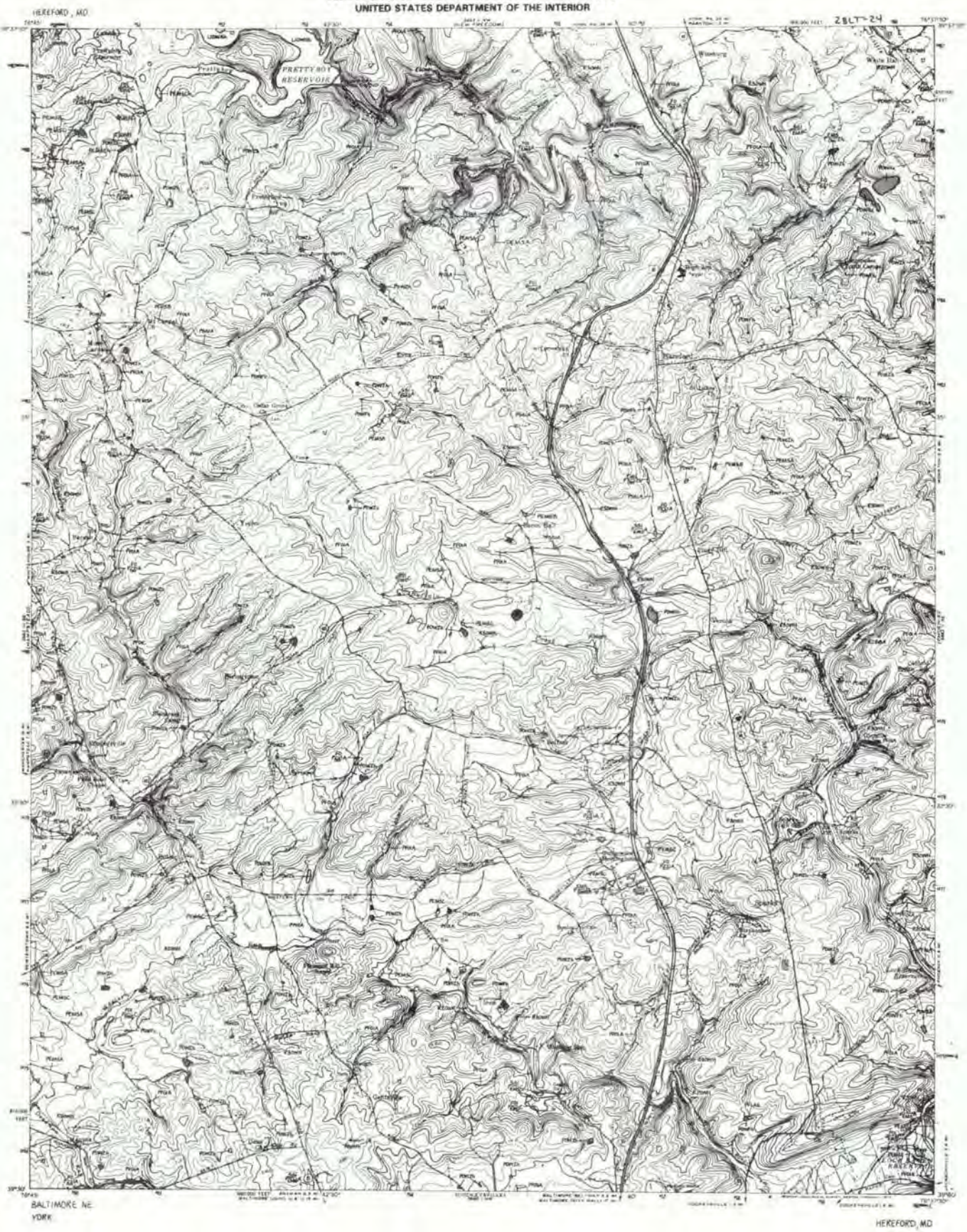
RCM 23

RICHMOND NE
TAPPAHANNOCK

HEATHSVILLE, VA.-MD.

NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR



NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR

WASHINGTON SE
LEONARDTOWN

HOLLYWOOD, MD

NATIONAL WETLANDS INVENTORY

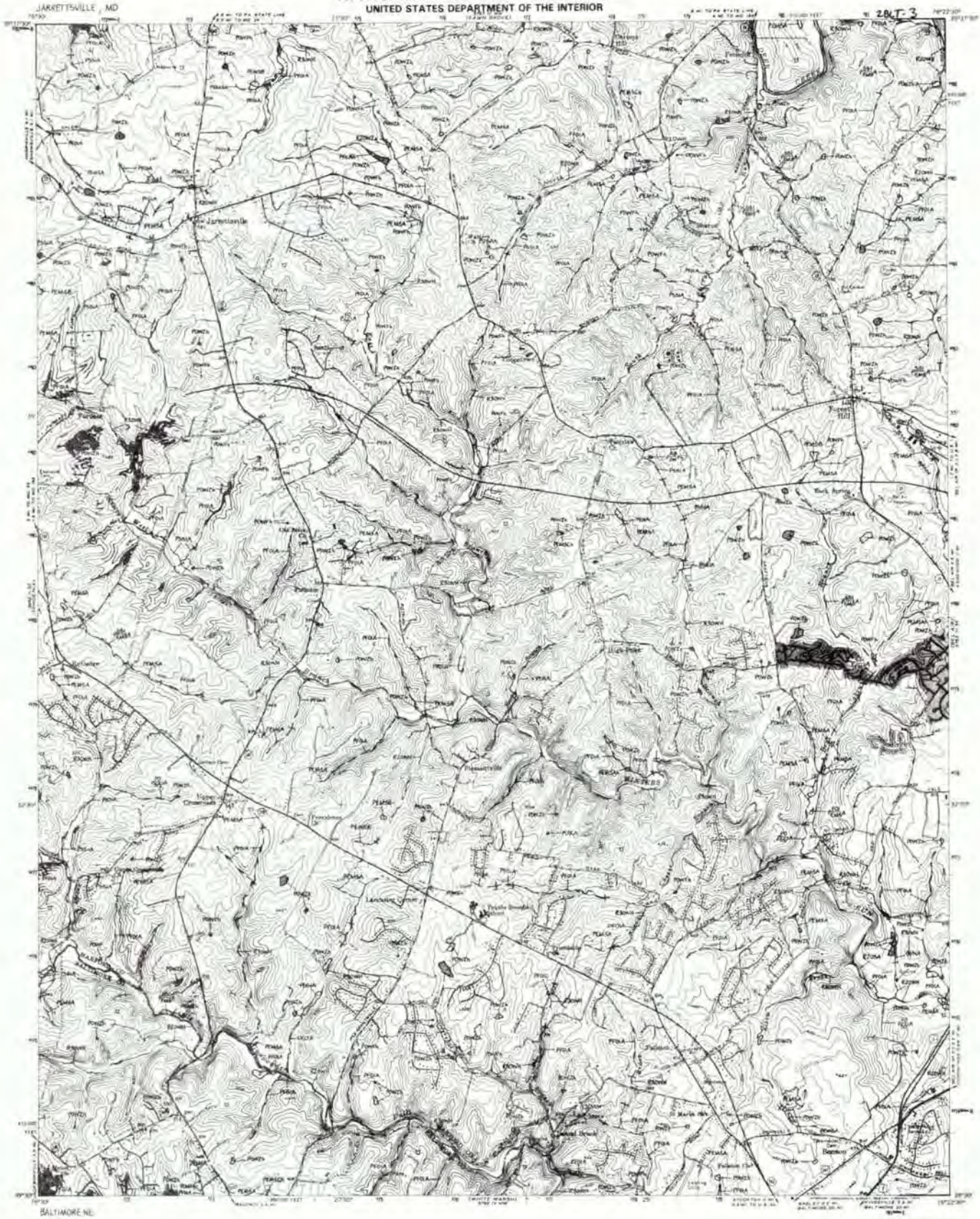
UNITED STATES DEPARTMENT OF THE INTERIOR

NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR

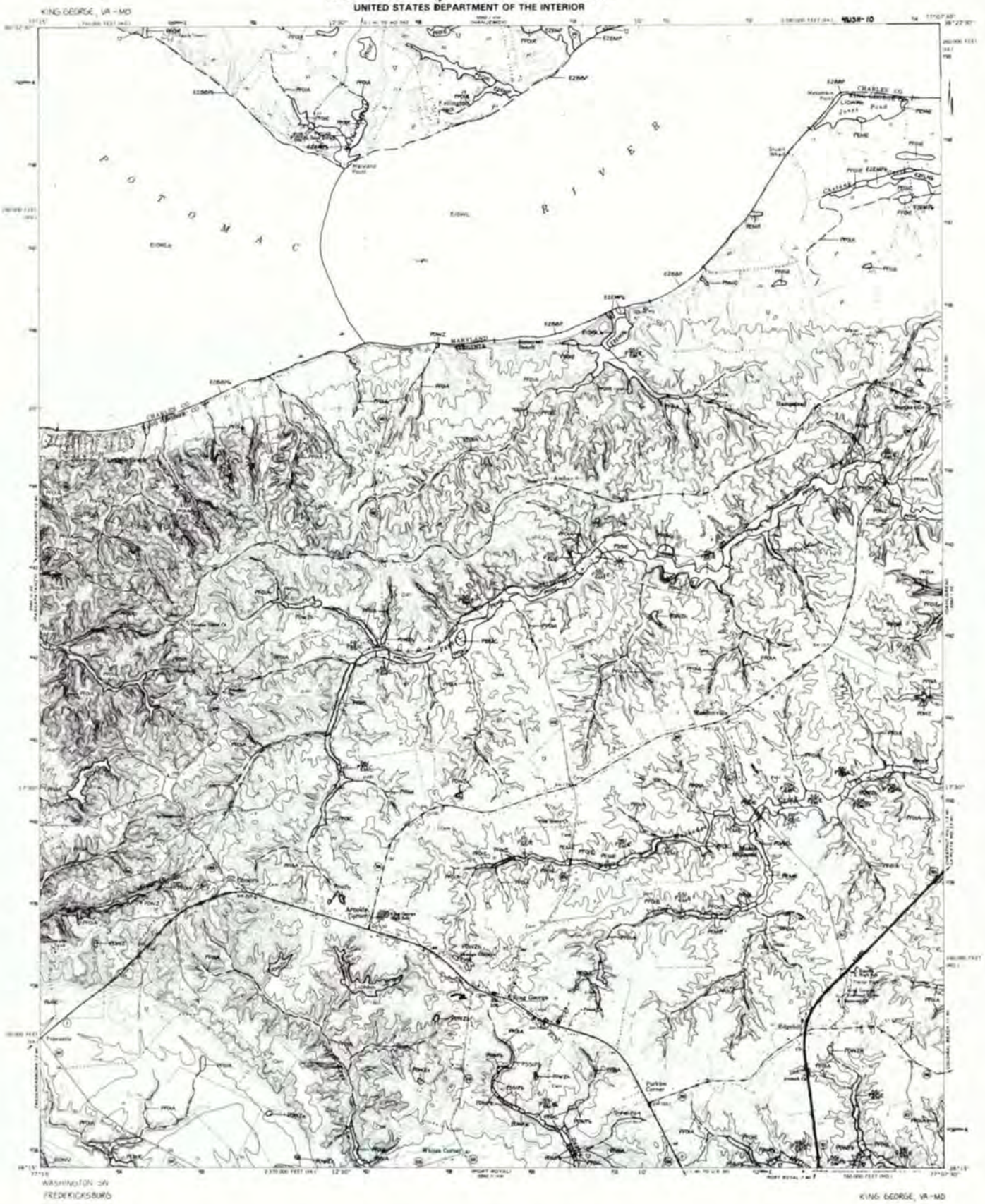
NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR



NATIONAL WETLANDS INVENTORY

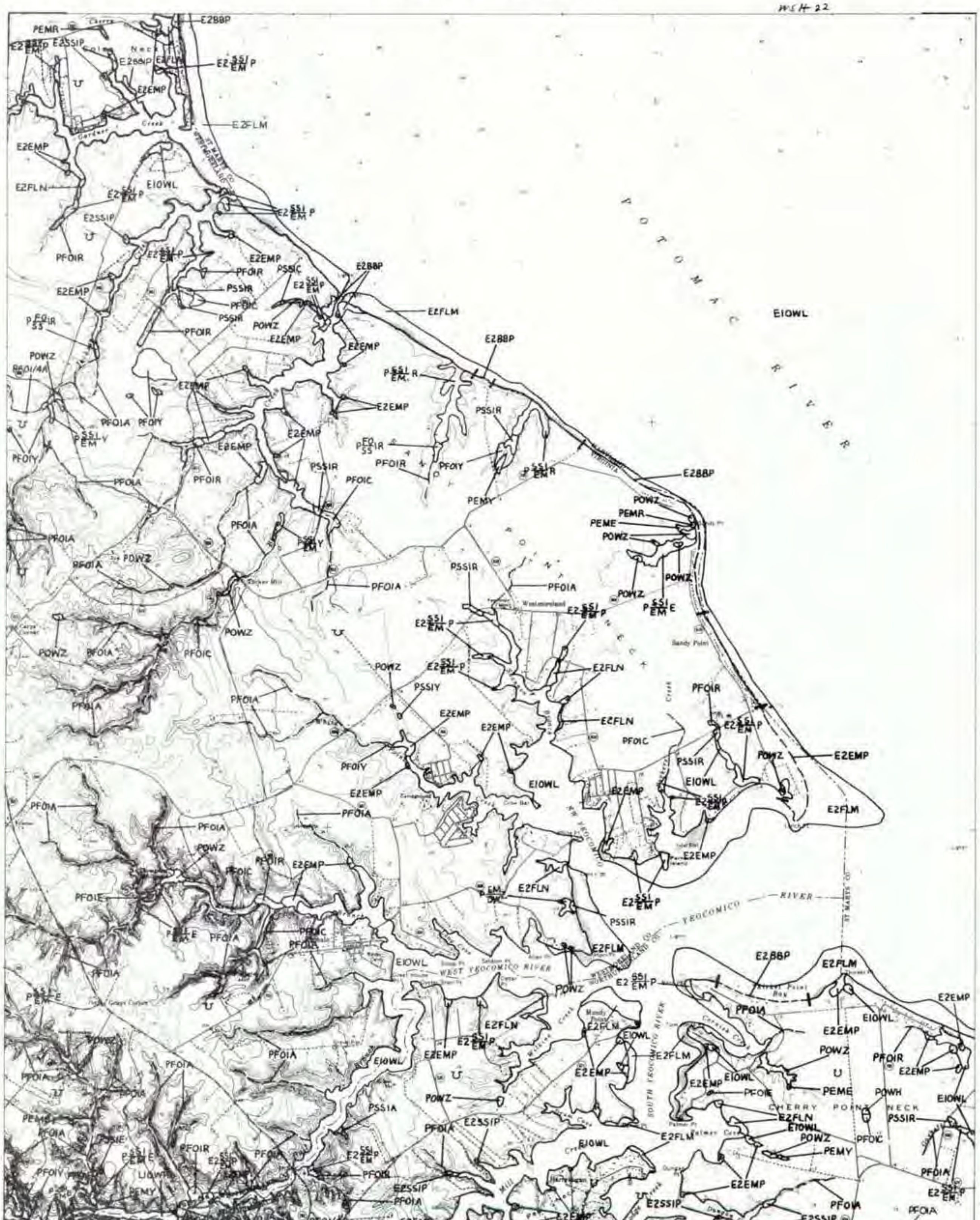
UNITED STATES DEPARTMENT OF THE INTERIOR



NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR

WSH 22



WASHINGTON SE

LEONARDTOWN

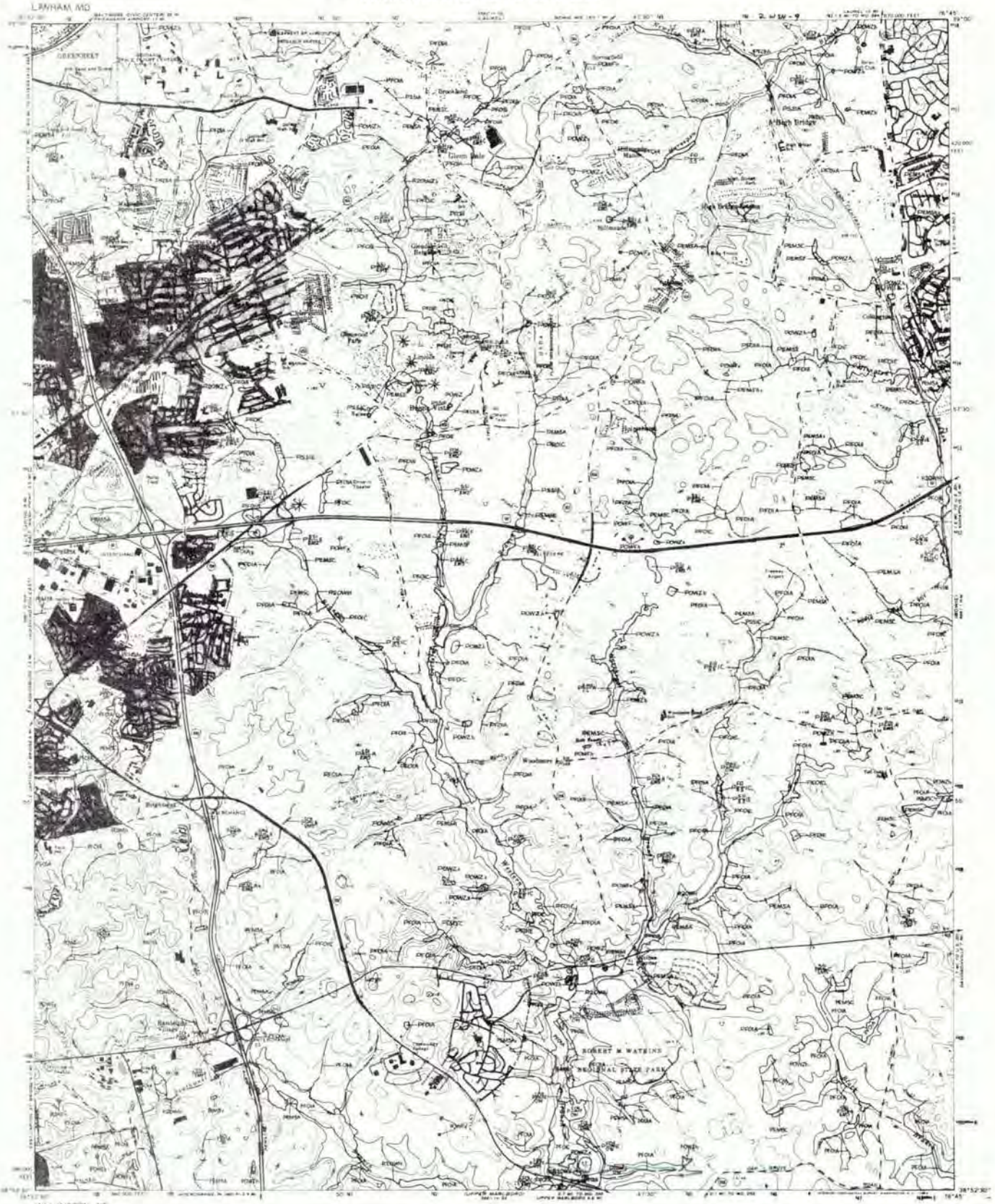
38°00'

76°30'

KINSALE, VA.-MD.

NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR



NATIONAL WETLANDS INVENTORY

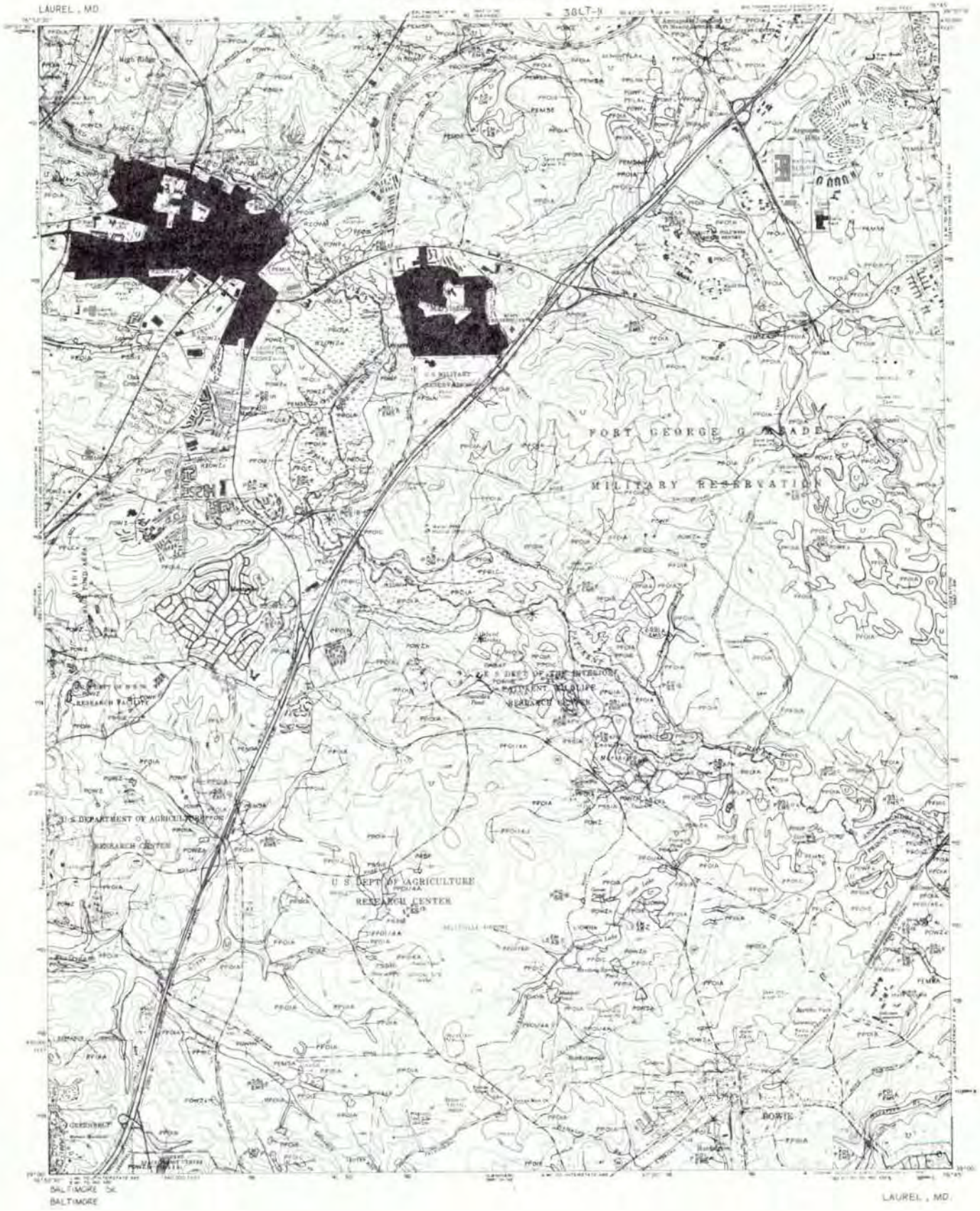
UNITED STATES DEPARTMENT OF THE INTERIOR

WASHINGTON EAST

LA PLATA, MD.

NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR



NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR

38°15'

76°37'30"

WASHINGTON SE
LEONARDTOWN

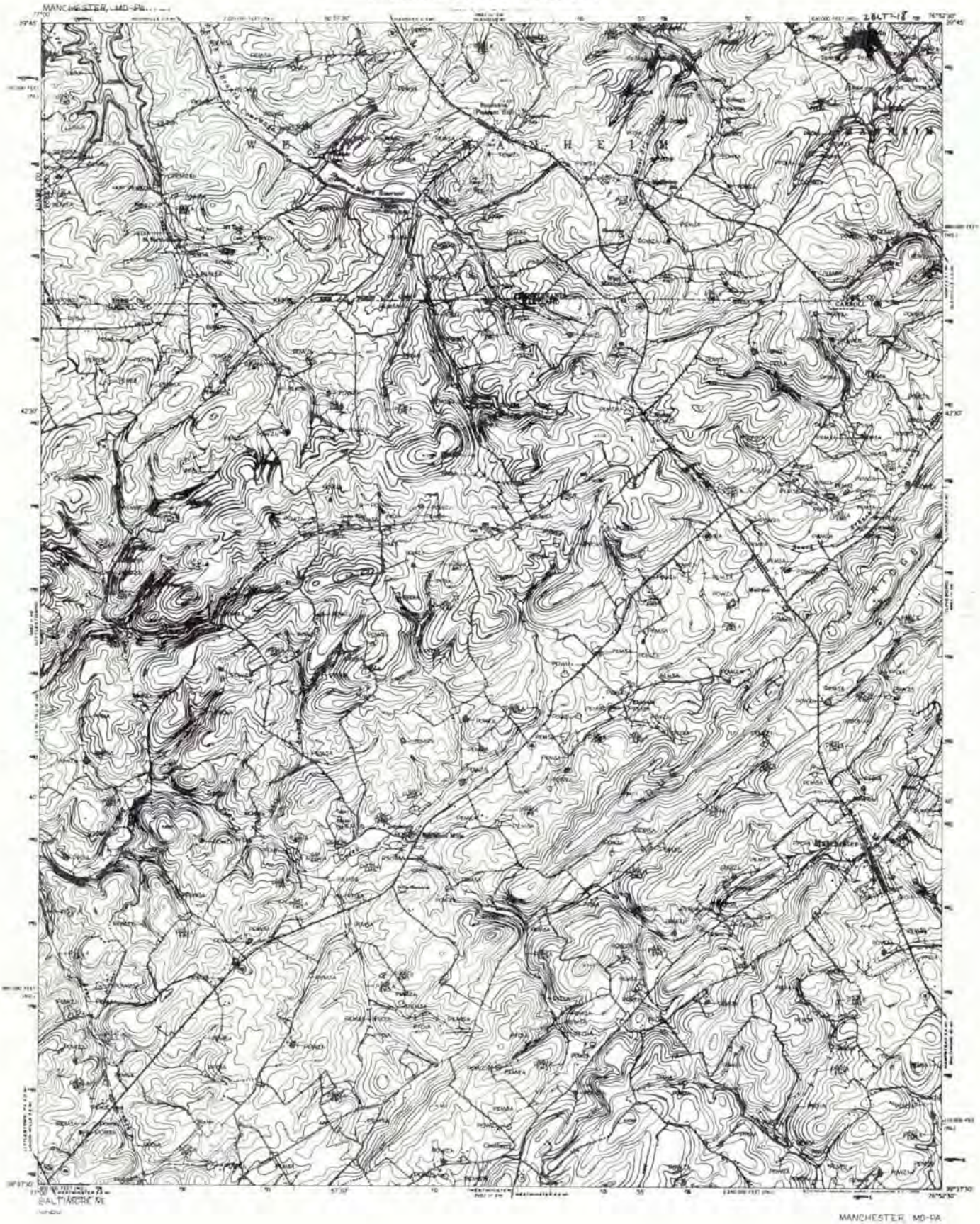
LEONARDTOWN, MD

NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR

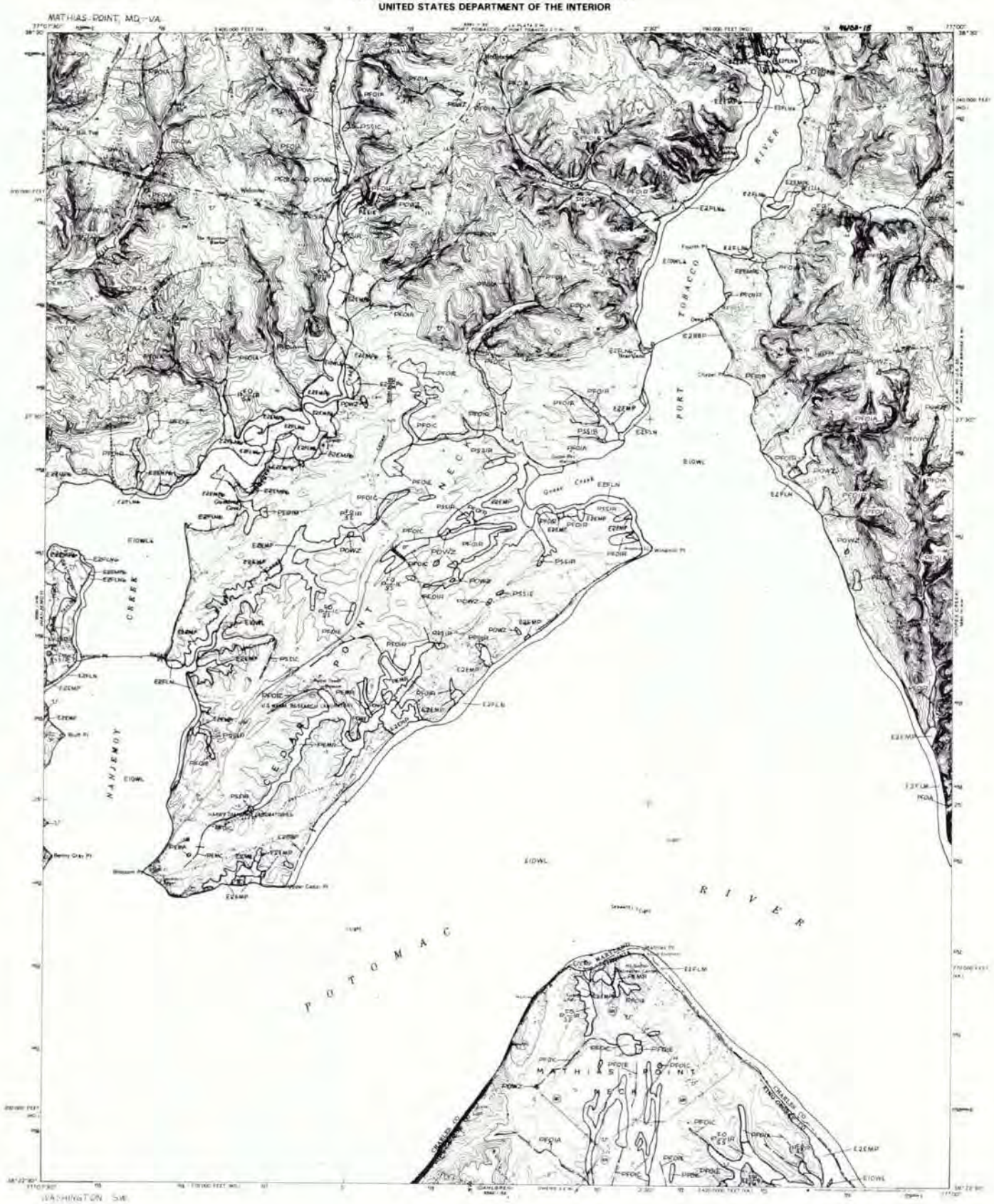
NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR



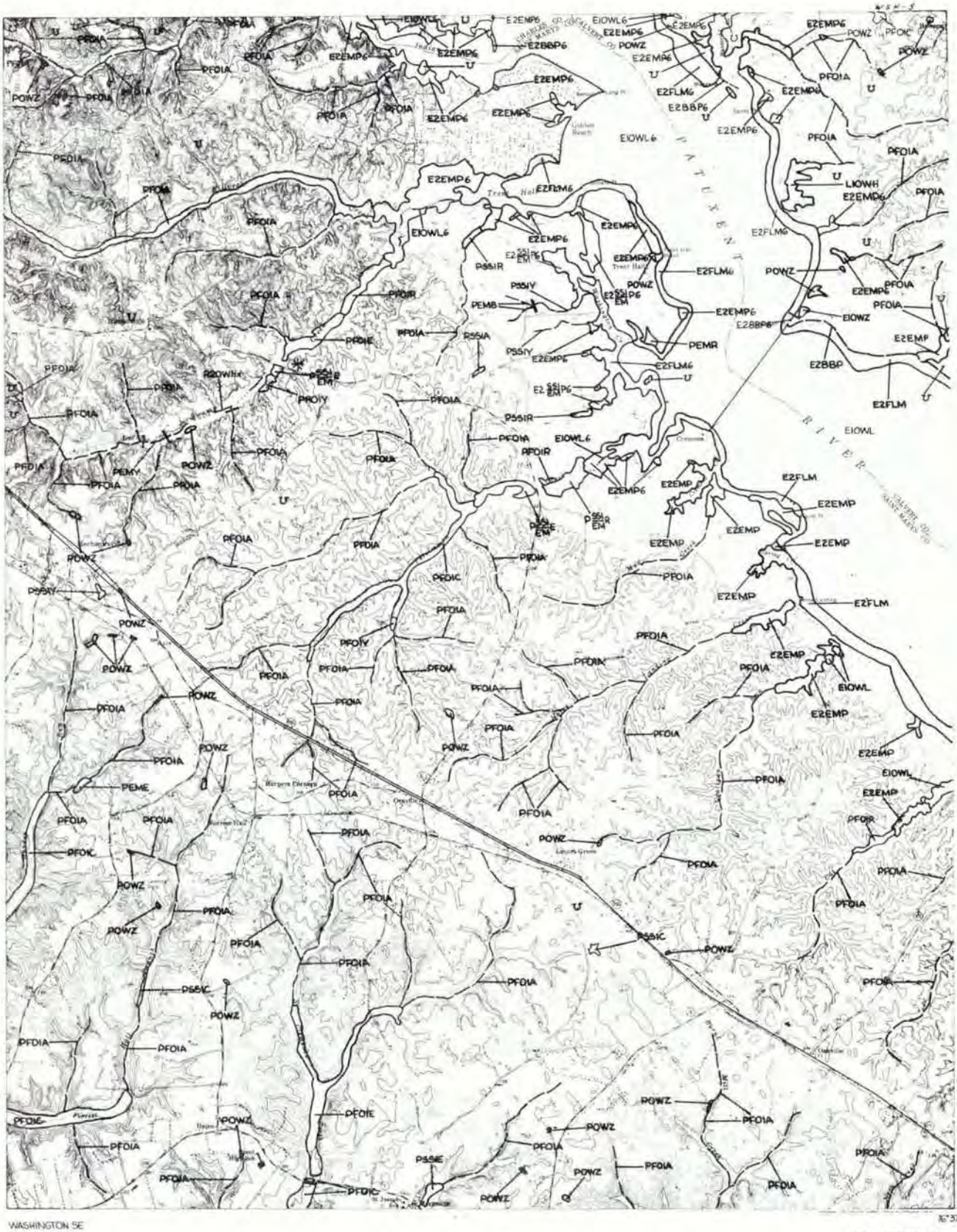
NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR



NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR



WASHINGTON SE
LEONARDTOWN

MECHANICSVILLE MD

NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR

NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR

WASHINGTON NW
WASHINGTON WEST

MOUNT VERNON, VA—MD

NATIONAL WETLANDS INVENTORY

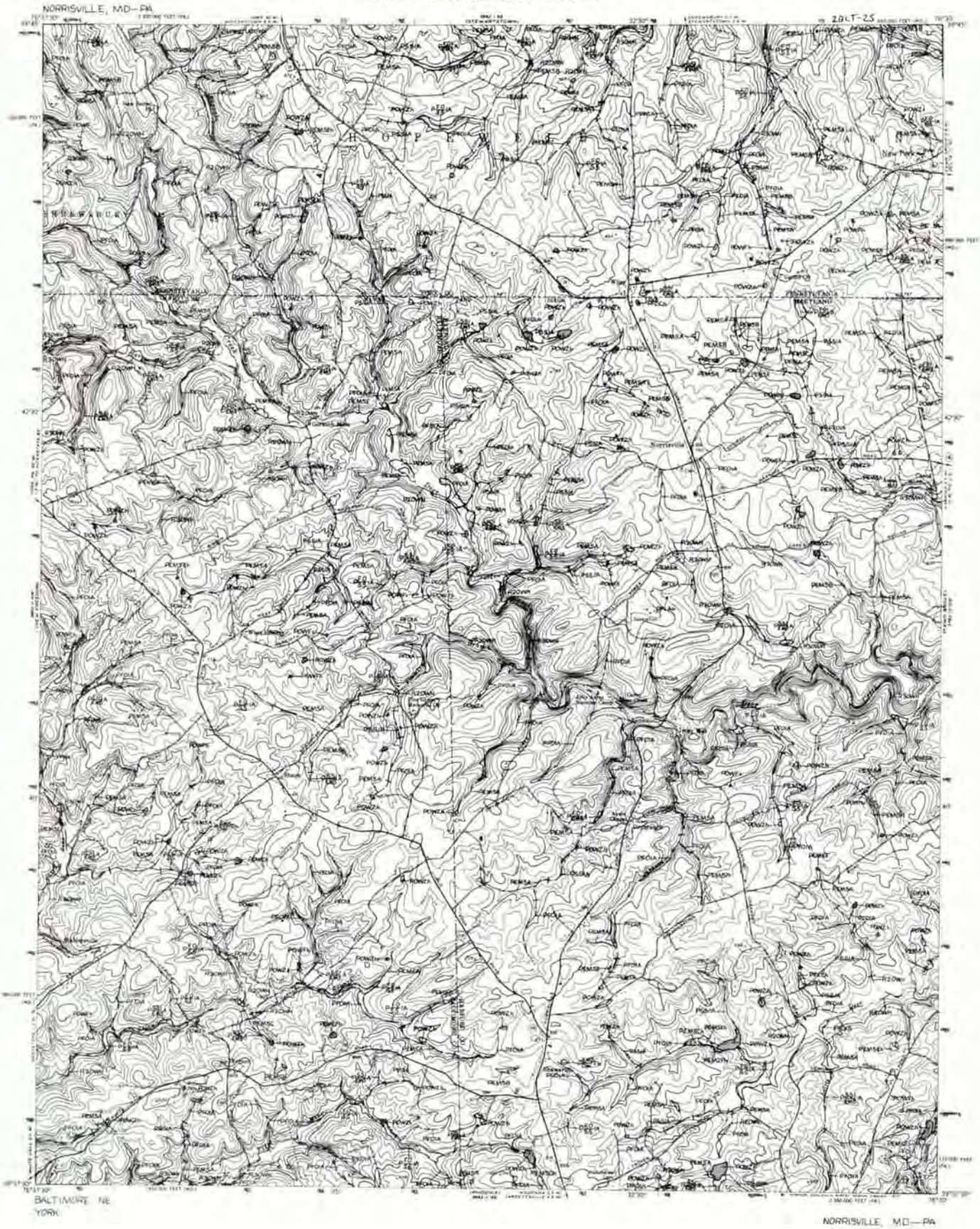
UNITED STATES DEPARTMENT OF THE INTERIOR

NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR

NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR



NATIONAL WETLANDS INVENTORY

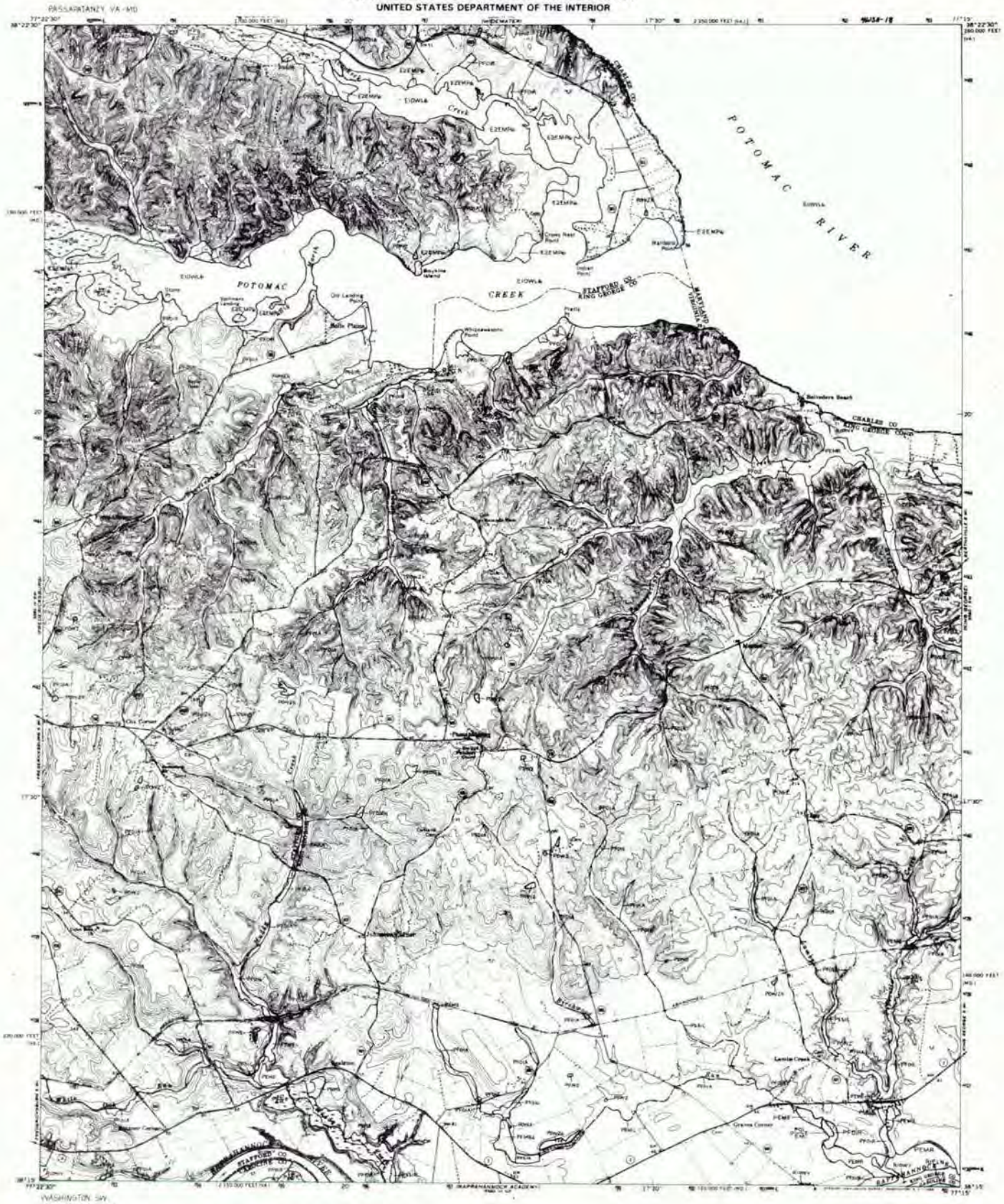
UNITED STATES DEPARTMENT OF THE INTERIOR

NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR

NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR



PASSAPATANZY, VA-MD

WASHINGTON, SW.

FREDERICKSBURG

NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR

NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR

PHOENIX, MD

28LT-21

BALTIMORE NE

YORK

PHOENIX, MD

NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR

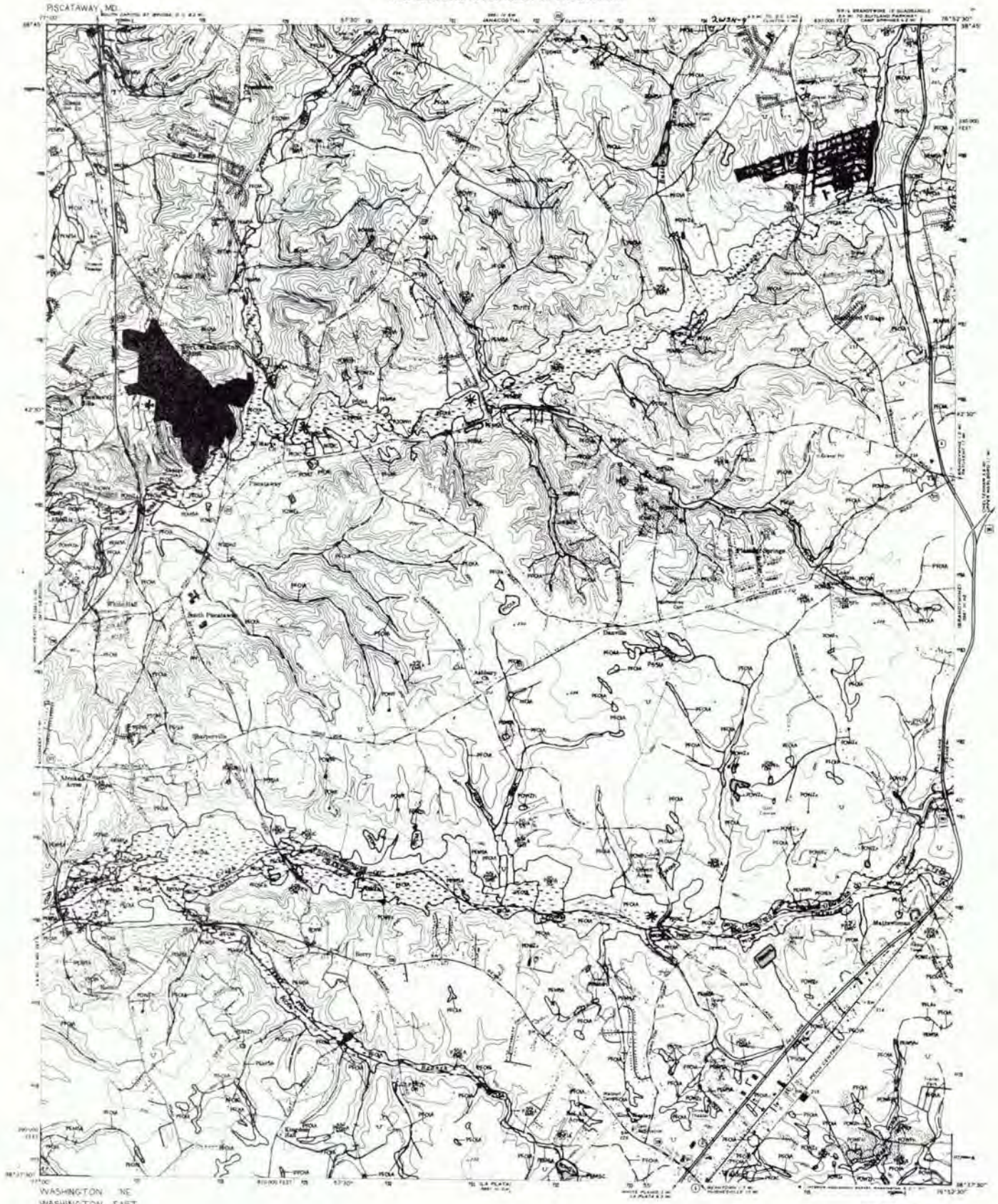
WASHINGTON SE
LEONARDTOWN

38°07'30"
76°30'

