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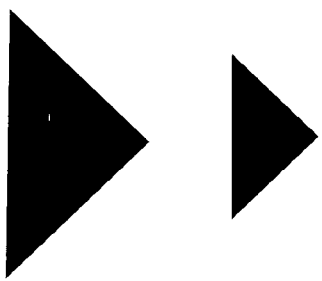

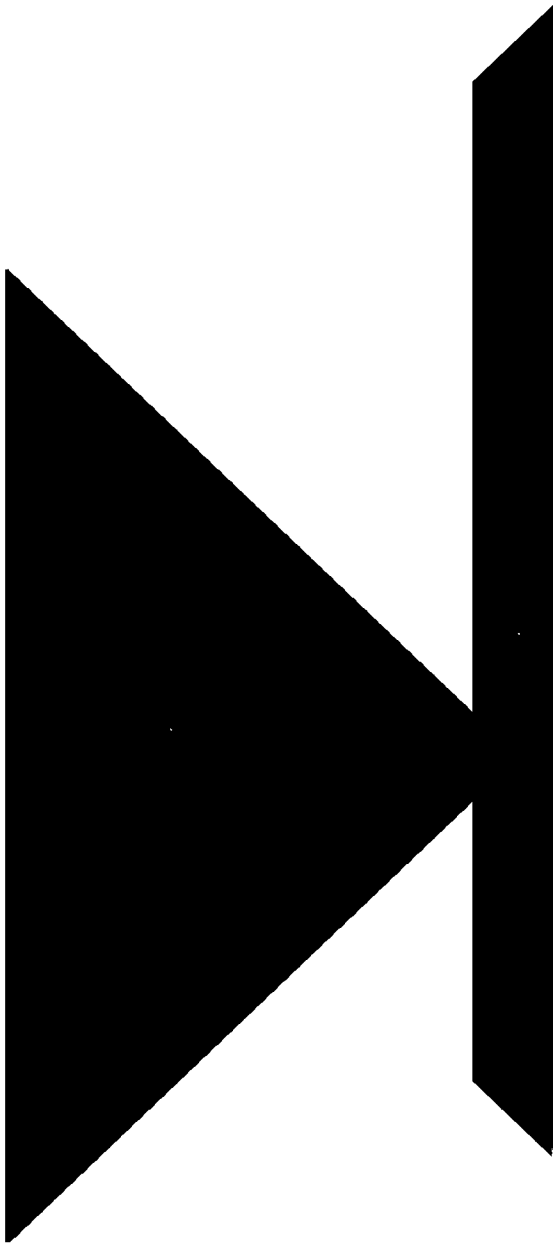

PRINCE GEORGE COUNTY AND CITY OF HOPEWELL

Special Report No. 293 in Applied Marine Science and Ocean Engineering

Gene M. Silberhorn and Sharon Dewing

Gene M. Silberhorn, Project Leader

U.S. DEPARTMENT OF COMMERCE NOAA
COASTAL SERVICES CENTER
2234 SOUTH HOBSON AVENUE
CHARLESTON, SC 29405-2413

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

Dr. Frank O. Perkins, Dean/Director

JANUARY 1989

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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

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, Prince George County, Virginia, D. W. Owen, L. M. Rogers, M. H. Peoples, and D. Byrd, 1976, SRAMSOE No. 114, 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.

Acknowledgments

First among the individuals that we owe thanks are Kelvin Char, Arthur Harris and Charles Roadley for their invaluable field assistance. We also thank Judy Hudgins for editing the manuscript. We are also indebted to Diane Bowers for map illustrations and Harold Burrell and William Jenkins for cover design and photographic reproduction. We greatly appreciate the talents of Janet Walker for text processing and table reproduction, and Sylvia Motley for printing.

This inventory was partially funded by the Virginia Council on the Environment and the National Oceanic and Atmospheric Administration, Grant No. NA87AA-D-CZ092.

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Introduction

Tidal marshes in Prince George County are found along the tributaries, islands and southern shoreline of the James River from Upper Chippokes Creek, which borders Surry County, to the upper reaches of the tidal portion of the Appomattox River, a major tributary of the James River. Slightly over 1,477 acres of tidal marshes occur in Prince George County. Most of the marshes (97.6 percent) are found in the James River system and its tributaries (Upper Chippokes Creek, Wards Creek, Flowerdew Hundred Creek and Powell Creek), totalling 1,441.8 acres.

All of the marshes in the county are classified as tidal freshwater marshes (0.0 to 0.5 ppt salinity). Many of the marshes support such a great diversity of vegetation that they are classified as Type XI Freshwater Mixed Community (see page 7), where no single species dominates. Tidal freshwater marshes characteristically also exhibit a significant seasonal succession, and therefore species composition as estimated by percent cover is strongly dependent on the period of observation. Users of this report should consider this factor when actual observations are made in the field. Many marshes, for example, that are dominated by arrow arum (*Peltandra virginica*) in May or June are often in competition with rice cutgrass (*Leersia orysoides*) and beggars ticks (*Bidens* spp.) in September.

These marshes are highly valuable to the estuarine environment. They are known to provide a wide variety of wildlife and waterfowl with cover and food. Wetlands of this type are also associated with the spawning and nursery areas for anadromous fish species such as herring, shad, striped bass and white perch.

The largest single marsh in Prince George County is Kennon Marsh (#13) on the James River with a total of 422 acres in area. Kennon Marsh has particular landscape appeal because it is associated with large bald cypress trees (tidal freshwater swamp). The entire system appears to be virtually undisturbed by man's activitites.

There are ten man-made islands in a reach of the James River from Windmill Point to City Point at Hopewell. The islands are represented as marshes #55, 80-86 and 89-90 and were created by dredged material in the process of maintaining the main channel depth. Some of the islands are nearly all marsh while others are of higher elevation and are dominated by trees. Marsh island #55, near Windmill Point, was built in the mid-1970's and at one time had more than 14 acres of marsh in the interior of its outer dikes. In 1988, however, only a small patch of marsh vegetation remains because the dike has been breached in several locations through erosion over the years.

Methods

Aerial photographs and topographic maps (U.S.G.S.) were utilized to determine wetland locations, wetland boundaries and patterns of marsh vegetation. Acreages and wetland boundaries were substantiated by observations on foot, by boat and by low level overflights. Individual plant species percentages are quantitative estimates of coverage based on visual field inspections of every marsh. In some instances, especially in tidal freshwater areas, those percentages are subject to seasonal bias.

Most of the field work for Prince George County was done in the summer of 1978. Subsequent field work and aerial photograph interpretation was done in the summer of 1988.

Marshes one quarter of an acre or larger are designated by number. Many marshes smaller than one quarter acre (usually narrow fringing marshes) are designated by the same symbol (color) as the larger marshes on the section maps but assigned no number. Small marshes (less than one acre) are exaggerated and are not indicated to scale. Information such as individual marsh acreage, plant species percentage and acreage, marsh type, and other observations are recorded in tabular form. Plant species percentages are recorded to the nearest percent, and acreages to the nearest tenth of an acre. In marshes of less than one acre, the areas are recorded to the nearest hundredth of an acre. In those instances where an individual plant species is estimated to amount to less than 0.5 percent, the symbol (-) is used to indicate a trace amount. In unusual situations where an individual marsh is estimated to contain 50 percent or more of a species that is not listed as a marsh type, the closest applicable marsh type is used.

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 — Saltmarsh Cordgrass Community

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 — Saltmeadow Community

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 — Black Needlerush Community

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 — Saltbush Community

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 Saltwort Community

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

Type XI Freshwater Mixed Community

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 Brackish Water Mixed Community

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.

Wetland Plants

Common and Scientific Names as Found in the Tables

Arrow Arum*	*Peltandra virginica* (L.) Kunth.
Arrow Head*	*Sagittaria latifolia* Willd.
Beggar's Ticks*	*Bidens* spp.
Big Cordgrass*	*Spartina cynosuriodes* (L.) Roth
Bonset	*Eupatorium perfoliatum* L.
Buttonbush*	*Cephalanthus occidentalis* L.
Cattails*	*Typha latifolia* L.
	Typha angustifolia L.
Common Threesquare*	*Scirpus americanus* Pers.
Gerardia	*Agalinis purpurea* (L.) Pennell.
Giant Bulrush*	*Scirpus validus* Vahl
Ironweed	*Vernonia novaboracensis* (L.) Michaux.
Jewelweed	*Impatiens capensis* Meerrb.
Marsh Hibiscus*	*Hibiscus moscheutos* L.
Marsh Mallow	*Kosteletskya virginica* Presl
Partridge Pea	*Cassia fasciculata* Michaux
Pickerelweed*	*Pontederia cordata* L.
Plume Grass	*Erianthus giganteus* (Walter)Muhl.
Rice Cutgrass*	*Leersia orysoides* (L.) Sw.
Smartweed*	*Polygonum punctatum* Ell.
Swamp Milkweed	*Asclepias incarnata* L.
Swamp Rose	*Rosa palustris* Marsh
Switchgrass*	*Panicum virgatum* L.
Tearthumbs*	*Polygonum arifolium* L.
	Polygonum sagittatum L.
Walter's Millet	*Echinochloa walteri* (Pursh) Nash
Water Hemp*	*Amaranthus cannabinuus* (L.) J.D. Sauer
Water Willow	*Decodon verticillatus* (L.) Ell.
Wild Rice*	*Zizania aquatica* L.
Woolgrass	*Scirpus cyperinus* (L.) Kunth.

* 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

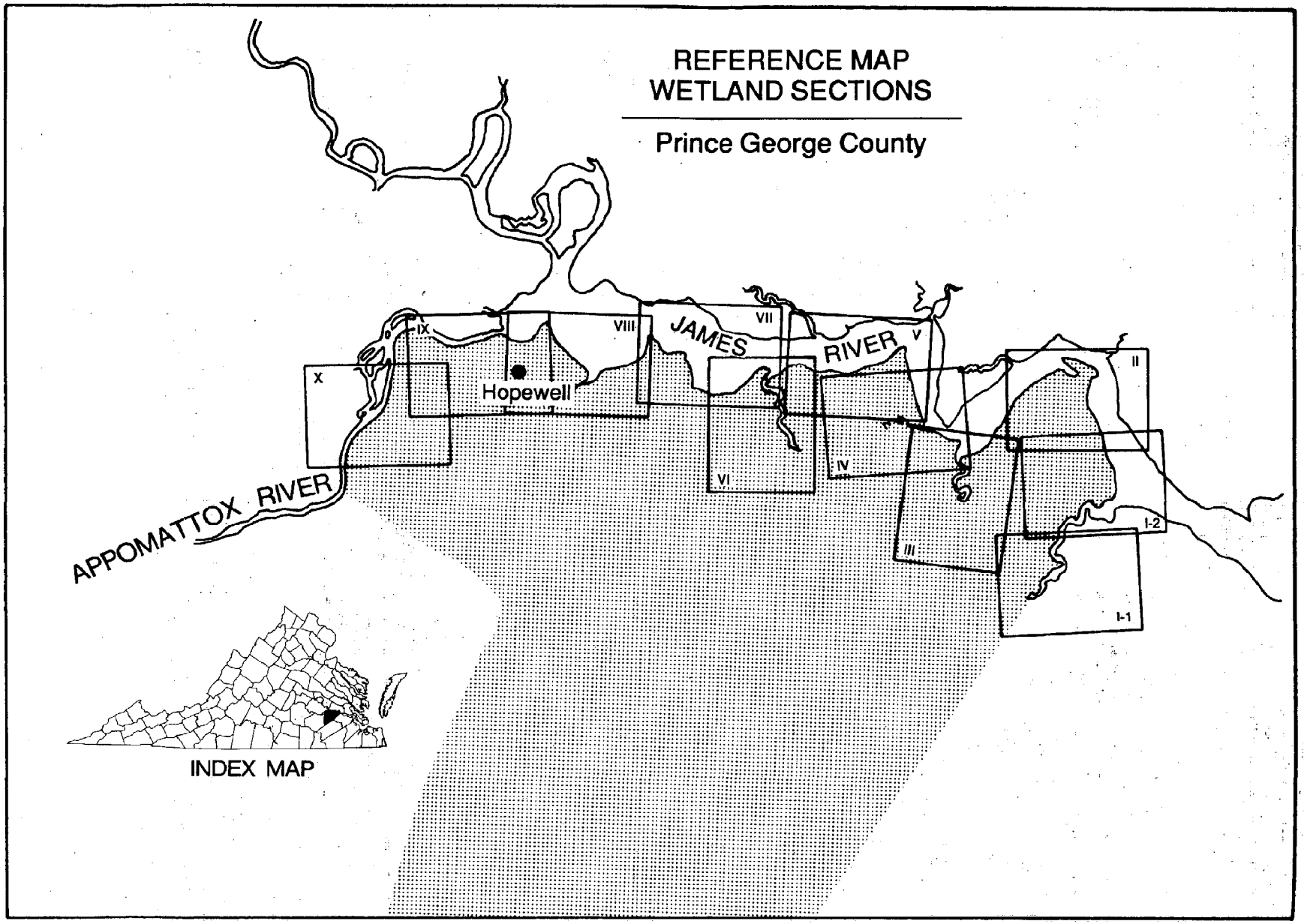
An isolated marsh surrounded on all sides by open water. Interior portions of the marsh may contain trees scattered at highest elevations.

