

DEPARTMENT OF DEFENSE  
DEPARTMENT OF THE NAVY  
NAVAL SEA SYSTEMS COMMAND

ENVIRONMENTAL ASSESSMENT / OVERSEAS ENVIRONMENTAL ASSESSMENT OF  
THE DISPOSITION OF EX-ORISKANY (CVA 34)

Pursuant to section 102(2)(c) of the National Environmental Policy Act (NEPA) of 1969, as amended; the Council on Environmental Quality regulations (40 CFR Parts 1500-1508) implementing the procedural provisions of NEPA; and Executive Order 12114 the Naval Sea Systems Command (NAVSEA) of the Department of the Navy gives notice that an Environmental Assessment (EA)-Overseas Environmental Assessment (OEA) has been prepared for disposition of ex-ORISKANY (CVA-34). Based on this EA-OEA, an Environmental Impact Statement (EIS)-Overseas Environmental Impact Statement (OEIS) is not required for the Proposed Action.

The Proposed Action is to sink and transfer the ex-ORISKANY to a state for use as an artificial reef. The ship is currently being environmentally prepared for reefing in accordance with draft EPA document: "National Guidance: Best Management Practices for Preparing Vessels Intended to Create Artificial Reefs." Sinking of the ship is contingent upon EPA's completion of the Best Management Practices document and upon EPA's issuance of a risk-based PCB disposal approval to allow solid materials containing PCB concentrations of 50 ppm or greater to remain onboard. Pre-sinking preparation work such as pre-flooding of selected tanks and voids, the removal of external seachest blanks, and the opening of air vents through tank tops, doors and hatches will be accomplished prior to the final tow to the reef site. Upon arrival at the reef site, ex-ORISKANY will be secured to hold the ship's position prior to sinking. The ship will be sunk by explosives placed inside the ship in accordance with a sink plan developed by Naval Surface Warfare Center (NSWC), Carderock. A ship transfer agreement will be negotiated with the receiving state. Title of ex-ORISKANY is expected to transfer to the selected state upon sinking of the ship at the state's permitted reef site.

The purpose of the Proposed Action is to reduce the inactive ship inventory. The need for the action is to reduce expenses associated with maintaining ships that are pending disposal. Based on the overall material condition of the vessel, ex-ORISKANY is the Navy Inactive Ship Program's highest ship disposal priority.

Alternatives considered by the Navy include the four alternative reef sites which were considered based on applications from five states: 1) Florida; 2) Mississippi; 3) Texas; and 4) a joint application from South Carolina and Georgia. The No Action alternative of retaining the ship in the Navy's inactive ship inventory for an indefinite period of time was also considered. The EA concludes that sinking ex-ORISKANY at any of the four proposed alternative reef sites will not have significant environmental impacts. No adverse environmental effects are anticipated from continued ship storage. However, continuing to hold inactive Navy vessels in long-term storage does not meet the Navy's need for properly disposing of vessels considered unfit for service. On this basis the No Action alternative was rejected. Other alternatives considered but eliminated from further discussion in the EA-OEA include donation as a museum, dismantling and recycling, title transfer to the Maritime Administration, Foreign Military Sale transfer, and sinking as part of Navy Fleet training exercises.

The EA shows that the Proposed Action will have no significant short- or long-term impacts on the following resources: Physical Environment, including air resources, water resources, substrate resources; Biological Environment, including benthic organisms, fish and other pelagic organisms; Socioeconomic Environment, including navigation, costs and benefits; or Cultural Resources, including both historic Navy vessels and submerged resources. The proposed action would not affect threatened or endangered species or adversely affect essential fish habitat and is not likely to result in the takes of marine mammals.

The EA shows that the preferred alternative will have no significant impacts from Hazardous Substances. The ship is being environmentally prepared for reefing in accordance with draft EPA document: "National Guidance: Best Management Practices for Preparing Vessels Intended to Create Artificial Reefs" (BMP). This work is being accomplished concurrently with EPA's finalization of the BMP document. Any change in the final version will be incorporated into the scope of work for preparing ex-ORISKANY for sinking as an artificial reef. Materials of concern, including hazardous materials which will be removed as part of ship preparation in accordance with the draft EPA BMPs include, but are not limited to: fuels and oil, asbestos, polychlorinated biphenyls (PCBs), paints, other materials of environmental concern (e.g., mercury, refrigerants), and debris (e.g., vessel debris, floatable, introduced material). Hazardous and non-hazardous wastes

generated by the vessel preparation activity will be managed in accordance with all applicable federal, state, and local regulations. States may have additional environmental preparation requirements, which the receiving state will be responsible for accomplishing.

