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CITY OF HAMPTON TIDAL MARSH INVENTORY

Special Report No. 60 in Applied Marine Science and Ocean Engineering

Thomas A. Barnard, Jr.

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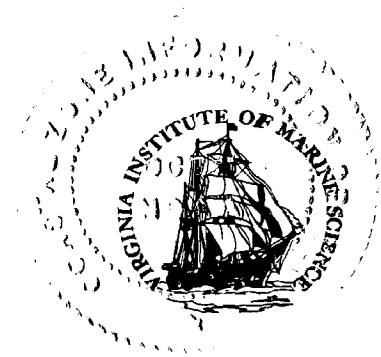
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Thomas A. Barnard, Jr.
G.M. Silberhorn, Project Leader

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OCTOBER 1975

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ACKNOWLEDGEMENTS

Funds for the publication and distribution of this report have been provided by the Department of Commerce, National Oceanic and Atmospheric Administration, Office of Coastal Zone Management, Grant No. 04-5-158-50001.

I wish to thank my colleagues, Gene M. Silberhorn, George M. Dawes, James L. Mercer, Kenneth A. Moore and Michael Penney for their invaluable field assistance and critical review of this report. I would also thank Mr. Earnest W. Looney for his able assistance in mapping the marshes of the Langley Air Force Base and Langley Research Center. Thanks also to Dr. William J. Hargis, Jr., Dr. Michael E. Bender, Mr. John Pleasants and Miss Christine Plummer who reviewed this manuscript prior to publishing.

Finally, I am indebted to Mr. Joseph Gilley for the cover design and map illustrations and to Mrs. Rhonda Payne and Miss Christine Plummer for typing the drafts and final manuscript.

CITY OF HAMPTON
TIDAL MARSH INVENTORY

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Cover East side of Pembroke Spit showing fringing cordgrass and saltbush at waterline and live oak trees in the background.

INTRODUCTION

This publication is the eighth in a series of marsh inventory reports compiled by the Wetlands Research Section, Virginia Institute of Marine Science. The marsh inventories presently available are Lancaster, Mathews, Northumberland, Stafford, Prince William and King George Counties plus one report detailing the marshes of York County and the City of Poquoson. All of these reports are presented in much the same format.

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. The inventory program is designed to assist wetlands boards, cities, counties, planning districts and other local, state and federal agencies as well as the general public and private industry.

The reader is referred to another recent publication of the Wetlands Research Section, Silberhorn et al. (1974) which will be helpful in the utilization of this inventory. Excerpts from this report, explaining marsh vegetation types and their evaluation, are included in the text below.

The City of Hampton presently contains 2220.75 acres of marshes 1/4 acre or larger in size. Saltmarsh cordgrass marsh (Type I) comprises 642 acres or 28.9% of this total. Black needlerush (Type III), salt meadow (Type II), saltbush (Type IV) and big cordgrass (Type V) comprise 21.1%, 30.4%, 12.2% and 1.1% of the total, respectively. Other marsh types, mainly cattail (Type VI), reedgrass (Type VIII) and brackish water mixed (Type XII) comprise the remaining 6.3%. The largest marsh areas in the City are found in the Salt Ponds-Long Creek area (sections IV and V), Newmarket Creek (section VIII) and the Northwest Branch of Back River including Brick Kiln Creek (section X).

It is sincerely hoped that this marsh inventory will be useful to all concerned with this valuable limited resource.

METHODS

Aerial photographs and topographic maps (U.S.G.S.) were consulted in order to obtain wetland locations and patterns of marsh vegetation. Marsh community zones and patterns were substantiated by ground truth, including observations on foot, by boat and by low level overflights. Plant species percentages are quantitative estimates of coverage based on visual field inspections of every marsh. In some instances, especially in tidal fresh-water marshes, these percentages are subject to seasonal bias.

Marshes one quarter of an acre or larger are designated by number. Many marshes smaller than one quarter acre (usually narrow fringing marshes) are shown as shaded areas but are not designated by number. Small marshes (less than one acre) are exaggerated and are not indicated to scale. Information such as individual marsh acreage, plant community percentage and acreage, marsh type and other observations are recorded in tabular form. Plant community percentages are recorded to the nearest percent, and acreages to the nearest tenth of an acre. Marshes of less than one acre are recorded to the nearest hundredth of an acre. Plant species which occupy less than ten percent of a given marsh are noted in the tables as "associated".

This inventory is organized into ten sections. Each section attempts to describe one creek-marsh drainage system or significant length of shoreline within the City of Hampton. These sections are illustrated in the Reference Map to Wetlands Sections which precedes the data presentation.

Marsh Types and Evaluation

For a better understanding of what is meant by marsh types, some background information is required. The personnel of the Wetlands Research Section 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 Silberhorn et al. (1974). 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 homogenously 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 and 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 grows. It can also kill shellfish by clogging their gills. Additionally marshes can assimilate and degrade pollutants through complex chemical processes, a discussion of 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 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 rather than in any other types.

For a better understanding of Virginia's Wetlands in general, the Wetlands Act of 1972 and marsh types and their evaluation, the following publications are recommended:

Coastal Wetlands of Virginia

Interim Report No. 3

Guidelines for Activities

Affecting Virginia's Wetlands

Special Report in Applied Marine

Science and Ocean Engineering No. 46

Gene M. Silberhorn, George M. Dawes,

Thomas A. Barnard, Jr., June 1974

Virginia Institute of Marine Science

Gloucester Point, Virginia 23062

Local Management of Wetlands

Environmental Considerations

Special Report in Applied Marine

Science and Ocean Engineering No. 35

Kenneth Marcellus, George M. Dawes,

Gene Silberhorn, June 1973

Virginia Institute of Marine Science

Gloucester Point, Virginia 23062

Coastal Wetlands of Virginia Interim Report No. 2

Special Report in Applied Marine

Science and Ocean Engineering No. 27

Kenneth Marcellus, July 1972

Virginia Institute of Marine Science

Gloucester Point, Virginia 23062

Coastal Wetlands of Virginia Interim Report
Special Report in Applied Marine Science and
Ocean Engineering No. 10
Marvin Wass and Thomas Wright, December 1969
Virginia Institute of Marine Science
Gloucester Point, Virginia 23062

Laws of Virginia Relating to Wetlands
and Subaqueous Lands
Virginia Marine Resources Commission
2401 West Avenue
Newport News, Virginia 23607

Wetlands Guidelines
Virginia Marine Resources Commission
2401 West Avenue
Newport News, Virginia 23607

MARSH PLANTS

Abbreviations, Common Names and Scientific Names as Found in the Data Tables

Sa	Saltmarsh Cordgrass	<u>Spartina alterniflora</u> Loisel.
Jr	Black Needlerush	<u>Juncus roemerianus</u> Scheele.
Md	Saltgrass Meadow	Saltgrass <u>Distichlis spicata</u> (L.) Greene Saltmeadow Hay <u>Spartina patens</u> (Aiton) Muhl.
Sb	Saltbushes	Marsh Elder <u>Iva frutescens</u> L. Groundsel Tree <u>Baccharis halimifolia</u> L.
Sc	Big Cordgrass	<u>Spartina cynosuroides</u> (L.) Roth.
a	Saltmarsh Bulrush	<u>Scirpus robustus</u> Pursh.
b	Saltmarsh Fleabane	<u>Pluchea purpurascens</u> (Swartz) DC.
c	Saltmarsh Aster	<u>Aster tenuifolius</u> L.
d	Cattail	<u>Typha angustifolia</u> L. <u>Typha latifolia</u> L.
e	Marsh Hibiscus	<u>Hibiscus moscheutos</u> L.
f	Water Hemp	<u>Amaranthus cannabinus</u> (L.) J.D. Sauer
g	Switch Grass	<u>Panicum virgatum</u> L.
h	Foxtail Grass	<u>Setaria geniculata</u> (Lam.) Beauvois.
i	Arrow Arum	<u>Peltandra virginica</u> (L.) Kunth.
j	Pickereel Weed	<u>Pontederia cordata</u> L.
k	Reed Grass	<u>Phragmites australis</u>
l	Olney Threesquare	<u>Scirpus olneyi</u> Gray.

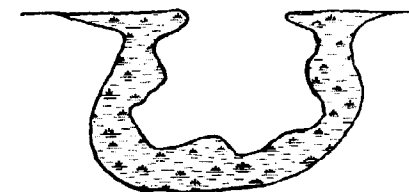
MARSH PLANTS (continued)

m	Marsh Mallow	<u>Kosteletskya virginica</u> (L.) Presl.
n	Saltmarsh Loosestrife	<u>Lythrum lineare</u> L.
o	Smartweed	<u>Polygonum</u> spp.
p	Wild Rice	<u>Zizania aquatica</u> L.
q	Sea Lavender	<u>Limonium carolinianum</u> (Walter) Britton.
r	Marsh Pink	<u>Sabatia stellaris</u> Pursh.
s	Saltwort	<u>Salicornia</u> spp.
t	Yellow Pond Lily	<u>Nuphar luteum</u> (L.) Sibthrop & Smith
	Mock Bishop-weed	<u>Ptilimnium capillaceum</u> (Michaux) Raf.
	Spike Rush	<u>Eleocharis obtusa</u> (Willd.) Schultes.
	Jewell Weed	<u>Impatiens capensis</u> Meerb.
	Sea Oxeye	<u>Borrichia frutescens</u> (L.) DC.
	Saltmarsh Fimbristylis	<u>Fimbristylis spadicea</u> (L.) Vahl.

Glossary of Descriptive Terms

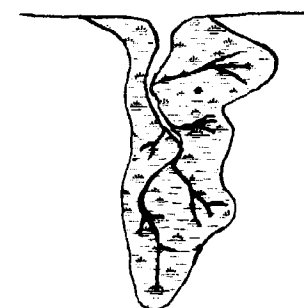
cove marsh

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.



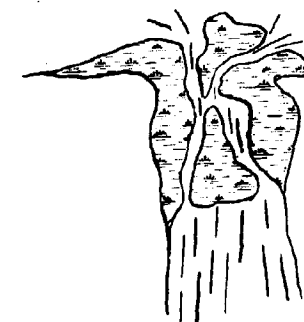
creek or
embayed marsh

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

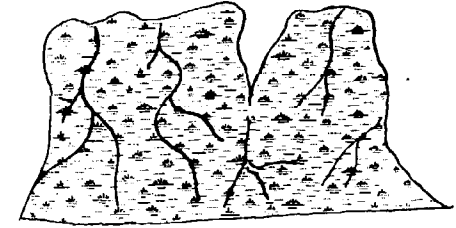
a marsh found growing on sediment deposited at the mouth of a tidal creek; tidal exchange through the creek mouth is usually restricted to narrow channels by the marsh.



Glossary of Descriptive Terms

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 along 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.

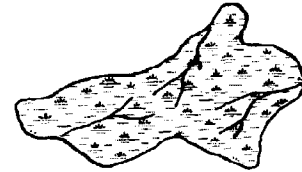
low marsh

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

Glossary of Descriptive Terms

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

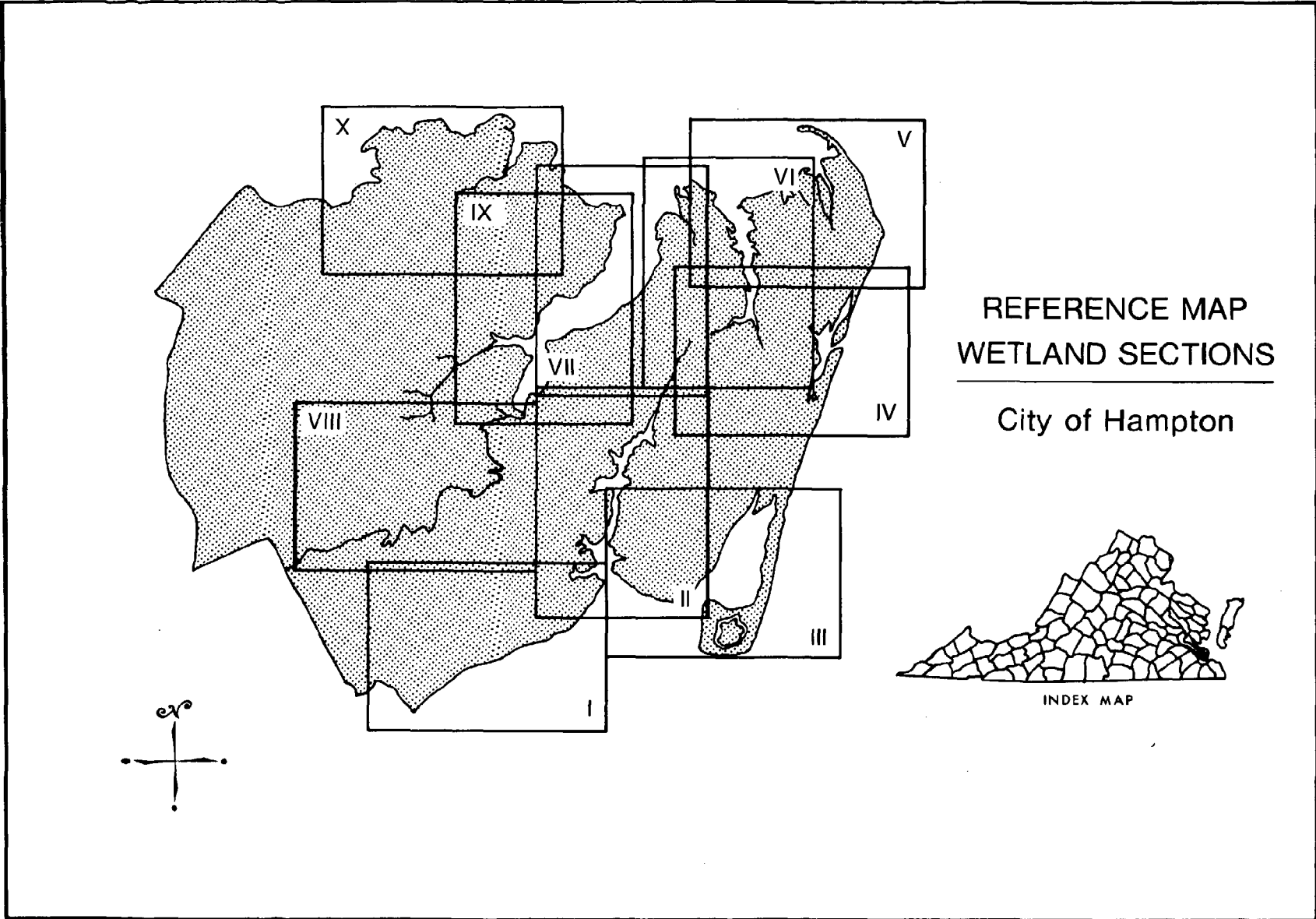
a marsh contained within a small, essentially semi-circular area on a shoreline.