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.


REFERENCE MAP
WETLAND SECTIONS
Prince George County
JAMES RIVER
APPOMATTOX RIVER
Hopewell
IX
VIII
VII
V
X
VI
IV
II
III
I-2
I-1
INDEX MAP

Section I: Upper Chippokes Creek

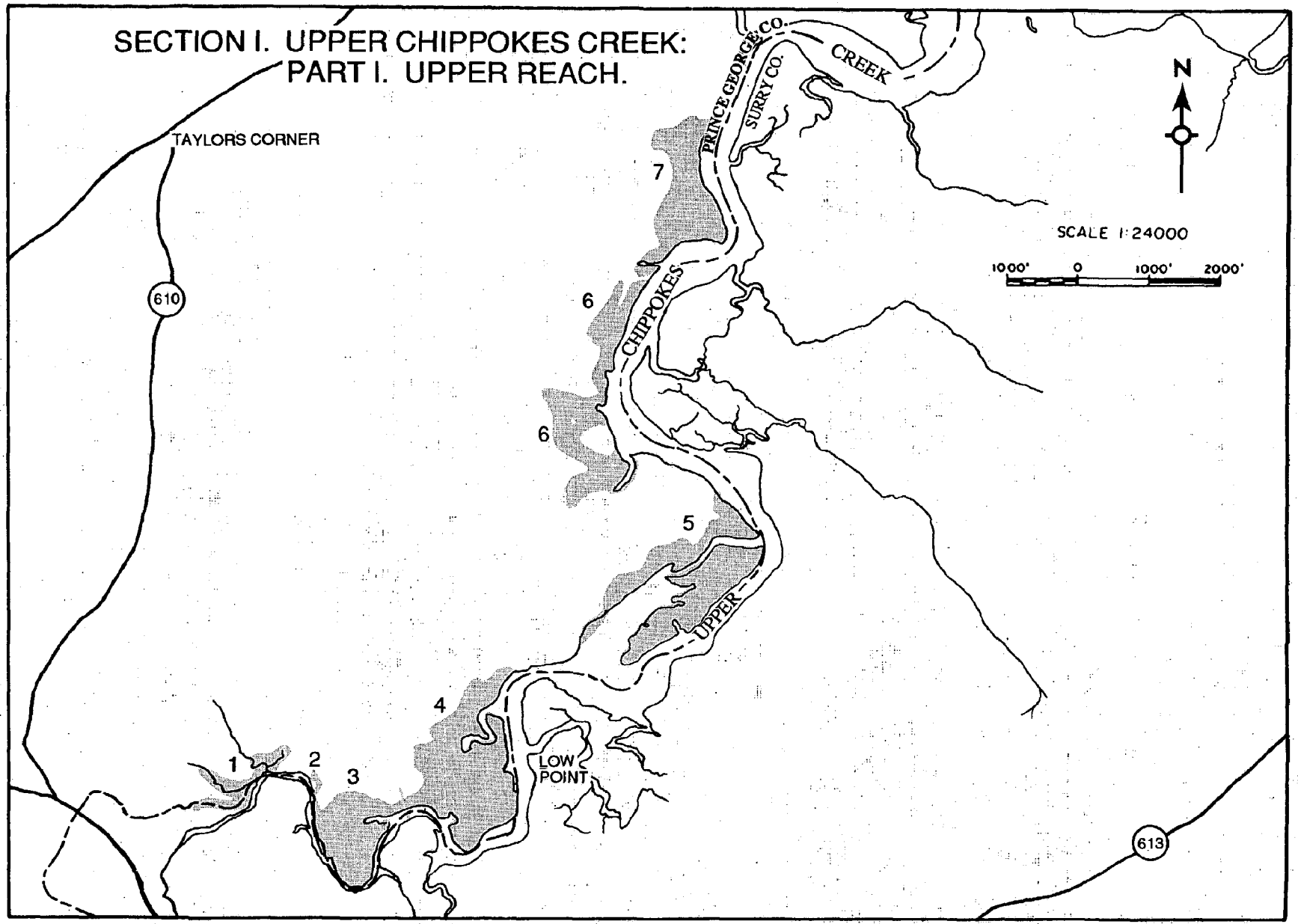
Part 1: Upper Reach

Part 2: Mouth and James River Shoreline

Upper Chippokes Creek marks the boundary between Prince George and Surry County. Only those marshes in Prince George County are recorded in this report. Information regarding the other marshes in this creek system is found in the Surry County Tidal Marsh Inventory.

This marsh creek system contains eleven individual marshes and has the largest acerage (423.6 acres) of all the James River tributaries in the county. Upper Chippokes Creek is a nearly pristine waterway with very little evidence of man-made disturbance. The tidal marshes of this creek are often associated with tidal swamps dominated by bald cypress (*Taxodium distichum*). The marshes of Upper Chippokes Creek are very diverse. Although the dominant plant species reported in most of the marshes is beggars ticks, this species does not mature until September, reflecting the seasonal succession of vegetation in a tidal freshwater marsh. During June, July and August, other plant species are more prevalent such as arrow arum, pickerelweed, cattails, yellow pond lily and others.

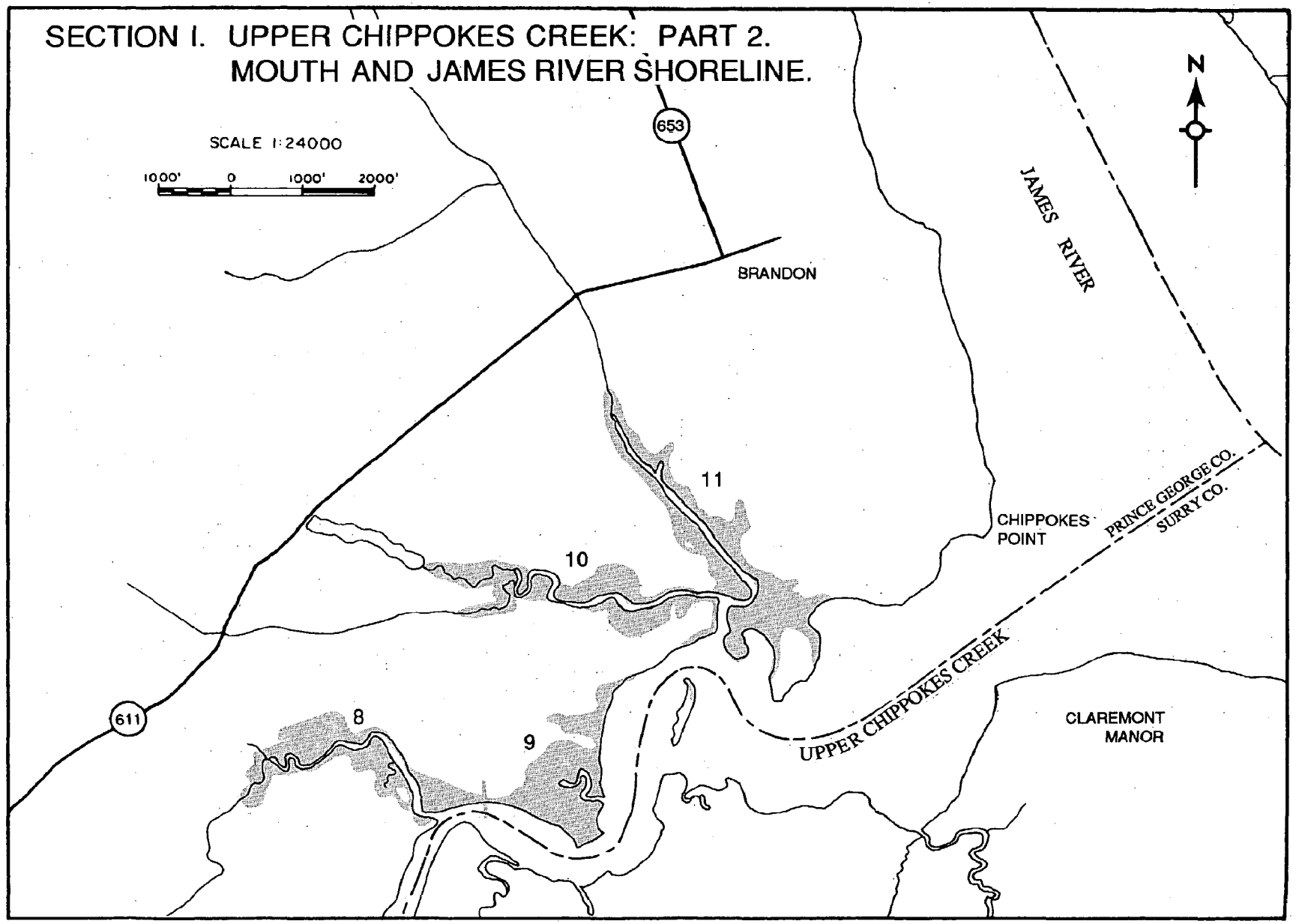
This creek system, in addition to being a valuable wildlife and waterfowl habitat, is also a confirmed nursery and spawning area for anadromous fish species such as herring, shad, striped bass, and white perch.


SECTION I. UPPER CHIPPOKES CREEK:
PART I. UPPER REACH.
TAYLORS CORNER
610
PRINCE GEORGE CO.
SURRY CO.
CREEK
CHIPPOKES
UPPER
LOW POINT
613
7
6
6
5
4
3
2
1
N
SCALE 1:24000
1000' 0 1000' 2000'

Section I: Upper Chippokes Creek. Part 1: Upper reach.

#	MARSH LOCATION	TOTAL ACRES		BIG CORDGRASS	TEARTHUMB	JEWELWEED	WILD RICE	RICE CUTGRASS	BEGGAR'S TICKS	PICKERELWEED-ARROW ARUM	WALTER'S MILLET	SMARTWEED	CATTAIL	WATER HEMP	MARSH HIBISCUS	SWITCHGRASS	SWAMP MILKWEED	COMMON THREESQUARE	PARTRIDGE PEA	BONESET	BUTTONBUSH	OTHERS	OBSERVATIONS	MARSH TYPE
1	Upper Chippokes Creek	14.9	%			40	10		10	30			--	10	--								Embayed marsh, dominated by beggar's ticks and jewelweed	XI
			acres			5.96	1.49		1.49	4.47				1.49										
2	Upper Chippokes Creek	.4	%		--	40	10		10	30			--	10									Small embayed marsh	XI
			acres			.16	.04		.04	.12				.04										
3	Upper Chippokes Creek	22.3	%			10	2	5	70	5	2		5	--	--					--		a,- h,- e,- i,1	Large point marsh	XI
			acres			2.23	.45	1.12	15.61	1.12	.45		1.12									i,.22		
4	Upper Chippokes Creek	52.7	%		10	5	2		66	10	--		2	5						--		i,-	Extensive marsh	XI
			acres		5.27	2.64	1.05		34.78	5.27			1.05	2.64										
5	Upper Chippokes Creek	86.7	%		--	11	40	--	31	9			3		6							a,- h,-	Extensive marsh, dominated by wild rice	XI
			acres			9.54	34.68		26.88	7.80			2.60		5.20									
6	Upper Chippokes Creek	39.6	%	5	20		5		40	5			15	5	5					--		h,-	Large embayed and fringing marsh	XI
			acres	1.98	7.92		1.98		15.84	1.98			5.94	1.98	1.98									
7	Upper Chippokes Creek	30.7	%		7	--	10	--	45				35		3		--	--				h,- i,-	Large point marsh dominated by beggar's ticks	XI
			acres		2.15		3.07		13.82				10.75		.92									

a=GERARDIA
b=IRONWEED
c=MARSH MALLOW
d=PLUME GRASS
e=SWAMP ROSE
f=WATER WILLOW
g=WOOLGRASS
h=BULRUSH
i=ARROWHEAD


SECTION I. UPPER CHIPPOKES CREEK: PART 2.
MOUTH AND JAMES RIVER SHORELINE.
SCALE 1:24000
1000' 0 1000' 2000'
N
653
BRANDON
JAMES RIVER
11
10
CHIPPOKES POINT
PRINCE GEORGE CO.
SURRY CO.
611
8
9
UPPER CHIPPOKES CREEK
CLAREMONT MANOR