In accordance with the draft EPA BMPs, solid materials containing PCBs greater than or equal to 50 parts per million (ppm) will not be removed from ex-ORISKANY prior to sinking. The sinking of ex-ORISKANY is therefore contingent upon the completion of the draft EPA BMPs and the receipt of a risk-based disposal approval from EPA, pursuant to 40 CFR 761.62(c). Upon announcement of the state selected to receive ex-ORISKANY for use as an artificial reef, but prior to sinking, the Navy will seek this risk-based PCB disposal approval from EPA National Headquarters or the EPA regional office having jurisdiction for the selected receiving state.

The selected receiving state will be required to obtain applicable federal, state, interstate, and local permits for using, siting, constructing, monitoring, and managing vessels transferred by the Navy for use as artificial reefs. All artificial reef construction activity requires the issuance of a Corps of Engineers (COE) permit. COE permits for artificial reef sites include reviews of the applicants' provisions for siting, constructing, monitoring, operating, maintaining, and managing the proposed artificial reef for consistency with the following standards: the enhancement of fishery resources to the maximum extent practicable; the facilitation of access and utilization by U.S. recreational and commercial fishermen; the minimization of conflicts among competing uses of the navigable waters or waters overlying the outer continental shelf (OCS) and of the resources in such waters; the minimization of environmental risks and risks to personal health and property; observance of generally accepted principles of international law; and the prevention of any unreasonable obstructions to navigation. The COE issues site permits only after review and analysis, including public notice and comment, preparation of required NEPA documentation, and certification of conformance with the state's Coastal Zone Management Plan, if applicable, in accordance with the Coastal Zone Management Act (33 CFR 320).

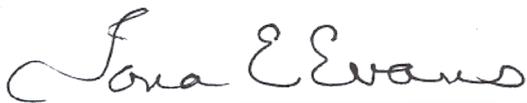
Protective measures, as described in the EA, will be coordinated and implemented as part of the sink plan to reduce or eliminate the impact on marine mammals and sea turtles and ensure public safety. All components of these protective measures, including

shipboard visual observers, will be in place on the day of the sinking action or the sinking action will be postponed. Pre-detonation monitoring will be conducted on the day of the sinking action to evaluate the proposed site and verify that the safety range is free of visually detectable marine mammals, sea turtles, large *Sargassum* rafts, and/or concentrations of jellyfish (possible indicators of sea turtle presence). Post-detonation monitoring would commence immediately following the sinking of ex-ORISKANY. These measures will also include establishment of an exclusion zone and safety range around the site to exclude all ship and submarine traffic not participating in the sinking action. Notices to Airmen and Mariners will be published in advance of the sinking exercise.

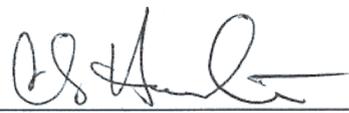
Based on the information gathered during preparation of the EA-OEA, the Navy finds that the disposition of the ex-ORISKANY by sinking and transfer to a state for use as an artificial reef, will not significantly impact the environment.

The EA, prepared by the Navy addressing this action, may be obtained from: Commander, Program Executive Office Ships (PMS 333), 1333 Isaac Hull Avenue SE, Washington Navy Yard, DC 20376-2701 (ATTN: CAPT Lawrence M. Jones, Jr., (202) 781-0621

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**ENVIRONMENTAL ASSESSMENT –  
OVERSEAS ENVIRONMENTAL  
ASSESSMENT  
OF THE  
DISPOSITION OF  
EX-ORISKANY (CVA 34)**

**02 April 2004**

**Department of the Navy  
Naval Sea Systems Command**

**ENVIRONMENTAL ASSESSMENT OF THE  
DISPOSITION OF EX-ORISKANY (CVA 34)**

RESPONSIBLE AGENCY: Department of the Navy  
Naval Sea Systems Command

ABSTRACT: This Environmental Assessment (EA) evaluates the environmental impacts associated with the disposition of ex-ORISKANY. The proposed action is to sink and transfer the vessel to a state for use as an artificial reef. Four alternative reef sites were considered based on applications from five states (Florida, Mississippi, Texas, and a joint application from South Carolina and Georgia) and the No Action alternative of retaining the ship in the Navy's inactive ship inventory for an indefinite period of time. This assessment concludes that the environmental advantages of ship reefing far exceed the disadvantages, and results in the best national use of ex-ORISKANY.