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.

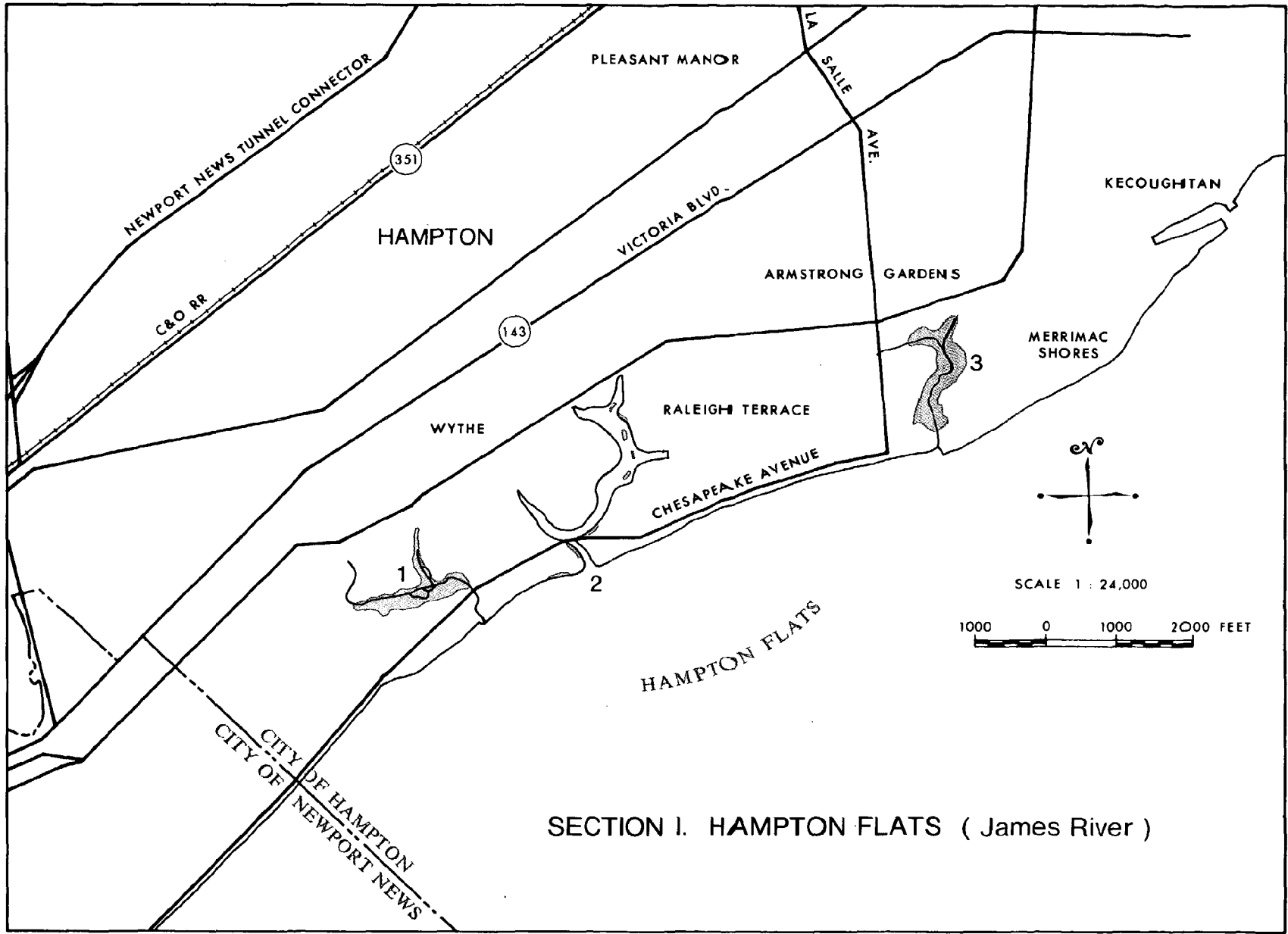




SECTION I

Hampton Flats (James River)

Three unnamed creeks contain all of the marsh (29.5 acres) in this section of Hampton. Moving from south to north the first and third marshes would be considered highly valuable from an environmental viewpoint. Even though enveloped by residential housing and apartments, these marshes remain relatively undisturbed. Marsh number 2 is made up of many scattered fringing marshes and small islands which total one-half acre.



Section I. Hampton Flats (James River)

#	PLACE NAME	ACRES	Sa		Jr		Md		Sb		Sc		OTHER		OBSERVATIONS	MARSH TYPE
			%	ACRES	%	ACRES	%	ACRES	%	ACRES	%	ACRES	%	ACRES		
1	Hampton Flats James River	11.0	90	9.9					10	1.1					Creek marsh	I
2	Hampton Flats James River	0.5	90	0.45					10	0.05					Small islands and narrow fringing marsh	I
3	Hampton Flats James River	18.0	90	16.2					10	1.8			d assoc.		Creek marsh	I
	Section I Totals	29.5		26.55						2.95						

- a = Saltmarsh Cordgrass a = Saltmarsh Bulrush f = Water Hemp k = Reed Grass p = Wild Rice
- r = Black Needlerush b = Saltmarsh Fleabane g = Switch Grass l = Olney Threesquare q = Sea Lavender
- ld = Saltgrass Meadow c = Saltmarsh Aster h = Foxtail Grass m = Marsh Mallow r = Marsh Pink
- b = Saltbushes d = Cattail i = Arrow Arum n = Saltmarsh Loosestrife s = Saltwort
- c = Big Cordgrass e = Marsh Hibiscus j = Pickerel Weed o = Smartweed t = Yellow Pond-lily

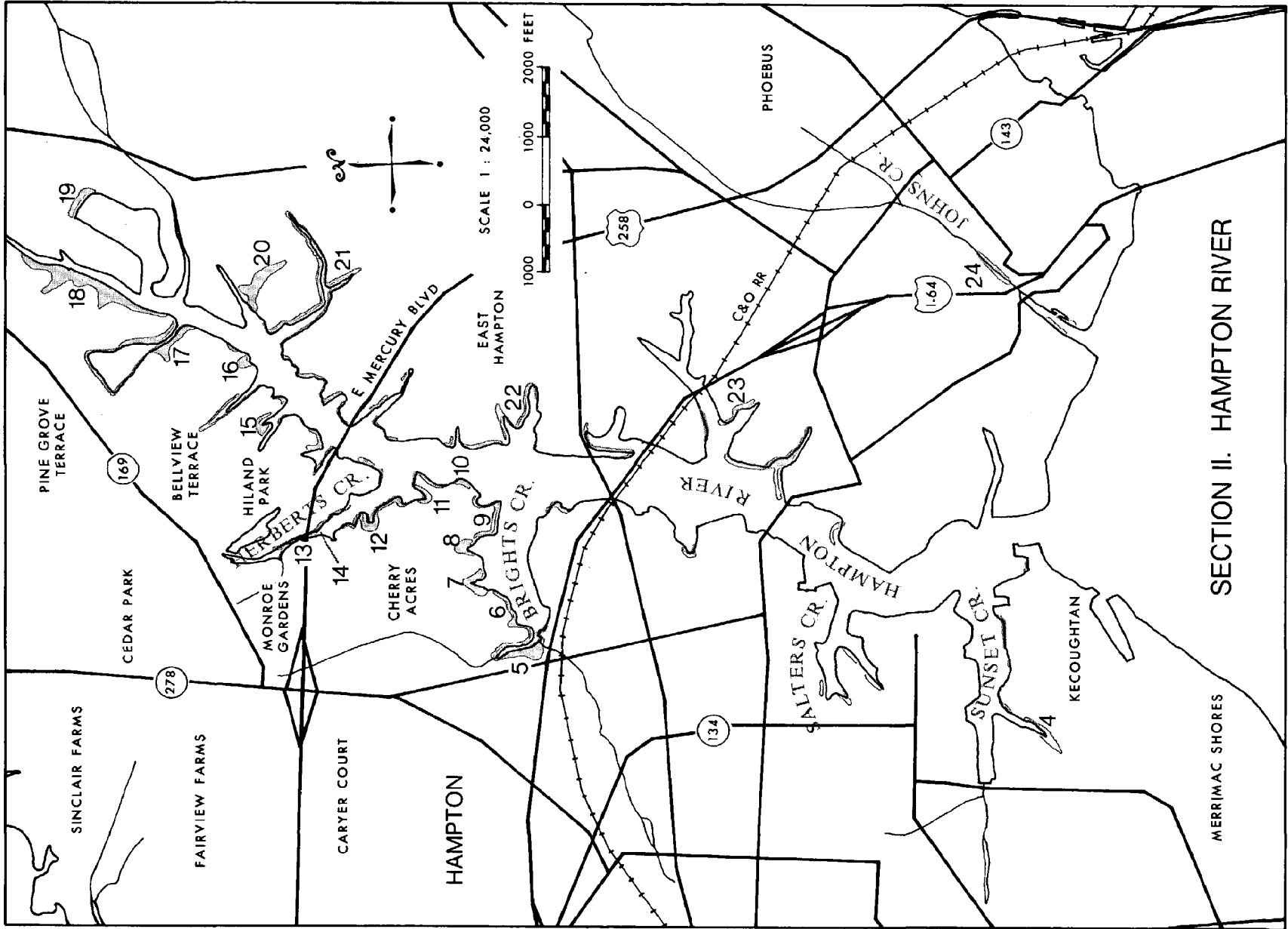
SECTION II

Hampton River

In terms of man's influence, the oldest and most heavily utilized segment of the City of Hampton shoreline is located along the southern end of the Hampton River. This development has resulted in the destruction of all but a fraction of the marshes originally comprising the Hampton River system. The industrial and residential development on the river and the concomitant marsh destruction have led to poor water quality.

At the present time the total marsh acreage in the Hampton River is thirteen acres. Most of the marshes remaining are narrow, fringing, Type I marshes ranging in size from less than 1/4 acre to 1/2 acre. The largest single marsh in the system covers six acres. Some marsh is still being filled at the north end of the river.

From an environmental viewpoint, it is imperative that the remaining marshes in the system be protected and that consideration be given to marsh reestablishment in areas where it is feasible to do so.



