

Proposed Mallows Bay – Potomac River National Marine Sanctuary Designation

Draft Environmental Impact Statement and Draft Management Plan



DECEMBER 2016 | sanctuaries.noaa.gov/mallows-bay/

National Oceanic and Atmospheric Administration (NOAA) U.S. Secretary of Commerce Penny Pritzker

Under Secretary of Commerce for Oceans and Atmosphere and NOAA Administrator Kathryn D. Sullivan, Ph.D.

Assistant Administrator for Ocean Services and Coastal Zone Management, National Ocean Service W. Russell Callender, Ph.D.

Office of National Marine Sanctuaries John Armor, Director Matt Brookhart, Acting Deputy Director

Cover Photo: Mallows Bay in the Potomac River is home to an extraordinary collection of shipwrecks. Credit: Marine Robotics and Remote Sensing, Duke University.



Abstract

In accordance with the National Environmental Policy Act (NEPA, 42 U.S.C. 4321 et seq.) and the National Marine Sanctuaries Act (NMSA, 16 U.S.C. 1434), the National Oceanic and Atmospheric Administration's (NOAA) Office of National Marine Sanctuaries (ONMS) has prepared a Draft Environmental Impact Statement (DEIS) that considers alternatives for the proposed designation of Mallows Bay-Potomac River as a National Marine Sanctuary. The proposed action addresses NOAA's responsibilities under the NMSA to identify, designate and protect areas of the marine and Great Lakes environment with special national significance due to their conservation, recreational, ecological, historical, scientific, cultural, archaeological, educational, or aesthetic qualities as national marine sanctuaries. ONMS has developed four alternatives for the designation and the DEIS evaluates the environmental consequences of each alternative under NEPA. The DEIS also serves as a resource assessment under the NMSA, documenting present and potential uses of the areas considered in the alternatives. NOAA's preferred alternative (Alternative C) would designate a 52 square mile area of the waters and bottomlands of the tidal Potomac River for the protection of at-risk, nationally-significant shipwrecks and associated maritime heritage resources. No significant adverse impacts to resources and the human environment are expected under any alternative. Long term beneficial impacts are anticipated if the proposed designation is finalized.

Lead Agency: National Oceanic and Atmospheric Administration

Cooperating Agencies: U.S. Department of Navy

For Further Information Contact: Paul Orlando, Regional Coordinator, Northeast and Great Lakes Region at (240) 460-1978, paul.orlando@noaa.gov

Comments Due: March 31, 2017

Public Comments May Be Submitted:

Online: Visit the federal eRulemaking portal at http://www.regulations.gov. In the search window, type NOAA-NOS-2016-0149, click the "Comment Now!" icon.

Mail: Paul Orlando, Regional Coordinator, Northeast and Great Lakes Region, 410 Severn Ave, Suite 207-A, Annapolis MD 21403.

Dear Reviewer:

In accordance with provisions of the National Environmental Policy Act of 1969 (NEPA), the National Oceanic and Atmospheric Administration (NOAA) encloses for your review the Draft Environmental Impact Statement (DEIS) for proposed designation of Mallows Bay-Potomac River as a National Marine Sanctuary. The DEIS considers four alternatives for the proposed designation.

On September 16, 2014, pursuant to Section 304 of the National Marine Sanctuaries Act and the Sanctuary Nomination Process (79 FR 33851), a coalition of community groups submitted a nomination asking NOAA to designate Mallows Bay-Potomac River as a National Marine Sanctuary. The nomination cited conservation goals to protect and conserve the fragile remains of the Nation's maritime and cultural heritage as well as opportunities to expand public access, recreation, tourism, research and education. NOAA completed its review of the nomination in accordance with the Sanctuary Nomination Process and, on January 12, 2015, added the area to the inventory of nominations that are eligible for designation.

On October 7, 2015, a Notice of Intent was issued to prepare a draft environmental impact statement (DEIS) and draft management plan and to carry out a public scoping process (80 FR 60634; October 7, 2015). The proposed designation addresses NOAA responsibility under the NMSA to identify, designate and protect areas of the marine and Great Lakes environment with special national significance due to their conservation, recreational, ecological, historical, scientific, cultural, archaeological, educational, or aesthetic qualities as national marine sanctuaries.

NOAA's preferred alternative (Alternative C) would designate a 52 square mile area of the waters and bottomland of the tidal Potomac River for the protection of at-risk, nationallysignificant shipwrecks and associated maritime heritage resources. Designation under the National Marine Sanctuaries Act would allow NOAA to supplement and complement existing authorities of the State of Maryland and other Federal agencies to protect the collection of nationally significant shipwrecks and related maritime-cultural assets in this area. No significant adverse impacts to resources and the human environment are expected under any alternative. Long term beneficial impacts are anticipated if the proposed designation is finalized.

Public Meetings will be held as follows:

1) Tuesday, March 7, 6:00-9:00 pm Charles County Government Building 200 Baltimore Street, La Plata, Maryland, 20646

2) Thursday, March 9, 6:00-9:00 pm Anne Arundel Community College, Center for Applied Learning and Technology (CALT) Building, Room 100 101 College Parkway, Arnold, MD 21012

Written comments will be accepted until March 31, 2017 and can be submitted online or through the mail to the sanctuary official identified below.

Responsible Official:	John Armor Director, Office of National Marine Sanctuaries
Sanctuary Official:	Paul Orlando Regional Coordinator, Northeast and Great Lakes Region
	Online: Visit the federal eRulemaking portal at http://www.regulations

Visit the federal eRulemaking portal at http://www.regulations.gov. In the search window, type NOAA-NOS-2016-0149, click the "Comment Now!" icon.

Mail:

Paul Orlando, Regional Coordinator, Northeast and Great Lakes Region, 410 Severn Ave, Suite 207-A, Annapolis MD 21403.

Sincerely, yohn Armor Director

About This Document

This draft environmental impact statement (DEIS) analyzes impacts and evaluates a reasonable range of alternatives (including a no action alternative) associated with the proposed designation of Mallows Bay-Potomac River as a National Marine Sanctuary. This document is also a resource assessment document that details the present and future uses of the areas identified for possible designation.

The National Oceanic and Atmospheric Administration (NOAA) prepared this DEIS in accordance with the National Environmental Policy Act of 1969 (NEPA; 42 USC 4321 *et seq.*) as implemented by the Council on Environmental Quality regulations (40 CFR Parts 1500-1508), and NOAA Administrative Order (NAO) 216-6A, which describes NOAA policies, requirements, and procedures for implementing NEPA.

Accordingly, this document was preceded by a Notice of Intent to prepare a draft environmental impact statement (DEIS) and carry out a public scoping process (80 FR 60634; Oct. 7, 2015). The public scoping period commenced in October 2015 and ended on January 15, 2016, during which time public meetings were held and NOAA received both written and oral comments on the concept of designating a sanctuary. NOAA received approximately 186 comments during that scoping period, strongly supportive of the concept. NOAA is the lead agency for this action. NOAA's Office of National Marine Sanctuaries (ONMS) is the implementing office for this action. The cooperating agency for the development of this DEIS is the U.S. Department of Navy.

Recommended Citation

Office of National Marine Sanctuaries. 2016. Mallows Bay-Potomac River National Marine Sanctuary Designation Draft Environmental Impact Statement. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Office of National Marine Sanctuaries, Silver Spring, MD.

Table of Contents

Abstract:	2
Dear Reviewer:	3
About this Document	5
Recommended Citation	5
List of Figures	10
List of Tables	11
Acknowledgments	13
Acronyms	13
EXECUTIVE SUMMARY	15
Chapter 1: Introduction and Background1.1 INTRODUCTIONThe National Marine Sanctuaries ActOffice of National Marine SanctuariesSanctuaries as Marine Protected AreasComprehensive Management of the NMSSSanctuary Nomination ProcessesSanctuary Designation Processes1.2 BACKGROUNDCommunity Nomination For Mallows Bay - Potomac RiverSanctuary Designation Public Scoping InputPublic Review of the DEISScope of DEIS	20 20 21 21 22 22 23 23 23 23 23 25 27 28
 Chapter 2: Purpose of and Need for Action 2.1 PROPOSED ACTION 2.2 PURPOSE OF AND NEED FOR ACTION Purpose of Action Need for Action 2.3 TARGET RESOURCES Threats to Target Resources Additional Activities 2.4 EXISTING LEGAL AUTHORITIES State of Maryland Laws Directed to Protect Maritime Heritage Assets 	29 29 29 30 30 30 32 32 33

State of Maryland Laws Controlling Activities That May Indirectly Affect Maritime Heritage	34
Resources	34 35
Federal Laws Controlling Activities That May Indirectly Affect Maritime Heritage Resources	33
Gan Analysis Palated to Existing Authorities for Target Pasources	30
National Marine Sanctuaries Act Role to Supplement and Complement Existing Authorities for	r
Target Resources	40
Chapter 3: Alternatives	42
3.1 DEVELOPMENT OF ALTERNATIVES	42
3.2 DESCRIPTION OF ALTERNATIVES	43
Alternative A. No Action or Status Quo Alternative	45
Alternative B. Approximately 18 square miles	45
Alternative C. Approximately 52 square miles	53
Alternative D. Approximately 100 square miles	58
Alternatives Considered But Not Carried Forward for Further Analysis	60
Regulations Proposed for All Action Alternatives	60
Permits, Certifications, and Authorizations	62
Non-regulatory Programs for All Action Alternatives	63
3.3 PREFERRED ALTERNATIVE	64
Chapter 4: Affected Environment	65
4.1 INTRODUCTION	65
4.2 PHYSICAL ENVIRONMENT	65
4.2.1 GEOLOGY	66
4.2.2 WATER RESOURCES	67
4.2.2.1 Water Quality/Quantity	67
4.2.2.2 Water Dynamics	70
4.2.3 AIR QUALITY	70
4.2.4 CLIMATE	71
4.2.5 NOISE	72
4.3 MARITIME CULTURAL LANDSCAPE RESOURCES	72
WWI Vessels & Shipbreaking	73
Other Submerged Historical and Cultural Resources	74
Contributing Cultural Aspects of the Maritime Cultural Landscape	76
Tribal Resources	77
African American History	77
Summary	77
4.4 BIOLOGICAL RESOURCES	78
4.4.1 FISHERIES	78
4.4.2 PROTECTED SPECIES	81
4.4.3 BIRDS	83
	7

4.4.4 TERRESTRIAL SPECIES	85
4.4.5 HABITATS	88
4.4.5.1 Tidal River	88
4.4.5.2 Palustrine	89
4.4.5.3 Terrestrial	89
4.4.5.4 EFH/Critical Habitat	90
4.5 SOCIOECONOMIC RESOURCES	91
4.5.1 Water Access and Existing Facilities	91
4.5.2 OTHER RECREATIONAL USES	93
4.5.2.1 Recreational Fishing	93
4.5.2.2 Hunting	94
4.5.2.3 Fishing and Hunting Guide Services	94
4.5.2.4 Fossil Collecting	94
4.5.2.5 Boating & Paddling	95
4.5.2.6 Birding and Wildlife Viewing	95
4.5.3 COMMERCIAL USES	96
4.5.3.1 Commercial Fishing	96
4.5.3.2 Shipping	96
4.5.4 TOURISM	96
4.5.5 LOCAL ECONOMY	97
4.5.6. PASSIVE ECONOMIC USE	104
4.6 DEPARTMENT OF DEFENSE FACILITIES	104
4.6.1 MARINE CORPS BASE QUANTICO	105
4.6.2 BLOSSOM POINT RESEARCH FACILITY	106
4.6.3 NAVAL SUPPORT FACILITY INDIAN HEAD	107
4.6.4 NAVAL –SUPPORT FACILITY DAHLGREN	108
Chapter 5: Environmental Consequences	112
5.1 INTRODUCTION	112
5.2 AFFECTED RESOURCES AND POTENTIAL IMPACTS	112
Types of Potential Impacts	112
Duration of Potential Impacts	113
Geographic Extent	113
Magnitude of Potential Impacts	113
5.3 ANALYSIS OF ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES	114
5.3.1 Alternative A: No Action	114
5.3.2 Impacts Common to Alternatives B, C, and D	116
5.3.4 Impacts Specific to Alternative B	122
5.3.5 Impacts Specific to Alternative C	124
5.3.6 Impacts Specific to Alternative D	125
5.3.7 Relative Magnitude of Across Alternatives	127
	8

5.3.8 Cumulative Impacts	
Chapter 6: Additional Considerations	137
6.1 CONSULTATION AND ENVIRONMENTAL COMPLIANCE	137
6.2 ENVIRONMENTAL JUSTICE	141
6.3 RELATIONSHIP OF SHORT-TERM USES AND LONG-TERM PRODUCTIVITY	142
6.4 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES	142
INDEX	143
LIST OF PREPARERS	144
REFERENCES	145
APPENDIX A - Draft Management Plan	148
APPENDIX B - Additional State of Maryland Authorities	195

List of Figures

Figure ES1: Map of Alternatives Considered	17
Figure 1: Map of the National Marine Sanctuary System	21
Figure 2: Boundaries for Alternatives B, C, and D	43
Figure 3: Boundary for Alternative B	46
Figure 4: Boundary Alternative C	54
Figure 5: Boundary Alternative C detail of proposed boundary area around Quantico Marine Base	55
Figure 6. Detail of proposed boundary (orange line) adjacent to Fairview, VA.	57
Figure 7. Detail of proposed boundary (orange line) adjacent to Caledon, VA.	58
Figure 8: Boundary Alternative D	59
Figure 9: The Potomac River Basin. Source: Interstate Commission on the Potomac River 2016	66
Figure 10: Maryland physiographic provinces and county boundaries. Source: Maryland Geological Survey 2016.	67
Figure 11: Maryland Public Access Locations. Source: Maryland Department of Natural Resources	92
Figure 11: Alternative B Economic Study Area	98
Figure 12: Alternative C Economic Study Area	99
Figure 13: Alternative D Economic Study Area	100
Figure 14: Map of Propose Alternatives and DOD Installations	105

List of Tables

Table 1: Summary of resources in each alternative including World War I (WWI) and U.S. Emergency Fleet Corporation (USEFC) Vessels in Alternative B	44
Table 2: U.S. Emergency Fleet Corporation Vessels in Alternative B	46
Table 3: Vessels Related to U.S. Emergency Fleet Corporation ship-breaking in Alternative B	51
Table 4: Other Vessels in Alternative B	51
Table 5: Partial and fragmentary vessel remains in Alternative B	52
Table 6: Non-Vessel Resources in Alternative B	52
Table 7: Additional Resources in Alternative C	56
Table 8: Fish species identified during juvenile striped bass surveys between 1957 and 2015 at three Potomac River seine survey sites	79
Table 9: Federal and State Protected Species in the Mallows Potomac NMS Alternatives Area	83
Table 10: Breed bird species present in USGS quads within and adjacent to sanctuary boundary, as associated level of breed certainty	84
Table 11: Reptile and amphibian species present in USGS quads within and adjacent to sanctuary boundary	86
Table 12: Selected Socioeconomic Measures of the Study Areas, Maryland, Virginia and the USA	101
Table 13: Percent Gender Distribution of the Study Areas, Maryland, Virginia and USA	101
Table 14: Percent Age Distribution of the Study Areas, Maryland, Virginia and USA	102
Table 15: Percent Race Distribution of the Study Areas, Maryland, Virginia and the USA	102
Table 16: Income and Employment	102
Table 17: Economic Sectors and Percentage of Employment	103
Table 18: Summary of terms used to describe potential environmental impacts	114
Table 19: Summary of the environmental consequences of Alternative A	115

Table 20: Summary of the environmental consequences common to Alternatives B, C, and D	117
Table 21: Summary of the environmental consequences of Alternative B	122
Table 22: Summary of the environmental consequences of Alternative C	124
Table 23: Summary of the environmental consequences of Alternative D	126
Table 24: Comparison of the magnitude of the environmental consequences of all alternatives	128
Table 25: Comparison of cumulative effects of all alternatives	134

Acknowledgements

This document was prepared by staff members of NOAA's Office of National Marine Sanctuaries, Maryland Department of Natural Resources, Maryland Historical Trust, and Charles County. Assistance was provided by Department of the Navy as a cooperating agency on the development of this document. A full list of preparers is provided at the end of the document.

Acronyms

ARPA - Archaeological Resources Protection Act

ASA - Abandoned Shipwreck Act

BLM - Bureau of Land Management

CZMA – Coastal Zone Management Act

ESA – Endangered Species Act

EPA - Environmental Protection Agency

DEIS - Draft Environmental Impact Statement

DNR - Maryland Department of Natural Resources

EEZ - Exclusive Economic Zone

FEIS - Final Environmental Impact Statement

FWS – U.S. Fish and Wildlife Service

GCN - (Species of) Greatest Conservation Need

MHT - Maryland Historical Trust

MOA - Memorandum of Agreement

MOTD - Maryland Office of Tourism Development

MPA - Marine Protected Area

NAO - NOAA Administrative Order

NEPA - National Environmental Policy Act

NHPA – National Historic Preservation Act

NMFS – National Marine Fisheries Service

NMSA - National Marine Sanctuaries Act

NMSS - National Marine Sanctuary System

NOAA - National Oceanic and Atmospheric Administration

NOS - National Ocean Service

NRHP - National Register of Historic Places

NSF - Naval Support Facility

OLE - NOAA Office of Law Enforcement

ONMS – Office of National Marine Sanctuaries

SAV - Submerged Aquatic Vegetation

SHPO - State Historic Preservation Office

SLA - Submerged Lands Act

SMCA - Sunken Military Craft Act

SMHA - Southern Maryland Heritage Area

TBNMS - Thunder Bay National Marine Sanctuary

UAS – Unmanned Aerial Systems

UCH - Underwater Cultural Heritage

USEFC - United States Emergency Fleet Corporation

EXECUTIVE SUMMARY

The purpose of this document is to evaluate a reasonable range of alternatives associated with the proposed designation of Mallows Bay-Potomac River as a National Marine Sanctuary, analyze their impacts on the human environment, and to provide the public with an opportunity to participate in the decision making process. The proposed designation emerges from a nomination submitted to the National Oceanic and Atmospheric Administration (NOAA) by the Governor of Maryland on behalf of a broad coalition of community groups, including state and local partners. The designation is expected to help conserve at-risk, nationally-significant shipwrecks and associated maritime heritage resources through the promulgation regulations and development of a management plan that includes both regulatory and non-regulatory actions. This document also includes an analysis of the potential environmental, cultural and socioeconomic impacts associated with the proposed regulations implementing the designation and regulatory and non-regulatory activities that address how to manage the nationally-significant shipwrecks and maritime heritage resources. A Federal Register notice of the proposed rule and draft management plan for the proposed designation of Mallows Bay-Potomac River were published concurrently with this Draft Environmental Impact Statement (DEIS). The Department of the Navy is a cooperating agency for this DEIS.

Mallows Bay is located along the tidal Potomac River, about 40 miles downstream of Washington, DC. These waters boast a diverse collection of nearly 200 known historic shipwreck vessels dating back to the Civil War and potentially dating back to the Revolutionary War as well as archaeological artifacts dating back 12,000 years indicating the presence of some of the region's earliest American Indian cultures, including the Piscataway Indian Nation and the Piscataway Conoy Tribe of Maryland (State of Maryland recognized Indian Tribes). The area is most renowned for the remains of over 100 wooden steamships, known as the "Ghost Fleet," that were built for the U.S. Emergency Fleet between 1917-1919 as part of US engagement in World War I. Their construction at more than 40 shipyards in 17 states reflected the massive national wartime effort that drove the expansion and economic development of communities and related maritime service industries including the present-day U.S. Merchant Marine. The area is contiguous to the Captain John Smith Chesapeake National Historic Trail, the Star Spangled Banner National Historic Trail, the Potomac Heritage National Scenic Trail and the Lower Potomac Water Trail which offer meaningful educational and recreational opportunities centered on the region's culture, heritage and history. Additionally, the structure provided by the vessels and related infrastructure serve as important habitat to thriving populations of recreational fisheries, bald eagles, and other aquatic species. Its listing on the National Register of Historical Places

(http://dnr2.maryland.gov/ccs/Documents/MB_NRHP_RegForm.pdf) solidifies the historical, archaeological and recreational significance of the Ghost Fleet and related maritime heritage sites in and around Mallows Bay. A description of the sanctuary and its resources can be found in Chapter 4(Affected Environment).

In June 2014, NOAA published a final rule in the Federal Register (79 FR 33851) that re-established a process by which a community could submit an application to have NOAA consider the nomination of an area of the marine or Great Lakes environment with special national significance for designation as a national marine sanctuary. This Federal Register notice contained the criteria and considerations NOAA will use to evaluate the national marine sanctuary nomination, described the process for submitting a national marine sanctuary nomination, and promulgated implementing regulations.

On September 16, 2014, pursuant to Section 304 of the National Marine Sanctuaries Act and the Sanctuary Nomination Process (79 FR 33851), a coalition of community groups submitted a nomination asking NOAA to designate Mallows Bay-Potomac River as a National Marine Sanctuary. The nomination cited conservation goals to protect and conserve the fragile remains of the Nation's maritime and cultural heritage as well as opportunities to expand public access, recreation, tourism, research and education. The Maryland Department of Natural Resources (DNR), Maryland Historical Trust, Maryland Department of Tourism, and Charles County, Maryland have worked together with community partners to initiate conservation and compatible public access strategies in and around Mallows Bay consistent with numerous planning and implementation documents. The nomination identified opportunities for NOAA programs to supplement and complement those actions to protect, study, interpret, and manage the area's unique maritime heritage resources. The proposed sanctuary would be managed jointly by NOAA, the State of Maryland, and Charles County, Maryland. The nomination was endorsed by a diverse coalition of organizations and individuals at local, state, regional and national levels, including elected officials, businesses, American Indians, environmental, recreation, conservation, fishing, tourism, museums, historical societies and education groups.

NOAA completed its review of the nomination in accordance with the Sanctuary Nomination Process and, on January 12, 2015, added the area to the inventory of nominations that are eligible for designation. Designation under the National Marine Sanctuaries Act would allow NOAA to supplement and complement existing authorities of the State of Maryland and other Federal agencies to protect this collection of nationally significant shipwrecks and related maritime-cultural assets.

On October 7, 2015, a Notice of Intent was issued to prepare a draft environmental impact statement (DEIS) and draft management plan and to carry out a public scoping process (80 FR 60634; October 7, 2015). This notice also informed the public that NOAA will coordinate its responsibilities under Section 106 of the National Historical Preservation Act (NHPA) (16 U.S.C 470) with its ongoing NEPA process, pursuant to 36 CFR 800.8(a), including the use of NEPA documents and public and stakeholder meetings to also meet the requirements of Section 106. The public scoping period commenced in October 7, 2015 and ended on January 15, 2016, during which time public meetings were held and NOAA received both written and oral comments on the concept of designating the sanctuary.

Based on strong public support received during the public comment period, NOAA is proposing to designate Mallows Bay-Potomac River National Marine Sanctuary and has developed four alternatives for the designation that include a no action alternative and three boundary alternatives (see Figure ES1). The proposed sanctuary will concentrate on the protection, access and interpretation of the maritime cultural features of the area, including the "Ghost Fleet", other vessels of historic significance, and related maritime infrastructure. These proposed actions will be primarily non-regulatory in nature, but will include limited regulation and permitting of specific activities that supplement and complement authorities that exist already to mitigate known threats to these historic resources. NOAA will consider and execute any regulations and/or permits in cooperation with the State of Maryland, Charles County and other Federal Authorities as appropriate.

The State of Maryland currently has a comprehensive set of management measures for the protection of the natural environment, including wildlife, fish, birds, water quality, and habitat. There are also various existing laws, regulations and policies that apply to activities in the area of the proposed sanctuary. As such, NOAA's proposed sanctuary regulations would only focus on the protection of the shipwrecks and

associated maritime heritage resources. Authorities related to natural resources and their management remains with Maryland Department of Natural Resources, the Maryland Department of the Environment, and other State and local jurisdictions. More information on the current laws can be found in Chapter 2 in the sections on Existing Legal Authorities (Section 2.4). NOAA is proposing to carry out education, science and interpretative programs that describe for visitors and user communities the relationship between the ship structures and their interplay with the natural system.



Figure ES1: Map of Alternatives being considered.

The four alternatives being considered are:

Alternative A -- No Federal designation as a National Marine Sanctuary (the no-action alternative).

Alternative B -- Approximately 18 square miles of area that coincides with the boundaries of the Widewater Historical and Archeological National Register District in National Register of Historic Places (NRHP). It includes the tidal waters at the northern boundary from Sandy Point, MD to Clifton Point, VA through the southern boundaries from Smith Point, MD to Brent's Point, VA and incorporates the waters of Wades Bay, Blue Banks, Mallows Bay, Liverpool Cove, and the Mallows Bay "Burning Basin" as far east as the egress for Marlow Creek into the basin itself. It includes at least these known maritime

heritage assets: (a) 134 known and 3 suspected vessels, including 118 World War I-era US Emergency Fleet Corporation (USEFC) wooden steamships and vessels related to their breaking, (b) 16 other vessels not related to shipbreaking, (c) 8 vessel debris piles, and (d) 6 non-vessel sites. In addition, this area is also rich in the history and culture of the Piscataway people, historic fisheries such as sturgeon and the caviar industry, and other battlescapes during Revolutionary and Civil Wars. This alternative is slightly larger than the area submitted through the Sanctuary Nomination Process because it incorporates the Historical District boundaries that were developed with additional information not available during the nomination development.

Alternative C -- Approximately 52 square miles of the tidal Potomac River. The northern boundary extends approximately 200 yards upstream of the Dominion Power lines near Ben Doane Road, Maryland to Possum Nose, Virginia. The southern boundary extends from the end of Owens Drive east of Chotank Creek, Virginia to Benny Gray Point, Maryland. The boundary encompasses all tidal waters within this boundary from mean high tide in Maryland to mean low tide in Virginia. In addition to the resources of Alternative B which would be incorporated, Alternative C adds two USEFC vessels, seven additional non-USEFC vessels and thirteen other vessels potentially in the area, as well as diverse non-vessel sites of historic significance. This alternative includes all of the known WWI-era USEFC vessels in Maryland waters, as well as a number of historically, archaeologically, and recreationally significant shipwrecks not currently included in the Historic District. This alternative incorporates marine battlescapes (land-sea engagements in the Civil War, among the first in that conflict, and one during the Revolution); the site of the first military balloon launch from a purpose built "aircraft carrier" in history; two major amphibious invasion operations (Brigadier General Benjamin Butler's attack from Budd's Ferry to Quantico Creek on March 9, 1861, and the Liverpool Point to Aquia Creek crossings during the Fredericksburg Campaign); Confederate communications and contraband water routes during the Civil War, and the overall scene of the Union's Potomac River blockade, 1861-1865. [Preferred Alternative]

Alternative D -- Approximately 100 square miles of the Potomac River. The northern boundary extends across the mouth of Pomonkey Creek from just south of Anne Mason Court in Indian Head, Maryland and then from Pomonkey Point, Maryland to Hallowing Point, Virginia. The southern boundary extends from Pope's Creek, MD to Persimmon Point, on Mathias Neck, VA. This area includes Mattawoman, Chicamuxen, Nanjemoy, and Port Tobacco creeks. On the Virginia side the line would extend to the Maryland-Virginia borderline, namely the high water mark, all of which is in Maryland territory. This alternative incorporates all the maritime heritage resources of Alternative C and would add additional area upstream and downstream from Alternative C that would support the visitor use goals of the sanctuary. No additional known historic shipwrecks will be captured in this alternative. However, there may be additional unknown maritime heritage resources and the water escape route to Virginia by John Wilkes Booth will be included in this alternative. The increased size would also increase the representation of resources such as landings and wharves, as well as larger sections of routes of exploration, military action and commerce (steamships), and increase the overall perspective of the Union's Potomac River blockade during the Civil War.

NOAA considered, but did not carry forward, two additional alternatives. One alternative considered was a one square mile area with the highest concentration of ships that would have included Mallows Bay, Liverpool Cove, and the Mallows Bay "Burning Basin" as far east as the egress for Marlow Creek into the basin itself. The second alternative considered would have included the area described in the

community-based nomination submitted to NOAA that has a slightly smaller boundary than the National Register Mallows Bay - Widewater Historic District. In both cases, the alternatives were not carry forward for further analysis because the areas did not meet the purpose of this action since they would not include the complete inventory of nationally significant maritime cultural heritage resources that the proposed action seeks to protect.

Based on consultation with the State of Maryland and Charles County, NOAA's preferred alternative is Alternative C. This alternative is also supported by public comments received during the initial scoping period.

Chapter 1 describes the context for the proposed designation within the National Marine Sanctuary System and the Sanctuary Nomination Process. Chapter 2 describes the purpose of and need for the proposed action and the existing authorities for this area. Chapter 3 describes the range of alternatives being considered to address the purpose and need. Chapter 4 describes the affected environment, including the maritime cultural heritage resources and socio-economic considerations. Chapter 5 describes environmental consequences associated with this proposed action, including direct, indirect and cumulative impacts for all the alternatives. Chapter 6 provides additional information pertaining to this action on required consultations and compliance approaches.

Chapter 1

INTRODUCTION AND BACKGROUND

1.1 Introduction

This section places the proposed designation of the Mallows Bay-Potomac River National Marine Sanctuary into the context of the mission of Office of National Marine Sanctuaries (ONMS) through the provisions of the National Marine Sanctuaries Act (NMSA).

The National Marine Sanctuaries Act

The NMSA (16 U.S.C. 1431 et. seq.) is the organic legislation governing ONMS (http://sanctuaries.noaa.gov/library/national/nmsa.pdf). The NMSA authorizes the Secretary of Commerce to designate as a national marine sanctuary any discrete area of the marine and Great Lakes environment with special national significance due to its conservation, recreational, ecological, historical, scientific, cultural, archeological, educational or esthetic qualities. In addition to designating and managing these special places, the NMSA provides additional purposes and policies that guide how NOAA manages these areas, including guidance to:

- Provide authority for comprehensive and coordinated conservation and management of these marine areas, and activities affecting them, in a manner which complements existing regulatory authorities (16 U.S.C. 1431 (b)(2));
- Enhance public awareness, understanding, appreciation and wise and sustainable use of the marine environment, and the natural, historical, cultural, and archeological resources of the National Marine Sanctuary System (16 U.S.C. 1431 (b)(4));
- Support, promote, and coordinate scientific research on, and long-term monitoring of, the resources of these marine areas (16 U.S.C. 1431 (b)(5));
- Facilitate, to the extent compatible with the primary objective of resource protection, all public and private uses of the resources of these marine areas not prohibited pursuant to other authorities (16 U.S.C. 1431 (b)(6));
- Develop and implement coordinated plans for the protection and management of these areas with appropriate Federal agencies, State and local governments, Native American tribes and organizations, international organizations, and other public and private interests concerned with the continuing health and resilience of these marine areas (16 U.S.C. 1431 (b)(7)).

This document describes how the proposed designation of the Mallows Bay-Potomac River National Marine Sanctuary would meet the purposes of the NMSA.

Office of National Marine Sanctuaries

The ONMS is within NOAA's National Ocean Service (NOS) and serves as the trustee for a system of marine protected areas encompassing more than 600,000 square miles of ocean and Great Lakes waters from State of Washington to the Florida Keys, and from New England to American Samoa (Figure 1). Within their protected waters, giant whales feed, breed and nurse their young, coral colonies flourish, and shipwrecks tell stories of our maritime history.

Sanctuary habitats include beautiful rocky reefs, lush kelp forests, whale migration corridors and destinations, spectacular deep-sea canyons, and underwater archaeological sites. The marine protected areas range in size from one mile in diameter Monitor National Marine Sanctuary to almost 582,578 square miles in Papahanāumokuākea Marine National Monument in the Northwestern Hawaiian Islands. Each area is a unique place deserving of special protection. They serve as natural classrooms, cherished recreational spots and places for valuable commercial activities. They represent many things to many people and are part of our nation's legacy to future generations.

ONMS raises public awareness of sanctuary resources and conservation issues through programs of scientific research, monitoring, exploration, education and outreach. ONMS provides oversight and coordination of the sanctuary system by setting priorities for addressing resource management issues and directing program and policy development. To protect the living marine and non-living resources of sanctuaries, ONMS works cooperatively with the public in developing sanctuary management plans and regulations consistent with the NMSA.

NATIONAL MARINE SANCTUARY SYSTEM



Figure 1: Map of the National Marine Sanctuary System

Sanctuaries as Marine Protected Areas

National marine sanctuaries are one type of marine protected area (MPA). NOAA defines a marine protected area as "...any area of the marine environment that has been reserved by Federal, state, territorial, tribal, or local laws or regulations to provide lasting protection for part or all of the natural and

cultural resources therein" (E.O. 13158, 65 FR 34909). MPAs are geographical areas "where natural and/or cultural resources are given greater protection than the surrounding waters" (E.O. 13158, 65 FR 34909). MPAs can be located in the open ocean, coastal areas, inter-tidal zones, estuaries, or the Great Lakes. Each MPA is designated based on a specific purpose and managed based on the laws or regulations under which is it designated. Examples of MPAs along Maryland's Atlantic coast include Assateague Island National Seashore and Chincoteague National Wildlife Refuge. Within the Chesapeake Bay, MPAs include Blackwater National Wildlife Refuge, Martin National Wildlife Refuge, Eastern Neck National Wildlife Refuge, and the *U-1105* Black Panther Historic Shipwreck Preserve located in the Potomac River off Piney Point, Maryland. For more information on MPAs please see http://marineprotectedareas.noaa.gov/. The proposed Mallows Bay - Potomac River National Marine Sanctuary would be the first of this type of MPA in Maryland.

Comprehensive Management of the NMSS

The NMSA includes a finding by Congress that ONMS will "improve the conservation, understanding, management and wise and sustainable use of marine resources" (16 U.S.C. 1431(a)(4)(A)). The NMSA further recognizes that "while the need to control the effects of particular activities has led to enactment of resource-specific legislation, these laws cannot in all cases provide a coordinated and comprehensive approach to the conservation and management of the marine environment" (16 U.S.C. 1431(a)(3)). Accordingly, ONMS subscribes to a broad and comprehensive management approach to meet the primary objective of resource protection in the NMSA. Each national marine sanctuary is designated to protect specific, nationally significant resources found in that area. Strong partnerships among resource management agencies, the scientific community, stakeholders and the public at-large are needed to realize the coordination and program integration that the NMSA calls for in order to comprehensively manage national marine sanctuaries.

Sanctuary Nomination Processes

On June 13, 2014, NOAA published a rule (79 FR 33851) that re-established a process by which communities may submit applications to have NOAA consider nominations of areas of the marine and Great Lakes environments as national marine sanctuaries. This rule contained the criteria and considerations NOAA will use to evaluate national marine sanctuary nominations, described the process for submitting national marine sanctuary nominations, and promulgated the regulations necessary to implement this action. NOAA reviews nominations against the established criteria and either accepts the nomination or returns it to the community for further development. Nominations describe the area that the community is interested in seeing designated as a national marine sanctuary including the resources that make the area special and how the community of successful nominations that NOAA may consider for designation as a national marine sanctuary. Addition to the inventory does not guarantee that a nominated area will become a national marine sanctuary. National marine sanctuary designation is a separate public process that by law, is highly public and participatory, and often takes several years to complete. Nominations on inventory expire after five years if NOAA does not decide to begin a designation process for that area. All nominations are available at NOAA's website: www.nominate.noaa.gov/nominations/.

Sanctuary Designation Processes

The National Marine Sanctuaries Act authorizes NOAA to identify, designate and protect areas of the marine and Great Lakes environment with special national significance due to their conservation, recreational, ecological, historical, scientific, cultural, archaeological, educational, or aesthetic qualities as national marine sanctuaries. NOAA identifies areas to consider for national marine sanctuary designation through the community-based Sanctuary Nomination Process described above. The process for designating a new national marine sanctuary is described in the NMSA and has four steps:

- 1) Scoping: NOAA announces its intent to designate a new national marine sanctuary and asks the public for input on potential boundaries, resources that could be protected, issues NOAA should consider and any information that should be included in the detailed resource analysis in a draft environmental impact statement.
- 2) Sanctuary Proposal: NOAA prepares draft designation documents including a draft management plan, draft environmental impact statement that analyzes a range of alternatives, proposed regulations and proposed boundaries.
- Public Review: The public, agency partners, tribes and other stakeholders provide input on the draft documents. This step also includes the formal consultations required under NEPA, and the NMSA. NOAA considers all input and determines appropriate changes.
- Sanctuary Designation: NOAA makes a final decision and prepares final documents. Before the designation becomes effective, the Governor reviews the documents. Congress also has the opportunity to review the documents.

1.2 BACKGROUND

Community Nomination For Mallows Bay - Potomac River

On September 16, 2014, pursuant to the Sanctuary Nomination Process (79 FR 33851), the State of Maryland coalition of community groups and a steering committee, composed of representatives of county government, tourism agencies, non-profit organizations, and private citizens among other groups, submitted a nomination asking NOAA to designate Mallows Bay-Potomac River as a National Marine Sanctuary. The Mallows Bay area of the tidal Potomac River is an area 40 miles south of Washington, D.C. off the Nanjemoy Peninsula of Charles County, MD. The nominated area of approximately 17-square-mile included submerged lands along the Potomac River that begin at the mean high tide water mark off Sandy Point and extend westward to the low water line just east of the Maryland-Virginia border near Clifton Point, VA. From there, the area extends southward following the Maryland-Virginia border to Brent's Point, VA. It then extends northeast to Smith Point, MD and follows the low water mark north along the Maryland shoreline back to Sandy Point. This area includes the waters of Wades Bay, Blue Banks, Mallows Bay, Liverpool Cove and the Mallows Bay "Burning Basin" as far east as the egress for Marlow Creek into the basin itself. The nomination package intended to propose a boundary for the sanctuary to closely match the boundaries of the Mallows Bay-Widewater Historic and Archeological District and was comprised of only property (land, bottomlands,

and/or waters) that is owned by the State of Maryland, which has jurisdiction over the Potomac River to the mean low tide on the Virginia shore.¹

The community nominated this area of national significance because it features unique historical, archaeological, cultural, ecological, and esthetic resources and qualities, which offer opportunities for conservation, education, recreation, and research. Its maritime landscape is home to a diverse collection of historic shipwrecks potentially dating back to the Revolutionary War through the present, totaling nearly 200 known vessels including the remains of the largest "Ghost Fleet" of World War I, wooden steamships built for the U.S. Emergency Fleet Corporation. The area's archaeological and cultural resources cover centuries of history from the earliest American Indian presence in the region circa 12,000 years ago to the roles that this area played in the Revolutionary, Civil and two World Wars, as well as in successive regimes of Potomac fishing industries. Its largely undeveloped landscape and waterscape have been identified as one of the most ecologically valuable areas in Maryland, providing important habitat for fish and wildlife, including rare, threatened and endangered species.

The nomination included goals to protect and conserve the fragile remains of the Nation's maritime cultural heritage as well as expanding opportunities for public access, recreation, tourism, research and education in the Mallows Bay area of the tidal Potomac River. The nomination described the national significance of the area and addressed management considerations such as opportunities to expand education and research in the area as part of the nomination. The full nomination is available at: www.nominate.noaa.gov/nominations/nomination_maryland_mallows_bay_potomac_river.pdf.

Additionally, the nomination described the community's major goals for a proposed Mallows Bay -Potomac River National Marine Sanctuary:

(1) Protect, systematically study, interpret and manage the extensive maritime, archaeological and historical resource base therein through cooperative partnerships with extant educational, county, state and national agencies as well as community-based interest groups and professional organizations.

(2) Study, assess, interpret and preserve the unique and evolving ecosystem as a living laboratory, as well as its integral relationship to the archaeological resource base.

(3) Manage and enhance public access, recreation, heritage tourism and ecotourism.

(4) Develop interpretive programs, exhibits, water trails, and public outreach to schools, community forums, and other interested institutions by relating the prehistory, history and unique ecological evolution of the sanctuary area and its natural and historical resources, and its relationship to the larger landscape of the American environment and its maritime heritage.

(5) Provide educational opportunities and field study programs with the Charles County School System, the College of Southern Maryland, St. Mary's College, and other regional educational institutions, as well as general public education and outreach, especially via Science, Technology, Engineering and Mathematics (STEM) programs through the site's importance as a living laboratory.

¹ When finalized, the Mallows Bay–Widewater Historic and Archeological District was one square mile larger than the community nominated area submitted to NOAA for consideration.

(6) Enhance federal, state, local and private partnerships working to conserve and promote the historic, cultural, natural, archaeological, recreational, educational, scientific and aesthetic resources of the area.

(7) Facilitate and advance the ongoing restoration of the Chesapeake Bay watershed and in particular, that of "The Nation's River"--as President Lyndon Johnson once called the Potomac River--by serving as a hub area for research and documentation of environmental change.

(8) Utilize the designation to responsibly market a high quality visitor experience to domestic and international visitors.

On January 12, 2015, after completing the detailed review process, NOAA added the Mallows Bay -Potomac River nomination to the inventory of areas that could be considered for sanctuary designation under the NMSA.

Sanctuary Designation Public Scoping Input

NOAA began the sanctuary designation process for Mallows Bay - Potomac River on October 7, 2015 with the publication of a notice of intent (NOI; 80 FR 60634) to prepare a DEIS evaluating alternatives related to the proposed designation of Mallows Bay-Potomac River under the National Marine Sanctuaries Act and concurrent with the public process required under the National Environmental Policy Act (NEPA). The NOI also announced NOAA's intent to fulfill the Agency's responsibilities under the requirements of the National Historic Preservation Act (NHPA).

The NOI initiated the public scoping phase of the designation process with a 90-day public comment period during which time NOAA solicited input on the range of issues to be considered in an environmental impact statement to designate this area as a national marine sanctuary. NOAA specifically asked for information that would assist in the development of alternatives including proposed regulations and boundaries. NOAA accepted public comments through a web-based portal and by mail from October 7, 2015, through January 15, 2016, and hosted two public scoping meetings. The first scoping meeting was conducted on November 4, 2015 in La Plata, MD, where approximately 125 people attended and 51 oral and written comments were received. The second meeting occurred on November 10, 2015 in Annapolis, MD. Approximately 100 people attended that meeting, and 23 oral and written comments were received.

During the scoping comment period, NOAA received 264 comments from individuals, businesses, organizations, and local, State, and federal agencies. The written comments received included 141 from individuals, nine from businesses, 46 from organizations, two from local agencies, two from State agencies, and four from federal agencies. Comments were also submitted by two members of the Maryland Congressional Delegation; one from U.S. Representative Steny Hoyer, and one from U.S. Senator Ben Cardin. All the written comments submitted and summaries of the public meeting verbal comments are available at https://www.regulations.gov/#!docketDetail;D=NOAA-NOS-2015-0111.

The majority of comments received during the scoping period strongly supported the proposed sanctuary designation based on the considerable value and significance of the natural, maritime, archaeological, and cultural resources within the area including those related to Native American history and activities, the

immense potential for ecological and archaeological research of the area's resources, and the economic and educational benefits of increased tourism and public access and awareness. Several of the comments note that a sanctuary designation would help restore the Chesapeake watershed, economically revitalize the local area, and help promote heritage and ecotourism, which, as a few comments indicate, supports Presidential Obama's Executive Order 13508 that instructs federal agencies to support the restoration of the Chesapeake Bay. Several comments, 12 in total, opposed the nomination predominantly citing opposition to the possibility of increased government intervention, specifically regarding fossil collection and fishing activities that could be impacted by a sanctuary designation.

The comments also identified boundary alternatives for consideration in the development of this DEIS. Several comments support the boundary proposed in the sanctuary nomination package that was intended to align with the boundary of the Mallows Bay-Widewater Archaeological and Historic District submitted by the State of Maryland (National Register Listing Number 15000173, April 24, 2015). NOAA also received considerable support for an expanded boundary. Fifteen comments support a northward expansion to Mattawoman Creek but most of the comments support a larger boundary extending from Chapman Park in the North to Chapel Point in the South. One comment suggests an even larger northern boundary extending to Piscataway Creek.

Most of the support for the expanded boundaries was based on the benefits and protection that the commenters felt a larger boundary would provide to the significant natural and maritime heritage resources in the area. Forty-five comments support incorporating and protecting additional nationally significant maritime heritage cultural resources beyond the resources in Mallows Bay, specifically those related to the American Revolution and the Civil War, some of which are located beyond the nomination boundary; a few comments stated that the historically significant cultural heritage resources associated with the fisheries industry should be considered in the development of boundary alternatives. Forty-three comments base support on the protection and conservation of valuable species and habitats in the expanded boundaries. Twenty-nine comments also condition support based on conserving and protecting the local fisheries. Thirty-two comments support the boundary expansions based on the benefits that the expanded boundaries could provide to the local area and specific resource use. These include recreation, tourism, public access and awareness, research, and education.

Twenty-four comments did not support a boundary expansion citing issues related to management, local impact, and government overreach. Some comments express concerns regarding how the boundaries would affect Virginia and one comment notes that Virginia should be excluded from the sanctuary boundary. One business submitted a comment of support conditioned on a limited boundary and the inclusion of language prohibiting future expansion.

Twenty-three comments supported the application of a more restrictive regulatory framework in the area, specifically regarding fishing and public access. Many comments argue for limited boating and fishing access citing the need to protect the archaeological and ecological integrity of the area and to prevent overuse and overdevelopment. Conversely, 34 comments, which support the sanctuary designation, argue that no regulations should be implemented that restrict fossil collection and local fishing.

Additional comments included suggestions to add a migratory bird refuge to the area, to add "Potomac" to the sanctuary name, and to designate the sanctuary by April 2017; commenters noted that this date coincides with the centennial of the U.S. entry into World War I and is also an important milestone in the

timeline for reaching a Chesapeake Bay restoration target for Total Maximum Daily Load (TMDL). Several comments were submitted that support increased collaboration between local, State and federal authorities in both Virginia and Maryland; two comments also supported a partnership with the College of Southern Maryland.

Finally, 28 comments argue for the addition of infrastructure and a visitor center. Comments specifically support adding more public launches and access points, more land and water trails, land and water signage that includes navigation and obstruction markers, camping areas, and observation points. These additions will enhance formal and non-formal educational outreach opportunities, support science and education programs, help users interpret the historical, cultural, and ecological resources in the area, and provide information necessary to mitigate threats to the maritime and natural resources.

NOAA used the public comments submitted during the scoping process to inform the preparation of the DEIS and in the development of the boundary alternatives, the proposed sanctuary regulations, and draft management plan. The DEIS reflects the strong public support for the protection of all nationally significant maritime heritage resources in the area. It also incorporates the need for enhanced recreation and access to the proposed sanctuary to support tourism and the local economy.

NOAA has worked closely with and sought input from resource agencies on the development of the DEIS. In August 2016, the Department of the Navy (DON) requested to become a cooperating agency in a letter to NOAA. The DON has several facilities along the area of the Potomac River considered in this DEIS and therefore offered their expertise in evaluating the impacts and effects of this proposal. NOAA accepted DON's offer in September 2016.

Public Review of the DEIS

The next step of public involvement is to ensure wide circulation of the DEIS and to solicit public comments on this document. A public review period of at least 60 days follows publication of the DEIS. Availability of the DEIS is announced in the Federal Register, on various email lists, on the Mallows Bay website concerning the proposed designation, and in local newspapers. Public hearings will be held no sooner than 30 days after the notice is published in the Federal Register. During the public comment period, oral and written comments are anticipated from federal, state, and local agencies and officials, from organizations, and from interested individuals. After the public comment period is over, the comments will be reviewed. A summary of these comments and the corresponding responses from NOAA will be included in the Final EIS. If necessary, changes will be made to the EIS as well as the proposed rule and draft management plans as a result of the public comments. If NOAA moves forward with a final action, it will issue a Final EIS, after which a 30-day mandatory waiting period will occur, and then NOAA may issue its record of decision (ROD). In addition, a final rule that promulgates the regulations and terms of designation of the sanctuary would be published in the Federal Register.

Scope of DEIS

This DEIS, along with the draft management plan and notice of proposed rulemaking, comprise the draft designation documents for the proposed national marine sanctuary designation. The DEIS analyzes the environmental impacts of alternatives for the proposed designation.

This document also serves as a resource assessment for the study area that describes both the maritime cultural heritage resources that the sanctuary proposes to manage as well as the ecological setting that is not proposed to be included in the sanctuary resources and therefore not managed by the sanctuary. The draft management plan (see Appendix A) describes the proposed non-regulatory management action plans for the area and the proposed rulemaking describes draft regulations for the DEIS preferred alternative.

Chapter 2

PURPOSE OF AND NEED FOR ACTION

2.1 PROPOSED ACTION

The proposed action is to designate the Mallows Bay-Potomac River National Marine Sanctuary (MPNMS). The designation would help conserve at-risk, nationally-significant maritime heritage resources through the promulgation of regulations and development of a management plan that includes both regulatory and non-regulatory actions.

NOAA is proposing to manage the MPNMS collaboratively with the State of Maryland and Charles County. The Maryland Historical Trust, within the Department of Planning, and the Department of Natural Resources, will represent the State of Maryland. NOAA proposes to establish the framework for this co-management in the sanctuary regulations. The operational details of the collaboration will be established in a Memorandum of Understanding (MOU). Details on the execution of sanctuary management such as activities, programs, and permitting programs would be included in the MOU. In addition, NOAA will form an advisory council with representatives from a broad range of user groups and interested organizations to provide advice to the NOAA sanctuary superintendent regarding the evolving priorities for site management and community requirements.

2.2 PURPOSE OF AND NEED FOR ACTION

Purpose of Action

The purpose of the proposed action is to fulfill the purposes and policies of the National Marine Sanctuary Act, which are to identify and consider areas of the marine environment for proposed designation as a national marine sanctuary, to conserve and manage the nationally significant maritime cultural heritage resources while enhancing public awareness and appreciation, and to facilitate to the extent compatible with the primary objective of resource protection, all public and private uses including recreation and tourism as directed by the National Marine Sanctuaries Act (NMSA). The NMSA authorizes the Secretary of Commerce to designate and manage discrete areas of the marine environment as national marine sanctuaries (16 U.S.C. 1433). Such designation is based on attributes of special national significance, including conservation, recreational, ecological, historical, scientific, cultural, archaeological, education or aesthetic qualities. The NMSA provides NOAA with the authority for comprehensive and coordinated management that complements existing regulatory authorities and directs NOAA to manage these areas in a way that enhances "public awareness, understanding, appreciation, and wise and sustainable use" (16 U.S.C. 1431(b)(4)). The purpose of the proposed action is also to further NOAA's mission, to conserve and manage coastal and marine ecosystems and resources.

The proposed action alternatives (Alternatives B through D) described in this DEIS would protect the maritime cultural heritage resources in Mallows Bay and adjacent areas of the Potomac River by establishing a national marine sanctuary. Those alternatives would provide for coordinated and comprehensive management and conservation of maritime resources through the joint management of the

area by NOAA, the State of Maryland, and Charles County. Those alternatives would also provide opportunities to promote recreation and tourism in the area along with research and education efforts.

Need for Action

The need for the proposed action is based on ongoing threats to the maritime cultural heritage resources in this area of the Potomac River. This proposed action responds to a nomination submitted to NOAA by the Governor of Maryland on behalf of a broad coalition of community groups, including state and local partners. The community nomination requested that the area be designated as a national marine sanctuary to preserve the maritime cultural heritage resources and to provide increased opportunities for research, education, recreation, and tourism. Although the Maryland Submerged Archaeological Historic Property Act (Md. Code Ann., State Fin. & Proc. §§ 5A-333 *et seq.*) provides a basic level of protection for maritime cultural heritage resources in Mallows Bay and adjacent areas of the Potomac River, the proposed action would allow NOAA's management under the NMSA to supplement and complement the existing authority and the current management work in the area.