PINEY POINT, MD-VA

NATIONAL WETLANDS INVENTORY

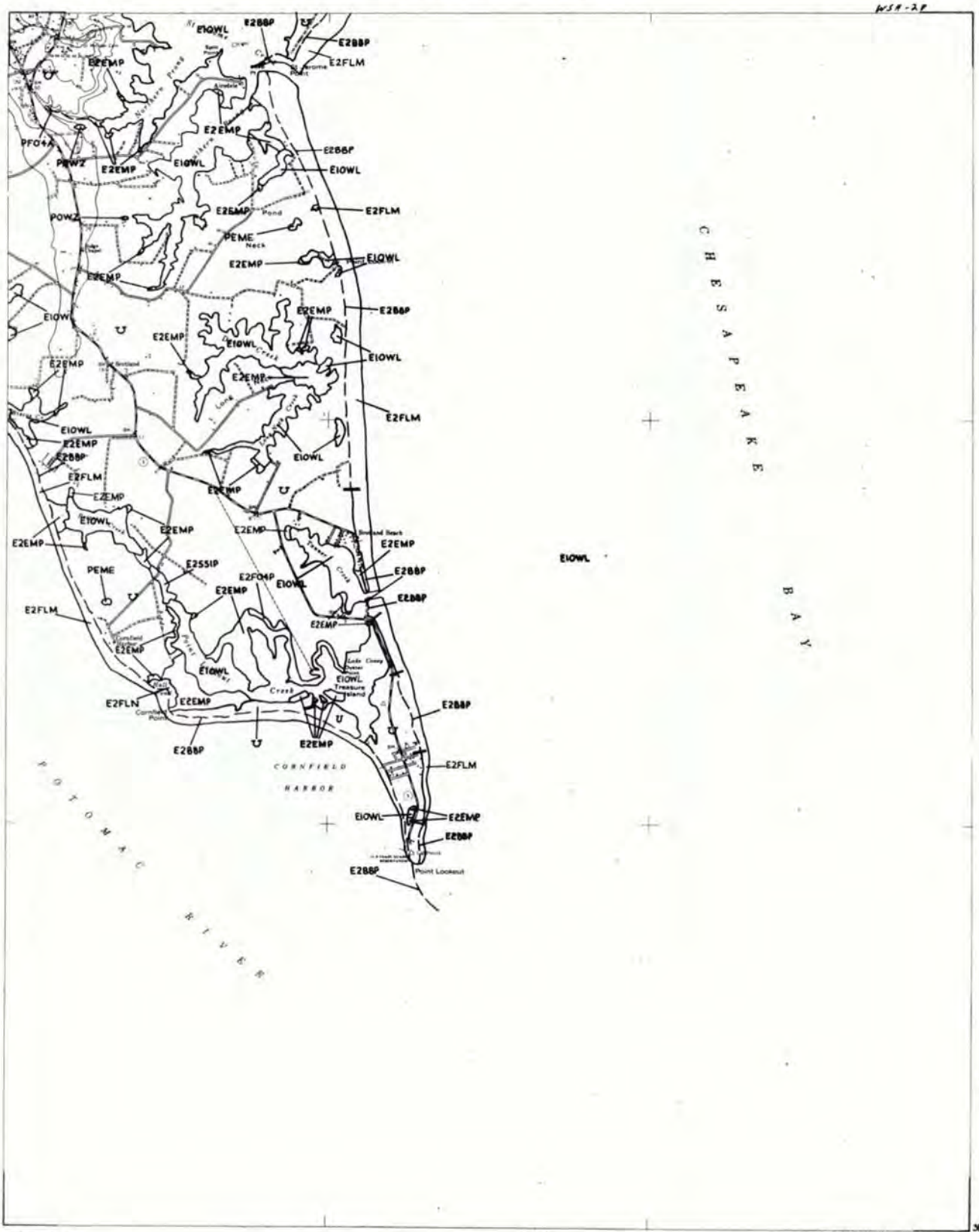
UNITED STATES DEPARTMENT OF THE INTERIOR



NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR

WSA-2P



38°00'

76°15'

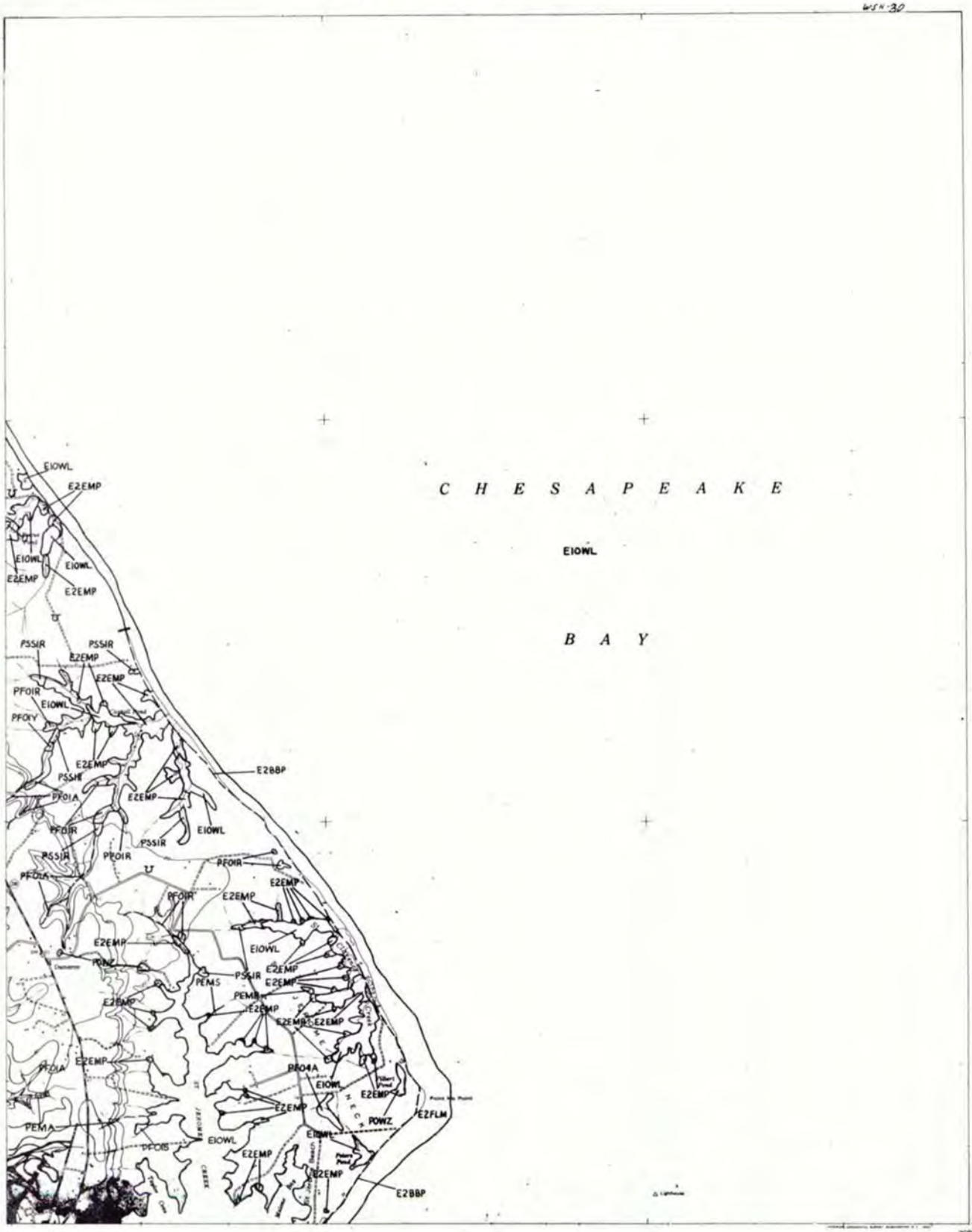
WASHINGTON SE
LEONARDTOWN

POINT LOOKOUT, MD

NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR

45N-30



38°07'30"

WASHINGTON SE
LEONARDTOWN

POINT NO POINT, MD.

NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR

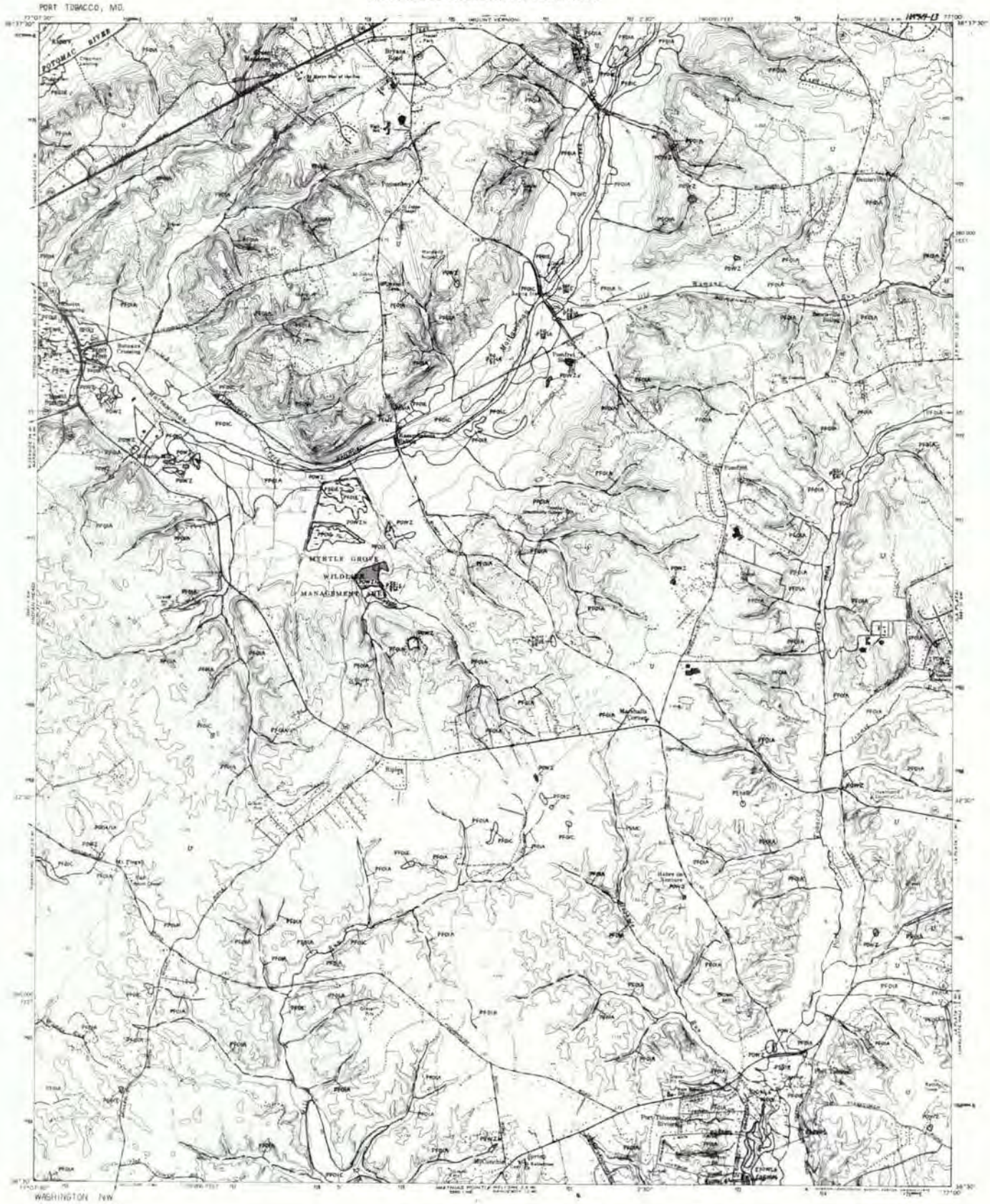
WASHINGTON SE
LEONARDTOWN

38°22'30"
76°52'30"

POPES CREEK, MD

NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR



NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR

WASHINGTON NE
WASHINGTON EAST

PRINCE FREDERICK, MD

NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR

NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR

NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR

NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR

WASHINGTON SE
LEONARDTOWN

ROCK POINT, MD

NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR

NATIONAL WETLANDS INVENTORY

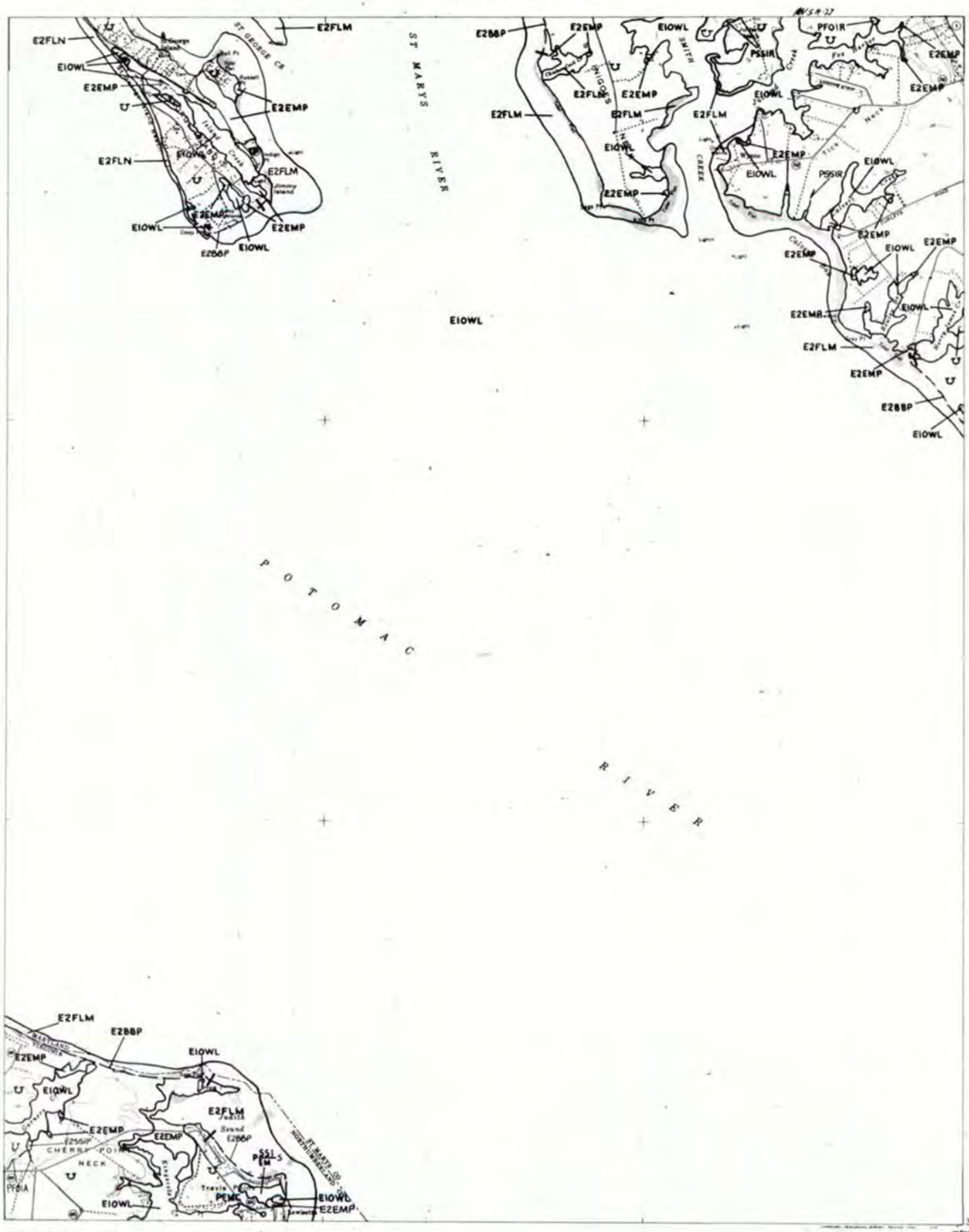
UNITED STATES DEPARTMENT OF THE INTERIOR

WASHINGTON SE
LEONARDTOWN

ST. CLEMENTS ISLAND, MD-VA

NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR



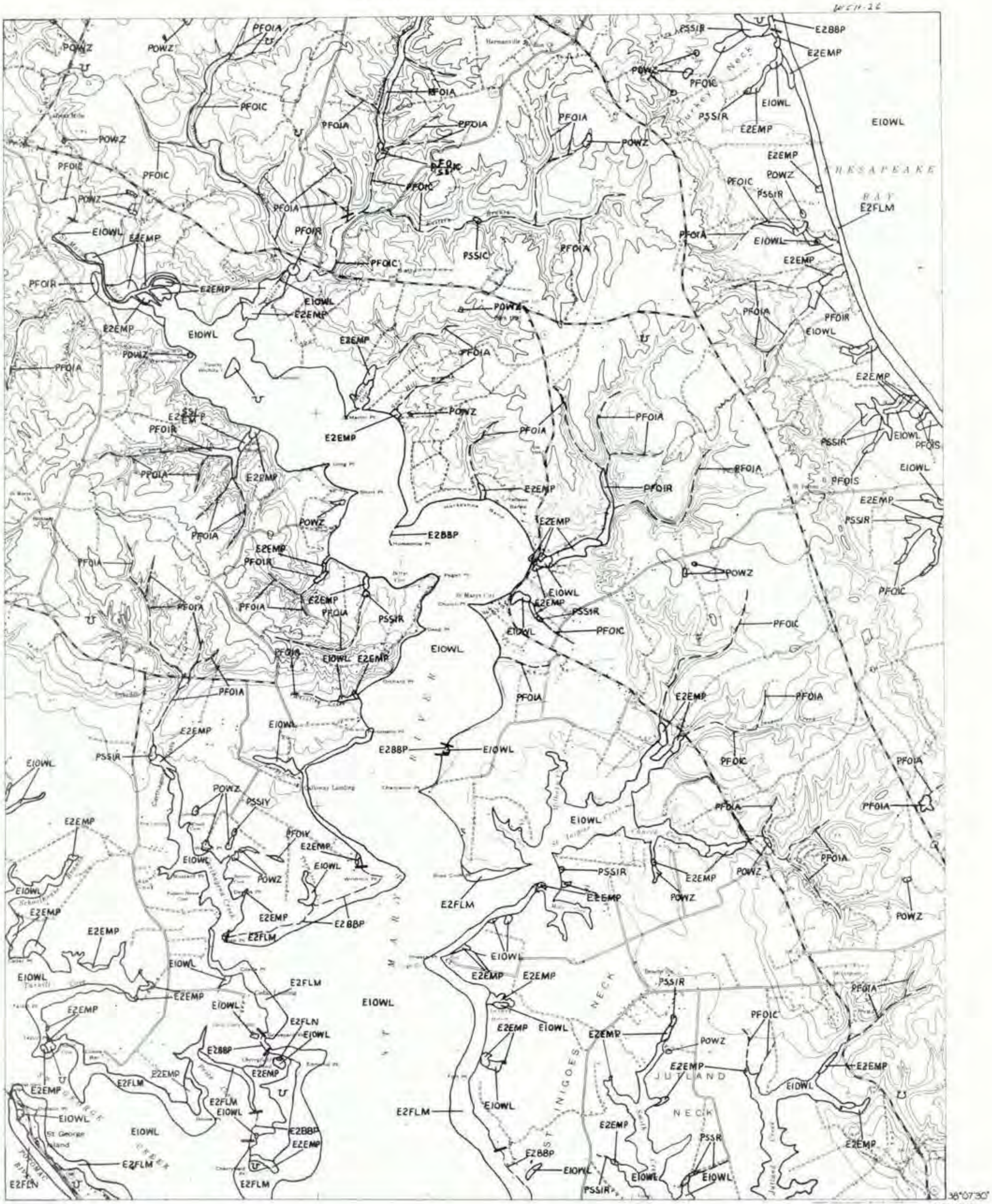
WASHINGTON SE
LEONARDTOWN

35°00'
76°22'30"

SIGEORGE ISLAND, MD.-VA.

NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR



WASHINGTON SE
LEONARDTOWN

ST MARY'S CITY, MD

NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR

SAVAGE, MD

BALTIMORE SE
BALTIMORE

SAVAGE, MD

NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR

WASHINGTON SE
LEONARDTOWN

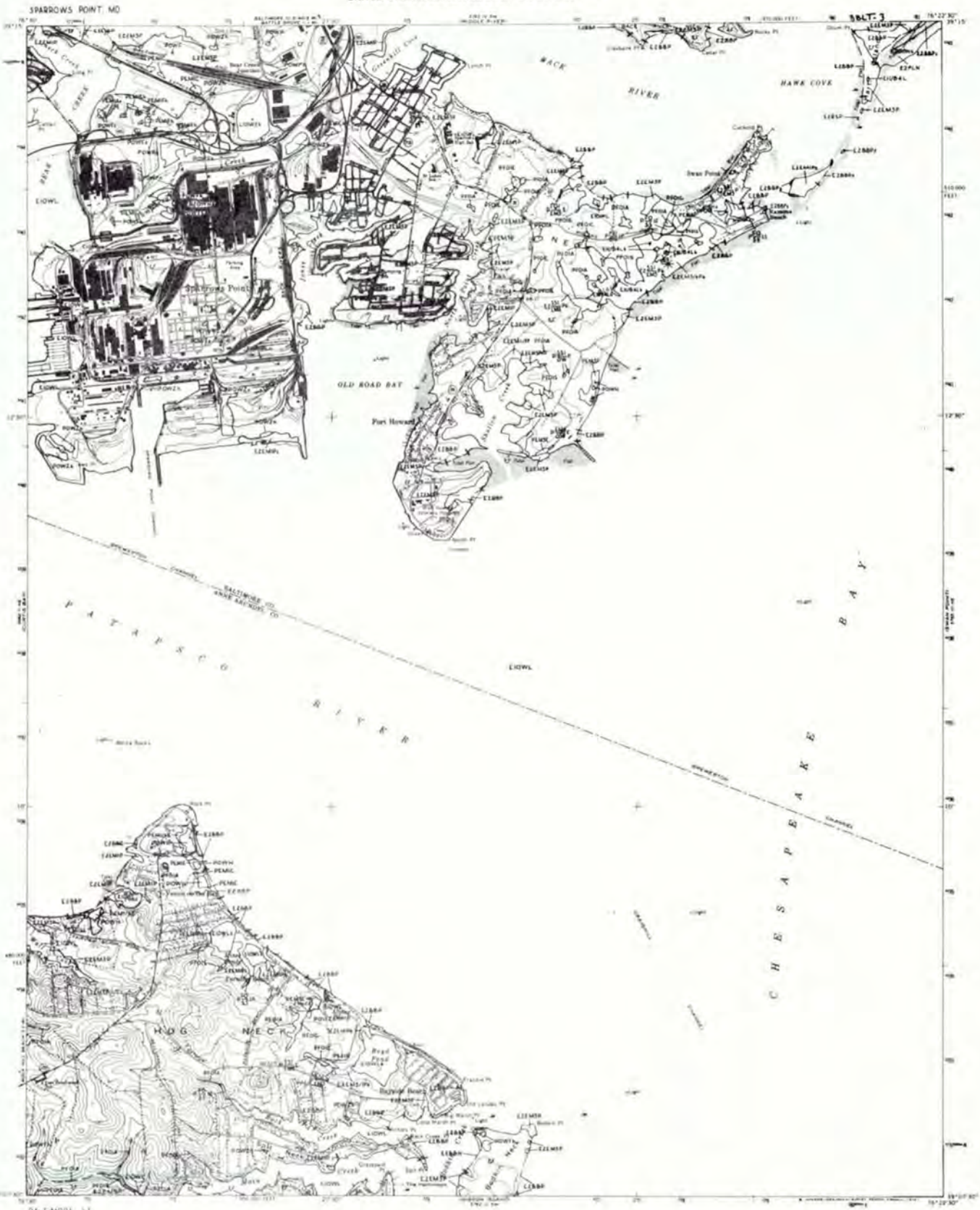
SOLOMONS ISLAND MD

NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR

NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR



NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR

SPESUTIE, MD

BALTIMORE SE
BALTIMORE

SPESUTIE, MD

NATIONAL WETLANDS INVENTORY

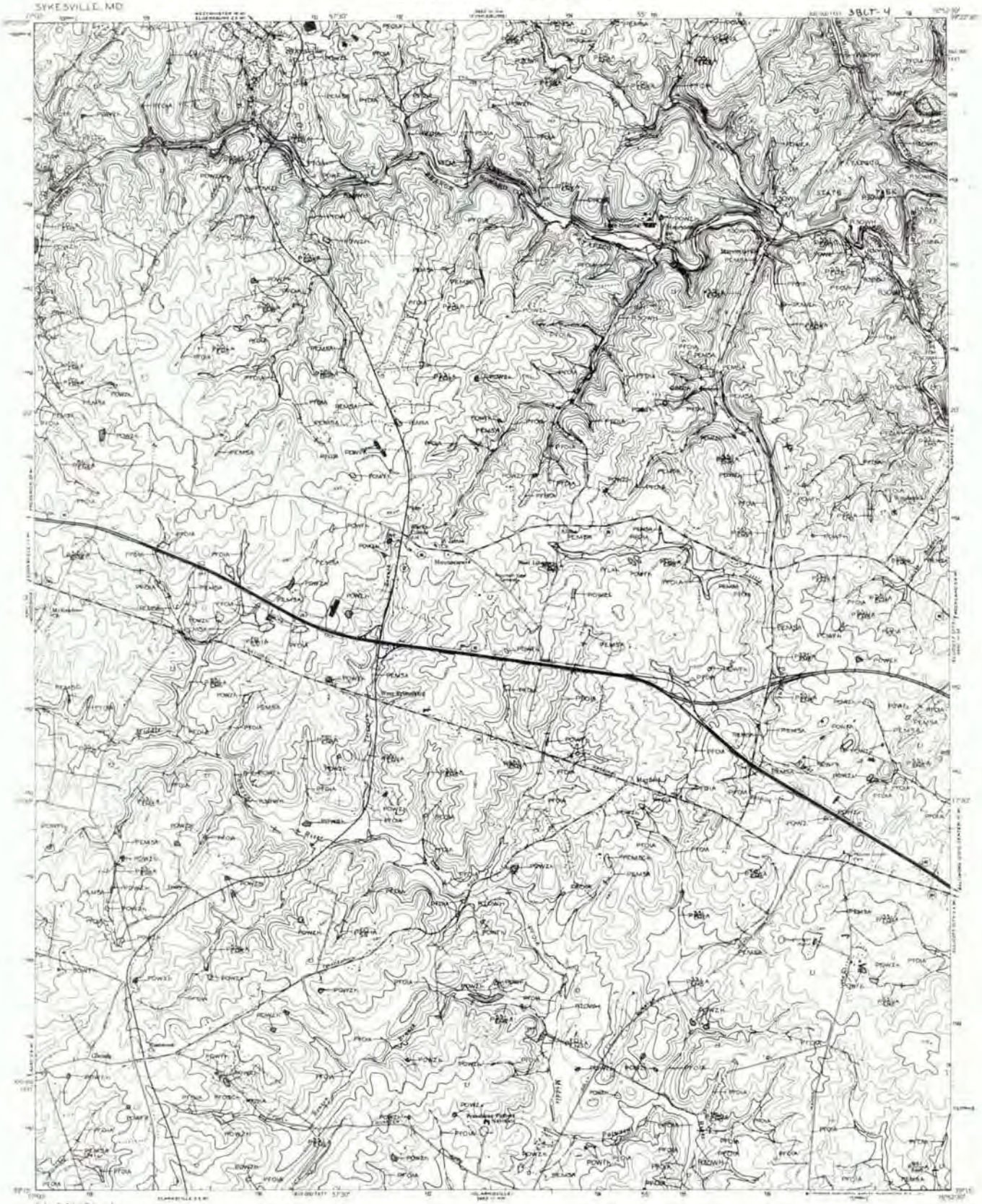
UNITED STATES DEPARTMENT OF THE INTERIOR

WASHINGTON SE
LEONARDTOWN

STRATFORD HALL, VA-MD

NATIONAL WETLANDS INVENTORY

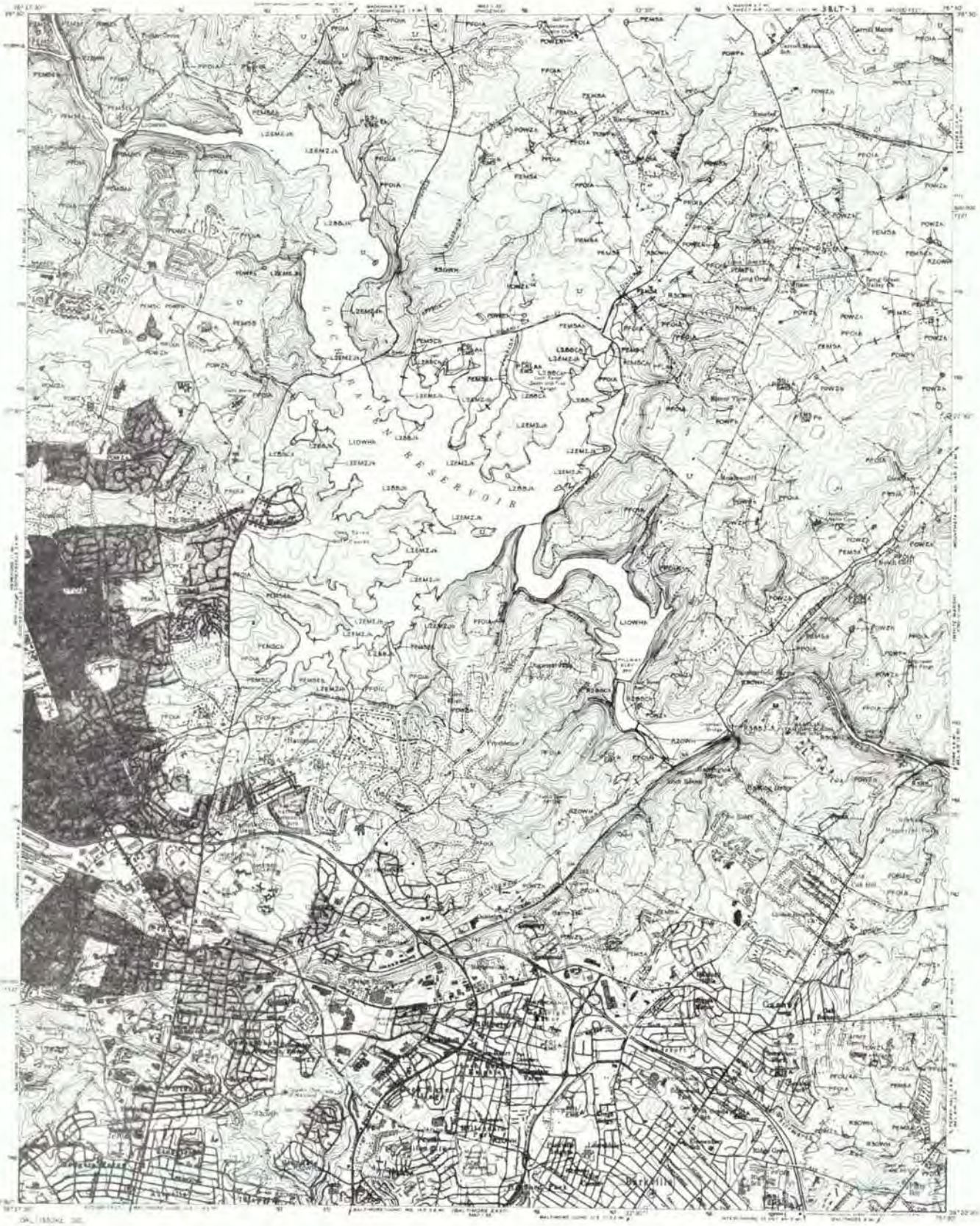
UNITED STATES DEPARTMENT OF THE INTERIOR



NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR

TOWSON , MD.