SECTION II. HAMPTON RIVER

Section II. Hampton River

#	PLACE NAME	ACRES	Sa		Jr		Md		Sb		Sc		OTHER		OBSERVATIONS	MARSH TYPE
			%	ACRES	%	ACRES	%	ACRES	%	ACRES	%	ACRES	%	ACRES		
04	Sunset Creek	0.25	95	0.24					5	0.01					Fringing marsh	I
05	Brights Creek	0.5	60	0.30			20	0.10	10	0.05			k 10	0.05	Reedgrass may be displacing the more valuable cordgrass	I
06	Brights Creek	0.25	100	0.25											Asphalt spill occurred here in the summer of 1973	I
07	Brights Creek	0.5	75	0.38					5	0.02			k 20	0.1	Pocket marsh	I
08	Brights Creek	0.25	100	0.25											Pocket marsh	I
09	Brights Creek	0.25	80	0.20					20	0.05					Fringing marsh 25 to 30 ft. in depth	I
10	Hampton River	0.25	100	0.25											Fringing marsh 30 to 40 feet in depth	I
11	Herberts Creek	0.5	90	0.45					10	0.05					Pocket marsh	I
12	Herberts Creek	0.25	100	0.25											Pocket marsh	I
13	Herberts Creek	0.25	60	0.15					40	0.1					Fringing marsh	I
14	Herberts Creek	0.5	70	0.35									k 30	0.15	Fringing marsh	I
15	Hampton River	0.25	100	0.25											Pocket marsh	I
16	Hampton River	0.25	90	0.22									d 10	0.03	Pocket marsh	I
17	Hampton River	2.0	100	2.00											Fringe around borrow pit	I

Sa = Saltmarsh Cordgrass
 Jr = Black Needlerush
 Md = Saltgrass Meadow
 Sb = Saltbushes
 Sc = Big Cordgrass

a = Saltmarsh Bulrush
 b = Saltmarsh Fleabane
 c = Saltmarsh Aster
 d = Cattail
 e = Marsh Hibiscus

f = Water Hemp
 g = Switch Grass
 h = Foxtail Grass
 i = Arrow Arum
 j = Pickereel Weed

k = Reed Grass
 l = Olney Threesquare
 m = Marsh Mallow
 n = Saltmarsh Loosestrife
 o = Smartweed

p = Wild Rice
 q = Sea Lavender
 r = Marsh Pink
 s = Saltwort
 t = Yellow Pond-lily

Section II. Hampton River (cont'd.)

#	PLACE NAME	ACRES	Sa		Jr		Md		Sb		Sc		OTHER		OBSERVATIONS	MARSH TYPE
			%	ACRES	%	ACRES	%	ACRES	%	ACRES	%	ACRES	%	ACRES		
18	Hampton River	6.0	85	5.10			10	0.85	5	0.05					Wide fringing marsh, entire area to north has been filled	I
19	Elizabeth Lake	0.5	50	0.25			40	0.20	10	0.05					Broad fringe	I
20	Hampton River	marsh filled		fringe remains											Scattered fringe, remaining marsh has been filled	
21	Hampton River	marsh filled		fringe remains											Scattered fringe remaining marsh has been filled	
22	Hampton River	0.25	90	0.22								k 10	0.03	Fringing marsh	I	
23	Hampton River	0.25	90	0.22					10	0.03				Fringing marsh	I	
24	Johns Creek	0.25	90	0.22					10	0.03				Pocket marsh above I-64 overpass	I	
	Section II Totals	13.5		11.55				1.15		0.45			k 0.33	d 0.03		

- | | | | | |
|--------------------------|------------------------|-------------------|---------------------------|----------------------|
| Sa = Saltmarsh Cordgrass | a = Saltmarsh Bulrush | f = Water Hemp | k = Reed Grass | p = Wild Rice |
| Jr = Black Needlerush | b = Saltmarsh Fleabane | g = Switch Grass | l = Olney Threesquare | q = Sea Lavender |
| Md = Saltgrass Meadow | c = Saltmarsh Aster | h = Poxtail Grass | m = Marsh Mallow | r = Marsh Pink |
| Sb = Saltbushes | d = Cattail | i = Arrow Arum | n = Saltmarsh Loosestrife | s = Saltwort |
| Sc = Big Cordgrass | e = Marsh Hibiscus | j = Pickerel Weed | o = Smartweed | t = Yellow Pond-lily |

SECTION III

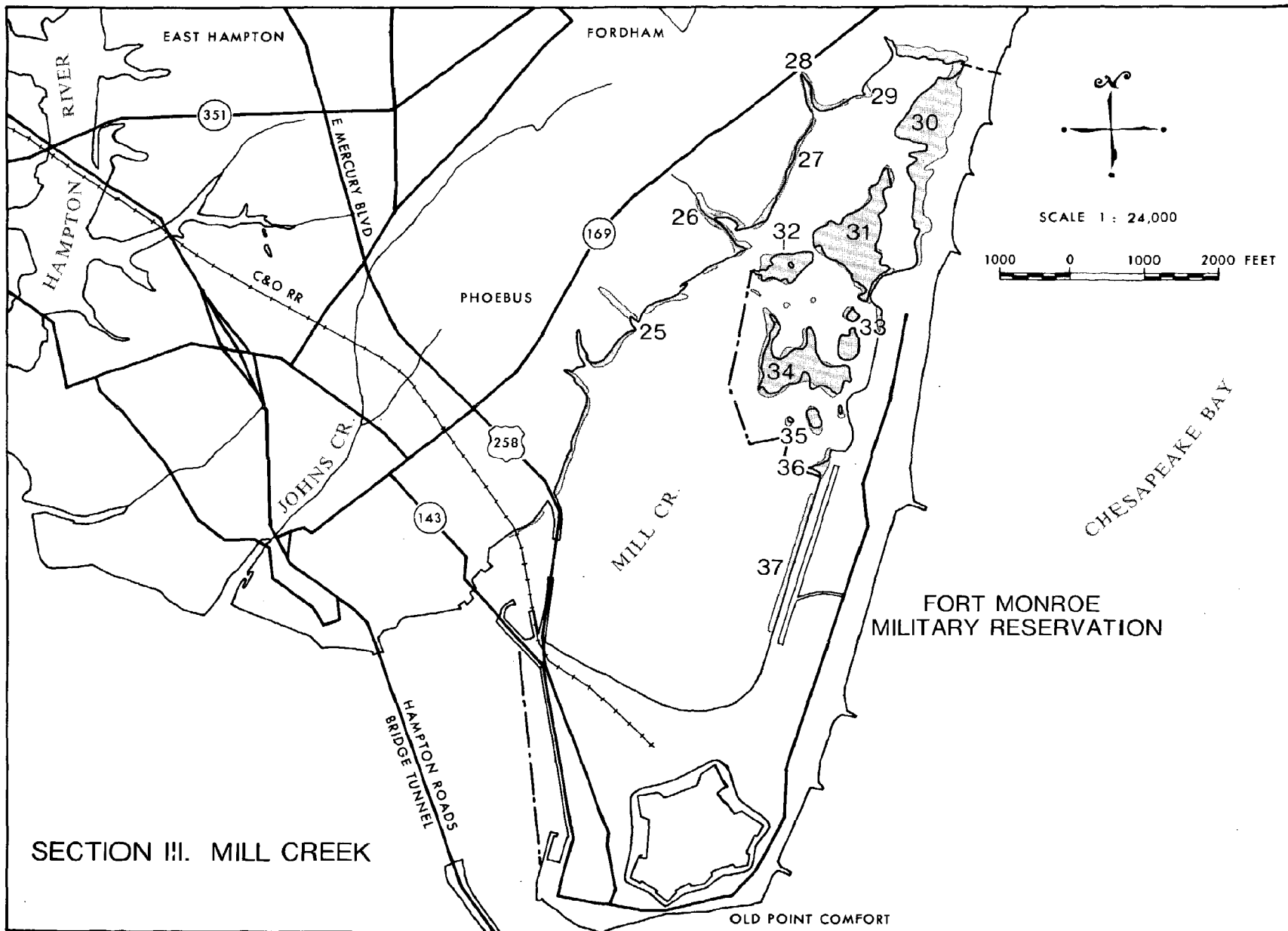
Mill Creek

Mill Creek is a fairly large body of shallow water containing 71.1 marsh acres. It is bordered on the East by the Fort Monroe Military Reservation and on the west by the relatively old Phoebus section of the City of Hampton. There appears to be no industrial development around the creek and the only new housing being constructed is at the creek's northernmost point.

Most of the marsh occurring in Mill Creek is within the boundaries of Fort Monroe (67 acres). Some fringing marsh occurs along the western shoreline of the creek. All of the marshes are dominated by saltmarsh cordgrass and are therefore considered quite valuable to the marine environment. Silberhorn et al. (1974).

Dredging and filling have taken place in the past on marshes belonging to Fort Monroe. The upper margins of marshes 30 and 31 are stressed somewhat by sediment accumulation but in general the marshes of this section are healthy. Water quality appears good although algal growth in shallow areas may indicate some nutrient enrichment.

Mill Creek appears to be an excellent wildfowl refuge at present. It's sheltered waters and abundant marsh afford feeding and resting area for migrating waterfowl.



Section III. Mill Creek

#	PLACE NAME	ACRES	Sa		Jr		Md		Sb		Sc		OTHER		OBSERVATIONS	MARSH TYPE
			%	ACRES	%	ACRES	%	ACRES	%	ACRES	%	ACRES	%	ACRES		
25	Mill Creek	0.25	100	0.25											Fringing marsh	I
26	Mill Creek	1.50	90	1.35					10	0.15					Fringing marsh	I
27	Mill Creek	0.25	90	0.22					10	0.03					Fringing marsh 20' wide	I
28	Mill Creek	0.50	90	0.45					10	0.05					Fringing marsh	I
29	Mill Creek	0.25	100	0.25												I
30	Mill Creek	25.00	60	15.00			30	7.50					q,s 10	2.50	Portions of marsh stressed by upland runoff	I
31	Mill Creek	18.00	60	10.80			30	5.40					q,s 10	1.80		I
32	Mill Creek	5.00	60	3.00			30	1.50					q,s 10	0.50	Marsh island	I
33	Mill Creek	4.00	60	2.40			30	1.20					q,s 10	0.40	Two marsh islands saltbush associated	I
34	Mill Creek	15.00	70	10.50			20	3.00					q,s 10	1.50	Marsh island	I
35	Mill Creek	0.50	90	0.45					10	0.05					Marsh Island	I
36	Mill Creek	0.50	100	0.5												I
37	Mill Creek	0.25	100	0.25											Fringe marsh 20' to 30' wide	I
	Section III Totals	71.0		45.42				18.60		0.28				q,s 6.7		

Sa = Saltmarsh Cordgrass
 Jr = Black Needlerush
 Md = Saltgrass Meadow
 Sb = Saltbushes
 Sc = Big Cordgrass

a = Saltmarsh Bulrush
 b = Saltmarsh Fleabane
 c = Saltmarsh Aster
 d = Cattail
 e = Marsh Hibiscus

f = Water Hemp
 g = Switch Grass
 h = Foxtail Grass
 i = Arrow Arum
 j = Pickerel Weed

k = Reed Grass
 l = Olney Threesquare
 m = Marsh Mallow
 n = Saltmarsh Loosestrife
 o = Smartweed

p = Wild Rice
 q = Sea Lavender
 r = Marsh Pink
 s = Saltwort
 t = Yellow Pond-lily

Section IV

Salt Ponds (South of Beach Road)

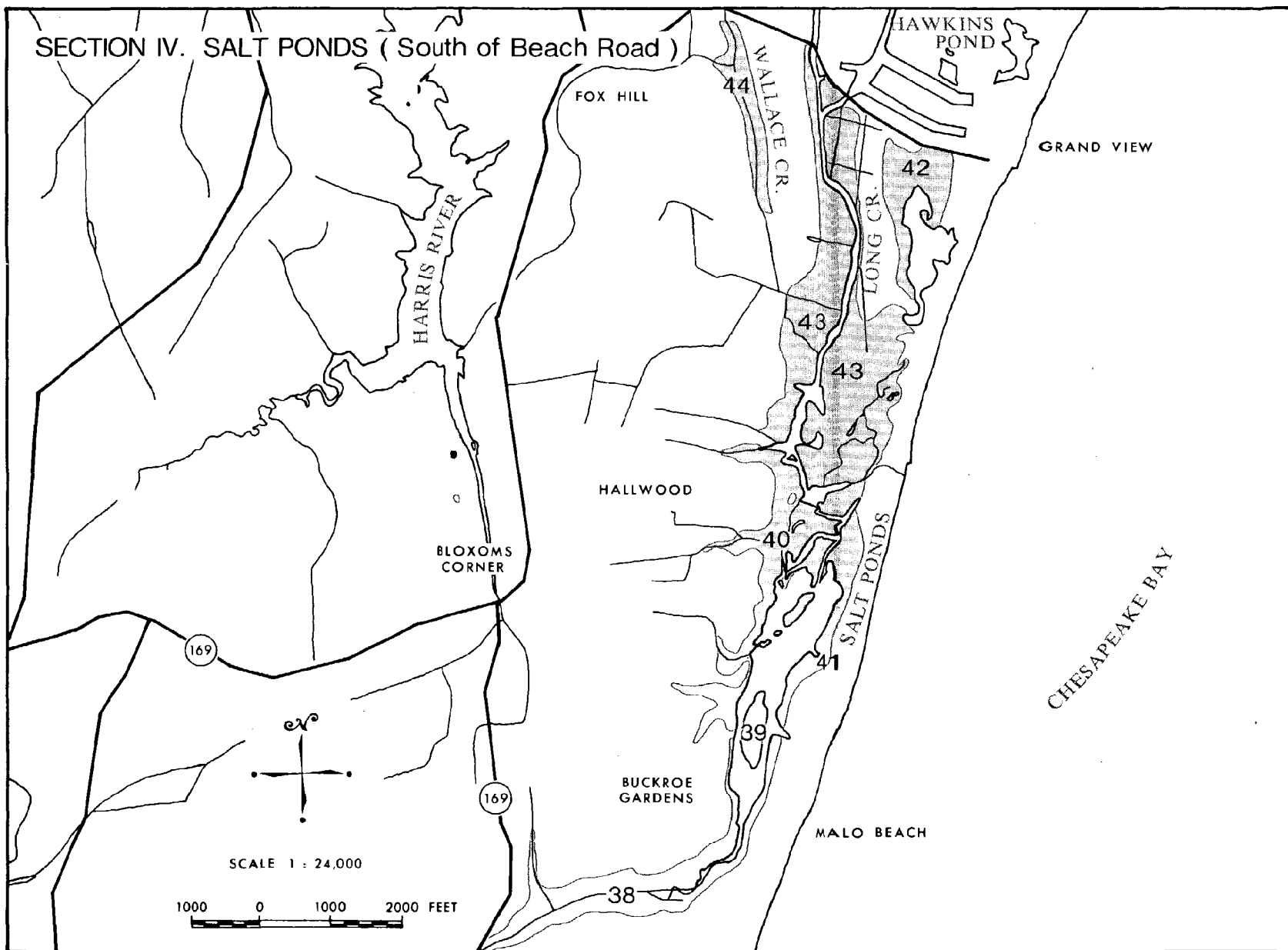
The Salt Ponds marshes (224 acres) contain, along with the Long Creek complex, the largest wetlands area in Hampton. The Salt Ponds marshes are dominated by saltmarsh cordgrass which is assessed as having the highest environmental values of any marsh type. The values to the marine environment, to wildlife and to wildfowl have been readily observed by VIMS personnel on several visits.