The need for designating the area as a national marine sanctuary was strongly supported during the public scoping process. Public comments supported the goals of preservation and increased opportunities as described above.

2.3 TARGET RESOURCES

This proposed action targets maritime heritage cultural resources primarily composed of shipwrecks from the remains of the U.S. Shipping Board's Emergency Fleet Corporation World War I (USEFC) fleet and the associated wet infrastructure (i.e., historic piers, wharves, landings) that were defined as significant through the designation of the Mallows Bay Historic District on the National Historic Register of Places in 2015. The action extends to other known and suspected shipwrecks that are part of the same World War I era fleet, but are located in areas outside of the boundary defined by the National Register of Historic Places under the National Historic Preservation Act. Additionally, the action includes other known and suspected shipwrecks that are not part of the World War I-era fleet, but have similar qualities pertaining to national significance for Revolutionary, Civil War and other periods. More information on the specific maritime heritage cultural resources included in each of the action alternatives (Alternatives B, C, and D) is included in Chapter 3.

Threats to Target Resources

The threats to the target resources are related to actions or conditions that result in the damage or loss of the historic resources. Over time direct damage has been observed from human and environmental sources that cause breaking, redistribution of shipwrecks and/or artifacts, defacing and physical alteration, and burning. Additionally, resources have been lost due to legal and illegal removal from the area.

A range of activities in the area both intentionally and unintentionally threaten the resources with direct damage. Anchoring, particularly large or heavy anchors, and vessel collisions in the area of the historic resources can result in unintentional damage since the resources may not be easily identified due to high water levels and/or low water visibility. Lack of public understanding of the significance of the shipwreck resources may also result in intentional anchoring that damages resources. Walking or climbing on the portions of shipwrecks above water is a safety hazard and can result in unintentional damage from the stress of people on the fragile parts of the shipwrecks, and intentional damage from people tying off one the resources, moving or removing sections of the resources, setting the resources on fire as seen in 2016 (Dr. Susan Langley, Maryland State Underwater Archaeologist, Maryland Historical Trust, personal communication), and leaving behind trash that damages the resources. Damage is also possible from collisions with unmanned aircraft, also called 'drones,' and objects towed behind boats based on recent events in national parks and in or adjacent to other national marine sanctuaries. People can also cause intentional damage by removing or moving portions of the shipwrecks that are under water. Damage can occur from oil or hazardous material spills elsewhere on land or in the Potomac River that reach the area and impact the shipwreck resources. While it does not currently occur in the area, oil drilling adjacent to the area or under the Potomac River through directional drilling has the potential to damage the resources from the drilling infrastructure and hazardous material spills.

Indirectly, the accumulation and entanglement of trash and marine debris dumped elsewhere in the Potomac River around the resources have resulted in damage to the resources. Debris has been known to accumulate and entangle on shipwrecks and associated biota. Marine debris is defined by NOAA as any persistent solid material that is manufactured or processed and directly or indirectly, intentionally or unintentionally, disposed of or abandoned into the marine environment. Since the Marine Plastic Pollution Research and Control Act of 1987 (Title II of Public Law 100-220) restricts the overboard discharge of garbage into any waterway of the United States the direct discharge of any garbage into the Potomac River is illegal. However, there is no State of Maryland law that regulates marine debris or garbage that indirectly makes its way into Maryland state waters. Maryland manages abandoned vessels, large floating debris, and other hazards to navigation through the Maryland Abandoned Boat and Debris Program administered through Department of Natural Resources Boating Services.

Weather and climate change-related processes such as hurricane, wind, flood, and ice events in the Mallows Bay area are also a known source of indirect damage to the resources. Maryland is especially vulnerable to the impacts of climate change, and its coastal waters are expected to rise 2.1 feet by the year 2050 and 3.7 feet or more by the century's end. A rise in sea level is also likely to cause higher tides in Chesapeake Bay, where an increase of about 3 feet in sea level could lead to an increase of 4-6 inches in the section of the Potomac River bordering Charles County (Boesch et al. 2013). While the frequency of tropical storms is not projected to increase as a result of global warming during the 21st century, highly intense storms are projected to become more common. Modern record storm surges of more than 7 feet were experienced in portions of the Chesapeake Bay during Hurricane Isabel in 2003; storm surge levels were highest in the uppermost Bay and tidal Potomac River near Washington, DC. Warming of sea surface temperatures also means tropical storms should maintain more of their intensity as they progress to the higher latitudes along the Mid-Atlantic coast. Several of the ships within Mallows Bay have been lifted and shifted during storm events, and this potential for change and damage is anticipated to increase.

Additional Activities

There are additional activities not considered a likely threat to the target resources but are activities that could cause damage depending on the location of the activity relative to sensitive resources. Education and outreach programs that raise public awareness of the historic resources have a high likelihood to mitigate potential damage.

While large and heavy anchors raise concerns about damage as described above, small anchors such as "mushroom anchors" are an alternative for users engaging in boating activities near the historic shipwreck resources. Educating boaters about the location of the historic resources and encouraging the use of these smaller anchors will help boaters avoid damage to the resources.

Use of net and lines and pound net anchoring could have the potential to cause damage. However, user education about the location of the historic resources can greatly mitigate the chances for damage since most users will voluntarily avoid shipwreck resources to avoid damaging their equipment. Pound nets are defined in Maryland regulation (COMAR 08.02.05.01) as a fixed entrapment gear consisting of: (a) A net body or crib measuring at least 16 feet long by 16 feet wide at the surface of the water with a netting floor and open top; (b) Mesh webbing with a twine size of #12 or larger; (c) At least one heart leading into the crib; and (d) A leader or hedging. Pound net sites in the Maryland portion of the Chesapeake Bay and its tributaries must be registered with the Department of Natural Resources. Sites in the Potomac River are registered with the Potomac River Fisheries Commission.

Dredging in the navigable channels of the Potomac River could potentially be conducted by both the State of Maryland and the U.S. Army Corps of Engineers. However, reviews of dredging records dating back to the 1970s show that Maryland has not assisted with any dredging projects along the Potomac River area considered in this action. The closest dredging project to the boundary alternatives is at Friendship Landing in Nanjemoy Creek. Maryland records also do not show any U.S. Army Corps of Engineers dredge projects in this area. Any future dredging projects in the Potomac River, by public or private groups, would come through Maryland review and concerns about the impacts on historic resources can be addressed at that time.

The collection of fossils through digging in the area also has the potential to unintentionally damage the historic resources proposed for protection by the sanctuary. Additional education efforts to help visitors understand where the historic shipwrecks are located and how to differentiate objects that are protected sanctuary resources from fossils will enable fossil collectors to avoid damage to the historic shipwreck resources.

2.4 EXISTING LEGAL AUTHORITIES

The focus of this proposed action is on the protection of shipwrecks and associated maritime heritage resources. The State of Maryland currently has a comprehensive set of laws, regulations, and management measures for the protection of the natural environment, including wildlife, fish, birds, water quality, and habitat (Appendix B). State and Federal laws also protect maritime heritage assets from looting, unwanted salvage, and other activities that threaten, damage or cause loss. However, each of these laws has

important gaps for which the National Marine Sanctuaries Act would complement and/or supplement existing statutes. Each State and Federal statute is addressed in the following paragraphs and the capability of each statute to control impacts to the target resources is identified.

State of Maryland Laws Directed to Protect Maritime Heritage Assets

Maryland Submerged Archaeological Historic Property Act, Md. Code Ann., State Fin. & Proc. §§ 5A-333 et seq.

The Maryland Submerged Archaeological Historic Property Act establishes a framework for the preservation and management of the State's heritage and enriches present and future generations with the cultural, educational, inspirational, social, and economic benefits of the past. In particular, the Act encourages a person who knows of the location of an archeological site to give the information and deposit for permanent preservation any object of value and interest to a reputable museum, an institution of higher education, another recognized scientific or historical institution, or the Maryland Historical Trust. The Act further establishes that the State of Maryland retains a property interest in historical or archaeological objects of value and interest, and the object should be deposited for permanent preservation with a reputable museum, an institution of higher education, or another recognized scientific or historical institution, or another recognized scientific or historical institution. The Act also makes it unlawful for any person to excavate, remove, destroy, injure, deface, or disturb submerged archaeological historic property on land over which the State of Maryland has sovereign control without a permit issued by the Maryland Historical Trust.

There are also two exceptions to the permit requirement established under the Act. A person does not need a permit to:

- Inspect, study, explore, photograph, measure, record or otherwise use and enjoy submerged archaeological historic property if the use does not involve excavation, removal destruction, injury, or disturbance of the submerged archaeological historic property or its immediate environment, endanger other person or property, or violate any law; or
- Collect and remove a limited number (no more than 5 items that collectively weigh no more than 25 pounds) of objects recoverable by hand or with a screwdriver, wrench, or pliers.

The term "submerged archaeological historic property" is broadly defined as any underwater structure, remains, or object that yields or is likely to yield information significant to the study of human prehistory, history, or culture, and that is so embedded in underwater land that excavation tools are needed to move the bottom sediments and has remained unclaimed for at least 100 years, or is included or eligible for inclusion into the National Register of Historic Places. The shipwrecks in the Mallows Bay study area are included in the National Register of Historic Places, and thus fall within the ambit of the Maryland Submerged Archaeological Historic Property Act.

The Act authorizes the Maryland Historical Trust to establish a program for the issuance and administration of permits for certain activities relating to submerged archaeological historic property. Regulations for the Protection of Submerged Archaeological Historic Property in Maryland can be found in Title 05, Subtitle 08, Chapter 03 of the Code of Maryland Regulations.

Violations of the Maryland Submerged Archaeological Historic Property Act is a misdemeanor. On conviction, a person may be subject to a maximum of 30-days imprisonment and/or a maximum criminal fine of \$1,000 for day on which the violation occurs. The loss of a permit is also considered a misdemeanor under the Act, which may give rise to slightly higher fines of up to \$10,000 and a maximum of one year imprisonment.

State of Maryland Laws Controlling Activities That May Indirectly Affect Maritime Heritage Resources

Chesapeake Bay Critical Area Protection Act, Md. Code Ann., Natural Resources § 8-1801 et seq.

The Chesapeake Bay Critical Area Protection Act was enacted by the Maryland State legislature to foster sensitive development along the shoreline of the Chesapeake Bay so as to minimize damage to water quality and wildlife habitats. The Act establishes and implements the Chesapeake and Atlantic Coastal Bays Critical Area Protection Program under which State and local jurisdictions address the impacts of land development within the Critical Area; minimize adverse impacts on water quality that result from pollutants that are discharged from structures or conveyances or that have run off from surrounding lands; conserve fish, wildlife, and plant habitat in the Critical Area, and establish land use policies for responsible development in the Critical Area. The term Critical Area is defined by the Act "as a strip of land along the tidal shoreline extending 1,000 feet landward from the water's edge, or from the landward boundary of any adjacent tidal wetland." Minimum standards for local Critical Area programs, entitled "Criteria for Local Critical Area Program Development" are found in Title 27, Subtitle .01 of the Code of Maryland Regulations (COMAR).

The Charles County Critical Area Zone Regulations implementing the Chesapeake Bay Critical Area Protection Act protect the shorelines of Mallows Bay from the adverse impacts of physical alteration and modification arising from agricultural, fishery, forestry and development activities, including the alteration, or use of any land for residential, commercial, industrial, or institutional purposes. In addition to the local county regulations, State regulations also afford additional protection to area wildlife and the habitat upon which they depend. Mallows Bay and the surrounding shoreline upstream and downstream of the Bay is located in a Critical Area. For more information on Charles County Critical areas see: https://www.charlescountymd.gov/pgm/planning/chesapeake-bay-critical-area-program

In addition to the local regulations, State regulations establish that: 1) colonial waterbird nesting sites in the Critical Area may not be disturbed during breeding season; 2) new facilities in the Critical Area shall not interfere with historic waterfowl concentration and staging areas; 3) physical alterations to streams in the Critical Area shall not affect the movement of fish; 4) the installation or introduction of concrete riprap or other artificial surfaces onto the bottom of natural streams in the Critical Area is prohibited unless water quality and fisheries habitat will be improved; and 5) The construction or placement of dams or other structures in the Critical Area that would interfere with or prevent the movement of spawning fish or larval forms in streams is prohibited.

The Maryland General Assembly enacted the Chesapeake Bay Critical Area Protection Act to foster more sensitive development activity along the shoreline of the Chesapeake Bay so as to minimize damage to water quality and wildlife habitats.

Federal Laws Directed to Protect Maritime Heritage Assets

In addition to the National Marine Sanctuaries Act, described briefly in Chapter 1 with additional information provided below, there are several additional laws that address the protection of maritime heritage resources from looting, unwanted salvage and other activities.

Abandoned Shipwreck Act (ASA) of 1987, 43 U.S.C. §§ 2101 et seq.

Under the Abandoned Shipwreck Act (ASA), the United States Government has asserted title to three categories of abandoned shipwrecks: 1) those embedded in the submerged lands of a State; 2) those embedded in the coralline formations protected by a State; and 3) those on submerged lands of a State that are included (or eligible for inclusion) in the National Register of Historic Places (NRHP). The ASA then authorizes the Federal government to transfer title of those shipwrecks to the respective states to manage the submerged cultural resources. The public is also given notice of the location of any shipwreck when title is asserted under the ASA (43 U.S.C. § 2105).

Pursuant to the ASA, states manage a broad range of living and nonliving resources in state submerged lands and waters, including abandoned shipwrecks. The Act states that it is the declared policy of Congress that states carry out their responsibilities under this chapter to develop appropriate and consistent policies so as to protect resources and habitats, guarantee recreational exploration of sites, and allow "appropriate" public and private recovery of shipwrecks. The Act encourages states to create underwater parks and areas to protect such resources. Funds available to states from grants from the Historic Preservation Fund shall be available for study, protection, and preservation of shipwrecks (43 U.S.C. § 2103).

The ASA also directs the Secretary of Interior, acting through the National Park Service, to develop Federal guidelines to assist states and Federal agencies in managing the shipwrecks in accordance with their responsibilities under the Act. The ASA Guidelines are intended to aid states in maximizing the enhancement of cultural resources, fostering partnerships among interested stakeholders, and facilitating recreational access, in addition to recognizing the interests of wreck discoverers and salvors consistent with the protection of the site's historical values and environmental integrity. However, the ASA Guidelines are only advisory.

There are two exceptions to this transfer of title from the United States to the individual states: 1) the United States retains title to any abandoned shipwreck located in or on Federal land; and 2) the ASA recognizes that an Indian tribe (as the term is defined in the Archaeological Resource Protection Act of 1979) retains title to any abandoned shipwreck located in or on Indian lands (i.e., lands of an Indian tribe or Indian individual held in trust by the United States or subject to a restriction against alienation imposed by the United States).
The U.S. Congress passed the ASA in response to the need to protect Underwater Cultural Heritage (UCH) and address the destruction resulting from treasure hunting and the law of salvage and finds. Congressional findings support the view that the states already had the authority to manage the UCH pursuant to the Submerged Lands Act, and that the ASA merely codified this minority view of admiralty cases. The ASA's legislative history states that the laws of salvage and finds are obviously inappropriate for underwater archaeological sites as [they] would be for ancient ruins on land.

Sanctions for looting or unauthorized salvage would be promulgated and enforced by the laws of the states implementing the ASA; however, U.S. admiralty courts may also implement sanctions for any violations of their court orders.

Sunken Military Craft Act

The Sunken Military Craft Act (SMCA) (Pub. L. No. 108-375, Tit. XIV; 10 U.S.C. 113 note) codifies U.S. practice, international agreements and federal admiralty court cases. The SMCA protects sunken U.S. military ships and aircraft wherever they are located. The Act also protects foreign sunken military craft located in U.S. internal waters, territorial sea, and the contiguous zone. The SMCA clarifies that sunken military craft and the associated contents of such craft – both US and foreign – remain the property of their flag States unless expressly abandoned. The term "sunken military craft" is broadly defined as all or any portion of any sunken warship, naval auxiliary, or other vessel that was owned or operated by a government on military spacecraft that was owned or operated by a government when it sank.

Section 1402 of the SMCA establishes that no person shall engage in or attempt to engage in any activity directed at a sunken military craft that disturbs, removes, or injures any sunken military craft, except as authorized by permit issued by the Secretary of the Navy, Air Force or other appropriate military unit. The Act further establishes that no person shall possess, disturb, remove, or injure any sunken military craft. It prohibits the application of the law of finds to any such craft, and eliminates any award for the unwanted salvage of such craft without the express permission of the United States or, with respect to foreign sunken military craft, the consent of the foreign sovereign. As these wrecks often involve human casualties, the SMCA calls for respectful treatment of wreck sites that are also the remains of lost military personnel.

Violators of the SMCA are subject to a maximum civil penalty of \$100,000 for each violation, and a vessel used to commit a violation may be *liable in rem* for a penalty. Criminal sanctions for plundering of wrecks, larceny of Government property, or violation of any applicable criminal law are also available to the United States against any violator of the SMCA.

Archaeological Resources Protection Act (ARPA) of 1979, Section 6 c

The Archaeological Resources Protection Act of 1979 (ARPA) (16 U.S.C. 470aa *et seq.*) establishes a permit system designed to address anthropological threats to archaeological resources located on public lands (owned and administered by the United States) and on the lands of Federally recognized Indian tribes. The term "archaeological resource" is broadly defined as any material remains of past human life

or activities which are of archaeological interest, and are at least 100 years of age. Section 6(a) of ARPA imposes a general prohibition against damaging archaeological resources. ARPA § 6(a) provides , "no person may excavate, remove, damage, or otherwise alter or deface, or attempt to excavate, remove, damage, or otherwise alter or deface any archaeological resource located on public lands or Indian lands unless" a federal permit issued authorizing such activity (*see* 16 U.S.C. 470ee(a)).

While the ARPA permit system was primarily established to address the domestic preservation of archaeological resources in the terrestrial environment, ARPA § 6(c) serves as a catch-all to reinforce state and local laws protecting such resources regardless of where the resources are located. ARPA § 6(c) further provides that "[n]o person may sell, purchase, exchange, transport, receive, or offer to sell, purchase, or exchange, in interstate or foreign commerce, any archaeological resource excavated, removed, sold, purchased, exchanged, transported, or received in violation of any provision, rule, regulation, ordinance, or permit in effect under State or local law" (*see* 16 U.S.C. 470ee(c)). This provision has been used to prosecute the attempted sale of archaeological resources stolen from private land, to enforce the illicit sale of artifacts stolen from a foreign state, and to protect maritime heritage (particularly the *R.M.S. Titanic*). Section 6(c) is implicated when an illicit sale or attempted sale of archaeological resources is conducted in interstate or foreign commerce and the action violates State or local law.

Potential sanctions for ARPA violations include civil penalties, criminal fines, imprisonment as well as forfeiture.

Federal Laws Controlling Activities That May Indirectly Affect Maritime Heritage Resources

National Historic Preservation Act (NHPA) of 1966

The National Historic Preservation Act of 1966 (Public Law 89-665; 16 U.S.C. 470 et seq.) emerged in part as a response to the destruction of older buildings and neighborhoods due to development in the immediate post-World War II years. Two additional direct causes were construction of the interstate highway system, which resulted in the destruction of many historic properties, and the early 1960's Urban Renewal Program, which increased destruction of historic downtown areas. Passage of the NHPA signaled the U.S. Government's commitment to preserving national heritage through ensuring the consideration of the value of heritage properties or resources of Federal, state, local, and international significance.

Section 110 mandates that Federal agencies assume responsibility for the preservation of historic properties or resources owned or controlled by such agency or may be affected by activities subject to the control or jurisdiction of the agency. Additionally, Federal agencies must carry out their programs and projects in accordance with the purposes of the NHPA. Congress amended the Act to add the provision that directs Federal agencies to withhold grants, licenses, approvals, or other assistance to applicants who intentionally, significantly, and adversely affect historic properties. This provision is designed to prevent applicants from destroying historic properties prior to seeking Federal assistance in an effort to avoid the Section 106 review process.

Section 106 requires Federal agencies to consider the effects of their proposed Federal and federallyfunded undertakings under their jurisdiction on historic properties in any state, including the state's submerged lands and waters as determined by the terms of the SLA. This section also applies to Federal agencies with the statutory authority to license, approve, or permit an undertaking. The Advisory Council on Historic Preservation (ACHP) has issued regulations that set forth the Section 106 process, which explains how Federal agencies must take into account the effects of their actions on historic properties and how the ACHP will comment on those actions.

The NHPA established the ACHP, an independent Federal agency, which is directed to advise the President and Congress on historic preservation matters, review the policies and programs of Federal agencies to improve their consistency with the purposes of the NHPA, conduct training and educational programs, and encourage public interest in preservation. Most importantly, the Act places the ACHP in the central role of administering and participating in the preservation review process established by Section 106. The center of Federal agency responsibilities under the NHPA can be found in Sections 106 and 110 of the Act.

The NHPA authorizes the Secretary of the Interior (SOI) to establish and promulgate regulations for the NRHP, which is composed of districts, sites, buildings, structures, and objects significant in American history, architecture, archaeology, engineering, and culture. In addition, the SOI is also authorized to set forth National Historic Landmark designation criteria and promulgate regulations for nominating historic properties for inclusion in the World Heritage List, in accordance with the terms of the Convention concerning the Protection of the World Cultural and Natural Heritage.

Section 110 requires Federal agencies, among other things, to withhold grants, licenses, approvals, or other assistance to applicants who intentionally, significantly, and adversely affect historic properties to prevent the destruction of historic properties in order to avoid the Section 106 process. However, the NHPA is only implicated when there is a Federal undertaking; therefore, only UCH affected by a proposed Federal undertaking can be protected under the NHPA.

FAA Modernization and Reform Act for 2012 (Pub. L. 112-095)

The Federal Aviation Administration (FAA) has the authority to establish restriction on the national airspace. The airspace around Washington, DC is governed by a Special Flight Rules Area (SFRA) within a 30 mile radius of Ronald Reagan Washington National Airport that restricts all flights in the greater DC area. A northern portion of the study area falls within this 30 mile radius and therefore is subject to the SFRA restrictions. Operation of aircraft, including unmanned aircraft systems (UAS), also called "drones," within the sanctuary is subject to FAA regulations.

In June 2016, the FAA published final operation rules for routine commercial use of small UAS. The new rules (14 CFR Part 107) include safety regulations for UAS weighing less than 55 pounds that are conducting commercial operations. However, operators of UAS flown strictly for hobby or recreational use are subject separate requirements in Part 101 of the FAA regulations and community-based safety guidelines.

Gap Analysis Related to Existing Authorities for Target Resources

Despite the existing authorities described above, the nationally-significant resources in the proposed national marine sanctuary area may continue to be damaged or lost due to gaps in authorities and insufficient resources and capacity for management programs.

Under Maryland law, historic resource removal is restricted but still allowed under the Maryland Submerged Archaeological Historic Property Act. The implementing regulations allow removal up to five artifacts which collectively weigh less than 25 pounds. No time limit is specified so it is unclear if removals are authorized up to five per visit, per day, per month, or some other period of time. The regulations do not specify if the limit is per person, per group, or some other metric. At present there is no mechanism to enforce the reporting requirement established under the Maryland law. As a result many items could be removed from the Mallows Bay area without being reported. The penalties for violations of the Maryland Submerged Archaeological Historic Property Act, not to exceed \$1,000 or imprisonment not to exceed 30 days or both at the discretion of the court, are significantly lower than those established under the National Marine Sanctuaries Act. Penalties for violating a permit under the Maryland law, loss of the permit, a misdemeanor offense on the perpetrator's record, and a fine not to exceed \$10,000 or imprisonment not to exceed one year, are all significantly lower than those established under the NMSA. Additionally, the Chesapeake Bay Critical Area Protection Act, which may provide indirect protection for the Mallows Bay maritime heritage culture resources, lacks a penalty provision for violations. The NMSA would address these gaps by establishing a strong penalty and enforcement system under the proposed action.

Current federal laws that apply to Mallows Bay have additional gaps. Under the ASA protection for underwater cultural resources is impacted by the lack of a definition of "abandoned" in the Act. The term "abandoned" was not expressly defined by the ASA because Congress instead relied on related case law, including the Treasure Salvors case and its progeny, where the courts inferred abandonment of long lost shipwrecks by their owners based on the passage of time and the absence of a claim to the ship. As a result, some salvors attempt to argue that a shipwreck is not abandoned and therefore not covered by the ASA, and subsequently demand a salvage award despite the ban on the application of the law of salvage. This strategy has had mixed success, although it brings into question the scope of protection afforded by the ASA. This gap would be filled with the designation of Mallows Bay as a national marine sanctuary since protection under the NMSA protects historic sanctuary resources regardless whether they are abandoned. The NMSA protection of historic sanctuary resources has withstood challenges under the law of finds and salvage and thus affords additional protection.

Another gap is that the ASA contains no federal penalty provisions. Instead, sanctions for looting or unauthorized salvage are promulgated and enforced by the laws of the states implementing the ASA. In states like Maryland, the penalty for violations of looting or unauthorized salvage is a misdemeanor and on conviction is subject to 30-day imprisonment and/or a maximum criminal fine of \$1,000 for each day of violation. The NMSA would fill this gap if Mallows Bay is designated because the civil penalties for violations are significantly higher than those authorized under Maryland State law.

While submerged historic resources within the National Register designated Mallows Bay - Widewater Historic and Archaeological District are offered greater protection under the NHPA that law does not

apply to private activities, only Federal undertakings. Additionally, vessels lying within a boundary alternative but outside the NHPA Historic District would only be subject to protection under state law described above. Furthermore, even though the SMCA potentially provides some of the target vessels with some protection, the SMCA will not provide protection to all vessels within the area being considered for proposed designation.

Based on the legal authorities and gaps described above there is still a need for increased protection of the maritime heritage culture resources through broader regulatory protections against damage, including removal. Non-regulatory outreach, education, and coordination efforts would also increase protection for these resources by raising awareness about the location and historic value of the resources, avoiding unintentional damage to the resources, and enhancing collaboration among federal, state and local agencies on activities such as emergency response planning.

National Marine Sanctuaries Act Role to Supplement and Complement Existing Authorities for Target Resources

The National Marine Sanctuaries Act (NMSA), as described in Chapter 1, authorizes the Secretary of Commerce - acting through NOAA - to designate and protect areas of the marine environment with special national or international significance due to their conservation, recreational, ecological, historical, scientific, cultural, archaeological, educational, or aesthetic qualities as national marine sanctuaries The NMSA also specifies that it is to be applied in accordance with generally recognized principles of international law, and in accordance with treaties, conventions, and other agreements to which the U.S. is a party.

The NMSA directs NOAA to protect and conserve nationally significant resources through comprehensive and coordinated conservation and management, the enforcement of regulatory programs, and the implementation of non-regulatory programs. The NMSA recognizes that "while the need to control the effects of particular activities has led to enactment of resource-specific legislation, these laws cannot in all cases provide a coordinated and comprehensive management approach to the conservation and management of the marine environment" (16 U.S.C. § 1431(a)(3)). National marine sanctuaries are comprehensively managed for present and future generations with the policy to facilitate, to the extent compatible with resource protection, all lawful public and private use of sanctuary resources. Under the NMSA, it is unlawful for any person or entity to destroy, cause the loss of, or injure any sanctuary resource; be involved in the possession or sale of a sanctuary resource taken unlawfully; violate a sanctuary regulation or permit; and interfere with the enforcement of the NMSA.

Congress enacted the Marine Protection, Research, and Sanctuaries Act of 1972 (MPRSA) in the wake of the environmental movement of the 1960s and 1970s. As reflected in the legislative history, the MPRSA arose out of public concern for ocean dumping, exploitation of the seabed for oil, gas, and minerals, and a desire to set aside special areas for protection, research, education, recreation, fishing, and other uses determined compatible with the primary conservation objective. The MPRSA detailed a plan for use of the marine environment by regulating the dumping of only certain waste in specified areas (Title I, or the Ocean Dumping Act), scientific research of the ocean in general but of ocean dumping sites in particular (Title II), and setting aside the more special or significant areas of the marine environment for conservation as national marine sanctuaries (Title III, or the National Marine Sanctuaries Act).

Although the NMSA was primarily enacted to conserve our natural heritage, the first national marine sanctuary to be designated under the Act in 1975 sought to conserve an underwater cultural resource, the Civil War ironclad U.S.S. Monitor. At the time of the Monitor National Marine Sanctuary designation, Title III of the MPRSA did not expressly refer to historical, archaeological, or cultural resources within its stated scope. As originally enacted, Title III provided the Secretary of Commerce with the authority to designate sanctuaries as necessary for the purpose of preserving or restoring such areas for their conservation, recreational, ecological, or aesthetic values. In 1992, on the twentieth anniversary of Title III, the most substantial changes to the NMSA occurred to date, amending it to expressly include the protection and management of historic and cultural resources.

With regards to enforcement, NOAA has a duty to conduct such enforcement activities as are necessary and reasonable to carry out the NMSA. The NMSA enforcement provisions collectively provide perhaps the broadest and most comprehensive enforcement authority of any heritage resource management statute. Offenders are strictly liable for violations; accordingly, no proof of negligence is required. NOAA must only demonstrate that an offender caused the destruction of, or injury to, sanctuary resources.

While the major heritage resource statutes provide for criminal enforcement mechanisms, the NMSA uses civil remedies and authorizes civil penalties for violations in marine sanctuaries. Since Federal and state criminal laws may also apply to these activities, the civil penalty enforcement tool provides resource managers and agency counsel with supplemental enforcement authority. In one enforcement case, *Craft v. National Park Service*, criminal penalties were pursued by the State of California against the offenders at the same time that Federal authorities pursued civil penalties under the NMSA. This dual-track enforcement authority is nearly non-existent in other state and Federal resource management regimes. The criminal provisions of Section 6 c) of the Archaeological Resources Protection Act are also available for protecting archaeological resources including those taken from private land, public lands and sanctuaries.

Sanctuary designation and management, as governed by the NMSA, serves as a framework for providing long-term protection, while allowing multiple uses of the sanctuaries to the extent that they are compatible with resource protection. The NMSA will supplement and complement the pre-existing authorities in the State of Maryland and help protect the target resources by filling in the gaps in the existing Federal and State authorities. The ONMS will also assist the State and local government with the implementation and enforcement of their regulations through regulatory and non-regulatory programs that address behavioral change through public outreach and education, enforcement, and interpretive enforcement. This is described in greater detail in Chapter 3.

Chapter 3

ALTERNATIVES

3.1 DEVELOPMENT OF ALTERNATIVES

NOAA has developed a reasonable range of alternatives to meet the purpose and need for this proposed action and analyzed the impacts for the alternatives as required by NEPA. The starting point for alternative development was the community sanctuary nomination described in Chapter 1. Additional information available in the final Mallows Bay - Widewater Historic and Archaeological District listing on the National Register of Historic Places was used to refine the alternatives. Public input during the scoping period, additional research conducted related to the historical and archaeological resources of the area, and input from Maryland Department of Natural Resources, Maryland Historical Trust, Charles County, and the Department of the Navy further refined the proposed alternatives. The four alternatives are "no action" (Alternative A) or the current status, and three progressively larger geographic action alternatives (Alternatives B, C, and D). For the action alternatives the same regulations and non-regulatory management actions would be applied to the geographic areas included in the alternative boundaries. Two alternatives were considered but not carried forward, as are described below, because they were outside the scope of the purpose and need of the proposed federal action.

While the community sanctuary nomination focus is the geographic area around Mallows Bay, public comments during the scoping period recommended researching additional maritime heritage resources in the areas beyond the nomination. NOAA worked with the Maryland Historical Trust and maritime author Donald Shomette to identify other significant assets that are known or suspected, based on historical literature, to exist in the area. NOAA and our partners recognize that the Mallows Bay maritime heritage culture resources are part of larger historical narrative with national and international significance. Alternatives B, C and D reflect both the larger historical story and recognize the human use benefits that are part of the purpose of sanctuary designation for this area.

NOAA determined that all of the areas evaluated in the alternatives described below possess special historical qualities that give them special national significance. As a result, the action alternatives will focus on the protection, access and interpretation of target resources associated with the maritime cultural features of the area, including the World War I "Ghost Fleet", other vessels of historic significance, and related maritime infrastructure. These actions will be primarily non-regulatory in nature, but will include limited regulation and permitting of specific activities that supplement and complement authorities that already exist to mitigate known threats to these historic resources. NOAA will consider and execute any regulations and/or permits in cooperation with Maryland, Charles County and other Federal Authorities as appropriate. See below for proposed regulations and permit information.

As such, the action alternatives will not include any direct management, regulation or authority by NOAA of the natural environment, including fish and wildlife, water quality, or habitat. Authorities related to natural resources and their management will remain with Maryland Department of Natural Resources and other local jurisdictions. However, NOAA will execute education, science and interpretative programs that describe for visitors and user communities the relationship between the shipwreck structures and their interplay with the natural system.

3.2 DESCRIPTION OF ALTERNATIVES

Four boundary alternatives were analyzed in terms of achieving optimum conservation of the historic shipwrecks, improving scientific knowledge of the area and promoting public understanding of the value of the Mallows Bay-Potomac River area maritime heritage resources.

The four alternatives being considered are: (A) no action or continuing the status quo; (B) approximately 18 square miles as submitted in the nomination package; (C) approximately 52 square miles, which would span the Potomac River from Ben Doane Road, Maryland, to Possum Nose, Virginia and the southern boundary extends from the end of Owens Drive east of Chotank Creek, Virginia to Benny Gray Point, Maryland, incorporating all historic WWI and Civil War-era shipwrecks near Widewater and Caledon State Parks; and (D) approximately 100 square miles extending across the mouth of Pomonkey Creek from just south of Anne Mason Court in Indian Head, Maryland to Pomonkey Point, Maryland and then from Pomonkey Point, Maryland to Hallowing Point, Virginia, extending southward to Pope's Creek, Maryland to Persimmon Point, on Mathias Neck, Virginia. See Figure 2 for a map of the alternatives and Table 1 for a comparison of the maritime heritage resources by alternative. More information on the maritime heritage cultural resources is found in Chapter 4.



Figure 2: Boundaries for Alternatives B, C, and D

Alternative	WWI / USEFC Vessels	WWI / USEFC Related Vessels	Non-WWI / USEFC- Related Vessels	Partial Vessels	Vessels Potentially in Area	Non-Vessel Resources
А	0	0	0	0	0	0
В	104	14	16	8	3	Wharves, slipways, berm and concrete basin, berm and log wall, landings, fish camps
С	2	0	7	0	13	Pre-contact and historic water trails and routes of trade, exploration, commerce and military action, early balloon reconnaissance from barges, landings and crossings
D	0	0	0	0	18	Escape route used by John Wilkes Booth in 1865, and larger segments of trails, routes and military activities
TOTALS	106	14	23	8	34	

Table 1: Summary of resources in each alternative including World War I (WWI) and U.S. Emergency Fleet Corporation (USEFC) Vessels.

Alternative A. No Action or Status Quo Alternative

Maintaining the status quo and not designating a national marine sanctuary in and around Mallows Bay will continue existing activities and forego the opportunity for cooperative management, research, education and development of this rich maritime heritage area. In the absence of a sanctuary, there will be less public awareness of the maritime history and national significance of this area, less scientific and historical research, no new education or programs directed at visitors and users, and no institutional framework for long-term planning and coordination of activities in this particularly valuable geographic area. There is also the risk that intentional and unintentional damage many continue from human activities further degrading the resources.

With the exception of the work of Donald Shomette in his book, *The Ghost Fleet of Mallows Bay*, and official reports housed at the Maryland Historical Trust, very little research has been conducted into the historical shipwrecks found in Mallows Bay and the surrounding area of the Potomac River. The historical, archaeological, and recreational significance of the individual and collective maritime resources in this area is not well known or promoted. Moreover, it is believed that in these waters there are many historic vessels yet to be discovered and documented. Currently, no organizations regularly study, monitor or assess the health, stability and changing conditions in this valuable maritime ecosystem. Because these waters contain so many unique resources, which in turn support so many beneficial uses, they require the special acknowledgment and study possible in a National Marine Sanctuary to ensure that their particular resources and qualities are conserved and promoted.

Selecting this alternative would be contrary to the strong public interest expressed by the State of Maryland, Charles County elected officials, and numerous individuals and non-governmental organizations during the nomination process, public scoping meetings, public comment period in support of this national marine sanctuary designation.

Alternative B. Approximately 18 square miles

This alternative represents the smallest area that would be considered for national marine sanctuary status, encompassing approximately 18 square miles (See Figure 3). The boundary begins at the mean high tide level on the Maryland side, extends to the Virginia-Maryland state boundary line, and follows the boundary of the National Register Mallows Bay - Widewater Historic and Archeological District.

When the community-based nomination package for the MPNMS was submitted to NOAA, the proposed boundaries for the NMS were intended to match those submitted for the National Register designation of the Mallows Bay - Widewater Historic and Archeological District. Those boundaries were updated after the nomination was submitted and defined as follows: "The boundary of the Mallows Bay – Widewater Historic and Archeological District begins at the Charles County shoreline at Sandy Point where the Maryland state waters and bottomlands begin at the mean high tide line. The eastern boundary follows the mean high tide line south to an unnamed point between Smith Point and Thomas Point. From that point the boundary extends west 4,680 meters across the Potomac River to the low water line just east of the Maryland-Virginia border near Brent Point Virginia. The western boundary extends north following just eastward of the Virginia border to near Clifton Point, Virginia. From there the boundary extends back east across the Potomac River 3,532 meters to the northeastern most point of the district near Sandy Point. The district extends, from north to south, 9,755 meters along the Potomac River. The total area of the district is 11,347.20155 acres (17.73008 square miles). The Maryland side of the district includes both the waters of Wades Bay, Blue Banks, Mallows Bay, Liverpool Cove, and the Mallows Bay "Burning Basin" as far east as the egress for Marlow Creek into the basin itself. The Mallows Bay – Widewater Historic and Archeological District is comprised of only property (land, bottomlands, and/or waters) that is owned by the state of Maryland."

Alternative B contains 118 USEFC vessels and related vessels, 16 other vessels, 8 areas of documented historic debris, 6 documented non-vessel sites, 3 potential vessels and known but as yet undocumented historic sites such as ferry landings and potentially 3 additional shipwrecks. Tables 2 - 6 below list the maritime heritage resources by type located in Alternative B.



Figure 3: Boundary for Alternative B

Vessel Name	Site Number	Vessel Type	Date Released from Bond (burned/sunk)
Adway	18CH493	Merchant vessel (steamship), Ferris type	1928
Afrania	18CH494	Merchant vessel (steamship), Ferris type	1926
Aiken	18CH495	Merchant vessel (steamship), Ferris type	1928
Alabat	18CH496	Merchant vessel (steamship), Ferris type	1928
Alanthus	18CH497	Merchant vessel (steamship), Ferris type	1930
Alapaha	18CH498	Merchant vessel (steamship), Ferris type	unknown, but hull in position since 1929
Alcis	18CH499	Merchant vessel (steamship), Ferris type	1929

Table 2: U.S. Emergency Fleet Corporation Vessels in Alternative B

Allison	18CH500	Merchant vessel (steamship), Ferris type	1929
Alpaco	18CH501	Merchant vessel (steamship), Ferris type	1928
Alta	18CH502	Merchant vessel (steamship), Ferris type	unknown, but hull in position since 1929
Andra	18VH503	Merchant vessel (steamship), Ferris type	1929
Angelina	18CH504	Merchant vessel (steamship), Ferris type	1928
Anoka	18CH505	Merchant vessel (steamship), Ferris type	unknown, but hull in position since 1929
Aowa	18CH506	Merchant vessel (steamship), Ferris type	unknown, but hull in position since 1929
Arado	18CH507	Merchant vessel (steamship), Ferris type	1928
Baladan	18CH508	Merchant vessel (steamship), Ferris type	1929
Banicia	18CH509	Merchant vessel (steamship), Ferris type	1929
Battahatchee	18CH510	Merchant vessel (steamship), Ferris type	1929
Bayou Teche	18CH511	Merchant vessel (steamship), Ferris type	1928
Bedminster	18CH512	Merchant vessel (steamship), Ferris type	unknown, but hull in position since 1929
Belgrade	18CH513	Merchant vessel (steamship), Ferris type	unknown, but hull in position since 1929
Bellbrook	18CH514	Merchant vessel (steamship), Ferris type	1928
Benzonia	18CH515	Merchant vessel (steamship), Ferris type	unknown, but hull in position since 1929
Bobring	18CH516	Merchant vessel (steamship), Ferris type	1928
Bockonoff	18CH517	Merchant vessel (steamship), Ferris type	1929
Boone	18CH519	Merchant vessel (steamship), Ferris type	1928

Bottineau	18CH520	Merchant vessel (steamship), Ferris	unknown, but hull in position
		type	since 1929
Boxley	18CH521	Merchant vessel (steamship), Ferris type	1928
Boykin	18CH522	Merchant vessel (steamship), Ferris type	unknown, but hull in position since 1929
Braeburn	18CH523	Merchant vessel (steamship), Ferris type	1928
Bromela	18CH524	Merchant vessel (steamship), Grays Harbor type	1928, Note: Only known Grays Harbor type
Buckhorn	18CH525	Merchant vessel (steamship), Ferris type	unknown, but hull in position since 1929
Buhisan	18CH526	Merchant vessel (steamship), Ferris type	1929
Cabeza	18CH529	Merchant vessel (steamship), Ferris type	unknown, but hull in position since 1929
Calala	18CH430	Merchant vessel (steamship), Ferris type	1926
Caribou	18CH531	Merchant vessel (steamship), Ferris type	unknown, but hull in position since 1929
Casmalia	18CH532	Merchant vessel (steamship), Ferris type	1929
Coconino	18CH533	Merchant vessel (steamship), Ferris type	1928
Congaree	18CH534	Merchant vessel (steamship), Ferris type	1929
Cumberland	18CH535	Merchant vessel (steamship), Ferris type	1928
Datis	18CH536	Merchant vessel (steamship), Ferris type	1928
Dertona	18CH537	Merchant vessel (steamship), Ferris type	1926
Dungeness	18CH538	Merchant vessel (steamship), Ferris type	1928
Fernandina	18CH539	Merchant vessel (steamship), Ferris type	1928
Flavel	18CH540	Merchant vessel (steamship), Ferris type	1928
Folsom	18CH541	Merchant vessel (steamship), Ferris type	1928
Fort Stevens	18CH542	Merchant vessel (steamship), Ferris type	1928

Guilford	18CH543	Merchant vessel (steamship), Ferris type	unknown, but hull in position since 1929
Hoosac	18CH544	Merchant vessel (steamship), Ferris type	1929
Kangi	18CH546	Merchant vessel (steamship), Ferris type	unknown, but hull in position since 1929
Kasota	18CH547	Merchant vessel (steamship), Ferris type	unknown, but hull in position since 1929
Kickapoo	18CH548	Merchant vessel (steamship), Ferris type	1929
Marshfield	18CH549	Merchant vessel (steamship), Ferris type	1929
Mono	18CH550	Merchant vessel (steamship), Ferris type	unknown, but hull in position since 1929
Moosabee	18CH551	Merchant vessel (steamship), Ferris type	1928
Musketo	18CH552	Merchant vessel (steamship), Ferris type	1928
Nameki	18CH553	Merchant vessel (steamship), Ferris type	unknown
Nemassa	18CH554	Merchant vessel (steamship), Ferris type	1929
North Bend	18CH555	Merchant vessel (steamship), Ferris type	1928
Nupolena	18CH556	Merchant vessel (steamship), Ferris type	unknown
Owatama	18CH557	Merchant vessel (steamship), Ferris type	1928
Panga	18CH558	Merchant vessel (steamship), Ferris type	1928
Quapaw	18CH559	Merchant vessel (steamship), Ferris type	1928
Quemakoning	18CH560	Merchant vessel (steamship), Ferris type	unknown, but hull in position since 1929
Swamscott	18CH561	Merchant vessel (steamship), Ferris type	unknown
Tanka	18CH562	Merchant vessel (steamship), Ferris type	unknown, but hull in position since 1929
Wakan	18CH563	Merchant vessel (steamship), Ferris type	1929
Wayhut	18CH564	Merchant vessel (steamship), Ferris type	1929
Wihaha	18CH565	Merchant vessel (steamship), Ferris	1929

		type	
Woyaca	18CH566	Merchant vessel (steamship), Ferris type	1929
Yawah	18CH567	Merchant vessel (steamship), Ferris type	1929
Unidentified steamship	18CH487	steamship	
Unidentified steamship	18CH518	steamship	
Unidentified steamship	18CH527	steamship	
Unidentified steamship	18CH528	steamship	
Unidentified steamship	18CH568	steamship	
Unidentified steamship	18CH569	steamship	
Unidentified steamship	18CH570	steamship	
Unidentified steamship	18CH571	steamship	
Unidentified steamship	18CH572	steamship	
Unidentified steamship	18CH573	steamship	
Unidentified steamship	18CH574	steamship	
Unidentified steamship	18CH575	steamship	
Unidentified steamship	18CH576	steamship	
Unidentified steamship	18CH577	steamship	
Unidentified steamship	18CH578	steamship	
Unidentified steamship	18CH579	steamship	
Unidentified steamship	18CH823	steamship	
Unidentified steamship	18CH840	steamship	

11 Unidentified steamships off Widewater and below; no site numbers yet; it is important to note that there is one additional vessel here that is not included because it is in Virginia waters.

Vessel Name	Site Number	Vessel Type
Ida S. Dow	18CH545	
Unidentified barge	18CH580	barge
Unidentified barge	18CH488	barge
Unidentified barge	18CH581	barge
Unidentified barge	18CH582	barge
Unidentified barge	18CH583	barge
Unidentified barge	18CH584	barge
Unidentified barge	18CH585	barge
Unidentified barge	18CH586	barge
Unidentified barge	18CH587	barge
Unidentified barge	18CH588	barge
Unidentified barge	18CH589	barge
Unidentified barge	18CH594	barge

Table 3: Vessels Related to U.S. Emergency Fleet Corporation ship-breaking in Alternative B

Table 4: Other Vessels in Alternative B

Vessel Name	Site Number	Vessel Type
Accomac	18CH492	ferry, built in 1973
Unidentified boat	18CH597	
Unidentified boat	18CH601	
Houseboat/Potomac River Ark	18CH604	houseboat
Unidentified	18CH605	centerboard schooner
Unidentified	18CH606	workboat
Unidentified	18CH607	small boat
Mermentau	18CH608	commercial fishing vessel, built in 1985
Unidentified	18CH609	centerboard log canoe
Unidentified	18CH612	composite steamship
Unidentified	18CH614	centerboard schooner
Longboat [?]	18CH615	Longboat
Unidentified	18CH616	centerboard sharpie
Unidentified boat	18CH844	(search and rescue)
Unidentified shipwreck	18CH802	
Probable 20th-C shipwreck	18CH825	

Vessel Name	Site Number
Ship debris	18CH590
Ship hull fragment	18CH595
Ship hull fragment	18CH596
Ship debris	18CH600
Ship hull fragment	18CH602
Ship debris	18CH617
Ship debris	18CH620
Ship debris	18CH842

Table 5: Partial and fragmentary vessel remains in Alternative B

Vessel Name	Site Number
Wharf	18CH491
Marine slipway	18CH591
Berm and log wall	18CH598
Canal berm	18CH599
Berm and concrete basin gateway	18CH603
Steamboat wharf	18CH843

In addition to the resources listed in Table 6 this alternative incorporates fish camps and related activity areas for net-tarring and caviar canning; segments of steamboat routes and landings; ferry crossings and landings, and was transited by the indigenous Piscataway Conoy peoples and historically by Captain John Smith. Sections of the Potomac River were used for barge-tethered balloon reconnaissance during the Civil War although it cannot yet be demonstrated this occurred specifically in the area covered by Alternative B, although it is certainly part of the battlescape for the Civil War as it is for Revolutionary War and War of 1812-related actions. There are also two vessels potentially located alternative B that date to the Civil War era and one to the last quarter of the 19th century.

Alternative C. Approximately 52 square miles

This alternative includes all the known shipwrecks in the area under consideration for national marine sanctuary status encompassing approximately 52 square miles (see Figure 4). The boundary begins at the Charles County shoreline near the terminus of Ben Doane Road where the Maryland state waters and bottomlands begin at the mean high tide line. The eastern boundary follows the mean high tide line south to Benny Gray Point at the mouth of Nanjemoy Creek. From that point the boundary extends south across

the Potomac River to the low water line at the Maryland-Virginia border to Owens Road just east of Chotank Creek Virginia. The western boundary extends north following the Maryland-Virginia border to near Possum Nose Virginia, excluding the Quantico restricted area (shown in Figure 5). From there the boundary extends back east across the Potomac River to the northeastern most point of the boundary near Ben Doane Road. The Maryland side of the boundary includes the waters of Goose Bay, Wades Bay, Blue Banks, Mallows Bay, the Mallows Bay "Burning Basin" as far east as the egress for Marlow Creek into the basin itself, Liverpool Cove, and Harrison Cove. The boundary is comprised of only property (bottomlands and waters) that is owned by the State of Maryland.



Figure 4: Boundary Alternative C



Figure 5: Boundary Alternative C detail of proposed boundary area around Quantico Marine Base

In addition to the resources included in Alternative B, this alternative adds the known resources listed in Table 7 below. Two of these vessels may date to the late 18th century, two to the first quarter of the 20th century and the remainder to the 19th century. Additionally, there are 13 vessels known only from documentary sources that may be located in the area. This alternative would encompass all of the USEFC vessels in Maryland waters as well as the site of the *Wawaset*, burned in 1873 with between 76 and 100 lives lost.

Vessel Name	Site Number
USEFC vessel located off Fairview, VA	18CH912
USEFC vessel located off Caledon, VA	18CH913
Steamer Wawaset	18CH804
Unidentified shipwreck	18CH800
Unidentified shipwreck	18CH803
Barge or Canal boat, possibly Civil War	18CH810
Unidentified shipwreck	18CH822
Unidentified shipwreck	18CH824
Unidentified shipwreck	18CH826

Table 7: Additional Resources in Alternative C

Among the shipwrecks listed in Table 7 (Additional Resources in Alternative C), there are two WWI-era wooden vessels (Sites 18CH912 and 18CH913) adjacent and abutting the Virginia shore of the Potomac River. The proposed sanctuary boundary in Alternative C will bisect both vessels, but the whole shipwreck will be managed and protected under the NMSA and NHPA. Both wrecks are eligible for listing on the National Register, and the State of Maryland is in the process of amending the district nomination to include both vessels. Site 18CH912 abuts private property located in Fairview, King County, VA (see Figure 6). Pursuant to a permit issued by King County, VA and the approval of the Maryland Historic Trust, the private owner has preserved Site 18CH912 in situ using a standard practice known as "site banking." Site banking involves filling the shipwreck with material and leveling sand against part of the vessel on the shoreward side. Concrete slabs were then placed on the river side to internally and externally support and stabilize the vessel. A dock was also built over the vessel to provide the property owner with a means of crossing the vessel without damage. Site 18CH913 is slightly upriver of Caledon State Park and, at present, a small portion of the stern is on the Virginia shoreline, leaving the vast majority of the vessel in the Potomac River in Maryland waters (see Figure 7). This is a relatively recent occurrence following a storm event.

