Appendix L

Recreation Justification

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MID-CHESAPEAKE BAY ISLAND ECOSYSTEM RESTORATION PROJECT RECREATION FEASIBILITY

REPORT ADDENDUM

MAY 2006

1. INTRODUCTION

The Mid-Bay Islands Restoration Project is an environmental project located in the Mid-Chesapeake Bay area, which spans north to south from the Chester River to the Maryland/Virginia state line, and along the eastern shore from Queen Anne's County to Somerset County, Maryland. James and Barren Islands are the two islands in the project area chosen for restoration. The project uses dredged material from the Upper Chesapeake Bay Approach Channels to the Port of Baltimore to beneficially restore 2,072 acres of wetland and upland habitat. By adding capacity to James and Barren Islands, the Mid-Bay Islands Restoration Project is planned to create approximately 932 acres of upland placement, and 1140 acres of wetland development (45% uplands / 55% wetlands). It is estimated that by 2021 the Mid-Bay Islands expansion alone will provide an additional 78 to 95 million cubic yards (mcy) of dredged material placement capacity.

This document contains a description of the conceptual plan that is being proposed for the recreation purposes on the Mid-Bay Islands. This analysis determines the net benefits for the recreation features proposed. Recreation features are being included in the Mid-Bay project as an additional project benefit, and are not part of the overall project benefit cost analysis. Therefore, recreation benefits will not be used in the justification of the recommended plan. Due to the incidental effect of these recreation elements, a determination of acceptable design to meet Corps standards has not been completed at this study phase. Based on a conceptual design for an existing tidal marsh cell, recreation costs are estimated at $204,000. Since recreational features must comply with the project purpose of remote island habitat, the actual location of the recreational features upon completion of the project will be restricted to the tidal gut area at James Island. This allows for passive recreation from the water (with possible time of year restrictions for nesting seasons, based on recommendations of local biologists). If deemed necessary, there is also the possibility of using of the dike areas for recreation, as no project benefits were claimed for habitat on the dikes themselves. In addition, if recreation were to expand to other restored areas outside of the dikes, the plan formulation section of the report would have to be updated and recalculated. This would lead to delaying finalization of the report.

Passive recreational and educational components considered in the plan formulation were very minimal. This was due to the fact that the project creates unique remote island ecosystem habitat which is fragile and very susceptible to human interference. It was determined that even passive recreation could negatively impact nesting habitats. And so, the intention of the project is to develop minimal low-impact recreational/educational spaces in a way that benefits the local jurisdictions and the State of Maryland, while still meeting the objectives of the restoration project. The majority of the passive recreational components are interpretive guidance and media, including: a self-guided/interpretive water trail in the tidal gut at James Island, informative signage, and avian observation from the water. Other components such as public tours of the islands, research opportunities for universities, and volunteer opportunities will be available during the construction of the project (estimated 30 years).

In 2000, the Chesapeake Bay Program (CBP) signed an agreement with the governors of MD, PA and VA, the mayor of DC, and the administrator of the EPA to increase the number of water trails in the Chesapeake Bay by 500 miles, by 2005. That goal has since been surpassed, and public awareness of the Bay's resources continues to grow. The additional 3.89 miles of water trail added at James Island will help to continue the CBP's mission of public education.

Recreational and educational features implemented at Mid-Bay will be consistent with the goals of the restoration project, and implementation will be coordinated with the sponsor, interested parties, and local jurisdictions.