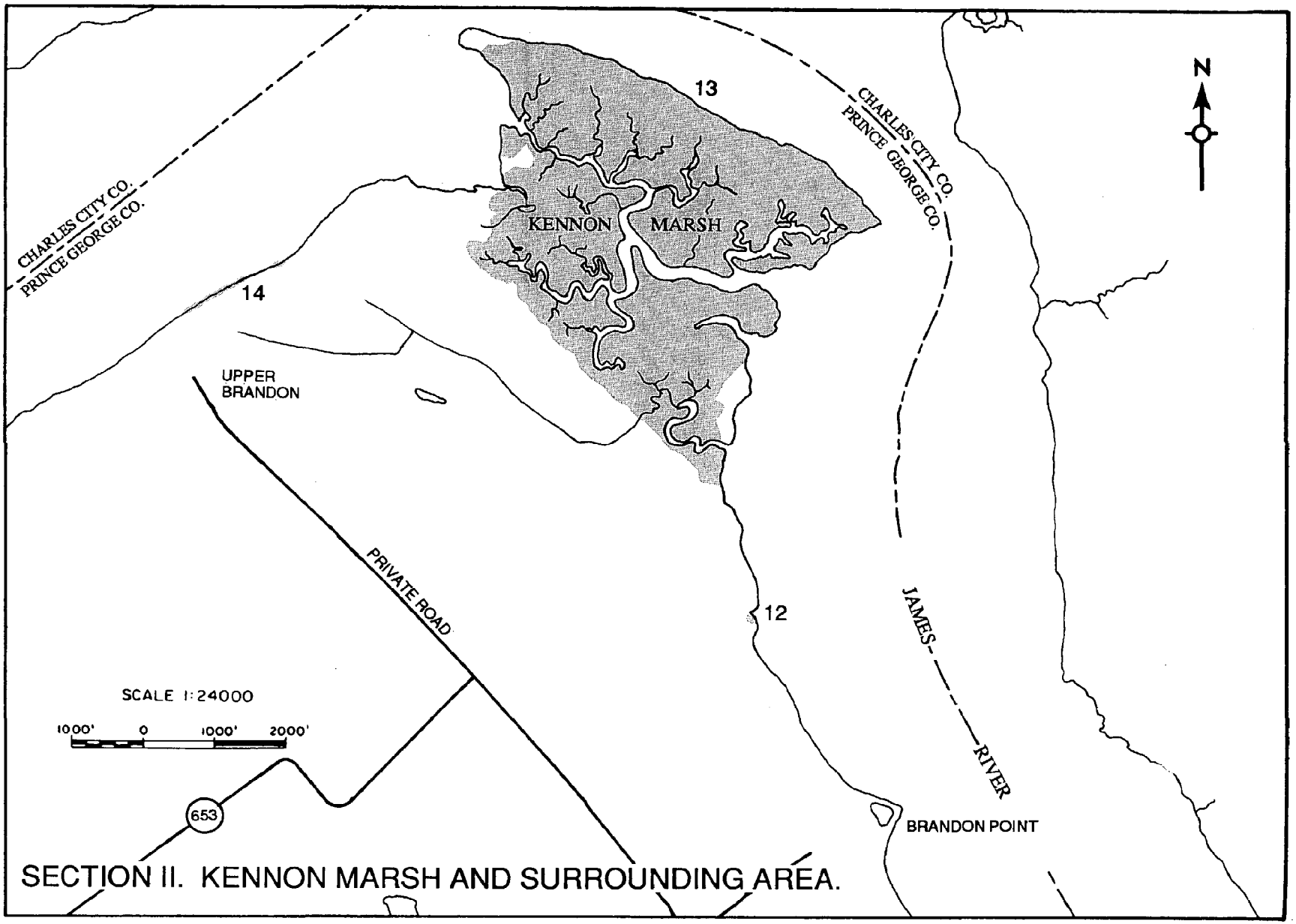
Section I: Upper Chippokes Creek. Part 2: Mouth and James River Shoreline.

#	MARSH LOCATION	TOTAL ACRES		BIG CORDGRASS	TEARTHUMB	JEWELWEED	WILD RICE	RICE CUTGRASS	BEGGAR'S TICKS	PICKERELWEED-ARROW ARUM	WALTER'S MILLET	SMARTWEED	CATTAIL	WATER HEMP	MARSH HIBISCUS	SWITCHGRASS	SWAMP MILKWEED	COMMON THREESQUARE	PARTRIDGE PEA	BONESET	BUTTONBUSH	OTHERS	OBSERVATIONS	MARSH TYPE
8	Upper Chippokes Creek	43.3	%		--	3	3		50	40	2	--		--	2	--	--				--	a,- h,- c,- i,-	Large creek marsh, scattered bald cypress and black gum	XI
			acres			1.30	1.30		21.65	17.32	.87				.87									
9	Upper Chippokes Creek	39.0	%		5	--	5		60	20		--	--	--	10	--	--				--	e,- h,-	Large point, scattered bald cypress	XI
			acres		1.95		1.95		23.40	7.80					3.90									
10	Upper Chippokes Creek	42.0	%				10		20	40			--	--	30	--					--		Large creek marsh, dominated by marsh hibiscus	XI
			acres				4.20		8.40	16.80					12.60									
11	Upper Chippokes Creek	52.0	%	--	--	--	5	--	25	40		--	10	10	7	--		--		--	3	a,- h,- e,-	Large creek marsh, bald cypress scattered throughout	XI
			acres				2.60		13.00	20.80			5.20	5.20	3.64						1.56			
	Total This Section	423.6	%																					
			acres	1.98	17.29	21.83	52.81	1.12	174.91	83.48	1.32		26.66	11.35	29.11						1.56	.22		

a=GERARDIA
b=IRONWEED
c=MARSH MALLOW
d=PLUME GRASS
e=SWAMP ROSE
f=WATER WILLOW
g=WOOLGRASS
h=BULRUSH
i=ARROWHEAD

Section II: Kennon Marsh and Surrounding Area

This section contains only three individual marshes. Marshes #12 and 14 are small marshes found along the James River Shoreline. Marsh #13, Kennon Marsh, is the largest marsh in Prince George County with 422 acres. This wetland is actually a system of tidal creeks, open marsh and tidal swamp dominated by ancient bald cypress trees and associated red maples (*Acer rubrum*), ash (*Fraxinus* spp.), and black gum (*Nyssa sylvatica*). Big cordgrass (*Spartina cynosuriodes*) is the dominant plant species in the marsh area with large patches of beggars ticks (*Bidens* spp.) becoming obvious in the autumn. Big Cordgrass is a very important waterfowl habitat and food plant. Kennon Marsh is one of the largest, undisturbed wetland areas in the upper reaches of the James River estuary.



SECTION II. KENNON MARSH AND SURROUNDING AREA.

Section II: Kennon Marsh and Surrounding Area.

#	MARSH LOCATION	TOTAL ACRES		BIG CORDGRASS	TEARTHUMB	JEWELWEED	WILD RICE	RICE CUTGRASS	BEGGAR'S TICKS	PICKERELWEED-ARROW ARUM	WALTER'S MILLET	SMARTWEED	CATTAIL	WATER HEMP	MARSH HIBISCUS	SWITCHGRASS	SWAMP MILKWEED	COMMON THREESQUARE	PARTRIDGE PEA	BONESET	BUTTONBUSH	OTHERS	OBSERVATIONS	MARSH TYPE
12	James River Shore-line	1.0	%						30				30	30	9							f, 1	Pocket marsh	XI
			acres						.30				.30	.30	.09							f, .01		
13	Kennon Marsh	422.0	%	50	10		--	--	25	4	2	6	--	1	1					--	1	d,-	Extensive marsh, dominated by big cordgrass. Bald cypress throughout the marsh	V
			acres	211.0	42.20				105.5	16.88	8.44	25.32		4.22	4.22						4.22			
14	James River Shore-line	.3	%						10	10		20				10						f,50	Small discontinuous fringe marsh dominated by water willow	XI
			acres						.03	.03		.06				.03						f,.15		
	Total This Section	423.3	%																					
			acres	211.0	42.20				105.83	16.91	8.44	25.38	.30	4.52	4.31	.03					4.22	.16		

a=GERARDIA
b=IRONWEED
c=MARSH MALLOW
d=PLUME GRASS
e=SWAMP ROSE
f=WATER WILLOW
g=WOOLGRASS
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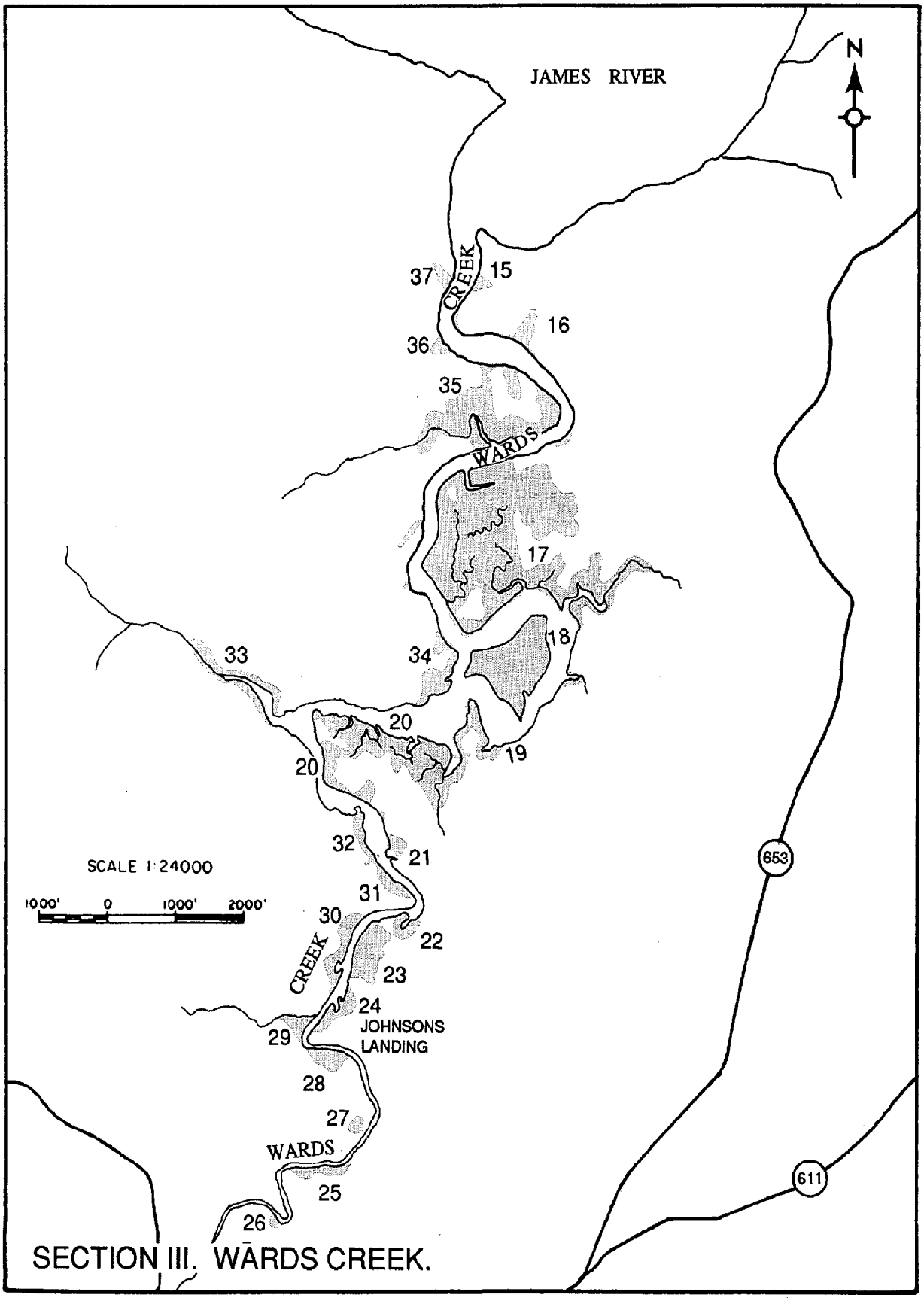
i=ARROWHEAD

Section III: Wards Creek

Wards Creek is a largely undisturbed tidal marsh creek with a significant amount of associated tidal swamp and bottomland hardwood forest. There are 23 individual marshes in the system, nearly all of them associated with swamp species such bald cypress, ash, red maple and black gum. The largest marsh along Wards Creek is marsh #17 with 90.5 acres and is classified as a Freshwater Mixed Commmunity (Type XI) because of its diverse plant community structure. This marsh is of high ecological value as a habitat for wildlife and waterfowl. Wild rice (*Zizania aquatica*), big cordgrass, smartweed (*Polygonum* spp.), waterhemp (*Amaranthus cannabinus*), and Walter's millet (*Echinochloa walteri*) produce seeds that are prime duck food. A wetlands system of this diversity has the potential to support a large waterfowl population.



SECTION III. WARDS CREEK.

Section III: Wards Creek.

#	MARSH LOCATION	TOTAL ACRES		BIG CORDGRASS	TEARTHUMB	JEWELWEED	WILD RICE	RICE CUTGRASS	BEGGAR'S TICKS	PICKERELWEED-ARROW ARUM	WALTER'S MILLET	SMARTWEED	CATTAIL	WATER HEMP	MARSH HIBISCUS	SWITCHGRASS	SWAMP MILKWEED	COMMON THREESQUARE	PARTRIDGE PEA	BONESET	BUTTONBUSH	OTHERS	OBSERVATIONS	MARSH TYPE
15	Wards Creek	1.5	%			40			--	40		--	--	--	10						10		Small embayed marsh within a tidal swamp	XI
			acres			.60				.60					.15						.15			
16	Wards Creek	3.0	%			20	5		35	10		--		20	5						5		Embayed and fringe marsh unit within a tidal swamp	XI
			acres			.60	.15		1.05	.30				.60	.15						.15			
17	Wards Creek	90.5	%	20	--	10	10	--	30	10	5	10	--	5	--	--				--	--	h,-	Extensive marsh with bald cypress scattered throughout	XI
			acres	18.1		9.05	9.05		27.15	9.05	4.53	9.05		4.53										
18	Wards Creek	20.1	%		--		5	--	55	10	10	--		10				5		--	5	h,-	Large marsh island	XI
			acres				1.01		11.06	2.01	2.01			2.01				1.01			1.01			
19	Wards Creek	4.4	%	--	--	10	15	--	40	10	10		--	10				5				g,- h,-	*Fringe/point marsh*	XI
			acres			.44	.66		1.76	.44	.44			.44				.22						
20	Wards Creek	26.6	%	--	--	20	10	--	40	10	5		--	10				5		--		g,- h,-	Large marsh associated with a tidal swamp	XI
			acres			5.32	2.66		10.64	2.66	1.33			2.66				1.33						
21	Wards Creek	1.2	%	--	--	--	40	--	35	10	10		--	--	--			5					Small, embayed marsh with bald cypress	XI
			acres				.48		.42	.12	.12							.06						

a=GERARDIA
b=IRONWEED
c=MARSH MALLOW
d=PLUME GRASS
e=SWAMP ROSE
f=WATER WILLOW
g=WOOLGRASS
h=BULRUSH
i=ARROWHEAD

Section III: Wards Creek.