Dredging activities in the Salt Ponds area have destroyed many acres of prime saltmarsh cordgrass marsh. Unfortunately, poor dredging techniques and completely inadequate spoil containment measures are continuing to destroy prime marsh. These measures have also resulted in a considerable sediment flow back into the Salt Ponds which has not only damaged bottom fauna and flora but is also counter-productive to the purpose of the dredging -- creation of more navigable waters.

Marsh number 42 surrounds an unnamed pond located to the east of Long Creek and lying between the Salt Ponds and Grand View. Although in a strictly biological sense this area is marsh, it may not be marsh as legally defined since tidal inundation has been either cut off or drastically impeded as a result of storm overwash and sand deposition.

The low elevation of the Salt Ponds area will make it a costly area to develop and to service. The fragility and dynamics of the Bay shoreline lead to the conclusion that any development in the area will be flood-prone, leading to inevitable economic costs of considerable magnitude. It appears that the best use of the complex would be to retain its natural values to the maximum, possibly providing carefully planned park facilities to enhance its use as recreational open space.

SECTION IV. SALT PONDS (South of Beach Road)



Section IV. Salt Ponds (Long Creek, South of Beach Road)

#	PLACE NAME	ACRES	Sa		Jr		Md		Sb		Sc		OTHER		OBSERVATIONS	MARSH TYPE
			%	ACRES	%	ACRES	%	ACRES	%	ACRES	%	ACRES	%	ACRES		
38	Long Creek	43.00	80	34.40	5	2.15			5	2.15	5	2.15	k 5	2.15	Creek marsh	I
39	Salt Ponds	6.00	100	6.00											Marsh island	I
40	Salt Ponds	44.00	80	35.20			10	4.40	5	2.20			k 5	2.20	Extensive marsh	I
41	Salt Ponds	18.00	60	10.80			20	3.60					k 20	3.60	Fringe marsh highly stressed by spoil from dredging	I
42	Long Creek	19.00			20	3.80	50	9.50	20	3.80			k 10	1.90	Tidal access has apparently been cut off in the past	II
43	Long Creek	80.00	60	48.00			30	24.00	10	8.00					Needlerush associated	I
44	Wallace Creek	14.00	50	7.00			40	5.60	10	1.40					Wide fringing marsh	I
	Section IV Totals	224.0		141.4		5.95		47.1		17.55		2.15		k 9.85		

Sa = Saltmarsh Cordgrass
 Jr = Black Needlerush
 Md = Saltgrass Meadow
 Sb = Saltbushes
 Sc = Big Cordgrass

a = Saltmarsh Bulrush
 b = Saltmarsh Fleabane
 c = Saltmarsh Aster
 d = Cattail
 e = Marsh Hibiscus

f = Water Hemp
 g = Switch Grass
 h = Foxtail Grass
 i = Arrow Arum
 j = Pickerel Weed

k = Reed Grass
 l = Olney Threesquare
 m = Marsh Mallow
 n = Saltmarsh Loosestrife
 o = Smartweed

p = Wild Rice
 q = Sea Lavender
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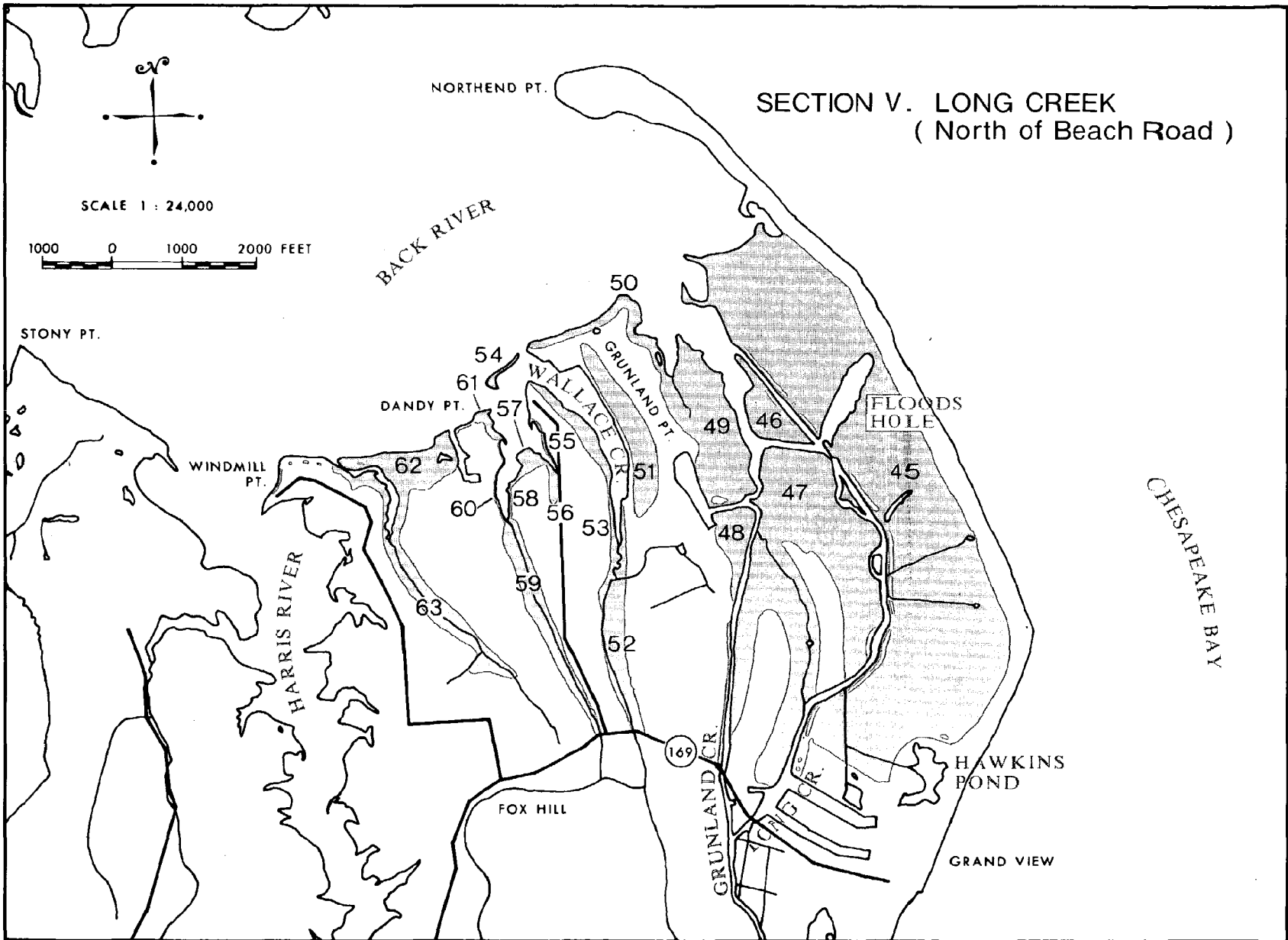
Section V

Long Creek (North of Beach Road)

The Long Creek marsh complex, composed of 543 marsh acres, is the single largest marsh system in Hampton. Its environmental values are truly irreplaceable. The open water areas contain numerous shellfish, crabs and fishes of all descriptions along with many other forms of marine life. Muskrats and an occasional deer utilize the area. Bird sightings have included egrets, loons, Canada geese, ducks, rails and various herons. The massive extent of the system provides an excellent buffer against coastal flooding and the conversion of the area to fastland uses could have serious consequences for the present residents of the communities stretching from Buckroe Beach through Fox Hill to Grand View. Erosion of the Bay beaches bordering the entire eastern side of the complex is a well known problem which lends importance to these marshes as an erosion deterrent, particularly during severe storms.

The marsh areas are dominated by black needlerush with saltmarsh cordgrass along the creek banks and other open water areas. Long Creek from Grand View to the Back River has been improved for navigation. In the process spoil was placed along both banks of the creek for nearly the entire distance. The spoil banks are now vegetated with upland species which lend some habitat diversity to the area but they also inhibit tidal flushing to many acres of marsh.

The City has tentative plans for use of the area as a park, wildlife refuge, and recreation complex. Plans call for minor alterations to allow controlled public access. The emphasis would be on the natural wildlife aspects of the area through a nature center, trails and catwalks over the marsh.



Section V. Long Creek (North of Beach Road)

#	PLACE NAME	ACRES	Sa		Jr		Md		Sb		Sc		OTHER		OBSERVATIONS	MARSH TYPE	
			%	ACRES	%	ACRES	%	ACRES	%	ACRES	%	ACRES	%	ACRES			
45	Long Creek	278.00		assoc.	65	180.70	25	69.50	10	27.80				a,b,c,d,e,g,l,q assoc.	Reed grass and saltbush on spoil along creek	III	
46	Long Creek	13.00	30	3.90	30	3.90	30	3.90	10	1.30					Wax myrtle, sea oxeye and sea lavender also present	XII	
47	Long Creek	109.00	10	10.90	50	54.50	30	32.70	10	10.90					Reed grass, wax myrtle, sea lavender and others present	III	
48	Grunland Creek	11.00			70	7.70	30	3.30								III	
49	Grunland Creek	40.00	40	16.00	40	16.00	10	4.00	10	4.0				s,q assoc.	Extensive marsh	XII	
50	Grunland Creek	7.00	80	5.60			10	0.70	10	0.70					Fringing marsh	I	
51	Wallace Creek	15.00			30	4.50	40	6.00	20	3.00			g 5	k 5	1.50	Marsh cut off by road & bulkhead; culverts allow water to flow	XII
52	Wallace Creek	16.00	15	2.40	10	1.60	75	12.00							Creek marsh	II	
53	Wallace Creek	7.00	50	3.50	20	1.40	20	1.40	10	0.70					Fringing marsh	I	
54	Back River	2.00	80	1.60					20	0.40					Marsh island	I	
55	Wallace Creek	0.50	100	0.50											Fringing marsh	I	
56	Wallace Creek	1.50	60	0.90	20	0.30	20	0.30								I	
57	Wallace Creek	1.00	50	0.5	10	0.1	30	0.3	10	0.1						I	
58	Wallace Creek	0.50	60	0.3	30	0.15	10	0.5							Fringing marsh	I	

Sa = Saltmarsh Cordgrass
 Jr = Black Needlerush
 Md = Saltgrass Meadow
 Sb = Saltbushes
 Sc = Big Cordgrass

a = Saltmarsh Bulrush
 b = Saltmarsh Fleabane
 c = Saltmarsh Aster
 d = Cattail
 e = Marsh Hibiscus

f = Water Hemp
 g = Switch Grass
 h = Foxtail Grass
 i = Arrow Arum
 j = Pickerel Weed

k = Reed Grass
 l = Cliney Threesquare
 m = Marsh Mallow
 n = Saltmarsh Loosestrife
 o = Smartweed

p = Wild Rice
 q = Sea Lavender
 r = Marsh Pink
 s = Saltwort
 t = Yellow Pond-lily

Section V. Long Creek (North of Beach Road) cont'd.