2. AUTHORIZATION

In 1997, USACE-Baltimore and Maryland Port Administration (MPA) initiated the Mid-Bay Islands Expansion Study under Congressional Authorization to pursue the study through the Senate Committee on Environment and Public Works, in accordance with Section 905(b) of the Water Resources Development Act (WRDA) of 1996. The resolution which was proposed on June 5, 1997 reads:

> *Resolved by the Committee on Environment and Public Works of the United States Senate, That the Secretary of the Army is requested to review the report of the Chief of Engineers on the Chesapeake Bay, Maryland and Virginia, published as House Document 176, Eighty-eighth Congress, First Session, and other pertinent reports with a view to conducting watershed management studies, in cooperation with other federal agencies, the State of Maryland and the State of Delaware, their political subdivisions and agencies and instrumentalities thereof, of water resources improvements in the interest of navigation, flood control, hurricane protection, erosion control, environmental restoration, wetlands protection, and other allied purposes in watersheds of the Eastern Shore, Maryland and Delaware.*

The Maryland Port Authority (MPA), the non-Federal sponsor, will provide 35 percent of the cost associated with construction of the project, including provision of all lands, easements, rights-of-way, and necessary relocations; and will pay 100 percent of the operation, maintenance, replacement and rehabilitation costs associated with the project. For the recreational components, economically justified facilities will be cost shared 50 percent Federal and 50 percent non-Federal.

Authority to include recreational components as part of the project purpose is found in the Flood Control Act of 1944, as amended, the Federal Water Project Recreation Act of 1965 (PL 89-72) and the WRDA 1986. These acts each grant broad authority to include recreation as a project purpose; however USACE policy (ER1105-2-100) limits the exercise of these authorities.

3. STUDY AREA

The middle Chesapeake Bay, which encompasses the Mid-Bay Islands region, is a valued recreational resource used by many individuals for a variety of activities; the most popular being swimming, boating, fishing, water sports, and wildlife viewing. Recreational activities are important to the local economy, and the recreational activities in the vicinity of the Mid-Bay Islands are typical of most Chesapeake Bay communities. In the Mid-Bay Islands project area, recreation opportunities will be toned down to "passive recreation" due to the restricted access planned after construction.

Recreation and education components suggested for inclusion in the future development of the Mid-Bay Islands Restoration are as follows:

3.1.1 During Construction (Est. 30 years)

- Research opportunities for educational institutions – Educational institutions would be provided opportunities and permitted to conduct scientific studies at James Island and at the proposed lateral expansions during site construction. Barren Island is owned by Fish and Wildlife Service (USFWS); research opportunities at Barren Island would be coordinated through by them.
- Volunteer opportunities – Volunteers would be invited to participate in both wetland and upland plantings, and various other activities that would aid in project creation / construction.
- Dock for visiting boats – A dock for visitors to tie-up boats will be located in the dike area. The main reasons for visitors during the construction phase would be construction, volunteer, or research. Upon completion of construction, the boat dock may remain in place if deemed necessary for additional project purposes such as O&M.
- Resting/viewing areas – Locations for resting on benches in the proposed dike areas would be in place during construction.

3.1.2 Upon Completion of Construction

- A self-guided/interpretive, low-impact water trial will be created through the main tidal gut area at James Island.
- Informative signage – Signs would be located at set areas along the water trail and other areas viewable by passive observance from the water. These signs would be intended to point out elements of viewable wildlife nearby and educate the public on the Mid-Bay Islands restoration. Other signage would be in place to indicate navigational warnings, land restrictions, tidal gut water trail directional signs, and time of year restrictions to tidal gut access if necessary.

Table 3-1: Preliminary cost estimate for proposed recreation features

FEATURE	QUANTITY	UNIT COST	TOTAL COST
Signs - frames	20	$200	$4,000
- graphics	2,000	$100	$200,000
Water Trail Construction, misc. cost	Existing tidal gut		$0
TOTAL			**$204,000**

4. RECREATION BENEFITS

The national economic development (NED) benefit evaluation procedures contained in ER 1105-2-100 (22 Apr 00), Appendix E, Section VII, include three methods of evaluating the beneficial and adverse NED effects of project recreation: travel cost method (TCM), contingent valuation method (CVM), and unit day value (UDV) method.

The UDV method was selected for estimating recreation benefits associated with the expansion of the Mid-Bay Islands. UDV was chosen because both TCM and CVM require extensive recreation surveys that were not feasible or justifiable. UDV relies on informed judgment, and is an acceptable method to approximate average willingness to pay for federally funded projects. The UDV approach consists of two parts: determining value per visit and estimating visitation user days.