#	MARSH LOCATION	TOTAL ACRES		BIG CORDGRASS	TEARTHUMB	JEWELWEED	WILD RICE	RICE CUTGRASS	BEGGAR'S TICKS	PICKERELWEED-ARROW ARUM	WALTER'S MILLET	SMARTWEED	CATTAIL	WATER HEMP	MARSH HIBISCUS	SWITCHGRASS	SWAMP MILKWEED	COMMON THREESQUARE	PARTRIDGE PEA	BONESET	BUTTONBUSH	OTHERS	OBSERVATIONS	MARSH TYPE
22	Wards Creek	3.6	%				10	10	30	20	20	--		10									Small embayed marsh	XI
			acres				.36	.36	1.08	.72	.72			.36										
23	Wards Creek	5.2	%				10	--		10	5		10	5				--	60				Embayed marsh	XI
			acres				.52			.52	.26		.52	.26					3.12					
24	Wards Creek	3.7	%		--		20	20	10	10				10					30			h,-	Fringe marsh	XI
			acres				.74	.74	.37	.37				.37					1.11					
25	Wards Creek	2.9	%		--	25			5		5			5					60				Fringe marsh, bald cypress scattered throughout	XI
			acres			.73			.15		.15			.15					1.74					
26	Wards Creek	1.0	%		40	25	10	25														a,-	Small embayed marsh	XI
			acres		.40	.25	.10	.25																
27	Wards Creek	1.0	%			10	10		20	10									50				Small embayed marsh	XI
			acres			.10	.10		.20	.10									.50					
28	Wards Creek	3.0	%			30	10		10	10	10		10	10					10				Embayed marsh, diverse vegetation	XI
			acres			.90	.30		.30	.30	.30		.30	.30					.30					

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Section III: Wards Creek.

#	MARSH LOCATION	TOTAL ACRES		BIG CORDGRASS	TEARTHUMB	JEWELWEED	WILD RICE	RICE CUTGRASS	BEGGAR'S TICKS	PICKERELWEED-ARROW ARUM	WALTER'S MILLET	SMARTWEED	CATTAIL	WATER HEMP	MARSH HIBISCUS	SWITCHGRASS	SWAMP MILKWEED	COMMON THREESQUARE	PARTRIDGE PEA	BONESET	BUTTONBUSH	OTHERS	OBSERVATIONS	MARSH TYPE
29	Wards Creek	2.1	%			20	10		20		10		10	20					10				Embayed marsh, diverse vegetation	XI
			acres			.42	.21		.42		.21		.21	.42					.21					
30	Wards Creek	5.8	%			5	35		25	5	10		--	10					5			g,5	Large, fringe marsh with black gum and ash trees	XI
			acres			.29	2.03		1.45	.29	.58			.58					.29			g,.29		
31	Wards Creek	3.1	%		20	10			10	30			10	10					10			b,- d,-	Fringe marsh, diverse vegetation	XI
			acres		.62	.31			.31	.93			.31	.31					.31					
32	Wards Creek	.5	%						55	10	15			10				10				a,-	Small fringe marsh dominated by beggar's ticks	XI
			acres						.28	.05	.08			.05				.05						
33	Wards Creek	9.7	%			5	20	20	30	10	10			4							1	b,-	Creek marsh, mixed freshwater vegetation	XI
			acres			.49	1.94	1.94	2.91	.97	.97			.39							.10			
34	Wards Creek	5.3	%			--	20		20	10	5	--	--	3	2			10	30				Large fringe marsh	XI
			acres				1.06		1.06	.53	.27			.16	.11			.53	1.59					
35	Wards Creek	20.1	%	--	--	10	20		55	5	--	--	5	2	3				--	--		g,-	Embayed marsh, dominated by beggar's ticks	XI
			acres			2.01	4.02		11.06	1.01			1.01	.40	.60									

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Section III: Wards Creek.

#	MARSH LOCATION	TOTAL ACRES		BIG CORDGRASS	TEARTHUMB	JEWELWEED	WILD RICE	RICE CUTGRASS	BEGGAR'S TICKS	PICKERELWEED-ARROW ARUM	WALTER'S MILLET	SMARTWEED	CATTAIL	WATER HEMP	MARSH HIBISCUS	SWITCHGRASS	SWAMP MILKWEED	COMMON THREESQUARE	PARTRIDGE PEA	BONESET	BUTTONBUSH	OTHERS	OBSERVATIONS	MARSH TYPE
36	Wards Creek	.5	%		--	5	30		30	30				5					--			g,-	Small cove marsh	XI
			acres			.03	.15		.15	.15				.03										
37	Wards Creek	2.0	%			50			5	40					5								Small fringe marsh	XI
			acres			1.00			.10	.80					.10									
	Total This Section	216.8	%																					
			acres	18.1	1.02	22.54	25.54	3.11	72.10	21.92	11.97	9.05	2.35	14.02	1.11			3.20	9.17		1.41	.29		

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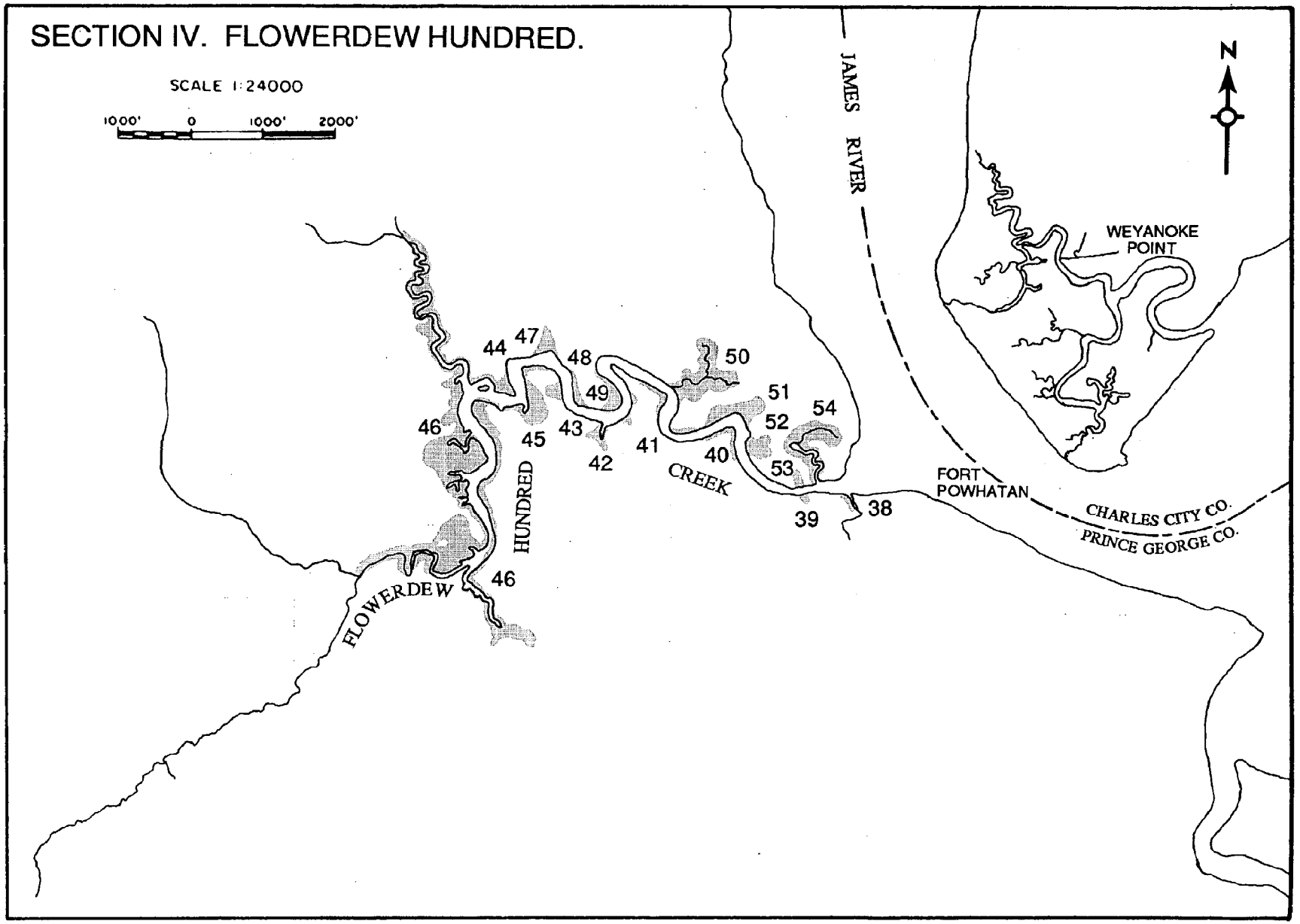
Section IV: Flowerdew Hundred Creek

Flowerdew Hundred Creek is a relatively undisturbed tidal creek bordered by tidal marshes and swamps. There are 17 individual marshes (#38-54) totalling 116 acres. A number of these marshes are associated with tidal swamps which are commonly vegetated by typical wetland trees such as bald cypress, red maple, black gum and American ash. The largest marsh in the system, marsh #46, occurs in the extreme upper reach of the creek and totals 70.7 acres.

When the original field survey was conducted in September, 1978, the dominant plant species recorded for most of the marshes was beggar's ticks (*Bidens* spp.). Because of the variability of seasonal vegetational succession, it is not unusual to find *Bidens* as a common or domiant plant in marshes, in that it matures and blooms late in the season. Other marsh species such as arrow arum and pickerelweed reach their peak in June/July and were less evident when the first field survey was made. Later observations of this system and others in the county were made in July, 1988 and at that time beggar's ticks was not prevalent, but water hemp (*Amaranthus cannabinuus*) was. The later species is a very important waterfowl food, a prolific producer of nutritious seeds which are relished by ducks and geese. The data tables in this report reflect the vegetation cover that was reported in 1978. As stated in the introduction, because of vegetational seasonal variablity, it is difficult to predict what plants an observer may find in a tidal freshwater marsh.


SECTION IV. FLOWERDEW HUNDRED.
SCALE 1:24000
1000' 0 1000' 2000'
N
JAMES RIVER
WEYANOKE POINT
FORT POWHATAN
CHARLES CITY CO.
PRINCE GEORGE CO.
FLOWERDEW HUNDRED CREEK
44
47
48
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39
38
46

Section IV: Flowerdew Hundred Creek.

#	MARSH LOCATION	TOTAL ACRES		BIG CORDGRASS	TEARTHUMB	JEWELWEED	WILD RICE	RICE CUTGRASS	BEGGAR'S TICKS	PICKERELWEED-ARROW ARUM	WALTER'S MILLET	SMARTWEED	CATTAIL	WATER HEMP	MARSH HIBISCUS	SWITCHGRASS	SWAMP MILKWEED	COMMON THREESQUARE	PARTRIDGE PEA	BONESET	BUTTONBUSH	OTHERS	OBSERVATIONS	MARSH TYPE
38	Flowerdew Hundred Creek	.5	%		10	40			10	10	---	30		--	--								Small creek marsh, bordering a tidal swamp	XI
			acres		.05	.20			.05	.05		.15												
39	Flowerdew Hundred Creek	.5	%			--	--		65	15		--	10								10		Small creek marsh	XI
			acres						.33	.08			.05								.05			
40	Flowerdew Hundred Creek	.25	%						23	23	5	42		5	2						--		Narrow fringe marsh, dominated by smartweed	XI
			acres						.06	.06	.01	.11		.01	.00									
41	Flowerdew Hundred Creek	1.0	%		20	30	--		20	20		10		--									Narrow fringe marsh, bordering a tidal swamp	XI
			acres		.20	.30			.20	.20		.10												
42	Flowerdew Hundred Creek	.5	%		20				40	20		10	10		--		--						Small cove marsh	XI
			acres		.10				.20	.10		.05	.05											
43	Flowerdew Hundred Creek	1.8	%		50	20			10	10									5		5		Embayed marsh dominated by tearthumb	XI
			acres		.90	.36			.18	.18									.09		.09			
44	Flowerdew Hundred Creek	1.5	%	--	10	10	10		30	10		25			--						5		Fringe marsh, diverse vegetation	XI
			acres		.15	.15	.15		.45	.15		.38									.08			

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Section IV: Flowerdew Hundred Creek.

#	MARSH LOCATION	TOTAL ACRES		BIG CORDGRASS	TEARTHUMB	JEWELWEED	WILD RICE	RICE CUTGRASS	BEGGAR'S TICKS	PICKERELWEED-ARROW ARUM	WALTER'S MILLET	SMARTWEED	CATTAIL	WATER HEMP	MARSH HIBISCUS	SWITCHGRASS	SWAMP MILKWEED	COMMON THREESQUARE	PARTRIDGE PEA	BONESET	BUTTONBUSH	OTHERS	OBSERVATIONS	MARSH TYPE
45	Flowerdew Hundred Creek	3.7	%		20		10		60	5			--	--	--						5		Embayed marsh, dominated by beggar's ticks	XI
			acres		.74		.37		2.22	.19											.19			
46	Flowerdew Hundred Creek	70.7	%		5	10	5		60	10			--	--	--				5		5		Large creek marsh	XI
			acres		3.54	7.07	3.54		42.42	7.07									3.54		3.54			
47	Flowerdew Hundred Creek	.75	%		10		5		70	10		5	--								--		Small creek marsh	XI
			acres		.08		.04		.53	.08		.04												
48	Flowerdew Hundred Creek	.75	%		15		10		50	10			5		5						5		Small fringe marsh	XI
			acres		.11		.08		.38	.08			.04		.04						.04			
49	Flowerdew Hundred Creek	1.8	%		10		10		50	10		10		--	--						10		Broad fringe marsh	XI
			acres		.18		.18		.90	.18		.18									.18			
50	Flowerdew Hundred Creek	7.3	%		35	20	5		20	10											10		Embayed creek marsh	XI
			acres		2.56	1.46	.37		1.46	.73											.73			
51	Flowerdew Hundred Creek	4.2	%		40	15	--		5	10			10	--	--						20		Embayed marsh	XI
			acres		1.68	.63			.21	.42			.42								.84			

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i=ARROWHEAD

Section IV: Flowerdew Hundred Creek.

#	MARSH LOCATION	TOTAL ACRES		BIG CORDGRASS	TEARTHUMB	JEWELWEED	WILD RICE	RICE CUTGRASS	BEGGAR'S TICKS	PICKERELWEED-ARROW ARUM	WALTER'S MILLET	SMARTWEED	CATTAIL	WATER HEMP	MARSH HIBISCUS	SWITCHGRASS	SWAMP MILKWEED	COMMON THREESQUARE	PARTRIDGE PEA	BONESET	BUTTONBUSH	OTHERS	OBSERVATIONS	MARSH TYPE
52	Flowerdew Hundred Creek	2.1	%		20	30	5	20	5	10				5	5								Embayed marsh	XI
			acres		.42	.63	.11	.42	.11	.21				.11	.11									
53	Flowerdew Hundred Creek	8.6	%		20	20		20	5	5		20		5	5								Embayed creek marsh	XI
			acres		1.72	1.72		1.72	.43	.43		1.72		.43	.43									
54	Flowerdew Hundred Creek	10.0	%		15	--			40	30		10		5	--								Embayed creek marsh	XI
			acres		1.50				4.00	3.00		1.00		.50										
	Total This Section	116.0	%																					
			acres		13.93	12.52	4.84	2.14	54.13	13.21	.01	3.73	.56	1.05	.58				3.63		5.74			

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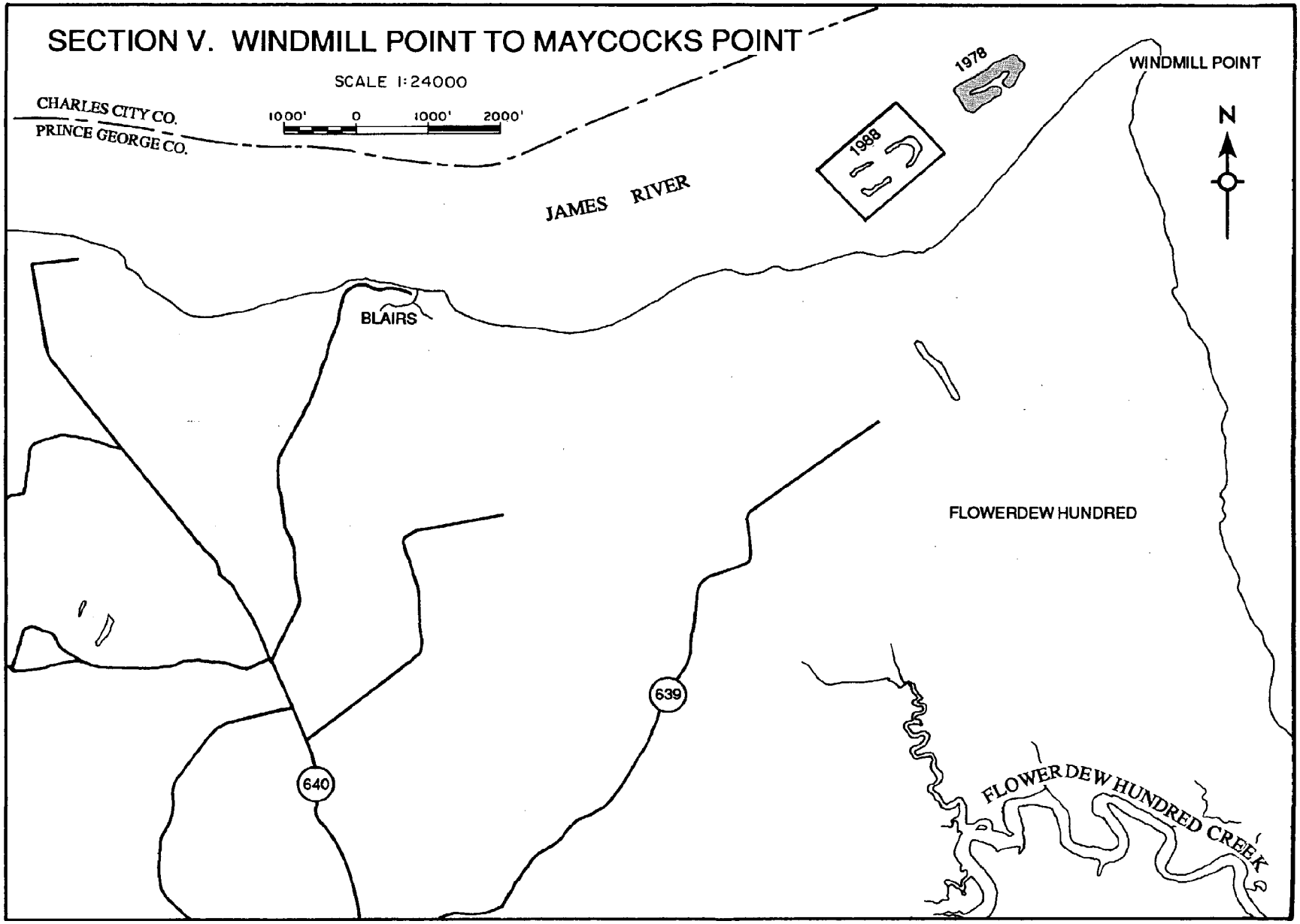
Section V: Windmill Point to Maycocks Point

The only marsh in this section is marsh #55. It is a man-made marsh island constructed by the U.S. Army Corps of Engineers in 1975 from dredged material obtained from maintenance dredging of the nearby main channel of the James River. A retangular-shaped dike was constructed to protect an intertidal interior which eventually became vegetated mainly with pickerelweed (*Pontederia cordata*), arrow arum (*Peltandra virginica*), and arrowhead (*Sagittaria latifolia*). In 1976, the intertidal marsh area within the dike was vegetated by approximately 14 acres of marsh plants, dominated the above mentioned species. When the initial field work was done for the Prince George County marsh inventory in 1978, the marsh had a total of 12 acres and was dominated by pickerelweed, arrow arum and arrowhead.

The dike has been breached in several areas since 1978 because of erosion, and now (1988) the vegetated wetland area has been reduced to only .25 acre of arrow arum and pickerelweed. Only the downriver part of the island remains relatively stable and supports a few trees and shrubs.

The map indicates the relative geomorphological change of this marsh in the last decade.


SECTION V. WINDMILL POINT TO MAYCOCKS POINT
SCALE 1:24000
1000' 0 1000' 2000'
CHARLES CITY CO.
PRINCE GEORGE CO.
JAMES RIVER
1978
1988
WINDMILL POINT
N
BLAIRS
FLOWERDEW HUNDRED
639
640
FLOWER DEW HUNDRED CREEK

Section V: Windmill Point to Maycocks Point.

#	MARSH LOCATION	TOTAL ACRES		BIG CORDGRASS	TEARTHUMB	JEWELWEED	WILD RICE	RICE CUTGRASS	BEGGAR'S TICKS	PICKERELWEED-ARROW ARUM	WALTER'S MILLET	SMARTWEED	CATTAIL	WATER HEMP	MARSH HIBISCUS	SWITCHGRASS	SWAMP MILKWEED	COMMON THREESQUARE	PARTRIDGE PEA	BONESET	BUTTONBUSH	OTHERS	OBSERVATIONS	MARSH TYPE
55	James River	.25	%							100													Island created from *dredged material*	XI
			acres							.25														
	Total This Section	.25	%																					
			acres							.25														

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g=WOOLGRASS
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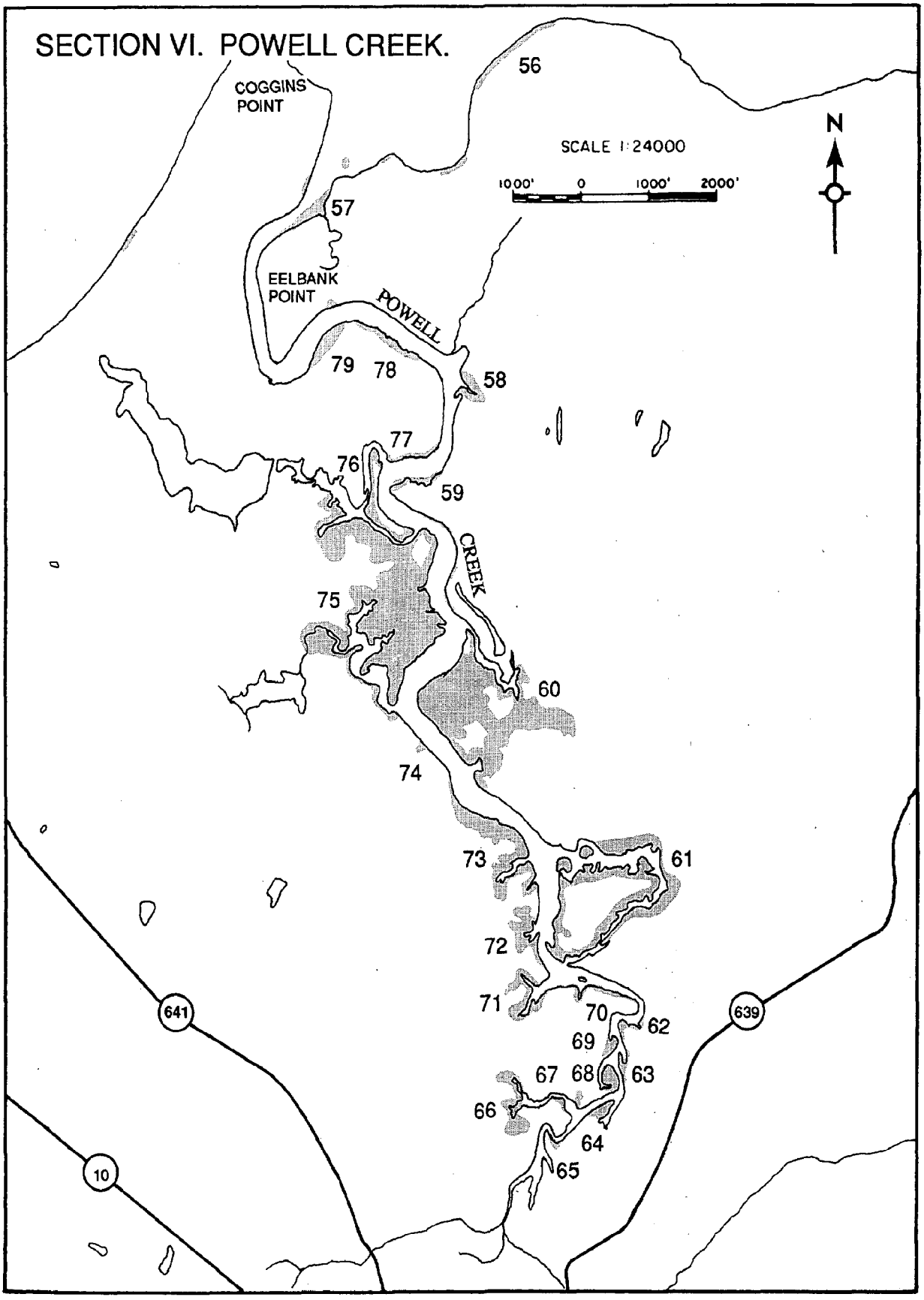
Section VI: Powell Creek

This section includes all the tidal marshes (#58-79) of Powell Creek. This creek system has been moderately disturbed in the past by gravel pit operations including channel dredging and gravel transport via barges. Relics of this operation, such as abandoned barges, a derelict dredge, piers and other equipment are still evident. A number of the rotting wooden barges have become vegetated by wetland plants, becoming, inadvertently, man-made marshes.