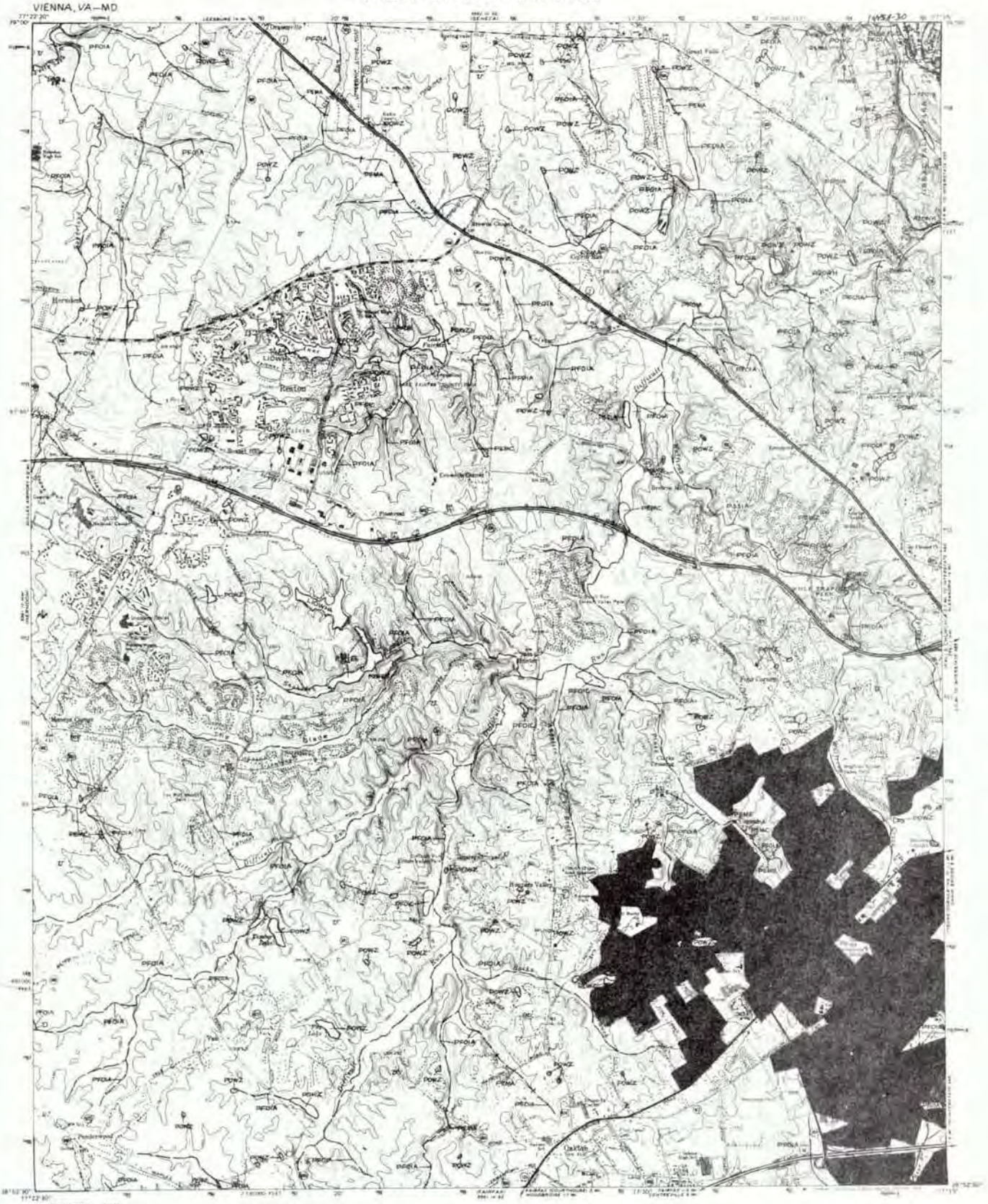


NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR

NATIONAL WETLANDS INVENTORY

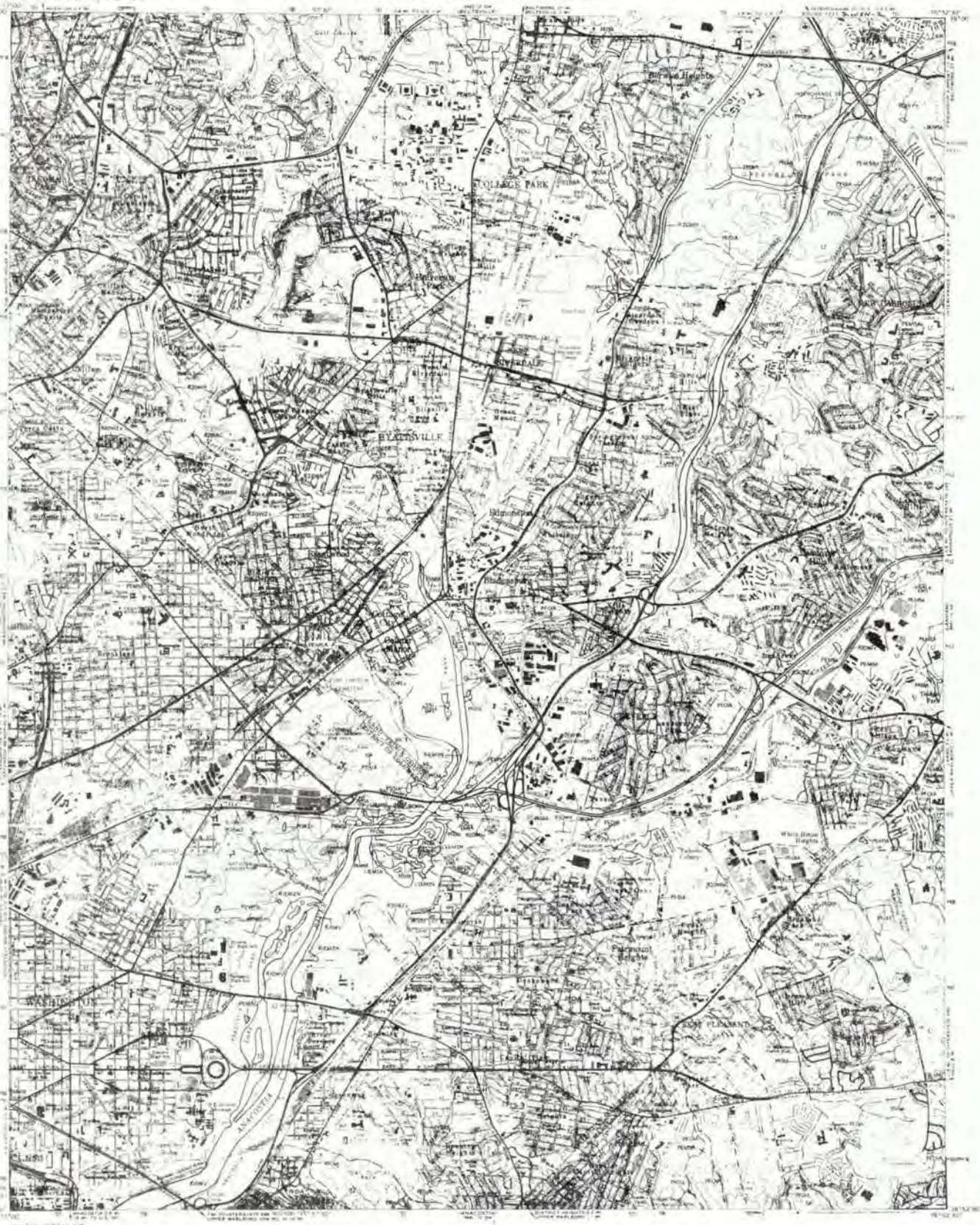
UNITED STATES DEPARTMENT OF THE INTERIOR



NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR

WASHINGTON EAST, MD.-DC.



WASHINGTON NE
WASHINGTON EAST

WASHINGTON EAST, MD.-DC.

NATIONAL WETLANDS INVENTORY

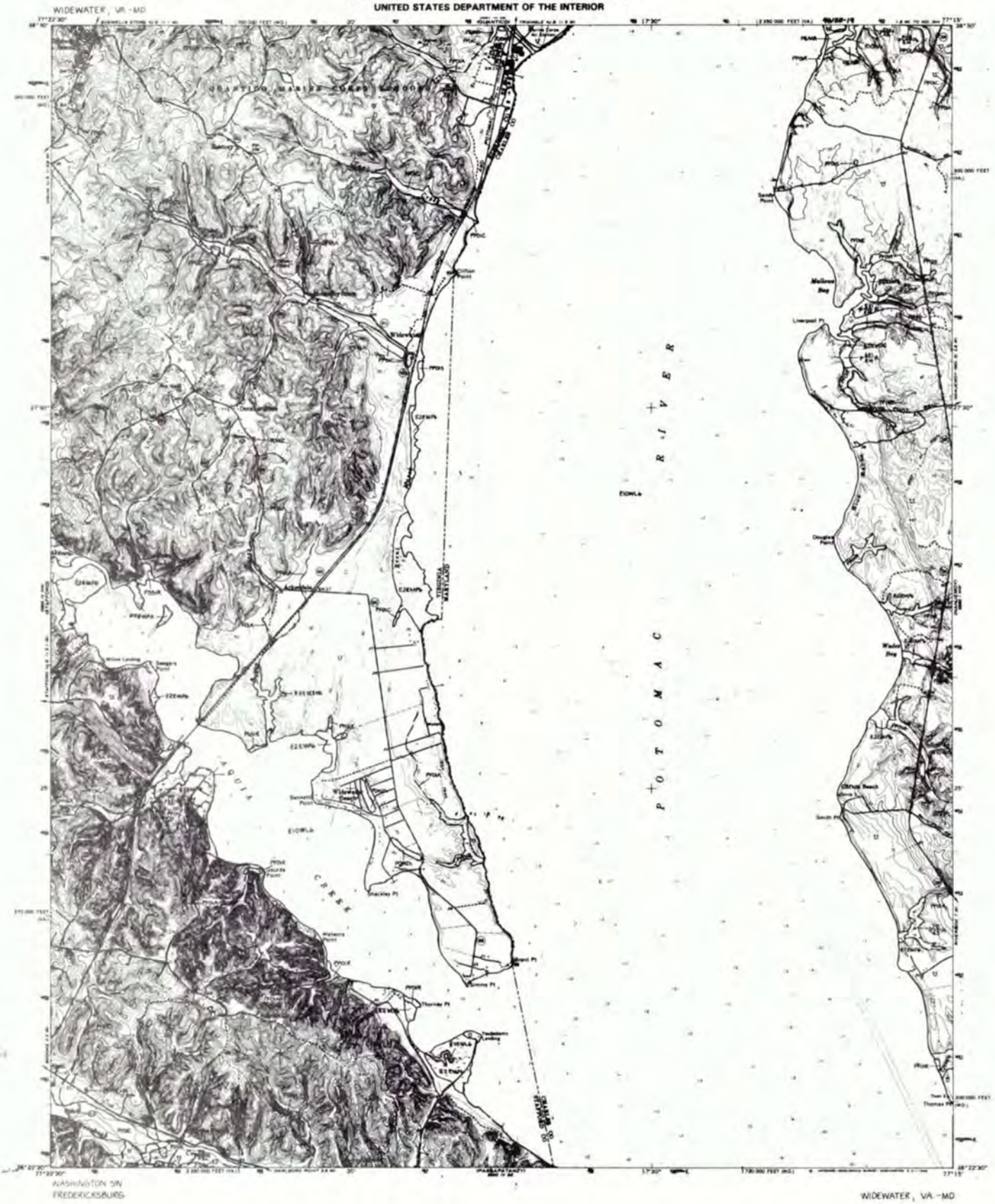
UNITED STATES DEPARTMENT OF THE INTERIOR

NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR

NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR



NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR