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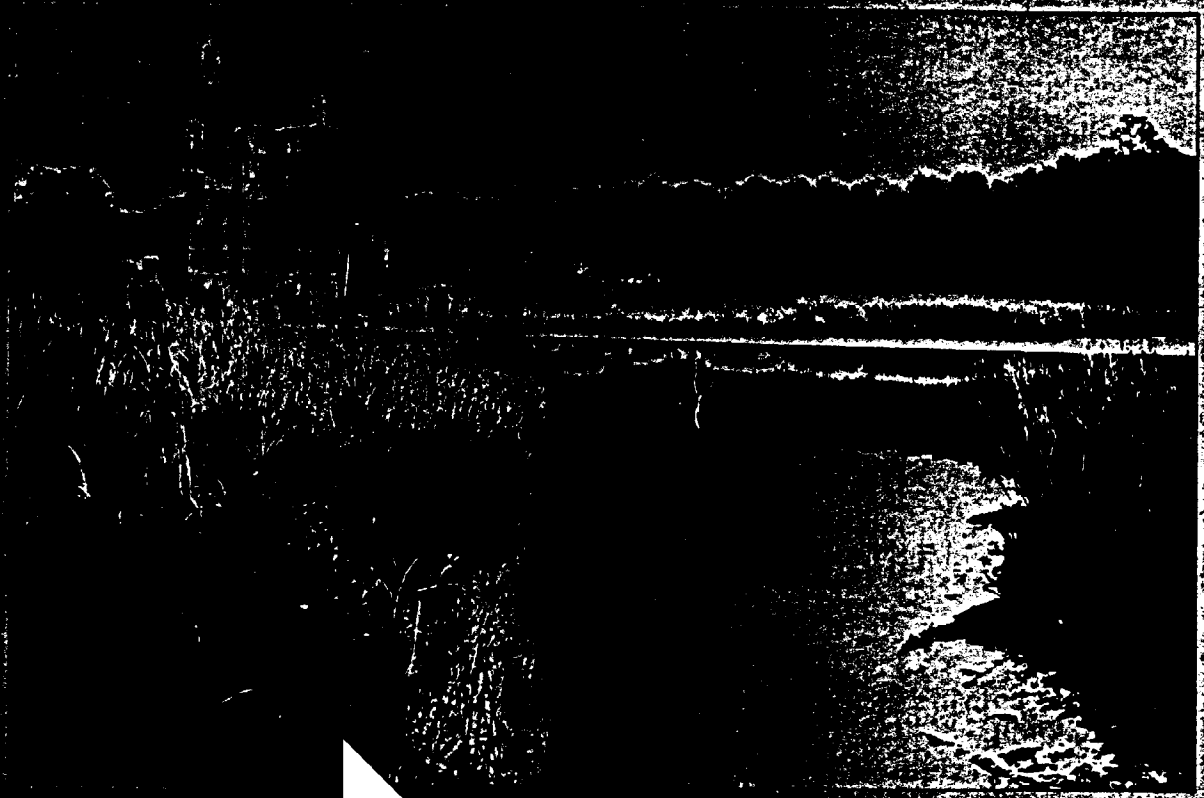

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WETLANDS PROGRAM

[illegible] INSTITUTE OF MARINE SCIENCE
SCHOOL OF MARINE SCIENCE
[illegible] COLLEGE OF WILLIAM AND MARY
Gloucester Point, Virginia 23062

SEPTEMBER 1990

RICHMOND COUNTY MARSH INVENTORY

Special Report No. 306 in Applied Marine Science and Ocean Engineering

Walter I. Priest, III and Sharon Dewing

WETLANDS PROGRAM

VIRGINIA INSTITUTE OF MARINE SCIENCE
School of Marine Science
The College of William and Mary
Gloucester Point, Virginia 23062

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SEPTEMBER 1990

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Preface

This publication is one of a series of county and city tidal marsh inventories prepared by the Wetlands Advisory Group of the Virginia Institute of Marine Science. The previously published reports include:

Lancaster County
Northumberland County
Mathews County
York County and the Town of Poquoson
Stafford County
Prince William County
King George County
City of Hampton
Fairfax County
Gloucester County
City of Virginia Beach Vol. 1 and 2
City of Newport News and Fort Eustis
Accomack County
Northampton County
Westmoreland County
James City County and the City of Williamsburg
Surry County
Spotsylvania and Caroline Counties and the City of Fredericksburg
New Kent County
Essex County
Isle of Wight County
Middlesex County
City of Norfolk
King William County and Town of West Point
King and Queen County
Prince George County and City of Hopewell
City of Portsmouth
City of Virginia Beach Vol. 3

Under Section 62-1.13.4 of the Virginia Wetlands Act, the Virginia Institute of Marine Science is obligated to inventory the tidal wetlands of the Commonwealth. This inventory program is designed to aid the local wetlands boards, the state and federal regulatory agencies, and regional planning districts in making informed rational decisions on the uses of these valuable resources. They are also intended for use by the general public as a natural history guide and the scientific community as a research data source.

The reader is referred to the Shoreline Situation Report, Richmond County, SRAMSOE No. 164, Virginia Institute of Marine Science, Gloucester Point, Virginia 23062. This report focuses on various shoreline characteristics including areas of erosion and accretion, beaches, marshes, artificially stabilized areas, and fastland types and uses.

Also of interest may be a booklet, Wetlands Guidelines, available from the Marine Resources Commission, Newport News, Virginia, which describes the wetlands types and the types of shoreline activities which affect wetlands and what these effects are.

Acknowledgements

I would like to thank my boat operators Bob Croonenberghs and Tom Luckham without whose tireless efforts this inventory would not have been possible. I would also like to thank the personnel of the Virginia Department of Transportation who opened the bridrge at the mouth of Cat Point Creek to allow us access.

We would especially like to thank Berch Smithson and Anna K. Kenne for the digital cartography, Julie G. Bradshaw for the cover photograph, William Jenkins for the photographic reproductions, Janet Walker for tables and topography, Judy Hudgins and Gene Silberhorn for their review of the manuscript, and Dianne Bowers for her invaluable assistance.

The field work for this inventory was funded in part by the Department of Commerce, National Oceanic and Atmospheric Administration, Office of Coastal Zone Management, Grant No. 04-6-168-44037, and in part by the Virginia Council on the Environment's Coastal Resources Management Program through grant # NA89AA-D-CZ134 of the National Oceanic and Atmospheric Administration under the Coastal Zone Management Act of 1972 as amended.

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Introduction

Richmond County is blessed with an especially rich diversity of tidal wetlands. They vary from the brackish marshes of Lancaster Creek through the slightly brackish marshes near the Route 360 bridge to the tidal freshwater marshes of upper portion of the county. This is due primarily to the changes in salinity which occur along this reach of the Rappahannock River. Many of the tributary creeks also display this transition, with brackish or slightly brackish marshes at their mouths and tidal freshwater marshes at their heads.

By virtue of its location along the Rappahannock River, Richmond County is also endowed with a wide variety of other marine resources which depend in one way or another on these tidal wetlands for food, habitat or maintenance of water quality. These range from the oyster growing areas of the lower county to the anadromous fish spawning areas of the tidal freshwater portions of the river and its tributaries.

This inventory is divided into ten sections beginning at the upper end of the county. Each section relates to a specific reach of the river shoreline or creek system. It covers 223 separate marshes totalling 4724 acres. The dominant wetland type is big cordgrass (2000 acres) which is indicative of low salinity or slightly brackish conditions. The next most abundant community in the county is the arrow arum-pickerelweed community (354 acres) which is indicative of freshwater areas. The next most abundant communities are saltmarsh cordgrass (351 acres), cattails (273 acres), saltmeadow (256 acres) and saltbush (237 acres) indicating a wide range of environmental conditions from fresh to brackish water.

The largest single marsh, 823 acres, is the McGuire Creek complex (#63) just below the Route 360 bridge which is dominated by big cordgrass and a number of brackish water species. Further upstream is the largest marsh system, Cat Point Creek (#15-#45), which is composed of a combination of oxbow, creek and broad fringing marshes. It is dominated by big cordgrass and a large number of freshwater species.

Something of special interest is the occurence of prairie cordgrass, *Spartina pectinata*, in Marsh #4. This is one of only eight places it has been reported from in the state.

Methods

Wetland locations and wetland boundaries were obtained by consulting USGS topographic maps and aerial photographs. The configuration and areal extent of each marsh was confirmed by observations by boat, on foot or by low level overflights. Individual plant species percentages are quantitative estimates of coverage based on visual inspections of every marsh.

These percent cover estimates are subject to a seasonal bias depending on what time of the year the estimates are made. In the brackish water marshes if the observations are in the spring many of the late developing annuals, e.g. water hemp, saltmarsh aster, marsh fleabane and orach, are not visible among the earlier developing grasses. In the freshwater marshes the spring and early summer dominants are usually the perennials, e.g. arrow arum, pickerelweed and cattails. During late summer and early fall these are often replaced by beggars ticks and rice cutgrass as the dominant species in the same marsh. This inventory was conducted during June, July and August of 1978.

The outline of each marsh as depicted on the topographic map was planimetered to determine its acreage. Marshes 0.25 acres or larger are designated by number. The acreage, plant species percentage and acreage, marsh type and other observations are recorded in tabular form for each of these marshes. Marshes less than 0.25 acres (usually narrow fringing marshes and very small pocket marshes) are indicated by the same shaded symbol as the numbered marshes but are not included in the tabulations. The size of the small marshes (less than one acre) is exaggerated on the maps for clarity and is not always to scale.

Plant species percentages are recorded to the nearest percent and acreages to the nearest 0.1 acre in the larger marshes and the nearest 0.01 acre in the smaller marshes. The acreages of the smaller marshes are probably not accurate to the second decimal. This is used, however, as a means to more accurately balance the the calculated acreages of the individual species. In those instances where an individual plant species was estimated to amount to less than 0.5 percent or 0.05 acre, the symbol (-) is used to indicate a trace amount. In unusual situations where an individual marsh was estimated to contain more than 50 percent or more of a species not listed as a marsh type, the closest applicable marsh type was used. For example, a marsh judged to contain 50 percent marsh hibiscus would be listed as Type XI (Freshwater Mixed).

Marsh Types and Evaluation

For a better understanding of what is meant by marsh types, some background information is required. The personnel of the Wetland Advisory Group have classified twelve different, common marsh types in Virginia, based on vegetational composition. These marsh types have been evaluated according to certain values and are recorded in the Guidelines report. The following is a brief outline of the wetland types and their evaluation as found in that publication:

It is recognized that most wetlands areas, with the exception of the relatively monospecific cordgrass marshes of the Eastern Shore, are not homogeneously vegetated. Most marshes are, however, dominated by a major plant. By providing the manager with the primary values of each community type and the means of identification, he then has a useful and convenient tool for weighing the relative importance of each marsh parcel. In Virginia, many wetlands management problems involve only a few acres or a fraction of an acre. The identification of plant communities permits the manager to evaluate both complete marshes and subareas within a marsh.

Each marsh type may be evaluated in accordance with five general values. These are:

1. Production and detritus availability. Previous VIMS reports have discussed the details of marsh production and the role of detritus which results when the plant material is washed into the water column. The term "detritus" refers to plant material which decays in the aquatic system and forms the basis of a major marine food web. The term "production" refers to the amount of plant material which is produced by the various types of marsh plants. Vegetative production of the major species has been measured, and marshes have been rated in accordance with their average levels of productivity. If the production is readily available to the marine food web as detritus, a wetlands system is even more important than one of equal productivity where little detritus results. Availability of detritus is generally a function of marsh elevation and total flushing, with detritus more available to the aquatic environment in the lower, well-flushed marshes.

2. Waterfowl and wildlife utilization. Long before marshes were discovered to be detritus producers, they were known as habitats for various mammals and marsh birds and as food sources for migratory waterfowl. Some marsh types, especially mixed freshwater marshes, are more valuable because of diversity of the vegetation found there.

3. Erosion buffer. Erosion is a common coastal problem. Marshes can be eroded, but some, particularly the more saline types, are eroded much more slowly than adjacent shores which are unprotected by marsh. This buffering quality is derived from the ability of the vegetation to absorb or dissipate wave energy by establishing a dense root system which stabilizes the substrate. Generally, freshwater species are less effective than saltwater plants in this regard.

4. Water quality control. The dense growth of some marshes acts as a filter, trapping upland sediment before it reaches waterways, thus protecting shellfish beds and navigation channels from siltation. Marshes can also filter out sediments that are already in the water column. The ability of marshes to filter sediments and maintain water clarity is of particular importance to the maintenance of clam and oyster production. Excessive sedimentation can reduce the basic food supply of shellfish through reduction of the photic zone where algae grow. It can also kill shellfish by clogging their gills. Additionally, marshes can assimilate and degrade pollutants through complex chemical processes, a discussion which is beyond the scope of this paper.

5. Flood buffer. The peat substratum of some marshes acts as a giant sponge in receiving and releasing water. This characteristic is an effective buffer against coastal flooding, the effectiveness of which is a function of marsh type and size.

Research and marsh inventory work accomplished by VIMS personnel indicate that 10 species of marsh vegetation tend to dominate many marshes, the dominant plant depending on water salinity, marsh elevation, soil type, and other factors. The term "dominant" is construed to mean that at least 50% of the vegetated surface of a marsh is covered by a single species. Brackish and freshwater marshes often have no clearly dominant species of vegetation. These marshes are considered to be highly valuable in environmental terms.

Marsh Types and Their Environmental Contributions

(Edited from Guidelines for Activities Affecting Virginia Wetlands)

Type I <u>Saltmarsh Cordgrass Community</u>

a. Average yield 4 tons per acre per annum. (Optimum growth up to 10 tons per acre.)
b. Optimum availability of detritus to the marine environment.
c. Roots and rhizomes eaten by waterfowl and stems used in muskrat lodge construction. Also serves as nesting material for various birds.
d. Deterrent to shoreline erosion.
e. Serves as sediment trap and assimilates flood waters.

Type II <u>Saltmeadow Community</u>

a. 1-3 tons per acre per annum.
b. Food (seeds) and nesting areas for birds.
c. Effective erosion deterrent.
d. Assimilates flood waters.
e. Filters sediments and waste material.

Type III <u>Black Needlerush Community</u>

a. 3-5 tons per acre per annum.
b. Highly resistant to erosion.
c. Traps suspended sediments but not as effective as Type II.
d. Somewhat effective in absorbing flood waters.

Type IV <u>Saltbush Community</u>

a. 2 tons per acre per annum or less.
b. Nesting area for small birds and habitat for a variety of wildlife.
c. Effective trap for flotsam.

Type V Big Cordgrass Community

a. 3-6 tons per acre per annum.
b. Detritus less available than from Type I.
c. Habitat for small animals and used for muskrat lodges.
d. Effective erosion buffer.
e. Flood water assimilation.

Type VI Cattail Community

a. 2-4 tons per acre per annum.
b. Habitat for birds and utilized by muskrats.
c. Traps upland sediments.

Type VII Arrow Arum-Pickerel Weed Community

a. 2-4 tons per acre per annum.
b. Detritus readily available to marine environment.
c. Seeds eaten by wood ducks.
d. Susceptible to erosion from wave action and boat wakes, particularly in winter months.

Type VIII Reed Grass Community

a. 4-6 tons per acre per annum.
b. Little value to wildlife except for cover.
c. Invades marshes and competes with more desirable species.
d. Deters erosion on disturbed sites.

Type IX Yellow Pond Lily Community

a. Less than 1 ton per acre per annum.
b. Cover and attachment site for aquatic animals and algae.
c. Feeding territory for fish.

Type X <u>Saltwort Community</u>

a. Less than 0.5 tons per acre per annum.
b. Little value to aquatic or marsh animals.

Type XI <u>Freshwater Mixed Community</u>

a. 3-5 tons per acre per annum.
b. High diversity of wildlife.
c. High diversity of wildlife foods.
d. Often associated with fish spawning and nursery grounds.
e. Ranks high as a sediment trap and nursery grounds.

Type XII <u>Brackish Water Mixed Community</u>

a. 3-4 tons per acre per annum.
b. Wide variety of wildlife foods and habitat.
c. Deterrent to shoreline erosion.
d. Serves as sediment trap and assimilates flood waters.
e. Known spawning and nursery grounds for fish.

Evaluation of Wetland Types

(From Guidelines for Activities Affecting Virginia Wetlands)

For management purposes, the twelve types of wetlands identified above are grouped into five classifications based on the estimated total environmental value of an acre of each type.

Group One: Saltmarsh Cordgrass (Type I)
Arrow Arum-Pickerel Weed (Type VII)
Freshwater Mixed (Type XI)
Brackish Water Mixed (Type XII)

Group One marshes have the highest values in productivity and wildfowl and wildlife utility and are closely associated with fish spawning and nursery areas. They also have high value as erosion inhibitors, are important to the shellfish industry, and are valued as natural shoreline stabilizers. Group One marshes should be preserved.

Group Two: Big Cordgrass (Type V)
Saltmeadow (Type II)
Cattail (Type VI)

Group Two marshes are of only slightly lesser value than Group One marshes. The major difference is that detritus produced in these marshes is less readily available to the marine environment due to higher elevations and consequently less tidal action to flush the detritus into adjacent waterways. Group Two marshes have very high values in protecting water quality and acting as buffers against coastal flooding. These marshes should also be preserved; but if development in wetlands is considered to be justified, it would be better to alter Group Two marshes than Group One marshes.

Group Three: Yellow Pond Lily (Type IX)
Black Needlerush (Type III)

The two marshes in the Group Three category are quite dissimilar in properties. The yellow pond lily marsh is not a significant contributor to the food web, but it does have high values to wildlife and waterfowl. Black needlerush has little wildlife value, but it ranks high as an erosion flood buffer. Group Three marshes are important, though their total values are less than Group One and Two marshes. If development in wetlands is considered necessary, it would be better to alter Group Three marshes than Groups One or Two.

Group Four: Saltbush (Type IV)

The saltbush community is valued primarily for the diversity and bird nesting area it adds to the marsh ecosystem. To a lesser extent it acts as an erosion buffer. Group Four marshes should not be unnecessarily disturbed, but it would be better to concentrate necessary development in these marshes rather than disturb any of the marshes in the preceding groups.

Group Five: Saltwort (Type X)
Reedgrass (Type VIII)

Based on present information, Group Five marshes have few values of any significance. While Group Five marshes should not be unreasonably disturbed, it is preferable to develop in these marshes than in any other types.

Marsh Plants

Common names and scientific names as found in the data tables of this report.