Most of the marshes have not been disturbed by this operation but actually have expanded because of the placement of abandoned barges immediately adjacent to the marsh shoreline. Over time the barges have deteriorated and accumulated sediment, providing conditions for marsh vegetation succession. A number of the marshes are embayed marshes, often occurring within a tidal swamp community. The species composition in this wetland system is very similar to that of the tidal creek tributaries along this reach of the James River, with the exception of partridge pea (*Cassia fasciculata*) which is more abundant in Powell Creek than any of the others.

As the other marsh creek systems, Powell Creek has high ecological value as a wildlife, waterfowl and fisheries habitat.


SECTION VI. POWELL CREEK.
COGGINS POINT
EELBANK POINT
POWELL CREEK
SCALE 1:24000
1000' 0 1000' 2000'
N
56
57
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639
10

Section VI: Powell Creek.

#	MARSH LOCATION	TOTAL ACRES		BIG CORDGRASS	TEARTHUMB	JEWELWEED	WILD RICE	RICE CUTGRASS	BEGGAR'S TICKS	PICKERELWEED-ARROW ARUM	WALTER'S MILLET	SMARTWEED	CATTAIL	WATER HEMP	MARSH HIBISCUS	SWITCHGRASS	SWAMP MILKWEED	COMMON THREESQUARE	PARTRIDGE PEA	BONESET	BUTTONBUSH	OTHERS	OBSERVATIONS	MARSH TYPE
56	Powell Creek	.25	%																			f,100	Fringe marsh containing 100% water willow	XI
			acres																			f,.25		
57	Powell Creek	1.0	%			--	5		60	30		--		5									Fringe marsh dominated by beggar's ticks	XI
			acres				.05		.60	.30				.05										
58	Powell Creek	1.5	%				5		70	5		5			10	5							Cove marsh dominated by beggar's ticks	XI
			acres				.08		1.05	.08		.08			.15	.08								
59	Powell Creek	.25	%			5		10	50	20		5		5		5					--		Fringe marsh	XI
			acres			.01		.03	.13	.05		.01		.01		.01								
60	Powell Creek	55.2	%						25	10	5	15	5		15				25	--	--		Large embayed marsh with ash trees scattered throughout	XI
			acres						13.80	5.52	2.76	8.28	2.76		8.28				13.80					
61	Powell Creek	32.0	%	5		20	5		40	10	--		--	10	--				10			a,-	Creek marsh and island marsh	XI
			acres	1.60		6.4	1.60		12.80	3.20				3.20	--				3.20					
62	Powell Creek	2.0	%			10			70	10				10							--	a,-	Point marsh	XI
			acres			.20			1.40	.20				.20										

a=GERARDIA
b=IRONWEED
c=MARSH MALLOW
d=PLUME GRASS
e=SWAMP ROSE
f=WATER WILLOW
g=WOOLGRASS
h=BULRUSH
i=ARROWHEAD

Section VI: Powell Creek.

#	MARSH LOCATION	TOTAL ACRES		BIG CORDGRASS	TEARTHUMB	JEWELWEED	WILD RICE	RICE CUTGRASS	BEGGAR'S TICKS	PICKERELWEED-ARROW ARUM	WALTER'S MILLET	SMARTWEED	CATTAIL	WATER HEMP	MARSH HIBISCUS	SWITCHGRASS	SWAMP MILKWEED	COMMON THREESQUARE	PARTRIDGE PEA	BONESET	BUTTONBUSH	OTHERS	OBSERVATIONS	MARSH TYPE
63	Powell Creek	1.0	%				5		65	10				5			--		10		5	a,-	Spit marsh dominated by beggar's ticks	XI
			acres				.05		.65	.10				.05					.10		.05			
64	Powell Creek	2.9	%			5	5		40	5				5					40				Point marsh	XI
			acres			.15	.15		1.16	.15				.15					1.16					
65	Powell Creek	.5	%		20	20	5		30	5				--	--				20				Small embayed marsh	XI
			acres		.10	.10	.03		.15	.03									.10					
66	Powell Creek	3.2	%		20	10	5		30	10				5					20				Embayed marsh	XI
			acres		.64	.32	.16		.96	.32				.16					.64					
67	Powell Creek	.5	%			--	5		50	5				--					40	--			Small embayed marsh	XI
			acres				.03		.25	.03									.20					
68	Powell Creek	1.4	%			10		2	20	5				5				3	55				Spit marsh with trees scattered throughout, black gum and ash	XI
			acres			.14		.03	.28	.07				.07				.04	.77					
69	Powell Creek	1.5	%			5		10	30	5			5	5					40				Embayed point marsh with trees scattered throughout, black gum and ash	XI
			acres			.08		.15	.45	.08			.08	.08					.60					

a=GERARDIA
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c=MARSH MALLOW
d=PLUME GRASS
e=SWAMP ROSE
f=WATER WILLOW
g=WOOLGRASS
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i=ARROWHEAD

Section VI: Powell Creek.

#	MARSH LOCATION	TOTAL ACRES		BIG CORDGRASS	TEARTHUMB	JEWELWEED	WILD RICE	RICE CUTGRASS	BEGGAR'S TICKS	PICKERELWEED-ARROW ARUM	WALTER'S MILLET	SMARTWEED	CATTAIL	WATER HEMP	MARSH HIBISCUS	SWITCHGRASS	SWAMP MILKWEED	COMMON THREESQUARE	PARTRIDGE PEA	BONESET	BUTTONBUSH	OTHERS	OBSERVATIONS	MARSH TYPE
70	Powell Creek	3.2	%			20			30	5	5			5					30		5		Fringe marsh and small island with black gum and ash trees scattered throughout	XI
			acres			.64			.96	.16	.16			.16					.96		.16			
71	Powell Creek	5.7	%		10	20	5	5	35	5	--		--					--	20				Small creek marsh	XI
			acres		.57	1.14	.29	.29	2.00	.29									1.14					
72	Powell Creek	3.9	%			5	5		40	5	--		--						40			h,5	Cove marsh	XI
			acres			.20	.20		1.56	.20									1.56			h,.20		
73	Powell Creek	13.8	%		10	5	5		30	5			5						40				Fringing creek marsh	XI
			acres		1.38	.69	.69		4.14	.69			.69						5.52					
74	Powell Creek	.5	%			10	5		70	5		5		5									Small embayed marsh	XI
			acres			.05	.03		.35	.03		.03		.03										
75	Powell Creek	64.5	%			5	5	20	50	5	--	5	--		--				10			h,-	Extensive embayed marsh	XI
			acres			3.23	3.23	12.90	32.25	3.23		3.23							6.45					
76	Powell Creek	3.0	%			35	5		35	5	--		--	10					10			h,-	Marsh island with scattered trees	XI
			acres			1.05	.15		1.05	.15				.30					.30					

a=GERARDIA
b=IRONWEED
c=MARSH MALLOW
d=PLUME GRASS
e=SWAMP ROSE
f=WATER WILLOW
g=WOOLGRASS
h=BULRUSH
i=ARROWHEAD

Section VI: Powell Creek.

#	MARSH LOCATION	TOTAL ACRES		BIG CORDGRASS	TEARTHUMB	JEWELWEED	WILD RICE	RICE CUTGRASS	BEGGAR'S TICKS	PICKERELWEED-ARROW ARUM	WALTER'S MILLET	SMARTWEED	CATTAIL	WATER HEMP	MARSH HIBISCUS	SWITCHGRASS	SWAMP MILKWEED	COMMON THREESQUARE	PARTRIDGE PEA	BONESET	BUTTONBUSH	OTHERS	OBSERVATIONS	MARSH TYPE
77	Powell Creek	1.0	%			30	5		30	5	--	--	--	30								h,-	Fringe marsh	XI
			acres			.30	.05		.30	.05				.30										
78	Powell Creek	.6	%		10	10	--		55	10		5		10									Fringe marsh	XI
			acres		.06	.06			.33	.06		.03		.06										
79	Powell Creek	2.8	%		10	20	5		35	10		10		10									Fringe marsh	XI
			acres		.28	.56	.14		.98	.28		.28		.28										
	Total This Section	202.2	%																					
			acres	1.60	3.03	15.32	6.93	13.40	77.60	15.27	2.92	11.94	3.53	5.10	8.43	.09		.04	36.50		.21	.45		

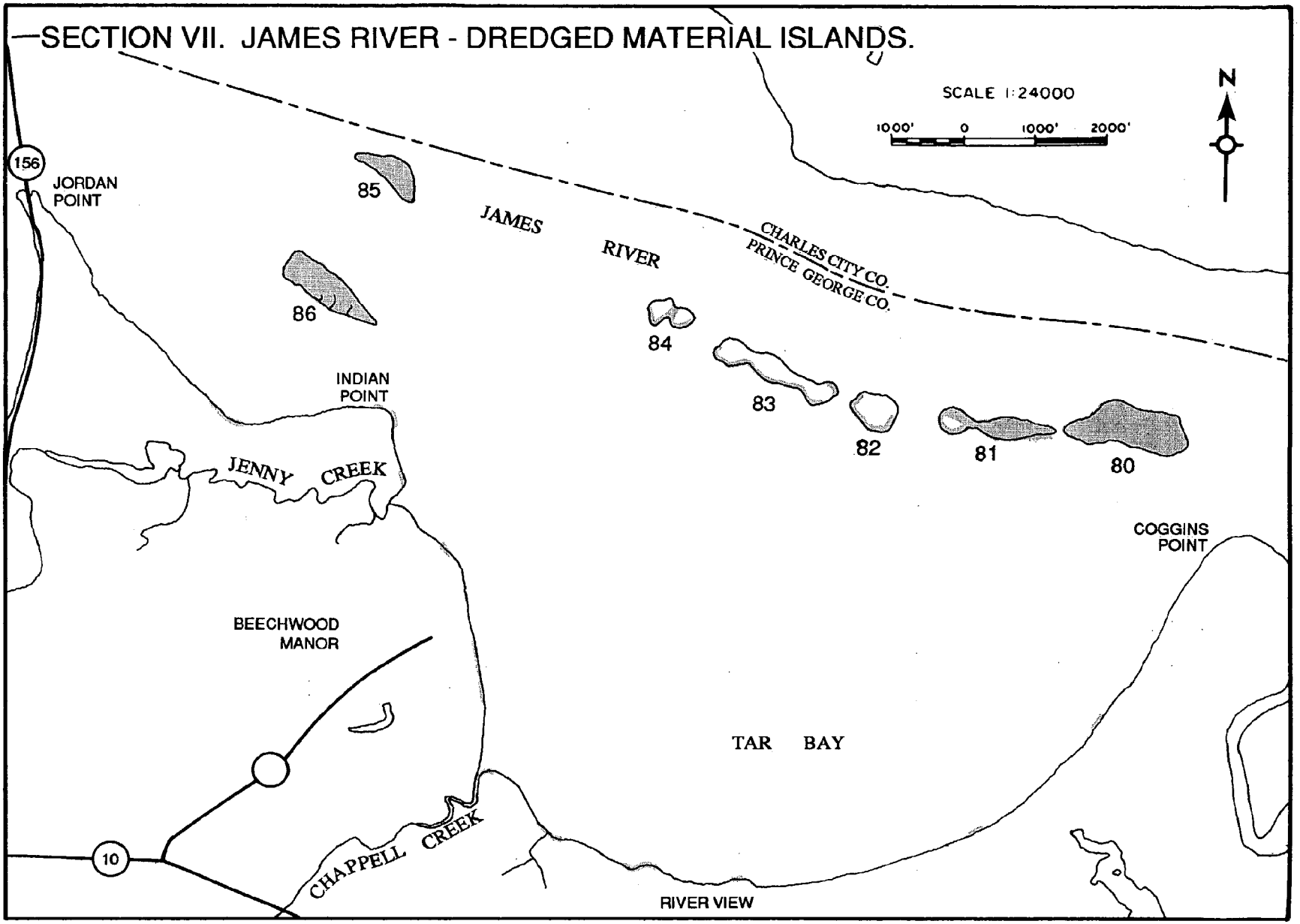
a=GERARDIA
b=IRONWEED
c=MARSH MALLOW
d=PLUME GRASS
e=SWAMP ROSE
f=WATER WILLOW
g=WOOLGRASS
h=BULRUSH
i=ARROWHEAD

Section VII: James River Dredged Material Islands

The marshes recorded in this section are all found on man-made islands in a reach of the James River from Coggins Point to Jordan Point. The islands were formed artifically via overboard disposal of dredged material in the process of maintenance dredging of the main channel of the James River over the years. There are seven islands in the archipelago, four of which are dominated by marsh vegeation (#80, 81, 85, & 86). Three (# 82-84) are predominantly vegetated by trees, chiefly red maple and cottonwood.

The largest marsh island (# 80), is 21.5 acres in area and is dominated by wild rice (*Zizania aquatica*), a valuable waterfowl food. The entire island complex is a confirmed waterfowl habitat. Other marsh plants occurring in this system noted for their food and cover value are smartweeds (*Polygonum* spp.), Walter's millet (*Echinochola walteri*), arrow arum and pickerelweed.

Two creeks located in this section, Chappell and Jenny creeks, were found to be limited by tidal influence, and although supported swamp and bottomland hardwood forests, no tidal marshes were observed.