The Maryland Historic Trust claims title to both wrecks (Sites 18CH912 and 18CH913) pursuant to the Maryland Submerged Archaeological Historic Property Act, *Md. Code Ann., State Fin. & Proc. §§ 5A-333 et seq.* This Act provides the State of Maryland with legal title and authority to regulate all submerged archaeological historic property that is embedded in submerged lands and have remained unclaimed for 100 years or longer; or is on or embedded in submerged lands and are included in or have been determined eligible for inclusion in the National Register of Historic Places.² This state law applies to any "watercraft or shipwrecks, whether standing, ruined, or vanished, and its debris field where the location itself retains historical or archeological value regardless of the value of any existing structure."

² Sections 5A-339 and 5A-340 establish the State of Maryland as the owner of any object or material of historical or archaeological value or interest found on a submerged or terrestrial archaeological site on land that the State owns or controls, and the owner of any submerged archaeological historic property on or taken from underwater land over which the State has sovereign control. The term "historic property" is broadly defined as any structure or object significant to the prehistory or history of the State; or the upland and underwater archaeology, architecture, engineering, or culture of the State. The definition of "historic property" includes related artifacts, records, and remains.

The definition of shipwreck includes the entire structure and its interdependent and its interrelated parts under the Maryland Submerged Archaeological Historic Property Act, the Abandoned Shipwreck Act, 43 U.S.C. *§§* 2101 *et seq.*, and other Federal laws that protect maritime heritage assets. The State of Maryland and NOAA will continue to work with the private property owner and the Commonwealth of Virginia to ensure the sustained management and protection of both wrecks.



Figure 6. Detail of proposed boundary (orange line) adjacent to Fairview, VA.



Figure 7. Detail of proposed boundary (orange line) adjacent to Caledon, VA.

Alternative C also incorporates larger portions of historically significant water routes including those of the Piscataway peoples and of John Smith's voyages, as well as larger portions of military water routes, and battlescapes from colonial times through the War of 1812 and Civil War. It would also incorporate sites of barge and balloon reconnaissance activities. Additional historic steamboat landings, ferry crossings, and fisheries would be added as would remains of industrial endeavors of the last century represented by visible shoreside remains of sand and gravel extraction such as vessels, wharves, and equipment.

Alternative D. Approximately 100 sq miles.

Alternative D includes all the known shipwrecks in Alternative C, plus vessels known only from documentary sources, and adds additional areas to support recreation and tourism and would encompass approximately 100 square miles (see Figure 8). The boundary begins at the Charles County shoreline near Pomonkey Creek just south of Anne Mason Court where the Maryland state waters and bottomlands begin at the mean high tide line. The eastern boundary crosses Pomonkey Creek in a straight line to Hallowing Point, Virginia. From there, the eastern boundary follows the mean high tide line south to Pope's Creek, Maryland. From that point the boundary extends south across the Potomac River to the low water line at the Maryland-Virginia border near Persimmon Point on Mathias Neck, Virginia. The western boundary extends north following the Maryland-Virginia border to Hallowing Point, Virginia, excluding the Quantico restricted areas shown in Figure 5. From there the boundary extends back east across the Potomac River to the northeastern most point of the boundary near Pomonkey Point. The boundary

extends, from north to south along the Potomac River. The Maryland side of the boundary includes the waters of Mattawoman Creek, Chicamuxen Creek, Goose Bay, Wades Bay, Blue Banks, Mallows Bay, the Mallows Bay "Burning Basin" as far east as the egress for Marlow Creek into the basin itself, Liverpool Cove, Harrison Cove, Nanjemoy Creek, and Port Tobacco Creek. The boundary is comprised of only property (bottomlands and waters) that is owned by the State of Maryland.



Figure 8: Boundary Alternative D

In addition to resources in Alternatives B and C, this alternative adds potentially, an additional 18 vessels known only from documentary sources may be in the area. It would incorporate larger portions of historically significant water routes including those of the Piscataway peoples and of John Smith's voyages, as well as larger portions of military water routes, and battlescapes from colonial times through the War of 1812 and Civil War. It would undoubtedly incorporate sites of barge and balloon reconnaissance activities. Additional historic steamboat landings, ferry crossings, and fisheries would be added, as well as the escape route of John Wilkes Booth after his assassination of President Abraham Lincoln in 1865. Of the 18 vessels possibly in the area, two may date to the 18th century, three to the first quarter of the 20th century and the remainder to the 19th century; mostly the latter half. This alternative

includes areas adjacent to Naval Support Facility Indian Head as well as the U.S. Army's Blossom Point Research Facility, near Welcome, MD.

During the public scoping meeting and public comment period, NOAA received several public comments recommending that the proposed boundaries for the MPNMS be expanded to include much of the Potomac River waterfront in Charles County, Maryland extending from approximately the Town of Indian Head to north of the Maryland 301 bridge. The rationale submitted for the enlarged boundary were: 1) it potentially could incorporate 18 more historic shipwrecks dating from 1749 as well as historically significant Civil War water routes and marine battlescapes and the water escape route of John Wilkes Booth; 2) it would allow for the possibility of a national marine sanctuary visitors center to be constructed at the Town of Indian Head, and assist with community revitalization efforts; and 3) it would provide for a complete representation of the environments on every riverine system in the coastal plain of Chesapeake tidewater. Alternative D addresses these comments.

Alternatives Considered But Not Carried Forward for Further Analysis

NOAA considered, but did not carry forward the analysis of two additional alternatives. One alternative considered was a one square mile area with the highest concentration of ships that would have included Mallows Bay, Liverpool Cove, and the Mallows Bay "Burning Basin" as far east as the egress for Marlow Creek into the basin itself. The second alternative considered would have included the area described in the community-based nomination submitted to NOAA that has a slightly smaller boundary from the National Register Mallows Bay - Widewater Historic District. In both cases the alternatives were not analyzed any further because they did not meet the purpose of this action since they would not include the complete inventory of nationally significant maritime cultural heritage resources that the proposed action seeks to protect.

Regulations Proposed for All Action Alternatives

Regulations

NOAA is proposing to implement three regulations for all the action alternatives (Alternatives B, C, and D) under the NMSA to protect the maritime cultural heritage resources and supplement and complement existing Federal and State authorities in the geographic areas described in the boundary alternatives above. The sanctuary-wide regulations would prohibit: 1) damaging sanctuary historical resources; 2) damaging any signs or markers related to the sanctuary; and 3) interfering with an investigation in connection with enforcement of the NMSA, sanctuary regulations, or sanctuary permit. NOAA is proposing these regulations with an exception for activities that are necessary to respond to emergencies that threaten lives, property or the environment and for law enforcement activities.

The regulation prohibiting damage to sanctuary historical resources applies to any resource possessing historical, cultural, archaeological or paleontological significance, including sites, contextual information, structures, districts, and objects significantly associated with or representative of earlier people, cultures, maritime heritage, and human activities and events.

For the proposed sanctuary this includes, but is not limited to, any sunken watercraft and any associated rigging, gear, fittings, trappings, and equipment; the personal property of the officers, crew, and passengers, and any cargo; and any submerged or partially submerged prehistoric, historic cultural remains, such as docks, piers, fishing-related remains (eg. weirs, fish-traps) or other cultural heritage materials. Sanctuary resource also means any archaeological, historical, and cultural remains associated with or representative of historic or prehistoric American Indians and historic groups or peoples and their activities. Historical resources include, but are not limited to, "cultural resources," "submerged cultural resources," and also include "historical properties," as defined in the National Historic Preservation Act, as amended, 16 U.S.C. 470 et seq., and its implementing regulations, as amended.

Damaging a sanctuary resource would include moving, removing, recovering, altering, injuring, destroying, possessing, or attempting to move, remove, recover, alter, injure, destroy, or possess a sanctuary historical resource. The prohibition would not apply to possessing historical resources removed from the sanctuary area before the effective date of the sanctuary designation. The goal of this regulation would be to protect the historical resources from any kind of alteration or disturbance by any type of human activity. This regulation would enhance the current Maryland law related to historical resources, and would no longer allow the removal of a minimum number of artifacts under the exception contained in the Maryland Submerged Archaeological Historic Property Act.

The regulation prohibiting damage to signs or markers would include marking, defacing, or damaging in any way, or displacing or removing or tampering with any signs, notices, or placards, whether temporary or permanent, or with any monuments, stakes, posts, buoys, or other boundary markers related to the sanctuary. The proposed action would recognize that these items are federal properties that are part of the management of the sanctuary and that contribute to education and outreach programs. The proposed sanctuary rule would complement and supplement existing Federal laws that protect Federal property.

NOAA is also proposing that Department of Defense (DOD) activities be carried out in a manner that avoids damage to sanctuary resources to the maximum extent practicable. In the event that DOD activities damage a sanctuary resource, DOD in coordination with the ONMS Director, must prevent and mitigate further damage and restore or replace the sanctuary resource in a manner approved by the Director. Given that the definition of sanctuary resources is limited to the historical resources and does not include biological or ecological resources, NOAA does not anticipate that many, if any, current DOD activities would impact the resources. NOAA plans to gather more detailed information from DOD while finalizing this DEIS to capture current activities. NOAA is not proposing any overflight zones, restrictions, or prohibitions for the proposed MPNMS since NOAA's proposed sanctuary resources would not be impacted by low flying aircraft. Additionally, NOAA is not proposing any noise restrictions because again, our analysis does not show there would be any impacts to proposed sanctuary resources. DOD is also required to consult with ONMS pursuant to NMSA section 304(d) on any newly proposed military activities occurring in the proposed sanctuary boundary that would be likely to injure sanctuary historical resources. In the event that a sanctuary historical resource is damaged then DOD would coordinate with the Sanctuary to mitigate further damage and restore the resources.

As part of the proposed designation NOAA is also recommending giving the sanctuary the ability to issue emergency regulations. Emergency regulations are used when there is an imminent risk to sanctuary resources and a temporary prohibition would prevent the destruction or loss of those resources. Emergency regulations can only be issued for a fixed amount of time that address the imminent risk, not to exceed six months and can only be renewed once for an additional six-month period. A full rulemaking process must be undertaken to consider making emergency regulations permanent or otherwise extending the emergency regulations beyond the renewal period.

Permits, Certifications and Authorizations

NOAA is proposing to include the authority to consider issuing general permits, special use permits, certifications, and authorizations to allow regulated activities to occur in the sanctuary under certain conditions. Because of the limited number of regulated activities described above NOAA does not anticipate needing to frequently use these authorities but having a range of options available will allow sanctuary managers flexibility to address proposed activities while protecting the sanctuary historical resources.

Similar to other national marine sanctuaries, NOAA is proposing to consider the general permits only for the purposes of sanctuary education, research, and management. NOAA would execute this permit authority using the existing procedure and review criteria which require permit applicants to provide a description of the proposed activity, a timeline, information on the equipment, personnel and their qualifications, methodology to be used, and potential effects of the activity on sanctuary resources.

Special use permits (SUPs) are established Section 310 of the National Marine Sanctuaries Act (16 U.S.C. § 1441; NMSA) to allow NOAA to issue permits to authorize specific activities in a sanctuary if the permit is necessary (1) to establish conditions of access to and use of any sanctuary resource or (2) to promote public use and understanding of a sanctuary resource. Special use permits are generally issued for concessionaire-type activities and other commercial activities that require access to the sanctuary to achieve a desired goal. The activities that qualify for SUPs are set forth in the Federal Register (78 FR 25957; May 3, 2013). Categories of SUPs may be changed or added to through public notice and comment. The current list of national categories subject to the requirements of SUPs is:

- 1) The placement and recovery of objects associated with public or private events on non-living substrate of the submerged lands of any national marine sanctuary.
- 2) The placement and recovery of objects related to commercial filming.
- 3) The continued presence of commercial submarine cables on or within the submerged lands of any national marine sanctuary.
- 4) The disposal of cremated human remains within or into any national marine sanctuary.
- 5) Recreational diving near the USS Monitor.
- 6) Fireworks displays.
- 7) The operation of aircraft below the minimum altitude in restricted zones of national marine sanctuaries.

The SUP for recreational diving near the USS *Monitor* and the operation of aircraft would not apply in the proposed sanctuary because USS *Monitor* is located in a different sanctuary. The SUP for operation of aircraft below the minimum altitude in restricted zones would also not apply because there are no proposed restricted zones for this proposed sanctuary. SUP applications would be reviewed to ensure that

the activity is compatible with the purposes for which the sanctuary is designated and that the activities carried out under the SUP be conducted in a manner that does not destroy, cause the loss of, or injure Sanctuary resources. NOAA also requires SUP permittees to purchase and maintain comprehensive general liability insurance, or post an equivalent bond, against claims arising out of activities conducted under the permit. The NMSA allows NOAA to assess and collect fees for the conduct of any activity under a SUP. The fees collected could be used to recover the administrative costs of issuing the permit, the cost of implementing the permit, and the fair market value of the use of sanctuary resources

NOAA is proposing to consider allowing an otherwise prohibited activity if that activity is specifically authorized by any valid Federal, State, or local lease, permit, license, approval, or other authorization. NOAA will consider issuing certifications for such activities that are in place at the time the sanctuary designation becomes effective provided that the holder of such authorization or right complies with NOAA's certification procedures and criteria within the timeline NOAA lays out to complete certifications. The certification process essentially "grandfathers in" existing activities while seeking to minimize the impact on sanctuary resources through terms or conditions worked out during the certification process.

Additionally, NOAA is proposing to consider issuing authorizations at any time after the designation that would allow an otherwise prohibited activity if that activity is specifically authorized by any valid Federal, State, or local lease, permit, license, approval, or other authorization. The proposed authorization authority is intended to streamline regulatory requirements by reducing the need for multiple permits. Similar to certifications, NOAA would use terms and conditions worked out during the authorization process to minimize the impact on sanctuary resources.

Non-regulatory Programs for All Action Alternatives

In addition, the proposed regulations described above, NOAA is also proposing non-regulatory programs that would apply to all the action alternatives (Alternatives B, C, and D). The non-regulatory programs are described in detail in the Draft Management Plan (DMP) issued as part of the proposed action (see Appendix A). The DMP describes all of the management actions and strategies that NOAA intends to implement in order to protect the nationally significant resources within the MPNMS, to help conserve and promote the shipwrecks that have been located and those that await discovery. Each resource is a unique and fragile element in our nation's history that the MPNMS is dedicated to preserving, interpreting and promoting for future generations.

The DMP is comprised of five action plans (Resource Protection; Recreation and Tourism; Education; Research, Science, and Technology; and Sanctuary Operations and Administration). It sets priorities to guide sanctuary programs and operations and provide the public with an understanding of the sanctuary's strategies to conserve and promote the national maritime historic resources of the MPNMS. The actions described are designed to strengthen and complement existing regulatory and non-regulatory protections currently in place under the State of Maryland and Charles County.

NOAA proposes to work in full cooperation with the State of Maryland Department of Natural Resources (DNR) and the Maryland Historical Trust (MHT) as well as with the Charles County Parks and Grounds Division in their role as trustees for state resources on the DMP action plans. In addition, partnerships

with private businesses, non-governmental organizations, educational and cultural institutions, and other local, state, and federal agencies provide expertise for scientific research and exploration, resources and capacities for site monitoring and enforcement, and support for education and outreach programs. The many partnerships developed over the course of this nomination and designation process have been, and will continue to be, critical to the success of the sanctuary.

The DMP is specific to NOAA's actions but links to and identifies the actions and responsibilities of partner management agencies, all of which will be an integral component of MPNMS success. Public involvement has been valuable throughout the nomination and designation processes, and will continue to be valuable, through opportunities to volunteer and to participate on the Sanctuary Advisory Council.

3.3 PREFERRED ALTERNATIVE

NOAA has selected Alternative C as the preferred alternative based on the public comments, additional historical research, and discussions with the State of Maryland and Charles County. Alternative C includes all known shipwrecks that this action seeks to protect while also supporting additional recreation opportunities as described in the purpose of the action. This boundary alternative would establish a Sanctuary area of approximately 52 square miles. NOAA determined that it was important and practical for the sanctuary boundaries to include the remainder of all known WWI-era vessels, thus providing protection for those maritime heritage resources currently known and those yet to be discovered. NOAA also concluded that by selecting boundaries beyond the nomination area the sanctuary's research and monitoring, education, and resource protection programs would be used to protect the important maritime heritage cultural resources while allowing and encouraging recreational use of the area.

Chapter 4

AFFECTED ENVIRONMENT

4.1 INTRODUCTION

Consistent with NEPA requirements, this chapter describes the environment of the area to be affected by the alternatives presented in Chapter 3. Resource descriptions are provided for the physical, maritime cultural landscape, biological, and socio-economic resources, and Department of Defense facilities of the Potomac River. A description is also provided that outlines consultations with the Department of Defense, as well as a description of the regulatory framework within which this action is proposed.

The information in this section, together with other information in this document, provides the basis for NOAA's evaluation of the potential environmental impacts of the expansion alternatives as described in Chapter 5 (Environmental Consequences). The scope of the environmental impacts addressed in this DEIS focuses primarily on the maritime heritage resources and primary human uses of the area. This chapter also describes the surrounding physical and biological environment since those resources are inter-connected with the shipwrecks and related maritime resources.

4.2 PHYSICAL ENVIRONMENT

The proposed sanctuary is located within the Potomac River, which flows for more than 380 miles from its headwaters at Fairfax Stone, West Virginia to Point Lookout, Maryland where it connects to the Chesapeake Bay (see Figure 9). The Potomac River is the Chesapeake Bay's second largest tributary, with a mouth more than 11 miles wide. The drainage area of the Potomac River includes 14,670 square miles in four states: Virginia (5,723 sq. mi.), Maryland (3,818 sq. mi.), West Virginia (3,490 sq. mi.), Pennsylvania (1,570 sq. mi.), and the District of Columbia (69 sq. mi.). See Section 4.2.2.2 on Water Dynamics for more information.



Figure 9: The Potomac River Basin. Source: Interstate Commission on the Potomac River 2016.

4.2.1 GEOLOGY

The Maryland Geological Survey is charged with investigating the geologic and water resources of Maryland. Maryland is part of six physiographic provinces (shown in Figure 10 below). A physiographic province is a geographic area in which the geology (including lithology and structure) and climate history have resulted in landforms that are distinctly different from adjacent areas.



Figure 10: Maryland physiographic provinces and county boundaries. Source: Maryland Geological Survey 2016.

Charles County falls within the Atlantic Coastal Plain Province. The Atlantic Coastal Plain Province is underlain by a wedge of unconsolidated sediments including gravel, sand, silt, and clay, which overlaps the rocks of the eastern Piedmont along an irregular line of contact known as the Fall Zone. Eastward, this wedge of sediments thickens to more than 8,000 feet at the Atlantic coast line.

The sediments of the Coastal Plain dip eastward at a low angle, generally less than one degree, and range in age from Triassic to Quaternary. The study area itself is composed mostly of Quaternary lowland deposit sediments, including sand, silt, gravel, clay, and peat. Mineral resources of the Coastal Plain are chiefly sand and gravel, and are used as aggregate materials by the construction industry. Clay for brick and other ceramic uses is also important. Small deposits of iron ore are of historical interest. Plentiful supplies of groundwater are available from a number of aquifers throughout much of this region.

4.2.2 WATER RESOURCES

4.2.2.1 Water Quality/Quantity

Maryland's Water Quality Standards

The Maryland Department of Environment is responsible for assessing water quality in accordance with the federal Clean Water Act. The purpose of Maryland's water quality standards is to protect, maintain, and improve the quality of the State's surface waters. Maryland's water quality standards have three main components: designated uses, water quality criteria to protect designated uses, and an anti-degradation policy. Designated uses are goals for water quality and are usually an appropriate intended use by humans and/or aquatic life. Each waterbody (stream segment, lake, bay, etc.) is assigned one or more designated

uses, such as human recreation, shell-fishing, human water supply, or aquatic life habitat. Although these designated use goals may not be currently meet, each must be attainable for that water body. This section of the Potomac River is labeled "Lower Potomac River Olighaline," and is designated Use II for Migratory Spawning & Nursery Use, Shallow Water Submerged Aquatic Vegetation Use, Open Water Fish & Shellfish Use, and Shellfish Harvesting Use.

Water quality criteria are generally numeric criteria that set the minimum water quality standards necessary to meet the designed uses. Maryland publishes criteria for protection of human health, protection of aquatic life and habitat, toxins such as lead, dissolved oxygen levels, turbidity, bacteria, and temperature. Maryland's water quality criteria are updated every 3 years and published in the Code of Maryland Regulations (COMAR). The antidegradation policy is the last component of the Maryland water quality standards. This policy assures that water quality continues to support designated uses.

Maryland's 2014 Integrated Report on Surface Water Quality

Maryland's 2014 Integrated Report on Surface Water Quality combines water quality reports required under sections 305(b), 314, and 303(d) of the federal Clean Water Act. Section 305(b) requires states, territories and authorized tribes to perform annual water quality assessments to determine the status of jurisdictional waters. The report is available at:

http://www.mde.state.md.us/programs/Water/TMDL/Integrated303dReports/Pages/2014IR.aspx. Section 314 requires states, territories and authorized tribes to classify lakes according to eutrophic condition and to identify lakes known to not meet water quality standards. Section 303(d) requires states, territories and authorized tribes to identify waters assessed as not meeting water quality standards (see Code of Maryland Regulations 26.08.02). Waters that do not meet standards may require a Total Maximum Daily Load (TMDL) to determine the maximum amount of an impairing substance or pollutant that a particular water body can assimilate and still meet water quality criteria.

A brief history of TMDL in the Chesapeake Bay watershed is provided in the 2014 Report:

"In the 1996 and 1998 303(d) Lists, specific Maryland tidal tributaries of the Chesapeake Bay were identified as being impaired for nutrients and sediments. These nutrient and sediment impairments were assessed at the 8-digit watershed scale and were included in the 1996-1998 Memorandum of Understanding between EPA and MDE (hereafter referred to as 'MOU listings'). Between 1996 and 2008, Maryland developed TMDLs to address many of these tidal nutrient MOU listings. As these TMDLs were completed and submitted to EPA, MDE received credit towards meeting the MOU for addressing these nutrient impairments.

In 2004, EPA and the Bay states began work on the development of the Chesapeake Bay TMDL. In anticipation of this Bay-wide TMDL, MDE published a list of watersheds in the Maryland Register with their associated impairments that MDE had determined would be addressed via the Chesapeake Bay TMDL. For the most part, these impairments consisted of the tidal nutrient and sediment impairment listings for which MDE had not yet developed a TMDL. However, there were some watersheds on this list that were inadvertently included (e.g. Potomac River Montgomery County) and others that were inadvertently excluded from the 2004 Maryland Register list (e.g. Magothy River). This was Maryland's first public notification that the

Chesapeake Bay and its tidal tributaries (hereafter referred to as simply "Chesapeake Bay") would be addressed via the Chesapeake Bay TMDL.

In the 2006 IR, Maryland first introduced the new salinity-based segmentation scheme for the Chesapeake Bay. The 2006 IR thus served as a transitional report which cross-walked the older 8-digit watershed assessment scale nutrient and sediment listings to the new salinity-based assessment scale listings. In 2008, Maryland fully adopted the salinity-based Chesapeake Bay segments as the spatial assessment scale and made other refinements to the way nutrient and sediment impairments were listed. In particular, Chesapeake Bay nutrient listings were now separately identified for the nutrients nitrogen and phosphorus. In addition, nutrient assessments were now identified for each subcategory designated use (e.g, Open Water, Deep Water, etc.) that applied within a given monitoring segment. One nuance with this spatial cross-walk (8-digit watershed to salinity-based segment) was that some 8-digit watersheds overlapped with multiple salinity-based segments, and vice versa. This meant that the MOU credits, for 8-digit watershed nutrient and sediment listings that were not yet addressed via a TMDL, had to be transferred to the appropriate salinity-based bay segment(s).

The approval of the Chesapeake Bay TMDL in December of 2010 meant that all of the remaining Category 5 (impaired, TMDL needed) nutrient and sediment Chesapeake Bay listings, including those mentioned in the MOU, had now been addressed by TMDLs. The Bay TMDL also addressed/overlapped segments with previously completed TMDLs. It's also worth noting that the Bay TMDL even addressed water segments not identified as impaired (e.g. Fishing Bay Mesohaline, (FSBMH) was in Category 3 – insufficient information). In summary, the Bay TMDL addressed all nutrient and sediment impairments in the Chesapeake Bay and its tidal tributaries. Since the 2010 Integrated Report had been submitted to EPA prior to the finalization of the Bay TMDL, the actual administrative process of moving these listings from Category 5 to Category 4a on the Integrated Report did not occur until the following reporting cycle (2012). The timeline shown in Figure 17 below summarizes these changes to Maryland's tidal nutrient and sediment impairment listings. Table 48 shows the public review periods provided for each of the past 7 Integrated Reports (303(d) Lists). To see records of the public review process for the Chesapeake Bay TMDL please read Section 11 of the Chesapeake Bay TMDL located at: http://www.epa.gov/reg3wapd/tmdl/ChesapeakeBay/tmdlexec.html."

The Lower Potomac River Olighaline segment is designated as a class 4a water. TMDLs were approved in 2010 for nitrogen and phosphorous due to agricultural pollutant sources. TMDL's have also been in place for the Lower Potomac River since 2007 for polychlorinated biphenyls (PCBs) found in fish tissue.

Discharge of dissolved nutrients (i.e. organic carbon, phosphorus, and nitrogen) from both point and nonpoint sources often causes low concentrations of dissolved oxygen, blue-green algae blooms, and eutrophication in the tidal Potomac River (USGS 1984, pgs. 3, 10). According to the USGS Water Quality Study of the Tidal Potomac River and Estuary:

Imbalances in the riverine ecosystem of the tidal Potomac River have led to algal blooms, low dissolved-oxygen concentrations, fish kills, changes in fish species, decrease in numbers of waterfowl, and decline in submersed plants during the last 30 to 50 years (1984; pg. 15).

4.2.2.2 Water Dynamics

The Chesapeake Bay is an estuary, in which fresh river water mixes with saltwater from the Atlantic Ocean. The area in which the sanctuary is located is freshwater, but is affected by tides in which some salinity (i.e., greater than zero parts per thousand) is present.

Much of the Chesapeake Bay is shallow (i.e., <20 feet deep), with water levels that change continuously with the tides and thus undergo extreme environmental fluctuations through the year. In the summer, shallow waters become very warm, often resulting in oxygen-depleting algal blooms. In winter, ice often covers the water. Shallow waters are constantly affected by wind and waves which suspend sediments and increase turbidity. Spring rains can lead to runoff of sediment and nutrients from the land and into the Chesapeake Bay and tributaries, which clouds shallow water. Heavy rainstorms also affect the salinity of the shallow waters. The river flow rate also changes seasonally and varies year to year. The USGS 51-year average is 11,400 cubic feet per second (USGS 1984).

The portion of the tidal Potomac River within the study area is known as the transition zone, a zone of mixing between fresh water of the Potomac River and salt water of the Chesapeake Bay. According to the USGS Water Quality Study of the Tidal Potomac River and Estuary:

The transition zone is a region of comparatively high biological production and diversity characterized by the interaction of two opposing water masses (river and ocean). ...the transition zone's bottom topography is characterized by a deep channel with an adjacent marginal slope that is bordered by a wide, shallow shelf. The channel ranges in depth from 20 feet to 107 feet (1984; pg. 3).

4.2.3 AIR QUALITY

The Maryland Department of Environment (MDE) monitors and regulates air quality within the State in coordination with the Environmental Protection Agency (EPA). MDE's Ambient Air Monitoring Program measures ground-level concentrations of criteria pollutants and air toxics, along with surface and aloft meteorological parameters. The Program also performs quality control, quality assurance, and analysis of the pollutant concentrations that are measured at each of the air monitoring stations located throughout Maryland. It is responsible for Air Quality Index (AQI) reporting and issuing daily air quality forecasts as well as coordination of 3D air-shed photochemical grid and dispersion modeling.

The AQI is an index for reporting daily air quality. It describes the cleanliness of the air in a particular location and the associated health concerns with increasing pollutant levels. The AQI focuses on health effects a person may experience within a few hours or days after breathing polluted air. The EPA calculates the AQI for five major air pollutants regulated by the Clean Air Act: ground-level ozone (O3), particle pollution (also known as particulate matter; PM2.5 or PM10), carbon monoxide (CO), sulfur dioxide (SO2), and nitrogen dioxide (NO2). For each of these pollutants, EPA has established national air quality standards to protect public health. An AQI value of 100 generally corresponds to the national air quality standard for the pollutant, which is the level EPA has set to protect public health. AQI values below 100 are generally thought of as satisfactory. When AQI values are above 100, air quality is considered to be unhealthy for certain sensitive groups of people. As AQI values increase above 150, everyone in the affected area may experience health effects. The AQI is divided into six categories:

0 to 50	Good: (air pollution poses little to no risk)
51 to 100	Moderate: (acceptable; some moderate health concerns for a few people)
101 to 150	Unhealthy for Sensitive Groups: (may cause a health effect for certain groups)
151 to 200	Unhealthy: (may pose health effect for everyone)
201 to 300	Very Unhealthy: (poses a health alert; everyone may experience health effect)
301 to 500	Hazardous: (triggers health warnings of emergency conditions)

2015 EPA data for Charles County shows that of 215 days measured for AQI, 156 days were "good," 58 days were "moderate", and only 1 day was "unhealthy for sensitive groups."

Charles County also falls within the Washington, DC-MD-VA Nonattainment Area for failing to meet the National Ambient Air Quality Standards (NAAQS) for Ozone. MDE data for 2015 shows that this region experienced 5 days where the 8-Hour Ozone concentrations exceeded NAAQS.

4.2.4 CLIMATE

Climate is defined as the average statistics of weather, which include temperature, precipitation and seasonal patterns such as storms and wind, in a particular region. The Natural Resources Conservation Service National Climate Center gives the following summary of the climate in La Plata, MD:

"In winter, the average temperature is 37.5 degrees F and the average daily minimum temperature is 28.1 degrees. The lowest temperature on record, which occurred at LA PLATA 1 W on January 22, 1984, is -8 degrees. In summer, the average temperature is 74.0 degrees and the average daily maximum temperature is 83.4 degrees. The highest temperature, which occurred at LA PLATA 1 W on September 10, 1983, is 103 degrees.

The average annual total precipitation is about 44.77 inches. Of this, about 27.9 inches, or 62 percent, usually falls in April through October. The growing season for most crops falls within this period. The heaviest 1-day rainfall during the period of record was 9.80 inches at LA PLATA 1 W on August 27, 1971. Thunderstorms occur on about 36 days each year, and most occur in July.

The average seasonal snowfall is 15.8 inches. The greatest snow depth at any one time during the period of record was 24 inches recorded on February 19, 1979. On an average, 14 days per year have at least 1 inch of snow on the ground. The heaviest 1-day snowfall on record was 24 inches recorded on February 19, 1979.

The average relative humidity in midafternoon is about 54 percent. Humidity is higher at night, and the average at dawn is about 75 percent. The sun shines 63 percent of the time in summer and 47 percent in winter. The prevailing wind is from the south. Average wind speed is highest, 11.1 miles per hour, in March."

Global climate change refers to the long-term and irrevocable shift in these weather related patterns, including the rise in the Earth's temperature due to an increase in heat-trapping or "greenhouse" gases in the atmosphere. Using ice cores and geological records, baseline temperature and carbon dioxide data extends back to previous ice ages thousands of years ago. Over the last 10,000 years, the rate of temperature change has typically been incremental, with warming and cooling occurring over the course

of thousands of years. However, scientists have observed an unprecedented increase in the rate of warming over the past 150 years, roughly coinciding with the global industrial revolution, which has introduced tremendous amounts of greenhouse gases into the atmosphere.

In the last century, Maryland has documented more than a foot of sea level rise, increasing water temperatures in the Chesapeake Bay, more rain and flooding in the winter and spring and more arid summers. Maryland's people and their property, natural environment and public investments are extremely vulnerable to climate change impacts. Maryland has more than 4,000 miles of shoreline across the state and the potential effects of climate change on these shorelines and the associated habitats are varied and significant. Anticipated climate impacts on the shorelines and habitats along and within the Sanctuary boundary range from increases in sea levels, coastal flooding, changes in saltwater regimes, increased air and water temperatures and changes to extreme and precipitation events. Some of these climate impacts may impact the shipwrecks through changes in water conditions or rises in sea levels that may submerge the resource.

Since the Maryland Commission on Climate Change was established in 2007, the State has made significant strides to address both greenhouse gas emissions and mitigation as well as pursue adaptation options. A wide variety of data and information about climate impacts is available. These include sea level rise projections, sea level inundation data layers, a Coastal Resiliency Assessment (http://dnr.maryland.gov/ccs/Documents/MARCH-2016_MDCoastalResiliencyAssessment.pdf), shorelines rates of change, and many others. These data and information are available to help assess risk to the cultural, historic and natural resources located within the Sanctuary boundaries.

4.2.5 NOISE

Noise along the Potomac River environment, both above and below the water, can come from a variety of natural and anthropogenic sources. Anthropogenic sources include vessel traffic on land in the water, aircraft, research, construction, and military activities. Noise generated from these activities can be transmitted through both air and water, and may be long-lived or temporary. These various activities produce composite noise fields above and below the water. The intensity level and frequency of the noise emissions are highly variable, both between and among the various sources. While maritime cultural heritage resources considered in the sanctuary designation are not considered susceptible to impacts from noise, noise could impact the recreational uses of the area. Charles County passed a noise ordinance in 2008 that sets noise limits within the county to "promote public health, safety, and welfare, the peace and quiet of the residents of the County, and the use and enjoyment of both public and private property." Additional zoning regulations were added in 2013 that set noise limits for residential zones adjacent to light industrial, planned employment park, heavy industrial, and business park zones.

4.3 MARITIME CULTURAL LANDSCAPE RESOURCES

The proposed Mallows Bay – Potomac River NMS contains one of the largest and most varied assemblages of submerged maritime heritage resources in the Western Hemisphere representing more than three centuries of American history, from the Revolutionary War era to the present. To date, over 100 vessels have been archaeologically identified and new wrecks are being discovered regularly as more
surveys are undertaken. It is designated as the Mallows Bay-Widewater Historic and Archaeological District in the National Register of Historic Places (NRHP) (for details of the listing see: http://dnr2.maryland.gov/ccs/Documents/MB_NRHP_RegForm.pdf, for the official listing notice see: http://dnr2.maryland.gov/ccs/Documents/MB_NRHP_RegForm.pdf, for the official listing notice see: http://dnr2.maryland.gov/ccs/Documents/MB_NRHP_RegForm.pdf, for the official listing notice see: http://www.nps.gov/nr/listings/20150501.htm) and the NRHP application contains more detailed information about the historic, cultural and archeological significance of the site. Please consult (http://dnr.maryland.gov/ccs/Pages/MallowsBay_History.aspx -

<u>http://dnr2.maryland.gov/ccs/Documents/MB_NRHP_RegForm.pdf</u>) for more information. What follows is an introductory overview of the historical and cultural resources and landscape in the area arranged thematically. Based on the Resources by Alternative Table 1 and existing legal framework discussed in Chapter 2, it is appropriate to consider cultural resources within the Affected Environment.

WWI Vessels & Shipbreaking

Mallows Bay and its environs have the distinction of being the largest wooden ship graveyard in the Western Hemisphere (Shomette 1996, 212) as the burnt- out remains of 104 wooden steamships and a plethora of other vessels sit in the bottom sediments of the cove. Most of these ships, colloquially referred to as the "Ghost Fleet," were built between 1917 and 1919 as part of a massive national wartime program that made the United States, for the first time in history, the greatest shipbuilding nation in the world. Throughout World War I, Germany's unrestricted submarine warfare resulted in substantial merchant shipping losses for the Allied forces and by 1917, German submarines had destroyed more than five million tons of Allied merchant shipping (Shomette 1996, 213). As a result, in 1917, the United States Emergency Fleet Corporation (USEFC) was formed to help offset these losses and it subsequently initiated one of the largest shipbuilding projects in American history. This project was so substantial that it required more than 40 shipyards in 17 States and nine different steamship designs and, by September 1918, for the first time in history, the United States was the world's leading shipbuilder.

By the end of World War I, the USEFC had completed 322 wooden and composite steamships (Shomette 1996, 227 & 233) and started a revival in wooden shipbuilding, a tradition which had quickly abated after the Civil War. Despite delays in production and efficacy criticisms, many of the vessels performed well and world records were broken. The steamship *Aberbeen*, whose hulk is located near Widewater, was constructed faster than any other vessel, of similar tonnage, in the world and every record in shipbuilding was smashed; its keel was laid on September 9, 1918 and on September 28, the steamship was launched. The steamship *Obak* was one of the fastest vessels in the fleet and averaged 12.01 knots, 2.01 knots above the contract requirement, and from full speed ahead, it could be brought to a standstill in two minutes, which was one and a half minutes faster than any other contemporaneous vessel on record (NRHP 1992, 20).

Though not a single USEFC steamship sailed into a European harbor during the war, they did become an integral part of coastwise and transoceanic commerce and three steamships, the *Utoka, Alabat,* and *Brookdale,* were outfitted as cargo-carrying training cruisers. However, the return of the popularity of metal hulled vessels and the introduction of diesel engines rendered these steamships obsolete before the project reached fruition and during the "Great 1920 Tie-Up," most of the USEFC steamships were moored in the James River. Through various failed corporate salvage operations, the steamships were brought to Mallows Bay where they were purposely scuttled, burned, and salvaged.

The remnants and debris from both local and industrial salvage operations resulted in the destruction of more than 80 steamships and created a landscape that more closely resembled a battlefield than an industrial salvage operation (Shomette 1996, 258). The Western Marine and Salvage Company was the first to attempt to salvage the fleet. They towed the steamships to Widewater where they endeavoured to salvage, burn, and then sink the remaining hulls, a process fraught with mishaps and difficulties. On April 18, 1923, a watchman accidentally overturned a kerosene cook stove and several of the ships in Widewater anchorage caught fire, including *Alanthus*, whose hulk is located in Mallows Bay; this fire is recorded as "one of the most stubborn [fires] Alexandria firefighters have battled" (NRHP 1992, 47). Soon after, salvage work quickly ground to a halt as local watermen and nature activists ardently protested their operations. Consequently, the salvage company purchased hundreds of acres along the opposite shoreline and towed the steamships to Mallows Bay where they resumed salvage activities. In 1931, the company was forced to declare bankruptcy and abandon the ships. The second, and last, largescale industrial salvage attempt occurred in the 1940s when the United States government allocated thousands of dollars to Bethlehem Steel to recover the metal from the steamships. This industrial salvage operation was also quickly abandoned as, by 1944, the demand for metal had slowed and Bethlehem Steel halted operations at Mallows Bay.

Mallows Bays is not only the final resting place of the first steamship built by the USEFC, *North Bend*, but also some of the last including *Boyton*, *Munra*, *Wonahbe*, and *Owatam*. Furthermore, several of the hulks, both at Widewater and at Mallows Bay, such as the aforementioned *Aberdeen*, *Obak*, and *Alanthus*, broke world records and were part of major, historic local events. These wrecks represent the end of a shipbuilding era and their successive dismantling helped support the local economy. During the Great Depression, the area provided subsistence income and materials for local residents and scrap collectors who salvaged the metal from the wrecks. "Potomac Arks" were essentially houseboats on scow barge hulls that, when free floating, allowed the owner to avoid paying property taxes. They were used for a myriad of purposes including housing for ship chandleries and stores and lodging for local salvors. Gamblers, bootleggers, and prostitutes also used "Potomac Arks" from, at least, the Civil War era until the 1960s. The industrial salvage operations, both in the 1920s and then in the 1940s, drastically impacted both the submerged cultural resources and landscape of the embayment. For example, Western Marine and Salvage installed four railways on Sandy Point and Bethlehem Steel created a large burning basin at the outlet of Mallows Creek.

In the 1960s, during the congressional hearings regarding possible removal of the ships, several groups suggested that the ship hulls, having been there for almost 40 years, had become an integral part of the Mallows Bay ecosystem and the local fishery. For various reasons they were never removed, and the ships remain today. Over the years, many of the sunken vessels have trapped sediments and collected plant life becoming artificial islands (Shomette 1996, 309).

Other Submerged Historical and Cultural Resources

In addition to the wooden and composite steamships, other ship remains have been found including 12 barges, several 19th century log canoes and schooners, various workboats, a car ferry, and possibly a Revolutionary War longboat.

The longboat, which may be located in Liverpool Cove at the back of Mallows Bay, would be the remains of a patriot longboat used by *Protector*, a Virginia Flotilla galley, that anchored near Mallows Bay so it's men could join forces with the Maryland militia (Shomette 1996, 206-207; NRHP 1992, 3). On July 23, 1776, the men from *Protector* arrived in Mallows Bay aboard two longboats and were set-upon by Lord Dunmore's Loyalist Flotilla led by Virginia's deposed governor James Murray, the Earl Lord of Dunmore, and manned by loyalists and freed slaves. Dunmore entered the Potomac to try and secure water for his crew and to "harass and annoy the Enemy by landing at different places" (Shomette 1996, 206-207; NHRP 1992, 3). Dunmore's fleet exchanged gunfire with the local patriot militia and attempted to seize both of *Protector*'s longboats. The patriot forces retreated, but before they fled, they smashed a hole in the bottom of one of the longboats to prevent its capture.

Historical records indicate that three sturgeon skiffs, *Black Bottom*, *W.S. Childs*, and *Edythe*, were abandoned in the area in 1926. These ships were built in 1888 in Philadelphia and imported into the area via train by Captain Morgan L. Monroe who used them in his sturgeon fishing and processing operations. These skiffs were the last "foreign vessels" to gain popularity on the Potomac (NRHP 1992, 5).

Another workboat, the two-masted pungy schooner *Capitol*, was involved in the first recorded maritime tragedy in the area. In 1896, two pungy schooners, *Capitol* and *Dove*, were sailing in tandem when they were swamped during a storm off Sandy Point. *Dove* and its crew were eventually saved but all personnel aboard *Capitol*, including the Captain, perished and the ship foundered (NRHP 1992, 5).

The remains of at least one centerboard canoe are found in Liverpool Cove. These vessels were common workboats from the 17th through the 20th centuries and have a unique shell-first design. For shell-first construction, the frames, which only provide lateral support for the ship and do not dictate its shape or form, are only added to the vessel after the hull has been assembled (Shomette 1996, 331). Near the centerboard canoe lies the remains of a centerboard schooner (Wreck No. 114) which has a flat-bottomed sharpie configuration. It might be the largest sharpie on record in the Chesapeake and the only one archaeologically documented on the Potomac River (Shomette 1996, 333).

Near the southern end of Mallows Bay rests *Ida S. Dow*, one of the last four-masted schooners to be constructed. Built in 1918, this merchant schooner survived the "Great Tie-up of 1920" but was damaged in a collision with a German steamship in 1931 (Shomette 1996, 266). Several years later, in 1934, it was acquired by salvors who anchored it in Mallows Bay and used it as a dormitory for the wreckers. In 1936, as it was no longer suitable for service, it was scuttled and abandoned. A popular story, published by Historian Fred Tilp, states that the vessel also served as a temporary residence for prostitutes who peddled their trade to the salvors in the areas (NRHP 1992, 31; Tilp 1982, 56).

There is one warship in Mallows Bay: the SS *Bodkin*, ex-USS *Nokomis*. Built in 1914, the yacht was commissioned as a submarine chaser for the United States Navy in 1917. The vessel was a composite steamship of steel construction but with wooden planking, deckings, and transverse framing armed with four 3-inch guns and manned by 191 officers and crew. During World War I, it helped protect American troop transports approaching the French coast. After the war, it was decommissioned and used to conduct surveys in Mexican and Caribbean waters for the Hydrographic Office and, in 1938, was loaned to the Coast Guard where it was renamed SS *Bodkin*. Again, it was overhauled to be a submarine chaser but work was suspended as German submarine activity lessened. In 1944, it was sent to Mallows Bay where Bethlehem Steel completely reduced the vessel (NRHP 1992, 34-35).

Though it is one of the most recent wrecks in the area, *Accomac* is one of the largest and most visible vessels in Mallows Bay. The steamship was built in 1918 to service between Halifax, Nova Scotia and Great Britain but, during World War II it was requisitioned by the United States government first for convoy duty then to haul rubber. A fews years after the war, it was converted to diesel power and, in 1950, it underwent a massive overhaul that transformed it from a transport vessel to a car ferry capable of carrying 70 cars and 1,200 passengers. It was during this time that the distinctive "spoon" bow was added (Shomette 1996, 314-317). In 1964, the introduction of the interstate highway and Chesapeake Bay Bridge Tunnel made the ferry obsolete and it was permanently decommissioned by fire; in 1973 its hulk was towed to Mallows Bay.

Contributing Cultural Aspects of the Maritime Cultural Landscape

Mallows Bay also has a rich maritime cultural landscape, defined as cultural and natural resources, human communities, and coastal environments within a geographic area that are connected with historic events, activities, or persons or demonstrate other aesthetic or cultural values (NPS 1997; TBNMS FEIS 2014). The area was one of President Grover Cleveland's favorite fishing retreats and served as President Calvin Coolidge's favorite duck hunting and fishing grounds. In 1903, Samuel Pierpont Langley made history when he flew his model of a "heavier-than-air-plane" 3,000 feet in 90 seconds from the roof of his "houseboat laboratory" at Widewater (NRHP 1992, 22).

The area has been the locus of important activities pertaining to the development of the nation; it was the site of a land--sea skirmish between Royal Navy forces, the Virginia State Navy, and Maryland Militia during the American Revolution as well as being the site of Pre--Civil War steamboat landings and Civil War campsites and batteries. The Confederate blockade- runner, *T.W. Riley*, is recorded as having sunk in adjacent Wades Bay and, in 1859, Cooke's Ferry was built at Sandy Point which later served as a transfer point for Confederate smuggling operations during the Civil War. From 1861-1862, Liverpool Point was held by a forward unit of Smith's 5th Excelsior Brigade and defended by several artillery batteries. In March 1862, an amphibious reconnaissance and raid, which involved over 1,000 men, was launched by Union forces from Liverpool Point and landed at Shipping Point on the Virginia side of the Potomac. During the mission, for the first time in history, a rapid fire Gatling Gun was used by Union troops and it was later permanently stationed at Liverpool Point (NRHP 1992, 5).

The region also contains the archaeological and cultural remains of several regimes of the Potomac fisheries industry from around 1840 through 1922, including pound net assemblage sites, domestic structures, net tarring facilities, sturgeon fishery sites, and a caviar processing plant. In the early years, fishing camps were established along the beach where the crew, usually comprised of slaves, lived during the fishing season (Shomette 1996, 209). Also associated with the Potomac fisheries industry are the historic vernacular watercraft involved in its operations during the 19th and early 20th centuries including bugeyes, brogans, centerboard schooners, sharpies, crab scrapes, turtle scrapes, and sturgeon boats, some of which have been previously discussed.

Tribal Resources

In addition to the items of significance noted above, this section of the Potomac River forms part of the traditional homeland and cultural landscape of the Piscataway Indian Nation and the Piscataway Conoy Tribe of Maryland. Evidence for the depth of American Indian occupation of this area of the Potomac, from the Archaic Period to the Post--Contact Period, is provided both through archaeological investigations and cultural traditions of the Piscataway people. The Piscataway have identified Mallows Bay and Liverpool Point as areas of significance within their cultural landscape (Strickland, Busby and King 2015:45). It is very likely that Nussamek, one of the villages visited by Captain John Smith during the summer of 1608, is in the area. However, no archaeological sites have yet been identified in a submerged context.

African American History

African- American presence is also evident in the historic record, from as early as the 1640s, when the first African slaves were landed on Maryland shores, and readily employed in the tobacco industry of the colony. By the time of the Civil War, Charles County's population was approximately 50 percent black, with slaves and black freemen alike engaged in tobacco agriculture and in the Potomac fisheries. During the war, African- Americans were recruited from the shores of Charles County to serve in the Union Army, but many returned to working as watermen for such fishery operations working from stations at Sandy Point and Liverpool Point.

During World War I, African -Americans were engaged in large numbers throughout the United States in the shipyards, lumber mills and machine shops involved in building many of the wooden steamships now resting in Mallows Bay.

Both of these historically under-represented communities have important maritime ties to the natural and cultural landscapes and will benefit significantly from the establishment of a Sanctuary which will provide tremendous and ongoing research and interpretive opportunities. The proposed MPNMS would serve as a research laboratory to provide information absent from the historical documents and to ground -truth and verify information from these documents. The types of information that can be learned from these sites include details about vessel design, use, evolution and adaptation as well as the unrecorded but substantial methodology of the shipbreaking processes and salvage operations. Archaeological evidence will also provide data on the site formation process and alteration of the physical landscape to support the use of the proposed MPNMS area as a major American ship graveyard.

Summary

As coined by Westerdahl (1992), Maritime Cultural Landscapes include submerged,

intertidal/foreshore/littoral and terrestrial resources as these relate and interrelate to maritime culture. While a National Marine Sanctuary's jurisdiction is restricted to the water base, the State and County can range more widely, and with respect to Charles County adjacent to the proposed Sanctuary, there is little privately owned land. This facilitates big-picture consideration of the many contributing resources to the Sanctuary including those that are intangible or expected but not yet demonstrated to exist within Sanctuary boundaries. Examples of the latter include Tribal Resources, where these are known on land, likely exist in areas of active erosion, and may exist in a submerged context not known to living tribal stakeholders nor yet identified through archaeological investigation.

While the community-based effort to nominate sections of the Potomac River and Mallows Bay as a National Marine Sanctuary was predicated on the existence of the rare and significant WWI/USEFC fleet remains and their attendant history to the present, as well as being appropriate to the commemoration of the centenary of WWI, it was not without awareness and consideration of the additional contributing elements of the maritime cultural landscape. It is very much a case of the whole being greater than the sum of its parts.

4.4 BIOLOGICAL RESOURCES

The tidal Potomac River contains large beds of submerged aquatic vegetation that serve as important feeding grounds and spawning and nursery habitat for a variety of aquatic and non-aquatic organisms. The area also harbors two fish species that have been identified in the Maryland DNR Wildlife Diversity Conservation Plan as species of Greatest Conservation Need (GCN), the Longnose Gar (*Lepisosteus osseus*) and Warmouth (*Lepomis gulosus*).

The presence of so many shipwrecks and the construction of the ship-breaking burning basin and canal in the area have created a unique environment that includes mini-ecosystems aboard many vessels of the embayment, some with thriving populations of fauna and flora. The presence of the wrecks has also resulted in decreased erosion rates and increased accretion rates, creating wetland, woodland and aquatic habitat above and below the waters. It is possible that valuable research opportunities on the physical and biological environment could increase, due simply to the broader awareness of the area brought forth by the sanctuary's presence. Understanding more about the biological environment through research efforts will help state and local managers target their programs effectively.

4.4.1 FISHERIES

The Maryland DNR Fisheries Service is responsible for managing the tidal freshwater portion of the Potomac River. The Maryland DNR Southern Regional Office conducts several studies on three species of greatest management concern in this area: Largemouth Bass, Northern Snakehead, and Blue Catfish. In addition, the Maryland DNR conducts an annual juvenile striped bass survey. The juvenile striped bass survey documents annual year-class success for young-of-the-year striped bass and relative abundance of many other fish species at 22 fixed stations within Maryland's portion of the Chesapeake Bay. One station is within the sanctuary boundary, at Liverpool Point, while two more sampling stations lie just outside of the boundary at Indian Head and Blossom Point. Other data collected during these surveys include bottom types, percent coverage of SAV in the sample area, water temperature, salinity, and sample depth. The fish species listed in Table [*] are all of the identified species found during the Juvenile Striped Bass Seine Surveys from 1957 to 2015 at these three sites.

Fish species identified between 1957-2015 from 3 Potomac River seine survey sites: Blossom Point, Liverpool Point, Indian Head					
Alewife	Fourspine Stickleback	Sheepshead Minnow			
American Eel	Gizzard Shad	Silver Perch			
American Shad	Golden Shiner	Silverjaw Minnow			
Atlantic Croaker	Goldfish	Silvery Minnow			
Atlantic Menhaden	Hickory Shad	Smallmouth Bass			
Atlantic Needlefish	Hogchoker	Spanish Mackerel			
Atlantic Silverside	Inland Silverside	Spot			
Atlantic Thread Herring	Largemouth Bass	Spottail Shiner			
Banded Killifish	Longnose Gar	Striped Anchovy			
Bay Anchovy	Mummichog	Striped Bass			
Black Crappie	Northern Hogsucker	Striped Killifish			
Blue Catfish	Northern Pipefish	Striped Mullet			
Blueback Herring	Northern Snakehead	Summer Flounder			
Bluefish	Oyster Toadfish	Tessellated Darter			
Bluegill	Pumpkinseed	Threadfin Shad			
Bluespotted Sunfish	Quillback	White Catfish			
Brown Bullhead	Rainwater Killifish	White Crappie			
Carp	Red Drum	White Mullet			
Chain Pickerel	Redbreast Sunfish	White Perch			
Channel Catfish	Redear Sunfish	White Sucker			
Crevalle Jack	Rough Silverside	Winter Flounder			
Dusky Pipefish	Satinfin Shiner	Yellow Perch			

 Table 8: Fish species identified during juvenile striped bass surveys between 1957 and 2015 at three

 Potomac River seine survey sites.

The following paragraphs further explain the habitat needs of a few of the most commonly found fish species from this list that are known to use habitat within the sanctuary boundary.

Alosines (Shad & River Herring) are commonly found in this portion of the Potomac River. Alosines include American shad (*Alosa sapidissima*), hickory shad (*Alosa mediocris*), blueback herring (*Alosa aestivalis*), and alewife herring (*Alosa pseudoharangus*). Blueback and alewife herring are collectively known as "river herring" because they are nearly identical and difficult to tell apart. Alosines migrate along the Atlantic coast and return to their natal rivers to spawn, so healthy habitat within these rivers are critical for species success. Juveniles will remain in freshwater nursery areas in spring and summer, feeding mainly on zooplankton. As water temperatures decline in the fall, most juveniles move downstream to more saline waters, eventually to the sea; however, some will remain in deeper waters of the Bay and its tributaries for their first winter. There is a statewide moratorium on the harvest of alosines in Maryland waters, but a catch and release recreational fishery for is permitted.

American eel (*Anguilla rostrata*) larvae utilize the Potomac River through adulthood. After spawning occurs in the Sargasso Sea, larvae are carried by currents to areas along the Atlantic coast and eventually

move into freshwater rivers and streams. They remain this these habitats for several years until they mature, before returning to the Sargasso sea to spawn and then die.

Atlantic menhaden (*Brevoortia tyrannus*) find important nursery habitat in the Potomac River. Larval fish enter the Chesapeake Bay in late winter and early summer and move into lower salinity waters in estuarine tributaries where they are found in great numbers. These juveniles, along with other immature fish (ages 1 and 2), remain in the Chesapeake Bay and tributaries until the fall when most migrate to the ocean.

Blue Catfish (*Ictalurus furcatus*) are not native to Maryland waters. They were stocked into Virginia tributaries of the Potomac River and have become very successful in the Potomac River since they prefer large rivers having deep channels with a swift current and a sandy bottom. They seek cool water in the summer and warmer waters in the winter. Blue Catfish reproduce and grow exceptionally quick and therefore are a popular species for both recreational and commercial harvest. The Maryland DNR has been working with other agencies to assess the population size, monitor movements, and determine growth of Blue Catfish within the Potomac River.

Channel Catfish (*Ictalurus punctatus*) are not native to Maryland waters, but they have become very successful in tidal and non-tidal waters across the state, including the tidal Potomac River. Channel catfish prefer deep pools around logs, rocks and other structure where they can hide, making the WWI shipwrecks vessels ideal habitat.

Largemouth bass (*Micropterus salmoides*) are found in all waters of Maryland from freshwater to brackish (a mix of fresh and saltwater) waters. They like large, slow moving rivers or streams with soft bottoms. Largemouth Bass are one of the most commonly sought recreational fishing species. Smallmouth Bass (*Micropterus dolomieu*) are most commonly found throughout the non-tidal Potomac in areas upstream from the sanctuary. However, both largemouth and smallmouth bass are annually monitored for relative abundance, condition (relative weight), length at age and other parameters and previous surveys have indicated a healthy population of largemouth bass and occasional smallmouth. Bass populations are heavily dependent on submerged aquatic vegetation (SAV). Stable and abundant nearshore grass beds, such as those within the sanctuary, attract and provide much habitat for bass in this area.

Longnose Gar (*Lepisosteus osseus*) are located with the tidal tributaries of the Chesapeake Bay. Gar spawn in shallow waters May through June. They tend to inhabit areas near downed trees, stone outcrops, and vegetation.

Northern snakehead (*Channa argus*) are native to the Yangtze River basin in China but has spread throughout the Potomac River. It can reach over 33 inches in length and tolerate a wide range of temperatures (32-85°F). Because of their feeding style, they could outcompete native fish such as largemouth bass. Biologists are also concerned that they could introduce parasites and diseases that could harm native species. Maryland DNR is working to prevent further spread of snakehead and to control established populations. In order to control the abundance of this species in invaded waters, anglers in Maryland and Virginia are required to kill any snakeheads that they catch.

Spot (*Leiostomus xanthurus*) migrate seasonally, entering bays and estuaries in the spring, where they remain until late summer or fall when they move offshore to spawn. Primary nursery areas for juvenile

spot occur in low salinity areas of bays and tidal creeks, but they can also be found associated with eelgrass communities.

Striped bass (*Morone saxatilis*) are one of the most important recreational fish species in Maryland. The striped bass stock within Chesapeake Bay is composed of pre-migratory fish, primarily ages 10 and younger, and coastal migratory striped bass range in age from age 2 to more than age 30. Mature resident and migratory striped bass move into tidal freshwater in early spring to spawn. After spawning, migratory fish return to the coast.

White perch (*Morone americana*) are common in the Potomac River during the springtime spawning season. White perch spawn from April through June in fresh to low-salinity waters of large rivers over fine gravel or sand. Juveniles use inshore areas of the creeks downstream of their spawning area during the first summer and fall. Adults tend to inhabit open waters close to shore, but may also frequent quiet streams well up into the tributaries from March - November. During the winter months, they can be found in downstream portions of the Potomac River and deeper channel areas throughout the Bay.

Yellow perch (*Perca flavescens*) are generally freshwater fish but in Maryland have adapted to estuarine waters and have historically been reported in all of the Chesapeake Bay's major tributaries and streams. Adult yellow perch inhabit slow-moving, nearshore areas where moderate amounts of vegetation provide cover, food and protection. Larval yellow perch will remain in the tributaries, but will generally migrate offshore to reduce their risk from predators. As juveniles, they move back to the shorelines to feed on the richer, nearshore food sources; at this stage, predator avoidance has been sufficiently developed.

4.4.2 PROTECTED SPECIES

The Endangered Species Act (ESA) (16 U.S.C. §§1531, et seq.) requires federal agencies to conserve endangered and threatened species and to conserve the ecosystems upon which these species depend. Under the ESA, activities that may affect protected species are regulated by NOAA and the USFWS. There are two federally listed fish species which occur in the portion of the Potomac River considered in the alternatives for this proposed action, the Atlantic sturgeon and shortnose sturgeon.

Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) are anadromous fish with adults spawning in freshwater in the spring and early summer before migrating into estuarine and marine waters for the remainder for their lives. The largest adults reach 60 years of age. Individuals usually live near the bottom of rivers and feed on aquatic invertebrates that live on or in the sediment. The species uses tidal rivers as nursery habitat for young fish. On February 6, 2012 NOAA issued a final rule (77 FR 5880) that listed the Atlantic sturgeon distinct population segment (DPS) for Chesapeake Bay as endangered under the ESA. The endangered status is based on severely depleted population size resulting from heavy fishing in the 1800s and early 1900s; current threats include habitat degradation, vessel strikes, and incidental catch and/or injury from other fishing activities. It is illegal to catch an individual for commercial or recreational purposes.

Shortnose sturgeon (*Acipenser brevirostrum*) have a life cycle similar to Atlantic sturgeon moving between fresh and marine waters. They are the smallest sturgeon species found along the U.S. east coast. Shortnose sturgeon survive up to 40 years on average and prey mainly on aquatic invertebrates that live in the sediment. The shortnose sturgeon was listed as endangered under the Endangered Species

Preservation Act of 1966 (a predecessor to the ESA) on March 11, 1967 (32 FR 4001). NOAA issues a recovery plan for the species on December 17, 1998 (63 FR 69613). Shortnose sturgeon are vulnerable to habitat change due to the fact that they breed slowly, live long, and have very specific habitat requirements for different life stages. It is illegal to catch an individual for commercial or recreational purposes.

In addition to Federal ESA protections, some species are protected under Maryland state regulations. The level of status for protected species under state regulations are:

"Endangered; a species whose continued existence as a viable component of the State's flora or fauna is determined to be in jeopardy. Threatened; a species of flora or fauna which appears likely, within the foreseeable future, to become endangered in the State. In Need of Conservation; an animal species whose population is limited or declining in the State such that it may become threatened in the foreseeable future if current trends or conditions persist" (COMAR 08.03.08).

Maryland has developed the 2015-2025 Maryland State Wildlife Action Plan that describes conservation efforts, including identifying Species of Greatest Conservation Needs (GCN). Species of CGN are those animals, both aquatic and terrestrial, that are at risk or are declining in Maryland. More details about GCN species can be found in Chapter 3 of the 2015-2025 Maryland State Wildlife Action Plan (http://dnr.maryland.gov/wildlife/Pages/plants_wildlife/SWAP_Submission.aspx).

The fish species below have been identified as Maryland Species of Greatest Conservation Need and use the portion of the Potomac River considered in the action alternatives for one or more life stages. Since the sanctuary boundary encompasses areas within the water only this document does not include a discussion of GCN species other than the identified fish GCN species known to be in the area. However, several non-fish GCN species have been known to use the area for a part of their life cycle. For example, Great Blue Herons and Bald Eagles nest in the area, and American Minks feed on fish, crustaceans, and small birds.

Hickory shad (*Alosa mediocris*) was once a common species of shad found in Potomac River. They are currently protected in Maryland from recreational and commercial harvest. Adults enter Potomac River to reproduce in freshwater in May and early June usually between dusk and midnight. After reproducing, adults leave the Potomac River and their offspring grow in tidal freshwater streams until they reach adulthood and migrate to the ocean. Hickory shad feed on small fishes, invertebrates, and fish eggs.

American shad (*Alosa sapidissima*) was a very abundant species found in Potomac River since colonial times. They are currently protected in Maryland from recreational and commercial harvest. Adults can live up to 10 years, but are only seasonal visitors to the Potomac River; the majority of their adult life is spent in the ocean swimming in large schools. During spring adults enter Potomac River to reproduce in freshwater. Shortly after reproducing they leave Potomac River and return to the ocean. Their offspring feed on invertebrates throughout summer and then in fall, they leave the Potomac River to enter the ocean.

White catfish (*Ameiurus catus*) is the only native fork-tailed catfish in the Potomac River. Once common to the Potomac River and all Chesapeake Bay tributaries, its abundance is now eclipsed by non-native, fork-tailed catfish such as channel catfish and blue catfish. White catfish is usually found year-round in fresh or brackish water. Adults live up to 11 years and reproduce in early summer and deposit eggs in

submerged woody material or some type of cavity. Eggs and young fish are cared for and guarded by the male. They feed on small fishes and invertebrates.

	Federal ESA	Maryland Species of GCN		
Common Name	Scientific Name	Status	Common Name	Scientific Name
Atlantic Sturgeon	Acipenser oxyrinchus oxyrinchus	endangered	Hickory Shad	Alosa mediocris
Shortnose Sturgeon	Acipenser brevirostrum	endangered	American Shad	Alosa sapidissima
			White Catfish	Ameiurus catus

Table 9: Federal and State Protected Species in the Mallows Potomac NMS Alternatives Area

4.4.3 **BIRDS**

The Potomac River shoreline is important habitat for number breeding bird species. Bald eagles nest along the shoreline in large pines. Osprey are also known to build their nests atop many of the shipwrecks, as well as on other perches along the shoreline. Great Blue Heron nest in the mudflats. Other waterfowl that do not breed in the area, such as the common merganser, bufflehead, and tundra swan, also use the area as flyover stops during migration.

The Maryland and the District of Columbia Breeding Bird Atlas Project was conducted between 2002-2006 in partnership between the U.S. Geological Survey, the Patuxent Wildlife Research Center, the DNR, and the Maryland Ornithological Society, and involved hundreds of volunteers who, for 5 years, conducted surveys throughout Maryland and Washington DC, and gathered data on over 200 species of birds known to breed in the state. The birds listed in Table 10 were identified through this effort as species of birds known to use the sanctuary area for breeding, or as a flyover stop during migration.

The atlas displays data by species, by block, or by county. The grid used in the atlas is based on the maps known as "quadrangles" or "quads" published by the U.S. Geological Survey in the 7 1/2 minute series. There are 239 quads in Maryland and DC, each named after a major town or geographical feature on the map. If a species was present in a quad that the sanctuary boundary fell within³, then that species was included in Table 10.

The Bird Atlas is divided into 3 categories of breeding certainty: possible, probable, and confirmed. Observers used these classifications to describe the level of certainty that a species is nesting in each block. Another classification - observed - was applied when a species (male or female) was observed within breeding dates but not in breeding circumstances.

³ U.S. Geological Survey quadrangles relevant to the sanctuary boundary include: Dahlgren, King George, Mathias Point, Najemoy, Passapatanzy, Quantico, and Widewater.

Table 10: Breed bird species present in USGS quads within and adjacent to sanctuary boundary, as associated level of breed certainty. Source: 2002-2006 Maryland and District of Columbia Breeding Bird Atlas Project.

Confirmed	Probable	Possible
Acadian Flycatcher	American Goldfinch	Baltimore Oriole
American Crow	American Redstart	Chuck-will's-widow
American Kestrel	American Robin	Cooper's Hawk
Bald Eagle	American Woodcock	Eastern Screech Owl
Belted Kingfisher	Barn Swallow	Kentucky Warbler
Blue Grosbeak	Barred Owl	Mallard
Blue-gray Gnatcatcher	Black Vulture	Northern Bobwhite
Brown Thrasher	Blue Jay	Red Shouldered Hawk
Brown-headed Cowbird	Cedar Waxwing	Red Tailed Hawk
Canada Goose	Chimney Swift	Song Sparrow
Carolina Chickadee	Eastern Meadowlark	Yellow Warbler
Carolina Wren	Eastern Towhee	Observed
Chipping Sparrow	Eastern whip-poor-will	Double-crested Cormorant
Common Grackle	Field Sparrow	Great Blue Heron
Common Yellowthroat	Grasshopper Sparrow	Royal Tern
Downy Woodpecker	Gray Catbird	
Eastern Bluebird	Green Heron	
Eastern Kingbird	Hooded Warbler	
Eastern Phoebe	Louisiana Waterthrush	
Eastern Wood-Pewee	Indigo Bunting	
European Starling	Northern Flicker	
Fish Crow	Northern Mockingbird	
Great Crested Flycatcher	Northern Rough-winged Swallow	
Great Horned Owl	Orchard Oriole	
Hairy Woodpecker	Pileated Woodpecker	
House Finch	Prairie Warbler	
House Sparrow	Scarlet Tanager	
Killdeer	Sedge Wren	
Mourning Dove	Summer Tanager	
Northern Cardinal	Tree Swallow	
Northern Parula	Turkey Vulture	
Osprey	Virginia Rail	
Ovenbird	White-breasted Nuthatch	
Pine Warbler	Wild Turkey	
Prothonotary Warbler	Worm-eating Warbler	
Purple Martin	Yellow-billed Cuckoo	
Red-bellied Woodpecker	Yellow-throated Vireo	

Red-eyed Vireo	
Red-headed Woodpecker	
Red-winged Blackbird	
Ruby Throated Hummingbird	
Tufted Titmouse	
White-eyed Vireo	
Wood Duck	
Wood Thrush	
Yellow-breasted Chat	
Yellow-throated Warbler	

4.4.4 TERRESTRIAL SPECIES

The following have been identified by the DNR Wildlife and Heritage Service as water-dependent terrestrial species found within or adjacent to the study area.

Mammal

The American Mink (*Neovison vison*) is a semiaquatic species native to Maryland. Mink require a permanent water source within their habitat and are known to live along wetland edges and the shoreline of the Potomac River, especially in areas with dense brush or those with a lot of trees. Mink will occasionally use dens throughout their travels, including those built by muskrats. Mink eat muskrats, mice, rabbits, small rodents, waterfowl, marsh nesting birds, crayfish, aquatic beetles and fish. Mink can hunt both on land and in water and will climb trees to find prey or will dive underwater to capture food.

Reptiles and Amphibians

The palustrine floodplain habitat (see 4.4.5.2) along this portion of the Potomac are vital to a number of reptiles and amphibians, including the state endangered rainbow snake (*Farancia erytrogramma*) and more common species such as northern watersnake (*Nerodia sipedon*), southern leopard frog (*Lithobates sphenocephalus*), pickerel frog (*Lithobates palustris*), and painted turtle (*Chrysemys picta*). Many amphibians also spend much of their adult lives in the mixed mesic hardwood forest habitat (see 4.4.5.3) along the shoreline, including eastern box turtles (*Terrapene carolina carolina*), eastern fence lizard (*Sceloporus undulatus*), five-lined skink (*Plestiodon inexpectatus*), Fowler's toad (*Anaxyrus fowleri*), and eastern American toad (*Anaxyrus americanus*).

The Maryland Amphibian and Reptile Atlas (MARA) was a five-year project between the Natural History Society of Maryland and Maryland DNR to document the current distributions of Maryland's amphibian and reptile species using a systematic and repeatable approach. Species listed in Table 11 were identified

in the relevant USGS quads⁴ during the survey. The Dahlgren and Passapatanzy quads were not surveyed, but similar species may be present in those neighboring quads.

Table 11: Reptile and amphibian species present in USGS quads within and adjacent to sanctuary boundary. Degree of Confidence for each Species by Quad: (C=Confirmed; P=Pending/Under Review; A=Accepted; X=Unconfirmed/Rejected; blank=not reported). Source: Maryland Amphibian and Reptile Atlas 2015.

Species	King George	Mathias Point	Nanjemoy	Quantico	Widewater
Turtle					
Eastern Musk Turtle			С		С
Eastern Mud Turtle	С	С	С		С
Eastern Box Turtle	С	С	С		С
Spotted Turtle		С			
Painted Turtle	С	С	С	С	С
Northern Red-bellied Cooter	С	С		С	С
Eastern Snapping Turtle	С	С	С	С	С
Lizard					
Eastern Fence Lizard	С		С	С	С
Little Brown Skink					С
Common Five-lined Skink	С	С	С		С
Snake					
Northern Watersnake		С	С	С	С
Queen Snake					С
Eastern Smooth Earthsnake		С	С	х	С
Northern Brownsnake	С	С	С		С
Northern Red-bellied Snake			С		
Eastern Gartersnake		С	С		
Common Ribbonsnake		С	С		С
Ring-necked Snake			С	С	
Eastern Wormsnake	С	С	С	С	С
Northern Rough Greensnake		С	С		A
Eastern Hog-nosed Snake			С		С
Rainbow Snake			С		С
Northern Black Racer	А	С	С	С	С
Eastern Ratsnake	С	С	С		С
Eastern Kingsnake	С	С	С		С
Copperhead		С	С		С
Salamander					
Marbled Salamander		С	С	С	С

⁴ U.S. Geological Survey quadrangles relevant to the sanctuary boundary include: Dahlgren, King George, Mathias Point, Najemoy, Passapatanzy, Quantico, and Widewater.

Spotted Salamander	С	С	С	С	С
Red-spotted Newt		С	С		
Eastern Redbacked Salamander			С	С	
Northern Red Salamander		С	С		
Northern Two-lined Salamander		Х	A		
Four-toed Salamander			С		
Frog & Toad					
Eastern Spadefoot	С	С	С		С
Eastern American Toad	С	С	С	С	С
Fowler's Toad	С	С	С		С
Upland Chorus Frog		Х	Х		
Spring Peeper	С	С	С	С	С
Eastern Cricket Frog	С	С	С	С	С
Green Treefrog	С	С	С	С	С
Unknown Gray Treefrog sp.		С	С	С	С
Cope's Gray Treefrog	С	С	С	С	С
Wood Frog		С	С	X	С
Southern Leopard Frog	С	С	С	С	С
Pickerel Frog		С	С	С	С
Northern Green Frog	С	С	С	С	С
American Bullfrog	С	С	С	A	С

Invertebrates

As a group, Maryland's invertebrates are not nearly as well studied as vertebrates. This also is true at both the regional and national scale due largely to the overwhelming number of invertebrate species, limited number of taxonomic specialists, and the complexities of the ecological communities of which they are an integral part. Because Maryland has marine, estuarine, freshwater and terrestrial environments, the invertebrate fauna of Maryland are diverse and include many thousands of species representing a wide variety of taxonomic groups, such as flatworms; freshwater mussels and other mollusks; crustaceans; spiders; and numerous insect groups, including dragonflies and damselflies, moths and butterflies, and many more. Fairly well-researched taxa groups include butterflies, dragonflies and damselflies (odonates), and freshwater mussels, a small percentage of the total number.

Several species of aquatic invertebrates are of high economic importance, either as commercially valuable species or because they are pest species. Commercially important species include the blue crab, which are managed by Maryland DNR's Fisheries Service with the goal of attaining healthy, sustainable populations.

Aquatic insects are an extremely diverse group, spanning some 13 orders of insects from springtails (Order Collembola) to caddisflies (Order Trichoptera) and containing thousands of species, some assuredly still undiscovered and unknown to science. They are a dominant part of most freshwater aquatic food webs, play critical roles in nutrient cycling, and serve as excellent indicators of aquatic habitat condition and biotic integrity. Still, for most aquatic insect groups, their study and identification,

especially to species level, require specialized taxonomic skills and training, which can pose formidable challenges to documenting species presence, distribution, ecological requirements, threats and conservation needs. Certain taxa, however, such as stoneflies (Order Plecoptera), mayflies (Order Ephemeroptera), caddisflies (Order Trichoptera) and especially odonates (dragonflies and damselflies, Order Odonata), are relatively well known and use the habitats within the study area. For example, part of odonates life cycle is completed in the clean waters of flowing streams.

4.4.5 HABITATS

4.4.5.1 Tidal River

At the mouth of streams that flow into the Potomac River along the Charles County shoreline, tidal marshes and shrublands have formed where sediment has accreted and is exposed at low tide. The vegetation of the marshes is diverse and dominated by aquatic plants that are emergent at high tide. Closer to the mainstem of the river, the lower elevation zones are dominated by broadleaved emergent plants, including spatterdock (*Nuphar advena*), arrow arum (*Peltandra virginica*) and pickerelweed (*Pontederia cordata*) while higher zones support wild rice (*Zizania* spp.), jewelweed (*Impatiens* spp.), rice cutgrass (*Leersia oryzoides*) and tearthumb (*Polygonum* spp.). Narrow, sandy tidal flats are exposed at low tide along much of the shoreline. Due to periodic high wave energy and the low elevation of the flats, the flats are frequently bare of vegetation. The narrow, sandy flats along the shoreline provide habitat for wildlife species of Greatest Conservation Need, including northern diamond-backed terrapin, herons (little blue, great blue), and for common wildlife species, including Canada goose and other waterfowl.

A variety of vascular plants that grow entirely under water, known as submerged aquatic vegetation (SAV), are also prevalent throughout the Potomac River. SAV grow in beds along shallow flats and margins of the main river and tributaries. They form grassy meadows and weed beds that provide food and shelter for juvenile fish, insect larvae, mollusks, plankton, crustaceans, and other invertebrates that become food for fish, waterfowl, turtles, mammals, and larger invertebrates. The Maryland DNR, in partnership with the Virginia Institute of Marine Science, has been surveying SAV in the Chesapeake Bay since 1978. *Hydrilla verticillata* is pervasive throughout the study area, particularly within Mallows Bay. While a nuisance to boaters and recreationalists, hydrilla provides excellent habitat for a number of aquatic species, particularly juvenile finfish. Other SAV found in the study area include: *Myriophyllum spicatum, Heteranthera dubia, Ceratophyllum demersum, Vallisneria americana, Najas minor*, and *Najas guadalupensis*.

The open water portion of the tidal Potomac River in this area has an approximate maximum depth of 100 feet, but the average depth is 19 feet (USGS 1984). River flow fluctuates seasonally and year to year. The deep water channels are prime habitat for blue catfish populations to thrive, aiding the booming blue catfish commercial fishery.

The health of the aquatic resources within the entire tidal Potomac River are severely impacted by pollutants, including nitrogen, phosphorus, and sediment. Additional factors impacting the river include land use, increases in impervious surfaces, loss of forest cover, natural factors such as weather and river flow, and other pressures from climate change and the introduction of invasive species.

4.4.5.2 Palustrine

Above tidal influence along the streams that flow into the Potomac, the Coastal Plain Floodplain Forests are temporarily to seasonally inundated. Red maple (*Acer rubrum*) and green ash (*Fraxinus pennsylvanica*) are abundant in the seasonally flooded areas, with sweet gum (*Liquidambar styraciflua*) and tulip tree (*Liriodendron*) more common in the temporarily inundated canopy, and spicebush (*Lindera benzoin*) abundant in the understory. Beaver are abundant in this portion of Charles County, and create diverse habitats with the floodplain forests. Nontidal emergent wetlands behind beaver dams often support floating aquatic plants including spatterdock (*Nuphar advena*), white water lily (*Nymphaea odorata*), duckweed (*Lemna spp.*), and pondweed (*Potamogeton spp.*). Pickerelweed (*Pontederia cordata*), rice cutgrass (*Leersia oryzoides*), sedges (*Cyperaceae spp.*) and cattail (*Typha spp.*) border areas of open water behind beaver dams. Common buttonbush (*Cephalanthus occidentalis*), alder and swamp loosestrife (*Decodon verticillatus*) form shrub thickets along the perimeter of the emergent marsh.

4.4.5.3 Terrestrial

Mixed Mesic Hardwood Forest dominates the uplands along the Potomac. Oaks, including white oak (*Quercus alba*) and northern red oak (*Quercus rubra*), tulip tree (Liriodendron) and hickories - mockernut (*Carya tomentosa*) and pignut (*Carya glabra*) - are common in the overstory, with flowering dogwood (*Cornus florida*), American holly (*Ilex opaca var. opaca*) and pawpaw (*Asimina triloba*) in the understory. Although Mesic Mixed Hardwood Forests are widespread throughout Charles County, their size and condition have been much reduced by logging, agriculture, and development.

On drier uplands along the river bluffs and terraces, Coastal Plain Oak-Pine Forest is common. The sandy soils underlying these areas are acidic and low in nutrients. Southern red oak (*Quercus falcata*) and chestnut oak (*Quercus montana*) are common, with Virginia pine (*Pinus virginiana*) and loblolly pine (*Pinus taeda*). The shrub layer is dominated by heaths such as huckleberries (*Gaylussacia* spp.), blueberries (*Vaccinium* spp.) and mountain laurel (*Kalmia latifolia*). Where shell material is exposed by erosion, the soils are much less acidic, and Eastern redbud (*Cercis canadensis*) and white ash (*Fraxinus americana*) are more common.

The extensive contiguous forest along this section of the Potomac is recognized as the Nanjemoy Important Bird Area by the National Audubon Society due to the extraordinary number of forest interior dwelling bird species (FIDS) documented breeding here and the presence of significant breeding populations of six birds whose survival is at risk nationwide. During a 2009 Bird Blitz survey coordinated by the National Audubon Society, 20 of the 24 potentially occurring FID species were recorded breeding in this area. Particularly area-sensitive species documented in this Important Bird Area include whippoor-will, worm-eating warbler, wood thrush, prairie warbler and prothonotary warbler. Most FIDS are neotropical migrants or birds that travel long distances to breed in North America and winter in Central and South America. These species include some of our most brilliantly colored songbirds such as the scarlet tanager and prothonotary warbler. These birds and others play many important roles in the ecosystem such as insect control, seed dispersal and providing food to other predators. The declines in FIDS have been attributed largely to the loss and fragmentation of forests in the eastern United States by urbanization, agriculture and some forest management practices.

4.4.5.4 EFH/Critical Habitat

Essential Fish Habitat

In the Potomac River there are two fish species, summer flounder (*Paralichthys dentatus*) and bluefish (*Pomatomus saltatrix*), that have essential fish habitat (EFH) designated under the Magnuson-Stevens Fishery Conservation and Management Act (MSA). The MSA was originally passed by Congress in 1976 and was updated in 1996 and 2006. Section 302 of the MSA created eight regional fishery management councils to develop Fishery Management Plans (FMPs) to regulate fisheries in an effort to prevent overfishing. Each council prepares FMPs for each fishery under its jurisdiction and submits these plans to the Secretary of Commerce for final approval.

The MSA provides Councils and NOAA authority to establish EFH and habitat areas of particular concern (HAPCs). The MSA defines Essential Fish Habitat as "those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity" (MSA Act § 3(10)). The EFH Final Rule (50 CFR Part 600) elaborates that the words "essential" and "necessary" mean identification of sufficient EFH to "support a population adequate to maintain a sustainable fishery and the managed species' contributions to a healthy ecosystem."

Summer flounder (*Paralichthys dentatus*) is a popular commercial and recreational fish species. Because of the geographic range and movement of the species the Mid-Atlantic Fishery Management Council manages summer flounder cooperatively with the Atlantic States Marine Fisheries Commission under an FMP that includes black sea bass and scup. In 2012 the summer flounder fishery was declared rebuilt. The Councils are currently developing an amendment to update the FMP to address changing conditions in the fishery. Currently, the Potomac River is included in the summer flounder EFH and native species of submerged aquatic vegetation such as macroalgae, seagrasses, and freshwater and tidal macrophytes are considered HAPC.

Bluefish (*Pomatomus saltatrix*) support commercial and recreational fishing and are found along the U.S. east coast from Maine to Florida. Mid-Atlantic Fishery Management Council manages bluefish and according to the Council's 2013 assessment it is not considered overfished and overfishing is not taking place. The Potomac River is included in the bluefish EFH and there are not designated HAPCs.

Critical Habitat

Before the turn of the century, most major river systems, including the Potomac River, contained abundant, healthy stocks of Atlantic sturgeon (*Acipenser oxyrhinchus*). During the 18th and 19th centuries, the Chesapeake Bay supported the second greatest caviar fishery in the United States. However, by the end of the 19th century, high harvest rates drastically reduced abundances of Chesapeake Bay sturgeon. Combined effects of overfishing and deterioration of habitat have caused Atlantic sturgeon to decline to the point of extirpation in Chesapeake Bay (Secor et al. 1997). A small spawning population exists in Virginia's James River and York River but spawning is not known to occur in Maryland waters. Based on the known presence Atlantic sturgeon in the Potomac River it was included in a June 3, 3016 NOAA proposed rule (81 FR 35701) to designate critical habitat for the Atlantic sturgeon that includes

the Potomac River up to the Little Falls Dam. No similar critical habitat has been designated for the shortnose sturgeon.

4.5 SOCIOECONOMIC RESOURCES

Charles County is home to a wealth of natural, cultural and historic resources, which offer numerous opportunities for recreation and tourism and support the local and regional economy. The county's rich heritage, many of its historic sites, towns and landmarks, as well as many of its outdoor recreational opportunities are closely tied to its strategic location on the Potomac River, beginning just 18 miles south of Washington, D.C. and extending approximately 30 miles north of the river's confluence with the Chesapeake Bay.

From the first American Indian inhabitants who relied on the river for fish, agricultural production, and transportation, the Potomac River has helped shape the history of human settlement and economic development in Charles County for centuries. That history is reflected today in some of the County's top heritage tourism attractions, recreational facilities and economic assets including:

- Thomas Stone National Historic Site, home of a signer of the Declaration of Independence;
- Port Tobacco one of the oldest towns in Maryland and on the East Coast of the U.S. and its historic Courthouse and One-Room Schoolhouse;
- General Smallwood State Park, which contains the home of the revolutionary war hero General William Smallwood;
- Indian Head, founded in 1890 when the U.S. Navy established a proving ground on Cornwallis Neck and which is today the County's largest employer.

This maritime heritage is also reflected in the vast collection of historic shipwrecks within the Potomac River, the archaeological and cultural remains of successive regimes of the Potomac River fisheries industry, and in the diverse variety of water-based recreational activities that occur today along the Potomac's extensive shoreline, inlets, beaches, and parks and recreation facilities.

4.5.1 Water Access and Existing Facilities

Along its nearly 300 mile shoreline of the Potomac River and its tributaries, Charles County offers six county parks (Marshall Hall, Ruth B. Swann, Mallows Bay, Port Tobacco River Park, Friendship Farm Park, and Southern Park, see Figure 11), two rail-trail parks (Indian Head Rail Trail and Pope's Creek) and four designated Natural Heritage Areas (Allen's Fresh, Chicamuxen Creek, Popes Creek, and Upper Nanjemoy Creek) serving approximately 190,000 users each year. There are also four state parks (Smallwood State Park, Chapman State Park, Zekiah Swamp NEA, Chapel Point State Park), the 540-acre Douglas Point Special Recreation Management Area (SRMA) co-managed by the Bureau of Land Management (BLM) and the Maryland Department of Natural Resources (DNR), six wildlife management areas (Cedar Point, Nanjemoy, Purse, Riverside, Chicamuxen, Mattawoman), and two natural resource management areas (Indian Creek and Maxwell Hall), and Doncaster Demonstration

Forest covering a combined total area of more than 20,000 acres. These parks and wildlife areas offer residents and visitors opportunities to experience some of southern Maryland's most scenic and undeveloped natural areas and engage in a wide variety of outdoor recreational activities including hunting, fishing, bicycling, hiking, boating, fossil collecting and bird watching.



Figure 11: Maryland Public Access Locations. Source: Maryland Department of Natural Resources

On the Virginia side of the River there are three National Wildlife Refuges (Mason Neck, Occoquan and Featherstone, four State Parks (Mason Neck, Leesylvania, Widewater, Caledon), the Crow's Nest Natural Area Preserve, Pohick Bay Regional Park and several local parks and private campgrounds including Aquia Landing Park, Barnesfield Park and Monroe Bay Campgrounds which offer a variety of river activities and help conserve the Potomac's historic landscape and viewshed. Virginia established a new canoe/kayak-in campsite at Caledon State Park in 2014 and is in the process of developing a new 1100 acre State Park at Widewater along the Potomac with trails boat launches, a fishing pier, and campsites, both of which will offer more recreational opportunities, linkages and fill public access gaps along the River for visitors, outdoor adventurers and enthusiasts.

Three national trails – the Captain John Smith Chesapeake National Historic Trail, the Star Spangled Banner National Historic Trail, and the Potomac Heritage National Scenic Trail – run through this entire section of the Potomac River. They provide opportunities for residents and visitors alike to learn about important chapters in American history and the development of the United States. Piscataway Park at the north end of Charles County, administered by the National Park Service and named after the Piscataway Indians still present in the area, offers visitors a public fishing pier, paddling access, and two boardwalks over freshwater tidal wetlands, a variety of nature trails, meadows, and woodland areas.

4.5.2 OTHER RECREATIONAL USES

4.5.2.1 Recreational Fishing

Recreational fishing is one of the most popular outdoor activities in Maryland and along this portion of the Potomac River. According to an economics and sociocultural status and trends study by the National Marine Fisheries Service released in 2014, 672,000 anglers fished Maryland waters in 2012 and contributed more than \$715 million to the State's economy. The tidal Potomac River provides important spawning, nursery or feeding habitat for a myriad of fish including striped bass, drum, largemouth bass, perch, catfish, and snakeheads, and offers outstanding recreational fishing. It is the site of national fishing tournaments, with over 50 organized largemouth bass tournaments targeting the Potomac River for competitive sport fishing yearly. In June 2015, the Walmart FLW National Fishing Tournament brought approximately \$1.5 million in economic activity to Charles County and was filmed by NBC Sports Outdoors.

In June 2015, the Maryland DNR hosted a workshop⁵ to gather data on where, when, and how people used the Potomac River. As a result of this workshop, it was found that recreational fishing from both motorized and non-motorized vessels occurs throughout the entire Potomac River year round. Fishing location is largely dependent on target species and season, but the majority of recreational fishing activity occurs in the bays and tributaries. Gear type used is also dependent on target species. The workshop also revealed an increase in fishing presence on the Potomac River in recent years with anglers present 24 hours a day 7 days a week as long as the waters are not frozen over.

In Charles County, shoreline fishing from piers is available at Smallwood State Park, Friendship Farm Park, and Southern Park. Public access to shoreline fishing is also available at the Douglas Point

⁵ On June 10, 2015, the Maryland Department of Natural Resources hosted a mapping workshop at the College of Southern Maryland in La Plata, Maryland. The purpose of the workshop was to collect spatial data on recreational and commercial activities and cultural assets in the Potomac River. The Maryland DNR captured the data in a Geographic Information System and created maps depicting general and dominant use areas for 23 different uses. The maps can be viewed on the Maryland Coastal Atlas under "Recreational Uses" at http://gisapps.dnr.state.md.us/coastalatlas/WAB/index.html.

Management Area and Chapel Point State Park, but shoreline fishing is known to occur along the entire river on both public and private lands.

Management authority for the mainstem tidal Potomac River below Washington D.C. for most species belongs to the Potomac River Fisheries Commission, a Maryland and Virginia bi-state Commission. They are charged with collecting commercial landings and other similar data, and maintain a system of day markers at the mouths of the various tributaries. Tributaries and some reaches of the nearshore area are under Maryland DNR jurisdiction.

4.5.2.2 Hunting

Hunting is managed and permitted by the Maryland DNR Wildlife and Heritage Service in accordance with open seasons, bag limits and shooting hours on several state lands in the area, including Cedar Point Wildlife Management Area (WMA), Cedarville State Forest (SF), Chapel Point State Park (SP), Chapman SP, Chicamuxen WMA, Indian Creek Natural Resources Management Area (NRMA), Myrtle Grove WMA, Nanjemoy WMA, Riverside WMA, Nanjemoy Creek WMA, and Zekiah Swamp Natural Environment Area (NEA). The June 2015 recreational mapping workshop also revealed dominant waterfowl hunting presence from November to February from the shoreline to 200 yards into the river.

Nanjemoy WMA and the jointly managed Douglas Point Special Recreation Management Area (SRMA) provide hunting for white-tailed deer, gray squirrels and other small game, wild turkey and waterfowl. Waterfowl blind sites are established just north and south of the Wilson's Landing boat ramp, with a disability accessible waterfowl blind site established just south of Douglas Point SRMA. The shorelines along Liverpool Point and Douglas Point are Waterfowl Hunting Zones and considered prime waterfowl hunting opportunities.

4.5.2.3 Fishing and Hunting Guide Services

Due to the proximity to large population centers, availability of access points, and the presence of targeted species, there are a number of guide services for both charter fishing and waterfowl hunting that operate in the tidal Potomac River. Boats launch from both the Maryland and Virginia sides of the Potomac, depending on where certain species are most likely to be present at certain times of year.

4.5.2.4 Fossil Collecting

Fossil hunting has become a popular activity at Purse State Park and other locations on the Potomac River. Collection of fossils on Federal and State lands is only allowed below the mean high water mark on the Potomac River. Only exposed fossils that are on the surface of the beach or the water may be collected; digging in the cliffs or in the water is prohibited. All fossil collection activities elsewhere on Federal and State lands are prohibited, as is collecting on private property without the owner's clear consent. In Maryland, private property starts at the high tide line, and in Virginia it starts at the low tide line. Scientific collection may be permitted based on site-specific analysis for qualified research or educational institutions.

4.5.2.5 Boating & Paddling

Recreational boating is a major activity on the Potomac River. Maryland currently has over 200,000 registered boats, and it has been estimated that Maryland has over 26,000 transient recreational vessels that use Maryland's waterways on an annual basis. Virginia has 246,000 active boat registrations. Boating activities on the Chesapeake Bay include the use of power, sail, and non-motorized boats (e.g., canoes, kayaks).

According to a 2005 recreational boating and infrastructure study prepared for the Maryland DNR, the majority of recreational boats are trailered, requiring access to the river via designated boat launch areas. The past decade has also witnessed a dramatic increase in the number of non-powered boats, including canoes, kayaks and stand up paddle boards that can be launched via docks or soft launch areas. Along the Potomac River and its tributaries, there are six public boat ramp sites (Marshall Hall, Slavens Dock, Friendship Farm Park, Mallows Bay, Indian Head, Smallwood State Park) and six private boat ramps/marinas are available to the public (Aqualand, Captain John's Marina, Port Tobacco Marina, Shymansky's Marina, Skuttlebutt Marina, and Goosebay Marina). On the Virginia side of the river there are approximately twelve marinas or yacht clubs including Stepp's Harbor View, Waugh Point, Aquia Bay, Hope Springs, and Occoquan which offer a wide range of water access, boating services and marine supplies.

In partnership with the Maryland DNR, and to accommodate the rapidly growing number of visitors and residents engaged in paddle sports, Charles County has developed a water-trail map, highlighting four distinct paddling routes along portions of the Potomac River and its tributaries: Mattawoman Creek, Mallows Bay, Nanjemoy Creek and Port Tobacco. These water trails range from short 1 to 2 hour trips, to all day excursions and offer complementary opportunities for fishing, bird and wildlife watching, and exploring the shipwrecks and other historic resources along the Lower Potomac and its tributaries. They are part of the larger planned Lower Potomac River Water Trail, which runs from Washington, D.C., to its confluence with the Chesapeake Bay.

4.5.2.6 Birding and Wildlife Viewing

Bird watching and wildlife viewing are said to be among the fastest growing outdoor activities in the United States and, with its hundreds of miles of relatively undeveloped shoreline, tidal marshes, near shore areas, and forests this portion of the Potomac River, offers extraordinary opportunities to see more than 100 species of native or migratory birds, and other wildlife. For bird watchers, the area along the Potomac River is home to the second largest Bald Eagle population in the State of Maryland, one of the highest populations of breeding Red-Headed Woodpeckers in Maryland, large populations of Osprey, and many colonial waterbirds such as Great Blue heron, egrets, terns and glossy ibis. Other wildlife species abundant in this area include beaver, otter, white-tailed deer, quail, wild turkeys and Common Goldeneye and Canvas Back Ducks. Visitors most often visit state and county parks, Wildlife Management Areas, and shallow creeks to view wildlife.

4.5.3 COMMERCIAL USES

4.5.3.1 Commercial Fishing

Fishing in the Potomac River mainstem is managed and regulated by the Potomac River Fisheries Commission. Fishing in the Potomac River tributaries on the Maryland side of the river is managed and regulated by the Maryland Department of Natural Resources. In 2015, over 1,100,000 pounds of Blue Catfish and over 600,000 pounds of Striped Bass were harvested in the Potomac River mainstem. That same year an additional 134,000 pounds of catfish and 12,000 pounds of white perch were commercially harvested from Maryland tributaries of the Potomac River. In addition, northern snakehead is an invasive species that is increasingly sought for sport and food as a means of control. In 2015, over 4,000 pounds of snakehead were commercially harvested, with a single snakehead tournament reeling in 1,871 pounds.

In dry years, higher salinities see significant commercial catches of Blue Crabs. In 2016 (final data pending), the section of the Potomac adjacent to Mallows Bay was highly productive for commercial crabbers. The area of the river near Mallows Bay is the second most valuable spawning area and nursery for Striped Bass on the Atlantic Coast. The same area is a valuable nursery area for American Shad, River Herring, and other species.

4.5.3.2 Shipping

Domestic shipping occurs on the Potomac River from the mouth of the River to Giesboro Point at Washington, DC. The most recent shipping data from the Army Corps of Engineers 2013 Waterborne Commerce of the United States (WCUS) report shows approximately 1,092,337 short tons of cargo traveling through this area. The majority of the cargo at 760,000 short tons includes crude materials (i.e. gravel, sand, stone, and soil). Approximately 200,000 short tons of petroleum products and 124,000 short tons of farm products are also shipped up and down the Potomac River every year. The controlling depth at the Maryland Point Bar is 19.5 feet and the Liverpool Point bar is 21.0 feet. The channel between Sandy Point and Quantico measures 22.6 feet.

4.5.4 TOURISM

Historically, Charles County has been primarily a rural community whose economy was based largely on agriculture. In recent decades however the county has experienced dramatic growth and a related transformation in its economy. Tourism and recreation are becoming an increasingly important part of the County and State's economic development strategies.

In 2003, Charles County, along with its two neighbors, St. Mary's and Calvert Counties, was designated as the Southern Maryland Heritage Area (SMHA), one of Maryland's 13 state certified areas established to enhance the economic activity of all of Southern Maryland through combining quality heritage tourism and small business development with preservation, cultural and natural resource conservation and education. Both the Charles County Office of Tourism and the SMHA develop visitor experiences and conduct marketing activities in alignment with the goals and objectives of the Maryland Office of Tourism Development (MOTD), the State's official destination marketing organization. SMHA's management plan specifically calls out nature tourism as a promising growth

area and a theme supported by residents. About 25 projects in the management plan's project list are nature and eco-tourism related. In addition, the MOTD's annual marketing plan specifically cites outdoor recreation as a high priority initiative, as water-based experiences continue to be one of the top travel motivators to the state. The varied topography and proximity to water make Charles County a natural destination.

Leisure and hospitality is now Charles County's second largest private employment sector. There are 20 hotels/motels, three bed and breakfasts, three campgrounds, and a broad variety of restaurants, fast food and take-outs able to accommodate a large number of new visitors. According to MOTD data, in 2013 Charles County generated \$184 million in tourism industry sales, \$47.2 million in tax receipts, and supported 3,101 hospitality jobs. Still, a 2012 tourism destination plan study prepared for the Charles County Office of Tourism found that there are great opportunities to increase tourism to Charles County by, among other things, better marketing and promotion of its water assets, historic sites and outdoor recreational facilities including the ghost fleet of Mallows Bay.

Since 1970, Charles County's population has grown by nearly 100,000 people from 47,678 to 146,551 in the 2010 decennial census. Despite this growth rate, the county's Potomac River shoreline and landscape remains relatively undeveloped and is a strong attraction for residents and tourists alike, who come for the area's hunting, fishing, boating and scenic beauty, and increasingly to visit the many shipwrecks visible at low-tide.

Across the river, neighboring Stafford, Prince William and King George Counties in Virginia have experienced similar population and development trends. Their shorelines are also relatively undeveloped and offer numerous opportunities for outdoor recreation and tourism associated with the Potomac River's rich maritime history and water resources. All three counties and the Commonwealth of Virginia actively promote their historic sites, landmarks, and outdoor recreation facilities along the river.

A 2009 study conducted by Douglas Lipton, a Marine Economic Specialist at the University of Maryland Sea Grant Extension Program, found that each registered boat contributed on average \$9,230 per year in economic activity and approximately every 6 boats registered in Maryland lead to more than one full time job in the State's economy. Boaters traveling from neighboring states are believed to substantially increase the numbers of those recreating on Maryland waters and those boaters also contribute to the economy through gas sales, food, equipment and other boating related purchases.

4.5.5 LOCAL ECONOMY

This section discusses the population of the three proposed action alternatives (B, C, and D), selected demographics and the composition of the local economies.

Economic Study Area

An economic study area for each proposed alternative (not including Alternative A, the no action alternative) was identified. The study area is based upon where the primary social and economic impacts are anticipated to occur from the use of MPNMS maritime heritage and natural resources and the

secondary counties. Secondary counties account for the multiplier impacts of spending and are identified by reviewing the Census of Inter-County Commuters (US Census Bureau). Counties are included if there are roughly 5,000 individuals who live in a county adjacent to the sanctuary but work in a different county or who work in an adjacent county but live in different county. The next three figures (Figures 11, 12, and 13) show the study area counties for each proposed alternative.



Figure 11: Alternative B Economic Study Area



Figure 12: Alternative C Economic Study Area



Figure 13: Alternative D Economic Study Area

Population & Demographics

Population estimates, population change and population density for the study areas are presented in Table 12 below. The most up to date data was used in the analysis. The three action alternatives (B, C, and D) have population changes that are higher than the national average, Maryland and Virginia. Additionally, the population densities are higher in the three study areas when compared to Maryland, Virginia and the United States (U.S.). This is not surprising, as the area around the proposed sanctuary is composed of many cities including Washington, DC.

	2014 Population	Population Change (%) 2010-2014	2014 Population Density ¹
Alternative B	3,376,608	6.9%	1,390
Alternative C	4,170,639	8.0%	1,317
Alternative D	5,188,800	7.6%	1,419
Maryland	5,887,776	3.4%	607
Virginia	8,185,131	4.4%	207
United States	314,107,084	3.3%	89

Table 12: Selected Socioeconomic Measures of the Study Areas, Maryland, Virginia and the U.S.

1. Number of people per square mile

Sources: U.S. Department of Commerce, Bureau of the Census and the Bureau of Economic Analysis, Regional Economic Information System.

The next three tables (Tables 13, 14, and 15) present information on the demographics that compose the study areas of the three alternatives. Gender, age, race and ethnicity are presented for review. There are no statistically significant differences for gender in the study areas versus Maryland, Virginia or the U.S. For age, there is a lower proportion of those ages 65 and over in the study areas than Maryland, Virginia or the U.S. All three study areas have a higher proportion of Black, Asian and Other populations than Maryland, Virginia or the U.S. The study areas also have a higher proportion of Hispanic/Latinos than Maryland and Virginia.

	Male	Female
Alternative B	48.7	51.3
Alternative C	48.9	51.1
Alternative D	48.7	51.3
Maryland	48.4	51.6
Virginia	49.1	50.9
United States	49.2	50.8

Table 13: Percent Gender Distribution of the Study Areas, Maryland, Virginia and the U.S.

	Under 5	5-19	20-34	35-44	45-54	55-64	65-74	75 and Older
Alternative B	7	19.4	23.1	14.5	14.7	11.4	6.2	7.3
Alternative C	7	19.1	23.5	15.0	14.6	11.1	6.0	7.1
Alternative D	7	19.2	22.7	14.8	14.7	11.4	6.2	7.5
Maryland	6	19.4	20.4	13.2	15.2	12.5	7.3	9.1
Virginia	6	19.4	21.1	13.4	14.6	12.3	7.5	9.1
United States	6	20.0	20.6	13.0	14.1	12.3	7.6	9.5

Table 14: Percent Age Distribution of the Study Areas, Maryland, Virginia and the U.S.

Table 15: Percent Race Distribution of the Study Areas, Maryland, Virginia and the USA

	White	Black	Asian	Other	Hispanic/Latino
Alternative B	47.5	34.4	9.0	5.1	14.7
Alternative C	51.6	29.9	9.4	5.0	14.8
Alternative D	52.5	27.4	10.4	5.5	15.4
Maryland	58.1	29.5	5.9	3.4	8.8
Virginia	69.3	19.3	5.8	2.2	8.4
United States	73.8	12.6	5.0	4.7	16.9

Income and Employment

The 2015 per capita income was higher and a lower rate of poverty for the three action alternatives (B, C, and D) relative to the U.S., Maryland and Virginia (see Table 16). In addition, there was a lower rate of unemployment in the three alternatives than the U.S. and Maryland. So the study area alternatives are all more prosperous economies than in Maryland, Virginia or the U.S.

	2015 Per Capita Income (\$)	2014 Persons Below Poverty (%)	Labor Force	Unemployed	Unemployment Rate		
Alternative B	59,609	9.4	1,892,762	92,301	4.9		
Alternative C	61,962	8.9	2,375,313	108,420	4.6		
Alternative D	64,124	8.5	2,932,397	130,434	4.4		
Maryland	50,345	10.0	3,151,932	163,827	5.2		
Virginia	54,176	11.5	4,240,476	188,563	4.4		
United States	46,049	15.6	158,390,332	8,439,390	5.3		

Table 16: Income and Employment

The next table (Table 17) shows various sectors of the economy and the percentage of employment within that sector. The largest sector of employment across all three alternatives is the government and government enterprises. Given MPNMS proximity to Washington DC, it is not surprising that the government makes up such a large share of overall employment. Other notable sectors of employment in the three alternatives where the proportion is higher than Maryland, Virginia or the U.S. include educational services and professional, scientific and technical services. A lower proportion of employment than Maryland, Virginia or the U.S. is in health care and social assistance and retail trade. For more detail, see Schwarzmann & Leeworthy, 2016.

	Alternative B	Alternative C	Alternative D	Maryland	Virginia	U.S.
Government and government enterprises	20.8	20.5	19.4	12.9	16.1	17.5
Other Services, except public administration	7.2	7.2	7.2	5.9	6.1	6.1
Accommodation and Food Services	6.2	6.2	6.3	6.3	6.5	5.8
Arts, Entertainment and Recreation	1.8	1.8	1.9	2.2	2.5	2.0
Health Care and Social Assistance	7.8	7.4	8.1	11.2	12.0	9.4
Educational services	14.8	15.3	15.2	6.9	9.8	10.5
Administrative and Waste Management Services	6.2	6.2	6.3	6.3	6.5	5.8
Management of Companies and Enterprises	1.0	1.0	1.0	1.3	0.8	1.6
Professional, Scientific and technical services	14.8	15.3	15.2	6.9	9.8	10.5
Real estate and rental and leasing	4.3	4.3	4.6	4.4	4.7	4.3
Finance and insurance	3.3	3.3	3.7	5.3	4.6	4.3
Information Services	2.3	2.4	2.4	1.8	1.5	1.7
Transportation and warehousing	1.7	2.1	2.0	3.4	2.9	3.0
Retail trade	7.7	7.6	7.7	10.1	9.8	10.0
Manufacturing	0.9	1.0	1.2	7.0	3.2	5.0
Construction	4.2	4.2	4.5	5.2	6.3	5.5
Trade, transport and	0.9	1.0	1.1	3.8	3.0	2.7

Table 17: Economic Sectors and Percentage of Employment

Utilities						
Mining	0.1	0.1	0.1	0.9	0.1	0.3
Forestry, fishing and related activities	0.02	0.02	0.03	0.5	0.2	0.3
Farm earnings	0.1	0.1	0.1	1.4	0.5	1.1

4.5.6. PASSIVE ECONOMIC USE

Many people place (or identify) economic value (willingness to pay) on natural and cultural resources to ensure that they are protected in a certain condition. Passive economic value is a term currently used by economists to describe this source of value. In the past, it was more commonly referred to as non-use value and was described as being motivated by desires to protect resources for future generations (bequeathal value) or to simply know that the resources would be protected in a certain condition in the future (existence value). The reason for the change in terminology is that people must know about the current conditions of the resources to place a value on them. People learn about the conditions of resources and the threats against their future conditions through various media sources (e.g., newspapers, magazines, television, radio, books, and the Internet).

While there are no existing studies on the passive economic value of resources within the MPNMS boundaries, there was clear indication in the original nomination and during the public scoping process that the public places a high value on the existence of these maritime heritage resources.

4.6 DEPARTMENT OF DEFENSE FACILITIES

A number of U.S. Department of Defense (DoD) installations are located along the Potomac River or in the vicinity of the proposed MPNMS (see Figure 14).

These facilities include:

- Marine Corps Base Quantico, located across the Potomac River in Virginia northwest of Mallows Bay;
- The U.S. Army Garrison Adelphi Laboratory Center Blossom Point Research Facility, which is also home to the Naval Research Laboratory Blossom Point, located in Maryland south of Mallows Bay at the tip of the small peninsula formed by Nanjemoy Creek and the Port Tobacco River; and,
- Naval Support Facility (NSF) Indian Head, and the associated Stump Neck Annex, located in Maryland north of Mallows Bay at Cornwallis Neck;
- Naval Support Facility Dahlgren located in Virginia south of Mallows Bay.

These installations are considered here because actions or activities that may be proposed in or arise from a national marine sanctuary designation may overlap or combine with activities or operations occurring on or around DoD installations. The following paragraphs provide short descriptions of each installation and briefly characterize the activities at each.



Figure 14: Map of Proposed Alternatives and DOD Installations.

4.6.1 MARINE CORPS BASE QUANTICO

Marine Corps Base Quantico (MCB Quantico), known as the "Crossroads of the Marine Corps", is a major Marine Corps training base occupying about 59,000 acres in Prince William, Stafford, and Fauquier Counties, Virginia about 2 miles northwest of Mallows Bay. The base consists of two major areas on either side of Interstate 95 - Mainside, east of the interstate, and Westside, west of the interstate. Mainside is home to numerous administrative support functions, some training functions, and Marine Corps Air Facility (MCAF) Quantico. Westside is used primarily for military training. Largely undeveloped, it consists mostly of training areas and ranges used for a wide array of training activities, including small arms and artillery training, demolition training, and air-to-ground training.

Quantico is home for the Military Department Investigative Agencies (MDIA) and Federal Bureau of Investigation (FBI) Academy, the main training center for the FBI. It also houses the principal training facility of the Drug Enforcement Administration (DEA).

As noted in Figure 5, a restricted area extends offshore into the Potomac River from the MCAF at MCB Quantico. The restricted area addresses current security needs at MCB Quantico, including the protection of military assets at MCAF. The restricted area also protects public health by preventing vessels from

disturbing an environmental remediation area located to the northeast of the MCAF. All persons, vessels, or other craft are prohibited from entering, transiting, drifting, dredging, or anchoring within the restricted area without the permission of the Commander, MCB Quantico or his/her designated representatives. The restriction is in place 24 hours a day, seven days a week. The boundary of the restricted area is demarcated with marker buoys and warning signs set at 500 foot intervals. In addition, lighted, floating, small craft intrusion barriers are placed across the Chopawamsic Creek channel at the entrance to the channel from the Potomac River and immediately west of the CSX railroad bridge. Commercial fisherman will be authorized controlled access to the restricted area (with the exception of Chopawamsic Creek channel) after registering with MCB Quantico officials and following specific access notification procedures. The Federal Register published the notice of the Final Rule (33 CFR Section 334.235) by the U.S. Army Corps of Engineers for restricted area and its boundaries on February 4, 2011.

MCAF Quantico is the home of HMX-1, a United States Marine Corps helicopter squadron responsible for the transportation of the President of the United States, Vice President, Cabinet members and other officials. HMX-1 conducts functional check flights at an altitude of 500 feet or more above ground level (AGL) over the east bank of the Potomac River. These check flights require a large amount of flying at various speeds and usually extend to the boundaries of MACF Quantico's airspace and through the proposed MPNMS area. In addition, MCAF conducts multiple air operations involving various types of rotary and fixed wing aircraft to include the MV-22 Osprey, VH-3D Sea King, VH-60N White Hawk, AV-8B Harrier, F-35B and F-35C Lightning II, C-130 Hercules, C-17 Globemaster, and other aircraft. The sanctuary area proposed in alternative C lies within the downwind pattern of the airfield and the approach corridor of runway 2 extends out into the proposed sanctuary area. In addition, both Mallows Bay and nearby electrical powerlines are reporting points for pilots operating under Visual Flight Rules.

On occasion, the Navy conducts Landing Craft Air Cushion (LCAC) exercises in the Potomac River to and from the MCAF Quantico shoreline. These LCACs, which are based out of Joint Expeditionary Base (JEB) Little Creek-Fort Story, Virginia, usually conduct operations on the river in this area twice a year. Normally about four to six LCACs participate in these operations, although on occasion as many as a dozen may be involved. MCB Quantico also serves as a safe harborage for all LCACs based at JEB Little Creek-Fort Story during dangerous storms, such as powerful hurricanes, in which case all of the LCACs could move up the Potomac River to MCB Quantico for several days until the storm passes.

The MCB Quantico Marina is located beyond the Town of Quantico at the east end of Potomac Avenue in Building 25. The Marina has over 100 slips, offering daytime, overnight and long-term berthing for boats up to 50 feet in length, most with electric and water hookups. It has restroom and shower facilities, a pump-out station and a small resale service that sells gas, oil, ice, and other boat supplies on site. It provides direct access to waters bounded by alternatives C and D.

4.6.2 BLOSSOM POINT RESEARCH FACILITY

U.S. Army Garrison Adelphi Laboratory Center Blossom Point Research Facility (BPRF) is a 1,600-acre installation located in Charles County on the peninsula formed by Nanjemoy Creek and the Potomac River about 15 miles downstream from Mallows Bay. BPRF is largely forested with wetlands, open fields, testing areas, and a few buildings. BPRF is used for testing and training activities that include ranges and other open space (USAG ALC 2014). The primary mission of BPRF is to field test fuzes,

explosives and pyrotechnic devices, and electronic telemetry systems. Fuze and related ordnance testing has been conducted at this site since 1942. Typical types of field tests include aircraft tests for light scatter studies; radar air target, encounter simulation; and helicopter drop/recovery of telemetry-instrumented, and simulated projectiles for purposes of gathering baseline data. In addition, the BPRF tests firing, recovery, and disassembly of explosive-loaded, fuzed projectiles for rockets, mortars and cannons. Much of this research and testing are voluntarily limited to 15 pounds per explosion and the test explosions usually result in short bursts of noise. No fixed-wing aircraft operations take place at BPRF. Unmanned aircraft, rockets, and parachutes are used at times for testing. On limited occasions, helicopters use the facility for night-time training. The explosive testing facilities at the BPRF are also available to other interested parties (USAG ALC 2014).

Also located at the BPRF, under a permit from the Army, is the 41 acre Naval Research Laboratory (NRL) which manages satellites through its Blossom Point Tracking Facility, which, at this location, enjoys horizon-to-horizon look angles and an interference-free, low-noise environment. Potential interference with the sensitive satellite antenna radio receivers is minimized by a 2,000-foot (ft.) - radius buffer zone around the NRL site. The NRL facility at BPRF provides simultaneous tracking and control for NRL and Navy satellites. The NRL also maintains two other associated satellite tracking facilities in Charles County, one in Pomonkey and the other at Maryland Point on the Potomac River about 7 miles south of Mallows Bay.

4.6.3 NAVAL SUPPORT FACILITY INDIAN HEAD

NSF Indian Head occupies 3,500 acres (which includes the 1,113 acre Stump Neck Annex) on the Maryland side of the Potomac River in Charles County about 5 miles north of Mallows Bay. The installation consists of two parcels - Cornwallis Neck, on the peninsula formed by Mattawoman Creek and the Potomac River, and Stump Neck across the mouth of the creek from Cornwallis Neck. The Facility occupies 16.5 miles of shoreline on the Potomac River, Mattawoman Creek, and Chicamuxen Creek.

NSF Indian Head includes Navy and joint tenant commands for research and development activities, as well as operational support programs, that include the Naval Surface Weapons Center Explosive Ordnance Disposal Technology Division, Joint Service Explosive Ordnance Disposal Technology Program, Marine Corps Chemical Biological Incident Response Force, Naval Sea Logistics Center, Naval Ordnance Safety and Security Activity, and the Joint Interoperability Test Command.

The land use on Cornwallis Neck includes an operational area and a restricted area in the southern part of the peninsula, where munitions explosive and rocket motor testing is performed. Stump Neck is the primary location for the Naval Explosive Ordnance Disposal Technology Division and Range 3, where the division performs open air detonations of foreign ordnance.

NSF Indian Head has designated an area of the waters adjacent to the facilities as a danger zone (33 CFR Part 334.240). This includes the Potomac River, and the Mattawoman and Chicamuxen creeks. The NSF Indian Head danger zone regulations state:

(a) The danger zone. Beginning at a point on the easterly shore of the Potomac River at latitude 38°36′00″, longitude 77°11′00″; thence to latitude 38°34′30″; longitude 77°13′00″; thence to latitude

38°33'20", longitude 77°14'20"; thence to latitude 38°32'20", longitude 77°15'10"; thence to latitude 38°32'00", longitude 77°15'00"; thence to latitude 38°32'30", longitude 77°14'00"; thence to latitude 38°32'30", longitude 77°14'00"; thence upstream along the easterly shoreline of Chicamuxen Creek to its head thence downstream along the westerly shoreline of Chicamuxen Creek to the southernmost point of Stump Neck; thence along the southeasterly shore of Mattawoman Creek to the pilings remaining from the footbridge connecting the left bank of the creek to the Naval Surface Warfare Center, Indian Head Division; thence along the northwesterly shore of Mattawoman Creek from the pilings remaining from the footbridge to the mouth of the creek; thence in a northeasterly direction along the easterly shore of the Potomac River to the point of beginning.

(b) The regulations.

(1) Firings consisting of controlled explosions within the danger zone, and controlled shore operations, or accidental explosions, hazardous to vessel traffic within the limits of the danger zone, may take place at any time of the day or night and on any day of the week.

(2) Flashing red lights, horns, and signs established at appropriate points will warn vessels of impending tests or operations considered to be hazardous to vessels within the danger zone.

(3) No persons or vessels except vessels of the United States or vessels authorized by the enforcing agency shall enter or remain in the danger zone while lights are flashing, when warning horns are in operation, or when warned or directed by a patrol vessel.

(4) Nothing in this section shall prohibit the use of Mattawoman Creek or Chicamuxen Creek as a harbor of refuge because of stress of weather.

(5) Except as prescribed in paragraph (b)(3) of this section, persons and vessels may enter and proceed through the danger zone without restriction. However, accidental explosions may occur at any time and persons and vessels entering the area do so at their own risk.

(6) Fishermen operating in the danger zone when warning signals are sounded shall evacuate the area immediately.

(7) The regulations in this section shall be enforced by the Commanding Officer, U.S. Naval Surface Warfare Center, Indian Head Division, Indian Head, Maryland.

4.6.4 NAVAL -SUPPORT FACILITY DAHLGREN

The NSF Dahlgren is located in King George County, VA along the Potomac River about 20 miles downstream from Mallows Bay. The 4,300 acre base is composed of two areas – the Mainside located north of Machodoc Creek and the Pumpkin Neck Annex (also called the Explosive Experimental Area) on the south side of Upper Machodoc Creek.

The NSF Dahlgren is home to the Naval Surface Warfare Center Dahlgren Division (NSWCDD) who's mission is to provide research, development, test and evaluation, analysis, system engineering integration and certification of complex naval warfare systems. It is a major testing area for naval guns and ammunition including the Electromagnetic Railgun and pulsed power, microwave and laser technologies.
Although the NSF Dahlgren is located outside of the alternatives considered for the national marine sanctuary, the facility has three designated "danger areas" in the waters adjacent to the facility. The Upper Danger Zone extends north of the Nice Bridge up to Port Tobacco Creek. The regulations for the danger zones (33 CFR Part 334.230) are as follows:

(a) Naval Surface Warfare Center, Dahlgren, VA -

(1) The areas. Portions of the Upper Machodoc Creek and Potomac River near Dahlgren, VA as described below:

(i) Lower zone. The entire portion of the lower Potomac River between a line from Point Lookout, Maryland, to Smith Point, Virginia, and a line from Buoy 14 (abreast of St. Clements Island) to a point near the northeast shore of Hollis Marsh at latitude 38°10′00″, longitude 76°45′22.4″. Hazardous operations are conducted in this zone at infrequent intervals.

(ii) Middle zone. Beginning at the intersection of the Harry W. Nice Bridge with the Virginia shore; thence to Light 33; thence to latitude 38°19'06", longitude 76°57'06" which point is about 3,300 yards east-southeast of Light 30; thence to Line of Fire Buoy O, about 1,150 yards southwest of Swan Point; thence to Line of Fire Buoy M, about 1,700 yards south of Potomac View; thence to Line of Fire Buoy K, about 1,400 yards southwesterly of the lower end of Cobb Island; thence to Buoy 14, abreast of St. Clements Island, thence southwest to a point near the northeast shore of Hollis Marsh at latitude 38°10'00"; longitude 76°45'22.4"; thence northwest to Line of Fire Buoy J, about 3,000 yards off Popes Creek, Virginia; thence to Line of Fire Buoy L, about 3,600 yards off Church Point; thence to Line of Fire Buoy N, about 900 yards off Colonial Beach; thence to Line of Fire Buoy P, about 1,000 yards off Bluff Point; thence northwest to latitude 38°17'54", longitude 77°01'02", a point of the Virginia shore on property of the Naval Support Facility Dahlgren, a distance of about 4,080 yards; thence north along the Potomac shore of Naval Surface Warfare Center, Dahlgren to Baber Point; and thence west along the Upper Machodoc Creek shore of Naval Surface Warfare Center, Dahlgren to Howland Point at latitude 38°19'0.5", longitude 77°03'23"; thence northeast to latitude 38°19'18", longitude 77°02'29", a point on the Naval Surface Warfare Center, Dahlgren shore about 350 yards southeast of the base of the Navy recreational pier. Hazardous operations are normally conducted in this zone daily except Saturdays, Sundays, and national holidays.

(iii) Upper zone. Beginning at Mathias Point, Va.; thence north to Light 5; thence northnortheast to Light 6; thence east-southeast to Lighted Buoy 2, thence east-southeast to a point on the Maryland shore at approximately latitude 38°23'35.5", longitude 76°59'15.5"; thence south along the Maryland shore to, and then along, a line passing through Light 1 to the Virginia shore, parallel to the Harry W. Nice Bridge; thence north with the Virginia shore to the point of beginning. Hazardous operations are conducted in this zone at infrequent intervals.

(2) The regulations.

(i) Hazardous operations normally take place between the hours of 8 a.m. and 5 p.m. daily except Saturdays, Sundays and national holidays, with infrequent night firing between 5 p.m. and 10:30 p.m. During a national emergency, hazardous operations will take place between the hours of 6 a.m. and 10:30 p.m. daily except Sundays. Hazardous operations may involve firing large or small caliber guns and projectiles, aerial bombing, use of directed energy, and operating manned or unmanned watercraft.

(ii) When hazardous operations are in progress, no person, or fishing or ovstering vessels shall operate within the danger zone affected unless so authorized by the Naval Surface Warfare Center, Dahlgren's patrol boats. Oystering and fishing boats or other craft may cross the river in the danger zone only after they have reported to the patrol boat and received instructions as to when and where to cross. Deep-draft vessels using dredged channels and propelled by mechanical power at a speed greater than five miles per hour may proceed directly through the danger zones without restriction except when notified to the contrary by the patrol boat. Unless instructed to the contrary by the patrol boat, small craft navigating up or down the Potomac River during hazardous operations shall proceed outside of the northeastern boundary of the Middle Danger Zone. All craft desiring to enter the Middle Danger Zone when proceeding in or out of Upper Machodoc Creek during hazardous operations will be instructed by the patrol boat; for those craft that desire to proceed in or out of Upper Machodoc Creek on a course between the western shore of the Potomac River and a line from the Main Dock of Naval Surface Warfare Center, Dahlgren to Line of Fire Buoy P, clearance will be granted to proceed upon request directed to the patrol boat.

(iii) Due to hazards of unexploded ordnance, no person or craft in the Middle Danger Zone shall approach closer than 100 yards to the shoreline of Naval Surface Warfare Center, Dahlgren, previously known as the Naval Surface Weapons Center.

(3) Enforcement. The regulations shall be enforced by the Commander, Naval Surface Warfare Center, Dahlgren and such agencies as he/she may designate. Patrol boats, in the execution of their mission assigned herein, shall display a square red flag during daylight hours for purposes of identification; at night time, a 32 point red light shall be displayed at the masthead. Naval Surface Warfare Center, Dahlgren (Range Control) can be contacted by Marine VHF radio (Channel 16) or by telephone (540) 653-8791.

(4) Exceptions. Nothing in this regulation shall be intended to prevent commercial fishing or the lawful use of approved waterfowl hunting blinds along the shorelines of Naval Surface Warfare Center, Dahlgren, provided that all necessary licenses and permits have been obtained from the Maryland Department of Natural Resources, the Virginia Department of Game and Inland Fisheries, or the Potomac River Fisheries Commission. Waterfowl hunters shall provide a completed copy of their blind permit to the Natural Resources Manager at Naval Surface Warfare Center, Dahlgren. Commercial fishermen and waterfowl hunters must observe all warnings and range clearances, as noted herein. Federal, State and local law enforcement agencies are exempt from the provisions of paragraph (a) of this section.

Many of the anticipated actions and activities that may occur as a result of any NMS designation at Mallows Bay-Potomac River would occur on the waters of the Potomac River and its tributaries, some of which are anticipated to overlap with marine areas utilized by the aforementioned U.S. DoD installations. Some existing overlaps are known and already occur and may vary between seasons. For instance, the Navy, commercial and industrial vessels (e.g., fuel barges, gravel barges), commercial fishing, and recreational users already operate in common waters. Marine freight activities south of Washington, D.C., on the Potomac River are already limited by a relatively shallow draft at a number of locations – e.g., vessel draft limits are 19.8 feet (ft.) at the Mattawoman Bar and 18.5 ft. at the Hunting Creek Shoal.

Chapter 5

ENVIRONMENTAL CONSEQUENCES

5.1 INTRODUCTION

This section evaluates the anticipated environmental impacts resulting from the implementation of each of the sanctuary expansion alternatives, including the no action alternative, presented in Chapter 3. The potential impacts would be applicable to the affected environment described in Chapter 4. Also discussed are potential cumulative impacts; unavoidable adverse impacts; the relationship between short-term uses and long-term productivity; and the irreversible and irretrievable commitment of resources. As described in Chapter 3, the alternatives are exclusively spatial in nature; that is, only alternatives related to the potential sanctuary boundary are considered, and each of the alternatives assumes that the regulatory regime outlined in Chapter 3 and the Notice of Proposed Rulemaking would extend to areas encompassed within the boundaries.

Under NEPA (42 U.S.C. 4321 et seq.), an environmental assessment would not have sufficed to analyze the impacts of this action since NOAA has determined that significant positive impacts are likely under alternatives B, C, and D for the maritime cultural resources. Additionally, the NMSA requires NOAA to publish a DEIS regardless of the intensity of the impacts of the proposed action if NOAA is designating a new national marine sanctuary (16 U.S.C. 1434).

5.2 AFFECTED RESOURCES AND POTENTIAL IMPACTS

The following sections describe the environmental consequences of the alternatives. The potential impacts, both beneficial and adverse, have been described by their characteristics: type (direct, indirect, or cumulative), duration (short- or long-term), geographic extent (localized or beyond project site), and magnitude/intensity; and an adverse or beneficial qualifier is applied (see Table 18). While the application of comprehensive sanctuary management activities, regulations, and resource protection programs to nationally significant cultural and historic features constitutes the primary and most direct benefit of the proposed action and the alternatives, there are several other anticipated benefits and minor adverse impacts to the human environment within and beyond the alternative areas as well. These consequences are common to expansion Alternatives B-D, though proportional to the areal extent of the alternative. Evaluations are provided for each resource element described in Chapter 4 (Affected Environment).

Types of Potential Impacts

Direct, indirect, and cumulative impacts are defined at 40 CFR 1508.7 and 1508.8, and these definitions are presented below. These categories are used to describe the nature, timing, and proximity of potential impacts on the affected area. Cumulative impacts as defined below are discussed in Section 5.3.7.

- **Direct Impact**: A known or potential impact caused by the proposed action or project that occurs at the time and place of the action.
- **Indirect Impact**: A known or potential impact caused or induced by the proposed action or project that occurs later than the action or is removed in distance from it, but is still reasonably expected to occur.
- **Cumulative Impact**: A known or potential impact resulting from the incremental effect of the proposed action added to other past, present, or reasonably foreseeable future actions.

Duration of Potential Impacts

The duration of the potential impact can be defined as either short-term or long-term and indicates the period of time during which the environmental resource would be impacted. Duration takes into account the permanence of an impact or the potential for natural attenuation of an impact. In general, the impacts of all of the proposed alternatives would be long-term or permanent. The duration of each potential impact is defined as follows:

- **Short-Term Impact**: A known or potential impact of limited duration, relative to the proposed action and the target resource. For the purposes of this analysis, these impacts may be instantaneous or may last minutes, hours, days, or up to 5 years.
- **Long-Term Impact**: A known or potential impact of extended duration, relative to the proposed action and the environmental resource. For the purposes of this analysis, these impacts would last longer than 5 years.
- **Permanent Impact**: A known or potential impact that is likely to remain unchanged indefinitely.

Geographic Extent

National marine sanctuary designation can cause impact at geographic scales beyond the proposed boundaries. For the purposes of this analysis, impacts are assessed in two ways:

- **Localized**: Site-specific and generally limited to the area within and the immediate surrounds of the proposed boundaries.
- **Beyond Proposed Boundaries**: Unconfined or unrestricted to the proposed boundaries. These impacts may extend only in the immediate vicinity of a proposed boundary or throughout Charles County, Maryland and/or throughout Prince William, Stafford, and King George Counties in Virginia.

Magnitude of Potential Impacts

The magnitude or intensity of a known or potential impact is defined on a spectrum ranging from no impacts to major impacts. The potential impacts could be either beneficial or adverse for a particular resource. The intent of the proposed action is to provide beneficial impacts to the target resources.

- **Minor impacts** to the structure or function of a resource might be perceptible but are typically not amenable to measurement. This term is closely linked to "negligible" which refers to a level that is below significant to the point of being hardly detectable. These are typically localized but may in certain circumstances extend beyond a proposed boundary. Generally, minor impacts are those that, in their context and due to their low level of severity, do not have the potential to meet the considerations of 'significance' set forth in CEQ regulations (40 CFR 1508.27).
- **Moderate impacts** to the structure or function of these resources are more perceptible and, typically, more amenable to quantification or measurement. These can be both localized, or may extend beyond a proposed boundary. Generally, moderate impacts are those that, in their context and due to their low level of severity, do not have the potential to meet the considerations of 'significance' set forth in CEQ regulations (40 CFR 1508.27).
- **Major impacts** to these resources are typically obvious, amenable to quantification or measurement, and result in substantial structural or functional changes to the resource. These can be localized, or may extend beyond a proposed boundary. Generally, major impacts are those that in their context and due to their severity, have the potential to meet the considerations of 'significance' set forth in CEQ regulations (40 CFR 1508.27).

Type of Impact	Duration of Impact	Geographic Extent	Magnitude / Intensity	Qualifier	Significance Determination
Direct	Short-term	Localized	Minor	Adverse	No Effect Negligible
Indirect	Long-term	Beyond proposed boundaries	Moderate	Beneficial	Less than Significant (<)
Cumulative	Permanent		Major		Significant (>)

Table 18: Summary of terms used to describe potential environmental impacts

5.3 ANALYSIS OF ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

5.3.1 Alternative A: No Action

The No Action alternative would mean not establishing a national marine sanctuary in this area. Implementation of the No Action alternative would mean no changes to existing management of the resources in this area described above in Chapter 4 Affected Environment. The No Action alternative provides a baseline against which environmental consequences of the national marine sanctuary designation alternatives can be compared. No direct changes to the environment or resources are expected to result from the No Action alternative. By not implementing the management actions and regulatory protections in the alternatives that would designate a national marine sanctuary there would be minor to moderate, indirect, adverse impacts to the maritime cultural resources (see Table 19, Row 7 and 8) and the socio-economic resources (see Table 19, Rows 17, 18, 20, 21) of the area. For the maritime cultural resources, the magnitude of the adverse impact varies are based on whether the resources are located

within the Historic District, and therefore have NHPA protections, or are outside the district with less protection from damage and removal. Impacts to socio-economic resources are minor due to the lost opportunity to attract new visitors to area. In addition, the public and media attention given to the area merely by virtue of its having been considered for Sanctuary status would have direct and significant impacts. Increased visitation was already being experienced during the period from 2014 onward. Should a Sanctuary not be established, this increased and increasing visitation without additional infrastructure to manage it can only lead to adverse impacts to the maritime cultural landscape and its constituent elements and features.

The maritime cultural resources would not have the added regulatory and non-regulatory protections that Sanctuary status would provide and this would leave resources vulnerable to damage either through a lack of understanding and appreciation of the historic nature of the resources or through damage not prohibited under current management. The determination not to establish a Sanctuary could even give the impression that the resources are not significant and do not merit preservation and protection. The existing protections under Maryland law would continue to apply and the resources within the National Register Historic District would continue to have additional protections provided under the NHPA that would reduce the negative, indirect impacts of no sanctuary designation (see Table 19, Row 7). The maritime cultural resources outside the historic district would still be protected under Maryland law, which allows limited removal, but those resources would not have the added protection of a sanctuary designation or NHPA designation potentially resulting in additional negative, indirect impacts (see Table 19, Row 8). The socio-economic resources of the area including the water access and facilities (see Table 19, Rows 17), other recreational uses (see Table 19, Rows 18), tourism (see Table 19, Rows 20), the local economy (see Table 19, Rows 21), and passive economic use (see Table 19, Rows 22) would experience indirect, minor adverse impacts because there would be no sanctuary designation to draw attention to the area and bring in additional visitors to drive economic development as has been seen in other national marine sanctuaries around the country. These adverse impacts are less than significant under the no action alternative due to their low level of intensity in the context of current management and economic development in the area.

There would be no impact on the additional physical and biological resources in the area since no action would leave the environment as is, without adding additional indirect beneficial or adverse impacts that would result from a sanctuary designation and the associated activities in the area.

Row #	Resource	Sub - category	Detail of Sub - category	Impact Type	Impact Duration	Geographic Extent	Magnitude / Intensity	Quality	Significance
1	Physical Environment	Geology		None	Permanent	Localized	N/A	N/A	No Effect
2		Water	Quality / Quantity	None	Permanent	Localized	N/A	N/A	No Effect
3			Dynamics	None	Permanent	Localized	N/A	N/A	No Effect
4		Air Quality		None	Permanent	Localized	N/A	N/A	No Effect
5		Climate		None	Permanent	Localized	N/A	N/A	No Effect
6		Noise		None	Permanent	Localized	N/A	N/A	No Effect

Table 19: Summary of the environmental consequences of Alternative A, the "No Action" alternative.

7	Maritime Cultural Landscape Resources	Within Historic District		Indirect	Permanent	Localized	Minor	Adverse	Less than significant
8		Outside Historic District		Indirect	Permanent	Localized	Moderate	Adverse	Less than significant
9	Biological Resources	Fisheries		None	Permanent	Localized	N/A	N/A	No Effect
10		Protected Species		None	Permanent	Localized	N/A	N/A	No Effect
11		Birds		None	Permanent	Localized	N/A	N/A	No Effect
12		Terrestrial Species		None	Permanent	Localized	N/A	N/A	No Effect
13		Habitat	Tidal River	None	Permanent	Localized	N/A	N/A	No Effect
14			Palustrine	None	Permanent	Localized	N/A	N/A	No Effect
15			Terrestrial	None	Permanent	Localized	N/A	N/A	No Effect
16			EFH / Critical Habitat	None	Permanent	Localized	N/A	N/A	No Effect
17	Socio- Economic Resources	Water Access & Facilities		Indirect	Permanent	Localized	Minor	Adverse	Less than significant
18		Other Recreational Uses		Indirect	Permanent	Localized	Minor	Adverse	Less than significant
19		Commercial Uses		None	Permanent	Localized	N/A	N/A	No Effect
20		Tourism		Indirect	Permanent	Localized	Minor	Adverse	Less than significant
21		Local economy		Indirect	Permanent	Localized	Minor	Adverse	Less than significant
22		Passive Economic Use		Indirect	Permanent	Localized	Minor	Adverse	Less than significant
23	Department of Defense Facilities	MCB Quantico		None	Permanent	Localized	N/A	N/A	No Effect
24		Blossom Point		None	Permanent	Localized	N/A	N/A	No Effect
25		NSF Indian Head		None	Permanent	Localized	N/A	N/A	No Effect
26		NSF Dahlgren		None	Permanent	Localized	N/A	N/A	No Effect

5.3.2 Impacts Common to Alternatives B, C, and D

The environmental consequences for 19 of the 26 resources categories described in Chapter 4 are the same for the action alternatives (B, C, and D). Table 20 summarizes the impacts common across

Alternatives B, C, and D. Detailed descriptions of these common impacts are below. The differences between the action alternatives is based on the square mileage of area included in the proposed boundary as described in Chapter 3. For the resources categories below the difference in area did not affect the environmental consequences. For additional information on minor differences across action alternatives in terms of order of magnitude see Section 5.3.7.

Row #	Resource	Sub - category	Detail of Sub - category	Impact Type	Impact Duration	Geographic Extent	Magnitude / Intensity	Quality	Significance
1	Physical Environment	Geology		Indirect	Permanent	Localize	Minor	Neutral	Negligible
2		Water	Quality / Quantity	Indirect	Short Term	Localize	Minor	Adverse	Negligible
3		Water	Dynamics	None	Permanent	Localize	N/A	N/A	No Effect
4		Air Quality		Indirect	Short Term	Localize	Minor	Adverse	Negligible
5		Climate (includes climate change)		Indirect	Short Term	Localize	Minor	Adverse	Negligible
6		Noise		Indirect	Short Term	Localize	Minor	Adverse	Negligible
9	Biological Resources	Fisheries		Indirect	Long Term	Beyond	Minor	Beneficial	Less than significant
10		Protected Species		Indirect	Long Term	Beyond	Minor	Beneficial	Less than significant
11		Birds		Indirect	Long Term	Beyond	Minor	Beneficial	Less than significant
12		Terrestrial Species		Indirect	Long Term	Beyond	Minor	Beneficial	Less than significant
13		Habitat	Tidal River	Indirect	Long Term	Beyond	Moderate	Beneficial	Less than significant
14		Habitat	Palustrine	Indirect	Long Term	Beyond	Minor	Beneficial	Less than significant
15		Habitat	Terrestrial	Indirect	Long Term	Beyond	Minor	Neutral	Less than significant
16		Habitat	EFH / Critical Habitat	Indirect	Long Term	Beyond	Minor	Beneficial	Less than significant
18	Socio- economic Resources	Other Recreational Uses		Direct	Permanent	Localized	Moderate	Beneficial	Less than significant
19		Commercial Uses		Indirect	Permanent	Localized	Minor	Beneficial	Less than significant

Table 20: Summary of the environmental consequences common to Alternatives B, C, and D

20	Tourism	Direct	Permanent	Beyond	Moderate	Beneficial	Less than significant
21	Local economy	Indirect	Long Term	Beyond	Moderate	Beneficial	Less than significant
22	Passive Economic Use	Indirect	Long Term	Beyond	Minor	Beneficial	Less than significant

Physical Environment

Geology

Overall there is expected to be an indirect, permanent, local, minor, neutral, negligible impact (Table 20, Row 1) on the geology of the area from a combination of minor positive and minor negative impacts. The historic resources lie within the river bed and have become immersed in the bottom substrates. Due to the relationship between the historic resources and the river bed, sanctuary designation will have a minor permanent, indirect, and beneficial impact to the river bed substrates. The proposed sanctuary regulations prohibit damage to the historical resources. Since the historical resources are irrevocably connected to the river bed substrates, actions to protect the historical resources ultimately will also indirectly benefit the underlying substrates. Likewise, actions that threaten the historical resources would likely also negatively impact the substrates. Activities that may negatively impact the geological structure and substrates in the study area include fishing with bottom-tending gears, anchoring, scraping, digging, dredging, sand and mineral mining, and oil and gas exploration. It is anticipated that any one of these activities would have an indirect, but permanent effect on the geology. Impacts would likely be minor and would be localized to where the activity took place.

The most common activity that takes place within the boundary is anchoring. Anchoring, particularly large or heavy anchors, disrupts the bottom substrates and can cause minor negative impacts to the river bed. Increased visitation because of a national marine sanctuary designation has the potential to increase this type of damage that would result in a negative impact. Education and outreach program are planned to mitigate this type of unintended damage. Another activity, dredging, could have an impact; however, reviews of dredging records dating back to the 1970s show that Maryland has not assisted with any dredging projects along the Potomac River area considered in this action. Any future dredging projects in the Potomac River, by public or private groups, would come through Maryland review and concerns about the impacts on historic resources can be addressed at that time. Also, while it does not currently occur in the area, oil drilling adjacent to the area or under the Potomac River through directional drilling has the potential to permanently alter the geological structure and underlying substrates.

Water Resources

Quality and Quantity

Discharge from the increased number of boaters visiting the sanctuary for recreational, educational, or research purposes would indirectly have a potentially adverse, but minor impact on the water quality of the area (Table 20, Row 2). Water quality impacts are negligible due to the short-term and localized

nature of increased boating traffic. There are no discharge regulations associated with the sanctuary, so no direct effects to water quality.

Water Dynamics

Designation of the sanctuary would have no effect on the quantity of water or dynamics within the Potomac River (Table 20, Row 3).

Air Quality

Exhaust from vessel traffic on the Potomac River is not currently regulated, and no additional regulation will be enacted with designation of this sanctuary (Table 20, Row 4). Increased vessel traffic related to increased visitation of the sanctuary may have an adverse, but minor impact on air quality. This indirect impact to air quality would be localized to the sanctuary boundaries on a short-term basis, and would be negligible.

Climate

Increased exhaust due to vessel traffic as noted above may contribute to an increase of greenhouse gasses contributing to a change in the earth's climate. The adverse impact of the gasses associated with a localized increase in visitation and use of the sanctuary is minor, and considered negligible in the context of the greater Chesapeake Bay (Table 20, Row 5).

Noise

Increased visitation to the area, including vehicular traffic on the roadways and vessel traffic on the water, may contribute to a minor increase in noise pollution in the area. This adverse impact would be short-term (only when visitors are present) and localized, and is expected to be less than significant (Table 20, Row 6).

Biological Resources

Fisheries, Protected Species, Birds, and Terrestrial Species

A diverse range of biological resources including fish, protected species, birds, and terrestrial species are found throughout the study area as described in Chapter 4. Because these species utilize the shipwrecks for a variety of their life stages, including spawning, there is expected to be an indirect, minor and beneficial impacts to the biological resources from additional protection of the shipwrecks by the national marine sanctuary (Table 20, Rows 9, 10, 11, and 12). The species that directly use the shipwreck habitat would see the most benefit from the direct conservation of their habitat.

Management actions could increase attention to, study of, and interpretation for, the biological resources resulting. The additional information will help state and local managers carry out their programs and policies more effectively for the biological resources resulting in indirect, beneficial, and long term

impacts to the biological resources beyond the sanctuary boundary. There are no foreseeable negative impacts to the biological resources under Alternatives B, C, or D.

Habitat

Tidal River, Palustrine, and EFH / Critical Habitat

The boundaries of Alternatives B, C, and D contain only tidal river habitat. While the proposed national marine sanctuary designation is focused on the conservation of maritime heritage resources it is expected that the river habitat will see indirect, minor, beneficial, less than significant impacts by protecting this current, unique habitat feature (Table 20, Row 13). The proposed regulation prohibiting damage to the shipwrecks would preserve the current status of tidal river habitat where the shipwrecks create vertical habitat features used by the biological resources described in Chapter 4. Without a national marine sanctuary designation the shipwrecks, and therefore, the tidal habitat, would be vulnerable to degradation. Because the beneficial impact to the habitat is estimated to be less than significant and indirectly related to the conservation of shipwrecks there is no difference expected between the three action alternatives.

Adjacent to the boundaries of Alternatives B, C, and D are areas of palustrine habitat located off the main river channel. This area is expected to see the same type of indirect, minor beneficial impacts as the tidal river habitat from a national marine sanctuary designation (Table 20, Row 14).

The tidal river habitat also serves at essential fish habitat (EFH) for summer flounder (*Paralichthys dentatus*) and bluefish (*Pomatomus saltatrix*), and serves as critical habitat for Atlantic sturgeon (*Acipenser oxyrhinchus*) (*see* section 4.4.5.4 EFH/Critical Habitat for more information). These important habitat types will see the same indirect, minor, beneficial impacts as the tidal river habitat from designating the area as a national marine sanctuary (Table 20, Row 16).

Terrestrial

Since the boundaries of the sanctuary lie within the waters of the Potomac River, and any impacts to adjacent terrestrial habitats would be indirect. There are no regulatory or non-regulatory actions are planned in this proposed action that would provide a positive or negative impact on the terrestrial habitat, but increase use of the river habitat may increase visitation to the adjacent terrestrial habitat. The visitation will likely bring positive benefits to the terrestrial habitat, such as shoreline cleanup efforts, as well as negative impacts from the pressure of more people using the land adjacent to the sanctuary area. Therefore, NOAA estimates that terrestrial habitat will see a minor, neutral impact that is less than significant (Table 20, Row 15).

Socio-Economic Resources

Other Recreational Uses

Recreational use of the Potomac River in the area under consideration for designation will permanently benefit from an increase in access, outreach and education to visitors (Table 20, Row 18). Designation is anticipated to have a localized, direct impact by increasing awareness and therefore usage of the area for

recreational purposes. Development of educational materials and water trail maps will enhance the visitor experience. There are no new regulations proposed that would limit any recreational use in the area, including recreational fishing, hunting, guide services, fossil collecting, birding, wildlife viewing, boating and paddling. While moderately beneficial, the impacts of designation to recreation are expected to be less than significant.

Commercial Uses

Localized increases in the number of personal watercraft and other vessels on the water are anticipated with sanctuary designation, but no changes are expected in commercial fishing or shipping as a results of sanctuary designation.

Under the proposed regulations, NOAA would not permit moving, removing, recovering, altering, injuring, destroying, possessing or attempting to move, remove, recover, alter, injure, destroy or possess a sanctuary resource. NOAA does not expect any impact to businesses related to commercial fishing, recreational for-hire fishing operations, and other operators in all of the proposed action alternatives (B, C and D). The gear likely to be used to commercially fish or recreationally fish in the sanctuary will not be impacted by this regulation. Therefore, commercial fishing operations and for-hire operations are not expected to be impacted. Education and outreach will be used to educate user groups about the location of the sanctuary resources to prevent anchor damage.

Certain management activities, such as improving safe passage markers, developing outreach materials on fishing activity, and increasing general public knowledge about the economic activities that occur in the area, are intended to mitigate any potential negative impacts to existing commercial shipping and fishing activities. Therefore, there are no anticipated impacts to normal, existing commercial shipping activities that occur throughout the proposed designation areas. In fact, there may be minor beneficial impacts to commercial fishing activities due to future increases in water access. Impacts to commercial uses under all alternatives are anticipated to be indirect, permanent, localized, and minor (Table 20, Row 19).

Tourism, Local economy, Passive Economic Use

Based upon the proposed regulations there are expected to be direct and indirect beneficial impacts to the local economy and small businesses from the proposed action alternatives (B, C and D). As previously mentioned in Chapter 4, visiting historical sites is a popular recreational activity in both Maryland and Virginia. A sanctuary designation may help to increase awareness of the historical and cultural resources within proposed sanctuary. It is expected that designation of Mallows Bay-Potomac River as a sanctuary would draw more tourists to the site and the surrounding area. Businesses that relate directly to the MPNMS, such as kayak outfitters and charter fishing boats, would likely see an increase in visitors. The potential benefit of outreach and education efforts that may arise as a result of sanctuary designation is the ability of existing tourism and recreational businesses or entrepreneurs to leverage the sanctuary and its resources to expand their business. In which case, recreational operators could potentially see a permanent, direct, moderate positive benefit (Table 20, Row 20). Businesses is the wider local economy may also see an indirect benefit from the increased visitation as visitors spend money at other local business not directly focused on tourism. It is estimated the local economy will see an indirect, moderate, moderate,

beneficial impact from sanctuary designation (Table 20, Row 21). Passive use may create additional economic value and benefits as people spend time and money to learn about the resources through the purchase of materials such as books, brochures, etc. Sanctuary designation has the potential to create indirect, minor, beneficial impacts for passive economic use (Table 20, Row 22). Additionally, the proposed sanctuary regulations will have no impact on personal property rights, land use and planning.

5.3.4 Impacts Specific to Alternative B

In addition to the impacts common to the action alternatives (B, C, and D) there are additional impacts specific to each of three boundary alternatives. Specifically, the impacts to the maritime cultural landscape resources, water access and facilities, and the four DOD facilities in the area. Table 21 shows the impacts specific to Alternative B.

Row #	Resource	Sub-category	Impact Type	Impact Duration	Geographic Extent	Magnitude / Intensity	Quality	Significance
7	Maritime Cultural Landscape Resources	Within Historic District	Direct	Permanent	Localize	Major	Beneficial	Significant
8		Outside Historic District	Indirect	Permanent	Localize	Minor	Beneficial	Less than significant
17	Socio- Economic Resources	Water Access & Facilities	Indirect	Long Term	Localized	Moderate	Beneficial	Less than significant
23	Department of Defense Facilities	MCB Quantico	Indirect	Permanent	Localized	Minor	Beneficial	Less than significant
24		Blossom Point	No impact	Permanent	N/A	N/A	N/A	No Effect
25		NSF Indian Head	No impact	Permanent	N/A	N/A	N/A	No Effect
26		NSF Dahlgren	No impact	Permanent	N/A	N/A	N/A	No Effect

Table 21: Summary of the environmental consequences of Alternative B.

Maritime Cultural Landscape Resources

Within Historic District

If Alternative B is selected, the management framework within the Mallows Bay-Widewater Historic and Archaeological District would benefit by the additional protective measures afforded by sanctuary status including the National Marine Sanctuaries Act, the Abandoned Shipwreck Act of 1987, and the Archeological Resources Protection Act of 1979. Within the Historic District no collection is permitted because it is a National Register District and the proposed sanctuary regulation would prohibit any type of damage to the resources. Education and outreach program would provide additional benefits to both users

and the resources. This benefit would be a permanent, major, beneficial direct, and significant for the local area covered by the designation (Table 21, Row 7).

Outside Historic District

Outsides the Historic District the management framework would remain the same as the current status. Maritime heritage resources overall would continue to be governed by State legislation, specifically the Maryland Submerged Archaeological Historic Property Act, that allows limited collection of artifacts without a permit. While some indirect, positive impacts may occur beyond the sanctuary boundary, the impact would be minor and less than significant (Table 21, Row 8). At least two WWI/USEFC vessels in Maryland waters would be outside of Sanctuary boundaries and the attention drawn to these vessels through the sanctuary designation process could make them vulnerable to casual damage by increased visitation without the increased protection of the sanctuary status. This would true of all elements of the Maritime Cultural Landscape but the vessels related to the USEFC would be especially salient.

Socio-Economic Resources

Water Access and Facilities

Water access areas for public recreation are still very limited in the area of the Potomac River near the proposed sanctuary boundaries. Both a Charles County June 2015 recreational mapping workshop and the sanctuary designation public scoping sessions in October 2015 revealed a strong demand for more shoreline and boating access. The Charles County Land Preservation, Parks, and Recreation Plan and the Southern Maryland Heritage Tourism Plan both also identify a need for additional shoreline access for fishing, walking, nature viewing and boat ramps and facilities for power, sail and paddle boats in Charles County. The Chesapeake Watershed Agreement of 2014 calls for adding 300 new public access sites to the Chesapeake Bay and throughout the watershed by 2025, with a strong emphasis on providing opportunities for boating, swimming and fishing. It is anticipated that sanctuary designation would enable the enhancement of existing public access sites within sanctuary boundaries and the possible addition of new sites.

Socio-economic resources (gas stations, convenience stores, bait shops) are also very limited along road access points to the shoreline and along the shoreline of the proposed sanctuary boundaries. Visitation to Mallows Bay Park (the main access point to the shipwrecks at Mallows Bay) has already increased dramatically due to the development of the Park and the increased awareness of the historic resources there. It is anticipated that this already increased visitation and new tourism associated with sanctuary designation will provide the impetus for the development of new businesses to serve visitors to the sanctuary.

If Alternative B was selected the area along the shoreline available for enhancing public access would be limited, and the potential to enhance supporting resources would be also be geographically limited. The benefit from Alternative B for water access and facilities would be indirect, moderate, and less than significant (Table 21, Row 17).

Department of Defense Facilities

Quantico, Blossom Point, Indian Head, Dahlgren

The northern boundary of Alternative B would end south of the MCB Quantico and the associated restricted area, and the boundary would not overlap or approach Blossom Point Research Facility, NSF Indian Head, or NSF Dahlgren. If Alternative B was selected the sanctuary education and outreach programing in cooperation with MCB Quantico staff would provide an indirect, permanent, localized, minor benefit that was less than significant (Table 21, Row 23). No effect is expected for the other three facilities (Table 21, Rows 24, 25, 26), given their location relative to Alternative B.

5.3.5 Impacts Specific to Alternative C

NOAA expects the same impacts to water access and facilities and the four DOD facilities to be consistent between Alternatives B and C. However, NOAA expects additional beneficial impacts to the maritime cultural landscape resources with Alternative C. Table 22 show the impacts specific to Alternative C.

Row #	Resource	Sub-category	Impact Type	Impact Duration	Geographic Extent	Magnitude / Intensity	Quality	Significance
7	Maritime Cultural Landscape Resources	Within Historic District	Direct	Permanent	Localize	Major	Beneficial	Significant
8		Outside Historic District	Direct	Permanent	Localize	Major	Beneficial	Significant
17	Socio- Economic Resources	Water Access & Facilities	Indirect	Long Term	Localized	Moderate	Beneficial	Less than significant
23	Department of Defense Facilities	MCB Quantico	Indirect	Permanent	Localized	Minor	Beneficial	Less than significant
24		Blossom Point	No Impact	N/A	N/A	N/A	N/A	No Effect
25		NSF Indian Head	No Impact	N/A	N/A	N/A	N/A	No Effect
26		NSF Dahlgren	No Impact	N/A	N/A	N/A	N/A	No Effect

Table 22: Summary of the environmental consequences of Alternative C.

Maritime Cultural Landscape Resources

Within Historic District

If Alternative C is selected, the management framework within the Mallows Bay-Widewater Historic and Archaeological District would benefit by the additional protective measures afforded by sanctuary status including the National Marine Sanctuaries Act, the Abandoned Shipwreck Act of 1987, and the Archeological Resources Protection Act of 1979. Within the Historic District no collection is permitted because it is a National Register District and the proposed sanctuary regulation would prohibit any type of damage to the resources. Education and outreach program would provide additional benefits to both users

and the resources. This benefit would be a permanent, major, beneficial direct, and significant for the local area covered by the designation (Table 22, Row 7).

Outside Historic District

Outsides the Historic District the management framework would also benefit by the additional protective measures afforded by sanctuary status. The sanctuary would also include all currently known shipwrecks from all periods as well as also protecting all other types and categories of tangible and intangible archaeological, historic, and cultural heritage within the Sanctuary boundary. This benefit would be a permanent, major, beneficial direct, and significant for the local area covered by the designation (Table 22, Row 8).

Socio-Economic Resources

Water Access and Facilities

If Alternative C was selected the area along the shoreline available for enhancing public access would be greater than alternative B with the addition of the MCB Quantico marina, but still limited, and the potential to enhance supporting resources would be also be geographically limited. The benefit from Alternative C for water access and facilities would be indirect, moderate, and less than significant (Table 22, Row 17).

Department of Defense Facilities

Quantico, Blossom Point, Indian Head, Dahlgren

The boundary of Alternative C would be adjacent to the MCB Quantico and the associated restricted area, while the boundary would not overlap Naval Support Facility Indian Head, or Naval Surface Warfare Center - Dahlgren Division. There would be a small overlap with the western edge of Blossom Point Research Facility's unexploded ordnance area. If Alternative C was selected the sanctuary education and outreach programing in cooperation with MCB Quantico staff would provide an indirect, permanent, localized, minor benefit that was less than significant (Table 22, Row 23). Specifically, the sanctuary education and outreach program could include information about the MCB Quantico restricted area, its boundaries, and markers to help keep boaters from encroaching into that area. No effect is expected for the other three facilities (Table 22, Rows 24, 25, 26) given their location relative to Alternative C. Department of Defense concerns may result in changes to geographic boundaries and regulations.

5.3.6 Impacts Specific To Alternative D

NOAA expects the impacts to the maritime cultural landscape resources to be consistent between Alternative C and D because all the known resources are located in Alternative C. However, NOAA expects additional benefits to water access and facilities and the four DOD facilities as described below. Table 23 shows the impacts specific to Alternative D.

Row #	Resource	Sub- category	Impact Type	Impact Duration	Geographic Extent	Magnitude / Intensity	Quality	Significance
7	Maritime Cultural Landscape Resources	Within Historic District	Direct	Permanent	Localize	Major	Beneficial	Significant
8		Outside Historic District	Direct	Permanent	Localize	Major	Beneficial	Significant
17	Socio- Economic Resources	Water Access & Facilities	Direct	Long Term	Localized	Moderate	Beneficial	Less than significant
23	Department of Defense Facilities	MCB Quantico	Indirect	Permanent	Localized	Minor	Beneficial	Less than significant
24		Blossom Point	Indirect	Permanent	Localized	Minor	Beneficial	Less than significant
25		NSF Indian Head	Indirect	Permanent	Localized	Minor	Beneficial	Less than significant
26		NSF Dahlgren	Indirect	Permanent	Localized	Minor	Beneficial	Less than significant

Table 23: Summary of the environmental consequences of Alternative D.

Maritime Cultural Landscape Resources

Within Historic District

If Alternative D is selected, the management framework within the Mallows Bay-Widewater Historic and Archaeological District would benefit by the additional protective measures afforded by sanctuary status as in Alternatives B and C since D contains all of B and C. This benefit would be a permanent, major, beneficial direct, and significant for the local area covered by the designation (Table 23, Row 7).

Outside Historic District

Outsides the Historic District the management framework would also benefit by the additional protective measures afforded by sanctuary status as in Alternative C. While no additional known shipwrecks or other significant tangible cultural heritage would be added in Alternative D the benefit to the overall maritime cultural landscape would still be a permanent, major, beneficial direct, and significant for the local area covered by the designation (Table 23, Row 8).

Socio-Economic Resources

Water Access and Facilities

If Alternative D was selected the sanctuary boundary would extend throughout a larger portion of the Potomac River and its tributaries, including the tidal waters of Mattawoman Creek, Nanjemoy Creek, and Port Tobacco River. Within the Alternative D boundary there are three additional public boat ramps that could support the need for more public access to enhance recreation and tourism opportunities. These boat ramps are at Slavins Dock in Mattawoman Creek, Friendship Landing in Nanjemoy Creek, and Chapel Point State Park in the Port Tobacco River (see Section 4.5.1. Figure 8). The availability of these boat ramps within the sanctuary boundary may help spread out the pressure on the single existing boat ramp available within Alternatives B or C, the Mallows Bay Park boat ramp. In Alternative D, the establishment of a sanctuary would have direct, long-term, moderate, beneficial impacts to the water access sites and facilities in the Potomac River (Table 23, Row 17) as sanctuary outreach materials help increase awareness of the access options.

Department of Defense Facilities

Quantico, Blossom Point, Indian Head, Dahlgren

The larger boundary of Alternative D would be adjacent to the MCB Quantico and the associated restricted area, Blossom Point Research Facility, and NSF Indian Head including the associated danger area. The sanctuary education and outreach program could include information about the NSF Indian Head danger area, its boundaries, and markers to help keep boaters from encroaching into that area. Although NSF Dahlgren is located outside the boundary of Alternative D, the NSF Dahlgren's Upper Danger Zone extends north of the Nice Bridge up to Port Tobacco Creek, which would overlap with the sanctuary boundary. The sanctuary education and outreach program could also provide information about this danger area to assist with compliance. If Alternative D was selected, the sanctuary education and outreach programing in cooperation with staff at the four facilities would provide an indirect, permanent, localized, minor benefit that would be less than significant (Table 21, Row 23, 24, 25, and 26). Department of Defense concerns may result in changes to geographic boundaries and regulations.

5.3.7 Relative Magnitude Across Alternatives

In addition to comparing the impacts common to the action alternatives (B, C, and D) and unique to the action alternatives NOAA also compared the relative magnitude of the no action (A) and action alternatives (B, C, and D) for the affected resources as shown in Table 24. NOAA does not anticipate any significant effects from the no action or proposed action alternatives.

Where there were differences in magnitude the differences were generally small given the small geographic differences (minimum of 18 square miles, maximum of 100 square miles).

Row #	Resource	Sub- category	Detail of Sub- category	Alternative A (No Action)	Alternative B	Alternative C (Preferred)	Alternative D
	Area of Alternative			0 square miles	18 square miles	52 square miles	100 square miles
	Number of Ships			0	142	151	151
	Number of Public Water Access Points			0	4	4	8
1	Physical Environment	Geology		No effect, since no change from current status.	Minor benefits from increased protection of the river-bottom structure created by ships.	Additional ships provide more, yet still minor, benefits for river- bottom structure created by ships.	Same as Alternative C since there are no additional known ships in area added in Alternative D.
2		Water	Quality / Quantity	No effect, since no change from current status.	Minor negative impacts as a result of increased visitation impacting water quality. No changes in water quantity expected.	Slightly more impacts than in Alternative B since there's a larger area to visit. No changes in water quantity expected.	More of the same type of impacts expected in Alternatives B and C since there's a much larger area to visit. No changes in water quantity expected.
3			Dynamics	No effect, since no change from current status.	No effect, since no impacts to water dynamics are expected.	No effect, since no impacts to water dynamics are expected.	No effect, since no impacts to water dynamics are expected.
4		Air Quality		No effect, since no change from current status.	Minor negative impacts as a result of increased visitation impacting air quality.	Slightly more impacts than in Alternative B since there's a larger area to visit.	More of the same type of impacts expected in Alternatives B and C since there's a much larger area to visit.
5		Climate		No effect, since no change from current status.	Minor negative impacts as a result of increased visitation contributing to climate change.	Slightly more impacts than in Alternative B since there's a larger area to visit.	More of the same type of impacts expected in Alternatives B and C since there's a much larger area to visit.
6		Noise		No effect, since no change from current status.	Minor negative impacts as a result of increased visitation impacting current noise levels.	Slightly more impacts than in Alternative B since there's a larger area to visit.	More of the same type of impacts expected in Alternatives B and C since there's a much larger area to visit.
7	Maritime Cultural Landscape	Within Historic		Negative effect because under	Resources would see a	Same as Alternative B	Same as Alternative B which includes the

Table 24: Com	parison of the m	agnitude of the	environmental	consequences	s of all	Alternatives.

	Resources	District		the current status the resources have limited protection under NHPA, ARPA and Maryland law.	moderate benefit from NMSA regulatory and non-regulatory programs.	which includes the Historic District.	Historic District.
8		Outside Historic District		Negative effect because under the current status the resources have limited protection under Maryland law.	Resources outside the Historic District would not be in the sanctuary so they would only see indirect benefits that come from being adjacent to the sanctuary.	Resources would see a moderate direct benefit from NMSA regulatory and non- regulatory programs if designated.	Same as Alternative C which includes all known resources outside the Historic District.
9	Biological Resources	Fisheries		No effect, since no change from current status.	Minor benefits from increased protection of ships to provide more habitat for fish species.	Additional ships provide more, yet still minor, benefits as protected habitat for fish species.	Same as Alternative C since there are no additional known ships in area added in Alternative D.
10		Protected Species		No effect, since no change from current status.	Same as line 9 since all protected species are fish species.	Same as line 9 since all protected species are fish species.	Same as line 9 since all protected species are fish species.
11		Birds		No effect, since no change from current status.	Minor benefits from increased protection of ship structures above water provides continued habitat for birds.	Additional ships provide more, yet still minor, benefits as protected habitat for birds.	Same as Alternative C since there are no additional known ships in area added in Alternative D.
12		Terrestrial Species		No effect, since no change from current status.	Minor impacts from increased protection of ship structures above water provides continued habitat for water dependent terrestrial species.	Additional ships provide more, yet still minor, benefits as protected habitat for terrestrial species.	Same as Alternative C since there are no additional known ships in area added in Alternative D.
13		Habitat	Tidal River	No effect, since no change from current status.	Minor indirect benefits from protecting river- bottom structure from further damage.	Additional ships would be protected providing more, yet still minor, benefits from additional	Same as Alternative C since there are no additional known ships in area added in Alternative D.

						protection for river-bottom structure.	
14			Palustrine	No effect, since no change from current status.	Minor indirect benefits from protecting the river-bottom structure from further damage resulting in increased stability for larger ecosystem.	Additional ships would be protected providing more, yet still minor, benefits from additional protection for river-bottom structure supporting larger ecosystem.	Same as Alternative C since there are no additional known ships in area added in Alternative D.
15			Terrestrial	No effect, since no change from current status.	Minor indirect benefits from protecting the river-bottom structure from further damage resulting in increased stability for larger ecosystem.	Additional ships would be protected providing more, yet still minor, benefits from additional protection for river-bottom structure supporting larger ecosystem.	Same as Alternative C since there are no additional known ships in area added in Alternative D.
16			EFH / Critical Habitat	No effect, since no change from current status.	Minor benefits from increased protection of ships to provide more EFH and Critical Habitat.	Additional ships provide more, yet still minor, benefits as EFH and Critical Habitat.	Same as Alternative C since there are no additional known ships in area added in Alternative D.
17	Socio- Economic Resources	Water Access & Facilities		Negative effect since no designation means losing the opportunity to draw additional visitors to the areas that would support or expand water access and facilities.	Beneficial effect from drawing additional visitors to the areas that would support or expand water access and facilities.	Slightly more benefits than in Alternative B since there's a larger area for access points and facilities.	The largest of the same type of impacts expected in Alternatives B and C since there's a much larger area for access points and facilities.
18		Other Recreational Uses		Negative effect since no designation means losing the opportunity to draw additional visitors to the areas that would participate in recreational	Beneficial effect from drawing additional visitors to the areas to participate in and support recreational uses.	Slightly more benefits than in Alternative B since there's a larger area for recreational uses.	The largest of the same type of impacts expected in Alternatives B and C since there's a much larger area for recreational uses.

			uses.			
19		Commercial Uses	No effect, since no change from current status.	There may be minor beneficial impacts from protecting the ships that provide habitat to commercially important fish species. No impact is expected for commercial shipping.	There may be slightly more, but still minor, beneficial impacts from protecting the ships that provide habitat to commercially important fish species. No impact is expected for commercial shipping.	Same as Alternative C since there are no additional known ships in area added in Alternative D.
20		Tourism	Negative effect since no designation means losing the opportunity to boost tourism.	Beneficial effect from drawing additional visitors to the area to learn about the ships and enjoy recreation options.	Larger positive impacts than in Alternative B since includes all known ships and larger area to visit.	The largest of the same type of impacts expected in Alternatives B and C since there's a much larger area for recreational uses.
21		Local economy	Negative effect since no designation means losing the opportunity to draw additional visitors to the areas that would support the wider economy.	Beneficial effect from drawing additional visitors to the area through tourism, research, and other programing that would add to the wider economy.	Larger positive impacts than in Alternative B since includes all known ships and the larger area would distribute visitor spending over a wider area.	The largest of the same type of impacts expected in Alternatives B and C since there's a much larger area to draw visitors where they could spend in the wider economy.
22		Passive Economic Use	No effect, since no change from current status.	Positive impact from protecting this special place.	A larger positive impact is expected from protecting all the known ships and a wider geographic area.	The largest benefit is expected since there's a much larger area included along with the known ships in Alternative C.
23	Department of Defense Facilities	MCB Quantico	No effect, since no change from current status.	NOAA does not expect any direct impacts, positive or negative from proposed regulations. Minor indirect benefits from non-regulatory outreach and education programs help explain the work at the facility	Same as Alternative B since all action alternatives are adjacent to facility.	Same as Alternative B since all action alternatives are adjacent to facility.

			and the facility's restricted area.		
24	Blossom Point	No effect, since no change from current status.	No effect since Alternative B does not overlap with facility.	No effect since Alternative C does not overlap with facility.	NOAA does not expect any direct impacts, positive or negative from proposed regulations. Minor indirect benefits from non-regulatory outreach and education programs help explain the facility's unexploded ordnance area.
25	NSF Indian Head	No effect, since no change from current status.	No effect since Alternative B does not overlap with facility.	No effect since Alternative C does not overlap with facility.	NOAA does not expect any impacts, positive or negative from proposed regulations. Minor indirect benefits from non-regulatory outreach and education programs help explain the facility's danger zone.
26	NSF Dahlgren	No effect, since no change from current status.	No effect since Alternative B does not overlap with facility.	No effect since Alternative C does not overlap with facility.	NOAA does not expect any impacts, positive or negative from proposed regulations. Minor indirect benefits from non-regulatory outreach and education programs help explain the facility's danger zone.

5.3.8 Cumulative Impacts

Sanctuary designation can reasonably be expected to result in an increase in visitation. Because the management plan calls for active education and outreach activities to increase public awareness of the sanctuary, it is reasonable to expect that this proposed action is likely to result in increased visitation to the area. This could include an increase in vehicle traffic in the area, increased boat traffic on the water, a need to increase the number of access points along the shore, and increased pressure on infrastructure. Increased visitation could put the area at risk for increased waste on shore and in the water. An increase in visitation would also likely result in increase in spending at local businesses, including outfitters, restaurants, and local stores. Overall, the management and increased protection measures for cultural resources can be expected to result in beneficial impacts to those resources, and likely to benefit natural resources which depend upon the cultural resources as habitat.

In order to estimate the cumulative impacts of the proposed national marine sanctuary designation NOAA considered past, present and foreseeable future actions. Recent development activities have been limited in this relatively undeveloped area of the Potomac River so there are a limited number of past actions, and one planned action that NOAA is aware of in the area. These are described below.

In 2010, Maryland DNR purchased a portion of land adjacent to Mallows Bay and made it available to Charles County to create and manage Mallows Bay County Park, the main launch point for access to the historic shipwrecks. The park is located adjacent to Mallows Bay and development of the park added a boat launch used to access the area under consideration for sanctuary designation. In February 2011, the National Park Service finalized the comprehensive management plan and environmental assessment for the Captain John Smith Chesapeake National Historic Trail (CJSCNHT) that includes the area of the Potomac River under consideration for sanctuary designation. The trail interprets the history of the Chesapeake Bay and encourages visitors to explore the area on land and in the water. Looking forward for foreseeable future actions, Charles County is interested in exploring options to expand access for kayak tours in Mallows Bay County Park while ensuring continued access to the boat launch for trailered boats.

The actions that could contribute to cumulative impacts are described above; this information was compiled based on internal NOAA and partner agency input. Only those actions with potential to contribute to cumulative impacts are listed. These actions are similar in scope to the proposed action, relate to river use activities, have similar types of impacts within the study area, affect similar resources. This approach was taken to include both actions for which detailed descriptions and expected impacts are known, as well as actions that have less defined impacts but may contribute to regional impacts. Because the proposed sanctuary designation is a regulatory and management action rather than a specific development action, the cumulative effects are related primarily to area-wide management of maritime heritage resources.

The protection, conservation, and education restoration efforts described under Alternatives B, C, and D, when added to the Mallows Bay Park and the CJSCNHT programs, would have a direct beneficial, long-term cumulative impact on cultural resources, and an indirect, beneficial, long-term cumulative impact on geology, aquatic resources, terrestrial resources, and threatened and endangered species within the region. There would be incremental benefits resulting from the implementation of Alternatives B, C, or D given the larger geographic area included in Alternatives C and D. Incremental benefits to cultural resources would be expected to be major due to the impact of additional protections for these resources. Incremental benefits to natural resources are expected to be minor when combined with other federal and state programs which focus on those resources.

The expected increase in visitation and infrastructure use under Alternatives B, C, and D, when added to the Mallows Bay Park and the CJSCNHT programs, would have an indirect, minor adverse impact to water resources, air quality, climate and noise resources. There would be incremental adverse effects resulting from the implementation of Alternatives B, C, or D given the larger geographic area included in Alternatives C and D. The incremental change resulting from the implementation of Alternatives B, C, and D, would be expected to be minor when combined with other activities.

The expected increased visitation under Alternative B, C, and D, when added to programs at Mallows Bay Park and CJSCNHT, would have minor beneficial cumulative impacts on water access and

facilities, recreational and commercial uses, tourism, the local economy and passive economic of the region. The incremental change resulting from the implementation of Alternatives B, C, or D, would be expected to be minor when combined with other federal and state programs as described. As a result, the cumulative impacts are anticipated to be minor.

No significant cumulative adverse effects from NOAA's proposed action alternatives are anticipated.

Row #	Resource	Sub- category	Detail of Sub- category	Alternative A (No Action)	Alternative B	Alternative C (Preferred)	Alternative D
	Area of Alternative			0 square miles	18 square miles	52 square miles	100 square miles
	Number of Ships			0	142	151	151
	Number of Public Water Access Points			0	4	4	8
1	Physical Environment	Geology		No effect.	Minor cumulative benefit.	2x benefits of Alt B given double size, but still minor.	Same as Alternative C, no additional known ships added in Alternative D.
2		Water	Quality / Quantity	No effect.	Minor negative impacts.	2x impacts of Alt B given double size, but still minor.	4x impacts of Alt B given size, but still minor.
3	1		Dynamics	No effect.	No effect	No effect.	No effect.
4		Air Quality		No effect.	Minor negative impacts.	2x impacts of Alt B given double size, but still minor.	4x impacts of Alt B given size, but still minor.
5		Climate		No effect.	Minor negative impacts.	2x impacts of Alt B given double size, but still minor.	4x impacts of Alt B given size, but still minor.
6		Noise		No effect.	Minor negative impacts.	2x impacts of Alt B given double size, but still minor.	4x impacts of Alt B given size, but still minor.
7	Maritime Cultural Landscape Resources	Within Historic District		Visible adverse effect due to continued degradation in the absence of additional protection.	Long-term major benefits from additional protections.	Same as Alternative B.	Same as Alternative B.
8		Outside Historic District		Visible adverse effect due to	Area not included in Alternative B, but minor indirect	Moderate direct benefits.	No additional shipwrecks, so same as Alternative

Table 25: Comparison of cumulative effects of all alternatives.

				continued degradation in the absence of additional protection.	benefits from being adjacent to the sanctuary.		C.
9	Biological Resources	Fisheries		No effect.	Minor indirect benefits impacts from preservation of fish habitat.	2x benefits of Alt B due to doubled area.	No additional shipwrecks, so same as Alternative C.
10		Protected Species		No effect.	Minor indirect benefits impacts from preservation of fish habitat.	2x benefits of Alt B due to increased number of shipwrecks.	No additional shipwrecks, so same as Alternative C.
11		Birds		No effect.	Minor indirect benefits impacts from preservation of bird habitat.	2x benefits of Alt B due to increased number of shipwrecks	No additional shipwrecks, so same as Alternative C.
12		Terrestrial Species		No effect.	Minor indirect benefits impacts from preservation of above-water habitat.	2x benefits of Alt B due to increased number of shipwrecks	No additional shipwrecks, so same as Alternative C.
13		Habitat	Tidal River	No effect.	Minor indirect benefits impacts from preservation of structure for ecosystems.	2x benefits of Alt B due to increased number of shipwrecks	No additional shipwrecks, so same as Alternative C.
14			Palustrine	No effect.	Minor indirect benefits impacts from preservation of structure for ecosystems.	2x benefits of Alt B due to increased number of shipwrecks.	No additional shipwrecks, so same as Alternative C.
15			Terrestrial	No effect.	Minor indirect benefits impacts from preservation of structure for ecosystems.	2x benefits of Alt B due to increased number of shipwrecks.	No additional shipwrecks, so same as Alternative C.
16			EFH / Critical Habitat	No effect.	Minor indirect benefits impacts from preservation ships to provide more EFH and Critical Habitat.	2x benefits of Alt B due to increased number of shipwrecks.	Same as Alternative C since there are no additional known ships in area added in Alternative D.
17	Socio- Economic Resources	Water Access & Facilities		No effect.	Minor indirect benefits from increased visitation.	2x benefits of Alt B due to double area.	4x impacts of Alt B given size
18		Other Recreational Uses		No effect.	Minor indirect benefits from increased visitation.	2x benefits of Alt B due to double area.	4x impacts of Alt B given size.
19		Commercial Uses		No effect.	Minor indirect benefits from protection of habitat	2x benefits of Alt B due to double area.	No additional shipwrecks, so same as Alternative

				for commercially important fish species.		C.
20		Tourism	No effect.	Minor benefits from increased visitation	2x benefits of Alt B due to double area.	4x impacts of Alt B given size.
21		Local economy	No effect.	Minor indirect benefits from increased visitation	2x benefits of Alt B due to double area.	4x impacts of Alt B given size.
22		Passive Economic Use	No effect	Direct benefits from protecting this special place.	2x benefits of Alt B due to double area	4x impacts of Alt B given size.
23	Department of Defense Facilities	MCB Quantico	No effect.	Minor indirect benefits.	Same as Alternative B.	Same as Alternative B
24		Blossom Point	No effect	No effect since Alternative B does not overlap with facility.	No effect since Alternative C does not overlap with facility.	Minor indirect benefits.
25		NSF Indian Head	No effect.	No effect since Alternative B does not overlap with facility.	No effect since Alternative C does not overlap with facility.	Minor indirect benefits.
26		NSF Dahlgren	No effect.	No effect since Alternative B does not overlap with facility.	No effect since Alternative C does not overlap with facility.	Minor indirect benefits.

Chapter 6

ADDITIONAL CONSIDERATIONS

6.1 CONSULTATION AND ENVIRONMENTAL COMPLIANCE

The following is a list of federal consultation and environmental regulations that apply to the proposed action, as well as a description of compliance by NOAA with applicable requirements.

Consultations under the NMSA

Under section 303(b)(2) of the NMSA, NOAA is required to conduct a series of consultations with Congress, federal and state agencies, and other interested parties. Per this requirement, consultation letters will be sent to coincide with the publication of this document and the proposed rulemaking to the following:

- U.S. House of Representatives Natural Resources Committee
- U.S. Senate Committee on Commerce, Science, and Transportation
- Department of Defense
- Department of State
- Department of Transportation
- Department of the Interior
- Environmental Protection Agency
- U.S. Army Corps of Engineers
- U.S. Fish & Wildlife Service
- U.S. Coast Guard

Relation to Existing Laws and Executive Orders

NEPA requires that a discussion of the relation of the action to other existing laws and executive orders be included. The relation of this action to other legal requirements is discussed as follows:

Coastal Zone Management Act (CZMA)

The CZMA creates a partnership between the Federal and State governments that allows States to develop coastal zone management programs within a set of Federal guidelines but tailored to their individual needs. The act also requires that each Federal agency activity within or outside the coastal zone that affects any land or water use or natural resource of the coastal zone shall be carried out in a manner that is, to the maximum extent practicable, consistent with the enforceable policies of the Federally-approved state coastal zone management program. NOAA has worked with the State of Maryland on drafting the proposed action since it takes place in wholly within Maryland state waters. NOAA will formally consult with the State of Maryland and the neighboring Commonwealth of Virginia on the federal consistency of this action.

Endangered Species Act (ESA)

The ESA requires all federal agencies, in consultation with the Departments of the Interior (USFWS) and Commerce (NMFS), to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species, or result in the destruction or adverse modification of the critical habitat of such species. For any action with a potential for impacts to federally protected species, NOAA's Office of National Marine Sanctuaries evaluates the potential impacts and, if needed, prepares a biological assessment to inform the biological opinion produced by NOAA's National Marine Fisheries Service (NMFS). This consultation informs the analysis of impacts on federally listed species to determine their significance. Potential impacts to threatened and endangered species are described in Section 5.3.2 above. Based on this evaluation, ONMS believes implementation of the proposed alternatives identified in this DEIS is not likely to adversely affect any species listed as threatened or endangered, or habitats critical to such species, under the ESA. The proposed alternatives may result in minor benefits to listed species as described in section 5.3.2 above. ONMS will confer with NMFS concurrent with public review of this DEIS to ensure that the selected alternative will be compliant with the ESA.

Fish and Wildlife Coordination Act, as amended in 1964

The Fish and Wildlife Coordination Act requires that all federal agencies consult with NMFS, USFWS and state wildlife agencies when proposed actions might result in modification of a natural stream or body of water. Federal agencies must consider effects that these projects would have on fish and wildlife development and provide for improvement of these resources. The Fish and Wildlife Coordination Act allows NMFS to provide comments to the U.S. Army Corps of Engineers during review of projects under §404 of the Clean Water Act (concerning the discharge of dredged materials into navigable waters) and §10 of the Rivers and Harbors Act of 1899 (obstructions in navigable waterways). NMFS comments provided under the Fish and Wildlife Coordination Act are intended to reduce environmental impacts to migratory, estuarine, and marine fisheries and their habitats. NOAA does not believe the proposed alternatives will result in a modification of a natural stream or body of water. Rather, the proposed alternatives are anticipated to benefit fish and wildlife development.

Magnuson-Stevens Fishery Conservation and Management Act (MSA)

Congress enacted the MSA to provide the Secretary of Commerce, by and through NMFS, authority to regulate domestic marine fisheries in need of conservation and management. Federal fisheries management is accomplished through Fishery Management Plans (FMPs) developed and prepared by regional Fishery Management Councils (or the Secretary through NMFS where appropriate) and approved, implemented and enforced by NMFS. Each FMP must identify Essential Fish Habitat (EFH) for the fishery and minimize adverse fishing impacts to the extent practicable. In addition, Federal agencies must consult with NMFS on any action that may adversely impact EFH. Potential impacts to EFH are described in Section 5.3.2 above. Based on this evaluation, ONMS believes implementation of the proposed alternatives identified in this DEIS is not likely to adversely affect EFH for summer flounder (*Paralichthys dentatus*) and bluefish (*Pomatomus saltatrix*). The proposed alternatives may result in indirect benefits to EFH in the Potomac River as described in section 5.3.2 above. ONMS will confer

with NMFS concurrent with public review of this DEIS to ensure that the selected alternative will be compliant with EFH requirements. No fishing regulations are contemplated for this action.

Marine Mammal Protection Act of 1972

The MMPA prohibits, with certain exceptions, the take of marine mammals in U.S. waters and by U.S. citizens on the high seas, and the importation of marine mammals and marine mammal products into the U.S. Due to the absence of marine mammals in the area of the Potomac River considered in the alternatives, NOAA does not believe that the proposed alternatives have the potential to result in the take, injury or harassment of any species protected under the MMPA.

Migratory Bird Treaty Act of 1918

The Migratory Bird Treaty Act provides federal protection for migratory birds in the United States, and makes it unlawful without a permit from USFWS to pursue, hunt, take, capture, kill or sell birds listed therein ("migratory birds"). The statute does not discriminate between live or dead birds, and gives full protection to any bird parts including feathers, eggs and nests. Over 800 bird species are protected on the list. Osprey are known to build their nests atop many of the shipwrecks, as well as on other perches along the shoreline of the proposed national marine sanctuary boundary alternatives. Great Blue Heron also nest in the mudflats. Both bird species are protected under the Migratory Bird Treaty Act. The designation of the proposed national marine sanctuary by NOAA will have no adverse impacts on migratory birds, but may (as a result of protecting the shipwrecks that Osprey frequently nest atop) have beneficial impacts on the migratory birds by protecting nesting and perching habitat.

National Historic Preservation Act of 1966

The National Historic Preservation Act of 1966 (NHPA; Public Law 89-665; 54 U.S.C. 300101 et seq.) is intended to preserve historical and archaeological sites in the United States of America. The act created the National Register of Historic Places, the list of National Historic Landmarks, and the State Historic Preservation Offices. Section 106 of the NHPA requires Federal agencies to take into account the effects of their undertakings on historic properties, and afford the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment. The historic preservation review process mandated by Section 106 is outlined in regulations issued by ACHP (36 CFR Part 800). The Maryland State Historic Preservation Office, which implements section 106 of the NHPA, is located in the Maryland Historical Trust Office of the Maryland Department of Planning. When necessary, MPNMS coordinates directly with the State Historic Preservation Office, as is the case with the proposal to designate a sanctuary.

No adverse impacts to historic or cultural resources are anticipated as a result of any of the alternatives presented in this DEIS.

Regulatory Flexibility Act (RFA)

The RFA, as amended and codified at 5 U.S.C. 601 et seq., requires an agency to prepare a regulatory flexibility analysis of any rule subject to the notice and comment rulemaking requirements under the

Administrative Procedure Act (5 U.S.C. 553) or any other statute, unless the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. Under section 605(b) of the RFA, however, if the head of an agency (or his or her designee) certifies that a rule will not have a significant impact on a substantial number of small entities, the statute does not require the agency to prepare a regulatory flexibility analysis. Pursuant to section 605(b), the Chief Counsel for Regulation, Department of Commerce, submitted a memorandum to the Chief Counsel for Advocacy, Small Business Administration, certifying that original proposed rule would not have a significant impact on a substantial number of small entities. The rationale for that certification was set forth in the notice of proposed rulemaking.

Rivers and Harbors Act of 1899

The Rivers and Harbors Act of 1899 regulates the following: (1) construction of bridges, causeways, dams or dikes; (2) obstruction of excavations and filling of navigable waters; (3) establishment of harbor lines and conditions related to grants for the extension of piers; and (4) penalties related to the regulated actions, and to the removal of existing structures. No activities regulated under the Rivers and Harbors Act of 1899 are part of the proposed action or any of the alternatives, and the proposed expansion of the existing sanctuary regulatory regime into new areas complements the oversight of dredge and fill activities by the USACE.

Executive Order 12866 Cost-Benefit Analysis

Under Executive Order 12866, if a rule is determined to be significant, then a socioeconomic impact study (i.e., assessment of the costs and benefits of the regulatory action) must be conducted. Under 12866 a regulatory action is significant if the rule may:

- have an annual effect on the economy of \$100 million or more or adversely affecting in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities;
- create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;
- materially alter the budgetary impacts of entitlements, grants, user fees, or loan programs, or the rights and obligations of recipients thereof; or
- raises novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this Executive Order.

NOAA has concluded that the proposed rule analyzed in this DEIS is not significant under E.O. 12866.

Executive Order 13132 Federalism

Under Executive Order 13132, each agency must consult, to the extent practicable and permitted by law, with State and local officials early in the process of developing regulations. These consultations should

seek comment on the compliance costs or preemption, as appropriate to the nature of the rulemaking under development. NOAA has concluded that this regulatory action does not have federalism implications sufficient to warrant preparation of a federalism assessment under Executive Order 13132 because NOAA supplements and complements state and local laws under the NMSA.

Executive Order 13175 Consultation and Coordination with Indian Tribal Governments

There are no federally recognized tribes in the immediate area of this proposed action for consultation under E.O. 13175. However, NOAA is inviting state recognized tribes to be consulting parties under Section 106 of the National Historic Preservation Act (54 U.S.C. 306108), pursuant to 36 CFR 800.2.

Executive Order 13186, Migratory Birds

On January 10, 2001, President Clinton signed Executive Order (EO) 13186, "Responsibilities of Federal Agencies to Protect Migratory Birds." One of the requirements of E.O. 13186 is that each federal agency taking actions that have, or are likely to have, a measurable negative effect on migratory bird populations is directed to develop and implement a Memorandum of Understanding (MOU) with USFWS that shall promote the conservation of migratory bird populations (E.O. 13186 Section 3(a)). On July 17, 2012, NMFS and USFWS finalized this MOU to conserve migratory bird populations as prescribed by E.O. 13186. This MOU went into effect on the date it was signed. This NMFS-USFWS MOU encompasses all relevant seabird-related NMFS activities and identifies specific areas of collaboration and cooperation with USFWS, including seabird bycatch reduction, information sharing and coordination, international policy and diplomacy and habitat conservation. The MOU also provides for strengthening migratory bird conservation by identifying strategies that promote conservation and reduce adverse impacts on migratory birds through enhanced collaboration between NMFS and USFWS. In addition, this MOU identifies specific activities where cooperation between NMFS and USFWS will contribute to the conservation of migratory birds and their habitat. These activities are intended to complement and support existing efforts and to facilitate new collaborative conservation efforts for migratory birds. Potential impacts to migratory birds (such as Osprey) have been considered by ONMS as have all protected species impacts, and the proposed alternatives are not anticipated to impact migratory birds.

6.2 ENVIRONMENTAL JUSTICE

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations directs that the programs of federal agencies identify and avoid disproportionately high and adverse effects on human health and the environment of minority or lowincome populations. The designation of national marine sanctuaries by NOAA helps to ensure the enhancement of environmental quality for all populations in the United States. None of the alternatives described in this document or their cumulative effects would result in any disproportionate negative impacts on any minority or low-income population. Rather, the proposed action is expected to result in long-term or permanent beneficial impacts by protecting maritime cultural heritage resources, which may provide employment opportunities and result in improved ecosystem services to nearby inhabitants through the protection of the habitat provided by the resource. Minority and low-income populations may benefit from planning efforts that seek to integrate communities into sanctuary management planning.

6.3 RELATIONSHIP OF SHORT-TERM USES AND LONG-TERM PRODUCTIVITY

NEPA requires consideration of the relationship between local short-term uses of the environment and the maintenance and enhancement of long-term productivity. The short-term uses of the environment relating to each of the alternatives would improve the health and quality of the environment by protecting the maritime cultural heritage resources that provide habitat for living resources through (1) regulations prohibiting damaging the maritime heritage resources; (2) providing a mechanism through the NMSA to respond to hazardous spills that damage the maritime heritage resources; and (3) monitoring human activities through regulations and non-regulatory programs that incorporate community involvement in the stewardship of sanctuary maritime heritage resources. NOAA expects an increase in the number visitors to the area as a results of the proposed sanctuary designation. Increase visitation may increase the establishments of supporting infrastructure and business such as roads, gas stations, convenience stores, restaurants, etc. over time. However, NOAA anticipates that any growth would be less than significant as a result of the proposed action. Long-term productivity derived from the alternatives is based on the goals of the sanctuary and the proposed management actions to achieve the goal of long-term protection of the maritime heritage resources that would preserve the living resource habitat. These proposed actions include action plans related to resource protection, recreation and tourism, education, science and research, infrastructure and operations. Benefits to both short-term uses and long-term productivity based on implementation of sanctuary designation and management actions are proportional to the number of maritime heritage resources that provide habitat encompassed within the area of each alternative.

6.4 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

NEPA requires an analysis of the extent to which the proposed project's primary and secondary effects would commit nonrenewable resources to uses that future generations would be unable to reverse. The alternatives presented in this DEIS would require minor commitments of both renewable and nonrenewable energy and material resources for the management and research activities associated with the sanctuary. Nonrenewable resources that would be used during management and research activities include fuel, water, power and other resources necessary to maintain and operate vessels and workspace associated with the sanctuary.

Index

Advisory Council: 29, 38, 64, 139, 148, 154, 157, 167, 173, 174, 177, 184, 190, 192, 193

Biological Resources: 78, 115, 116, 117, 119, 120, 129, 135

Blossom Point Research Facility: 60, 104, 106, 107, 124, 125, 127

Charles County: 13, 16, 19, 23, 24, 29, 30, 31, 34, 42, 45, 52, 58, 60, 63, 64, 67, 71, 72, 77, 88, 89, 91, 93, 95, 96, 97, 106, 107, 113, 123, 133, 143, 144, 147, 148, 149, 150, 152, 153, 155, 156, 159, 162, 163, 164, 166, 173, 174, 175, 186, 191, 193

Commercial Fishing: 51, 96, 110, 111, 121, 149, 192

Department of Defense: 61, 65, 104, 116, 121, 124, 125, 126, 127, 131, 136, 137, 144, 151, 186

Management Plan: 15, 16, 21, 23, 27, 28, 29, 63, 90, 96, 97, 132, 133, 138, 144, 147, 151, 156, 157, 172, 173, 174, 176, 184, 190, 191,

Marine Corps Base Quantico: 104, 105, 106, 116, 122, 124, 125, 126, 127, 131, 136

Maritime Cultural Landscape: 65, 72, 76, 77, 78, 115, 116, 122, 123, 124, 126, 128, 134, 146, 150, 168

Maryland Department of Natural Resources: 13, 16, 17, 29, 31, 32, 42, 63, 91, 92, 93, 96, 110, 143, 144, 148, 153, 154, 191, 192, 196

Maryland Historical Trust: 13, 16, 29, 31, 33, 42, 44, 63, 139, 143, 148, 153, 155, 191,

National Historic Preservation Act: 25, 37, 139, 141, 155

National Marine Sanctuaries Act: 2, 13, 16, 20, 23, 25, 29, 33, 35, 39, 40, 62, 122, 125, 148, 150, 152

Naval Support Facility Dahlgren: 104, 108, 109, 116, 122, 124, 126, 127, 132, 136

Naval Support Facility Indian Head: 60, 107, 116, 122, 124, 125, 126, 127, 132, 136

Physical Environment: 65, 115, 117, 118, 128, 134

Recreational Fishing: 80, 90, 93, 121, 154

Socioeconomic Resources: 91

State of Maryland: 15, 16, 19, 23, 24, 26, 29, 30, 31, 32, 33, 34, 41, 45, 53, 56, 57, 59, 63, 64, 95, 137, 147, 148, 150, 152, 153, 155, 156, 158, 162, 163, 164, 165, 166, 173, 174, 175, 185, 186, 191, 194,

Virginia: 18, 23, 24, 26, 27, 43, 45, 53, 56, 57, 58, 65, 75, 76, 80, 88, 89, 90, 92, 93, 94, 95, 97, 100, 101, 102, 103, 104, 105, 106, 109, 110, 113, 121, 137, 144, 145, 146, 151, 154, 161, 163, 180, 185

LIST OF PREPARERS

NOAA

Annie Sawabini, Office of National Marine Sanctuaries Alice Stratton, Office of National Marine Sanctuaries Rachel Matheny, Office of National Marine Sanctuaries Paul Orlando, Office of National Marine Sanctuaries Jennifer Lechuga, Office of National Marine Sanctuaries Dayna Rignanese, Office of National Marine Sanctuaries Gladys Miles, Office of General Counsel, Oceans and Coasts Section

Maryland Historical Trust

Susan Langley

Maryland Department of Natural Resources

Catherine McCall, Chesapeake and Coastal Service Kelly Collins Choi, Chesapeake and Coastal Service Kimberly Hernandez, Chesapeake and Coastal Service Emily Vainieri, Assistant Attorney General Dave Heilmeier, Wildlife and Heritage Service Jim Bennett, Wildlife and Heritage Service Kathy McCarthy, Wildlife and Heritage Service Kerry Wixted, Wildlife and Heritage Service Tom Parham, Tidewater Ecosystem Assessment Mark Trice, Tidewater Ecosystem Assessment Mary Groves, Fisheries Service Joe Love, Fisheries Service Tim Groves, Fishing and Boating Service Jay Kilian, Fishing and Boating Service Eric Durell, Fishing and Boating Service Jim Uphoff, Fishing and Boating Service John Gallager, Fishing and Boating Service Matt Negley, Fishing and Boating Service Dave Gailey, Forest Service Mary Owens, Parks Service

Maryland Department of Planning

Paul Cucuzzella, Office of Attorney General

Potomac River Fisheries Commission Marty Gary

Charles County Government

Eileen Minnick Charles Co Govt Steve Bunker Charles Co Govt

National Park Service Chesapeake Bay Office Matt Janunic
References

Boesch, D.F., L.P. Atkinson, W.C. Boicourt, J.D. Boon, D.R. Cahoon, R.A. Dalrymple, T. Ezer, B.P. Horton, Z.P. Johnson, R.E. Kopp, M. Li, R.H. Moss, A. Parris, C.K. Sommerfield. 2013. Updating Maryland's Sea-level Rise Projections. Special Report of the Scientific and Technical Working Group to the Maryland Climate Change Commission, 22 pp. University of Maryland Center for Environmental Science, Cambridge, MD.

Breeding Bird Atlas Explorer (online resource). 2016. U.S. Geological Survey Patuxent Wildlife Research Center. <Accessed 6 September 2016>. http://www.pwrc.usgs.gov/bba. Data compiled from: Maryland and the District of Columbia Breeding Bird Atlas 2002-2006. Maryland Ornithological Society. Results used with permission.

Department of the Navy. 2013. Environmental Impact Statement for Outdoor Research, Development, Test, and Evaluation Activities Naval Surface Warfare Center, Dahlgren Division (NSWCDD). U.S. Department of Defense, Department of the Navy, Dahlgren, Virginia.

Durell, E.Q., and Weedon, C. 2015. Striped Bass Seine Survey Juvenile Index Web Page. Accessed 25 July 2016 at <u>http://dnr2.maryland.gov/fisheries/Pages/juvenile-index.aspx</u>. Maryland Department of Natural Resources, Fisheries Service, Annapolis, Maryland.

Geology: <u>http://www.mgs.md.gov/geology/geologic_map/md_geologic_map.html</u> <u>http://www.mgs.md.gov/esic/geo/cha.html</u>

MARA Database (online resource). 2010 Maryland Department of Natural Resources. https://webapps02.dnr.state.md.us/mara/default.aspx Data compiled from: Maryland Amphibian and Reptile Atlas 2010-2014. Natural History Society of Maryland. Interim results used with permission.

Maryland Department of Natural Resources. 2013. *Maryland Land Preservation and Recreation Plan* 2014-2018. http://dnr.maryland.gov/land/Documents/LPRP/LPRP_%202014-2018.pdf

Maryland Department of Planning. 2014. Population Projections for Charles County. Accessed 25 July 2016 at <u>http://www.mdp.state.md.us/msdc/s3_projection.shtml</u>.

National Park Service. 2011. *Final Comprehensive Management Plan and Environmental Assessment Captain John Smith Chesapeake National Historic Trail. Delaware, Maryland, Virginia, and District of Columbia.* U.S. Department of Interior, National Park Service, Washington, DC.

National Register of Historic Places. 2015. Nomination for the Mallows Bay- Widewater Historic and Archaeological District. <u>http://dnr2.maryland.gov/ccs/Documents/MB_NRHP_RegForm.pdf</u>

The Nature Conservancy. 2016. *Maryland Coastal Resiliency Assessment*. M.R. Canick, N. Carlozo and D. Foster. Bethesda, MD.

Office of National Marine Sanctuaries. 2016. *Flower Garden Banks National Marine Sanctuary Expansion Draft Environmental Impact Statement*. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Office of National Marine Sanctuaries, Silver Spring, MD.

Outdoor Industry Association. Retrieved 2016 from https://outdoorindustry.org/2015-annual-report/

Rivers & Watersheds: *The Geology of Virginia - The Potomac and Shenandoah System. College of William and Mary Department of Geology*. Accessed 19 July 2016 at http://web.wm.edu/geology/virginia/rivers/potomac-shenandoah.html.

Schwarzmann, D., Leeworthy, V.R. 2016. Mallows Bay Potomac River Study Area Profile 2000 to 2015. Marine Sanctuaries Conservation Series. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Office of National Marine Sanctuaries, Silver Spring, MD.

Shomette, Donald G. 1996. *Ghost Fleet of Mallows Bay and Other Tales of the Lost Chesapeake*. Tidewater Publishers, Centreville, MD.

Strickland, Scott M., Virginia R. Busby, and Julia A. King. 2015. *Indigenous Cultural Landscapes Study for the Nanjemoy and Mattawoman Creek Watersheds*. Prepared for the National Park Service, Annapolis, MD. St. Mary's College of Maryland, St. Mary's City, Maryland.

Thunder Bay National Marine Sanctuary. 2014. Final Environmental Impact Statement. NOAA.

Tilp, Frederick. 1982. The Chesapeake Bay of Yore. Chesapeake Bay Foundation, annapolis.

U.S. Army, Garrison Adelphi Laboratory Center. 2009. Draft Environmental Assessment for the United States Army Garrison Adelphi Laboratory Center Real Property Master Plan. https://www.ncpc.gov/DocumentDepot/PublicNotices/Adelphi_Lab_Master_Plan_EA_MP14_Nov2009.p df

U.S. Department of Commerce, Bureau of the Census. http://www.census.gov

U.S. Geological Survey. *1984. Water-Quality Study of the Tidal Potomac River and Estuary - An Overview.* Paper 2233. Edited by Edward Callender, Virginia Carter, D. C. Hahl, Kerie Hitt, and Barbara I. Schultz. <u>http://pubs.usgs.gov/wsp/2233/report.pdf</u>.

U.S. Department of Labor, Bureau of Labor Statistics, Consumer Price Index. http://data.bls.gov/cgibin/surveymost

U.S. Department of Labor, Unemployment. http://www.bls.gov/data/#unemployment

Virginia Department of Conservation & Recreation. Feb 2012. 2011 Virginia Outdoors Demand Survey. http://www.dcr.virginia.gov/recreational-planning/document/vosexecsum11.pdf

Westerdahl, Christer. 1992. "The Maritime Cultural Landscape." In *Nautical Archaeology*. 21(1):5-14.

Appendix A

Mallows Bay – Potomac River National Marine Sanctuary Draft Management Plan

December 2016

Executive Summary

On October 7, 2015, the National Oceanic and Atmospheric Administration (NOAA) published a Notice of Intent to conduct scoping and to prepare an environmental impact statement (EIS) for the proposed Mallows Bay-Potomac River National Marine Sanctuary (MPNMS). The community-based nomination of the proposed sanctuary was submitted to NOAA on September 16, 2014 and accepted into the inventory of national marine sanctuaries on January 12, 2015.

More than 185 known vessels spanning from the Revolutionary War through the present, lie in and around the Mallows Bay area of the Potomac River. These vessels include the largest collection of World War I wooden steamships built for the U.S. Emergency Fleet. These vessels, which are listed on the National Register of Historic Places, and other shipwrecks and archaeological and cultural remains found in the area, are not only nationally significant from an historical perspective, deserving an exceptional level of conservation, study, and public interpretation, but also provide important habitat for fish and wildlife and are increasingly a recreational destination in a maritime landscape and waterscape identified as one of the most ecologically valuable in Maryland.

The proposed name of the sanctuary is the Mallows Bay - Potomac River National Marine Sanctuary. To simplify the name, this document commonly references Mallows Potomac NMS or abbreviates as MPNMS.

1.1 About this Management Plan

This Draft Management Plan (DMP) describes all of the management actions and strategies that NOAA intends to implement in order to protect the nationally significant resources within the MPNMS, to help conserve and promote the shipwrecks that have been located and those that await discovery. Each resource is a unique and fragile element in our nation's history that the MPNMS is dedicated to preserving, interpreting and promoting for future generations. The actions described below are largely non-regulatory and are designed to strengthen and complement existing protections currently in place under the State of Maryland and Charles County. The minimal regulatory actions which are planned are intended to best ensure the long-term protection of these valuable resources.

The management plan is comprised of five action plans (Resource Protection; Recreation and Tourism; Education; Research, Science, and Technology; and Sanctuary Operations and Administration). It sets priorities to guide sanctuary programs and operations and provide the public with an understanding of the sanctuary's strategies to conserve and promote the national maritime historic resources of the MPNMS.

While MPNMS is managed by NOAA, the sanctuary relies heavily on the work of others to help carry out its mission. NOAA works in full cooperation with the State of Maryland Department of Natural Resources (DNR) and the Maryland Historical Trust (MHT) as well as with the Charles County Parks and Grounds Division in their role as trustees for State of Maryland resources. In addition, partnerships with private businesses, non-governmental organizations, educational and cultural institutions, and other local, state, and federal agencies provide expertise for scientific research and exploration, resources and capacities for site monitoring and enforcement, and support for education and outreach programs. The many partnerships developed over the course of this nomination and designation process have been, and will continue to be, critical to the success of the sanctuary.

This DMP is specific to NOAA's actions but links to and identifies the actions and responsibilities of partner management agencies, all of which will be an integral component of MPNMS success. Public involvement has been valuable throughout the nomination and designation processes, and will continue to be valuable, through opportunities to volunteer and to participate on the sanctuary advisory council.

1.2. NOAA's Office of National Marine Sanctuaries

The ONMS is within NOAA's National Ocean Service (NOS) and serves as the trustee for a system of marine protected areas encompassing more than 600,000 square miles of ocean and Great Lakes waters from State of Washington to the Florida Keys, and from New England to American Samoa (Figure 1). Within their protected waters, giant whales feed, breed and nurse their young, coral colonies flourish, and shipwrecks tell stories of our maritime history. NOAA's National Ocean Service manages the national marine sanctuaries through the authority of the National Marine Sanctuaries Act (NMSA). Existing marine sanctuaries contain deep ocean gardens, coral reefs, whale migration corridors, deep-sea canyons, historically significant shipwrecks, and other underwater archaeological sites. They range in size from a one-nautical mile column at Monitor National Marine Sanctuary, to more than 582,578 square miles at Papahānaumokuākea Marine National Monument.

ONMS fosters public awareness of marine resources and maritime heritage through scientific research, monitoring, exploration, education, and outreach and works closely with its many partners and the public to protect and manage sanctuaries. The ONMS is a world leader in marine management by protecting living marine creatures, environmental quality, and maritime heritage resources, while maintaining recreational and commercial activities that are sustainable and compatible with long-term preservation.

NATIONAL MARINE SANCTUARY SYSTEM



Figure 1: Map of the National Marine Sanctuary System

1.3. Mallows Bay-Potomac River National Marine Sanctuary

Located on a beautiful and relatively undeveloped section of the tidal Potomac River in Charles County, Maryland, just 40 miles south of the Nation's Capital, the Mallows Bay area is the home of one of the largest collections of historic shipwrecks and related maritime resources in the world. These waters contain a diverse collection of nearly 200 vessels and related archaeological artifacts from the region's earliest Native American cultures to the 20th century. These marine resources are nationally significant not only due to their sheer numbers and diversity, but also because of their historical, archaeological, cultural, educational, research, scientific, recreational and tourism values.

The Potomac River has nurtured people for more than 12,000 years, serving as a source for food, transportation, trade and recreation. Often referred to as "the Nation's river," the Potomac flows through an area of distinctive history and natural beauty of national and international significance. From American Indian canoes to Captain John Smith's shallop, and from wooden sailing craft that helped settle and feed our growing nation to modern Navy ships visiting the Washington D.C. Navy Yard, many thousands of vessels have traveled the Potomac River over centuries. Yet, the Potomac's remarkable maritime history reflected in the hundreds of historic shipwrecks from the Revolutionary War to the present found throughout the river is often not appreciated or well understood.

The Mallows Bay area represents centuries of American history, and holds many heritage resources, from a suspected Revolutionary War era longboat, to a Confederate blockade runner and the remains of over 100 wooden and composite steamships built for America's engagement in World War I. While these ships are the area's more obvious historic and archaeological features, many historic resources including historic commercial fishing camps, piers, wharfs, ship breaking operations, landings and battlescapes, are less visible and remain largely unknown to the public. MPNMS would protect and manage these historical resources as sanctuary resources.

Archaeological research and evidence suggests that it is high probability that many more historic archaeological sites await discovery. In addition to helping to protect and interpret individual sites, managing the sanctuary as a maritime cultural landscape offers the opportunity to foster an interconnected understanding of our nation's and the Chesapeake and Potomac region's rich maritime past. This landscape approach considers the archaeological, historical and associated natural resources from the perspective of their relationship with people and cultures through time. It enables a more comprehensive interpretation of people and place. And, as new discoveries are made, it encourages an increasingly diverse public to find shared meaning and outstanding opportunities for education, recreation and tourism in this nationally and internationally significant place.

To help promote and conserve these underwater treasures, this section of the Potomac River was nominated by the State of Maryland, Charles County and community groups and individuals as a proposed new National Marine Sanctuary -- the first such sanctuary on a river and in the Chesapeake watershed. This section of the Potomac contains the largest concentration of World War I-era shipwrecks in the U.S., represents three centuries of American maritime history, as well as Native American history. As a collection, they illuminate important and dramatic chapters in our nation's history. Readily accessible by boaters, paddlers and many visible from land at low tide, these wrecks often provide sanctuary users with an up close shipwreck experience.

Designation under the National Marine Sanctuaries Act allows NOAA to supplement and complement work by the State of Maryland and other Federal agencies to conserve this collection of nationally significant shipwrecks and related cultural assets. As the site of the largest collection of vessels built for America's entry into World War I (WWI), it would highlight and serve as a lasting legacy of the WWI centennial approaching in April 2017.

A public scoping period commenced on October 7, 2015 and ended on January 15, 2016, during which time public meetings were held and NOAA received both written and oral comments on the concept of designating the sanctuary. Based upon comments received during the scoping process, the alternatives considered in the draft environmental impact statement are:

(A) No Federal designation as a National Marine Sanctuary (the no-action alternative).

(B) Approximately 18 square miles of area that coincides with the boundaries of the Widewater Historical and Archeological National Register District in the National Register of Historic Places (NRHP). This alternative is slightly larger than the area submitted through the Sanctuary Nomination Process because it incorporates the Historical District boundaries that were developed with additional information not available during the nomination development.
(C) Approximately 52 square miles of the Potomac River. This alternative extends the rationale used for Alternative B to include all of the known WWI-era U.S. Emergency Fleet Corporation vessels in Maryland waters, as well as a number of historically, archaeologically, and recreationally significant shipwrecks not currently included in the Widewater Historical and Archeological National Register District. The process and considerations used to identify

maritime resources and to define these boundaries is the same as those used to define the Widewater Historical and Archeological National Register District.

(D) Approximately 100 square miles of the Potomac River. This alternative includes additional area upstream and downstream from Alternative C that would support the visitor use goals of the sanctuary. There may also be additional unknown maritime heritage resources as well as the water escape route to Virginia by John Wilkes Booth.

Each alternative also includes adopting this management plan and the proposed regulations described below and found in Appendix 3.

Regulations Proposed for All Alternatives

Regulations

NOAA is proposing to implement three regulations for all the action alternatives (Alternatives B, C, and D) under the NMSA to protect the maritime cultural heritage resources and supplement and complement existing Federal and State authorities in the geographic areas described in the boundary alternatives above. The sanctuary-wide regulations would prohibit: 1) damaging sanctuary historical resources; 2) damaging any signs or markers related to the sanctuary; and 3) interfering with an investigation in connection with enforcement of the NMSA, sanctuary regulations, or sanctuary permit. NOAA is proposing these regulations with an exception for activities that are necessary to respond to emergencies that threaten lives, property or the environment and for law enforcement activities.

NOAA is also proposing that Department of Defense (DOD) activities be carried out in a manner that avoids damage to sanctuary resources to the maximum extent practicable. In the event that DOD activities damage a sanctuary resource NOAA and DOD would coordinate to develop a mitigation and restoration plan. Given that the definition of sanctuary resources is limited to the historical resources and does not include biological or ecological resources NOAA does not anticipate that many, if any current DOD activities would impact the resources. DOD is also required to consult with ONMS pursuant to NMSA section 304(d) on any newly proposed military activities occurring in the proposed sanctuary boundary that would be likely to injure sanctuary historical resources. In the event that a sanctuary historical resource is damaged then DoD would coordinate with the Sanctuary to mitigate further damage and restore the resources.

As part of the proposed designation NOAA is also recommending giving the sanctuary the ability to issue emergency regulations. Emergency regulations are used when there is an imminent risk to sanctuary resources and a temporary prohibition would prevent the destruction or loss of those resources. Emergency regulations can only be issued for a fixed amount of time that address the imminent risk. A full rulemaking process must be undertaken to consider making emergency regulation permanent.

Permits, Certifications and Authorizations

NOAA is proposing to include the authority to consider issuing general permits, special use permits, certifications, and authorizations to allow regulated activities to occur in the sanctuary under certain

conditions. Because of the limited number of regulated activities described above NOAA does not anticipate needing to frequently use these authorities but having a range of options available will allow sanctuary managers flexibility to address proposed activities while protecting the sanctuary historical resources.

Similar to other national marine sanctuaries, NOAA is proposing to consider the general permits only for the purposes of sanctuary education, research, and management. NOAA would execute this permit authority using the existing procedure and review criteria that require permit applicants to provide a description of the proposed activity, a timeline, information on the equipment, personnel and their qualifications, methodology to be used, and potential effects of the activity on sanctuary resources.

Special use permits (SUPs) are established Section 310 of the National Marine Sanctuaries Act (16 U.S.C. § 1441; NMSA) to allow NOAA to issue permits to authorize specific activities in a sanctuary if the permit is necessary (1) to establish conditions of access to and use of any sanctuary resource or (2) to promote public use and understanding of a sanctuary resource. Special use permits are generally issued for concessionaire-type activities and other commercial activities that require access to the sanctuary to achieve a desired goal.

NOAA is proposing to consider allowing an otherwise prohibited activity if that activity is specifically authorized by any valid Federal, State, or local lease, permit, license, approval, or other authorization. NOAA will consider issuing certifications for such activities that are in place at the time the sanctuary designation becomes effective provided that the holder of such authorization or right complies with NOAA's certification procedures and criteria within the timeline NOAA lays out to complete certifications. The certification process essentially "grandfathers in" existing activities while seeking to minimize the impact on sanctuary resources through terms or conditions worked out during the certification process.

Additionally, NOAA is proposed to consider issuing authorizations at any time after the designation that would allow an otherwise prohibited activity if that activity is specifically authorized by any valid Federal, State, or local lease, permit, license, approval, or other authorization. The proposed authorization authority is intended to streamline regulatory requirements by reducing the need for multiple permits. Similar to certifications, NOAA would use terms and conditions worked out during the authorization process to minimize the impact on sanctuary resources.

Nonregulatory Programs for All Alternatives

In addition to the proposed regulations described above, NOAA is also proposing nonregulatory programs that would apply to all the action alternatives (Alternatives B, C, and D). These nonregulatory programs are described in detail in this document. Each resource is a unique and fragile element in our nation's history that the MPNMS is dedicated to preserving, interpreting and promoting for future generations. The actions described herein are designed to strengthen and complement existing regulatory and nonregulatory protections currently in place under the State of Maryland and Charles County.

Preferred Alternative

Based on consultation with the State of Maryland and Charles County, NOAA's preferred alternative is C (see Figure 2). This alternative is also supported by public comments received during the initial scoping period. By enlarging the sanctuary boundaries from the original nomination package to this area, the totality of known WWI-era vessels as well as other important maritime resources would be protected through the sanctuary's resource protection programs, while allowing recreational use of the resources.

The nationally significant collection of shipwrecks and related maritime heritage resources are a vital part of our history, yet vulnerable to natural processes and human impacts. Through research, education, and community involvement, the sanctuary, its many partners and the public will work to conserve these historic shipwrecks for future generations.



Figure 3: Map of Mallows-Potomac NMS alternatives

1.4. Community Based Management

Partnerships with government entities at all levels, as well as with non-profit, business, academic, tourism, American Indian, and other user groups are critical to the management and operational success of the MPNMS. Consequently, the sanctuary is managed jointly by NOAA, the State of Maryland, and Charles County, Maryland, in cooperation with non-governmental partners.

NOAA is proposing to manage the MPNMS collaboratively with the State of Maryland and Charles County. The Maryland Historical Trust, within the Department of Planning, and the Department of Natural Resources, will represent the State of Maryland. NOAA proposes to formalize this joint management in the sanctuary regulations and intends to work out the operational details of the collaboration in a Memorandum of Understanding (MOU). Details on the execution of sanctuary management such as activities, programs, and permitting programs would be included in the MOU.

In addition, an appointed sanctuary advisory council will provide advice to the sanctuary superintendent. Members of the advisory council represent the community's interests, including education, research, conservation, maritime history and interpretation, fishing, tourism, economic development, recreation, American Indian and the community-at-large. Advisory council members serve as liaisons between their constituents and the sanctuary. With a broad expertise and diverse representation, the advisory council offers advice to the sanctuary superintendent on resource management issues that helps ensure that a wide range of viewpoints are provided upon which to base management decisions. A partnership organization and/or "Friends" group will assist with planning, development and outreach for the sanctuary.

Maryland Department of Natural Resources

The Maryland DNR's mission is to "Lead Maryland in securing a sustainable future for our environment, society, and economy by preserving, protecting, restoring, and enhancing the State's natural resources." As a partner in the designation and implementation of the MPNMS, DNR will continue to retain all authorities and regulations, while working cooperatively to promote the sustainable use and conservation of the Potomac River and its ecosystems.

The DNR Chesapeake and Coastal Service manages the Maryland coastal zone pursuant to the Coastal Zone Management Act. Maryland's Coastal Zone Management (CZM) Program was federally approved in 1978 in response to the passage of the CZMA, which provides funds to coastal states to develop and administer coastal zone management programs. The Program works to manage the resources within Maryland's coastal zone - the land, water and subaqueous land between the territorial limits of Maryland in the Chesapeake Bay, Atlantic Coastal Bays and the Atlantic Ocean, as well as the towns, cities and counties that contain and help govern the thousands of miles of Maryland shoreline.

The DNR Fisheries and Boating Service manages commercial and recreational fishing in all Maryland tidal waters of the Chesapeake Bay and tributaries (excluding the mainstem Potomac River which is managed by the Potomac River Fisheries Commission in cooperation with Maryland DNR and Virginia Marine Resources Commission). DNR also supports and regulates public boating use and safety on the Potomac River. The Natural Resources Police (NRP) patrol on land and water, and are responsible for conservation and boating law enforcement, homeland security, search and rescue, and emergency medical services. NRP will partner with the MPNMS and NOAA's Office of Law Enforcement (OLE) to enforce sanctuary regulations.

DNR owns Mallows Bay Park, and manages extensive land adjacent to the MPNMS including Nanjemoy and Riverside Wildlife Management Areas (WMA) and Douglas Point Special Recreation Management Area (SRMA). DNR's Wildlife and Heritage Service manages these lands for public access, recreation, and ecosystem conservation and restoration. DNR will work in partnership with MPNMS to promote public access and recreational opportunities at the land-water interface while striving to better understand and enhance the natural ecosystems.

Maryland Historical Trust

The MHT, within the Maryland Department of Planning, is the state agency dedicated to preserving and interpreting the legacy of Maryland's past. Through research, conservation and education, MHT assists the people of Maryland in understanding their historical and cultural heritage. The MHT serves as Maryland's State Historic Preservation Office (SHPO) pursuant to the National Historic Preservation Act of 1966. In addition to its administrative office in Crownsville, the MHT includes the Jefferson Patterson Park & Museum in St. Leonard, Maryland, which houses the Maryland Archaeological Conservation Laboratory.

The Maryland Maritime Archaeology Program (MMAP) within MHT is responsible for the management of all submerged archaeological historic property on State of Maryland lands. To this end it evaluates permits for undertakings for federal compliance purposes, issues permits for applications for projects affecting maritime and submerged archaeological historic properties, provides educational trainings and public outreach programs and events.

The MMAP was created in 1988 in response to the National Abandoned Shipwreck Act which gave states that had management programs in place title to significant historic shipwreck remains within their waters. In addition to shipwrecks, the MMAP searches for, inventories and manages the State of Maryland's other submerged cultural resources. These include prehistoric sites, historic structures such as buildings, bridge, and wharf remains. Maryland's waters cover a range of vessels from native log canoes to colonial merchantmen and warships, and even relatively modern shipwrecks of historic importance.

MMAP actively undertakes cooperative endeavors with numerous groups and agencies at local, state, and federal levels to promote wise management as well as public education and outreach. These partnerships include the U.S. Navy; the National Park Service; the U.S. Army Corps of Engineers; the Maryland State Highway Administration; the Maryland DNR; maritime, historical and archeological societies (such as the Institute for Maritime History, the Nautical Archaeology Society, and the Maritime Archaeological and Historical Society); dive clubs; metal detecting groups; and local and regional schools.

The MHT also administers the Maryland Heritage Area Program. The proposed sanctuary would fall within the Southern Maryland Heritage area. The Maryland Heritage Area Authority provides targeted financial and technical assistance within locally designated Heritage Areas, to promote, economic well-being of the region's communities.

Charles County Department of Recreation, Parks and Tourism

The Charles County Department of Recreation, Parks and Tourism represents the County in management of the sanctuary through the Division of Parks and Grounds. The Division's mission is to enhance the quality of life for County residents by providing enjoyable leisure services. The Division of Parks and Grounds maintains around 14 parks, 5 boating access facilities, and other recreational facilities with 50 miles of trails totaling 3,600 acres serving over 700,000 annual visitors.

Charles County Parks and Grounds provides the main access to Mallows Bay through the Mallows Bay Park. The Mallows Bay Park is located on a larger protected property owned by the State of Maryland,

but the County has primary responsibility to maintain the Park under a lease agreement. The Charles County Office of Tourism also plays a role in promoting Mallows Bay Park and providing information on the history of the site.

1.5. Partnerships

In addition to shared management responsibilities between Federal, State and local agencies, the sanctuary will partner with other local, state, and federal authorities, along with support from recreational users and other members of the community, to conserve and promote these maritime heritage resources.

The MPNMS strongly encourages responsible stewardship of the shipwrecks and other maritime heritage resources. To facilitate recreational access, the sanctuary will work with partners to improve access, signage, interpretation, and promote visitation and safe use of sanctuary resources.

Both NOAA and the State of Maryland recognize that sea level rise, shoreline erosion, and aquatic invasive species pose potential harm to these maritime heritage resources. The sanctuary will work with state, university and NOAA scientists to develop long-term monitoring programs to better understand how the chemical, biological, and physical conditions found around these shipwrecks are affecting the corrosion and deterioration of these irreplaceable archaeological sites.

The sanctuary's planned education and outreach programs will help people of all ages and backgrounds enrich their lives while learning about, physically experiencing, and working to conserve the Potomac River's maritime heritage. Because people are stewards of what they value, and value what they understand, the MPNMS embraces education as a powerful resource conservation tool. Sanctuary education comes in many forms, from programs for teachers and students to imaginative exhibits, and from community boat building to remotely operated vehicle competitions. Although conservation is the central message, the sanctuary promotes learning across the curriculum.

The MPNMS will conduct, support, promote, and coordinate scientific research and monitoring of its maritime heritage resources to ensure their long-term conservation. Archaeological and historical research conducted by the sanctuary and its partners is fundamental to better understanding the region's historic shipwrecks. This knowledge is essential for addressing management issues and enhancing resource protection. Archaeological and historical research is also at the heart of the sanctuary's plans for exhibits, education initiatives, and public programming.

1.6. Developing a Management Plan

As part of the designation process and in accordance with the NMSA, NOAA, in partnership with the State of Maryland and Charles County, Maryland, developed this draft management plan (DMP) to identify site-specific goals, objectives, strategies and activities to ensure the proposed sanctuary best achieves its mission and the community-based vision, as articulated in the nomination and in the public scoping sessions.

Management plans are sanctuary-specific planning and management documents used by all national marine sanctuaries. They identify needs, challenges and opportunities, and develop a course for the

future. A management plan describes the resource protection, recreation and tourism, research, and education programs that guide sanctuary operations, specify how a sanctuary should best conserve and promote its resources, and describe sanctuary regulations if appropriate.

This DMP guides Mallows Potomac NMS programs and operations by setting budget and project priorities. The plan also assists the sanctuary's advisory council in providing advice on management decisions and provides the public with a better understanding of the sanctuary's strategies to protect the resources of the Potomac River in and around Mallows Bay.

Development of the MPNMS management plan began in January 2016 after conclusion of the public scoping period. Input gathered from resource users, stakeholders, interest groups, government agencies, and other members of the public during the scoping process was considered in developing the management plan, including comments regarding boundaries, education and outreach, recreation and tourism, funding, science and research and sanctuary operations.

The core of the management plan consists of five action plans: Resource Protection; Recreation and Tourism; Education; Research, Science and Technology; and Sanctuary Operations and Administration. Each action plan provides background information on resource management issues and an overview of the direction the sanctuary will take to address management needs. The goals for each action plan are summarized and the strategies describe how the goals will be accomplished for a particular issue or program area.

2. Resource Protection Action Plan

2.1. Purpose

This action plan strengthens protection of the historic shipwrecks, assets related to shipbreaking of the WWI-era vessels, other significant maritime cultural features of the area, and the natural resources related to the structures provided by the historic shipwrecks.

2.2. Background

Several natural processes and human impacts threaten the long-term sustainability of shipwrecks and maritime heritage resources of the Mallows Bay-Potomac River area. While little, if anything, can be done to "protect" the resources from natural processes such as floods and extreme weather events, programs identified in other management action plans can help better understand and communicate any changes and associated impacts. As such, the Resource Protection Action Plan focuses on assessing and reducing human impacts on sanctuary resources. Human activities - such as climbing/accessing the wrecks, fire, vandalism, altering or looting, and anchoring in some loci - have potential for harming shipwrecks and other maritime heritage resources. This action plan enhances extant provisions and enables additional protections by raising awareness of the historic value of the maritime assets and related ecosystems, by providing appropriate programming and infrastructure coordination to support increased visitation while mitigating threat to the resources, and by encouraging responsible use of the area. As appropriate, existing and new authorities will be enforced to deter human-induced threats.

In 2014, the Maryland SHPO requested designation of the Potomac River which included Mallows Bay as the Mallows Bay-Widewater Historical and Archaeological National Register District; the area was listed in April 2015. As a National Register Historic District in the State of Maryland no artifact collection is allowed and permits for any disturbance must be approved by the State of Maryland's Board of Public Works in addition to the SHPO. However, there are at least three WWI-era vessels outside the Historic District and, under the State of Maryland's present Submerged Archaeological Historic Property Act, these are subject to collection and disturbance. A number of other known submerged vessel remains, including some significant ones, are not within the Historic District and there is high potential for other vessels and maritime heritage-related resources not yet located but referenced in historic documents. The creation of the MPNMS provides a mechanism to provide better protection for these resources.

2.3. Action Plan Goals

The goals of this action plan are to:

- Protect the historical and archaeological maritime resources within the sanctuary boundaries both for their significance to the cultural heritage and national patrimony but also for the integral role they have come to play in the natural environment of the region.
- Manage visitor use, encourage sustainable tourism, enhance public access, recreation, heritage tourism and eco-tourism in a manner that is safe and minimizes potential impacts on sanctuary resources.
- Enhance federal, state, local and private partnerships working to conserve and promote the historic, cultural, natural, archaeological, recreational, educational, scientific and aesthetic resources of the area through the coordination of law enforcement and emergency response efforts, and interpretive enforcement programs.

The Resource Protection Action Plan is tightly coordinated with other actions plans (see Appendix 1: Strategy Crosswalk) since there is mutual benefit to be derived and, as a result, this allows both budgetary and managerial efficiency. This action plan seeks to close gaps between the existing protections provided and the goals stated above through the application of the NMSA which would preclude all collection of artifacts and site disturbance, beyond the protection offered by State of Maryland legislation and the National Register status which only applies to the Historic District.

<u>Safety</u> (coordinates with Recreation and Tourism Action Plan) The safety of both the resources and visitors can be enhanced by the development of shore-side signage and marked water trails to guide visitors through the wrecks and away from sensitive heritage or environmental areas while providing a positive experience.

<u>Interpretive Enforcement</u> (coordinates with both the Recreation and Tourism Action Plan and the Education Action Plan) Increased public awareness of and compliance with protective measures for the resources will be enhanced through education and outreach. This takes numerous forms, including multimedia, trainings for law enforcement agencies, collaboration with institutional, private sector, and nonprofit partners, and ongoing monitoring programs.

2.4. Action Plan Strategies

STRATEGY RP-1: Increase compliance with sanctuary regulations and other applicable state and federal laws.

Activity 1.1: Ensure sufficient enforcement presence in the sanctuary through partnerships and interagency coordination.

- A. Provide information to law enforcement personnel on interpretive enforcement.
- B. Develop outreach materials for enforcement officers to distribute while patrolling the sanctuary.
- C. Host regional law enforcement/maritime heritage resource law workshops.
- D. Develop an interagency communication and emergency response plan.
- E. Explore feasibility of using technology to monitor the sanctuary; e.g., periodic drone overflights and solar--powered surveillance cameras.

Activity 1.2: Use interpretive enforcement as a tool to inform users about sanctuary regulations.

- A. Integrate interpretive enforcement into shore-side signage throughout the sanctuary region.
- B. Include informational inserts about the sanctuary in Maryland boat registration and renewal packets.
- C. Provide U.S. Coast Guard Auxiliary members, marina employees, and other appropriate individuals and organizations with information about recognizing and reporting violations of sanctuary regulations.

STRATEGY RP-2: Assess and evaluate use of sanctuary resources.

Activity 2.1: Monitor use of sanctuary resources in order to better understand user groups being served, patterns of use, and the effects of use on the resources.

- A. Determine levels of acceptable change to sanctuary resources and ensure monitoring programs are appropriately designed to track associated metrics over time.
- B. Work with outfitters, local businesses, and Charles County government (Parks and Grounds, Chamber of Commerce/Tourism) and enforcement partners to document visitation to the sanctuary and use of the resources.
- C. Develop procedures and provide incentives to allow users to voluntarily report visitation to the sanctuary and use of the resources.
- D. Explore the use of technologies (e.g., website links, social media, on-site QR codes) to facilitate monitoring and reporting of visitors and uses.

STRATEGY RP-3: Build capacity for access and responsible use of sanctuary resources by fostering greater awareness among known and potential user groups.

Activity 3.1: Provide practical information for users such as shipwreck identification maps and information, access points, regulations and contact information.

A. Develop outreach materials and Web--based information for users of sanctuary resources.

- B. Explore the use of cell phones and podcasting as a means of providing users interpretive materials at shipwreck sites.
- C. Provide public-friendly information about the shipwrecks, sanctuary regulations, and enforcement/emergency contact information at marinas, boat ramps, parks, other access points, and venues like visitor centers.

Activity 3.2: Install trail/guidance/mooring buoys at shipwreck sites and along paddling routes to protect shipwrecks from anchor damage and to facilitate approaching the shipwrecks in a manner that protects the resource from damage.

- A. Develop a five--year plan to determine the nature, number and placement of buoys, including consideration of materials, permitting, staffing, operational and scheduling needs.
- B. Develop an operational plan for annual deployment, retrieval, and maintenance of buoys.
- C. Work with local outfitters and other partners to monitor the buoys throughout their deployment.

Activity 3.3: Explore the development of "certification programs" for local outfitters, businesses and local activities that actively promote recreational etiquette and stewardship of sanctuary resources (e.g., similar to the Florida Keys National Marine Sanctuary's Blue Star Program).

Activity 3.4: Work with other agencies, local governments, and non-governmental organizations to improve public access along the Potomac River.

STRATEGY RP-4: Preserve and curate maritime heritage artifacts.

Activity 4.1: Conduct an assessment of the wrecks and determine the best approaches to in-situ conservation that encourages public access and interpretation while protecting natural resources, especially where wrecks have become habitat.

Activity 4.2: Develop an agreement with the Maryland Archaeological Conservation Laboratory for treatment and curation of artifacts if at any time artifact removal is deemed necessary.

Activity 4.3: Establish membership criteria and procedures to establish an accessions committee to evaluate donation criteria and artifact handling policies in regard to establishing a visitor center collection to accept artifacts previously removed or tied to the history of the ships and area.

Activity 4.4: Make artifacts available to the public and to professionals via exhibits, loans, and selected access to the artifact collection.

3. Recreation and Tourism Action Plan

3.1. Purpose

This action plan enhances tourism and recreational opportunities through safe and responsible public uses that are compatible with sanctuary objectives for resource protection.

3.2. Background

The MPNMS offers outstanding outdoor recreational and heritage and nature tourism opportunities including fishing, kayaking and canoeing, boating, wildlife viewing, fossil hunting, and immersion in important chapters in our nation's history.

The area's role in Native American history, the Revolutionary War, Civil War, and World War I and II are some of the critical stories to be told in and around the sanctuary. Most apparent to the public is the story surrounding the vast "Ghost Fleet" of Mallows Bay including its role in making America the greatest shipbuilding nation in the world; its role in the creation of the U.S. Merchant Marine; and the shipbreaking operation's role in supporting America's entry into WWII. This history is unique and attractive to a diverse audience of history buffs, explorers, and tourists, both domestic and international. With sanctuary designation, it is anticipated that there will be strong interest in the sanctuary and its ghost fleet of WWI steamships.

Visitors to MPNMS can engage in a broad variety of recreational and tourism experiences and activities. The National Park Service Chesapeake Bay Office partnered with the Chesapeake Conservancy to connect and network a series of recreational sites along the Maryland and Virginia shores, including Mallows Bay, to facilitate public access and enhance recreational experiences along this portion of the river. The sanctuary's location allows for several connection points to this network. The region is contiguous to three National Trails (Captain John Smith Chesapeake National Historic Trail, the Star Spangled Banner National Historic Trail, and the Potomac Heritage National Scenic Trail). Additionally, the MPNMS is adjacent to the Religious Freedom National Scenic Byway, included in the Indian Heritage Trail ("Through Piscataway Eyes,"), and is surrounded by state and local parkland, wildlife management areas and lands managed by the U.S. Bureau of Land Management.

This section of the Potomac River supports a premier recreational fishery and many high-profile fishing tournaments occur in nearby waters. Paleocene era shark teeth and other fossils can be found along the shoreline. The area is home to one of the largest nesting eagle populations in the eastern United States and provides habitat for other birds and wildlife, making it an attractive location for birders and wildlife enthusiasts. However, the remarkable history, natural beauty, and the recreational and tourism opportunities of this area have been relatively unknown and underutilized and thus visitor services are limited. Over the past few years, efforts have been made to connect and market a diversity of recreational opportunities along the Maryland and Virginia sides of the river including options for day-use and itineraries for multiple day excursions. Sanctuary management, communications and outreach efforts can supplement and enhance this development of sustainable local tourism and outdoor recreation industries.

3.3. Action Plan Goals

The three goals of this action plan are to:

• Manage and enhance public access, recreation, heritage tourism and eco-tourism.

• Develop interpretive programs, exhibits, water trails, and public outreach to schools, community forums, and other interested institutions by relating the pre-history, history and unique ecological evolution of the sanctuary area and its natural and historical resources, and its relationship to the larger landscape of the American environment and its maritime heritage.

• Utilize the designation to responsibly market a high quality visitor experience to domestic and international visitors.

This action plan seeks to close gaps between the existing opportunity for recreation and tourism and the goals stated above. To do so, a focus on the following priorities will be integral to the action plan strategies:

<u>Marketing and Promotion</u>. Raising public awareness of the sanctuary and sanctuary-related opportunities is a critical first step in enhancing tourism and recreational use of the sanctuary. To do so involves developing and implementing a strategic marketing and communications plan and an orientation and interpretation plan. It also involves providing basic way-finding and informational materials on the internet, mobile device applications, and in publications, as well as offering special events and programs to draw targeted audiences to the sanctuary, while maintaining sensitivity to the resource protection needs of the sanctuary.

<u>Visitor Services.</u> Basic visitor amenities (i.e., access road signage, parking, information and restrooms) need to be assessed and future needs evaluated and planned. Services such as experienced guides, kayak and canoe rentals, bait and tackle, food, lodging, and other amenities, are very limited in this area. Developing or enhancing these services in a manner which is sustainable and consistent with Charles County's planning for this area will help ensure a high quality visitor experience to the sanctuary.

<u>Water Access.</u> Charles County, in cooperation with Maryland DNR, manages a day-use park at Mallows Bay, which has wildlife viewing areas, waterfront fishing and hiking trails. Many of the historic shipwreck and shipbreaking remains are visible from the shoreline at low tides. A boat ramp and special kayak launching area constructed by the State of Maryland and Charles County provides easy access to Mallows Bay, the Potomac River and the historic shipwrecks.

However, the size and topography of the boat launch area present challenges for accommodating increased usage and may create user conflicts between kayaks, motor boats and visitors, particularly on weekends. There is a severe shortage of reasonable alternative access sites along this section of the Potomac River. As such, an important component of the marketing and promotion strategy will be to assess the types and locations of recreational uses along the middle portion of the Potomac River to encourage visitation to other access points for purposes that do not necessarily depend the historic and/or natural resources afforded at Mallows Bay Park.

<u>Safety.</u> Water current, winds and weather can make this section of the Potomac River dangerous at times. Moreover, the channel for boats coming in and out of the Mallows Bay Park boat ramp is not well marked. Additionally, no directional markers exist for safe water trails through the shipwrecks, whose steel spikes and other remains often lie just below the water surface, posing risks to both boaters and the resources. Additional guidance, warnings and other safety measures would be advisable.

3.4. Action Plan Strategies

STRATEGY RT-1: Increase awareness and knowledge of the sanctuary by developing and implementing a strategic marketing and communications plan targeted toward a wide variety of users and potential visitors.

Activity 1.1. Partner with the State of Maryland and Charles County offices of tourism, the Southern Maryland Heritage area, the Charles County Chamber of Commerce and the Maryland World War I Centennial Commission to develop and implement a marketing and communications plan to promote the sanctuary.

Activity 1.2. Explore co-marketing and co-branding opportunities for recreation and tourism with the Commonwealth of Virginia and local counties.

Activity 1.3: Develop basic outreach materials for a wide variety of users that encourage responsible and safe use of sanctuary resources.

Activity 1.4: Develop a website and mobile-based application to provide quality, up-to-date information about the sanctuary, including implementing Web 2.0 components (social networking, wikis, blogs, etc.) to encourage collaboration and interaction with the public.

Activity 1.5: Develop and provide wayfinding and signage for the sanctuary.

Activity 1.6: Sponsor, organize, and participate in special events and outreach opportunities that promote the sanctuary's mission and that allow for dissemination of sanctuary information.

A. Continue to sponsor and organize an annual Potomac River cleanup.

B. Explore opportunities to create an annual Mallows Bay Potomac River Sanctuary Maritime festival.

C. Participate in local community events.

D. Partner with other NOAA programs to participate in regional outreach events.

E. Present at local, regional, and national workshops and conferences targeted at specific groups including resource managers, and maritime history and archaeology professionals.

F. Partner with local organizations to organize special activities as part of the annual "Get into Your Sanctuary" Day.

STRATEGY RT-2: Enhance sustainable visitor services to the sanctuary.

Activity 2.1: Explore opportunities to develop a visitor center to enhance education, science, interpretation of the sanctuary and partner programs as well as to support ADA requirements.

Activity 2.2: Develop partnerships with commercial kayak operators, fishing guides, watermen and/or potential boat tour guides to facilitate high quality recreational and heritage tourism experiences in the

sanctuary and help educate visitors about the sanctuary's maritime heritage resources, boating safety and stewardship.

Activity 2.3: Partner with Charles County, the State of Maryland, and interested stakeholders to explore opportunities to develop or enhance tourism infrastructure and visitor services such as food, lodging, equipment and other amenities.

STRATEGY RT-3: Enhance public access, safety and responsible use of sanctuary resources.

Activity 3.1: Provide practical information for sanctuary visitors such as shipwreck maps and information, access points, regulations, safety and contact information.

A. Develop outreach materials and web-based information for recreational users of sanctuary resources.

B. Explore the use of mobile technology (such as use of smart phones and mobile apps) as a means of allowing recreational users to access interpretive materials at shipwreck sites.

C. Provide information about the sanctuary at Mallows Bay Park, local marinas, boat ramps, and other access points.

Activity 3.2: Build upon the Charles County and lower Potomac water trails to develop a sanctuary specific water trail and explore the use of markers, interpretive buoys or other means of identification at shipwreck sites to facilitate access while protecting shipwrecks from boat or anchor damage and protect the public.

A. Identify partnerships and establish roles with relevant state agencies, Charles County government and non-governmental organizations that will collaborate in the development of the water trail.

B. Develop a phased interpretive plan for the water trail.

C. Seek funding with partners to implement the interpretive plan.

Activity 3.3: Work with other agencies, local governments, and non-governmental organizations to improve recreational access along the Potomac River.

Activity 3.4: Work with the U.S. Coast Guard, the State of Maryland, Charles County and other interests to improve channel markers in the sanctuary.

STRATEGY RT-4: Conduct an assessment of the economic impact of the sanctuary.

Activity 4.1: Develop an initial baseline assessment of sanctuary visitation, recreational uses and intensity and associated economic impacts, and conduct periodic re-evaluations.

Activity 4.2: Use the assessment information to refine marketing and tourism opportunities and promotional products.

4. Education Action Plan

4.1. Purpose

This action plan builds and enhances public understanding and stewardship of the sanctuary, its maritime resources and the greater Chesapeake watershed, through partnerships with formal and informal educational providers and institutions, distance and other web-based learning, and specific educational programs and initiatives.

4.2. Background

Education and expanding environmental literacy is a principal focus of the MPNMS. Education is needed to raise public understanding and appreciation of the sanctuary and its resources, encourage public stewardship, and to increase knowledge about Maryland's and our nation's maritime and cultural history.

<u>An Integrated Approach.</u> Education is essential to achieving many of the Sanctuary's management objectives and will be used to both complement and promote resource protection, recreation and tourism and science and technology action plans. Likewise, education at the sanctuary can also help achieve local, state, and regional education goals and standards, including:

- The 2014 Chesapeake Watershed Agreement's Environmental Literacy goal of participation in teacher-supported, meaningful watershed educational experiences in elementary, middle and high school;
- The State of Maryland K-12 curriculum, standards and graduation requirements for social studies, history, STEM education and environmental education; and
- The Maryland Higher Education Commission's vision of ensuring that "Maryland residents have the opportunity to benefit from a higher education that enriches their lives and advances their contributions to civic life, economic development, and social progress of the State."

Education at the sanctuary is envisioned to include formal pre-K-12 education, higher education, and informal programs and initiatives for sanctuary visitors and constituents of all ages. MPNMS is a unique venue and forum for interdisciplinary education and study in the fields of history, ecology, archaeology, science, technology, engineering, mathematics, social studies, art and sociology. Educational programs and initiatives will involve multiple experiences and methods of delivery including outdoor discovery and investigation at the site, classroom learning, distance and web-based learning, and learning through partner sites, such as the National Aquarium in Baltimore, showcasing exhibits and programs. Education efforts will strive to enhance understanding of the Chesapeake Bay's and Potomac River's maritime, natural resource, and cultural heritage; the relationship between maritime resources and site ecology; and the role of people in shaping the past and future of these resources. Educational activities will seek to utilize and further develop observational buoys, remotely operated vehicles (ROV) and other technologies as well as student and citizen monitoring data in sanctuary education.

Sanctuary features and objectives included in the MPNMS education action plan will be developed using and integrating the goals and priorities of its partner agencies, organizations, and local and State of Maryland school system curriculum requirements as a foundation to guide content. Sanctuary education will seek to coordinate, partner with and enhance existing initiatives including NOAA's Bay Watershed Education and Training (B-WET) program and Ocean Guardian program, the Charles County Public Schools Nanjemoy Creek Environmental Education Center, and the College of Southern Maryland's credit and non-credit degree programs.

4.3 Action Plan Goals

The goals of this action plan are to:

- Protect, systematically study, interpret and manage the extensive archaeological and historical resource base therein through cooperative partnerships with extant educational, county, state and national agencies as well as community-based interest groups and professional organizations.
- Develop interpretive programs, exhibits, water trails, and public outreach to schools, community forums, and other interested institutions by relating the pre-history, history and unique ecological evolution of the sanctuary area and its natural and historical resources, and its relationship to the larger landscape of the American environment and its maritime heritage.
- Provide educational opportunities and field study programs with the Charles County School System, the College of Southern Maryland, St. Mary's College, and other regional educational institutions, as well as general public education and outreach, especially via STEM programs through the site's importance as a living laboratory.
- Enhance federal, state, local and private partnerships working to conserve and promote the historic, cultural, natural, archaeological, recreational, educational, scientific and aesthetic resources of the area.

This action plan seeks to close gaps between the existing opportunities for education and the goals stated above. To do so, a focus on the following priorities will be integral to the action plan strategies:

- Expand informal education through outreach programs.
- Partner with Charles County Public School System and other institutions to create county-wide K-12 programming for student and teachers for field experiences at MPNMS.
- Contribute to efforts that create a skilled labor force in advanced technologies related to marine technology, remote sensing, data management and geographic information systems, and software engineering.

4.4. Action Plan Strategies

STRATEGY ED-1: Partner with State of Maryland and local school systems and other education providers to develop and begin implementing a plan for integrating education about the MPNMS and its resources into the formal pre-K-12 curriculum.

Activity 1.1: Develop in-class, on-site and web-based education materials and lessons for students aligned with state and local content standards and Chesapeake Bay Program education goals.

Activity 1.2: Develop sanctuary-related lesson plans, classroom materials, professional development opportunities and workshops for teachers.

Activity 1.3: Explore and develop opportunities for an "Adopt a Ship" program for schools, shipboard education, and day-camp or overnight programs in the sanctuary including workshops and field seminars on sanctuary resources and technologies.

STRATEGY ED-2: Partner with the College of Southern Maryland, other institutions of higher education, and public and private partners to develop and begin implementing a plan for advancing higher education and future career opportunities related to the MPNMS and its resources.

Activity 2.1: Develop and seek opportunities to integrate sanctuary content into undergraduate and graduate level courses and explore new degree options in the diverse disciplines associated with the sanctuary.

Activity 2.2: Develop internship opportunities for college students and explore opportunities to support job training and readiness efforts associated with the sanctuary.

Activity 2.3: Host national/regional conferences for professionals in the field.

Activity 2.4: Host, organize, and support observational buoy, ROV-building and science and technology workshops and competitions for students of all ages and educators.

Activity 2.5: Work with the College of Southern Maryland to develop an archive for sanctuary-related publications and oral histories.

STRATEGY ED-3. Develop and begin implementing a general public education and outreach plan.

Activity 3.1: Develop and distribute educational materials, multimedia content (including web, social media and video), exhibits, videography, live expedition broadcasts and a website for the general public.

Activity 3.2: Bring MPNMS content to a national audience through distance learning, a lecture series, and partnerships with organizations such as the National Aquarium in Baltimore, National Geographic, the World War1 Centennial Commission, and Smithsonian Institution.

Activity 3.3: Develop infrastructure to support field-based educational opportunities within the sanctuary.

STRATEGY ED-4: Maximize the impact and effectiveness of education and outreach efforts, including interpretation, through ongoing evaluation.

Activity 4.1: Create a standing working group of education experts from the sanctuary advisory council, local schools, and agencies to advise on sanctuary education programs.

Activity 4.2: Seek ongoing input, foster youth leadership, and encourage youth participation in sanctuary education and outreach programs through developing a "Sanctuary Stewards" program, a volunteer group comprised of local junior high, high school, and college students.

Activity 4.3: Develop and implement an ongoing system to evaluate and improve education and outreach programs.

5. Research, Science and Technology Action Plan

5.1. Purpose

This action plan outlines priorities for science, technology development, and research and monitoring to meet the management objectives for the sanctuary and establishes the framework to encourage and integrate a broad range of archaeological and interdisciplinary research by sanctuary partners.

5.2. Background

Increasing the understanding of maritime heritage and ecological resources – and their interdependencies in this maritime cultural landscape – is a primary function of MPNMS. While comparably more is known about the "ghost fleet", new information continues to be uncovered pertaining to ship locations and physical condition, their history and connections to communities across the country, and to their evolution from merchant ships to being reclaimed by nature. Beyond the ghost fleet, significant gaps exist in the understanding of historical and cultural resources throughout the middle Potomac River. Archives hold treasures of historical records, images, and early video that await discovery, validation and interpretation. Meanwhile, new aerial surveys and scientific efforts are providing updated perspectives on the condition of sanctuary resources, the interaction between the maritime and natural environments, and how they are changing through time. Thus, the role of science is essential to connect these pieces in meaningful ways and to expand access to the information needed to adapt and effectively manage.

This action plan includes three separate, but related science activities: characterization, monitoring and research. All are important to objectives related to resource protection as well as to management strategies for recreation, interpretation, and education. The application of technologies such as remote sensing for aerial and underwater surveys, geographic information systems for understanding complex relationships and web-enabled programs for public communication help ensure that science is translated both efficiently and effectively. Knowledge gained through science activities is used, in cooperation with the public and sanctuary partners, to evaluate existing management strategies, identify emerging threats and adapt future management actions.

- Characterization is the process through which resources, human uses and potential threats are inventoried, located, documented, and analyzed.
- Monitoring describes the periodic re-evaluation of the resources, human uses and potential threats to determine present-day condition and document changes over time.
- Research can take on different applications, but oftentimes refers to exploring cause and effect relationships between resources, human uses and potential threats.

5.3 Action Plan Goals

The four goals of this action plan are to:

• Protect, systematically study, interpret and manage the extensive archaeological and historical resource base therein through cooperative partnerships with extant educational, county, state and national agencies as well as community-based interest groups and professional organizations.

• Study, assess, interpret and preserve the unique and evolving ecosystem as a living laboratory, as well as its integral relationship to the archaeological resource base.

• Enhance federal, state, local and private partnerships working to conserve and promote the historic, cultural, natural, archaeological, recreational, educational, scientific and aesthetic resources of the area.

• Facilitate and advance the ongoing restoration of the Chesapeake Bay watershed and in particular, that of "The Nation's River" (as President Lyndon Johnson once called the Potomac River) by serving as a hub area for research and documentation of environmental change.

This action plan seeks to close gaps between the existing science programs and the goals stated above. To do so, a focus on the following priorities will be integral to the action plan strategies:

Document and characterize the sanctuary's maritime heritage resources and related ecological resources. To date, no comprehensive survey of the area and characterization of its resources has been completed. These resources include shipwrecks centered on the remains of a World War 1-era fleet and the associated wet infrastructure (i.e., historic piers, wharves, landings) that were defined as significant through their designation on the NRHP in 2015. Additional resources include other known and suspected shipwrecks that are part of the same World War 1-era fleet, but are located in areas outside of the boundary defined by the NRHP under the National Historic Preservation Act, as well as other known and suspected shipwrecks that are not part of the World War 1-era fleet, but have similar qualities pertaining to national significance for Revolutionary, Civil War and other periods. Data, most notably associated with the ghost fleet, has been compiled primarily through archaeological transects conducted between 1986 and 1996, but that record remains incomplete and out of date.

The area lacks a systematic and validated inventory of the area's physical and natural features, including their spatial distribution and baseline condition. Filling this gap is a critical first step towards understanding and prioritizing the resources at risk. It will also serve as the basis for numerous educational and interpretative programs and the design of water trails that are the primary means of helping to mitigate potential threats by raising public awareness and appreciation of the resources and encouraging responsible use of the area.

<u>Characterize and monitor threats to sanctuary resources from human uses.</u> Social sciences provide insight into human uses, including those with potential to threaten the resources. In 2010, the opening of Mallows Bay Park created a much needed public access point to the middle portion of the Potomac River, allowing for increased visitation and recreational uses. Since then, additional interest in the area has been generated through local marketing strategies that are promoting a network of outdoor opportunities along the river as well as attention derived from the National Marine Sanctuary designation process.

While nearly all on-water activities are compatible with resource protection objectives, one recent incident highlighted the potential human-induced threats to the historical resources and underscored the need for significantly greater educational and public outreach programs to help mitigate improper and/or

inadvertent actions. In April 2016, a fire broke out on the most visible of the ghost fleet vessels and smoldered for several days. While the exact cause of this incident was not identified, this vessel is the one most often physically accessed by the public as it remains emergent above the water line even at higher tide levels. Thus, it underscores the real threats that exist and the need for greater public awareness regarding stewardship of these resources.

<u>Characterize and monitor the interaction between sanctuary resources and the surrounding environment.</u> A sanctuary provides an important venue to better understand complex interactions and change through time related to sanctuary resources, public priorities for conservation and use, and interactions with the natural environment. It provides a living laboratory to engage the public and a catalyst for focused partnerships that help to achieve a common understanding and allow a forum for more adaptive management strategies. In doing so, the sanctuary also becomes a "sentinel site" within the broader context of the Chesapeake Bay – a place that helps inform conditions at a greater scale and serves as a potential test bed for science and management activities.

Expand public and private partnerships related to a comprehensive science strategy to achieve management objectives. The national brand of a National Marine Sanctuary acts as a catalyst to attract public and private partnerships. New investments ("of opportunity") are being made already to initiate a portion of the highest priority science needs. A strategic plan is needed to identify and coordinate science priorities that achieve management objectives and to foster deliberate partnerships to implement actions.

5.4 Action Plan Strategies

STRATEGY R-1: Characterize the sanctuary's maritime heritage resources and landscape features.

Activity 1.1: Conduct systematic surveys to locate and identify maritime heritage resources and landscape features.

- A. Conduct an Unmanned Aircraft System (UAS) survey to collect ultra-high resolution imagery of Mallows Bay and create a photomosaic of baseline conditions. Also construct a 3D model of Mallows Bay, including shoreline, ecology and shipwreck features.
- B. Conduct remote sensing surveys within sanctuary boundaries, including side-scan sonar and Light Detection and Ranging (LIDAR), to understand the location, condition, and structure of the shipwrecks and landscape features.
- C. Disseminate research results to professional and public audiences.
- D. Establish mechanisms and resources to periodically repeat surveys to assess changes to the shipwrecks and associated features.

Activity 1.2: Conduct historical and archival research on potential maritime heritage resources and landscape features in and around the sanctuary.

- A. Research and compile historical documentation relevant to sanctuary resources, including vessel enrollment and registration documents, court records, insurance files, and regional newspapers.
- B. Maintain files and databases on potential shipwrecks and other maritime heritage resources within the sanctuary.

C. Document oral histories of significant events within sanctuary boundaries and on lands adjacent to the sanctuary.

Activity 1.3: Establish baseline archaeological documentation of identified maritime heritage resources for long-term monitoring.

- A. Determine priorities for shipwreck and archaeological site research and documentation based on:
 - a. Sites in areas heavily trafficked by recreational users.
 - b. Newly discovered sites susceptible to looting or disturbance.
 - c. Sites of historical significance based on NRHP criteria.
 - d. Sites that may be deteriorating or becoming less accessible as a result of natural and human processes.
- B. Complete baseline documentation of prioritized shipwrecks and archaeological sites including site plans and photo-documentation.
- C. Disseminate documentation results to professional and public audiences.

Activity 1.4: Develop a Sanctuary Geographic Information System (GIS) for archaeological, historical, biological, and geographical data management and dissemination.

- A. Develop a comprehensive database using existing and new data sets.
- B. Maintain and utilize GIS data and create products from the data.
- C. Provide public access to the data via the sanctuary's Web site.
- D. Provide data via web services to sanctuary partner's websites and data portals.

STRATEGY R-2: Develop a long-term monitoring program for sanctuary maritime heritage sites and surrounding environment.

Activity 2.1: Develop and implement a long-term monitoring plan to determine the natural and human impacts on sanctuary maritime heritage sites.

- A. Develop marine observation infrastructure and capabilities to serve as an ONMS Sentinel Site
- B. Collect and evaluate existing data to establish baselines.
- C. Establish site-specific requirements for monitoring.
- D. Implement monitoring program (e.g. water quality, surface elevation tables, vegetation transects, invasive species).

STRATEGY R-3: Build partnership with the College of Southern Maryland's Southern Maryland Studies to curate and manage a Mallows Bay Sanctuary Research Collection.

Activity 3.1: Partner with the College of Southern Maryland to develop a Mallows Bay Sanctuary Research Collection library and make it accessible to the public.

- A. Ensure collection infrastructure and policies meet archival standards.
- B. Conduct a long-term space evaluation.
- C. Determine and implement digitization priorities.
- D. Ensure the collection is publicly accessible, physically and online.

Activity 3.2: Evaluate opportunities to increase Mallows Bay Sanctuary Research Collection holdings.

- A. Develop an acquisitions policy for the collection.
- B. Define the scope of the collection.
- C. Actively pursue donation of archival materials.

STRATEGY R-4: Develop partnerships with local, state, national, and international researchers and organizations to enhance sanctuary research programs.

Activity 4.1: Develop partnerships to characterize the sanctuary's maritime heritage resources.

Activity 4.2: Develop partnerships with multi-disciplinary researchers and organizations to study the Potomac River ecology including the study of climate change, invasive species, river biology, benthic ecology, geology, and water quality.

Activity 4.3: Create a standing research working group of multidisciplinary researchers from the SAC, government agencies, academic institutions, and non-governmental organizations to provide input to further develop and implement a comprehensive sanctuary research program.

STRATEGY R-5: Utilize volunteers, students, fellows, and interns for sanctuary characterization, research, and monitoring.

Activity 5.1: Recruit, train, and retain volunteers to assist sanctuary staff on various research projects and with the Mallows Bay Sanctuary Research Collection.

- A. Recruit and train volunteers to interpret the sanctuary's maritime heritage resources.
- B. Develop a citizen science program and list of research opportunities.
- C. Develop a list of opportunities and needs for the Mallows Bay Sanctuary Research Collection.

Activity 5.2: Establish partnerships with K-12 schools, universities, colleges, and other institutions to establish a robust program for student research internships and fellowships.

- A. Work with ONMS headquarters and NOAA's Maritime Heritage Program to establish memoranda of agreement with appropriate institutions.
- B. Develop a list of prospective student research projects.
- C. Create an "Adopt-a-Ship" program with K-12 schools to collect prescribed data to supplement a long-term monitoring program if the shipwrecks and surrounding biota.

6. Sanctuary Operations and Administration Action Plan

6.1 Purpose

This action plan identifies sanctuary infrastructure, staffing, and program support needed for effective implementation of the Final Management Plan.

6.2 Background

Appropriate infrastructure, trained personnel and volunteers, safe operations and adherence to administrative protocols are cornerstones to carrying out the intended purposes of the sanctuary and implementing its management plan. An important up-front need will be to understand the requirements of the final management plan through needs assessments and to identify options for satisfying the highest priority needs. It's anticipated that securing an office location, seating of required staff, and ensuring safety and compliance will be among the initial steps. As the sanctuary will be co-managed, some capacity may be available through partnerships with the State of Maryland or Charles County although it's likely that significant gaps will exist. NOAA will look to leverage other community partnerships and find ways to help address the remaining priority needs.

6.3 Action Plan Goals

The goals of this action plan are to:

- Identify and prioritize staff resources and related capacities that are sufficient to implement management plan priorities
- Identify and prioritize facilities, small boats, buoys, exhibits, signage and associated infrastructure that are sufficient to implement management plan priorities
- Develop and implement an annual operating plan for priority management plan actions and to ensure safety and compliance with administrative requirements and protocols
- Establish a Sanctuary Advisory Council to provide vehicle for ongoing community voice in sanctuary management.