#	PLACE NAME	ACRES	Sa		Jr		Md		Sb		Sc		OTHER		OBSERVATIONS	MARSH TYPE
			%	ACRES	%	ACRES	%	ACRES	%	ACRES	%	ACRES	%	ACRES		
59	Wallace Creek	12.00	60	7.20	30	3.60	10	1.20							Creek marsh	I
60	Wallace Creek	1.00	40	0.40	40	0.40	10	0.10	10	0.10					Fringing marsh	XII
61	Wallace Creek	0.25	40	0.10			40	0.10	20	0.05						XII
62	Back River	19.00	20	3.80	50	9.50	30	5.70							Small percentages of other species present	III
63	Windmill Point	9.00	60	5.40	30	2.70	10	0.90							Creek marsh	I
	Section IV Totals	542.75		63.0		287.05		142.15		49.05				g k 0.75 0.75		

Sa = Saltmarsh Cordgrass
 Jr = Black Needlerush
 Md = Saltgrass Meadow
 Sb = Saltbushes
 Sc = Big Cordgrass

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 b = Saltmarsh Fleabane
 c = Saltmarsh Aster
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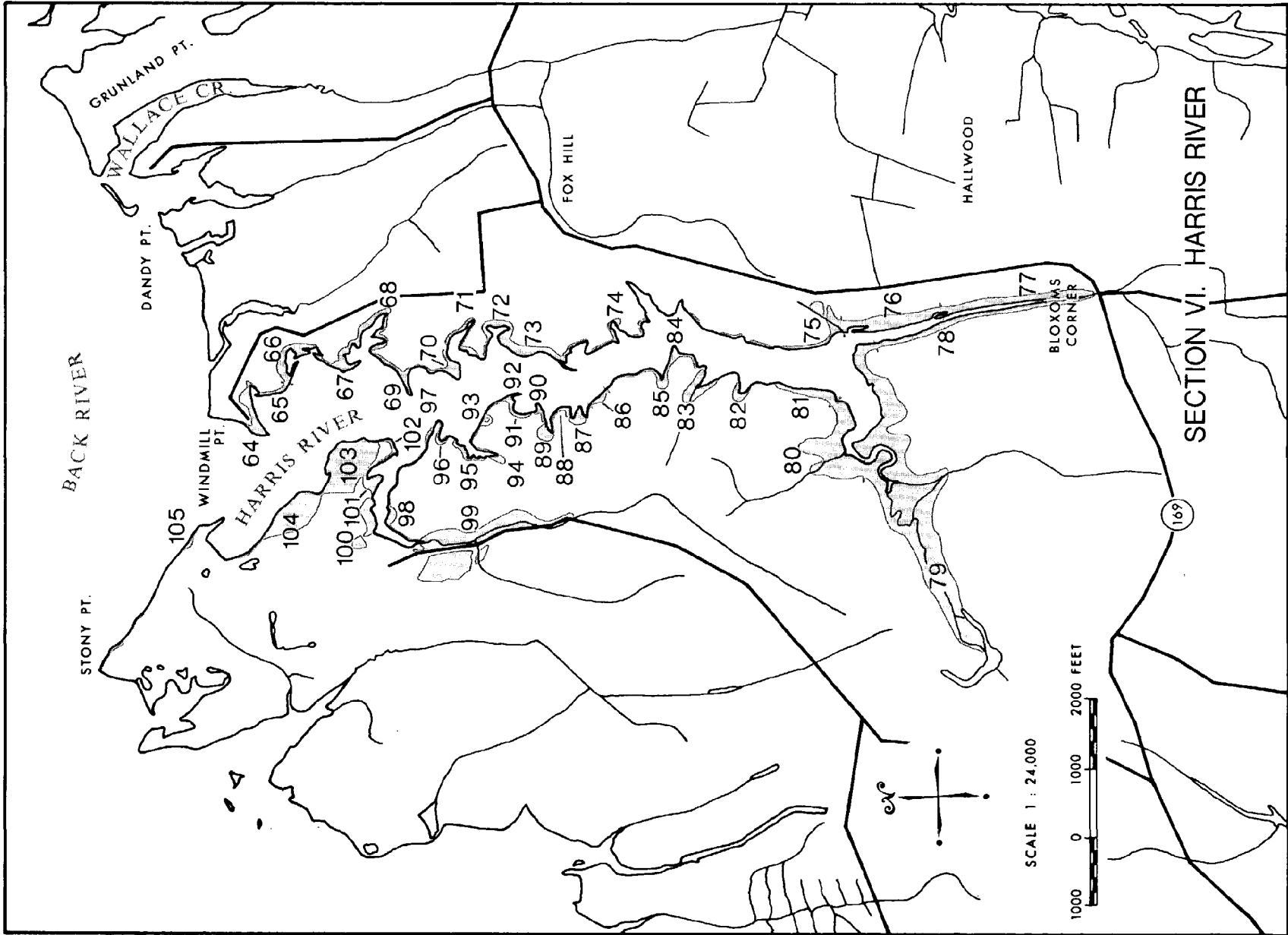
p = Wild Rice
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SECTION VI

Harris River

Unlike the Hampton River, the Harris River has not felt great developmental pressure until recently. Practically all of the Harris River shoreline is fringed by Type I and Type XII marshes and there are extensive marsh areas along both the southwest and southeast prongs. There are presently 104.5 acres of Type I marsh, 4 acres of Type III marsh and 20.5 acres of Type XII marsh in the river system. This amounts to 129 acres of marsh in the river.

Most of the marshes present are physically situated in the form of fringing marsh and the Harris River shoreline is generally free from serious erosion, Hobbs, et al. (1975). Preservation of the existing marsh in the river will contribute to the maintenance of water quality and shoreline stability.



Section VI. Harris River

#	PLACE NAME	ACRES	Sa		Jr		Md		Sb		Sc		OTHER		OBSERVATIONS	MARSH TYPE
			%	ACRES	%	ACRES	%	ACRES	%	ACRES	%	ACRES	%	ACRES		
64	Harris River	0.50	70	.35	30	0.15									Fringing marsh	I
65	Harris River	0.25	70	.17	30	0.08									Fringing marsh	I
66	Harris River	1.50	60	0.9	40	0.6									Cove marsh	I
67	Harris River	0.25	70	.17			20	.05	10	.03					Cove marsh	I
68	Harris River	0.50	60	0.3	30	0.15			10	0.05					Cove marsh	I
69	Harris River	0.25	60	0.15	30	0.07			10	0.03					Fringing marsh	I
70	Harris River	1.00	50	0.5	50	0.5									Pocket marsh	I
71	Harris River	0.25	80	0.20	10	0.02			10	0.02					Fringing marsh	I
72	Harris River	0.50	60	0.3	30	0.15			10	0.05					Cove marsh	I
73	Harris River	1.00	30	0.3	60	0.6			10	0.10					Fringing marsh	III
74	Harris River	0.25	90	0.22					10	0.03					Pocket marsh	I
75	Harris River	1.00	80	0.8	10	0.1			10	0.10					Pocket marsh	I
76	Harris River	4.00	80	3.20	10	0.40			10	0.40					Fringing marsh	I
77	Harris River	4.00	75	3.00					20	0.80			5	0.20	Fringing marsh	I

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 Jr = Black Needlerush
 Md = Saltgrass Meadow
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 Sc = Big Cordgrass

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 b = Saltmarsh Fleabane
 c = Saltmarsh Aster
 d = Cattail
 e = Marsh Hibiscus

f = Water Hemp
 g = Switch Grass
 h = Poxtail Grass
 i = Arrow Arum
 j = Pickerel Weed

k = Reed Grass
 l = Olney Threesquare
 m = Marsh Mallow
 n = Saltmarsh Loosestrife
 o = Smartweed

p = Wild Rice
 q = Sea Lavender
 r = Marsh Pink
 s = Saltwort
 t = Yellow Pond-lily

Section VI. Harris River (cont'd.)

#	PLACE NAME	ACRES	Sa		Jr		Md		Sb		Sc		OTHER		OBSERVATIONS	MARSH TYPE
			%	ACRES	%	ACRES	%	ACRES	%	ACRES	%	ACRES	%	ACRES		
78	Harris River	1.00	90	0.90					10	0.10					Fringing marsh	I
79	Harris River	64.00	70	44.80			20	12.8	10	6.40					Creek marsh	I
80	Harris River	4.00	80	3.20	10	0.40			10	0.40					Cove marsh	I
81	Harris River	0.25	70	0.17	30	0.08									Fringing marsh	I
82	Harris River	0.25	60	0.15	40	0.1									Cove Marsh	I
83	Harris River	0.5	70	0.35	30	0.15									Cove marsh	I
84	Harris River	0.5	50	0.25			40	0.20	10	0.05					Spit marsh	I
85	Harris River	1.00	80	0.80			10	0.10	10	0.10					Pocket marsh	I
86	Harris River	0.25	80	0.2			10	0.02	10	0.02					Fringing marsh	I
87	Harris River	0.50	30	0.15	70	0.35									Cove marsh	III
88	Harris River	0.25	20	0.05	80	0.20									Fringe marsh	III
89	Harris River	0.25	30	0.07	70	0.18									Pocket marsh	III
90	Harris River	0.25	30	0.07	70	0.18									Point marsh	III
91	Harris River	0.25	30	0.07	70	0.18									Fringe marsh	III

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k = Reed Grass
 l = Olney Threesquare
 m = Marsh Mallow
 n = Saltmarsh Loosestrife
 o = Smartweed

p = Wild Rice
 q = Sea Lavender
 r = Marsh Pink
 s = Saltwort
 t = Yellow Pond-lily

Section VI, Harris River (cont'd.)

#	PLACE NAME	ACRES	Sa		Jr		Md		Sb		Sc		OTHER		OBSERVATIONS	MARSH TYPE
			%	ACRES	%	ACRES	%	ACRES	%	ACRES	%	ACRES	%	ACRES		
92	Harris River	0.25	80	0.20	20	0.05									Point marsh	I
93	Harris River	0.50	40	0.20	40	0.20	10	0.05	10	0.05					Pocket marsh	XII
94	Harris River	0.50	60	0.30	30	0.15			10	0.05					Pocket marsh and fringe	I
95	Harris River	0.25	20	0.05	70	0.18			10	0.02					Fringe	III
96	Harris River	0.25	80	0.20	20	0.05									Pocket marsh	I
97	Harris River	0.75	60	0.45	30	0.22			10	0.08					Fringe	I
98	Harris River	0.25	30	0.08	70	0.17									Fringe	III
99	Harris River	15.0	60	9.00	10	1.50	10	1.50	20	3.00					Extensive marsh disrupted by roads. Probably significant nursery for fin-fish	I
100	Harris River	1.00	50	0.50	40	0.40			10	0.10					Broad fringing marsh	I
101	Harris River	1.00	20	0.20	50	0.50	20	0.20	10	0.10					Broad fringing marsh	III
102	Harris River	0.25	60	0.15	30	0.08			10	0.02					Spit marsh	I
103	Harris River	10.0	20	2.00	10	1.00	30	3.00	40	4.00					Extensive high marsh; 2 abandoned cars at south end	XII
104	Harris River	8.0	20	1.60	20	1.60	40	3.20	20	1.60					Extensive high marsh	XII
105	Harris River	0.50	70	0.35			30	0.15							Broad fringe	I

Sa = Saltmarsh Cordgrass
 Jr = Black Needlerush
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 m = Marsh Mallow
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Section VI, Harris River (cont'd.)

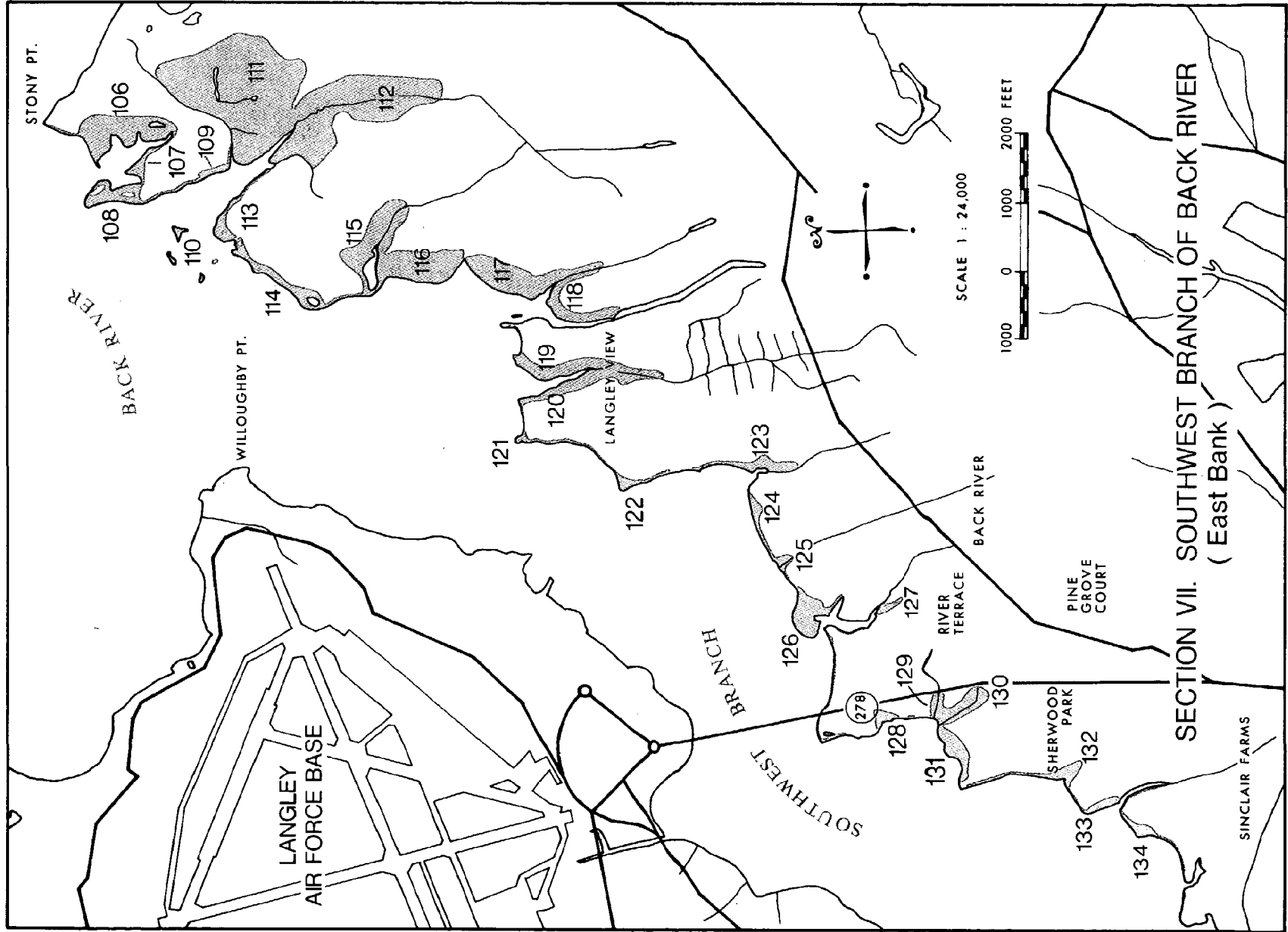
#	PLACE NAME	ACRES	Sa		Jr		Md		Sb		Sc		OTHER		OBSERVATIONS	MARSH TYPE
			%	ACRES	%	ACRES	%	ACRES	%	ACRES	%	ACRES	%	ACRES		
	Section VI Totals	127.0		77.07		10.80		21.27		17.70				0.20		