SECTION VII. JAMES RIVER - DREDGED MATERIAL ISLANDS.
SCALE 1:24000
1000' 0 1000' 2000'
N
156
JORDAN POINT
85
JAMES RIVER
CHARLES CITY CO.
PRINCE GEORGE CO.
86
84
83
82
81
80
INDIAN POINT
JENNY CREEK
COGGINS POINT
BEECHWOOD MANOR
TAR BAY
10
CHAPPELL CREEK
RIVER VIEW

Section VII: James River Dredged Material Islands.

#	MARSH LOCATION	TOTAL ACRES		BIG CORDGRASS	TEARTHUMB	JEWELWEED	WILD RICE	RICE CUTGRASS	BEGGAR'S TICKS	PICKERELWEED-ARROW ARUM	WALTER'S MILLET	SMARTWEED	CATTAIL	WATER HEMP	MARSH HIBISCUS	SWITCHGRASS	SWAMP MILKWEED	COMMON THREESQUARE	PARTRIDGE PEA	BONESET	BUTTONBUSH	OTHERS	OBSERVATIONS	MARSH TYPE
80	James River	21.5	%			10	50	--		20	10	10		--									Marsh island	XI
			acres			2.15	10.75			4.30	2.15	2.15												
81	James River	8.0	%			10	5	--	10	10	10	45	--	10	--								Island	XI
			acres			.80	.40		.80	.80	.80	3.60		.80										
82	James River	.8	%			10	5	--	5	5		70			5								Island and narrow fringe marsh	XI
			acres			.08	.04		.04	.04		.56			.04									
83	James River	1.0	%									30										f,70	Island and narrow fringe marsh	XI
			acres									.30										f,.70		
84	James River	2.0	%				5		5	5		80	5										Island with fringe marsh	XI
			acres				.10		.10	.10		1.60	.10											
85	James River	6.8	%				10	--	20	20	10	40	--										Man-made marsh island	XI
			acres				.68		1.36	1.36	.68	2.72												
86	James River	13.3	%				40		5	20	5	25	5	--									Dredged, material marsh island	XI
			acres				5.32		.67	2.66	.67	3.33	.67											

a=GERARDIA
b=IRONWEED
c=MARSH MALLOW
d=PLUME GRASS
e=SWAMP ROSE
f=WATER WILLOW
g=WOOLGRASS
h=BULRUSH
i=ARROWHEAD

Section VII: James River Dredged Material Islands.

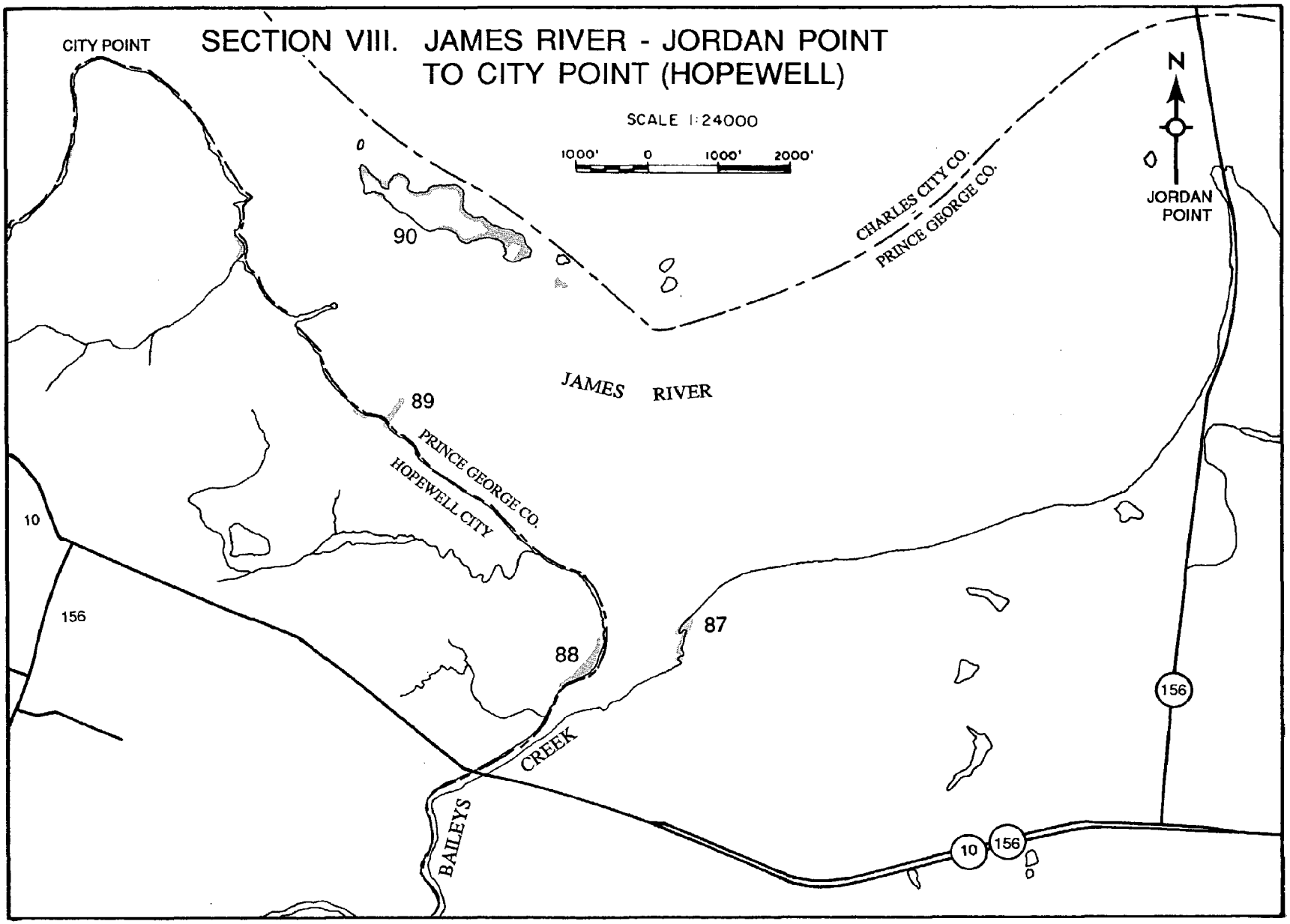
#	MARSH LOCATION	TOTAL ACRES		BIG CORDGRASS	TEARTHUMB	JEWELWEED	WILD RICE	RICE CUTGRASS	BEGGAR'S TICKS	PICKERELWEED-ARROW ARUM	WALTER'S MILLET	SMARTWEED	CATTAIL	WATER HEMP	MARSH HIBISCUS	SWITCHGRASS	SWAMP MILKWEED	COMMON THREESQUARE	PARTRIDGE PEA	BONESET	BUTTONBUSH	OTHERS	OBSERVATIONS	MARSH TYPE
	Total This Section	53.4	%																					
			acres			3.03	17.29		2.97	9.26	4.30	14.26	.77	.80	.04							.70		

a=GERARDIA
b=IRONWEED
c=MARSH MALLOW
d=PLUME GRASS
e=SWAMP ROSE
f=WATER WILLOW
g=WOOLGRASS
h=BULRUSH
i=ARROWHEAD

Section VIII: James River - Jordan Point to City Point (Hopewell)

Only four marshes are contained in this section. Two of the marshes (# 89 & 90) are on islands in the James River which were likely created by overboard disposal of dredged material. These marshes are dominated by smartweeds, a valuable waterfowl food. The other marshes (# 87 & 88) are small fringe marshes located at the mouth of Baileys Creek.

Baileys Creek itself is a highly polluted waterway and although it supports swamp and bottomland forest wetlands, no tidal marshes of any significance (less than .25 acre) were observed at the time of the initial field work in 1978, as well as in 1988.


SECTION VIII. JAMES RIVER - JORDAN POINT
TO CITY POINT (HOPEWELL)
SCALE 1:24000
1000' 0 1000' 2000'
CITY POINT
N
JORDAN POINT
CHARLES CITY CO.
PRINCE GEORGE CO.
JAMES RIVER
90
89
88
87
PRINCE GEORGE CO.
HOPEWELL CITY
10
156
BAILEYS CREEK

Section VIII: James River-Jordan Point to City Point (Hopewell).

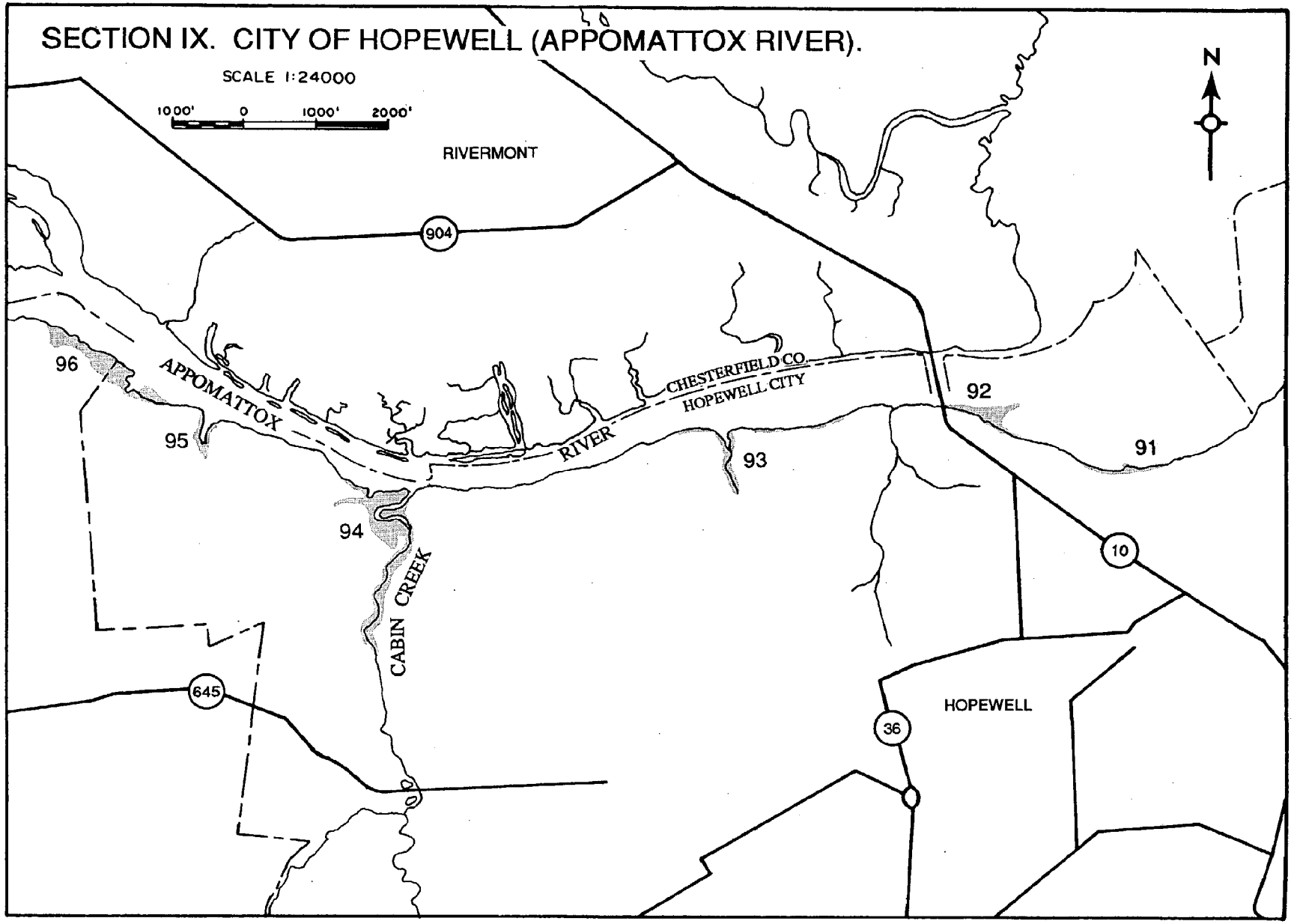
#	MARSH LOCATION	TOTAL ACRES		BIG CORDGRASS	TEARTHUMB	JEWELWEED	WILD RICE	RICE CUTGRASS	BEGGAR'S TICKS	PICKERELWEED-ARROW ARUM	WALTER'S MILLET	SMARTWEED	CATTAIL	WATER HEMP	MARSH HIBISCUS	SWITCHGRASS	SWAMP MILKWEED	COMMON THREESQUARE	PARTRIDGE PEA	BONESET	BUTTONBUSH	OTHERS	OBSERVATIONS	MARSH TYPE
87	James River	.25	%				20			10		60	5	5									Fringe marsh	XI
			acres				.05			.03		.15	.01	.01										
88	James River	1.7	%				60			--		10		30									Fringe marsh dominated by wild rice	XI
			acres				1.02					.17		.51										
89	James River	.3	%				5					80		10				5					Island fringe marsh	XI
			acres				.02					.24		.03				.02						
90	James River	4.0	%			10	--		5	15	--	70	--	--	--								Marsh island	XI
			acres			.40			.20	.60		2.80												
	Total This Section	6.25	%																					
			acres			.40	1.09		.20	.63		3.36	.01	.55				.02						

a=GERARDIA
b=IRONWEED
c=MARSH MALLOW
d=PLUME GRASS
e=SWAMP ROSE
f=WATER WILLOW
g=WOOLGRASS
h=BULRUSH
i=ARROWHEAD

Section IX: City of Hopewell (Appomattox River)

The Appomattox River, a major tributary of the James, is a tidal waterway to the fall line, at the City of Petersburg, approximately 10.5 river miles from its mouth.