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TABLE OF CONTENTS

**ENVIRONMENTAL ASSESSMENT OF THE DISPOSITION OF EX-ORISKANY (CVA 34) i**

**1.0 PURPOSE AND NEED FOR THE PROPOSED ACTION ..... 1-1**

1.1 Purpose and Need ..... 1-1

1.2 Background..... 1-1

1.2.1 ORISKANY ..... 1-1

1.2.2 Navy Authority to Convey Vessels for Reefing ..... 1-2

1.2.3 State Artificial Reef Programs ..... 1-3

**2.0 PROPOSED ACTION AND ALTERNATIVES..... 2-1**

2.1 Proposed Action..... 2-1

2.1.1 Environmental Preparation of Ship in Accordance with EPA Best Management Practices 2-1

2.1.2 Towing ..... 2-3

2.1.3 Sinking..... 2-3

2.1.4 State Long-Term Management/Monitoring..... 2-4

2.1.5 TSCA Risk-Based Disposal Approval..... 2-4

2.1.6 Permits for Construction and Management of Artificial Reefs ..... 2-6

2.2 Alternative Reef Site: Florida ..... 2-6

2.3 Alternative Reef Site: Georgia/South Carolina..... 2-8

2.4 Alternative Reef Site: Mississippi ..... 2-9

2.5 Alternative Reef Site: Texas ..... 2-11

2.6 No Action Alternative..... 2-12

2.7 Other Alternatives Eliminated From Further Consideration ..... 2-13

**3.0 AFFECTED ENVIRONMENT ..... 3-1**

3.1 Alternative Reef Site: Florida ..... 3-1

3.1.1 Description of the Proposed Reef Site ..... 3-1

3.1.2 Air Quality ..... 3-1

3.1.3 Water Quality..... 3-1

3.1.4 Substrate..... 3-2

3.1.5 Biological Resources ..... 3-2

3.1.6 Socioeconomic Environment..... 3-3

3.1.7 Cultural Resources..... 3-4

3.2 Alternative Reef Site: Georgia/South Carolina..... 3-4

3.2.1 Description of Proposed Artificial Reef Site ..... 3-4

3.2.2 Air Quality ..... 3-5

3.2.3 Water Quality..... 3-5

3.2.4 Substrate..... 3-5

3.2.5 Biological Resources ..... 3-6

3.2.6 Socioeconomic Environment..... 3-6

3.2.7 Cultural Resources..... 3-7

3.3 Alternative Reef Site: Mississippi ..... 3-7

3.3.1 Description of Proposed Artificial Reef Site ..... 3-7

3.3.2 Air Quality ..... 3-8

3.3.3 Water Quality..... 3-8

3.3.4 Substrate..... 3-8

3.3.5	Biological Resources .....	3-9
3.3.6	Socioeconomic Environment .....	3-10
3.3.7	Cultural Resources .....	3-11
3.4	Alternative Reef Site: Texas .....	3-12
3.4.1	Description of Proposed Artificial Reef Site .....	3-12
3.4.2	Air Quality .....	3-12
3.4.3	Water Quality .....	3-12
3.4.4	Substrate .....	3-13
3.4.5	Biological Resources .....	3-13
3.4.6	Socioeconomic Environment .....	3-14
3.4.7	Cultural Resources .....	3-15
3.5	No Action Alternative .....	3-15
<b>4.0</b>	<b>ENVIRONMENTAL CONSEQUENCES .....</b>	<b>4-1</b>
4.1	General Impacts .....	4-1
4.1.1	Hazardous Substances .....	4-1
4.2	Alternative Reef Site: Florida .....	4-3
4.2.1	Air Quality .....	4-3
4.2.2	Water Quality .....	4-4
4.2.3	Substrate .....	4-4
4.2.4	Biological Resources .....	4-5
4.2.5	Socioeconomic Environment .....	4-7
4.2.6	Cultural Resources .....	4-8
4.2.7	Cumulative Effects .....	4-8
4.3	Alternative Reef Site: Georgia/South Carolina .....	4-8
4.3.1	Air Quality .....	4-8
4.3.2	Water Quality .....	4-8
4.3.3	Substrate .....	4-9
4.3.4	Biological Resources .....	4-9
4.3.5	Socioeconomic Environment .....	4-11
4.3.6	Cultural Resources .....	4-11
4.3.7	Cumulative Effects .....	4-11
4.4	Alternative Reef Site: Mississippi .....	4-12
4.4.1	Air Quality .....	4-12
4.4.2	Substrate .....	4-12
4.4.3	Biological Resources .....	4-13
4.4.4	Socioeconomic Environment .....	4-14
4.4.5	Cultural Resources .....	4-16
4.4.6	Cumulative Effects .....	4-16
4.5	Alternative Reef Site: Texas .....	4-17
4.5.1	Air Quality .....	4-17
4.5.2	Water Quality .....	4-17
4.5.3	Substrate .....	4-18
4.5.4	Biological Resources .....	4-18
4.5.5	Socioeconomic Environment .....	4-21
4.5.6	Cultural Resources .....	4-22
4.5.7	Cumulative Effects .....	4-22
4.6	No Action Alternative .....	4-22
<b>5.0</b>	<b>Protective measures .....</b>	<b>5-1</b>