4.1.1 Determining Value per Visit

When the UDV method is used for economic evaluations, planners select a specific value from the range of values provided annually by USACE, in Economic Guidance Memorandum (EGM) 06-03, Unit Day Values for Recreation, Fiscal Year 2006. The selected value is used to estimate annual use over the project life, in the context of both the with- and without-project framework. The difference between the with- and without-project conditions provides the estimate of recreation benefits.

The without-project condition in the analysis has limited recreation value since both Barren and James Islands currently have few recreation opportunities. The without-project condition is described in Appendix H of the main report. Appendix H explains that while both Barren and James Islands have a limited number of boat docks and marinas within 10 miles, they both have a higher than average boat usage when compared to other Mid-Bay islands. Therefore, even though they are not convenient to many boaters, their waters are still popular with boaters. Appendix H also determined that 50% of the boaters near James Island and 40% near Barren Island were likely to engage in fishing. Based on the number of registered motorboats and estimates of the number of annual boater user days, the recreational user days per year were also calculated in Appendix H. It was determined that the recreational user days in the vicinity of James Island were about 20,000, and about 8,000 of those were calculated to be primarily fishing days. At Barren Island, there were about 25,000 recreational user days, 11,000

being fishing recreation days. The without-project condition will be the expected value of the recreational activity based on the UDV method, when no recreation measures are planned. A detailed description of these statistics is documented in Appendix H.

Table 4-2 illustrates the method of assigning a point rating to a particular activity, both with and without recreation measures installed. The table also shows the point values assigned based on measurement standards described for the five criteria: Recreation Experience, Availability of Opportunity, Carrying Capacity, Accessibility, and Environmental.

Point value assignments for Table 4-2 are based on Economic Guidance Memorandum (EGM) 06-03, Unit Day Values for Recreation, Fiscal Year 2006. The Criteria and Judgment Factors for General Recreation were specifically used as the basis of the estimated point values for the proposed recreation area. Judgment factors were based on the ongoing public involvement of the island as well as coordination with local agencies and organizations.

4.1.2 Estimating Visitation

Visitation days without the project are approximated based on the aerial survey and model analysis of boaters conducted in 2002, and described in Appendix H. It is estimated that the number of visitor days at James Island would increase by at least 20% after the completion of construction of the recreation area through the main tidal gut at the island. Visitor days are not expected to increase at Barren Island as no additional recreation features are going to be added there during the construction of this project. Table 4-1 outlines visitation.

Table 4-1: Island Visitation With and Without the Project

ISLAND	BOATERS W/O PROJECT	BOATERS W/PROJECT
James	20,000	24,000
Barren	25,000	25,000
Total (Both Islands)	45,000	49,000

Table 4-2: Ranking Criteria and Judgment Factors for Water Trail at James Island

CRITERIA	JUDGMENT FACTORS				
Recreation Experience Total Pts: 30	Two general Activities	Several general activities	Several general activities: one high quality value activity	Several activities; more than one high quality high activity	Numerous high quality value activities; some general activities
Point Value Without-Project: 2 With-Project: 12	0-4	5-10	11-16	17-23	24-30
Availability of opportunity Total Pts: 18	Several within 1 hr. travel time; a few within 30 min. travel time	Several within 1 hr. travel time; none within 30 min. travel time	One or two within 1 hr. travel time; none within 45 min. travel time	None within 1 hr. travel time	None within 2 hr. travel time
Point Value Without-Project: 3 With-Project: 6	0-3	4-6	7-10	11-14	15-18
Carrying capacity Total Pts: 14	Minimum facility for development for public health and safety	Basic facility to conduct activity(ies)	Adequate facilities to conduct without deterioration of the resource or activity experience	Optimum facilities to conduct activity at site potential	Ultimate facilities to achieve intent of selected alternative
Point Value Without-Project: 2 With-Project: 12	0-2	3-5	6-8	9-11	12-14
Accessibility Total Pts: 12	Limited access by any means to site or within site	Fair access, poor quality roads to site; limited access within site	Fair access, fair road to site; fair access, good roads within site	Good access, good roads to site; fair access, good roads within site	Good access, high standard road to site; good access within site
Point Value Without-Project: 8 With-Project: 12	0-3	4-6	7-10	11-14	15-18
Environmental Total Pts: 20	Low esthetic factors that significantly lower quality[7]	Average esthetic quality; factors exist that lower quality to minor degree	Above average esthetic quality; any limiting factors can be reasonably rectified	High esthetic quality; no factors exist that lower quality	Outstanding esthetic quality; no factors exist that lower quality
Point Value Without-Project: 4 With-Project: 13	0-2	3-6	7-10	11-15	16-20