There are six tidal marshes (# 91-96) in this section, totalling slightly over 19 acres. All of these marshes are found within the city limits of Hopewell, except marsh #96, which is partially in Hopewell and Prince George County. This marsh is the largest marsh in this section, with 8.5 acres. Slightly over 12 acres of the total acres in this section, are dominated by smartweeds and tearthumbs (*Polygonum* spp.). Seeds from these species are a valuable waterfowl food source. Several of the smaller embayed marshes in this section are associated with timbered wetlands such as tidal swamps and/or bottomland hardwood forests.


SECTION IX. CITY OF HOPEWELL (APPOMATTOX RIVER).
SCALE 1:24000
10000' 0 1000' 2000'
N
RIVERMONT
904
96
APPOMATTOX
RIVER
CHESTERFIELD CO.
HOPEWELL CITY
92
91
95
93
94
CABIN CREEK
10
645
HOPEWELL
36

Section IX: City of Hopewell (Appomattox River).

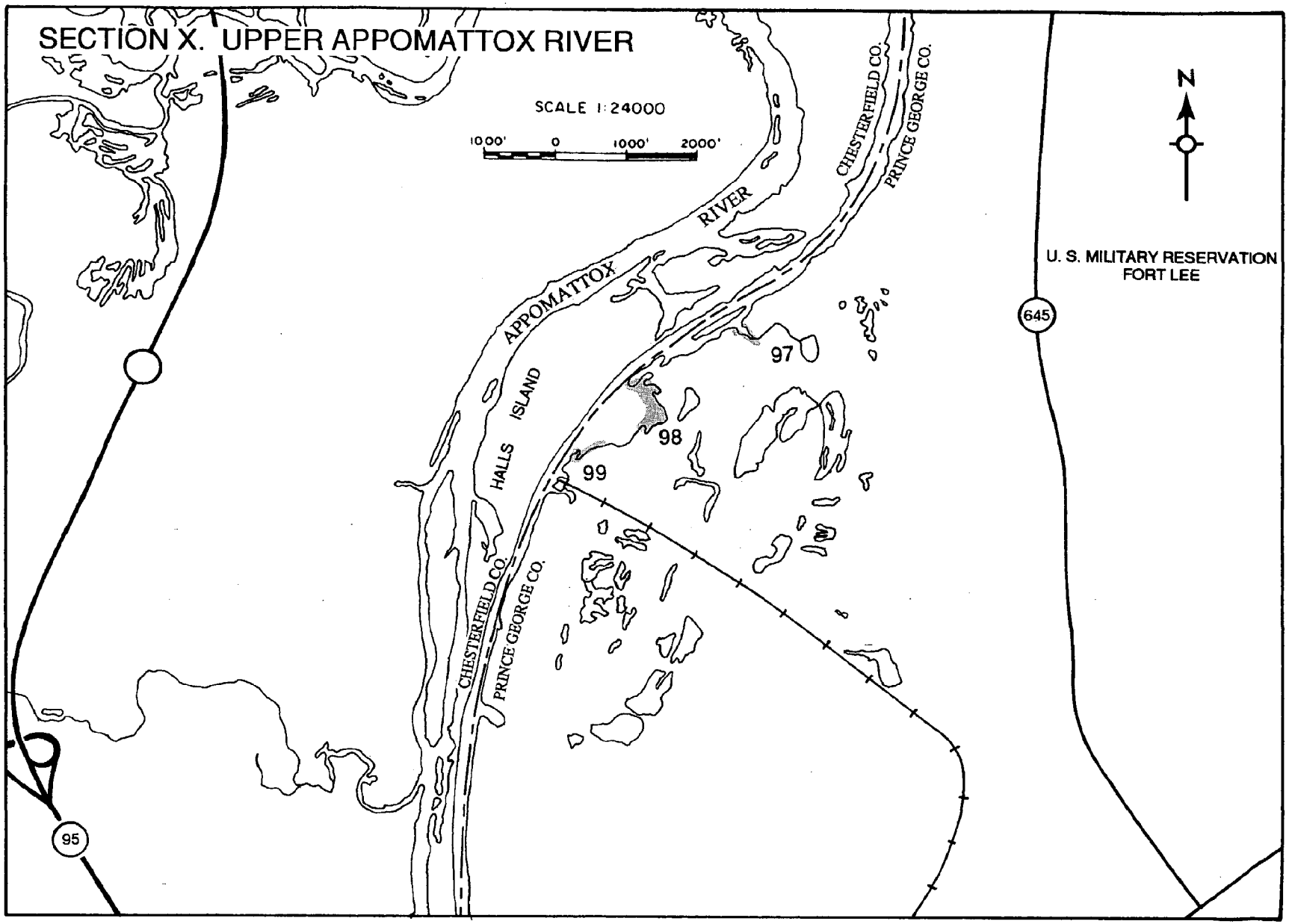
#	MARSH LOCATION	TOTAL ACRES		BIG CORDGRASS	TEARTHUMB	JEWELWEED	WILD RICE	RICE CUTGRASS	BEGGAR'S TICKS	PICKERELWEED-ARROW ARUM	WALTER'S MILLET	SMARTWEED	CATTAIL	WATER HEMP	MARSH HIBISCUS	SWITCHGRASS	SWAMP MILKWEED	COMMON THREESQUARE	PARTRIDGE PEA	BONESET	BUTTONBUSH	OTHERS	OBSERVATIONS	MARSH TYPE
91	Appomat-tox River	1.04	%						30	10	10	50	--	--									Fringe marsh dominated by smartweed	XI
			acres						.31	.10	.10	.52												
92	Appomat-tox River	3.0	%				15		5	10		60	10	--									Spit marsh with scattered trees	XI
			acres				.45		.15	.30		1.8	.30											
93	Appomat-tox River	1.0	%		80		5		5	5		5											Small creek marsh	XI
			acres		.80		.05		.05	.05		.05												
94	Cabin Creek	3.0	%		30	20	--		20	5	5	10	--	10	--								a,-	Large creek marsh	XI
			acres		.90	.60			.60	.15	.15	.30		.30										
95	Appomat-tox River	2.6	%		20				10	5		60		5								--		Small creek marsh	XI
			acres		.52				.26	.13		1.56		.13										
96	Appomat-tox River	8.5	%		45	10	--		10	10	5	10		10	--				--					Large fringe marsh	XI
			acres		3.83	.85			.85	.85	.43	.85		.85										
	Total This Section	19.14	%																					
			acres		6.05	1.45	.50		2.22	1.58	.68	5.08	.30	1.28										

a=GERARDIA
b=IRONWEED
c=MARSH MALLOW
d=PLUME GRASS
e=SWAMP ROSE
f=WATER WILLOW
g=WOOLGRASS
h=BULRUSH
i=ARROWHEAD

Section X: Upper Appomattox River

This section includes three marshes found along the upper tidal reach of the Appomattox River. Two of the marshes are embayed wetlands, surrounded by bottomland hardwood forests. The dominant vegetation in these two marshes are tearthumbs (*Polygonum arifolium* and *P. sagittatum*). These two species form dense vine-like growth that become a nearly impenetrable thicket late in the growing season, offering cover for wildlife and seeds for waterfowl food.

Two marshes were observed farther upriver, between Harrison Creek and just below the I-95 bridge in 1978 where this branch of the river terminates into a dredged canal. These marshes were not found during field observations in 1988. It is assumed that they were filled in or were impacted by hydrological changes.


SECTION X. UPPER APPOMATTOX RIVER
SCALE 1:24000
1000' 0 1000' 2000'
N
CHESTERFIELD CO.
PRINCE GEORGE CO.
APPOMATTOX RIVER
HALLS ISLAND
U. S. MILITARY RESERVATION
FORT LEE
645
97
98
99
95

Section X: Upper Appomattox River.

#	MARSH LOCATION	TOTAL ACRES		BIG CORDGRASS	TEARTHUMB	JEWELWEED	WILD RICE	RICE CUTGRASS	BEGGAR'S TICKS	PICKERELWEED-ARROW ARUM	WALTER'S MILLET	SMARTWEED	CATTAIL	WATER HEMP	MARSH HIBISCUS	SWITCHGRASS	SWAMP MILKWEED	COMMON THREESQUARE	PARTRIDGE PEA	BONESET	BUTTONBUSH	OTHERS	OBSERVATIONS	MARSH TYPE
97	Appomat-tox River	.5	%		55	20	5		5	--		10			5		--						Embayed marsh	XI
			acres		.28	.10	.03		.03	--		.05			.03		--							
98	Appomat-tox River	4.1	%		60	10				5		5	10		5		5						Embayed marsh	XI
			acres		2.46	.41				.21		.21	.41		.21		.21							
99	Appomat-tox River	.25	%		5	85	1			5			2				2						Fringe marsh	XI
			acres		.01	.21	.00			.01			.01				.01							
	Total This Section	4.85	%																					
			acres		2.75	.72	.03		.03	.22		.26	.42		.24		.22							
	Grand Total	1,465.79	%																					
			acres	232.68	86.27	77.81	109.03	19.77	489.99	162.73	29.64	73.06	34.90	38.67	43.82	.12	.22	3.26	49.30		13.14	1.82		

a=GERARDIA
b=IRONWEED
c=MARSH MALLOW

d=PLUME GRASS
e=SWAMP ROSE

f=WATER WILLOW
g=WOOLGRASS

h=BULRUSH
i=ARROWHEAD

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Johnsons Landing 26
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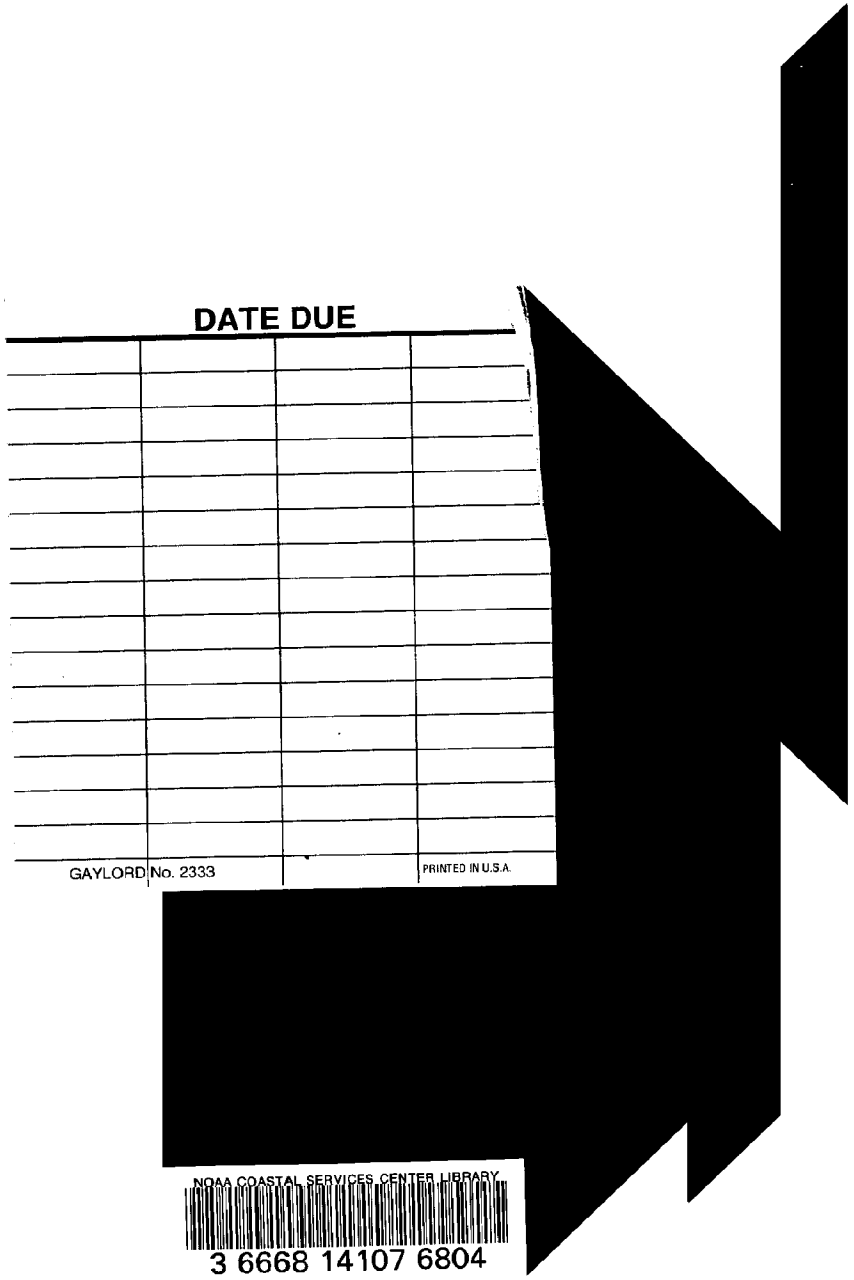
Maycocks Point 37
Powell Creek 41-46
Tar Bay 48
Upper Brandon 22
Upper Chippokes Creek 1,16-20
Wards Creek 25-30
Windmill Point 1,37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