- Sa = Saltmarsh Cordgrass a = Saltmarsh Bulrush f = Water Hemp k = Reed Grass p = Wild Rice
- Jr = Black Needlerush b = Saltmarsh Fleabane g = Switch Grass l = Olney Threesquare q = Sea Lavender
- Md = Saltgrass Meadow c = Saltmarsh Aster h = Foxtail Grass m = Marsh Mallow r = Marsh Pink
- Sb = Saltbushes d = Cattail i = Arrow Arum n = Saltmarsh Loosestrife s = Saltwort
- Sc = Big Cordgrass e = Marsh Hibiscus j = Pickerel Weed o = Smartweed t = Yellow Pond-lily

SECTION VII

Southwest Branch of Back River (East Bank)

This section contains 183 acres of marsh, most of which is Type I (91 acres) and Type III (50 acres) marsh. The largest marshes are located in the northern end of the branch, the Stony Point area. In general, plant zonation in these brackish water marshes takes the form of saltmarsh cordgrass (Type I) growing from mean sea level to mean high water followed by saltgrass and saltmeadow hay (Type II) dominating in the higher areas of the marsh which are only flooded during spring and storm tides.



Section VII. Southwest Branch of Back River (East bank)

#	PLACE NAME	ACRES	Sa		Jr		Md		Sb		Sc		OTHER		OBSERVATIONS	MARSH TYPE
			%	ACRES	%	ACRES	%	ACRES	%	ACRES	%	ACRES	%	ACRES		
106	Stony Point	11.0	90	9.90	10	1.10									Extensive marsh; high wild-fowl use observed	I
107	Stony Point	2.00	90	1.80					10	0.20						I
108	Stony Point	6.00	80	4.80			10	0.60	10	0.60						I
109	Unnamed Creek	0.50	70	0.35			10	0.05	20	0.10					Fringing marsh	I
110	S.W. Branch Back River	1.00	100	1.00											Marsh islands	I
111	Unnamed Creek	51.00	30	15.30	60	30.60			10	5.10					High waterfowl use noted	III
112	Unnamed Creek	34.00	40	13.60	30	10.20	20	6.80	10	3.4					Creek marsh	XII
113	S.W. Branch Back River	3.00	100	3.00											Broad fringing marsh	I
114	S.W. Branch Back River	6.00	70	4.20			20	1.20	10	0.60					Broad fringing marsh	I
115	S.W. Branch Back River	12.00	60	7.20	10	1.20	20	2.40	10	1.20			q assoc.	Sea oxeye associated; large cove marsh	I	
116	S.W. Branch Back River	13.00	50	6.50	10	1.30	30	3.90	10	1.30			q assoc.	Sea oxeye associated; extensive fringing marsh	I	
117	S.W. Branch Back River	11.00	50	5.50			40	4.40	10	1.1					Extensive fringing marsh	I
118	Unnamed Creek	3.00	50	1.50	20	0.60	20	0.6	10	0.30					Fringing marsh at mouth of dredged canal	I
119	Langley View	7.00	30	2.10	50	3.50	20	1.40								III

Sa = Saltmarsh Cordgrass
 Jr = Black Needlerush
 Md = Saltgrass Meadow
 Sb = Saltbushes
 Sc = Big Cordgrass

a = Saltmarsh Bulrush
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 c = Saltmarsh Aster
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f = Water Hemp
 g = Switch Grass
 h = Foxtail Grass
 i = Arrow Arum
 j = Pickerel Weed

k = Reed Grass
 l = Olney Threesquare
 m = Marsh Mallow
 n = Saltmarsh Loosestrife
 o = Smartweed

p = Wild Rice
 q = Sea Lavender
 r = Marsh Pink
 s = Saltwort
 t = Yellow Pond-lily

Section VII. Southwest Branch Back River (East bank) (cont'd.)

#	PLACE NAME	ACRES	Sa		Jr		Md		Sb		Sc		OTHER		OBSERVATIONS	MARSH TYPE
			%	ACRES	%	ACRES	%	ACRES	%	ACRES	%	ACRES	%	ACRES		
120	Langley View	5.00	70	3.50	10	0.50	20	1.00							Fringing marsh	I
121	S.W. Branch Back River	0.25	50	0.12			20	0.05	30	0.08					Point marsh	I
122	S.W. Branch Back River	1.00	90	0.90					10	0.10					Point marsh	I
123	S.W. Branch Back River	3.00	80	2.40	10	0.30	10	0.30							Creek marsh	I
124	S.W. Branch Back River	1.00	20	0.20	10	0.10	60	0.60	10	0.10					Pocket marsh	II
125	S.W. Branch Back River	0.25	10	0.02	60	0.15	20	0.05	10	0.02					Pocket marsh	III
126	S.W. Branch Back River	5.00	70	3.50			20	1.00	10	0.50						I
127	Unnamed Creek	0.25	80	0.20					20	0.05						I
128	S.W. Branch Back River	0.25	80	0.20					20	0.05					Pocket marsh	I
129	S.W. Branch Back River	1.00	30	0.30			60	0.60	10	0.10					Pocket marsh	II
130	S.W. Branch Back River	1.50	50	0.75			20	0.30	30	0.45					Pocket marsh	I
131	S.W. Branch Back River	2.00	70	1.40			20	0.40	10	0.20					Fringing marsh	I
132	Sherwood Park	1.00	70	0.70			20	0.20	10	0.10					Cove marsh	I
133	S.W. Branch Back River	0.25	20	0.05			60	0.15	10	0.02	10	0.02			Fringing marsh	II

Sa = Saltmarsh Cordgrass
 Jr = Black Needlerush
 Md = Saltgrass Meadow
 Sb = Saltbushes
 Sc = Big Cordgrass

a = Saltmarsh Bulrush
 b = Saltmarsh Fleabane
 c = Saltmarsh Aster
 d = Cattail
 e = Marsh Hibiscus

f = Water Hemp
 g = Switch Grass
 h = Foxtail Grass
 i = Arrow Arum
 j = Pickerel Weed

k = Reed Grass
 l = Olney Threesquare
 m = Marsh Mallow
 n = Saltmarsh Loosestrife
 o = Smartweed

p = Wild Rice
 q = Sea Lavender
 r = Marsh Pink
 s = Saltwort
 t = Yellow Pond-lily

Section VII. Southwest Branch of Back River (East bank) (cont'd.)

#	PLACE NAME	ACRES	Sa		Jr		Md		Sb		Sc		OTHER		OBSERVATIONS	MARSH TYPE
			%	ACRES	%	ACRES	%	ACRES	%	ACRES	%	ACRES	%	ACRES		
134	S.W. Branch Back River	0.50	50	0.25			30	0.15	20	0.10					Broad fringing marsh	I
	Section VII Totals	182.75		91.24		49.55		26.15		15.77		0.02				

ja = Saltmarsh Cordgrass
jr = Black Needlerush
jd = Saltgrass Meadow
jb = Saltbushes
jc = Big Cordgrass

a = Saltmarsh Bulrush
b = Saltmarsh Fleabane
c = Saltmarsh Aster
d = Cattail
e = Marsh Hibiscus

f = Water Hemp
g = Switch Grass
h = Foxtail Grass
i = Arrow Arum
j = Pickerel Weed

k = Reed Grass
l = Olney Threesquare
m = Marsh Mallow
n = Saltmarsh Loosestrife
o = Smartweed

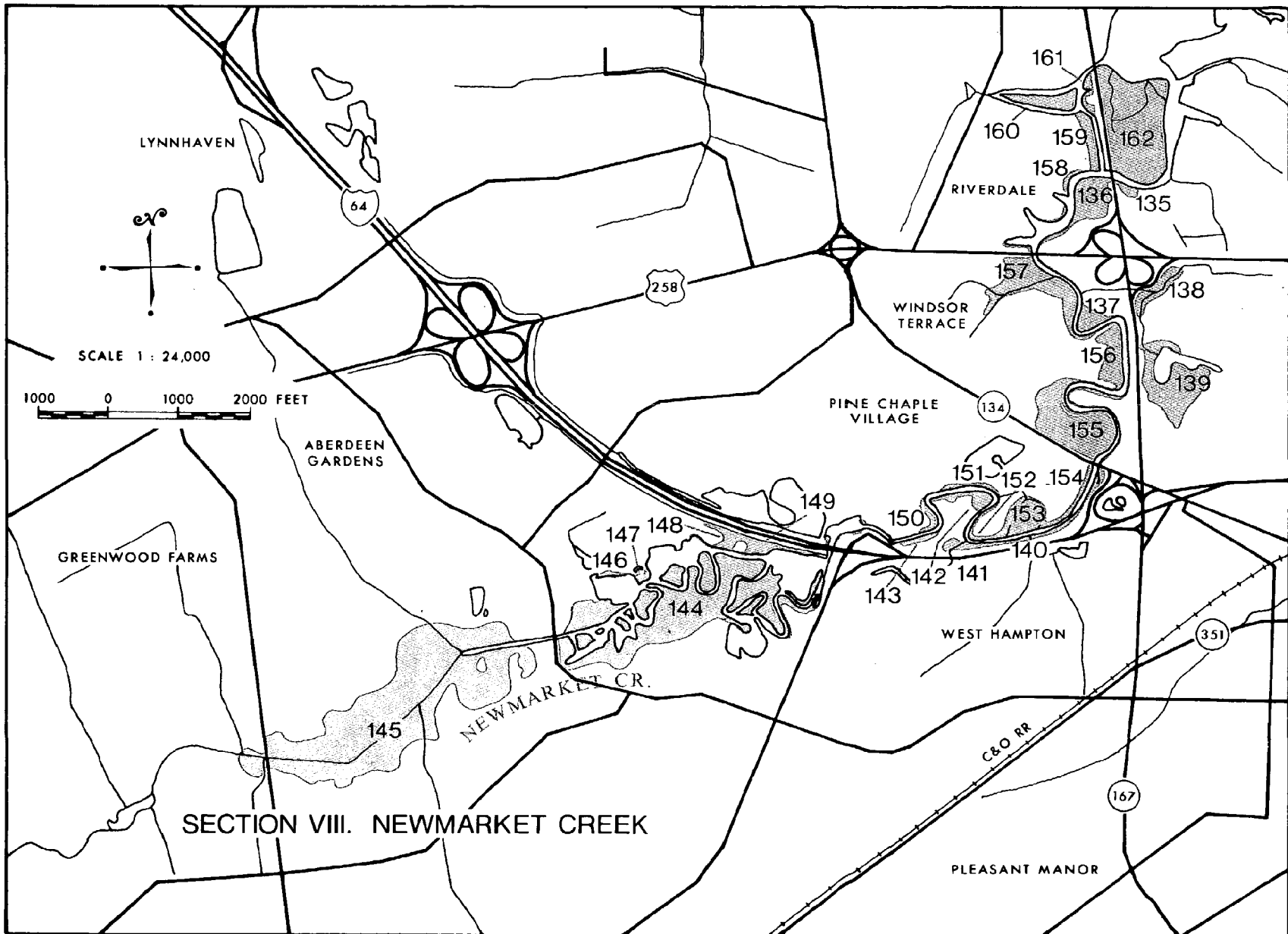
p = Wild Rice
q = Sea Lavender
r = Marsh Pink
s = Saltwort
t = Yellow Pond-lily

SECTION VIII

Newmarket Creek

Newmarket Creek contains 230 acres of marsh. Most of the marsh is either dominated by cattail (Type VIII) or salt-meadow (Type II) and is located west of the point where I-64 crosses the creek. This area is high in value to wildlife.