5. EXPLANATION OF RECREATION POINT VALUES

5.1.1 RECREATION EXPERIENCE

Recreation experience was assigned a point value of 2 without the project, and a point value of 12 with the project. Due to the deteriorating quality of the Mid-Bay Islands, it is assumed that currently, without the project, the Mid-Bay Islands can support very little recreation activity. This activity would most likely be bird watching, picnicking, or limited coastal fishing upon beach access. Based on the boat survey in Appendix H, it is assumed that 20,000 boaters a year currently use James Island for these purposes. Although the Mid-Bay Islands restoration would restrict island usage, recreation experience is still expected to be enhanced in the project area. It is assumed that additional activity, and specifically the construction of the boat trail, which is considered a "specialized recreation experience," would raise the point value to 12 points and improve the overall recreation experience in the project area.

5.1.2 AVAILABILITY OF OPPORTUNITY

Availability of opportunity was assigned a point value of 3 without the project, and a point value of 6 with the project. Presently, the Chesapeake Bay Program estimates that there are roughly 650 miles of water trails in the Maryland waters of the Chesapeake Bay. However the James Island water trail will provide a one of a kind opportunity in terms of its restored island area and unique ecosystem habitat. The with-project condition of the Mid-Bay Islands restoration assumes that very few opportunities would be available to get the same level of recreational experience. The unique opportunities at the Mid-Bay Islands raise Mid-Bay's point value to 6.

5.1.3 CARRYING CAPACITY

Carrying capacity was assigned a point value of 2 without the project; because currently there are "minimum facilities for development for public health and safety." As explained in the main report, Barren and James Islands are rapidly being depleted of precious land mass and animal habitat, and very limited recreation facilities currently exist there. With the current trends in the availability of land mass, the opportunity exists that additional recreation facilities such as the water trail can be added to the project, and raise the point value of this element to 12 with the project.

5.1.4 ACCESSIBILITY

Accessibility was assigned a point value of 8 without the project because currently there is fair access to both James and Barren Islands. Presently, people are able to boat up to the islands and use them for general recreation. However, once the Mid-Bay restoration is in place, it is anticipated that on-island access will be closed to the public. Water trail access at James Island is expected to remain open during most times of the year. Factoring in the decrease of on-island access and the uniqueness of the added water trail feature, the with-project condition was assigned a point value of 12 for this element.

5.1.5 ENVIRONMENTAL

The environmental element was assigned a point value of 4 without the project. This was due to the fact that the Mid-Bay Islands are currently experiencing a great deal of erosion that is leading to degraded environmental quality and loss of habitat. Ecosystem restoration elements such as increased habitat area and island species attraction are the main environmental goals of the Mid-Bay Island restoration project. These additional benefits are expected to enhance the general recreation experience at the islands and raise the point value with the project to 13.

6. RECREATION POINT VALUE CONVERSION

The Economics Guidance Memorandum, 06-03, Unit Day Values for Recreation, Fiscal Year 2006 also describes how to convert recreational point values to dollar values. The guidance provides a conversion table based on the Consumer Price Index, where as the recreation point values increase, the dollar values of recreation also go up. And recreation is categorized as either "general" or "specialized." Specialized recreation has a higher point value because it includes activities that are unique and/or not readily available in the area.

In total, the without-project condition has a point value of 19. By using the conversion table, the value of general recreation without the project is $4.19 per user day, and specialized recreation is worth $14.75 per user day. With the project in place, the total point value is estimated to be 54, so the with-project condition is worth $6.78 per user day, and specialized recreation is worth $19.14 per user day.

7. SPECIALIZED RECREATION OPPORTUNITIES

The main recreation element of a "water trail" is considered general recreation according to Economics Guidance Memorandum 06-03. There are currently 1,804 miles of water trails in the Chesapeake Bay, approximately 650 miles in the Maryland waters alone. (Chesapeake Bay Program, 2006) However, since the water trail at James Island will have unique species habitat and restored island area, approximately twenty five percent of the recreational experience at the Mid-Bay Islands restoration could be classified as "specialized". The support for the specialized classification use is that the project will attract species with life requisites requiring island habitat. The Mid-Bay Islands will be part of a small group of islands in the Bay that will provide unique, remote island habitat. This habitat area currently provides nesting opportunities for island species, as well as sustains diamondback terrapin and bald eagle nests. It is expected that the restored island area will attract new species, including some rare and threatened. The restored area will also be much larger and thus provide increased habitat acreage.

8. ECONOMIC JUSTIFICATION OF RECREATION

The justification of incurring additional costs for recreation features is derived by utilizing a benefit to cost ratio. The tangible economic justification of the proposed ancillary recreation project component can be determined by comparing the equivalent average annual costs to construct the recreation facilities against the estimate of the equivalent average annual benefits, which would be realized over the period of analysis. The federally mandated project evaluation interest rate of 5.125 percent, an economic period of analysis of 50 years, and current prices were used to evaluate economic feasibility (see Table 8-1).

Annual visitation was calculated with and without the project features. In the calculation, 25% of the UDV of recreation was considered specialized and 75% was considered general. The following is the estimated revenue.