Alder	*Alnus serrulata* (Aiton) Willd
American Germander	*Teucrium canadense* L.
Arrow Arum*	*Peltandra virginica* (L.) Kunth
Arrowhead*	*Sagittaria falcata* Pursh
	Sagittaria latifolia Willd.
Beak Rush	*Rhynchospora* spp.
Bedstraw	*Galium tinctorium* L.
Beggars Ticks*	*Bidens coronata* (L.) Britton
Big Cordgrass*	*Spartina cynosuroides* (L.) Roth
Black Gum*	*Nyssa sylvatica* Marshall
Black Needlerush*	*Juncus roemerianus* Scheele
Black Willow	*Salix nigra* Marshall
Bladderwort	*Utricularia* sp.
Blue Flag	*Iris virginica* L.
Boneset	*Eupatorium perfoliatum* L.
Burweed	*Sparganium* sp.
Button Bush	*Cephalanthus occidentalis* L.
Cane	*Arundinaria gigantea* Michaux
Cardinal Flower	*Lobelia cardinalis* L.
Cattails*	*Typha augustifolia* L.
	Typha latifolia L.
Chairmaker's Rush	*Scirpus americanus* Persoon
Climbing Hempweed	*Mikania scandens* (L.) Willd.
Common Reed*	*Phragmites australis* (Cav.) Trin. ex Steud.
Dayflower	*Commelina virginica* L.
Dogwood	*Cornus amomum* Miller
Eryngo	*Eryngium aquaticum* L.
False Nettle	*Boehmeria cylindrica* (L.) Swartz
Fleabane*	*Pluchea purpurascens* (Swartz) DC
Foxtail Grass	*Setaria magna* Grisebach
Gerardia	*Agalinis purpurea* (L.) Pennell
Giant Bulrush*	*Scirpus validus* Vahl.
Ironweed	*Vernonia nova boracensis* (L.)
Jewelweed	*Impatiens capensis* Meerb
Joe-Pye Weed	*Eupatorium dubium* Willd.
Juniper	*Juniperus virginiana* L.
Lilaeopsis	*Lilaeopsis chinensis* (L.) Kuntze
Lizard's-Tail	*Saururus cernuus* L.
Marsh Fern	*Thelypteris palustris* Schott
Marsh Fimbristylis	*Fimbristylis spadicea* (L.) Vahl.
Marsh Hibiscus*	*Hibiscus moscheutos* L.
Marsh Mallow	*Kosteletskya virginica* Presl.
Meadow Rue	*Thalictrum polygamum* Muhl.
Mock Bishop's-Weed	*Ptilimnium capillaceum* (Michaux) Raf.
Nut Sedge	*Cyperus* spp.
Orach	*Atriplex patula* L.
Panic Grass	*Panicum agrostoides* Spreng.
Olney Threesquare	*Scirpus olneyi* Gray
Pickerelweed	*Pontedaria cordata* L.
Plumegrass	*Erianthus giganteus* (Walter) Muhl
Red Maple	*Acer rubrum* L.
Rice Cutgrass*	*Leersia oryzoides* (L.) SW.
Royal Fern*	*Osmunda regalis* L.
Sacciolepis	*Sacciolepis striata* (L.) Nash
Saltbush	Marsh Elder *Iva frutescens* L.*
	Groundsel Tree *Baccharis halimifolia* L.*
Saltmarsh Aster	*Aster subulatus* Michaux
	Aster tenuifolius L.
Saltmarsh Bulrush	*Scirpus robustus* Pursh
Saltmarsh Cordgrass*	*Spartina alterniflora* Loisel
Saltmarsh Loosestrife	*Lythrum lineare* L.
Saltmeadow Hay*	*Spartina patens* (Aiton) Muhl.
Seaside Goldenrod	*Solidago sempervirens* L.
Sensitive Fern	*Onoclea sensibilis* L.
Slough Grass	*Spartina pectinata* Link
Smartweed*	*Polygonum punctatum* Ell.

Sneezeweed	*Helenium autumnale* L.
Soft Rush	*Juncus effusus* L.
Spikerush	*Eleocharis fallax* Weatherby
	Eleocharis parvula (R.+S.) Link
St. John's Wort	*Hypericum* sp.
Swamp Loosestrife	*Decodon verticillatus* (L.) Ell.
Swamp Milkweed	*Asclepias incarnata* L.
Swamp Rose	*Rosa palustris* Marshall
Sweet Flag*	*Acorus calamus* L.
Sweet Pepperbush	*Clethra alnifolia* L.
Switch Grass*	*Panicum virgatum* L.
Tearthumb	*Polygonum arifolium* L.
	Polygonum sagittatum L.
Three-Way Sedge	*Dulichium arundinaceum* (L.) Britton
Turk's-Cap Lily	*Lilium michauxii* Poiret
Virginia Willow	*Itea virginica* L.
Water Dock*	*Rumex verticillatus* L.
Water Hemlock	*Cicuta maculata* L.
Water Hemp*	*Amaranthus cannabinus* (L.) J.D. Sauer
Water Horehound	*Lycopus virginicus* L.
Water Lily	*Nymphaea odorata* Aiton
Water Parsnip	*Suim suave* Walter
Water Primrose	*Ludwigia palustris* (L.) Ell.
Water Willow	*Justicia americana* (L.) Vahl.
Wax Myrtle*	*Myrica cerifera* L.
Wild Millet	*Echinochloa waleri* (Pursh) Nash
Wild Rice*	*Zizania aquatica* L.
Wild Rye	*Elymus virginicus* L.
Wood Reedgrass	*Cinna arundinacea* L.
Wool Grass	*Scirpus cyperinus* (L.) Kunth
Yellow Pond Lily*	*Nuphar luteum* (L.) Sibth. & Smith

***Species included in the Wetlands Act of 1972.**

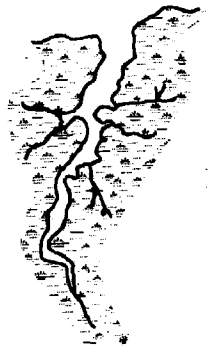
Glossary of Descriptive Terms

Cove Marsh

A marsh contained within a concavity or recessed area on a shoreline. The marsh vegetation is usually found surrounding a central, open-water pond, and tidal flushing is permitted through an inlet.

Creek or Embayed Marsh

A marsh occupying a drowned creek valley. In many large creek marshes the salinity decreases headward; this type of marsh may be divided for inventory purposes into sections if significant changes in the plant community occur along its length.

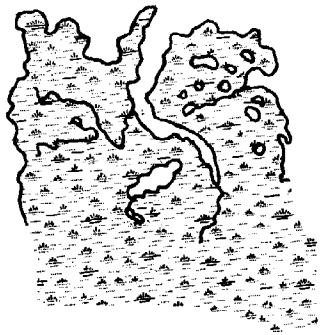


Delta Marsh

A marsh growing on sediment deposited at the mouth of a tidal creek. Tidal exchange through the creek mouth is usually restricted to narrow channels by the marsh.

Extensive Marsh

A large marsh where the length and depth or width are roughly comparable. Most extensive marshes are drained by many tidal channels and creeks which have little freshwater input.



Fringe Marsh

A marsh which borders a section of shoreline and generally has a much greater length than width or depth.

High Marsh

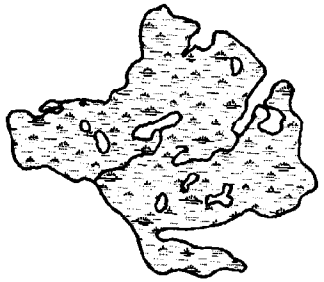
The marsh surface is at an elevation of mean high water or above; it is usually inundated less than twice daily by tidal action.

Low Marsh

The marsh surface is at an elevation below mean high water; it is usually inundated twice daily by tidal action.

Marsh Island

An isolated marsh surrounded on all sides by open water. Interior portions of the marsh may contain trees scattered at highest elevations.

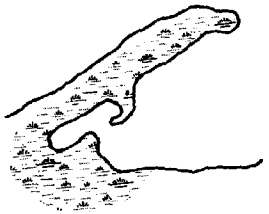


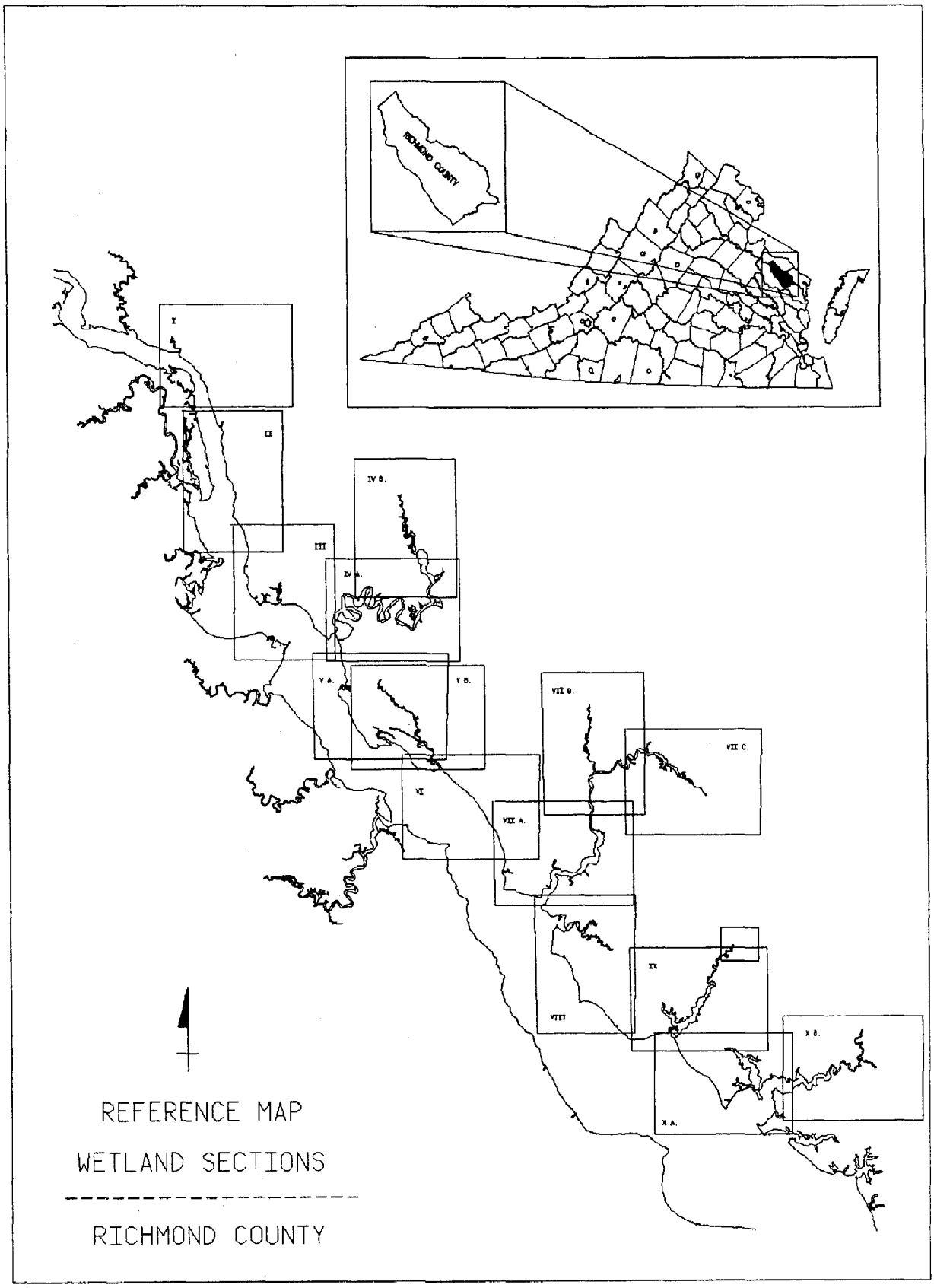
Pocket Marsh

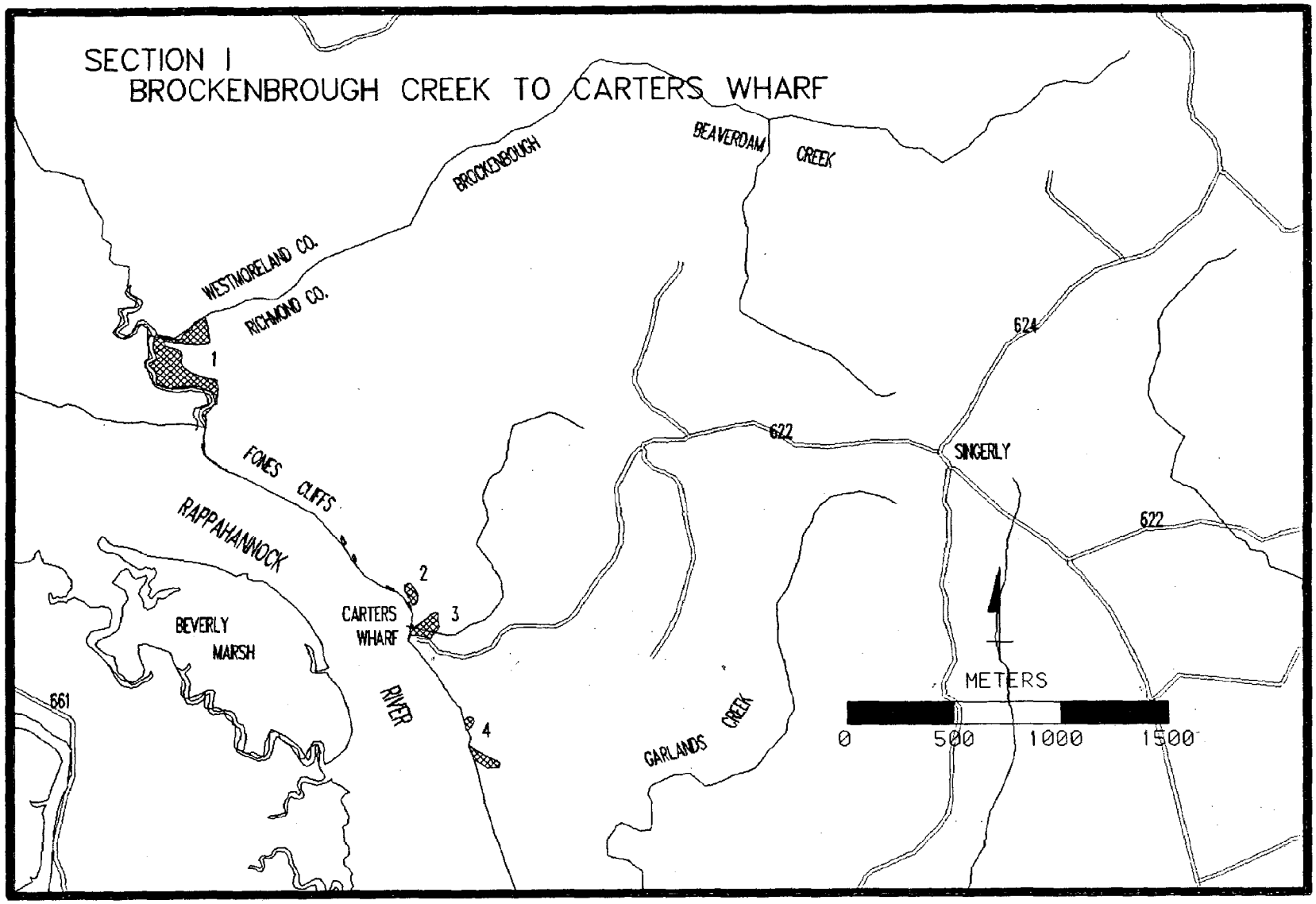
A marsh contained within a small, essentially semi-circular area on a shoreline.

Point or Spit Marsh

A marsh which extends from the uplands in the form of a point or spit. Its development is usually influenced by tidal currents that form a sand berm behind which the marsh forms.

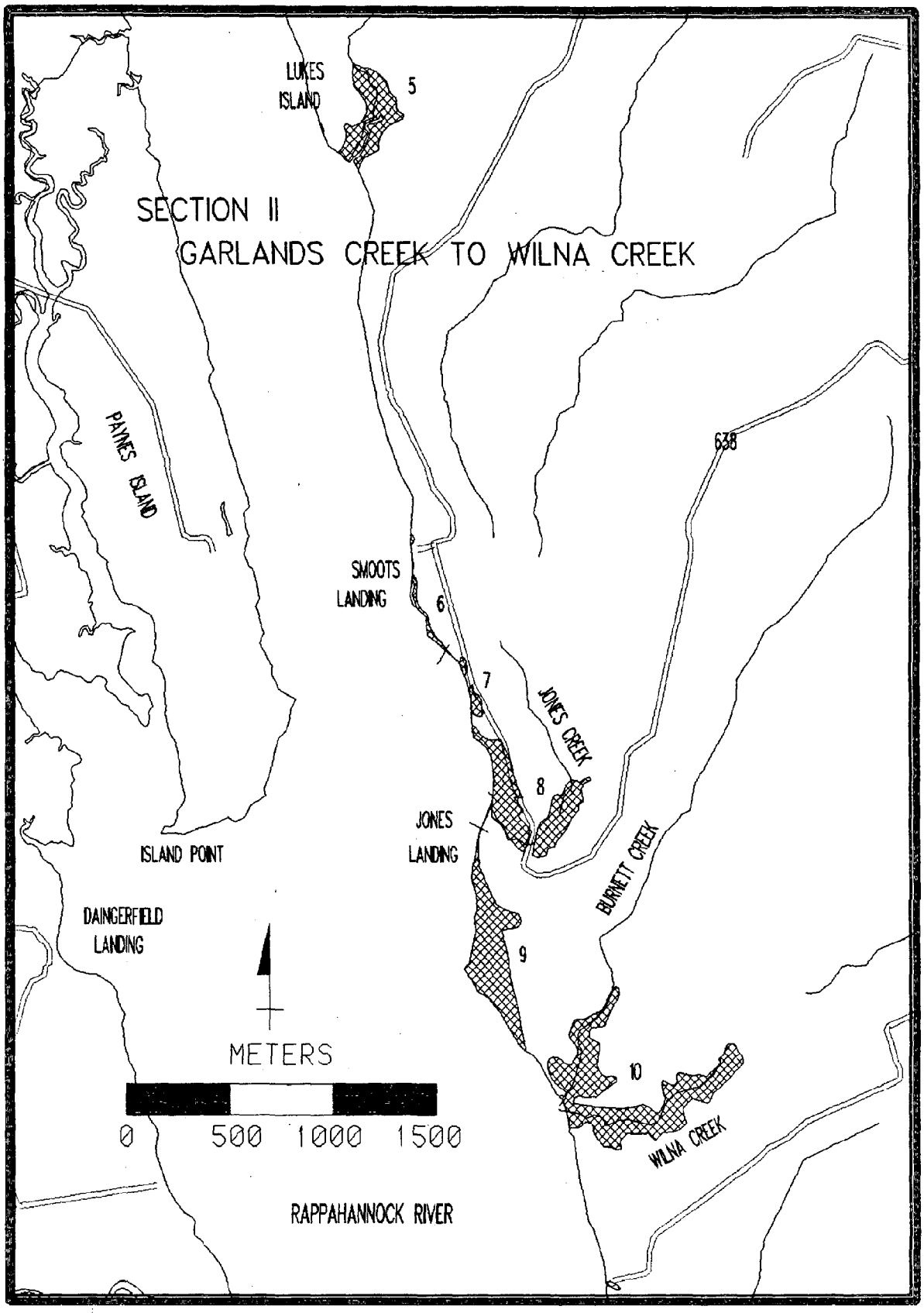



RICHMOND COUNTY
I
II
III
IV A.
IV B.
V A.
V B.
VI
VII A.
VII B.
VII C.
VIII
IX
X A.
X B.
REFERENCE MAP
WETLAND SECTIONS
RICHMOND COUNTY


SECTION I
BROCKENBROUGH CREEK TO CARTERS WHARF
BROCKENBROUGH
BEAVERDAM
CREEK
WESTMORELAND CO.
RICHMOND CO.
1
624
622
SINGERLY
FONES CLIFFS
RAPPAHANNOCK
2
CARTERS
WHARF
3
BEVERLY
MARSH
RIVER
4
GARLANDS CREEK
661
METERS
0
500
1000
1500

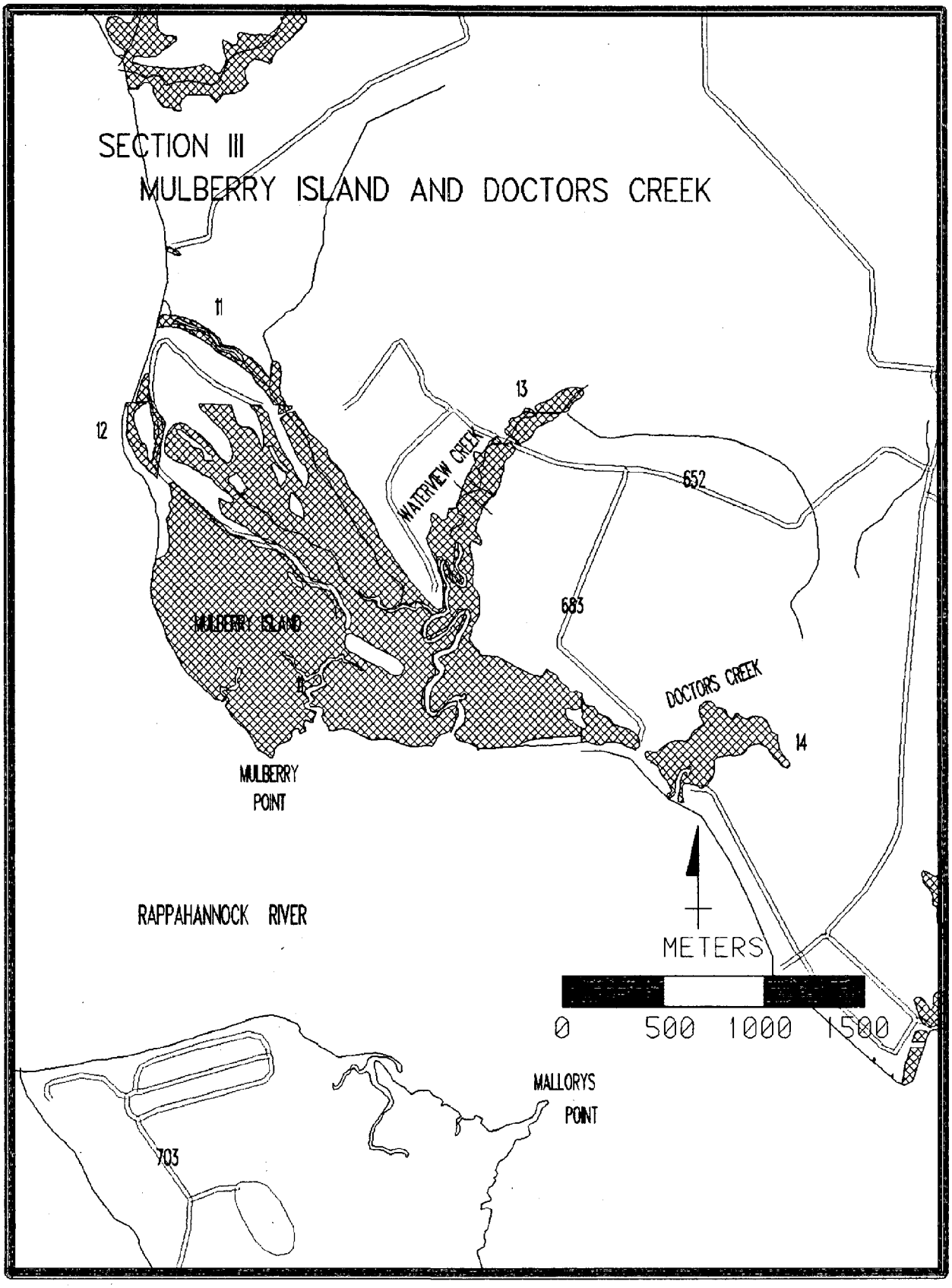
I. Brockenbrough Creek to Carters Wharf.

#	Marsh Location	Total Acres		Salt Marsh Cordgrass	Salt Meadow Hay	Big Cordgrass	Black Needlerush	Salt Bush	Cattails	Salt Marsh Bulrush	Water Hemp	Marsh Hibiscus	Tearthumb	Smartweed	Arrow Arum & Pickerelweed	Jewelweed	Rice Cutgrass	Wild Rice	Olney Threesquare	Beggars Ticks	Others	Observations	Marsh Type
1	Brocken-brough Creek	13.85	%			1		--	15		1	2	1	--	20	1	20	15	--	23	A-,B-,C1,F-,B-,J-,K-,L-,Z-	Creek marsh	XI
			acres			.14			2.08		.14	.28	.14		2.77	.14	2.77	2.08		3.19	C.14		
2	Rappahan-nock River	1.03	%								--	5	1		--	1	1	85			AA-,D-,S5,V1,R1,BB-	Pocket behind beach	XI
			acres									.05	.01			.01	.01	.88			S.05,V.01		
3	Carters Wharf	2.63	%						20		--	19	10	--	10	5	5		--		AA-,D-,G-,K-,L-,S30,U-,BB1		XI
			acres						.53			.50	.26		.26	.13	.13				S.79,BB.03		
4	Rappahan-nock River	2.25	%		6	5		--	--		--	4	--	--	5	1	5		5	5	A1,CC4,S38,AA-,U1,DD-,HH-,T-,	G-,H-,I-,J-,K-,L-,Q-,R20 Small creek marsh and pocket	XI
			acres		.14	.11						.09			.11	.02	.11		.11	.11	A.02,CC.09,S.86,U.02,R.45		
T	Total Section I	19.76	%																				
			acres			.25			2.61		.14	.92	.41		3.14	.30	3.02	2.96	.11	3.30	2.60		
			%																				
			acres																				
			%																				
			acres																				
			%																				
			acres																				


SECTION II
GARLANDS CREEK TO WILNA CREEK
LUKES ISLAND
5
PAYNES ISLAND
SMOOTS LANDING
6
7
JONES CREEK
8
JONES LANDING
ISLAND POINT
DAINGERFIELD LANDING
BURNETT CREEK
9
10
WILNA CREEK
638
METERS
0
500
1000
1500
RAPPAHANNOCK RIVER

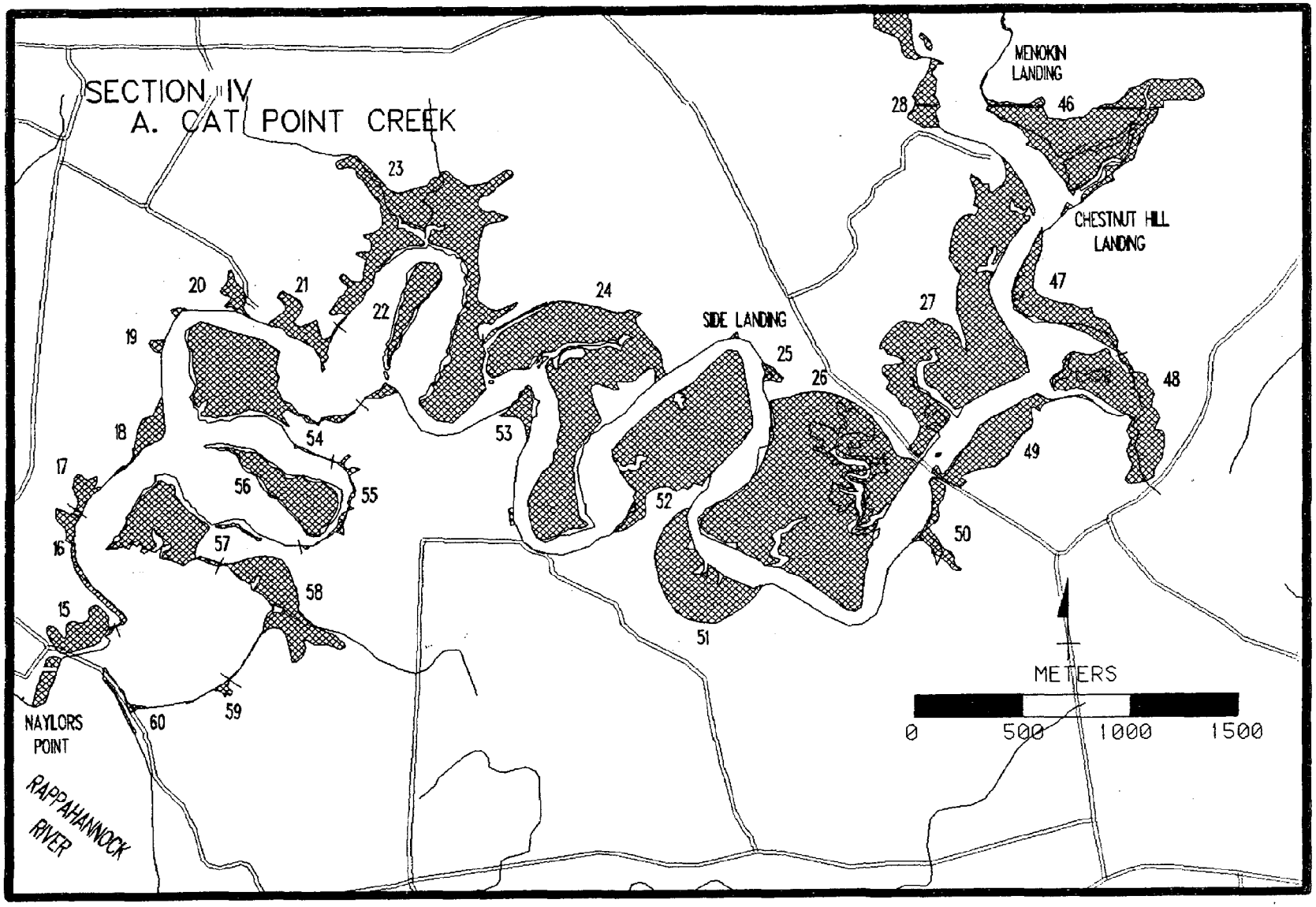
II. Garlands Creek to Wilna Creek.

#	Marsh Location	Total Acres		Salt Marsh Cordgrass	Salt Meadow Hay	Big Cordgrass	Black Needlerush	Salt Bush	Cattails	Salt Marsh Bulrush	Water Hemp	Marsh Hibiscus	Tearthumb	Smartweed	Arrow Arum & Pickerelweed	Jewelweed	Rice Cutgrass	Wild Rice	Olney Threesquare	Beggars Ticks	Others	Observations	Marsh Type
5	Lukes Island	16.01	%	--	--	25			2		2	2	1	--	16	1	2	40	3	5	A-,CC-,AA-,C-,Y-,Z-,D-,F-,K-,L1,Q-,	S-,T-,X-	XI
			acres			4.00			.32		.32	.32	.16		2.56	.16	.32	6.40	.48	.80	L.16		
6	Smoots Landing	1.91	%			68		2			--	20			--						AA10,D-,J-,K-	Broad fringe with berm	V
			acres			1.30		.04				.38									AA.19		
7	Smoots Landing	2.38	%		--	90		--	--			5							1		AA-,D4,K-	Pocket marsh	V
			acres			2.14						.12							.02		D.10		
8	Jones Creek	25.64	%	--		80			1		--	3	--	1	10	--	5	--			C-,D-,G-,K-,L-,R-,FF-		V
			acres			20.51			.26			.77		.26	2.56		1.28						
9	Rappahannock River	29.46	%	1	--	59			15		--	5	--	--	3	--	2	1	3	10	CC1,AA-,B-,C-,D-,F-,K-,Y-,GG-		V
			acres	.29		17.38			4.42			1.47			.88		.59	.29	.88	2.95	CC.29		
10	Wilna Creek	51.65	%	--	--	45			25		--	6	--	--	10	1	10	--		--	AA-,B2,D-,G-,L1,Z-		XII
			acres			23.24			12.91			3.10			5.17	.52	5.17				B1.03,L.52		
T	Total Section II	127.05	%																				
			acres	.29		68.57		.04	17.91		.32	6.16	.16	.26	11.17	.68	7.36	6.69	1.38	3.75	2.29		
			%																				
			acres																				


SECTION III
MULBERRY ISLAND AND DOCTORS CREEK
11
12
13
WATERVIEW CREEK
652
683
MULBERRY ISLAND
DOCTORS CREEK
14
MULBERRY
POINT
RAPPAHANNOCK RIVER
METERS
0
500
1000
1500
MALLORYS
POINT
703

III. Mulberry Island and Doctors Creek.

#	Marsh Location	Total Acres		Salt Marsh Cordgrass	Salt Meadow Hay	Big Cordgrass	Black Needlerush	Salt Bush	Cattails	Salt Marsh Bulrush	Water Hemp	Marsh Hibiscus	Tearthumb	Smartweed	Arrow Arum & Pickerelweed	Jewelweed	Rice Cutgrass	Wild Rice	Olney Threesquare	Beggars Ticks	Others	Observations	Marsh Type
11	Mulberry Island	435.55	%	--	1	84		--	--		--	8	--	1	2	1	1	--	1	--	II-,CC1,JJ-,AA-, B-,C-,D-,G-,H-,J-,	K-,L-,R-,T-, GG-,E-,Z-	V
			acres		4.36	365.86						34.84		4.36	8.71	4.36	4.36		4.36		CC4.36		
12	Mulberry Island	8.12	%	--	1	30		--	30		--	2	1	--	10		3		5	10	CC-,AA5,C2,D-, G-,H-,J-,K-,F1		XII
			acres		.08	2.44			2.44			.16	.08		.81		.24		.41	.81	AA.41,C.16,F.08		
13	Waterview Creek	16.45	%	--		--			5		--	15	22	1	43	1	1	--		10	B1,C-,G-,L1,KK-		XI
			acres						.82			2.47	3.62	.16	7.07	.16	.16			1.65	B.16,L.16		
14	Doctors Creek	29.75	%	--	1	50		--	20		--	25	--	1	1	--	1		--		II-,CC1,JJ-,AA-, B-,G-,K-,L-,Z-,AV	Large creek marsh	V
			acres		.30	14.88			5.95			7.44		.30	.30		.30				CC.30		
T	Total Section III	489.87	%																				
			acres		4.74	383.18			9.21			44.91	3.70	4.82	16.89	4.52	5.06		4.77	2.46	5.63		
			%																				
			acres																				
			%																				
			acres																				
			%																				
			acres																				


SECTION IV
A. CAT POINT CREEK
MENOKIN LANDING
CHESTNUT HILL LANDING
SIDE LANDING
NAYLORS POINT
RAPPAHANNOCK RIVER
METERS
0
500
1000
1500
15
16
17
18
19
20
21
22
23
24
25
26
27
28
46
47
48
49
50
51
52
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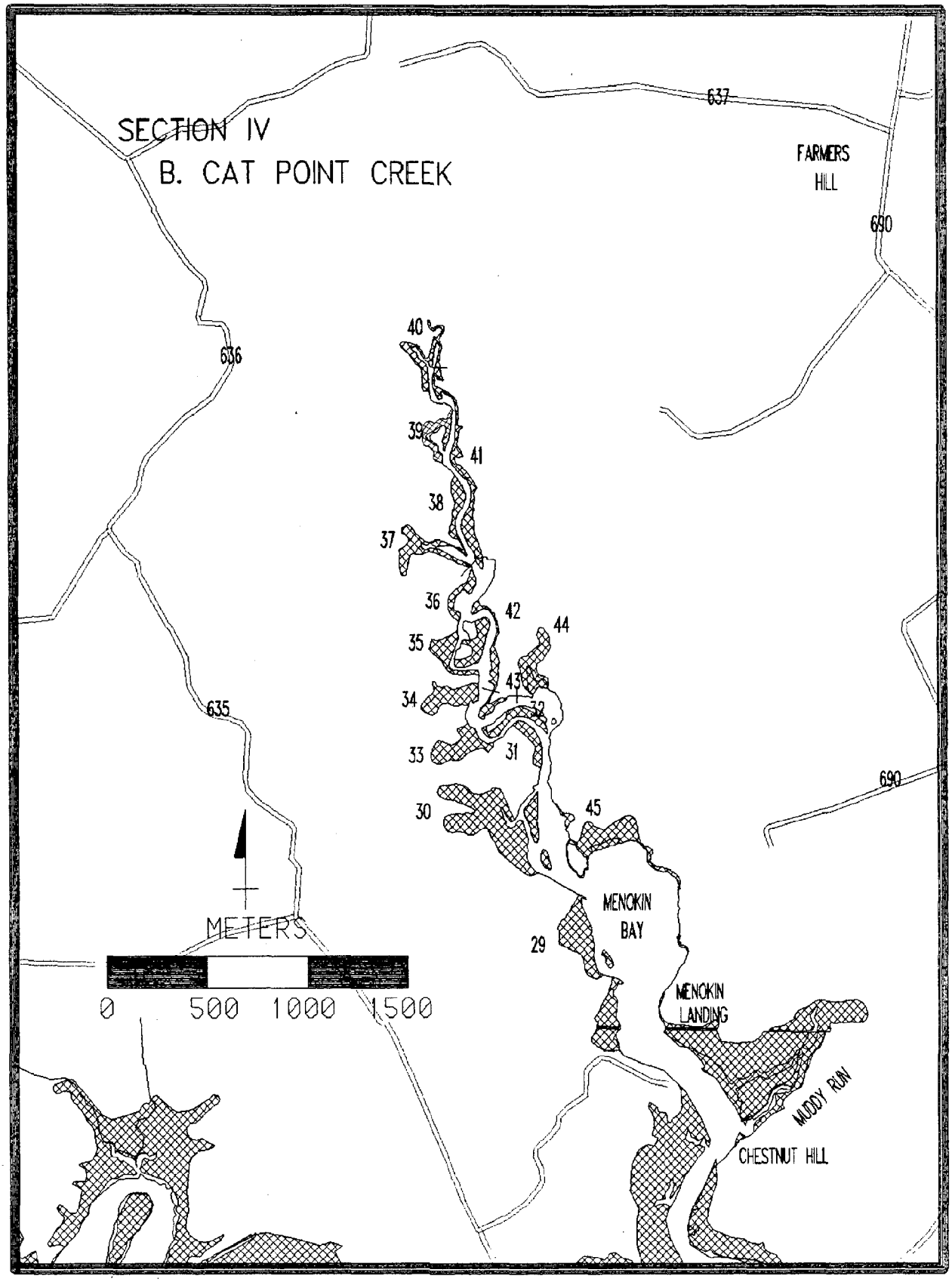
56
57
58
59
60


SECTION IV
B. CAT POINT CREEK
637
FARMERS
HILL
690
636
635
690
40
39
41
38
37
36
42
44
35
43
34
32
33
31
30
45
29
METERS
0
500
1000
1500
MENOKIN
BAY
MENOKIN
LANDING
MUDDY RUN
CHESTNUT HILL

IV. Cat Point Creek.

#	Marsh Location	Total Acres		Salt Marsh Cordgrass	Salt Meadow Hay	Big Cordgrass	Black Needlerush	Salt Bush	Cattails	Salt Marsh Bulrush	Water Hemp	Marsh Hibiscus	Tearthumb	Smartweed	Arrow Arum & Pickerelweed	Jewelweed	Rice Cutgrass	Wild Rice	Olney Threesquare	Beggars Ticks	Others	Observations	Marsh Type
15	Naylors Point	12.20	%	1	5	48		--	10		--	21	--	--	--	--	2		5		II5,CC2,EE-,AA1, D-,G-,Z-	Large pocket marsh	XII
			acres	.12	.61	5.86			1.22			2.56					.24		.61		II.61,CC.24,AA.12		
16	Cat Point Creek	2.33	%	27	--	15		--	25			15		--	--				7		II10,CC-,AA-,C-, D-,F-,G1	Pocket marsh	XII
			acres	.63		.35			.58			.35							.16		II.23,G.02		
17	Cat Point Creek	2.40	%	30	--	50		--	--		--	5	2	2	--	--	1	--	3	--	II6,AA1,B-,C-,D-, G-,H-,J-,L-		V
			acres	.72		1.20						.12	.05	.05			.02		.07		II.14,AA.02		
18	Cat Point Creek	5.15	%	10	--	60			2		--	15			2		--				II10,B-,D-,G1,L-, Z-	Broad cordgrass fringe	V
			acres	.52		3.09			.10			.77			.10						II.52,G.05		
19	Cat Point Creek	1.12	%	15		20			10		--	11		3	40	--	--			--	II-,B-,G1,Z-	Pocket marsh	XI
			acres	.17		.22			.11			.12		.03	.45						G.01		
20	Strangeway Landing	3.44	%	1	--	10			13		--	5	--	10	60		1	--			CC-,D-,G-,L-,Z-	Large pocket marsh of small creek	VII
			acres	.03		.34			.45			.17		.34	2.06		.03						
21	Cat Point Creek	9.06	%	2	2	75			6		--	10		--	5						II-,CC-,AA-,D-,J-, K-,G-,Z-	Dominated by cordgrass	V
			acres	.18	.18	6.80			.54			.91			.45								
22	Cat Point Creek	12.55	%	--	2	60					--	8	--	--	13	--	2	--		--	A-,II-,AA13,B-,Z- CC-,D-,G-,K-,R2	Island marsh and point marsh	V
			acres		.25	7.53						1.00			1.63		.25				AA1.63,R.25		

IV. Cat Point Creek.

#	Marsh Location	Total Acres		Salt Marsh Cordgrass	Salt Meadow Hay	Big Cordgrass	Black Needlerush	Salt Bush	Cattails	Salt Marsh Bulrush	Water Hemp	Marsh Hibiscus	Tearthumb	Smartweed	Arrow Arum & Pickerelweed	Jewelweed	Rice Cutgrass	Wild Rice	Olney Threesquare	Beggars Ticks	Others	Observations	Marsh Type
23	Cat Point Creek	87.52	%	1	--	61		--	5		--	5	1	--	25	--	1	--	--	1	II-,CC-,AA-,MM-,B-,C-,D-,G-,L-,	GG-,EE-,Z- Dominated by cordgrass	V
			acres	.88		53.39			4.38			4.38	.88		21.88		.88			.88			
24	Cat Point Creek	97.40	%	--		50			5		--	5	1	--	17	--	2	6		13	B-,C-,D-,G-,H-,J-,K-,L1,Z-		V
			acres			48.70			4.87			4.87	.97		16.56		1.95	5.84		12.66	L.97		
25	Cat Point Creek	1.33	%	1		35			7		--	7	3	--	40		3	--		4	CC-,AA-,Y-,HH-,B-,C-,D-,E-,G-,	K-,L-,Z-,AU- Very diverse marsh	XI
			acres	.01		.47			.09			.09	.04		.53		.04			.05			
26	Cat Point Creek	138.96	%	--		35			2		--	8	--	--	40	--	10	--		5	AA-,B-,C-,D-,F-,G-,H-,K-		XI
			acres			48.64			2.78			11.12			55.58		13.90			6.95			
27	Cat Point Creek	99.69	%	--		1	--		17		--	1	1	1	8		5	3		61	A-,CC-,B1,Q-,W-,Y-,NN-,C1,D-,E-,	G-,H-,K-,L-.M-,OO-,C-,D-,PP-,AM-,AU-	XI
			acres			1.00			16.95			1.00	1.00	1.00	7.98		4.98	2.99		60.81	B1.00,C1.00		
28	Menokin Bay	6.81	%						5			--	1	3	10	--	3	2		69	CC-,C-,H-,HH-,L-,M5,E-,W2	Completely dom. bidens marsh	XI
			acres						.34				.07	.20	.68		.20	.14		4.70	M.34,W.14		
29	Menokin Bay	8.52	%						1			1	--	--	8	--	20	2		60	A-,CC1,K-,L-,M2,QQ-,B-,C1,E-,H1,	W-,PP-,E3,AU-	XI
			acres						.09			.09			.68		1.70	.17		5.11	CC.09,M.17,C.09,H.09,E.26		
30	Cat Point Creek	23.84	%										1	2	21	--	2	30		40	A-,CC1,B1,G-,H-,I-,L-,M-,E-,AL-,	C1,D-,E-,W1,X-,Y-,QQ-,PP-,AU-	XI
			acres										.24	.48	5.01		.48	7.15		9.54	CC.24,B.24,C.24,W.24		

IV. Cat Point Creek.

#	Marsh Location	Total Acres		Salt Marsh Cordgrass	Salt Meadow Hay	Big Cordgrass	Black Needlerush	Salt Bush	Cattails	Salt Marsh Bulrush	Water Hemp	Marsh Hibiscus	Tearthumb	Smartweed	Arrow Arum& Pickerelweed	Jewelweed	Rice Cutgrass	Wild Rice	Olney Threesquare	Beggars Ticks	Others	Observations	Marsh Type
31	Cat Point Creek	2.19	%	1					3		--	2	1	--	22	1	2	--		30	A3,CC2,L-,M25, E1,W-,B-,C7,D-,	E-,Y-,QQ-,HH-AU- Broad fringe marsh x 60-70'	XI
			acres	.02					.07			.04	.02		.48	.02	.04			.66	A.07,M.55,C.15, CC.04,E.02		
32	Cat Point Creek	3.36	%	1		--			10			1	--	--	30	--	2	--		40	A2,CC2,H-,K-,L-, M5,Y-,OO-,B-,C1,	D-,E-,E5,Q-, R-,W1,QQ-, AU- Island marsh	XI
			acres	.03					.34			.03			1.01		.07			1.34	A.07,CC.07,C.07, M.17,E.17		
33	Cat Point Creek	6.10	%			--			15			--	1	--	30	--	9	--		40	CC1,B-,H-,I-,L-, M1,E2,C1,E-,F-,	W-,QQ-,PP-, AU-	XI
			acres						.92				.06		1.83		.55			2.44	CC.06,E.12,C.06, M.06		
34	Cat Point Creek	5.83	%						--			1		--	30	--	2	20		35	A-,CC1,B1,F-,H-, I-,L-,M4,EE-,C1,	D1,E-,E3,W1, OO-,QQ-,AU-	XI
			acres									.06			1.75		.12	1.17		2.04	CC.06,B.06,E.18, M.23,C.06,D.06		
35	Cat Point Creek	6.37	%						1			--			30	4	2	3		40	A-,CC2,SS-,B-, C2,E-,F-,QQ-,H-,	HH-,K-,L-,AU-, M5,E10,W1,X-, Y-,EE- Island, pocket and fringe marsh	XI
			acres						.06						1.91	.25	.13	.19		2.55	CC.13,W.06,C.13, M.32,E.64		
36	Cat Point Creek	2.04	%						5			--			25	--	2	10		40	A-,CC1,B-,C1,D-, E-,F-,L-,U-,M15,	W1,E-,OO-, QQ-,EE-,PP-, UU-,AU- Cove marsh	XI
			acres						.10						.51		.04	.20		.82	CC.02,C.02,M.31, W.02		
37	Cat Point Creek	4.27	%						1			1	--	--	20	--	5	33		33	A-,CC1,C-,D-,E-, F-,I-,J-,PP-,VV-,	L-,M2,N2,E-, R-,T-,W2,EE-, U-,QQ-,UU-, NN-,WW-,XX-, AU-	XI
			acres						.04			.04			.85		.21	1.41		1.41	CC.04,M.09,N.09, W.09		
38	Cat Point Creek	2.27	%						--			2	2	1	20	5	5	25		25	A-,CC1,B-,E-,F-, G-,H-,I-,J1,Z-,	PP-,K-,L-,M10, N-,E3,Q-,W-, YY-,AU-	XI
			acres									.05	.05	.02	.45	.11	.11	.57		.57	CC.02,J.02,M.23, E.07		

IV. Cat Point Creek.

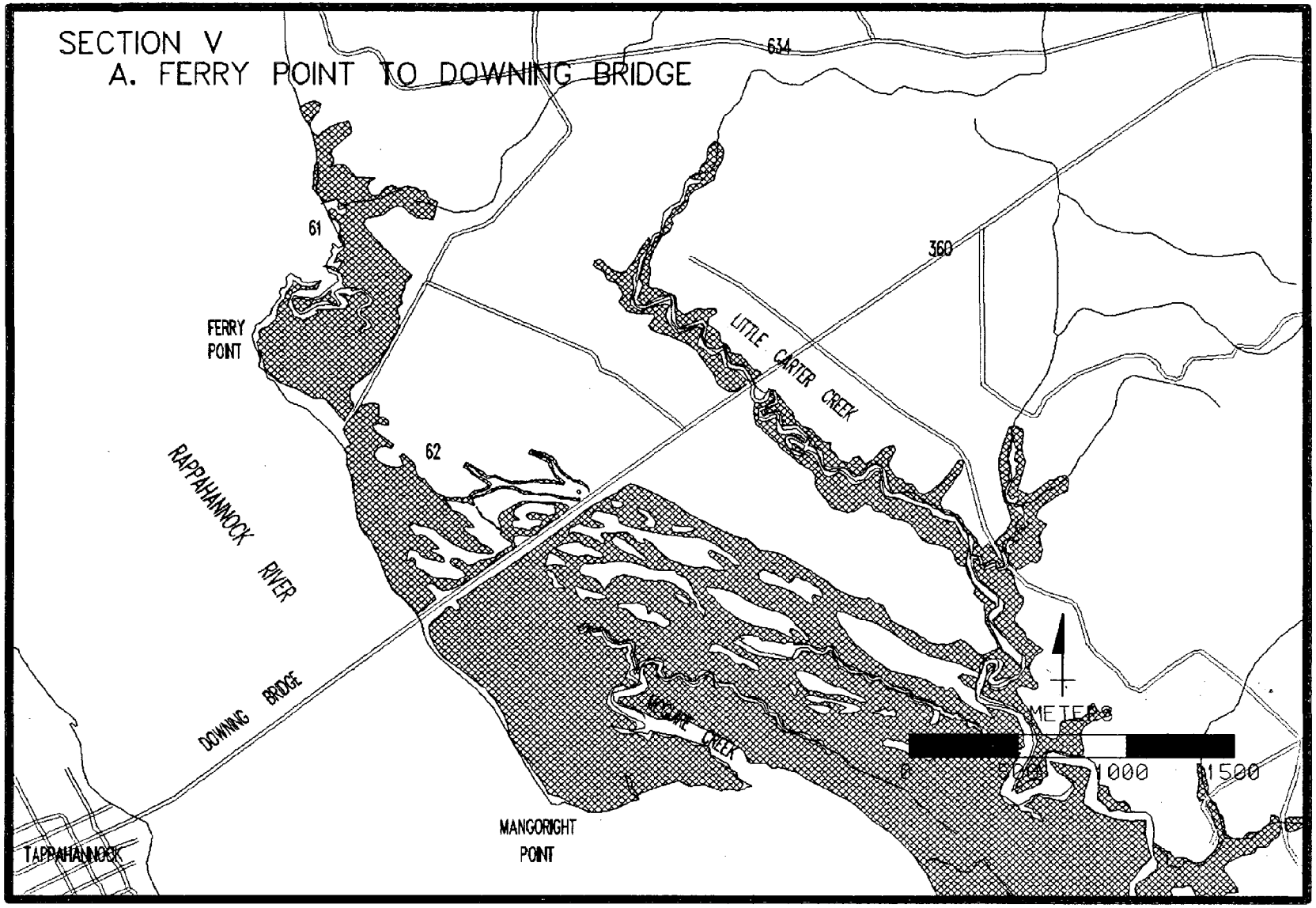
#	Marsh Location	Total Acres		Salt Marsh Cordgrass	Salt Meadow Hay	Big Cordgrass	Black Needlerush	Salt Bush	Cattails	Salt Marsh Bulrush	Water Hemp	Marsh Hibiscus	Tearthumb	Smartweed	Arrow Arum & Pickerelweed	Jewelweed	Rice Cutgrass	Wild Rice	Olney Threesquare	Beggars Ticks	Others	Observations	Marsh Type
39	Cat Point Creek	3.95	%								--	--	4	--	12	10	5	18		20	A-,CC-,B-,G-,H-,L-,M5,EE-,PP-,	E25,Q-,W1,X-,Y-,U-,ZZ-	XI
			acres										.16		.47	.40	.20	.71		.79	M.20,E.99,W.04		
40	Cat Point Creek	1.82	%								--	--	5	--	9	25		--		15	A-,B-,D-,H-,J-,K-,L-,M19,N-,UU-,R-,	E25,Q1,S-,W-,X-,Y-,U-,EE-,AC-,AD-,NN-,DD-,AE-,AF-,AG-,AH-,A1,	XI AK-,AL-
			acres										.09		.16	.46				.27	M.35,Q.02,E.46,A.02		
41	Cat Point Creek	4.38	%						5		--	1	3	2	25	1		20		35	A-,B1,C-,D-,E-,F-,H-,J1,UU-,K-,L-,	M1,Q-,R-,Y-,EE-,OO-,QQ-AN-,XX-,AM-,PP-,W5,U-,AU-	XI
			acres						.22			.04	.13	.09	1.10	.04		.88		1.53	B.04,J.04,M.04,W.22		
42	Cat Point Creek	1.92	%			--			5		--	1	3	3	25	2	5	2		40	A-,CC3,B-,C1,D5,F-,H-,K-,L-,M5,N-,	E-,Q-,W-,AO-,U-,QQ-,OO-,EE-,AD-,AF-,UU-,AH-	XI
			acres						.10			.02	.06	.06	.48	.04	.10	.04		.77	CC.06,C.02,D.10,M.10		
43	Cat Point Creek	.90	%			3			1		--	1	1	2	30	--	10	--		41	A-,CC1,B-,C-,D-,E-,H-,OO-,I-,K-,	L-,R-,W10,Y-,EE-,AN-,HH-,VV-,AU-	XI
			acres			.03			.01			.01	.02	.02	.27		.09			.37	CC.01,W.09		
44	Cat Point Creek	6.28	%			--			2		--	1	3	1	35		5	2		40	A-,CC2,B-,C-,D1,E-,F-,L-,Q-,W8,	QQ-,AU-,EE-,PP-,AQ-	XI
			acres						.13			.06	.19	.06	2.20		.31	.13		2.51	CC.13,D.06,W.50		
45	Menokin Bay	8.91	%						2		--	8	--	1	25		2	18		40	A-,CC1,B-,C-,D2,E-,F-,G-,H-,I-,L-,	T-,W1,XX-,WW-,EE-,AR-,AH-,AQ-,AN-,AL-,AT-,M-,LL-,AU-	XI
			acres						.18			.71		.09	2.23		.18	1.60		3.56	CC.09,D.18,W.09		
46	Cat Point Creek and Muddy Run	55.17	%						1		--	1	--	2	25		--	21		45	A-,CC-,B-,C-,D-,E-,F-,L-,N1,W3,	AU-,M1,AS-Bidens over-growing arrow arum and pickerelweed	XI
			acres						.55			.55		1.10	13.79			11.59		24.83	N.55,W1.66,M.55		

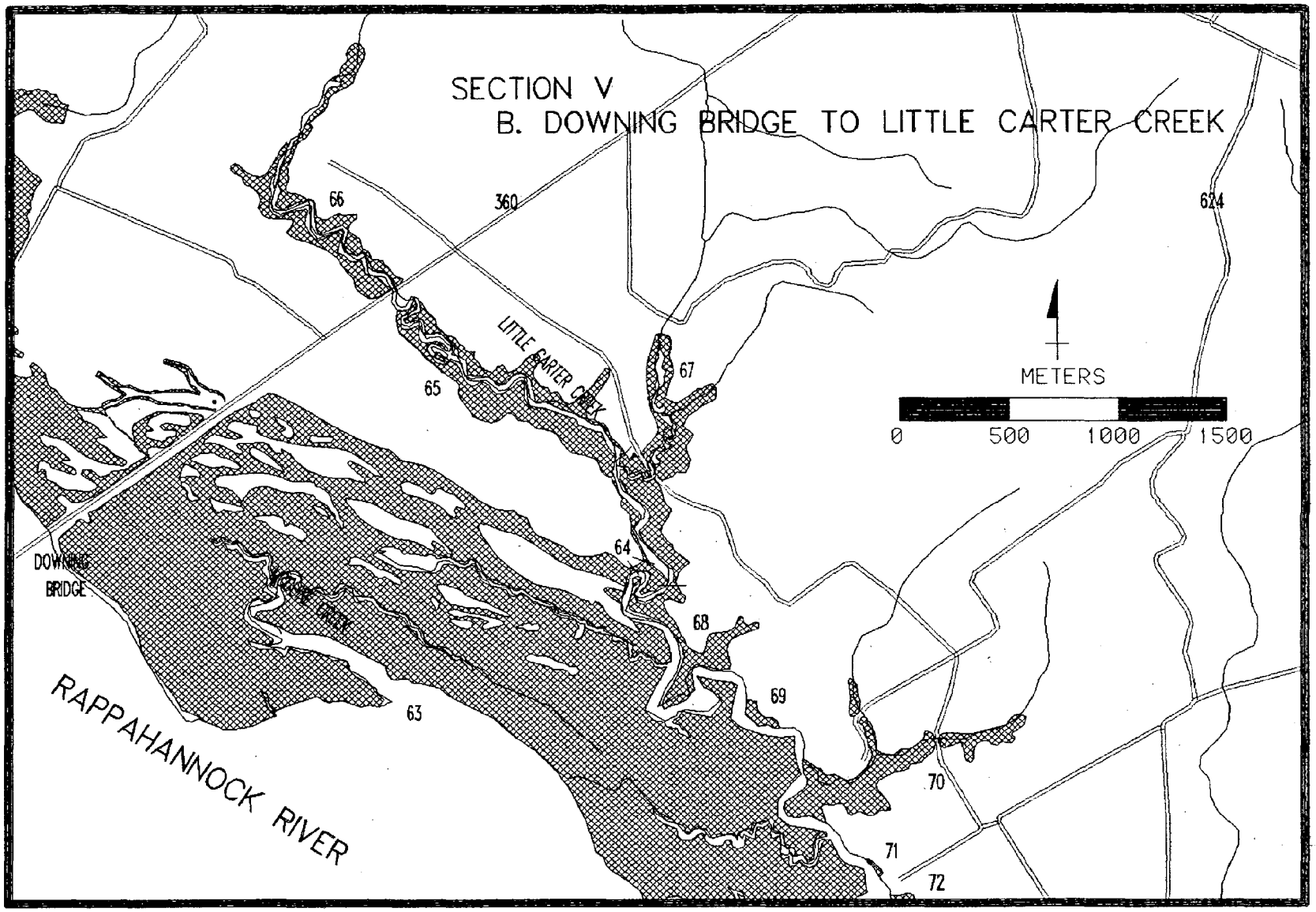
IV. Cat Point Creek.

#	Marsh Location	Total Acres		Salt Marsh Cordgrass	Salt Meadow Hay	Big Cordgrass	Black Needlerush	Salt Bush	Cattails	Salt Marsh Bulrush	Water Hemp	Marsh Hibiscus	Tearthumb	Smartweed	Arrow Arum & Pickerelweed	Jewelweed	Rice Cutgrass	Wild Rice	Olney Threesquare	Beggars Ticks	Others	Observations	Marsh Type
47	Cat Point Creek	20.18	%						20		--	5		--	9		--	20		40	CC1,B1,C1,D1, E-,H-,K-,L-,W1,	M1,AU-	XI
			acres						4.04			1.01			1.82			4.04		8.07	CC.20,B.20,D.20, W.20,M.20,C.20		
48	Cat Point Creek	32.69	%						--			--			10			65		18	B-,W7	Invading oxbow area; very little open water left	XI
			acres												3.27			21.25		5.88	W2.29		
49	Cat Point Creek	21.03	%						7		--	1			18		3	30		40	CC-,B1,C-,D-,F-, H-,Y-,Z-		XI
			acres						1.47			.21			3.79		.63	6.31		8.41	B.21		
50	Cat Point Creek	6.11	%	--					12		--	10	--	--	51		20	5		1	CC-,C-,D1,E-,F-, H-,Y-,Z-		VII
			acres						.73			.61			3.12		1.22	.31		.06	D.06		
51	Cat Point Creek	32.47	%	--		1			5		--	1	2	--	50	--	30	1		10	B-,C-,F-,H-,Y-, AQ-		VII
			acres			.32			1.62			.32	.65		16.24		9.74	.32		3.25			
52	Cat Point Creek	70.13	%	--		45			25		--	2	--		25	--	1	--		2	B-,C-,D-,K-,H-, Z-,Y-		XII
			acres			31.56			17.53			1.40			17.53		.70			1.40			
53	Cat Point Creek	3.88	%	2		1			25			2			66		1	1		--	C2	Fringe x 20'	VII
			acres	.08		.04			.97			.08			2.56		.04	.04			C.08		
54	Cat Point Creek	44.51	%	5		75			2		--	5	--	--	8	--	4			--	CC-,C-,D-,H-,Y1, Z-,AP-	Large marsh with fringe x 40'	V
			acres	2.23		33.38			.89			2.23			3.56		1.78				Y.45		

IV. Cat Point Creek.

#	Marsh Location	Total Acres		Salt Marsh Cordgrass	Salt Meadow Hay	Big Cordgrass	Black Needlerush	Salt Bush	Cattails	Salt Marsh Bulrush	Water Hemp	Marsh Hibiscus	Tearthumb	Smartweed	Arrow Arum & Pickerelweed	Jewelweed	Rice Cutgrass	Wild Rice	Olney Threesquare	Beggars Ticks	Others	Observations	Marsh Type
55	Cat Point Creek	1.00	%	15		10			--		--	5	--	--	30			38		--	C2,D-,F-,Z-,H-,Y-	Four pocket marshes with fringe x 10'	XI
			acres	.15		.10						.05			.30			.38			C.02		
56	Cat Point Creek	21.56	%	30		25					1	1	--	1	25		1	15		--	B1,C-,D-,H-,L-,Y-,EE-		XII
			acres	6.47		5.39					.22	.22		.22	5.39		.22	3.23			B.22		
57	Cat Point Creek	26.67	%	25		63			--		--	5		--	5	--	1	--		--	II-,CC1,D-,H-,Y-,AP-,Z-		V
			acres	6.67		16.80						1.33			1.33		.27				CC.27		
58	Cat Point Creek	21.11	%	30		59			2		--	2	--	--	5						II-,AA-,D1,Y1,Z-	Large salt marsh cordgrass meadow	V
			acres	6.33		12.45			.42			.42			1.06						D.21,Y.21		
59	Cat Point Creek	.91	%	1				--	30			47									A-,CC-,AA1,O20,B-,C-,D1,H-,Y-		XII
			acres	.01					.27			.43									AA.01,O.18,D.01		
60	Cat Point Creek	.76	%	25	--	8		1	18	--		11			1				--		A-,II-,CC-,Y1,Z-,AA30,C-,D-,E5	Pocket marsh	XII
			acres	.19		.06		.01	.14			.08			.01						Y.01,AA.23,E.04		
T	Total Section IV	931.09	%																				
			acres	25.44	1.04	277.72		.01	63.30		.22	37.55	4.68	3.76	203.06	1.32	41.42	70.66	.84	174.23	25.87		
			%																				
			acres																				


SECTION V
A. FERRY POINT TO DOWNING BRIDGE
634
61
360
FERRY POINT
LITTLE CARTER CREEK
62
RAPPAHANNOCK RIVER
DOWNING BRIDGE
MOSAIC CREEK
METERS
0
500
1000
1500
MANGORIGHT POINT
TAPPAHANNOCK

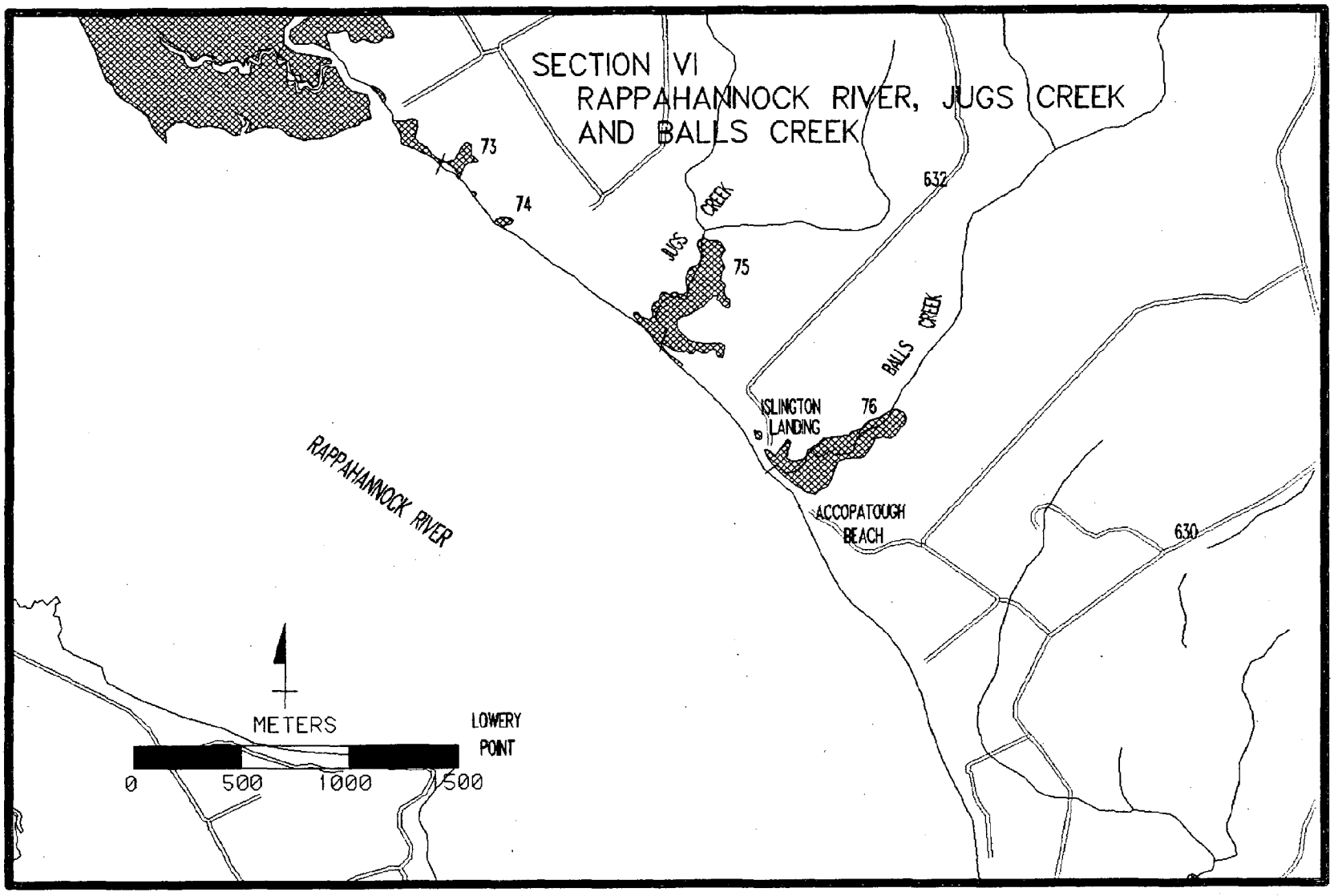

SECTION V
B. DOWNING BRIDGE TO LITTLE CARTER CREEK
360
624
66
65
67
64
68
69
70
71
72
63
LITTLE CARTER CREEK
DOWNING BRIDGE
RAPPAHANNOCK RIVER
METERS
0
500
1000
1500

V. Ferry Point to Little Carter Creek.

#	Marsh Location	Total Acres		Salt Marsh Cordgrass	Salt Meadow Hay	Big Cordgrass	Black Needlerush	Salt Bush	Cattails	Salt Marsh Bulrush	Water Hemp	Marsh Hibiscus	Tearthumb	Smartweed	Arrow Arum & Pickerelweed	Jewelweed	Rice Cutgrass	Wild Rice	Olney Threesquare	Beggars Ticks	Others	Observations	Marsh Type
61	Ferry Point	120.18	%	23	3	70			--		--	1	--	1	--	--	1		--		II-,CC-,JJ-,GG-, Z-,AA1,B-,C-,D-,	H-,Y-	V
			acres	27.64	3.61	84.13						1.20		1.20			1.20				AA1.20		
62	Rappahannock River	71.51	%	--	15	60		--	5		--	7	--	1					10		A-,II-,CC2,Z-,AA-, SS-,B-,D-,G-,Y-,	AR-,KK-	V
			acres		10.73	42.91			3.58			5.01		.72					7.15		CC1.43		
63	McGuire Creek	823.25	%	12	10	65		10	--	--	1	1			--				1		A-,II-,CC-,Z-,JJ-, AA-,SS-,MM-,B-,	G-,GG-,Y-, AB-,TT-	V
			acres	98.79	82.33	535.11		82.33			8.23	8.23							8.23				
64	Little Carter Creek	4.84	%	36	1	55		--	1	--	5	1		--					1		II-,CC-,MM-,G-, Z-	Island and point marsh	V
			acres	1.74	.05	2.66			.05		.24	.05							.05				
65	Little Carter Creek	56.44	%	58	15	25			--	--	--	2		--	--				--	--	II-,CC-,AA-,MM-, C-,F-,G-,AP-,Z-		I
			acres	32.74	8.47	14.11						1.13											
66	Little Carter Creek	38.97	%	50	--	--		--	1	--	4	7		3	--		--	--	--	30	A-,II5,AA-,OO-, B-,C-,F-,G-,AR-	Z-	I
			acres	19.49					.39		1.56	2.73		1.17						11.69	II1.95		
67	Little Carter Creek	40.71	%	35	37	25		1	--	--	--	1		--	--			1	--		A-,II-,CC-,AB-, AA-,MM-,B-,C-,	G-,L-,Z- Creek marsh with broad fringe	XII
			acres	14.25	15.06	10.18		.41				.41						.41					
68	Little Carter Creek	19.09	%	20	10	67		3	--	--	--	--		--					--		II-,J-,Z-		V
			acres	3.82	1.91	12.79		.57															

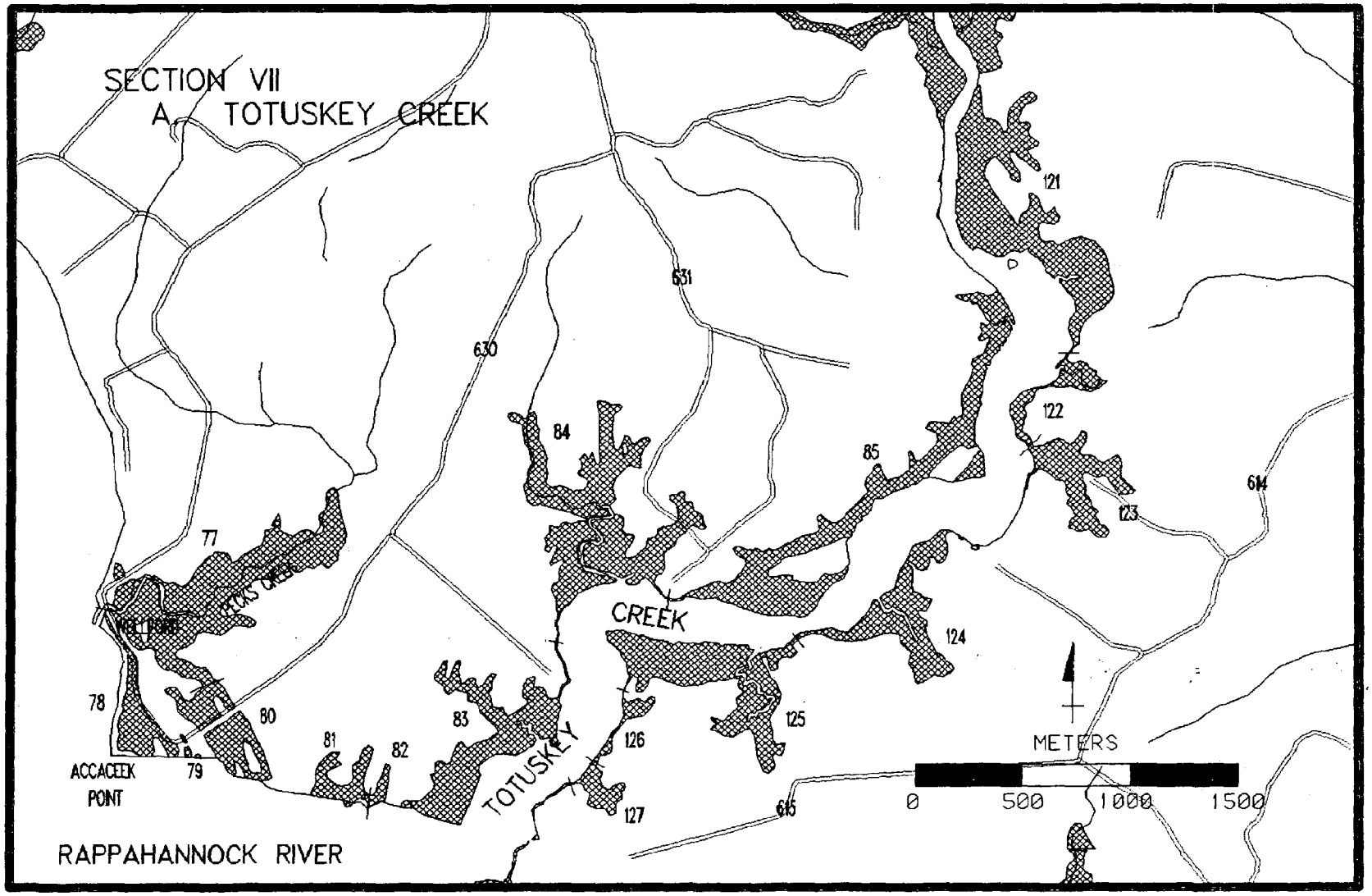
V. Ferry Point to Little Carter Creek.

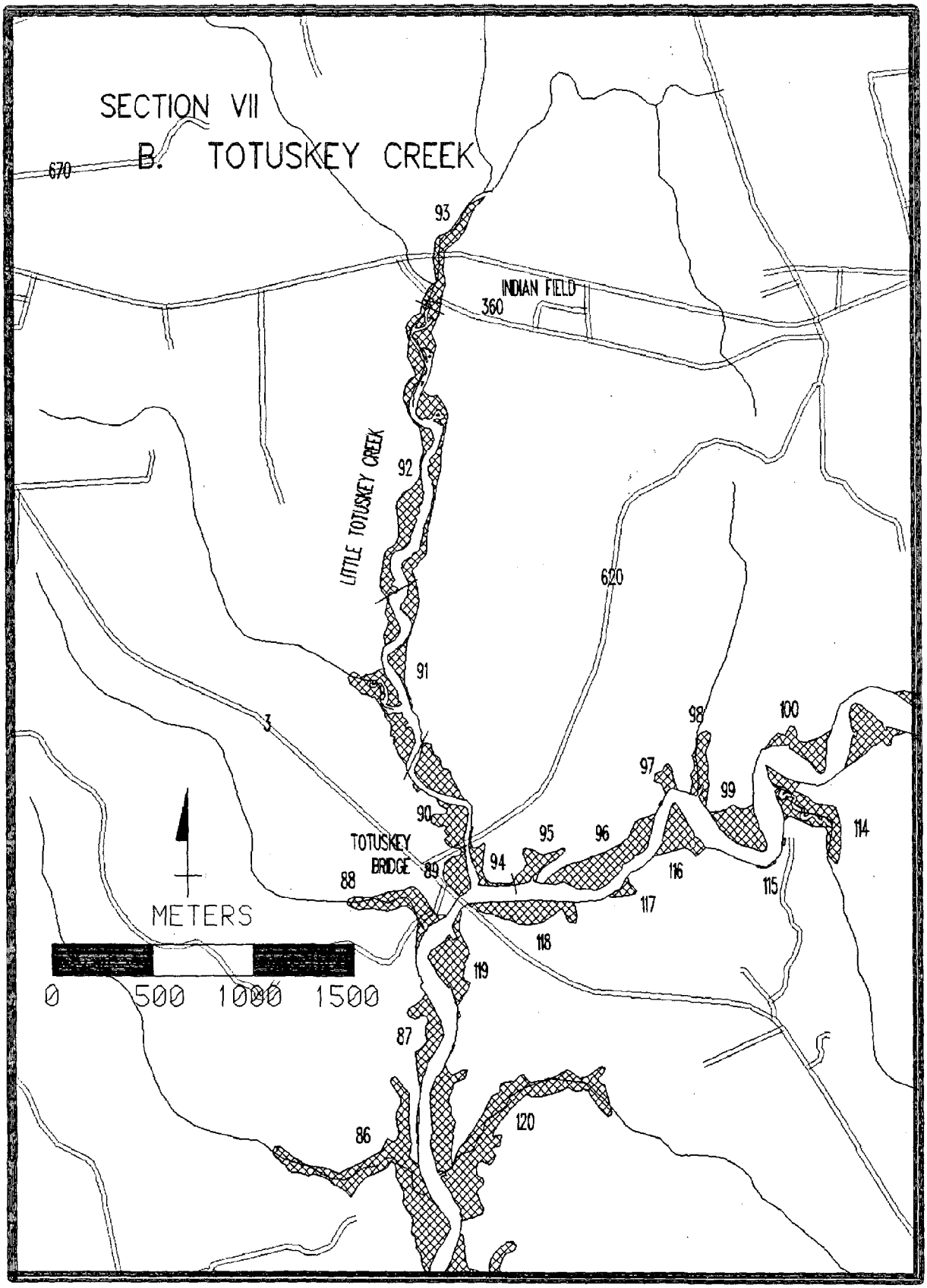
#	Marsh Location	Total Acres		Salt Marsh Cordgrass	Salt Meadow Hay	Big Cordgrass	Black Needlerush	Salt Bush	Cattails	Salt Marsh Bulrush	Water Hemp	Marsh Hibiscus	Tearthumb	Smartweed	Arrow Arum & Pickerelweed	Jewelweed	Rice Cutgrass	Wild Rice	Olney Threesquare	Beggars Ticks	Others	Observations	Marsh Type
69	Little Carter Creek	2.26	%	60	5	34		--	1		--	--		--					--		II-,C-,Z-	Broad extensive marsh	I
			acres	1.36	.11	.77			.02														
70	Little Carter Creek	35.84	%	3	17	70		5	--	--	2	1		--		--	1		1		A-,II-,B-,K-,Y-,Z-		V
			acres	1.08	6.09	25.09		1.79			.72	.36					.36		.36				
71	Little Carter Creek	.25	%	30	8	20		20			--	--		--	1		1				II-,D-,J20,Z-	Sandbar with marsh inside cove	XII
			acres	.08	.02	.05		.05							--		--				J.05		
72	Mouth of Little Carter Creek	3.34	%	7	40	40		--	2		--	--		--					10		II-,MM-,D1,Z-	Large pocket marsh	XII
			acres	.23	1.34	1.34			.07										.33		D.03		
T	Total Section V	1216.68	%																				
			acres	201.22	129.72	729.14		85.15	4.11		10.75	19.12		3.09			1.56	.41	16.12	11.69	4.66		
			%																				
			acres																				
			%																				
			acres																				
			%																				
			acres																				

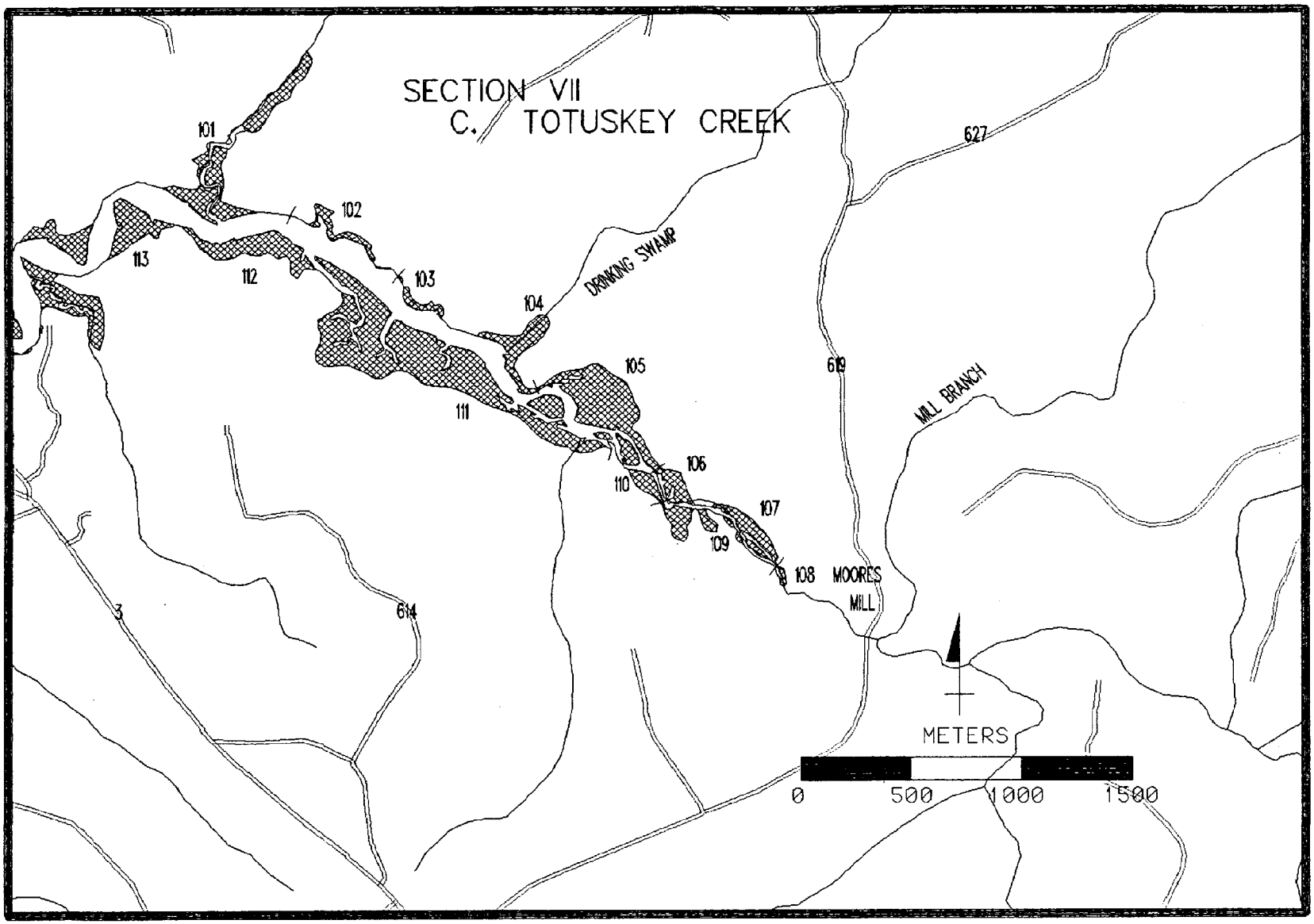

SECTION VI
RAPPAHANNOCK RIVER, JUGS CREEK
AND BALLS CREEK
73
74
JUGS CREEK
75
632
BALLS CREEK
ISLINGTON LANDING
76
ACCOPATOUGH BEACH
630
RAPPAHANNOCK RIVER
METERS
0
500
1000
1500
LOWERY POINT

VI. Rappahannock River, Jugs Creek and Balls Creek.

#	Marsh Location	Total Acres		Salt Marsh Cordgrass	Salt Meadow Hay	Big Cordgrass	Black Needlerush	Salt Bush	Cattails	Salt Marsh Bulrush	Water Hemp	Marsh Hibiscus	Tearthumb	Smartweed	Arrow Arum & Pickerelweed	Jewelweed	Rice Cutgrass	Wild Rice	Olney Threesquare	Beggars Ticks	Others	Observations	Marsh Type
73	Rappahannock River	2.31	%		2	90		--		--		6					2		--		Z-	Pocket marsh	V
			acres		.05	2.08						.14					.05						
74	Rappahannock River	.52	%		--	2		15	3			70		--	--	--	3				CC2,F-,G-,Z5	Small pocket marsh	XI
			acres			.01		.08	.02			.36					.02				CC.01,Z.03		
75	Jugs Creek	23.95	%	2	1	65		1	1		--	5		2	1	--	17		5		II-,AA-,SS-,C-,D-,Z-		V
			acres	.48	.24	15.57		.24	.24			1.20		.48	.24		4.07		1.20				
76	Balls Creek	22.28	%	20	16	45		4	5	--	--	3		1	1		--		5		II-,AA-,SS-,F-,Z-,AB-		XII
			acres	4.46	3.56	10.03		.89	1.11			.67		.22	.22				1.11				
T	Total Section VI	49.06	%																				
			acres	4.94	3.85	27.69		1.21	1.37			2.37		.70	.46		4.14		2.31		.04		
			%																				
			acres																				
			%																				
			acres																				
			%																				
			acres																				


SECTION VII
A. TOTUSKEY CREEK
121
631
630
122
84
85
614
123
77
CREEK
124
78
80
83
125
81
82
126
TOTUSKEY
ACCACEEK
POINT
79
127
615
METERS
0
500
1000
1500
RAPPAHANNOCK RIVER


SECTION VII
B. TOTUSKEY CREEK
670
93
INDIAN FIELD
360
LITTLE TOTUSKEY CREEK
92
620
91
3
98
100
97
99
90
95
96
114
TOTUSKEY
BRIDGE
89
94
116
88
115
117
METERS
118
0
500
1000
1500
119
87
120
86


SECTION VII
C. TOTUSKEY CREEK
101
102
103
104
105
106
107
108
109
110
111
112
113
DRINKING SWAMP
MILL BRANCH
MOORES MILL
627
619
614
3
METERS
0
500
1000
1500

VII. Totuskey Creek.

#	Marsh Location	Total Acres		Salt Marsh Cordgrass	Salt Meadow Hay	Big Cordgrass	Black Needlerush	Salt Bush	Cattails	Salt Marsh Bulrush	Water Hemp	Marsh Hibiscus	Tearthumb	Smartweed	Arrow Arum & Pickerelweed	Jewelweed	Rice Cutgrass	Wild Rice	Olney Threesquare	Beggars Ticks	Others	Observations	Marsh Type
77	Pecks Creek	75.72	%	19	30	20	1	25	--	--	--	--		2	--		--		3		A-,II-,AA-,MM-,B-,RR-,Z-	Very diverse mixed brackish marsh	XII
			acres	14.39	22.72	15.14	.76	18.93						1.51					2.27				
78	Accaceek Point	17.72	%	3	59	20	3	--			--								15		AB-	Beach around perimeter	II
			acres	.53	10.45	3.54	.53												2.66				
79	Rappahannock River	.25	%		20																CC5,AL75,Z-	Pocket marsh behind dune	XI
			acres		.05																CC.01,AL.19		
80	Rappahannock River	22.28	%	4	40	10	15	1		--	--	--							30		A-,II-,AB-,JJ-,AA-,D-	Extensive marsh	XII
			acres	.89	8.91	2.23	3.34	.22											6.68				
81	Rappahannock River	9.05	%	10	50	25	--	5	5	--	--	--							5		A-,II-,AB-,AA-,D-	Double pocket marsh	II
			acres	.91	4.53	2.26		.45	.45										.45				
82	Rappahannock River	2.27	%	25	40	22	--	--	8	--	--	--							5		A-,II-,AB-,MM-	Small creek marsh	XII
			acres	.57	.91	.50			.18										.11				
83	Mouth of Totuskey Creek	46.22	%	5	7	82	--	1	3	--	1	--							1		II-,AB-,AA-,D-	Extensive marsh	V
			acres	2.31	3.24	37.90		.46	1.39		.46								.46				
84	Totuskey Creek	75.89	%	--	1	85		--	11	--	1	--					--		1		II-,CC-,AB1,SS-		V
			acres		.76	64.51			8.35		.76								.76		AB.76		

VII. Totuskey Creek.

#	Marsh Location	Total Acres		Salt Marsh Cordgrass	Salt Meadow Hay	Big Cordgrass	Black Needlerush	Salt Bush	Cattails	Salt Marsh Bulrush	Water Hemp	Marsh Hibiscus	Tearthumb	Smartweed	Arrow Arum & Pickerelweed	Jewelweed	Rice Cutgrass	Wild Rice	Olney Threesquare	Beggars Ticks	Others	Observations	Marsh Type
85	Totuskey Creek	77.14	%	1	--	98		--	1			--					--				CC-,SS-,D-		V
			acres	.77		75.60			.77														
86	Totuskey Creek	35.30	%		--	99		--	1			--	--				--		--		CC-,SS-,Z-	Almost pure stand of big cordgrass	V
			acres			34.95			.35														
87	Totuskey Creek	7.98	%	1	--	96		--		--	--	1			1		1				CC-,C-,D-	Big cordgrass dominating extensive marsh	V
			acres	.08		7.66						.08			.08		.08						
88	Totuskey Creek	10.62	%			95		--			--	4	--		1						CC-,Z-	Creek marsh	V
			acres			10.09						.42			.11								
89	Totuskey Creek	4.78	%			90			1			7			2		--				CC-,Z-	Hibiscus pocket in center of marsh	V
			acres			4.30			.05			.33			.10								
90	Little Totuskey Creek	14.56	%	--	1	60			11		3	6	5	2	--	--	6	--	2	1	II1,B2,C-,D-,G-,L-,Z-		V
			acres		.15	8.74			1.60		.44	.87	.73	.29			.87		.29	.15	II.15,B.29		
91	Little Totuskey Creek	17.95	%		--	30			15		1	7	10	3	15	2	5	5		2	II-,B3,EE-,Z-,C-,D1,M1,K-,Y-,OO-		XI
			acres			5.39			2.69		.18	1.26	1.80	.54	2.69	.36	.90	.90		.36	B.54,D.18,M.18		
92	Little Totuskey Creek	33.00	%			--			--		--	1	8	3	20	1	5	35		25	B-,C-,E-,G-,H-,I-,J-,K-,L-,W2,EE-,	AU-	XI
			acres									.33	2.64	.99	6.60	.33	1.65	11.55		8.25	WW.66		

VII. Totuskey Creek.

#	Marsh Location	Total Acres		Salt Marsh Cordgrass	Salt Meadow Hay	Big Cordgrass	Black Needlerush	Salt Bush	Cattails	Salt Marsh Bulrush	Water Hemp	Marsh Hibiscus	Tearthumb	Smartweed	Arrow Arum & Pickerelweed	Jewelweed	Rice Cutgrass	Wild Rice	Olney Threesquare	Beggars Ticks	Others	Observations	Marsh Type
93	Little Totuskey Creek	6.30	%								--	5	25	10	20	5	15				E-,G-,I-,X-,Y-,K-, M10,EE-,AL-,U-,	N5,W5,AT-	XI
			acres									.32	1.58	.63	1.26	.32	.95				M.63,N.32,W.32		
94	Little Totuskey Creek	3.09	%			40			40			5			15				--		C-,D-,F-		XII
			acres			1.24			1.24			.15			.46								
95	Totuskey Creek	5.03	%	--		80			5			7			8						Z-	Pockets of cattail, arrow arum and pickerelweed	V
			acres			4.02			.25			.35			.40								
96	Totuskey Creek	16.66	%			75			13	--	--	5	--	--	5		1		1		CC-,B-,Z-	Arrow arum and pickerelweed fringe	V
			acres			12.50			2.17			.83			.83		.17		.17				
97	Totuskey Creek	2.38	%	--		35			55			2			8		--				Z-	Arrow arum and pickerelweed fringe	VI
			acres			.83			1.31			.05			.19								
98	Totuskey Creek	5.59	%			--			93		--	2	--		5	--	--				C-,D-,Z-	Arrow arum and pickerelweed fringe along creek	VI
			acres						5.20			.11			.28								
99	Totuskey Creek	9.50	%	--		50			25	--		20			5	--		--			D-,Z-	Large stand of cattail in center	V
			acres			4.75			2.38			1.90			.48								
100	Totuskey Creek	7.15	%			25			55	--	--	15		--	5	--	--				D-,I-,Z-		VI
			acres			1.79			3.93			1.07			.36								

VII. Totuskey Creek.

#	Marsh Location	Total Acres		Salt Marsh Cordgrass	Salt Meadow Hay	Big Cordgrass	Black Needlerush	Salt Bush	Cattails	Salt Marsh Bulrush	Water Hemp	Marsh Hibiscus	Tearthumb	Smartweed	Arrow Arum & Pickerelweed	Jewelweed	Rice Cutgrass	Wild Rice	Olney Threesquare	Beggars Ticks	Others	Observations	Marsh Type
101	Totuskey Creek	20.22	%			3			5		--	--	1	--	44	10	5	20		10	CC-,C-,F-,I-,J1, N-,W1	Very diverse marsh	XI
			acres			.61			1.01				.20		8.90	2.02	1.01	4.04		2.02	J.20,W.20		
102	Totuskey Creek	1.21	%						--	--	--	1	--	--	45	5	3	45		1	D-,F-,G-,I-,W-,X-	Fringe x 30'	XI
			acres									.01			.54	.06	.04	.54		.01			
103	Totuskey Creek	.62	%						5	--	--				50	3	2	40		--	C-,D-,F-,I-,K-	Fringe x 30'	VII
			acres						.03						.31	.02	.01	.25					
104	Totuskey Creek	8.82	%								1			--	35	5	1	53		5	C-,I-,W-		VI
			acres								.09				3.09	.44	.09	4.67		.44			
105	Totuskey Creek	22.81	%						60		--	3	--		15	1	1	18		2	C-,F-,H-,I-,J-,W-, X-	Dominated by cattails	XI
			acres						13.69			.68			3.42	.23	.23	4.11		.46			
106	Totuskey Creek	3.57	%												17	1	20	60		2	CC-,F-,H-,I-,K-, W-,X-		XI
			acres												.61	.04	.71	2.14		.07			
107	Totuskey Creek	5.34	%								--				30	15	22	30		1	C-,F-,H1,I-,K-, W1,AG-		XI
			acres												1.60	.80	1.17	1.60		.05	H.05,W.05		
108	Totuskey Creek	.44	%								--				20	40	20	15			J-,W5		XI
			acres												.09	.18	.09	.07			W.02		

VII. Totuskey Creek.

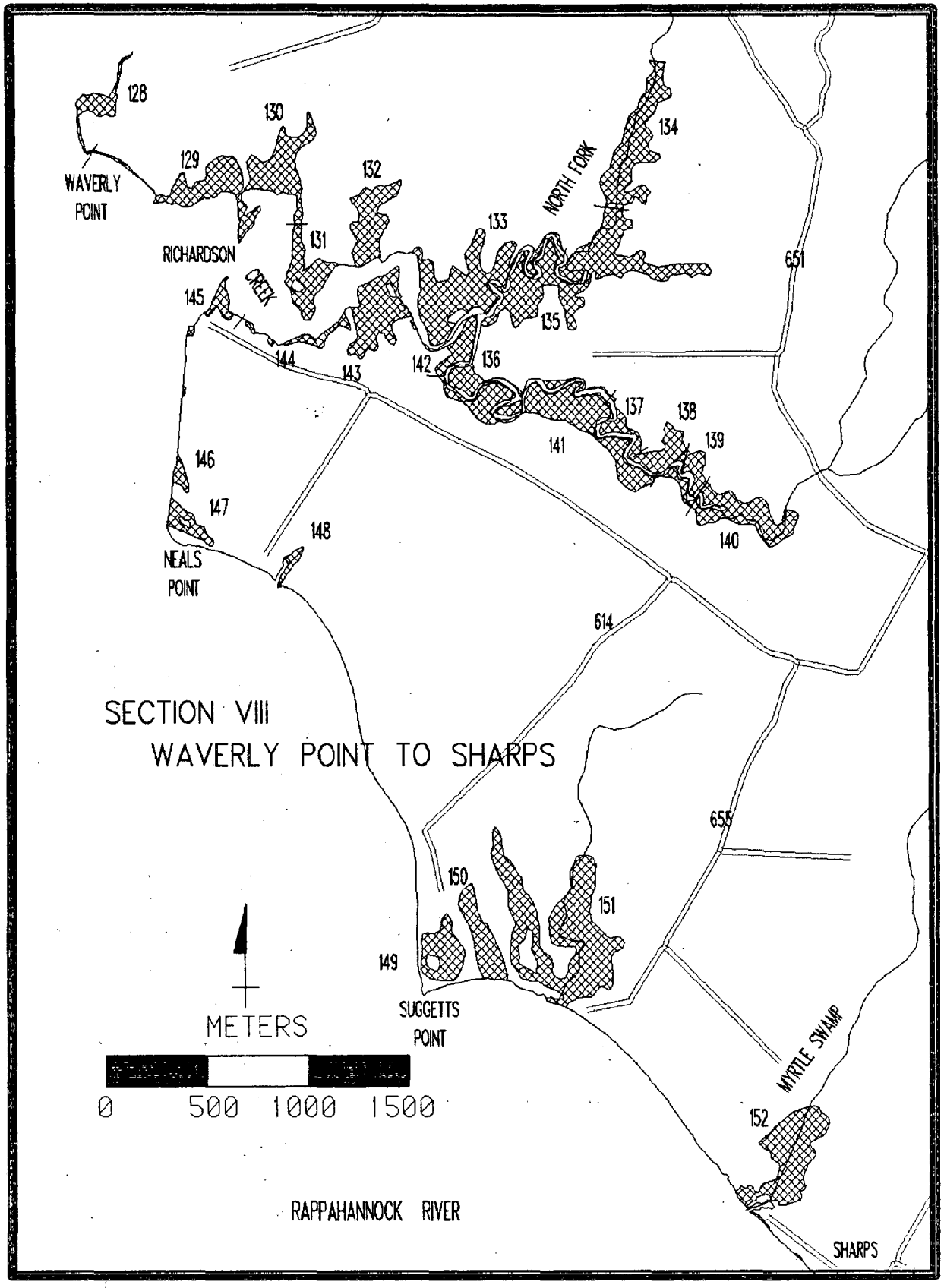
#	Marsh Location	Total Acres		Salt Marsh Cordgrass	Salt Meadow Hay	Big Cordgrass	Black Needlerush	Salt Bush	Cattails	Salt Marsh Bulrush	Water Hemp	Marsh Hibiscus	Tearthumb	Smartweed	Arrow Arum & Pickerelweed	Jewelweed	Rice Cutgrass	Wild Rice	Olney Threesquare	Beggars Ticks	Others	Observations	Marsh Type
109	Totuskey Creek	5.72	%									--	--		35	5	10	47			CC-,C1,F1,H1,I-,J-,W-		XI
			acres												2.00	.29	.57	2.69			C.06,F.06,H.06		
110	Totuskey Creek	2.67	%						--		--	--	1		50	9	5	32		2	C-,F1,H-,K-,W-		VII
			acres										.03		1.34	.24	.13	.85		.05	F.03		
111	Totuskey Creek	71.01	%						5				--	1	40	2	5	40		2	CC-,C-,F5,G-,I-,W-,X-	Large diverse freshwater marsh	XI
			acres						3.55					.71	28.40	1.42	3.55	28.40		1.42	F3.55		
112	Totuskey Creek	12.12	%						40			15		--	40	1	3	1		--	C-,X-		XI
			acres						4.85			1.82			4.85	.12	.36	.12					
113	Totuskey Creek	9.19	%		2				45		--	20			30	--	1	--			CC-,C1,I-,N-,X1,Z-		XI
			acres		.18				4.14			1.84			2.76		.09				C.09,X.09		
114	Totuskey Creek	11.91	%			40			15		--	15			23	1	4	--			B1,C1,D-,Z-,G-,H-,I-,N-,X-		XI
			acres			4.76			1.79			1.79			2.74	.12	.48				B.12,C.12		
115	Totuskey Creek	.25	%			70						5		--	5				20	--	AL-	Fringe marsh x 40'	
			acres			.18						.01			.01				.05				
116	Totuskey Creek	7.27	%	--		65			10			15		--	10		--				CC-,C-,D-,Z-		V
			acres			4.73			.73			1.09			.73								

VII. Totuskey Creek.

#	Marsh Location	Total Acres		Salt Marsh Cordgrass	Salt Meadow Hay	Big Cordgrass	Black Needlerush	Salt Bush	Cattails	Salt Marsh Bulrush	Water Hemp	Marsh Hibiscus	Tearthumb	Smartweed	Arrow Arum & Pickerelweed	Jewelweed	Rice Cutgrass	Wild Rice	Olney Threesquare	Beggars Ticks	Others	Observations	Marsh Type
117	Totuskey Creek	1.54	%	--		70		--	3			20			7		--				CC-,C-,D-,NN-,Z-		V
			acres			1.08			.05			.31			.11								
118	Totuskey Creek	10.95	%	--		90		--	5	--		3		--	2		--				CC-		V
			acres			9.86			.55			.33			.22								
119	Totuskey Creek	10.69	%	--		96		--	1			2		--	--		--				CC-,SS1,D-,Z-	Dominated by big cordgrass	V
			acres			10.26			.11			.21									SS.11		
120	Totuskey Creek	45.68	%	1		96		--	1	--		1		--	--		--		1		II-,CC-,AA-,SS-,C-,Z-	Dominated by big cordgrass, stands of cattails & threesquare	V
			acres	.46		43.85			.46			.46							.46				
121	Totuskey Creek	80.03	%	2	--	92		--	2	1	--	--	2	--	--		--		1		CC-,AB-,SS-,C-,D-,Z-	Completely dominated by big cordgrass	V
			acres	1.60		73.63			1.60	.80			1.60						.80				
122	Totuskey Creek	10.52	%	1		98						1							--		CC-,C-,D-,Z-	Completely dominated by big cordgrass	V
			acres	.11		10.31						.11											
123	Totuskey Creek	23.37	%	--	1	68		--	30			1							--		C-,D-,X-		V
			acres		.23	15.89			7.01			.23											
124	Totuskey Creek	33.76	%	1	15	80		1	--	--	--	--							3		II-,AB-,SS-,MM-,C-,D-,Z-		V
			acres	.34	5.06	27.01		.34											1.01				

VII. Totuskey Creek.

#	Marsh Location	Total Acres		Salt Marsh Cordgrass	Salt Meadow Hay	Big Cordgrass	Black Needlerush	Salt Bush	Cattails	Salt Marsh Bulrush	Water Hemp	Marsh Hibiscus	Tearthumb	Smartweed	Arrow Arum & Pickerelweed	Jewelweed	Rice Cutgrass	Wild Rice	Olney Threesquare	Beggars Ticks	Others	Observations	Marsh Type
125	Totuskey Creek	52.45	%	4	10	67	--	15	--		--			--					4		II-,AB-,SS-	Extensive marsh and creek marsh	V
			acres	2.10	5.25	35.14		7.87											2.10				
126	Totuskey Creek	3.34	%	20	51	25	--		--	--									3		II-,D1	Two pocket marshes connected by fringe x 10'	II
			acres	.67	1.70	.84													.10		D.03		
127	Totuskey Creek	6.17	%	15	53	15	--	1	10		--	--							5		A-,AA-,D1	Small creek marsh	II
			acres	.93	3.27	.93		.06	.62										.31		D.06		
T	Total Section VII	968.10	%																				
			acres	26.66	67.41	537.02	4.63	28.33	72.50	.80	1.93	16.96	8.58	4.67	75.56	6.99	13.15	61.93	18.68	13.28	9.13		
			%																				
			acres																				
			%																				
			acres																				
			%																				
			acres																				
			%																				
			acres																				


SECTION VIII
WAVERLY POINT TO SHARPS
128
129
130
131
132
133
134
135
136
137
138
139
140
141
142
143
144
145
146
147
148
149
150
151
152
WAVERLY POINT
RICHARDSON CREEK
NORTH FORK
NEALS POINT
SUGGETTS POINT
MYRTLE SWAMP
SHARPS
651
614
655
METERS
0
500
1000
1500
RAPPAHANNOCK RIVER

VIII. Waverly Point to Sharps.

#	Marsh Location	Total Acres		Salt Marsh Cordgrass	Salt Meadow Hay	Big Cordgrass	Black Needlerush	Salt Bush	Cattails	Salt Marsh Bulrush	Water Hemp	Marsh Hibiscus	Tearthumb	Smartweed	Arrow Arum & Pickerelweed	Jewelweed	Rice Cutgrass	Wild Rice	Olney Threesquare	Beggars Ticks	Others	Observations	Marsh Type
128	Waverly Point	4.29	%	--	25	68		1		1											D5,AR-	Planted marsh	V
			acres		1.07	2.92		.04		.04											D.21		
129	Mouth of Richardson Creek	13.18	%	3	55		--	1	1			--							40		AA-		II
			acres	.40	7.25			.13	.13										5.27				
130	Richardson Creek	18.46	%	15	20	17	1	40	1	--		1							5			Creek marsh	XII
			acres	2.77	3.69	3.14	.18	7.38	.18			.18							.92				
131	Richardson Creek	12.05	%	15	25	18	2	20			--								20		AR-,II-,AB-,SS-, MM-,D-	Very diverse point marsh	XII
			acres	1.81	3.01	2.17	.24	2.41											2.41				
132	Richardson Creek	12.56	%	--	30	30		30	--			--							10		II-,Z-	Creek marsh	XII
			acres		3.77	3.77		3.77											1.26				
133	Richardson Creek and North Fork	25.80	%	12	18	40		10	--	--	--	--							20		II-,AB-,Z-		XII
			acres	3.10	4.64	10.32		2.58											5.16				
134	North Fork	23.97	%	1		1			65	--		8	--		20	1	3	1	--		X-,Z-		VI
			acres	.24		.24			15.58			1.92			4.79	.24	.72	.24					
135	North Fork	45.85	%	3	3	89		--	1	--	--	1		--	--	--	--		3		II-,AB-,Z-,JJ-,C-		V
			acres	1.38	1.38	40.81			.46			.46							1.38				

VIII. Waverly Point to Sharps.

#	Marsh Location	Total Acres		Salt Marsh Cordgrass	Salt Meadow Hay	Big Cordgrass	Black Needlerush	Salt Bush	Cattails	Salt Marsh Bulrush	Water Hemp	Marsh Hibiscus	Toothumb	Smartweed	Arrow Arum & Pickerelweed	Jewelweed	Rice Cutgrass	Wild Rice	Olney Threesquare	Beggars Ticks	Others	Observations	Marsh Type
136	Richardson Creek	4.24	%	1	10	68		1		--	--	--		--					20		AB-,Z-		V
			acres	.04	.42	2.88		.04											.85				
137	Richardson Creek	2.62	%	20	--	75			--		--	5	--	--	--	--					FF-,AB-,Z-		V
			acres	.52		1.97						.13											
138	Richardson Creek	8.21	%	40		53			1	--	--	5	--	--	1	--	--				C-,Z-		V
			acres	3.28		4.35			.08			.41			.08								
139	Richardson Creek	5.78	%	40		50				--	1	1	--	--	5	1	1	--			CC-,AB-,Z1,JJ-,C-,D-,S-,AP-,FF-		V
			acres	2.31		2.89					.06	.06			.29	.06	.06				Z.06		
140	Richardson Creek	16.23	%	20		1			6		--	20	--	--	25	--	5	22			C-,D1,F-,Z-		XI
			acres	3.25		.16			.97			3.25			4.06		.81	3.57			D.16		
141	Richardson Creek	27.86	%	2	5	78		3	--	--	--	7		--	--		--		5		AB-,JJ-,SS-,C-,Z-		V
			acres	.56	1.39	21.73		.84				1.95							1.39				
142	Richardson Creek	5.92	%	--	15	65		10	--	--	--	--							10		CC-,AB-,JJ-,MM-,Z-		V
			acres		.89	3.85		.59											.59				
143	Richardson Creek	15.84	%	3	5	45		39	--	--	--	--							8		CC-,AB-	Large extensive marsh	XII
			acres	.48	.79	7.13		6.18											1.27				

VIII. Waverly Point to Sharps.

#	Marsh Location	Total Acres		Salt Marsh Cordgrass	Salt Meadow Hay	Big Cordgrass	Black Needlerush	Salt Bush	Cattails	Salt Marsh Bulrush	Water Hemp	Marsh Hibiscus	Tearthumb	Smartweed	Arrow Arum & Pickerelweed	Jewelweed	Rice Cutgrass	Wild Rice	Olney Threesquare	Beggars Ticks	Others	Observations	Marsh Type
144	Richardson Creek	.50	%	42	10	40		2	--	--											II-,AB1,D5,Z-	Two small pocket marshes and fringe x 12'	XII
			acres	.21	.05	.20		.01													AB.01,D.03		
145	Mouth of Richardson Creek	2.11	%	15	25	45	--	15		--		--									SS-,D-	Spit marsh	XII
			acres	.32	.53	.95		.32															
146	Rappahannock River	1.53	%	1	43	5		45		1		5										Very high marsh behind beach in slight depression	XII
			acres	.02	.66	.08		.69		.02		.08											
147	Neals Point	3.98	%	--	70	--	17	10		--		--			--				3			Embayed marsh	II
			acres		2.79		.68	.40											.12				
148	Rappahannock River	1.58	%	5	10	--		40	45	--	--	--									CC-,AB-	Pocket marsh at head of canal behind bulkhead	XII
			acres	.08	.16			.63	.71														
149	Suggetts Point	10.63	%	5	70	--	--	25	--		--								--		AB-	Embayed marsh with tidal pond	II
			acres	.53	7.44			2.66															
150	Rappahannock River	10.86	%	1	55	10	--	14	--		--								20		A-,AB-	Large creek marsh cut off by beach berm	II
			acres	.11	5.97	1.09		1.52											2.17				
151	Rappahannock River	48.94	%	15	34	20	--	30	--	--	--								--		A-,II-,CC-,AB1, MM-		XII
			acres	7.34	16.64	9.79		14.68													AB.49		

VIII. Waverly Point to Sharps.

#	Marsh Location	Total Acres		Salt Marsh Cordgrass	Salt Meadow Hay	Big Cordgrass	Black Needlerush	Salt Bush	Cattails	Salt Marsh Bulrush	Water Hemp	Marsh Hibiscus	Tearthumb	Smartweed	Arrow Arum & Pickerelweed	Jewelweed	Rice Cutgrass	Wild Rice	Olney Threesquare	Beggars Ticks	Others	Observations	Marsh Type
152	Myrtle Swamp	24.20	%	27	40	1	--	30	--	1									1		A-,AB-,AA-	New spoil and bulkheading; creek rerouted around spoil	XII
			acres	6.53	9.68	.24		7.26		.24									.24				
T	Total Section VIII	347.19	%																				
			acres	35.28	72.22	120.68	1.10	52.13	18.11	.30	.06	8.44			9.22	.30	1.59	3.81	23.03		.96		
			%																				
			acres																				
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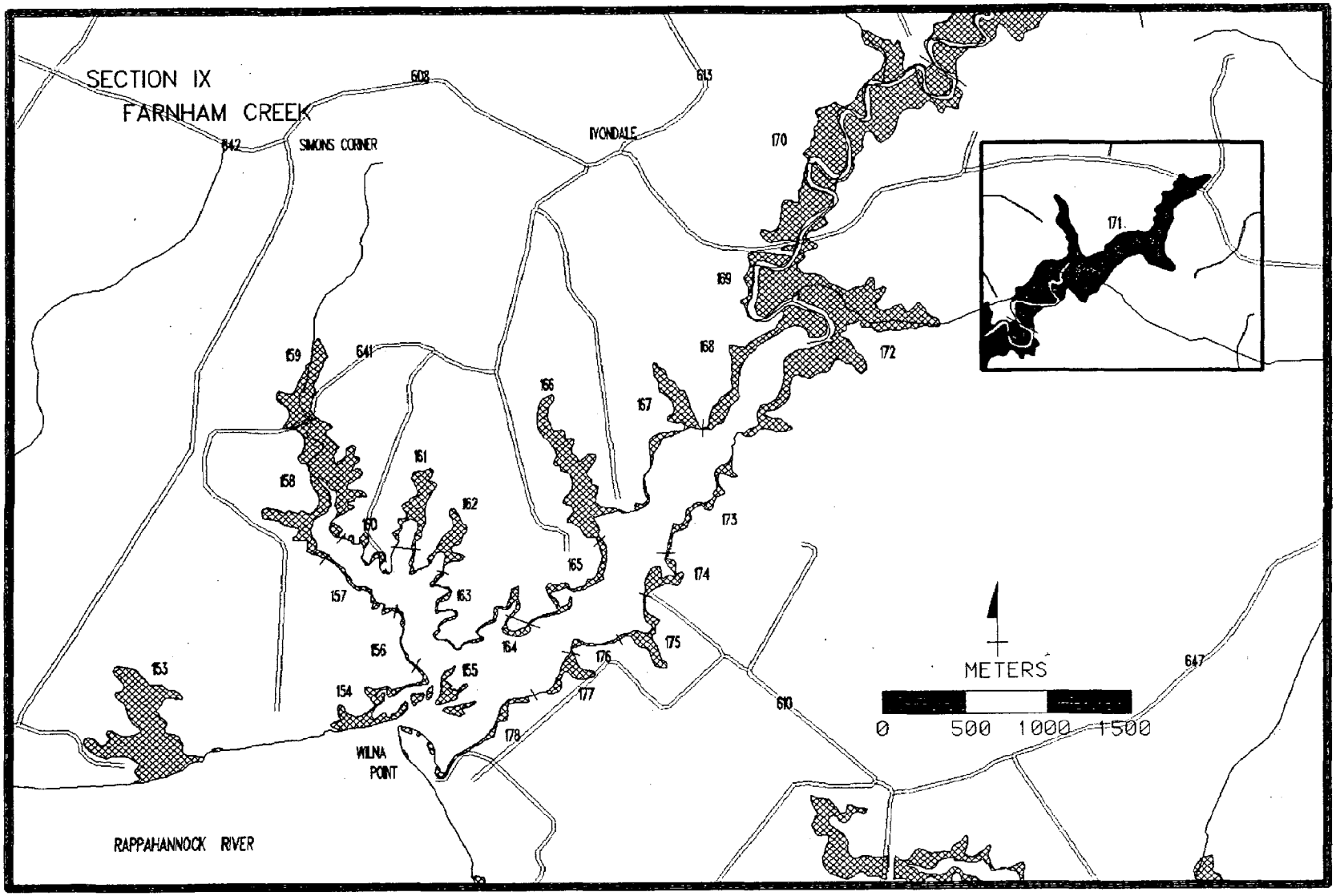
SECTION IX
FARNHAM CREEK
608
613
642
SIMONS CORNER
IVONDALE
170
171
169
168
172
159
641
166
167
161
158
162
160
173
165
174
157
163
164
175
156
176
153
155
154
177
610
647
178
WILNA
POINT
METERS
0
500
1000
1500
RAPPAHANNOCK RIVER

IX. Farnham Creek.

#	Marsh Location	Total Acres		Salt Marsh Cordgrass	Salt Meadow Hay	Big Cordgrass	Black Needlerush	Salt Bush	Cattails	Salt Marsh Bulrush	Water Hemp	Marsh Hibiscus	Tearthumb	Smartweed	Arrow Arum & Pickerelweed	Jewelweed	Rice Cutgrass	Wild Rice	Olney Threesquare	Beggars Ticks	Others	Observations	Marsh Type
153	Rappahannock River	31.02	%	1	34	10		45	5	--									5		AB-,SS-	Large creek marsh	XII
			acres	.31	10.55	3.10		13.96	1.55										1.55				
154	Wilna Point	7.53	%	40	13	30	--	14	2	--		--							1		AB-	Cove spit marsh	XII
			acres	3.01	.98	2.26		1.05	.15										.08				
155	Farnham Creek	4.40	%	95	--	5		--			--										AB-	Islands at mouth of creek	I
			acres	4.18		.22																	
156	Farnham Creek	.19	%	50	5	35	--	10		--												*Fringe and* small pocket marsh	I
			acres	.10	.01	.07		.02															
157	Farnham Creek	.28	%	50	12	25		--	5	8		--							--		II-,JJ-,Z-	Series of small pocket marshes and fringe x 7'	I
			acres	.14	.03	.07			.01	.02													
158	Farnham Creek	25.86	%	30	20	40		5	--	2	--								2		II-,AB1	Lower end of creek marsh	XII
			acres	7.76	5.17	10.34		1.29		.52									.52		AB.26		
159	Farnham Creek	10.35	%	1	10	85		2	1		--	--		--					1		A-,II-,AB-,AA-	Upper end of creek marsh	V
			acres	.10	1.04	8.80		.21	.10										.10				
160	Farnham Creek	.71	%	45	4	35		--	15	1	--	--									AB-	Two small pockets	XII
			acres	.32	.03	.25			.11	.01													

IX. Farnham Creek.

#	Marsh Location	Total Acres		Salt Marsh Cordgrass	Salt Meadow Hay	Big Cordgrass	Black Needlerush	Salt Bush	Cattails	Salt Marsh Bulrush	Water Hemp	Marsh Hibiscus	Tearthumb	Smartweed	Arrow Arum & Pickerelweed	Jewelweed	Rice Cutgrass	Wild Rice	Olney Threesquare	Beggars Ticks	Others	Observations	Marsh Type
161	Farnham Creek	7.51	%	47	5	47	--	--	--	1	--	--										Creek marsh	XII
			acres	3.53	.38	3.53				.08													
162	Farnham Creek	4.37	%	60	20	16		--	1	2	--								1			Small creek marsh with large pocket and fringe	I
			acres	2.62	.87	.70			.04	.09									.04				
163	Farnham Creek	.67	%	65	3	30	--	2	--			--									SS-,C-	Two small pocket marshes and fringe x 6'	I
			acres	.44	.02	.20		.01															
164	Farnham Creek	.50	%	45	15	10	--	30															XII
			acres	.23	.08	.05		.15															
165	Farnham Creek	1.50	%	50	10	35	--	5	--	--	--								--		II-,AB-,AA-,C-	Spit cove marsh with two pockets and narrow fringe	I
			acres	.75	.15	.53		.08															
166	Farnham Creek	17.78	%	1	5	70		16	7	--	--	--							1		A-,II-,AB-	Creek marsh	V
			acres	.18	.89	12.45		2.84	1.25										.18				
167	Farnham Creek	9.19	%	1	5	72		20	2	--	--								--		A-,II-,AB-	Creek marsh with two pockets and fringe x 15'	V
			acres	.09	.46	6.62		1.84	.18														
168	Farnham Creek	13.67	%	13	2	85		--	--	--	--	--		--	--				--		A-,CC-,AB-,AA-,Z-		V
			acres	1.78	.27	11.62																	

IX. Farnham Creek.

#	Marsh Location	Total Acres		Salt Marsh Cordgrass	Salt Meadow Hay	Big Cordgrass	Black Needlerush	Salt Bush	Cattails	Salt Marsh Bulrush	Water Hemp	Marsh Hibiscus	Tearthumb	Smartweed	Arrow Arum & Pickerelweed	Jewelweed	Rice Cutgrass	Wild Rice	Olney Threesquare	Beggars Ticks	Others	Observations	Marsh Type
169	Farnham Creek	4.03	%		1	84		--	7	--	--	--		--	--				7		A-,CC1,Z-	Creek marsh	V
			acres		.04	3.39			.28										.28		CC.04		
170	Farnham Creek	56.48	%	1	--	33			33	--	1	4	7	7	6	1	1	--	--		II4,AB-,Z-,JJ-, B2,N-,C-,D-,F-,	J-,L-,Y-	XII
			acres	.56		18.64			18.64		.56	2.26	3.95	3.95	3.39	.56	.56				II2.26,B1.13		
171	Farnham Creek	68.43	%			15			30			5	15	10	20	2	1				CC-,B-,C-,X-,EE-, U-,D-,E-,F-,G-,	W-,UU-,I-,L-, N1,R-,Y1,AU-	XII
			acres			10.26			20.53			3.42	10.26	6.84	13.69	1.37	.68				N.68,Y.68		
172	Farnham Creek	50.04	%	--	2	88	--	--	7	--	--	--		--	--	--			3		A-,II-,CC-,AA-, MM-,Z-	Extensive creek marsh	V
			acres		1.00	44.04			3.50										1.50				
173	Farnham Creek	2.72	%	10	3	85		--	2			--										Small spit marsh with two small pockets and fringe x 15'	V
			acres	.27	.08	2.31			.05														
174	Farnham Creek	2.64	%	10	30	55	--	5				--									II-	Large cove marsh	V
			acres	.26	.79	1.45		.13															
175	Farnham Creek	3.73	%	35	40	5		12	8	--				--					--			Large pocket marsh	XII
			acres	1.31	1.49	.19		.45	.30														
176	Farnham Creek	.40	%	15	--	50		35														Spit marsh with fringe x 8'	V
			acres	.06		.20		.14															

IX. Farnham Creek.

#	Marsh Location	Total Acres		Salt Marsh Cordgrass	Salt Meadow Hay	Big Cordgrass	Black Needlerush	Salt Bush	Cattails	Salt Marsh Bulrush	Water Hemp	Marsh Hibiscus	Tearthumb	Smartweed	Arrow Arum & Pickerelweed	Jewelweed	Rice Cutgrass	Wild Rice	Olney Threesquare	Beggars Ticks	Others	Observations	Marsh Type
177	Farnham Creek	2.21	%	70	25	2	--	--	2	--		--			--						AB1	Large pocket marsh with fringe x 8'	I
			acres	1.55	.55	.04			.04												AB.02		
178	Farnham Creek	2.13	%	50	25	15	--	7	2	--		--			--						AB1,Z-	Three small pocket marshes with fringe x 10'	I
			acres	1.07	.53	.32		.15	.04												AB.02		
T	Total Section IX	328.34	%																				
			acres	30.62	25.41	140.29		22.32	46.77	.72	.56	5.68	14.21	10.79	17.08	1.93	1.24		4.25		6.46		
			%																				
			acres																				
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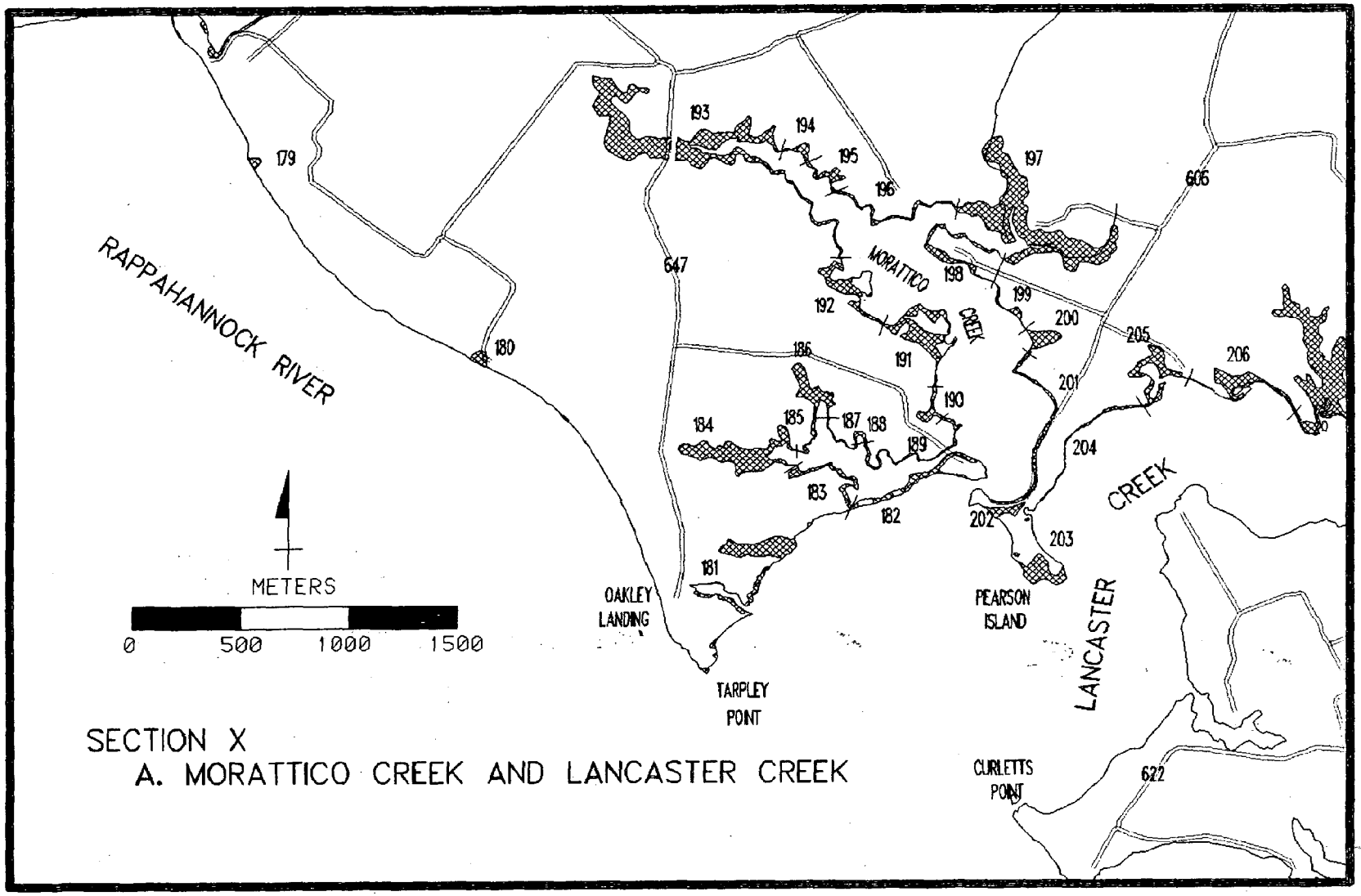
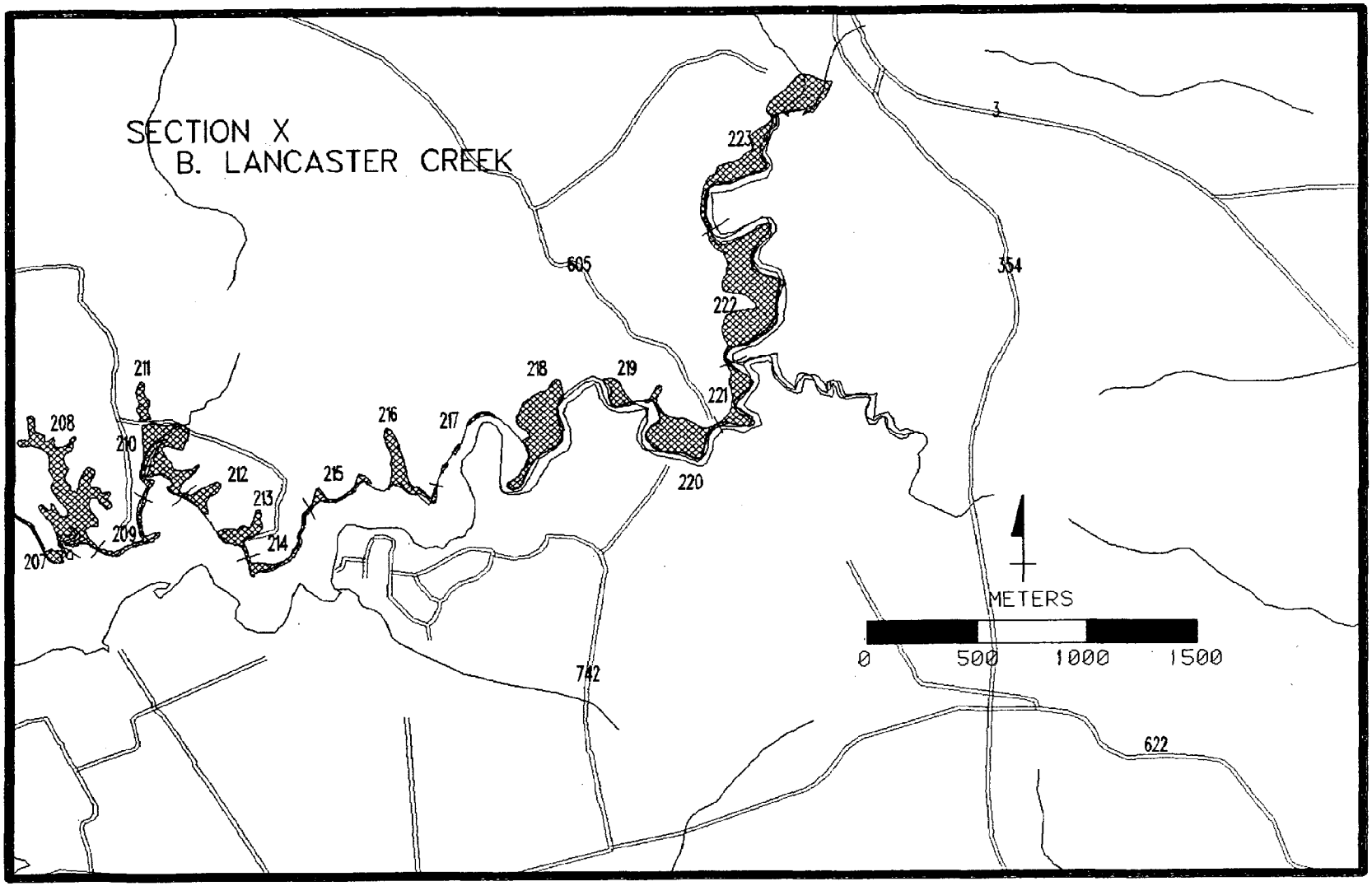


SECTION X
A. MORATTICO CREEK AND LANCASTER CREEK


SECTION X
B. LANCASTER CREEK
207
208
209
210
211
212
213
214
215
216
217
218
219
220
221
222
223
605
354
3
742
622
METERS
0
500
1000
1500

X. Morattico Creek and Lancaster Creek.

#	Marsh Location	Total Acres		Salt Marsh Cordgrass	Salt Meadow Hay	Big Cordgrass	Black Needlerush	Salt Bush	Cattails	Salt Marsh Bulrush	Water Hemp	Marsh Hibiscus	Tearthumb	Smartweed	Arrow Arum & Pickerelweed	Jewelweed	Rice Cutgrass	Wild Rice	Olney Threesquare	Beggars Ticks	Others	Observations	Marsh Type
179	Rappahannock River	.58	%	1	5	--		44		--	--	44		--	--						CC1,D-,Z5	Pocket marsh draining through dune	XII
			acres	.01	.03			.26				.26									CC.01,Z.03		
180	Rappahannock River	.83	%						15			50		--	--						CC-,SS25,Z10	Pocket marsh draining through dune	XI
			acres						.12			.42									SS.21,Z.08		
181	Morattico Creek	6.26	%	70	15		--	15		--		--									CC-,Z-	Long narrow pocket marsh	I
			acres	4.38	.94			.94															
182	Perch Creek	1.93	%	60	10	--	1	29		--											AB-,CC-	Fringe marsh inside long barrier spit, both sides	I
			acres	1.16	.19		.02	.56															
183	Perch Creek	.38	%	50	20	5		25			--										A-,CC-,AB-,AA-, MM-	Two small pocket marshes with fringe x 5'	I
			acres	.19	.08	.02		.10															
184	Perch Creek	10.70	%	20	38	--		40	--	--	2										A-,II-,CC-,AB-, AA-	Creek marsh	XII
			acres	2.14	4.07			4.28			.21												
185	Perch Creek	.30	%	40	35			25			--										A-,II-,AB-,AA-	Two small pockets with fringe x 5'	XII
			acres	.12	.11			.08															
186	Perch Creek	4.41	%	15	45			30			10										A-,CC-,AB-,AA-	Small creek marsh	XII
			acres	.66	1.98			1.32			.44												

X. Morattico Creek and Lancaster Creek.

#	Marsh Location	Total Acres		Salt Marsh Cordgrass	Salt Meadow Hay	Big Cordgrass	Black Needlerush	Salt Bush	Cattails	Salt Marsh Bulrush	Water Hemp	Marsh Hibiscus	Tearthumb	Smartweed	Arrow Arum & Pickerelweed	Jewelweed	Rice Cutgrass	Wild Rice	Olney Threesquare	Beggars Ticks	Others	Observations	Marsh Type
187	Perch Creek	.15	%	45	35	--	--	20		--	--										A-,II-,CC-,AB-, AA-	Two small pocket marshes with fringe x 5'	XII
			acres	.07	.05			.03															
188	Perch Creek	.40	%	25	50			25	--		--										A-,II-,Z-	Small pocket marsh	II
			acres	.10	.20			.10															
189	Perch Creek	.42	%	40	30		--	30													A-,AA-,SS-	Two pocket marshes with fringe x 8'	XII
			acres	.17	.13			.13															
190	Morattico Creek	.76	%	65	15	1	4	15														Two pocket marshes with fringe x 10'	I
			acres	.49	.11	.01	.03	.11															
191	Morattico Creek	5.73	%	20	39	1	25	15	--													Border fringe x 10'	XII
			acres	1.15	2.23	.06	1.43	.86															
192	Morattico Creek	2.88	%	20	30		20	30	--	--									--		CC-,AB-	Large cove marsh	XII
			acres	.58	.86		.58	.86															
193	Morattico Creek	28.47	%	3	32	27	--	35	--	--	--			--					3		A-,AB-,JJ-,AA-, MM-	Long creek marsh	XII
			acres	.85	9.11	7.69		9.96											.85				
194	Morattico Creek	.74	%	46	50	1	2	1		--		--							--		AB-	Pocket marsh	II
			acres	.34	.37	.01	.01	.01															

X. Morattico Creek and Lancaster Creek.

#	Marsh Location	Total Acres		Salt Marsh Cordgrass	Salt Meadow Hay	Big Cordgrass	Black Needlerush	Salt Bush	Cattails	Salt Marsh Bulrush	Water Hemp	Marsh Hibiscus	Tearthumb	Smartweed	Arrow Arum & Pickerelweed	Jewelweed	Rice Cutgrass	Wild Rice	Olney Threesquare	Beggars Ticks	Others	Observations	Marsh Type
195	Morattico Creek	.93	%	39	42	--		1			--								17		A-,AB1,AA-	Grazed pocket marsh	XII
			acres	.36	.39			.01											.16		AB.01		
196	Morattico Creek	.32	%	35	55		10	--													AB-	Pocket and spit marsh with fringe x 5'	II
			acres	.11	.18		.03																
197	Morattico Creek	29.73	%	3	54	1	1	40	--	--	--								1		A-,CC-,AB-	Large creek marsh	II
			acres	.89	16.05	.30	.30	11.89											.30				
198	Morattico Creek	2.18	%	15	45	--	20	20		--											AB-	Fringe x 30'	XII
			acres	.33	.98		.44	.44															
199	Morattico Creek	.25	%	50	50																	Grazed to stubble	I
			acres	.13	.13																		
200	Morattico Creek	1.00	%	35	45	1	1	17	1	--	/										AB-	Large pocket marsh	XII
			acres	.35	.45	.01	.01	.17	.01														
201	Morattico Creek	.68	%	85	2	--	1	10		2												Fringe marsh x 8'	I
			acres	.58	.01		.01	.07		.01													
202	Pearson Island	.35	%	45	35	2	8	10		--											AB-,AA-	Pocket marsh between roads	XII
			acres	.16	.12	.01	.03	.03															

X. Morattico Creek and Lancaster Creek.

#	Marsh Location	Total Acres		Salt Marsh Cordgrass	Salt Meadow Hay	Big Cordgrass	Black Needlerush	Salt Bush	Cattails	Salt Marsh Bulrush	Water Hemp	Marsh Hibiscus	Tearthumb	Smartweed	Arrow Arum & Pickerelweed	Jewelweed	Rice Cutgrass	Wild Rice	Olney Threesquare	Beggars Ticks	Others	Observations	Marsh Type
203	Pearson Island	4.04	%	20	50	3	2	25		--													II
			acres	.81	2.02	.12	.08	1.01															
204	Lancaster Creek	.60	%	75	3	10	1	10		1											AA-	Fringe marsh x 10'	I
			acres	.45	.02	.06	.01	.06		.01													
205	Lancaster Creek	3.92	%	55	8	17	--	20	--	--									--		CC-,AB-,P-	Cove marsh	I
			acres	2.16	.31	.67		.78															
206	Lancaster Creek	4.08	%	38	25	10	6	20	--	1											AB-	Creek marsh with 5' fringe	XII
			acres	1.55	1.02	.41	.24	.82		.04													
207	Lancaster Creek	1.06	%	20	30	1	45	4	--												CC-,AB-	Spit marsh	XII
			acres	.21	.32	.01	.48	.04															
208	Lancaster Creek	22.05	%	13	25	12	--	45	2	--	1								2		A-,CC-,AB-		XII
			acres	2.87	5.51	2.65		9.92	.44		.22								.44				
209	Lancaster Creek	.36	%	45	5	30	--	20		--											AB-	Spit marsh with fringe x 8'	XII
			acres	.16	.02	.11		.07															
210	Lancaster Creek	12.72	%	20	7	70	--	2	1	--	--	--									CC-		V
			acres	2.54	.89	8.90		.25	.13														

X. Morattico Creek and Lancaster Creek.

#	Marsh Location	Total Acres		Salt Marsh Cordgrass	Salt Meadow Hay	Big Cordgrass	Black Needlerush	Salt Bush	Cattails	Salt Marsh Bulrush	Water Hemp	Marsh Hibiscus	Tearthumb	Smartweed	Arrow Arum & Pickerelweed	Jewelweed	Rice Cutgrass	Wild Rice	Olney Threesquare	Beggars Ticks	Others	Observations	Marsh Type
211	Lancaster Creek	2.08	%		32	1			45			20							1		II-,CC1,AA-,E-		XII
			acres		.67	.02			.94			.42							.02		CC.02		
212	Lancaster Creek	2.46	%	30	35	12	2	15	5	--	--										CC1	Small creek marsh	XII
			acres	.74	.86	.30	.05	.37	.12												CC.02		
213	Lancaster Creek	3.76	%	3	15	30	--	50	2		--								--			Large creek marsh	IV
			acres	.11	.57	1.13		1.89	.08														
214	Lancaster Creek	1.56	%	10	45	30	--	15				--										Large spit marsh	XII
			acres	.16	.70	.47		.23															
215	Lancaster Creek	1.53	%	5	3	87	--		5		--	--		--								Two pocket marshes with 5' fringe	V
			acres	.08	.05	1.33			.05														
216	Lancaster Creek	5.58	%	1	2	73		2	20		--	--		--					2				V
			acres	.06	.11	4.07		.11	1.12										.11				
217	Lancaster Creek	.94	%			98			1			1			--						CC-	Two small pocket marshes	V
			acres			.92			.01			.01											
218	Lancaster Creek	15.51	%	--	--	85		--	14	--	--	--		--			--		1		CC-,AB-		V
			acres			13.18			2.17										.16				

X. Morattico Creek and Lancaster Creek.

#	Marsh Location	Total Acres		Salt Marsh Cordgrass	Salt Meadow Hay	Big Cordgrass	Black Needlerush	Salt Bush	Cattails	Salt Marsh Bulrush	Water Hemp	Marsh Hibiscus	Tearthumb	Smartweed	Arrow Arum & Pickerelweed	Jewelweed	Rice Cutgrass	Wild Rice	Olney Threesquare	Beggars Ticks	Others	Observations	Marsh Type
219	Lancaster Creek	2.90	%	1		27			72		--	--		--	--		--				CC-		VI
			acres	.03		.78			2.09														
220	Lancaster Creek	11.50	%			55			43		--	--	--		--		--		2		CC-		V
			acres			6.33			4.95										.23				
221	Lancaster Creek	4.49	%			35			48		--	--	--	--	15		1		1		F-,Z-		XII
			acres			1.57			2.16						.67		.04		.04				
222	Lancaster Creek	24.67	%			10		--	57		--	--	--	1	30	--	1	--	1		C-,R-,W-,X-,Y-,Z-		VI
			acres			2.47			14.06					.25	7.40		.25		.25				
223	Lancaster Creek	20.18	%		--				46		1	--	1	3	47	2	--	--			C-,R-,T-,W-,X-		XI
			acres						9.28		.20		.20	.61	9.48	.40							
T	Total Section X	246.39	%																				
			acres	27.25	51.84	53.61	3.75	47.76	37.73	.06	1.07	1.11	.20	.86	17.55	.40	.29		2.56		.38		
GT	GRAND TOTAL	4723.53	%																				
			acres	351.70	256.23	2338.15	9.48	236.95	273.62	1.88	15.05	143.22	31.94	28.95	354.13	16.44	78.83	146.46	74.05	208.71	56.02		
			%																				
			acres																				

Richmond County: Others List

A. Saltmarsh Aster
B. Wild Millet
C. Giant Bulrush
D. Chairmaker's Rush
E. Nut Sedge
F. Water Parsnip
G. Swamp Milkweed
H. Water Hemlock
I. Button Bush
J. Arrowhead
K. Ironweed
L. Wood Reedgrass
M. Dayflower
N. Burweed
O. Swamp Loosestrife
P. Lilaeopsis
Q. Sneezeweed
R. Marsh Fern
S. Sweet Flag
T. St. John's Wort
U. False Nettle
V. Lizard's-Tail
W. Water Lily
X. Swamp Rose
Y. Climbing Hempweed
Z. Water Dock
AA. Switch Grass
BB. Sensitive Fern
CC. Spikerush
DD. Dogwood
EE. Cardinal Flower
FF. Bedstraw
GG. American Germander
HH. Meadow Rue
II. Marsh Mallow
JJ. Fleabane
KK. Foxtail Grass
LL. Juniper
MM. Saltmarsh Loosestrife
NN. Royal Fern
OO. Eryngo
PP. Turk's-Cap Lily
QQ. Beak Rush
RR. Seaside Goldenrod
SS. Common Reed
TT. Marsh Fimbristylis
UU. Three-Way Sedge
VV. Wild Rye
WW. Water Horehound
XX. Sweet Pepperbush
YY. Plumegrass
ZZ. Sacciolepsis
AB. Orach
AC. Cane
AD. Panic Grass
AE. Virginia Willow
AF. Bladderwort
AG. Alder
AH. Black Gum
AI. Red Maple
AJ. Yellow Pond Lily
AK. Joe-Pye Weed
AL. Soft Rush
AM. Boneset
AN. Gerardia
AO. Water Primrose
AP. Mock Bishop's-Weed
AQ. Blue Flag
AR. Wax Myrtle
AS. Black Willow
AT. Water Willow
AU. Wool Grass
AV. Slough Grass

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