East of I-64 the marsh has been highly disturbed by dredge and fill activities associated with highway construction and commercial and residential development. Reedgrass (Phragmites australis) now dominates much of the creek bank and this portion of the creek has lost much of its environmental value. Many of these marshes (Numbers 135-143 and 146-160) encompass mounds of fill and/or dredge spoil which because of their elevation have been colonized by upland vegetation. These areas have habitat value of their own but have displaced marsh which was of more value to the Newmarket Creek system.



Section VIII. Newmarket Creek

#	PLACE NAME	ACRES	Sa		Jr		Md		Sb		Sc		OTHER		OBSERVATIONS	MARSH TYPE
			%	ACRES	%	ACRES	%	ACRES	%	ACRES	%	ACRES	%	ACRES		
135	Newmarket Creek	0.25	10	0.02			30	0.08	30	0.08	30	0.08			Broad fringe	XII
136	Newmarket Creek	9.0	10	0.90			50	4.50	30	2.70	10	0.90			Previously disturbed area	II
137	Newmarket Creek	2.0					10	0.20	30	0.60	60	1.20				V
138	Newmarket Creek	2.0					10	0.20	30	0.60	10	0.20	k 50	1.0	Small marsh on each side of a tidal drainage ditch.	VIII
139	Newmarket Creek	12.0	10	1.2			10	1.2	30	3.6	30	3.6	k 20	2.4	Large marsh with scattered up-land islands.	XII
140	Newmarket Creek	0.75	10	0.07			10	0.07	10	0.07	assoc.		k 70	0.52	25 ft. wide fringe marsh	VIII
141	Newmarket Creek	0.25	50	0.12	10	0.02							k 40	0.1	Pocket marsh	I
142	Newmarket Creek	1.0	10	0.1			50	0.5	30	0.3			k 10	0.1	Big cordgrass associated	II
143	Newmarket Creek	0.5					40	0.2	60	0.3					Broad fringe	IV
144	Newmarket Creek	53.0	20	10.6			40	21.2	30	15.9	10	5.3	e,g,Jr,k assoc.		Extensive marsh area	XII
145	Newmarket Creek	74.0							20	14.8			d 80	59.2	Waterdock, Jewelweed, hibiscus and others. High wildlife use	VI
146	Newmarket Creek	0.25									20	0.05	k 80	0.2	Disturbed area	VIII
147	Newmarket Creek	0.25					20	0.05	30	0.08	10	0.02	k 40	0.1	Disturbed area	XII
148	Newmarket Creek	0.50	50	0.25					30	0.15	20	0.1				I

Sa = Saltmarsh Cordgrass
 Jr = Black Needlerush
 Md = Saltgrass Meadow
 Sb = Saltbushes
 Sc = Big Cordgrass

a = Saltmarsh Bulrush
 b = Saltmarsh Fleabane
 c = Saltmarsh Aster
 d = Cattail
 e = Marsh Hibiscus

f = Water Hemp
 g = Switch Grass
 h = Foxtail Grass
 i = Arrow Arum
 j = Pickerel Weed

k = Reed Grass
 l = Olney Threesquare
 m = Marsh Mallow
 n = Saltmarsh Loosestrife
 o = Smartweed

p = Wild Rice
 q = Sea Lavender
 r = Marsh Pink
 s = Saltwort
 t = Yellow Pond-lily

Section VIII. Newmarket Creek (cont'd.)

#	PLACE NAME	ACRES	Sa		Jr		Md		Sb		Sc		OTHER		OBSERVATIONS	MARSH TYPE
			%	ACRES	%	ACRES	%	ACRES	%	ACRES	%	ACRES	%	ACRES		
149	Newmarket Creek	0.50	10	0.05	20	0.10	50	0.25	20	0.10						II
150	Newmarket Creek	0.50	10	0.05			60	0.3	30	0.15	assoc				Fringe marsh	II
151	Newmarket Creek	0.50	10	0.05			60	0.3	20	0.1	assoc		k 10	0.05	Broad fringe	II
152	Newmarket Creek	0.25	10	0.02			60	0.15	20	0.05	assoc		k 10	0.02	Fringe marsh	II
153	Newmarket Creek	6.0	20	1.2			40	2.4	10	0.6			k 30	1.8	Fringe marsh	XII
154	Newmarket Creek	0.25	20	0.05			40	0.1	10	0.02			k 30	0.08	15 ft. wide Fringe marsh	XII
155	Newmarket Creek	17.0	assoc				60	10.2	40	6.8	assoc					II
156	Newmarket Creek	5.0	assoc				50	2.5	30	1.5	20	1.0	k assoc			II
157	Newmarket Creek	11.0	20	2.2			60	6.6	10	1.1	10	1.1				II
158	Newmarket Creek	0.25	assoc				100	0.25								II
159	Newmarket Creek	0.50	30	0.15			40	0.20	30	0.15					Fringe marsh	XII
160	Newmarket Creek	3.0	20	0.6			40	1.2	40	1.2					Marsh island (created) partially filled	XII
161	Newmarket Creek	0.75	30	0.22			50	0.38	20	0.15						II
162	Newmarket Creek	29.0	25	7.25			60	17.4	5	1.45	10	2.9	a assoc		Extensive marsh	II

Sa = Saltmarsh Cordgrass
 Jr = Black Needlerush
 Md = Saltgrass Meadow
 Sb = Saltbushes
 Sc = Big Cordgrass

a = Saltmarsh Bulrush
 b = Saltmarsh Fleabane
 c = Saltmarsh Aster
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k = Reed Grass
 l = Olney Threesquare
 m = Marsh Mallow
 n = Saltmarsh Loosestrife
 o = Smartweed

p = Wild Rice
 q = Sea Lavender
 r = Marsh Pink
 s = Saltwort
 t = Yellow Pond-lily

Section VIII Newmarket Creek (cont'd.)

#	PLACE NAME	ACRES	Sa		Jr		Md		Sb		Sc		OTHER		OBSERVATIONS	MARSH TYPE
			%	ACRES	%	ACRES	%	ACRES	%	ACRES	%	ACRES	%	ACRES		
	Section VIII Totals	230.25		25.1		0.12		70.43		52.55		16.45		65.57		

- 3a = Saltmarsh Cordgrass
- Jr = Black Needlerush
- 4d = Saltgrass Meadow
- 3b = Saltbushes
- 3c = Big Cordgrass
- a = Saltmarsh Bulrush
- b = Saltmarsh Fleabane
- c = Saltmarsh Aster
- d = Cattail
- e = Marsh Hibiscus
- f = Water Hemp
- g = Switch Grass
- h = Foxtail Grass
- i = Arrow Arum
- j = Pickerel Weed
- k = Reed Grass
- l = Olney Threesquare
- m = Marsh Mallow
- n = Saltmarsh Loosestrife
- o = Smartweed
- p = Wild Rice
- q = Sea Lavender
- r = Marsh Pink
- s = Saltwort
- t = Yellow Pond-lily

SECTION IX

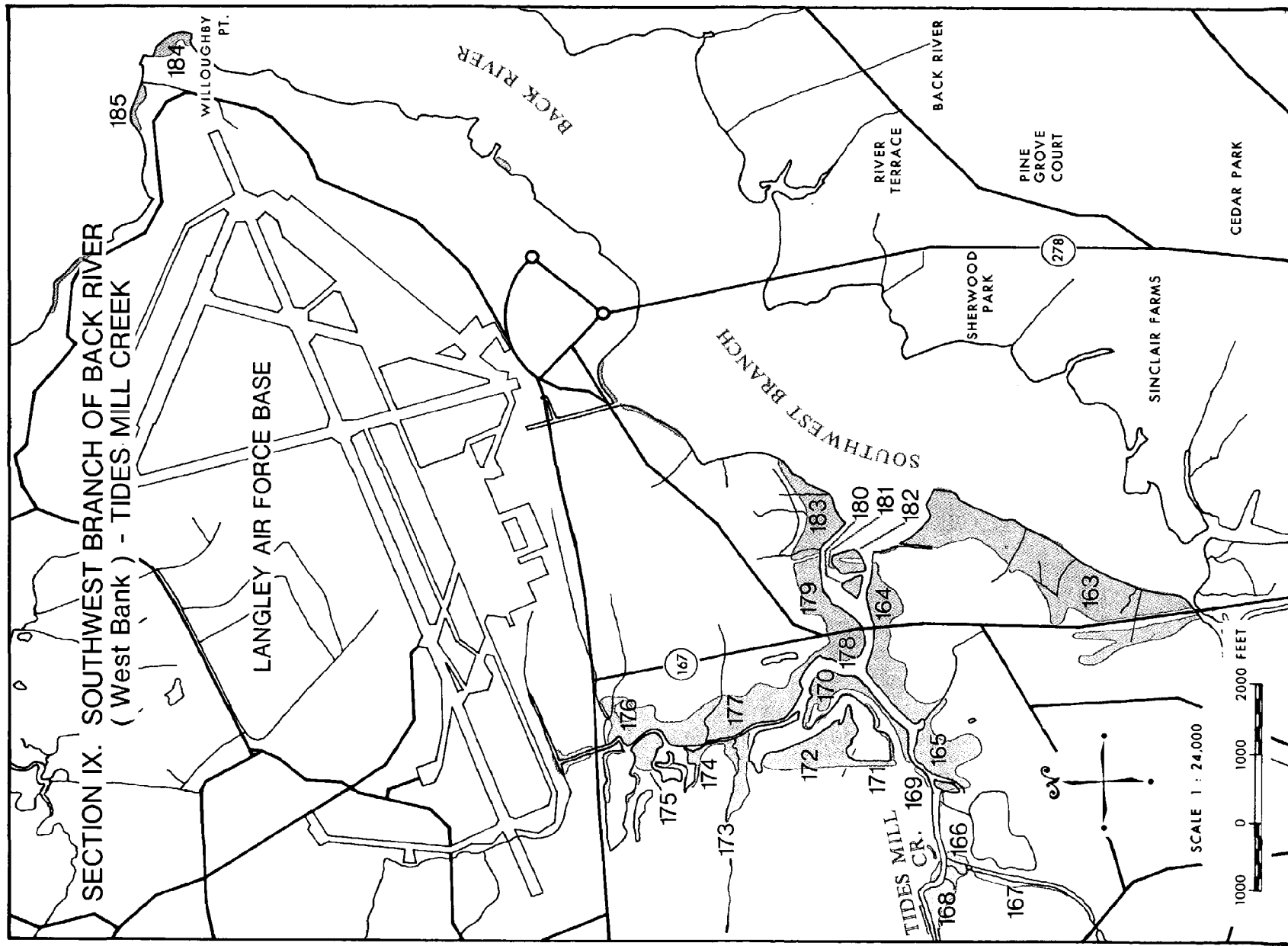
Southwest Branch of Back River (West Bank)

Tides Mill Creek

This section of the inventory delineates marshes from the mouth of Newmarket Creek up the west bank of the Southwest Branch of Back River to the north side of Willoughby Point and includes Tides Mill Creek. Of the 186 total acres of marsh in this area, 83% is Type I (saltmarsh cordgrass) or Type II (saltmeadow).

Tides Mill Creek has been extensively disrupted by dredge and fill activities associated with residential development and other construction. Recent actions by the Hampton Wetlands Board, however, appear to have "stabilized" the marshes in the area.

The marshes in both the Southwest Branch and Tides Mill Creek are typical brackish water marshes in terms of plant species present and plant zonation. As such they have very real values to wildlife in terms of habitat and food supply. Heavy wildlife utilization was observed in the larger marshes throughout this inventory.