8.1.1 Without -Project:

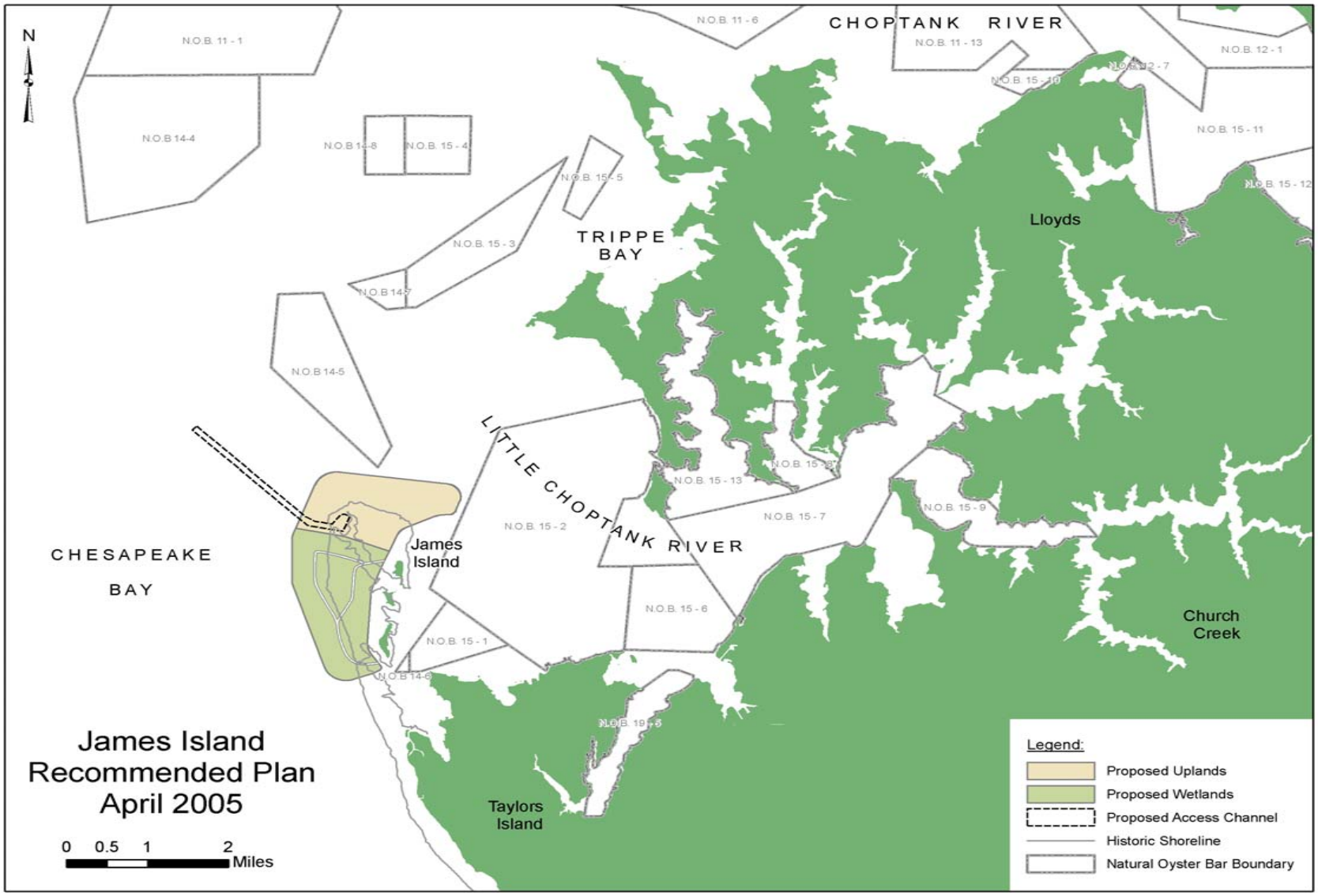
Annual Visitor Total	=	45,000
Cost per person/visit (general recreation)	=	$4.19
Cost per person/visit (specialized recreation)	=	$14.75
Total (75% general, 25% specialized)	=	$307,350/yr value

8.1.2 With -Project:

Annual Visitor Total	=	49,000
Cost per person/visit (general recreation)	=	$6.78
Cost per person/visit (specialized recreation)	=	$19.14
Total (75% general, 25% specialized)	=	$483,630/yr value