This action plan seeks to close gaps between the existing capacity for sanctuary operations and the goals stated above. To do so, a focus on the following priorities will be integral to the action plan strategies:

Sanctuary Staffing

To-date, staffing required for the sanctuary designation process and for program implementation near the MPNMS has been through informal arrangements with Federal, State of Maryland, and Charles County partners and through countless community members and organizations. As appropriate, NOAA hopes to leverage similar support following sanctuary designation. At designation, NOAA will have lead responsibility for the sanctuary and will designate a superintendent who will work alongside the State of Maryland co-manager. The superintendent will oversee site-specific management functions, including revision and implementation of the management plan. The superintendent designates responsibility for implementing specific programs or projects, establishes the administrative framework to ensure all resource management activities are coordinated, and maintains and manages an appropriate infrastructure to adequately support site operations. The superintendent reports to the ONMS Regional Superintendent for the Northeast and Great Lakes Region. Additional staff must have knowledge and expertise in policy, marine resources, GIS, information technology, program development and office administration. Staffing the sanctuary can be implemented using Federal staff or contractors, as well as through agreements with state, local, or other partners.

Sanctuary Infrastructure

Similar to staff resources, basic infrastructure needs during the designation process have been provided as needed - by State of Maryland and Charles County partners and local community organizations, most often in the form of periodic meeting space and occasional access to small boats. As appropriate, NOAA hopes to leverage similar support following sanctuary designation. Initially, NOAA will work with State of Maryland and Charles County partners to evaluate options for siting an office that best meets the requirements for sanctuary management and community engagement. Additional infrastructure requirements for small boats, signage, exhibits and property improvements at local public access points will be considered with State of Maryland and Charles County partners and in accordance with their governing authorities.

Establishing a Sanctuary Advisory Council

Public involvement in sanctuary management is vitally important. Notably, the nomination of MPNMS was made possible by a broad coalition of community organizations, while the sanctuary concept has been shaped further through the diversity of perspectives provided through the public comment period. Upon designation, Section 315 of the NMSA authorizes the Secretary of Commerce to establish a Sanctuary Advisory Council at MPNMS. This authority is delegated to the Director of the ONMS, who will approve Council charters and appoint up to 15 Council members. All sites in the ONMS have a SAC. With a broad expertise and diverse representation, the Advisory Council offers advice to the sanctuary superintendent on resource management issues that helps ensure that a wide range of viewpoints are provided upon which to base management decisions. In order to better understand and address specific management issues and broaden public involvement, the SAC may extend its capacities as needed by forming temporary issue-specific working groups which invite additional community members and experts to participate in the development of sound management advice for the sanctuary. The SAC evaluates the working group recommendations and in turn makes their recommendations to the sanctuary superintendent.

6.4 Action Plan Strategies

STRATEGY SO-1: Conduct a needs assessment to identify staffing requirements and priorities. Consider and coordinate staffing needs to optimize expertise and opportunity for Federal programs, State and local agencies, other partners and volunteers.

Activity 1.1: Incrementally fulfill priority staffing needs in accordance with management plan requirements

A. Hire Sanctuary Superintendent and co-manager as appropriate.

B. Evaluate and leverage, as appropriate, partner capacities and expertise to satisfy management plan requirements

C. Explore options for filling priority gaps through a range of mechanisms such as direct hires, partnerships, contract support, reassignment opportunities, and volunteers.

Activity 1.2: Identify and develop legal mechanisms for sanctuary co-management, including policy, financial resources, infrastructure and program operations. As appropriate, develop cooperative

agreements, MOAs/MOUs, joint enforcement agreements, emergency response protocols, and other shared actions

Activity 1.3: Establish volunteer and docents programs to develop a system of public involvement to support the Sanctuary Program.

STRATEGY SO-2: Conduct a needs assessment and requirements document for facilities, exhibits and other infrastructure as well as requirements for operations and maintenance

Activity 2.1: Identify and establish location for administrative offices and field site(s) as appropriate.

Activity 2.2: Identify and begin to secure priority infrastructure to support sanctuary operations and/or to enhance visitor experience.

A. Enhance capacity, as appropriate, at public access points for potable water,

plumbing/restrooms, electricity, and internet.

B. Enhance capacity, as appropriate, at public access points (e.g., parking, walking trails) and safety (e.g., lighting, signs).

Activity 2.3: Identify and begin to establish interpretative facilities, kiosks, and signage.

A. Develop and install signage at boat ramps, local parks, local roadways, and other appropriate locations.

B. Design and install information kiosks at appropriate locations.

Activity 2.4: Explore requirements and options for a visitor center for the purposes of tourism, education, interpretation, and/or science.

A. Conduct a feasibility study to consider purpose, public access, visitor experience, and leveraging opportunities.

B. Develop an implementation plan for a science and education center based on the feasibility study.

Activity 2.5: Explore requirements and opportunities for conservation of sanctuary resources such as artifacts, oral histories, and document collections.

Activity 2.6: Explore opportunities through Charles County comprehensive plan, State of Maryland, and other local planning efforts to support sanctuary objectives and accommodate anticipated increases in visitation.

A. Enhance infrastructure (e.g., roads and directional signage on local roadways) and provide services (e.g., local vendors).

B. Explore options for siting of possible visitor center.

C. Explore options and need for siting of buoys and or water trail markers.

STRATEGY SO-3: Conduct a needs assessment and requirements document for small boats and related infrastructure as well as requirements for staffing, operations and maintenance.

Activity 3.1: Develop a requirements document detailing needs for small boats, such as emergency response, science, education, recreation/tourism, and enforcement.

Activity 3.2: Incrementally fulfill priority small boat needs.

A. Utilize, as appropriate, partner capacities and expertise.

B. Explore options for filling priority gaps through a range of mechanisms such as direct purchase, partnerships, and contract support.

C. Identify and develop legal mechanisms for small boat management, including policy, financial resources, infrastructure, program operations, training and safety.

Activity 3.3: Identify need and develop an emergency response capacity related to small boats.

- A. Identify threats, on-water requirements, and existing response capacity and authority.
- B. Develop/enhance contingency and emergency response plans.
 - 1. Work with United States Coast Guard to incorporate MPNMS into the Area Contingency Plan.
 - 2. Develop protocols and agreements necessary to respond to emergencies, and provide training for staff.

STRATEGY SO-4: Develop an operations plan for day-to-day management of facilities, small boats, personnel and safety.

Activity 4.1: Ensure compliance with operational and environmental regulations, security, policies and procedures at Federal, state and local levels.

Activity 4.2: Develop a continuity of operations plan.

Activity 4.3: Develop a safety plan and implement periodic training of staff and partners.

Activity 4.4: Develop a disaster plan for environmental or maritime emergencies.

Activity 4.5: Develop plan to ensure safety of visitors and recreational users, including implementing voluntary reporting of visitor use and emergency contact information as appropriate.

STRATEGY SO-5: Develop partnerships and resources to support sanctuary operations programs and infrastructure.

Activity 5.1: Explore potential partnerships that align with sanctuary management plan priorities and requirements and develop formal partnerships and agreements as appropriate.

Activity 5.2: Partner with the National Marine Sanctuary Foundation to implement management plan priorities, expand communications to constituents, and leverage partnerships.

Activity 5.3: Establish a local "Friends" group and/or formalize a "Partnership" for Mallows Bay-Potomac River to conduct local programming, community engagement, and support fiduciary requirements.

STRATEGY SO-6: Establish and operate a Sanctuary Advisory Council.

Activity 6.1: Identify, process and seat 15 advisory council representatives that reflect the diversity of partners and local stakeholder groups.

Activity 6.2: Provide guidance and support to SAC to develop Council Charter, in compliance with National SAC Guidelines.

Activity 6.3: Establish meeting schedule and convene periodic meetings.

Activity 6.4: Provide support, resources, and guidance to train SAC members and educate the public about sanctuary management issues and ensure that SAC members are a respected voice in the community.

DMP Appendices

DMP Appendix 1: Strategy Crosswalk DMP Appendix 2: Proposed Sanctuary Regulations DMP Appendix 3: Potential sanctuary operating budgets and partner contributions.

	Resource Protection	Recreation & Tourism	Education	Research, Science Tech	Sanctuary Ops & Admin
RP 1.1: Ensure sufficient enforcement presence in the sanctuary through partnerships and interagency coordination.				R 1.0	SO 3.1 SO 3.3 SO 4.3 SO 4.4
RP 1.2: Use interpretive enforcement as a tool to inform users about sanctuary regulations.		RT 1.5 RT 3.4			SO 3.1 SO 3.3
RP 2.1: Monitor use of sanctuary resources in order to better understand user groups, patterns, and the effects.		RT 1.4 RT 2.2		R 2.1 R 5	
RP 3.1: Provide practical information for users such as shipwreck identification maps and information, access points, regulations and contact		RT 1.4 RT 3.1	ED 3.1		
RP 3.2: Install trail/guidance/mooring buoys at shipwreck sites and along paddling routes to prevent anchor damage and to facilitate approach in a manner that protects from damage.		RT 1.5 RT 3.2			SO 2.3
RP 3.3 Explore the development of "certification programs" for local businesses and activities that actively promote recreational etiquette and stewardship of sanctuary resources.		RT 1.3		R 5	SO 5.2
RP 3.4: Work with other agencies, local governments, and non-governmental organizations to improve public access along the Potomac River.		RT 1.5 RT 3.3		R 1.1 R 1.2 R 4.2	
RP 4.1: Conduct assessment of wrecks and determine best approaches to in situ conservation that encourages public access / interpretation while protecting natural resources.				R 2.1	
RP 4.2: Develop an agreement with the Maryland Archaeological Conservation Laboratory for treatment and curation of artifacts.					SO 2.5 SO 5.2
RP 4.3: Establish membership criteria and procedures to establish an accessions committee to evaluate donation criteria and artifact handling policies in regard to establishing a visitor center					SO 2.5
RP 4.4: Make artifacts available to the public and to professionals via exhibits, loans, and selected access to the artifact collection.				R 3.1	SO 2.5
RT 1.1. Partner with the State of MD and Charles Co. offices of tourism, the Southern MD Heritage area, the Charles Co. Chamber of Commerce and			ED 3.2		SO 5.1

DMP Appendix 1: Strategy Crosswalk
the MD World War I Centennial Commission to develop and implement a marketing and communications plan to promote the sanctuary.			
RT 1.2. Explore co-marketing and co-branding opportunities for recreation and tourism with the Commonwealth of Virginia and local counties			
RT 1.3: Develop basic outreach materials for a wide variety of users that encourage responsible and safe use of sanctuary resources.	RP 3.3	ED 3.1	
RT 1.4: Develop a website and mobile based application to provide quality, up-to-date information about the sanctuary, including implementing Web 2.0 components to encourage collaboration and interaction with the public	RP 2.1 RP 3.1	ED 1.1	
RT 1.5: Develop and provide way-finding and signage for the sanctuary.	RP 1.2 RP 3.2 RP 3.4		SO 2.3
RT 1.6: Sponsor, organize, and participate in special events and outreach opportunities that promote the sanctuary's mission and that allow for dissemination of sanctuary information.		ED 1.3 ED 2.4	SO 5.2 SO 5.3
RT 2.1: Explore opportunities to develop a visitor center to enhance education, science, interpretation of the sanctuary and partner programs as well as to support ADA requirements.			SO 2.2 SO 2.3 SO 2.4
RT 2.2: Develop partnerships with local operators and guides to facilitate high quality recreational and heritage tourism experiences in the sanctuary and help educate visitors about MPNMS maritime heritage resources, boating safety and stewardship.	RP 2.1	ED 1.3 ED 3.3	SO 3.1 SO 3.3 SO 4.3 SO 4.4 SO 4.5 SO 5.3
RT 2.3: Partner with Charles Co., the State of MD, and interested stakeholders to explore opportunities to develop or enhance tourism infrastructure and visitor services.			SO 2.6 SO 5.3
RT 3.1: Provide practical information for sanctuary visitors such as shipwreck maps and information, access points, regulations, safety and contact information.	RP 2.1		SO 4.4
RT 3.2: Build upon existing water trails to develop a MPNMS water trail and explore the use of markers, interpretive buoys or other means of identification at shipwreck sites to facilitate access while protecting shipwrecks and the public.	RP 3.2		
RT 3.3: Work with other agencies, local governments, and non-governmental organizations to improve recreational access along the Potomac	RP 3.4	ED 3.3	SO 2.6 SO 4.4

River.				
RT 3.4: Work with the U.S. Coast Guard, the State of MD, Charles Co. and other interests to improve channel markers in the sanctuary	RP 1.2			SO 3.3 SO 4.3 SO 4.4
RT 4.1: Develop an initial baseline assessment of sanctuary visitation, recreational uses and intensity and associated economic impacts, and conduct periodic re-evaluations.				
RT 4.2: Use the assessment to refine marketing and tourism opportunities and promotional products				
ED 1.1: Develop in-class, on-site and web-based education materials and lessons for students aligned with state and local content standards and Chesapeake Bay Program education goals.		RT 1.4		
ED 1.2: Develop sanctuary-related lesson plans, classroom materials, professional development opportunities and workshops for teachers.				
ED 1.3: Explore and develop opportunities for an "Adopt a Ship" program for schools, shipboard education, and day-camp or overnight programs in the sanctuary including workshops and field seminars on sanctuary resources and technologies.		RT 1.6 RT 2.2	R 5.2	
ED 2.1: Develop and seek opportunities to integrate sanctuary content into undergraduate and graduate level courses and explore new degree options.				
ED 2.2: Develop internship opportunities for college students & explore opportunities to support sanctuary-related job training and readiness efforts.				
ED 2.3: Host national/regional conferences for professionals in the field.				
ED 2.4: Host, organize, and support observational buoy, ROV-building and science and technology workshops and competitions for students of all ages and educators		RT 1.6	R 5.2	
ED 2.5: Work with the College of Southern Maryland to develop an archive for sanctuary- related publications and oral histories.			R 1.2 R 3.1	SO 2.5 SO 5.1
ED 3.1: Develop and distribute educational materials, multimedia content, exhibits, videography, live expedition broadcasts and a website for the general public.	RP 3.1	RT 1.3	R 1.4	
ED 3.2: Bring MPNMS content to a national audience through distance learning, lectures, and partnerships with organizations such as the National Aquarium, Nat Geo, the World War 1		RT 1.1		SO 5.1 SO 5.3

Centennial Commission, and Smithsonian.					
ED 3.3: Develop infrastructure to support field- based educational opportunities within the sanctuary		RT 2.2 RT 3.3			
ED 4.1: Create a standing working group of education experts from the SAC, local schools, and agencies to advise on sanctuary education programs.				R 5.1	SO 6.1
ED 4.2: Seek ongoing input, foster youth leadership, and encourage youth participation in sanctuary education and outreach programs through developing a "Sanctuary Stewards" program, a volunteer group comprised of local junior high, high school, and college students.				R 5.2	SO 1.3 SO 5.3
ED 4.3: Develop and implement an ongoing system to evaluate and improve education and outreach programs.					SO 4.5
R 1.1: Conduct systematic surveys to locate and identify maritime heritage resources and landscape features.	RP 4.1				
R 1.2: Conduct historical and archival research on potential maritime heritage resources and landscape features in and around the sanctuary.	RP 4.1		ED 2.5		
R 1.3: Establish baseline archaeological documentation of identified maritime heritage resources for long-term monitoring.					
R 1.4: Develop a Sanctuary GIS for data management and dissemination.			ED 3.1		
R 2.1: Develop and implement a long-term monitoring plan to determine the natural and human impacts on sanctuary maritime heritage sites.	RP 2.1 RP 4.2				
R 3.1: Partner with the College of Southern Maryland to develop a MPNMS Research Collection library and make it accessible to the public.	RP 4.4		ED 2.5		SO 2.5
R 3.2: Evaluate opportunities to increase MPNMS Research Collection holdings					
R 4.1: Develop partnerships to characterize the sanctuary's maritime heritage resources.					
R 4.2: Develop partnerships with multi-disciplinary researchers and organizations to study the Potomac River ecology.	RP 4.2				
R 4.3: Create a standing research working group of multidisciplinary researchers from the SAC,					SO 4.5

government agencies, academic institutions, and non-governmental organizations to provide input to further develop and implement a comprehensive sanctuary research program.					
R 5.1: Recruit, train, and retain volunteers to assist sanctuary staff on various research projects and with the MPNMS Research Collection	RP 3.3		ED 4.1		SO 1.3
R 5.2: Establish partnerships with K-12 schools, universities, colleges, and other institutions to establish a robust program for student research internships and fellowships			ED 1.3 ED 2.2 ED 2.4 ED 4.2		
SO 1.1: Incrementally fulfill priority staffing needs					
SO 1.2: Identify and develop legal mechanisms for sanctuary co-management, including policy, financial resources, infrastructure and program operations. As appropriate, develop cooperative agreements, MOAs/MOUs, joint enforcement agreements, emergency response protocols, etc					
SO 1.3: Establish a volunteer and docents programs to develop a system of public involvement to support the Sanctuary Program.			ED 4.2	R 5.1	
SO 2.1: Identify and establish location for administrative offices and field site(s) as appropriate					
SO 2.2: Identify and begin to secure priority infrastructure to support sanctuary operations and/or to enhance visitor experience		RT 2.1			
SO 2.3: Identify and begin to establish interpretative facilities, kiosks, and signage	RP 3.2	RT 2.1 RT 1.5			
SO 2.4: Explore requirements and options for a visitor center for the purposes of tourism, education, interpretation, and/or science		RT 2.1			
SO 2.5: Explore requirements and opportunities for conservation of sanctuary resources such as artifacts, oral histories, and document collections	RP 4.3 RP 4.2 RP 4.4		ED 2.5	R 3.1	
SO 2.6: Explore opportunities through Charles Co. comprehensive plan, State of MD and other local planning efforts to support sanctuary objectives and accommodate anticipated increases in visitation		RT 2.3 RT 3.3			
SO 3.1: Develop a requirements document detailing needs for small boats, such as emergency response, science, education, recreation/tourism, and enforcement	RP 1.2	RT 2.2			
SO 3.2: Incrementally fulfill priority small boat needs	RP 1.1				

SO 3.3: Identify need and develop an emergency response capacity related to small boats	RP 1.1 RP 1.2	RT 2.2 RT 3.4			
SO 4.1: Ensure compliance with operational and environmental regulations, security, policies and procedures at Federal, state and local levels					
SO 4.2: Develop a continuity of operations plan.					
SO 4.3: Develop a safety plan and implement periodic training of staff and partners	RP 1.1	RT 2.2 RT 3.4			
SO 4.4: Develop a disaster plan in case of environmental or maritime emergencies	RP 1.1	RT 2.2 RT 3.1 RT 3.3 RT 3.4			
SO 4.5: Develop plan to ensure safety of visitors and recreational users, including implementing voluntary reporting of visitor use and emergency contact information as appropriate		RT 2.2	ED 4.3		
SO 5.1: Explore potential partnerships that align with sanctuary management plan priorities and requirements and develop formal partnerships and agreements as appropriate	RP 3.3 RP 4.2	RT 1.1	ED 2.5 ED 3.2		
SO 5.2: Partner with the National Marine Sanctuary Foundation		RT 1.6			
SO 5.3: Establish a local "Friends" group and/or formalize a "Partnership" for MPNMS to conduct local programming, community engagement, and support fiduciary requirements.		RT 1.6 RT 2.2 RT 2.3		R 3.2 R 4.2	
SO 6.1: Identify, process and seat 15 advisory council representatives that reflect the diversity of partners and local stakeholder groups.			ED 4.1		
SO 6.2: Provide guidance and support to SAC to develop Council Charter, in compliance with National SAC Guidelines.					
SO 6.3: Establish meeting schedule and convene periodic meetings.					
SO 6.4: Provide support, resources, and guidance to train SAC members and educate the public about sanctuary management issues and ensure that SAC members are a respected voice in the community.					

DMP Appendix 2: Proposed Sanctuary Regulations

SUBPART S - MALLOWS BAY - POTOMAC RIVER NATIONAL MARINE SANCTUARY

§ 922.200 Boundary.

The Mallows Bay – Potomac River National Marine Sanctuary consists of an area of approximately 39 square nautical miles (nmi2) (52 sq. mi) of waters of the state of Maryland in the Potomac River and the submerged lands thereunder, over, around, and under the underwater cultural resources in the Potomac River. The precise boundary coordinates are listed in appendix A to this subpart. The southern and western boundary of the sanctuary approximates the border between the Commonwealth of Virginia and the State of Maryland along the western side of the Potomac River and begins at Point 1 east of Choptank Creek in King George County near Hooes, VA. From this point the boundary continues to the west passing through the points in numerical order until it reaches Point 237 at Bull Bluff on the southern side of the mouth of Potomac Creek. From this point the boundary continues north across the mouth of Potomac Creek to Point 238 near Marlboro Point in Stafford, VA. and once again follows the points in numerical order until it reaches Point 269 at the southern side of the mouth of Aquia Creek. From this point the boundary continues north across the mouth of Aquia Creek to Point 270 near Brent Point in Stafford, VA. The boundary then continues north passing through the points in numerical order until it reaches Point 312 north of Tank Creek near the restricted area in the Potomac River around Marine Base Quantico at the mouth of Chopawamsic Creek. From this point the boundary continues outside of and around the restricted area to the east and then north again passing through the points in numerical order until it reaches Point 343 south of Quantico Marina. From this point the boundary continues to the east, then north and west around the marina and then north again following the points in numerical order until it reaches Point 365 at Shipping Point on the southern side of the mouth of Quantico Creek in Quantico, VA. From this point the boundary moves to the NNE across the mouth of Quantico Creek to Possum Point near Dumfries, VA. From this point the boundary continues north passing through the points in numerical order until it reaches Point 390 SE of Southbridge, VA. From this point the boundary moves SE towards Point 391 in a straight line crossing the Potomac River until it intersects the shoreline of the river at Moss Point on the Maryland side at mean high water near Indian Head, MD just north of Goose Bay. From this intersection the boundary then follows the shoreline initially to the SW cutting across the mouths of creeks and streams along the eastern side of the Potomac River, then south past Sandy Point and around Mallows Bay. The boundary then continues following the shoreline south past Smith Point and Thomas Point where it turns to the SE and then east around Maryland Point. From here the boundary continues to follow the shoreline to the ENE past Riverside, MD until it intersects the line formed between Point 392 and Point 393 at Benny Gray Point on the western side of the mouth of Nanjemoy Creek on Tayloe Neck in Maryland. Finally, from this intersection the boundary crosses the Potomac River to the SE in a straight line and continues to Point 393 east of Choptank Creek on the Virginia side of the Potomac River.

§ 922.201 Definitions.

(a) The following terms are defined for purposes of Subpart S:

Sanctuary resource means any historical resource with the Sanctuary boundaries, as defined by the § 922.3. This includes, but is not limited to, any sunken watercraft and any associated

rigging, gear, fittings, trappings, and equipment; the personal property of the officers, crew, and passengers, and any cargo; and any submerged or partially submerged prehistoric, historic cultural remains, such as docks, piers, fishing-related remains (e.g., weirs, fish-traps) or other cultural heritage materials. Sanctuary resource also means any archaeological, historical, and cultural remains associated with or representative of historic or prehistoric American Indians and historic groups or peoples and their activities.

(b) All other terms appearing in the regulations in this subpart are defined at 15 CFR 922.3, and/or in the Marine Protection, Research, and Sanctuaries Act, as amended, 33 U.S.C. 1401 et seq., and 16 U.S.C. 1431 et seq.

§ 922.202 Joint Management.

NOAA has primary responsibility for the management of the Sanctuary pursuant to the Act. However, NOAA shall co-manage the Sanctuary in collaboration with the State of Maryland and Charles County. The Director shall enter into a Memorandum of Understanding regarding this collaboration that shall address, but not be limited to, such aspects as areas of mutual concern, including Sanctuary programs, permitting, activities, development, and threats to Sanctuary resources.

§ 922.203 Prohibited or otherwise regulated activities.

(a) Except as specified in paragraphs (b) and (c) of this section, the following activities are prohibited and thus are unlawful for any person to conduct or to cause to be conducted:

(1) Moving, removing, recovering, altering, destroying, possessing, or otherwise injuring, or attempting to move, remove, recover, alter, destroy, possess or otherwise injure a Sanctuary resource. This prohibition does not apply to possessing historical resources removed from the Sanctuary area before the effective date of the Sanctuary designation.

(2) Marking, defacing, or damaging in any way, or displacing or removing or tampering with any signs, notices, or placards, whether temporary or permanent, or with any monuments, stakes, posts, buoys, or other boundary markers related to the Sanctuary.

(3) Interfering with, obstructing, delaying or preventing an investigation, search, seizure or disposition of seized property in connection with enforcement of the Act or any regulation or any permit issued under the Act.

(b) The prohibitions in paragraphs (a) (1) through (3) of this section do not apply to any activity necessary to respond to an emergency threatening life, property or the environment; or to activities necessary for valid law enforcement purposes.

(c)

(1) Department of Defense activities must be carried out in a manner that avoids to the maximum extent practicable any adverse impacts on Sanctuary resources.

(2) In the event of destruction of, loss of, or injury to a Sanctuary resource resulting from an incident, including but not limited to discharges, deposits, and groundings, caused by a Department of Defense activity, the Department of Defense, in coordination with the Director, must promptly prevent and mitigate further damage and must restore or replace the Sanctuary resource in a manner approved by the Director.

§ 922.204 Emergency regulations.

(a) Where necessary to prevent or minimize the destruction of, loss of, or injury to a Sanctuary resource, or to minimize the imminent risk of such destruction, loss, or injury, any and all activities are subject to immediate temporary regulation, including prohibition. An emergency regulation shall not take effect without the approval of the Governor of Maryland or her/his designee or designated agency.(b) Emergency regulations remain in effect until a date fixed in the rule or six months after the effective date, whichever is earlier. The rule may be extended once for not more than six months.

§ 922.205 Permit procedures and review criteria.

(a) Authority to issue general permits. The Director may allow a person to conduct an activity that would otherwise be prohibited by this subpart, through issuance of a general permit, provided the applicant complies with:

(1) The provisions of subpart E; and

(2) The relevant site specific regulations appearing in this subpart.

(b) Sanctuary general permit categories. The Director may issue a sanctuary general permit under this subpart, subject to such terms and conditions as he or she deems appropriate, if the Director finds that the proposed activity falls within one of the following categories:

(1) Research - activities that constitute scientific research on or scientific monitoring of national marine sanctuary resources or qualities;

(2) Education - activities that enhance public awareness, understanding, or appreciation of a national marine sanctuary or national marine sanctuary resources or qualities; or

(3) Management - activities that assist in managing a national marine sanctuary.

(c) Review criteria. The Director shall not issue a permit under this subpart, unless he or she also finds that:

(1) The proposed activity will be conducted in a manner compatible with the primary objective of protection of national marine sanctuary resources and qualities, taking into account the following factors:

(i) the extent to which the conduct of the activity may diminish or enhance national marine sanctuary resources and qualities; and

(ii) any indirect, secondary or cumulative effects of the activity.

(2) It is necessary to conduct the proposed activity within the national marine sanctuary to achieve its stated purpose;

(3) The methods and procedures proposed by the applicant are appropriate to achieve the proposed activity's stated purpose and eliminate, minimize, or mitigate adverse effects on sanctuary resources and qualities as much as possible;

(4) The duration of the proposed activity and its effects are no longer than necessary to achieve the activity's stated purpose;

(5) The expected end value of the activity to the furtherance of national marine sanctuary goals and purposes outweighs any potential adverse impacts on sanctuary resources and qualities from the conduct of the activity;

(6) The applicant is professionally qualified to conduct and complete the proposed activity;

(7) The applicant has adequate financial resources available to conduct and complete the proposed activity and terms and conditions of the permit;

(8) There are no other factors that would make the issuance of a permit for the activity inappropriate.

§ 922.206 Certification of preexisting leases, licenses, permits, approvals, other authorizations, or rights to conduct a prohibited activity.

(a) A person may conduct an activity prohibited by § 922.203(a)(1) through (3) if such activity is specifically authorized by a valid Federal, state, or local lease, permit, license, approval, or other authorization, or tribal right of subsistence use or access in existence prior to the effective date of sanctuary designation and within the sanctuary designated area and complies with § 922.49 and provided that the holder of the lease, permit, license, approval, or other authorization complies with the requirements of paragraph (e) of this section.

(b) In considering whether to make the certifications called for in this section, the Director may seek and consider the views of any other person or entity, within or outside the Federal government, and may hold a public hearing as deemed appropriate.

(c) The Director may amend, suspend, or revoke any certification made under this section whenever continued operation would otherwise be inconsistent with any terms or conditions of the certification. Any such action shall be forwarded in writing to both the holder of the certified permit, license, or other authorization and the issuing agency and shall set forth reason(s) for the action taken.

(d) Requests for findings or certifications should be addressed to the Director, Office of National Marine Sanctuaries; ATTN: Sanctuary Superintendent, Mallows Bay - Potomac National Marine Sanctuary, 1305 East West Hwy, 11th Floor, Silver Spring, MD 20910. A copy of the lease, permit, license, approval, or other authorization must accompany the request.

(e) For an activity described in paragraph (a) of this section, the holder of the authorization or right may conduct the activity prohibited by § 922.203 (a)(1) through (3) provided that:

(1) The holder of such authorization or right notifies the Director, in writing, within 180 days of the effective date of Sanctuary designation, of the existence of such authorization or right and requests certification of such authorization or right;

(2) The holder complies with the other provisions of this section; and

(3) The holder complies with any terms and conditions on the exercise of such authorization or right imposed as a condition of certification, by the Director, to achieve the purposes for which the Sanctuary was designated.

(f) The holder of an authorization or right described in paragraph (a) of this section authorizing an activity prohibited by § 922.203 may conduct the activity without being in violation of applicable provisions of § 922.203, pending final agency action on his or her certification request, provided the holder is otherwise in compliance with this section.

(g) The Director may request additional information from the certification requester as he or she deems reasonably necessary to condition appropriately the exercise of the certified authorization or right to achieve the purposes for which the Sanctuary was designated. The Director must receive the information requested within 45 days of the postmark date of the request. The Director may seek the views of any persons on the certification request.

(h) The Director may amend any certification made under this section whenever additional information becomes available that he/she determines justifies such an amendment.

(i) Upon completion of review of the authorization or right and information received with respect thereto, the Director shall communicate, in writing, any decision on a certification request or any action taken with respect to any certification made under this section, in writing, to both the holder of the certified lease, permit, license, approval, other authorization, or right, and the issuing agency, and shall set forth the reason(s) for the decision or action taken.

(j) The holder may appeal any action conditioning, amending, suspending, or revoking any certification in accordance with the procedures set forth in § 922.50.

(k) Any time limit prescribed in or established under this section may be extended by the Director for good cause.

DMP Appendix 3: Potential sanctuary operating budgets and partner contributions.

The potential operating budget below is an estimate to show options for activities that can be funded at varying levels. The base level of operations characterized below can be executed within existing funds without any negative impact on the National Marine Sanctuary System as a whole. In this table each column's list of activities for a given funding level also includes all activities from preceding columns. The operating budget each year for the proposed sanctuary would be contingent on several factors including the overall operation budget for ONMS and spending priorities determined by ONMS and NOAA. In addition, the budget may also include "construction" funds to support infrastructure capital and maintenance. These would be contingent on factors similar to the operational funds.

\$250,000	\$450,000	\$550,000	\$650,000	\$750,000
Sanctuary designation Establish Sanctuary	Hire Program and Operations Coordinator	Hire Research Coordinator, Maritime Heritage Coordinator,	Hire Research Coordinator, Maritime Heritage Coordinator,	Hire Research Coordinator, Maritime Heritage Coordinator,
Advisory Council	Line Descent	Education Coordinator,	Education Coordinator,	Education Coordinator,
Establish	Hire Research Coordinator, Maritime	or Research Protection Coordinator	or Research Protection Coordinator	or Research Protection Coordinator
administrative office(s)	Heritage Coordinator,	Continue to implement	Construction of visitor	Fully implement
initially	or Research Protection Coordinator	management plan priorities	center and related	management plan
Hire Sanctuary				Finalize Sanctuary
Superintendent	Fully operational Sanctuary Advisory	Expand STEM education and	Continue to implement management plan	Condition Report
Develop/expand programs to enhance	Council	technology training programs through	priorities	Initiate review of management plan with
awareness and	Continue to implement	partnerships	Expand priority	partners, community
interpretation of	management plan		strategies and signage	and Sanctuary
Sanctuary and	priorities	Expand priority	to enhance awareness	Advisory Council
resources		strategies and signage	and interpretation of	
	Expand partnerships	to enhance awareness	Sanctuary and	Fully operate visitor
Develop/expand	for economic	and interpretation of	resources	center
partnerships for	development and small	Sanctuary and		
economic	business opportunities	resources	Initiate Sanctuary	
development, branding			Condition Report	
and small business	Implement priority	Continue fundraising		
opportunities	strategies and signage to enhance awareness	strategy for visitor center and related		
Develop/expand on-	and interpretation of	interpretative products		
water access and	Sanctuary and			
programs	resources	Expand acquisition/operation of		
Establish resource	Develop/expand	priority vessel/kayak		
protection program	volunteer network	capacities		
with focus on				
informational markers,	Expand resource			
initiate law	protection programs			
enforcement	through informational			
collaborations,	markers and outreach			
develop/expand safety				
and emergency	Develop fundraising			
response capacities	strategy for visitor			
	center and related			
	interpretative products			

\$250,000	\$450,000	\$550,000	\$650,000	\$750,000
Expand partnerships	Expand			
for sanctuary	recreation/tourism/co-			
characterization	branding opportunities			
	with MD/VA/Federal			
Establish a local	park systems			
sanctuary foundation				
	Acquire/operate priority			
Conduct requirements	vessel/kayak			
studies for	capacities			
infrastructure - visitor				
center, vessel/kayaks,				
buoys, exhibits and				
signage				

Partner Contributions

As first set forward in the sanctuary nomination (September 2014), the State of Maryland, through the Maryland Department of Natural Resources, Maryland Historical Trust, other state agencies, as well as Charles County MD agencies are committed partners to ensure the proposed Mallows Bay-Potomac River National Marine Sanctuary reaches its full potential. Areas of collaboration that will supplement and complement federal funding address all aspects of the draft management plan including resource protection, education, interpretation, recreation, tourism and marketing, science and technologies, and sanctuary operations. Similar to the Federal Government, these agencies are not able to commit funds beyond the current fiscal year and must balance obligations across competing priorities, however, much of the support is available through staff time, continuation of existing programming, and equipment. Additionally, their involvement already has proven to be invaluable in terms of leveraging significant investments from numerous public and private institutions to initiate some of the priority programs in this Draft Management Plan.

Maryland Historical Trust

- The steward of historic cultural resources and the Maryland Maritime Archaeology Program which addresses such remains in submerged or semi-submerged contexts
- Assist with compliance with Section 106 of the NHPA for placement of kayak launches and buoys, and may be able to aid in seasonal deployment and retrieval of buoys.
- Occasional access to small boats for science, education, outreach and emergency response
- Assist development of emergency planning and plans. Qualified to participate in certain federally mandated response activities that threaten resources, such as oil spills
- Training for staff such as emergency first response (first aid, CPR, AED), diver-related (oxygen provision)
- Assist with the development of interpretive enforcement materials and plans.
- Assist with research and technology training programs
- Partner for grant applications and occasionally, when possible, may be able to assist with funding some projects.
- Assist with education and public outreach through planning, community engagement activities and related products and services.

• Active involvement in Sanctuary management through the Sanctuary Advisory Council

Maryland Department of Natural Resources (DNR)

DNR Chesapeake & Coastal Services

- Liaison to multiple stakeholders and partners throughout the coastal zone and point-of-contact within DNR
- Ready to provide staff assistance with development and implementation of public outreach and education
- Capacity to host Participatory GIS sessions to gather and map community knowledge on recreational uses within the designated area
- NOAA Coastal Zone Management funding available
- Home to Maryland Public Access, Water Trails and Recreational Planning Program, with technical and financial assistance available for kayak/canoe soft launch planning and construction
- Host Mallows Bay website with current activities and updates, as well as flickr page with photos of recent activities.
- Active involvement in Sanctuary management through the Sanctuary Advisory Council

DNR Fisheries

- Liaison to recreational and commercial fishing stakeholders, Sport & Tidal Fisheries Advisory Commissions
- Manage fisheries resource data
- Provide small boats/skiffs on an as needed basis

DNR Wildlife and Heritage Service

- Liaison to recreational hunting stakeholders
- Share management goals/issues with adjacent Nanjemoy NRMA
- Manage Bionet resource data

DNR Park Service

- Liaison to recreational users in the area through neighboring Smallwood State Park
- Offered office space and facilities at Smallwood State Park, as needed

DNR Boating Service

- Supported Mallows Bay Park through Waterway Improvement Fund projects, continuing interest in boating access at site
- Offered water vessels, as needed
- Hydrographic service has offered assistance with buoy/water trail marker procurement and deployment

DNR Natural Resource Police

• May be tapped for Cooperative Enforcement Program

• Provide vessels on an as needed basis

DNR Communications

• Stand ready to coordinate and issue press releases, DNR newsletters and magazine, publicity events

Charles County, MD

- Continue to manage Mallows Bay Park consistent with the park plan and the lease with the DNR.
- Seek to improve the facilities at Mallows Bay Park, to include an expanded kayak launch facility, a kayak for-hire vendor, and a boat to improve safety and management, as budget and DNR lease agreement allow.
- Continue to employ docents to manage Mallows Bay Park.
- Continue to provide security and a police presence at Mallows Bay Park.
- Continue to provide and expand public outreach and tourism services to promote Mallows Bay Park, such as the "Get Wrecked at Mallows Bay" marketing campaign.
- Continue to provide and expand public outreach and tourism services to promote Mallows Bay Park through a World War I Centennial Commemoration that includes a three-day kick-off event in April 2017.
- Active involvement in Sanctuary management through the Sanctuary Advisory Council

APPENDIX B - Additional State of Maryland Authorities

This appendix identifies statutory authority from the Environment Article, the Natural Resources Article, and the State Finance and Procurement Article of the Maryland Annotated Code that is potentially applicable to Mallows Bay. This document does not include any statutory authority from other areas of the Code, such as the Agriculture, Transportation, Land Use, or Public Utilities Articles, that may also have applicable law.

I. ENVIRONMENT ARTICLE

- a. Sediment Control (ENV Title 4, Subtitle 1)
 - i. statewide oversight and procedures for counties and Soil Conservation Districts (SCDs) to implement soil erosion control programs; grading and building permits for land disturbance activities issued by county or SCD in compliance with subtitle; some counties have delegated enforcement authority; for others, Department of the Environment (MDE) responsible for enforcement
- b. Stormwater Management (ENV Title 4, Subtitle 2)
 - i. management of stormwater necessary to reduce stream channel erosion, pollution, siltation, sedimentation and local flooding, all of which have adverse impacts on water and land resources of Maryland; do environmental site design; county MS4 permits; watershed protection and restoration plans (fee);
 - ii. county must approve Stormwater Management (SWM) plans before grading/building permits issued; MDE review of county SWM programs every 3 years;
- c. Water Pollution Control and Abatement (ENV Title 4, Subtitle 4)
 - i. public policy to improve, conserve, and manage the quality of the waters of the State and protect, maintain, and improve the quality of water for public supplies, propagation of wildlife, fish and aquatic life, and domestic, agricultural, industrial, recreational, and other legitimate beneficial uses
 - ii. MDE may develop comprehensive programs and plans for prevention, control, and abatement of pollution of the waters of the State by oil or sediment
 - iii. oil spill prevention; emergency oil spillage program and plan; transfer, storage, treating, transport of oil to prevent water pollution; bonding required for vessels carrying or receiving 25 barrels or more of oil; requirements on USTs; liability for oil spills
 - iv. a person may not place sediment in a position likely to pollute
- d. Appropriation or Use of Waters, Reservoirs, and Dams (ENV Title 5, Subtitle 5)
 - i. must have permit to use or appropriate surface or groundwaters of the State
 - ii. must have permit to construct structures (e.g., dams, reservoirs, culverts, bridges) in any waters of the State including the 100-year nontidal floodplain; must have

permit to change in whole or part the course, current, or cross-section of any stream or body of water within the State (except tidal)

- iii. must get permit to construct conduit, pipeline, wire cable, trestle or other device, structure, or apparatus in, under, through, or over the bed or waters of the Potomac River
- e. Maryland Water Conservation (ENV Title 5, Subtitle 5a)
 - i. revised permit granting significant increase in withdrawal of water authorized under existing water appropriation permit for public water systems serving at least 10,000 individuals; specific BMPs required
- f. Nontidal Wetlands (ENV Title 5, Subtitle 9)
 - i. avoid and minimize impacts to nontidal wetlands; permit required for regulated activities in nontidal wetlands (removal, excavation, grading, dumping, etc.); mitigation for loss of nontidal wetlands
- g. Chesapeake Bay and Tributaries (ENV Title 5, Subtitle 11)
 - i. no open water dumping of dredge material;
 - ii. beneficial use of dredged material includes island restoration, shoreline stabilization, fish/shellfish habitat creation, restoration, etc.; oversight committees; Hart-Miller Island; dredged material management exec committee;
- h. Hazardous Materials (ENV Title 7)
 - i. Must have permit to transfer hazardous materials; must have permit to store, discharge, treat, or dispose of controlled hazardous substance; subject to penalties if Title 7 violated
- i. Water, Ice, Sanitary Facilities: Regulations by State (ENV Title 9, Subtitle 2)
 - i. permit required for any water supply systems, sewerage systems, refuse disposal systems that is a solid waste acceptance facility; sewage treatment plant; authority for public water supply system regulations; used tire cleanup and recycling fund; coal combustion by-products fund; Coal Combustion Byproducts (CCB) permits;
 - ii. NOTE: Other sewer-related authority at Title 9, Subtitles 5-9 (sanitary commissions, county water & sewer plans, sewerage facilities bond act; water and sewer authorities, etc.)
- j. Water Pollution Control (ENV Title 9, Subtitle 3)
 - i. discharge permits (Maryland National Pollutant Discharge Elimination System (NPDES) permits);
 - ii. water quality and effluent standards;
 - iii. No discharge into waters of the State w/o first receiving necessary treatment or other corrective action to protect legitimate beneficial uses of the waters of the State
- k. Gas and Oil (ENV Title 14)

- i. drilling and production of oil and gas should be conducted in a manner that will minimize effects on surrounding environment; must have permit prior to well for exploration, production, or underground storage of gas or oil in the State;
- ii. A person may not drill for oil or gas in the waters of the Chesapeake Bay (CB), any of its tribs, or in the CB Critical Area;
- iii. permit required to conduct seismic operations but permit may be denied if activity poses substantial risk of environmental damage to CB, Critical Area, nontidal wetland, Maryland Rare, Threatened, and Endangered (RTE) animals, designated archaeological site and that cannot be mitigated; prohibition on using explosives in seismic operations conducted on the waters of the Chesapeake Bay and its tributaries; hydraulic fracturing regs to be developed; specifies well locations; Prince George's County underground storage of gas, acquired by gas storage company, eminent domain available; MDE to prescribe rules to permit to drill natural gas storage operations, those rules may contain restrictions necessary in the public interest to protect the waters of the State, including subsurface and percolating waters; interstate oil and gas compact;
- 1. Coastal Facilities Review Act (ENV Title 14, Subtitle 5)
 - i. applies to crude oil storage facility and natural gas facility (including pipelines) in the coastal area;
 - ii. must obtain permit prior to construction of facility
- m. Wetlands and Riparian Rights (ENV Title 16)
 - i. license/permit required for dredging and filling State and private tidal wetlands; includes piers/platforms, shoreline erosion control projects
- n. Water Quality Certifications (COMAR 26.08.02.10)
 - i. Establishes the process by which MD issues a water quality certification

II. NATURAL RESOURCES ARTICLE

- a. Natural Resources Police Force (NR Title 1, Subtitle 2)
 - i. responsibility for protecting the natural resources of the State is vested in the Natural Resources Police Force w/in Department of Natural Resources (DNR); public safety agency with authority to enforce conservation, boating, and criminal laws
- b. Recreational Use of the Potomac River (NR Title 1, Subtitle 6)
 - i. policy of the State to foster water safety for recreational uses of Potomac River; responsible for administering program of water safety for recreational uses of the hazardous section of the Potomac;
- c. Fish & Fisheries (NR Title 4, Subtitle 2)
 - i. DNR is responsible for conservation management of the fish, fisheries, fish resources, and aquatic life within the state; nuisance organisms (nonnative aquatic organism), inspections, abatement orders (4-205.1); DNR shall manage fisheries for benefit of all the citizens of the State (4-215.3)

- d. Endangered Species of Fish Conservation Act (NR Title 4, Subtitle 2A)
 - i. protect endangered and threatened fish;
- e. Potomac River Compact & Potomac River Fisheries Commission (NR 4-306 and 4-307)
 - i. establishes Potomac River Fisheries Commission (PRFC); PRFC may adopt rules and regs as may be necessary for authorizing and regulating the dredging of oysters, etc.
- f. State Fish Refuges and Hatcheries in Tidal and Nontidal Water (NR Title 4, Subtitle 4)
 - i. DNR may acquire any area of water or land suitable to protect, propagate, or manage fish, shall be called State fish refuge
- g. Licensing, Regulation, and Supervision of Fishing and Fisheries in Tidal Waters (NR Title 4, Subtitle 7)
 - i. Restrictions on licenses, fees, registrations, permits; specifications for certain counties; etc.
- h. Crabs (NR Title 4, Subtitle 8)
 - i. DNR may adopt rules/regs related to blue crabs; license required to operate vessels to catch crabs; restrictions on picking, canning, packing crab meat; size and number restrictions; commercial crab fishing, additional crew authorizations; non-native crab species
- i. Lobster, Terrapin, Conch (NR Title 4, Subtitle 9)
 - i. Lobster rules, regs; taking or possession of terrapin; rules/regs related to diamondback terrapin; must have license before catching conch for commercial purpose
- j. Oysters & Clams (NR Title 4, Subtitle 10)
 - i. General provisions related to oysters and clams; areas off limits; mechanical means prohibited; Submerged Aquatic Vegetation (SAV) protection zones; clam dredge restrictions; seasons; seed oysters, daily catch limits; Natural Oyster Bars (NOBs); dredging requirements; sales reports; oyster sanctuaries; hard shell clams; soft shell clams; surf clams and quahogs;
- k. Oysters and Clams Culture (NR Title 4, Subtitle 11)
 - i. Resurvey of submerged areas of the state; NOBs and seed areas; Potomac river seed areas; areas closed/reserved for oyster seed propagation; destruction or damage to NOBs prohibited
- 1. Aquaculture (NR Title 4, Subtitle 11a)
 - i. May adopt aquaculture regs; aquaculture review board; coordinating council; public shellfish fishery areas; submerged land leases; fees; water column leases; demonstration leases; recordkeeping; oyster propagation research; permit for commercial rearing of shellfish seeds
- m. Forest Conservation Act (NR Title 5, Subtitle 16)

- i. Local government shall develop local forest conservation program consistent with Subtitle 16; applicant for subdivision or grading or sediment control permits (greater than 40,000 square feet) shall submit forest stand delineation; forestation, afforestation, reforestation requirements; review of forest conservation and subdivision plans; forest mitigation banks; variances; reporting
- n. Leasing of State Oil and Gas Resources (NR Title 5, Subtitle 17)
 - i. Board of Public Works (BPW) shall adopt regs establishing procedures and standards for awarding any oil or natural gas lease for production or reserve under lands or waters of the State; lessee must obtain lease prior to being put into production; lease cannot preclude/interfere with public or private harvesting of finfish or shellfish
 - ii. NOTE: BPW did not develop oil/gas regs
- o. Conservation and Management of State Waters in General (NR Title 8, Subtitle 2)
 - i. DNR shall be responsible for planning, development, management and conservation of the Chesapeake Bay and any other tidal waters, including their shoreline and bottom and any resources associated with these waters ... DNR may plan and develop public recreational facilities, etc.; coordinates public access to Chesapeake Bay and tributaries;
- p. State Boat Act (NR Title 8, Subtitle 7)
 - i. intent is to foster the development, use, and enjoyment of all the waters of Maryland.
 - ii. *8-721 et seq ... addresses removal and disposal of abandoned vessels; debris that poses a hazard to navigation or limits access to a public boating access facility or a shipping channel is eligible for removal; local governments can apply to DNR for money from waterway improvement fund
- q. Chesapeake and Atlantic Coast Bays Critical Area Protection Program (NR Title 8, Subtitle 18)
 - i. To establish a resource protection program for the Chesapeake and the Atlantic Coastal Bays and their tributaries by fostering more sensitive development activity for certain shoreline areas so as to minimize damage to water quality and natural habitats; and to implement the resource protection program on a cooperative basis between the state and local governments, with local governments establishing and implementing their programs in a consistent and uniform manner subject to State and local leadership, criteria, and oversight.
- r. Wildlife (NR Title 10)
 - i. DNR responsible for conservation and management of wildlife and wildlife resources of the State; license required to be waterfowl outfitter or waterfowl hunting guide; except for unprotected birds and game birds hunted during open season, a person may not hunt any wild bird; may not take or destroy nest or eggs of any wild bird, or possess nest or eggs; cannot hunt game birds except as provided by federal/state laws; migratory bird refuge; hunting game birds/animals during open season; game bird hunting restrictions; other hunting restrictions;

- ii. Nongame and Endangered Species Conservation Act (NR Title 10, Subtitle 2a);
 - B. in addition to Endangered Species Act (ESA) species, DNR shall determine whether any species of wildlife or plant is endangered or threatened; incidental take permit for Puritan Tiger Beetle, Delmarva fox squirrel; DNR shall establish programs, including acquisition of land or aquatic habitat or interests in the land or aquatic habitats, necessary for the conservation of nongame, threatened, or endangered species of wildlife or plants;
- iii. Wild Waterfowl (NR Title 10, Subtitle 6)
 - B. offshore blind site; person may not shoot a wild waterfowl resting on land or water (10-602); shall not purposely or unnecessarily disturb wild waterfowl; may not hunt wild waterfowl while using floating device towed by power boat or sailboat (10-603); person may not hunt wild waterfowl while standing in the water except where specified; may hunt wild waterfowl while standing in the water at a licensed offshore stationary blind or blind site; licenses for offshore stationary blinds;
- iv. State Wildlife Management Areas and Hunting Grounds (NR Title 10, Subtitle 8)
 - B. DNR may acquire any area of land or water in the State suitable to propagate or manage wildlife for hunting purposes; an acquired area of land or water may be used to create and maintain State wildlife refuges for wildlife management and hunting grounds
- v. Wild Waterfowl Policy (NR Title 10, Subtitle 10)
 - B. License to feed waterfowl upon land owned by person/group or in waters within 300 yards of shoreline owned by person/group;

III. STATE FINANCE & PROCUREMENT ARTICLE

- a. Maryland Submerged Archaeological Historic Property Act (SFP 5A-340, 341)
 - i. submerged archaeological historic property taken from underwater land over which State has sovereign control is the property of the State; BPW can approve permit to convey title to submerged archaeological historic property it owns
- b. Sale & Transfer of Property (SFP 10-305)
 - i. State real or personal property (which includes the inland waters of the State and the land under those waters) may be sold, leased, transferred, exchanged, granted, or otherwise disposed of;
- c. Conveyance of Title to Lands Owned by State Due to Their Relationship to State Waters (SFP 10-401)
 - i. BPW may not convey title to land covered by subtitle (e.g., submerged lands) to any person other than the riparian owner of the land abutting the land conveyed; can't convey until after advice w/ other State agencies;



AMERICA'S UNDERWATER TREASURES