Section IX. Southwest Branch of Back River (West Bank), Tides Mill Creek

#	PLACE NAME	ACRES	Sa		Jr		Md		Sb		Sc		OTHER		OBSERVATIONS	MARSH TYPE
			%	ACRES	%	ACRES	%	ACRES	%	ACRES	%	ACRES	%	ACRES		
163	S.W. Branch Back River	56.0	30	16.8	assoc		50	28.0	20	11.2					Extensive marsh	II
164	Tides Mill Creek	5.0	50	2.50			40	2.0	10	0.50						I
165	Tides Mill Creek	25.0	40	10.0			50	12.5	10	2.5	assoc					II
166	Tides Mill Creek	1.0	40	0.4	10	0.1	30	0.3	20	0.2	assoc				Small island and fringe	XII
167	Tides Mill Creek	0.25	10	0.02			40	0.1	30	0.08	10	0.02	k 10	0.02	Disturbed area	XII
168	Tides Mill Creek	5.0	10	0.5			80	4.0	10	0.5					Large marsh island	II
169	Tides Mill Creek	0.25	20	0.05			60	0.15					k 20	0.05	Highly disturbed area	II
170	Tides Mill Creek	12.0	20	2.4	10	1.2	40	4.8	30	3.6						XII
171	Tides Mill Creek	1.5	90	1.35					10	0.15			k assoc.			I
172	Tides Mill Creek	12.0	80	9.6			20	2.4	assoc				a assoc.		North end of marsh stressed by construction	I
173	Tides Mill Creek	3.0	15	0.45			70	2.1	15	0.45	assoc		a,d assoc.			II
174	Tides Mill Creek	1.0	60	0.6					40	0.4						I
175	Tides Mill Creek	4.0	30	1.2			50	2.0	20	0.8	assoc		e assoc.			II
176	Tides Mill Creek	4.0	20	0.8			65	2.60	15	0.6	assoc		a assoc.		High wildlife utilization	II

Sa = Saltmarsh Cordgrass
 Jr = Black Needlerush
 Md = Saltgrass Meadow
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 l = Olney Threesquare
 m = Marsh Mallow
 n = Saltmarsh Loosestrife
 o = Smartweed

p = Wild Rice
 q = Sea Lavender
 r = Marsh Pink
 s = Saltwort
 t = Yellow Pond-lily

Section IX. Southwest Branch of Back River (West bank), Tides Mill Creek (cont'd.)

#	PLACE NAME	ACRES	Sa		Jr		Md		Sb		Sc		OTHER		OBSERVATIONS	MARSH TYPE
			%	ACRES	%	ACRES	%	ACRES	%	ACRES	%	ACRES	%	ACRES		
177	Tides Mill Creek	21	70	14.7	assoc		30	6.3	assoc		assoc		a assoc.		High waterfowl use	I
178	Tides Mill Creek	6	25	1.5	assoc		65	3.90	10	0.6						II
179	Tides Mill Creek	9	20	1.8	assoc		65	5.85	15	1.35			k assoc			II
180	Tides Mill Creek	2	60	1.2			40	0.8							Marsh island	I
181	Tides Mill Creek	1.5	40	0.6			60	0.9							Marsh island	II
182	Tides Mill Creek	0.5	10	0.05			80	0.4	10	0.05					Marsh island	II
183	Tides Mill Creek	15	20	3.0			40	6.0	30	4.5			k 10	1.5		XII
184	Willoughby Point	0.5	60	0.3			20	0.1	20	0.1						I
185	Willoughby Point	0.5	80	0.4			20	0.1							Fringing marsh	I
	Section IX Totals	186		70.22		1.3		85.3		27.58		0.02		1.57		

Sa = Saltmarsh Cordgrass
 Jr = Black Needlerush
 Md = Saltgrass Meadow
 Sb = Saltbushes
 Sc = Big Cordgrass

a = Saltmarsh Bulrush
 b = Saltmarsh Fleabane
 c = Saltmarsh Aster
 d = Cattail
 e = Marsh Hibiscus

f = Water Hemp
 g = Switch Grass
 h = Foxtail Grass
 i = Arrow Arum
 j = Pickerel Weed

k = Reed Grass
 l = Olney Threesquare
 m = Marsh Mallow
 n = Saltmarsh Loosestrife
 o = Smartweed

p = Wild Rice
 q = Sea Lavender
 r = Marsh Pink
 s = Saltwort
 t = Yellow Pond-lily

SECTION X

Northwest Branch of Back River

This portion of Hampton waterfront, from Willoughby Point to the headwaters of Brick Kiln Creek and including Tabbs Creek, presently contains 610 acres of marsh. Most of this marsh is typical brackish water wetlands in structure but changes at the upper end of Brick Kiln Creek to a plant community unique to the City of Hampton.

The two marshes at the upper end of Brick Kiln Creek (199, 200) are highly diverse communities in terms of vegetation. The species present are a combination of brackish and freshwater plants.

Marsh #199 vegetation percentages:

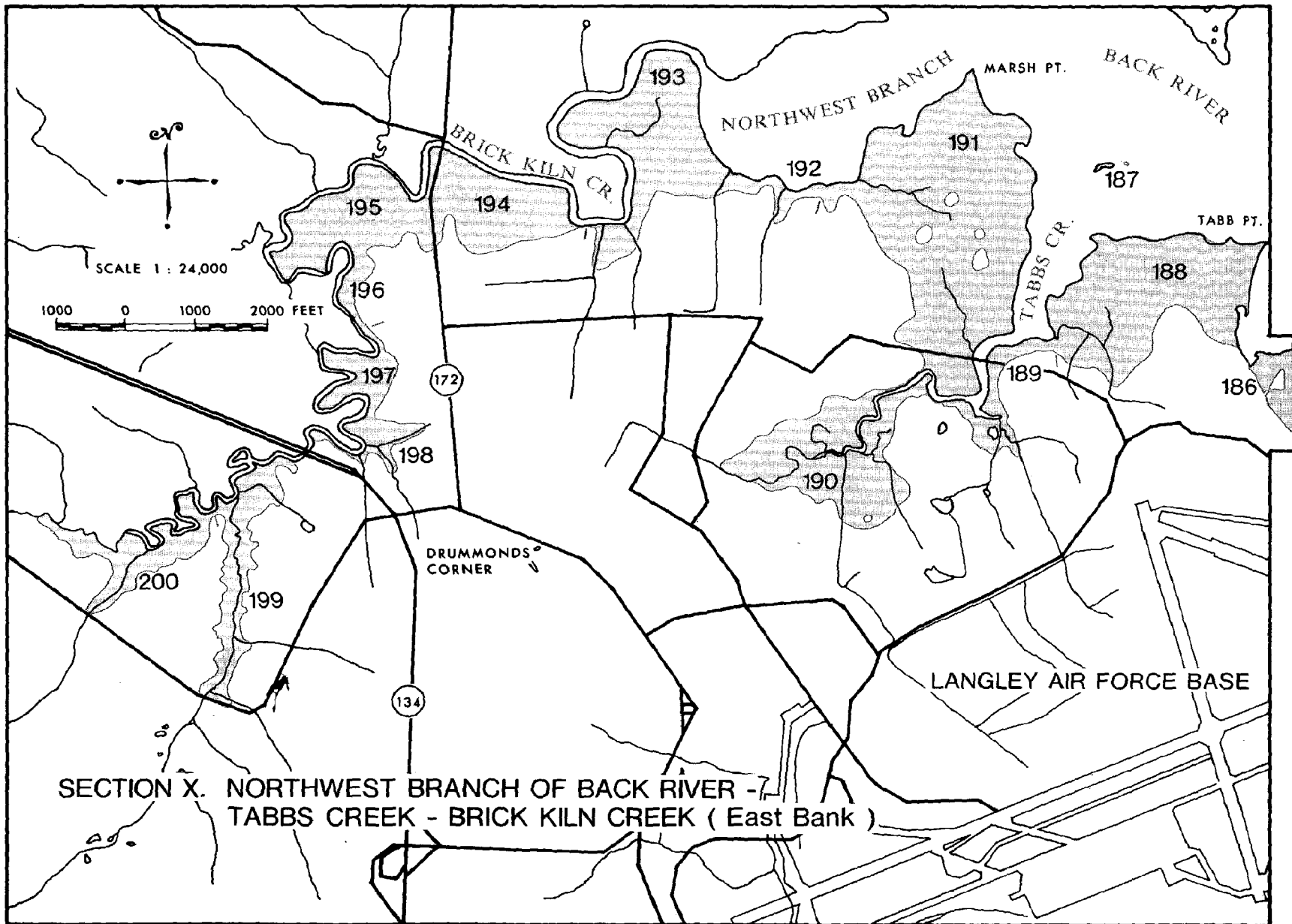
- 30% Marsh Hibiscus/Marsh Mallow
- 25% Mock Bishop-weed (Ptilimnium capillaceum)
- 15% Water Dock (Rumex verticillatus)
- 10% Saltbush (Iva and Baccharis)
- 10% Spike Rush (Eleocharis obtusa)
- 10% Water Hemp (Amaranthus cannabinus)

Marsh #200 vegetation percentages:

- 20% Mock Bishop-weed (Ptilimnium capillaceum)
- 20% Marsh Hibiscus/Marsh Mallow
- 20% Spike Rush (Eleocharis obtusa)
- 10% Cattail (Typha angustifolia)
- 10% Water Dock (Rumex verticillatus)
- Big Cordgrass (Spartina cynosuroides)
- 20% Saltbushes (Iva and Baccharis)
- Arrow Arum (Peltandra virginica)
- Water Hemp (Amaranthus cannabinus)

Further research in the above described communities is planned.

The two large marshes (188, 191) and Tabbs Creek marsh (189, 190) are typical high marsh and are owned by the Federal Government (Langley Air Force Base). For further details concerning these marshes see Wise, (1973).



Section X. Northwest Branch of Back River

#	PLACE NAME	ACRES	Sa		Jr		Md		Sb		Sc		OTHER		OBSERVATIONS	MARSH TYPE
			%	ACRES	%	ACRES	%	ACRES	%	ACRES	%	ACRES	%	ACRES		
86	Langley	7.0	60	4.2	5	0.35	10	0.7	25	1.75						I
87	Langley	0.50	70	0.35			30	0.15							Two marsh islands	I
88	Tabb Point	98.0	35	34.3	5	4.9	40	39.2	20	19.6			q, a, m, e assoc		Sea oxeye present; extensive marsh	XII
89	Tabbs Creek	4.0	55	2.2	10	0.4	25	1.0	10	0.4					Broad fringe	I
90	Tabbs Creek	95.0	10	9.5	assoc		50	47.5	30	28.5			a, d, q 10	9.5	Extensive creek marsh	II
91	Marsh Point	159.0	15	23.85	20	31.8	55	87.45	10	15.9	assoc		q, a assoc		Short form of cordgrass in high areas; high wildlife use	XII
92	Northwest Br. Back River	10.5	30	3.15	10	1.05	50	5.25	10	1.05						II
93	Brick Kiln Creek	76.0	10	7.6	30	22.8	60	45.6	assoc		assoc		a assoc		Extensive marsh	II
94	Brick Kiln Creek	44.0	5	2.2	40	17.6	40	17.6	15	6.6	assoc				Extensive marsh	XII
95	Brick Kiln Creek	48.0	5	2.4	40	19.2	30	14.4	15	7.2	10	4.8			Extensive marsh	XII
96	Brick Kiln Creek	7.0			80	5.6			20	1.4					Broad fringing marsh	III
97	Brick Kiln Creek	11.0			40	4.4	40	4.4	10	1.1	10	1.1	a, k assoc			XII
98	Brick Kiln Creek	7.0	10	0.7	80	5.6					10	0.7				III
99	Brick Kiln Creek	26.0							10	2.6			e, m, f 40	23.4	Mock bishopweed 25% *; water-dock and spikerush 25%	XI

a = Saltmarsh Cordgrass
r = Black Needlerush
d = Saltgrass Meadow
b = Saltbushes
c = Big Cordgrass

a = Saltmarsh Bulrush
b = Saltmarsh Fleabane
c = Saltmarsh Aster
d = Cattail
e = Marsh Hibiscus

f = Water Hemp
g = Switch Grass
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i = Arrow Arum
j = Pickerel Weed

k = Reed Grass
l = Olney Threesquare
m = Marsh Mallow
n = Saltmarsh Loosestrife
o = Smartweed

p = Wild Rice
q = Sea Lavender
r = Marsh Pink
s = Saltwort
t = Yellow Pond-lily

* see text p. 61

Section X. Northwest Branch of Back River (cont'd.)

#	PLACE NAME	ACRES	Sa		Jr		Md		Sb		Sc		OTHER		OBSERVATIONS	MARSH TYPE	
			%	ACRES	%	ACRES	%	ACRES	%	ACRES	%	ACRES	%	ACRES			
200	Brick Kiln Creek	21.0							assoc		assoc		d, e, m, i, f 50	21.0	Mock bishop weed spikerush water dock	20% * 20 10	XI
	Section X Totals	614		90.45		113.7		263.25		86.1		6.6		53.9			
	Grand Total	2220.75	28.9	642	21.1	468.47	30.4	675.4	12.2	269.98	1.1	25.24	6.3	139.65			

- | | | | | | |
|--------------------------|------------------------|-------------------|---------------------------|----------------------|------------------|
| Sa = Saltmarsh Cordgrass | a = Saltmarsh Bulrush | f = Water Hemp | k = Reed Grass | p = Wild Rice | * see text p. 61 |
| Jr = Black Needlerush | b = Saltmarsh Fleabane | g = Switch Grass | l = Olney Threesquare | q = Sea Lavender | |
| Md = Saltgrass Meadow | c = Saltmarsh Aster | h = Foxtail Grass | m = Marsh Mallow | r = Marsh Pink | |
| Sb = Saltbushes | d = Cattail | i = Arrow Arum | n = Saltmarsh Loosestrife | s = Saltwort | |
| Sc = Big Cordgrass | e = Marsh Hibiscus | j = Pickerel Weed | o = Smartweed | t = Yellow Pond-lily | |

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