Table 8-1: Benefits and Costs of Recreation Elements

Annual Costs	
Total Recreation Costs	$204,000
Interest during PED and Construction (6 mos.)	$2,614
Total Investment Cost	$206,614
Average Annual Cost	**$11,537**
Annual Benefits	
With-Project - Unit Day Value (75% general / 25% specialized)	$9.87
Daily Users	49,000
Annual Use (49,000 *$9.87) $9.87 = ($6.78*.75 + $19.14*.25)	$483,630
Without-Project - Unit Day Value (75% general / 25% specialized)	$6.83
Daily Users	45,000
Annual Use (45,000 *$6.83) $6.83 = ($4.19*.75 + $14.75*.25)	$307,350
Annual Benefit ($483,630 - $307,350)	**$176,280**
Benefit to Cost	
Net Annual Benefits	**$164,743**
Benefit Cost Ratio	**14.3 to 1**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CHOPTANK RIVER
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TRIPPE BAY
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N.O.B 14-5
Lloyds
LITTLE CHOPTANK RIVER
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N.O.B. 15 - 9
N.O.B. 15 - 2
CHESAPEAKE BAY
James Island
N.O.B. 15 - 6
N.O.B. 15 - 1
N.O.B 14-6
Church Creek
N.O.B. 19 - 5
Taylors Island
James Island
Recommended Plan
April 2005
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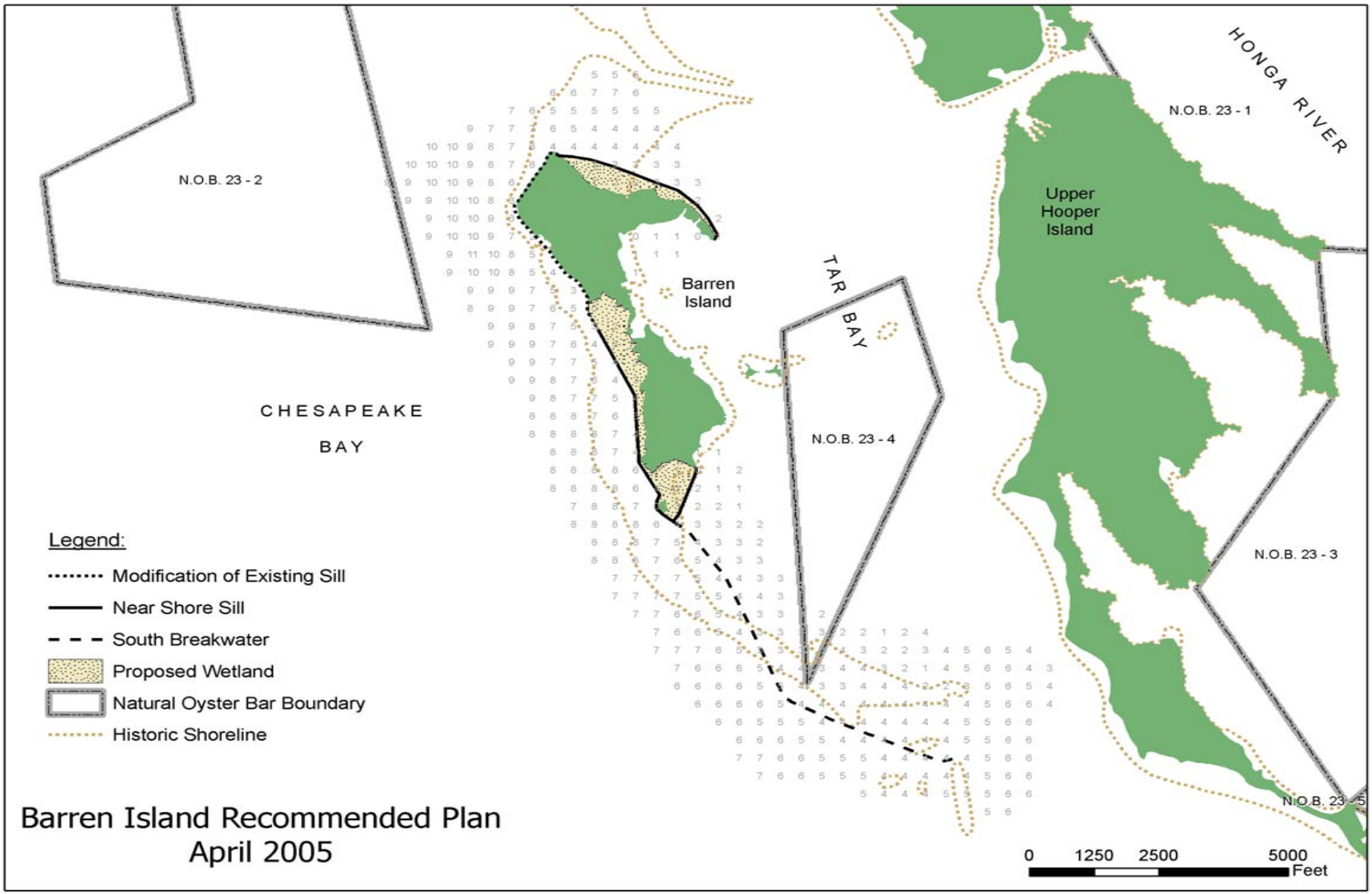
Miles
Legend:
Proposed Uplands
Proposed Wetlands
Proposed Access Channel
Historic Shoreline
Natural Oyster Bar Boundary



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