**6.0 CONCLUSIONS ..... 6-1**  
**7.0 LIST OF PREPARERS ..... 7-1**  
**APPENDIX A: STATE ARTIFICIAL REEF PROGRAMS..... 1**  
**APPENDIX B: REFERENCES ..... 1**  
**APPENDIX C: ORGANIZATIONS CONSULTED ..... 1**

**LIST OF FIGURES**

Figure 1: Florida Site Location Map..... 2-7  
Figure 2: Georgia/South Carolina Site Location Map ..... 2-8  
Figure 3: Mississippi Site Location Map..... 2-10  
Figure 4: Texas Site Location Map..... 2-11

## ACRONYMS

ACOE	Army Corps of Engineers
AQS	Aerometric Quality System
AWOIS	Automated Wreck and Obstructions Information System
BMP	Best Management Practices
BPW	Bulk Product Waste
CAA	Clean Air Act
DEP	Department of Environmental Protection
DNR	Department of Natural Resources
DO	Dissolved Oxygen
DRMS	Defense Reutilization and Marketing Service
EA	Environmental Assessment
ECARP	Escambia County Artificial Reef Plan
ECMRD	Escambia County Marine Resources Division
EEZ	Exclusive Economic Zone
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FCC	Federal Communications Commission
FMP	Fishery Management Plan
FWCC	Fish and Wildlife Conservation Commission
FZ	Fishery Management Zone
GMFMC	Fishery Management Plans of the Gulf of Mexico
HAPC	Habitat Areas of Particular Concern
HHRA	Human Health risk Assessment
LAARS	Large Area Artificial Reef Site
MARAD	Maritime Administration
MLW	Mean Low Water
MMS	Minerals Management Service
MPA	Marine Protection Area
MRD	Marine Resources Division
MSFCMA	Magnuson-Stevens Fishery Conservation and Management Act
NDRF	National Defense Reserve Fleet
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic Atmospheric Administration
NOS	National Ocean Service (NOAA)
NSWC	Naval Surface Warfare Center
OCS	Outer Continental Shelf
OEA	Overseas Environmental Assessment
OFM	Office of Fisheries Management
OPIS	Ocean Planning Information System (NOAA)
PCBs	Polychlorinated Biphenyls
PPM	Parts Per Million
PRAM	Prospective Risk Assessment Model
SAFMC	South Atlantic Fishery Management Council

SERA	Screening-Level Ecological Risk Assessment
SFA	Sustainable Fisheries Act
SMZ	Special Management Zone
TPWD	Texas Parks and Wildlife Department
TSCA	Toxic Substances Control Act
USEPA	United States Environmental Protection Agency
USCG	U.S. Coast Guard

## **EXECUTIVE SUMMARY**

### **Purpose and Need For the Proposed Action**

Ex-ORISKANY was decommissioned on September 30, 1976, and retained as a mobilization asset until stricken from the Naval Vessel Register on July 25, 1989. The ship was initially designated for use as a ship museum and then was sold by the Defense Reutilization and Marketing Service (DRMS) in 1995 for dismantling in Vallejo, CA. The DRMS sales contract was terminated for default in 1997 and physical custody of the ship reverted to the Navy. The Navy towed the ship to the Maritime Administration's (MARAD) Beaumont, TX, National Defense Reserve Fleet (NDRF) in 1999 due to a lack of inactive ships storage capacity on the West Coast and the inability to dispose of the ship at little or no cost to the Navy.

The ship has remained in Beaumont, TX, for four years and has continued to deteriorate despite the expenditure of funds to maintain the ship in a safe stow condition. Ex-ORISKANY is the Inactive Ships Program's highest ship disposal priority. There is an essential need for the cost-effective disposal of this ship, to continue the reduction of the inactive ships inventory and to reduce expenses associated with maintaining ships that are pending disposal.

The purpose of this Environmental Assessment is to assess environmental impacts associated with the disposition of ex-ORISKANY.

### **The Proposed Action**

The proposed action is to sink and transfer ex-ORISKANY to a state for use as an artificial reef at a permitted reef site. Five states have submitted four applications to MARAD under a Navy/MARAD Memorandum of Agreement dated October 14, 2003, that utilizes MARAD as the lead federal agency for states to apply for both Navy and MARAD ships for artificial reefing. Applications were received from Texas, Mississippi, Florida, and a combined application from South Carolina and Georgia.

### **Alternatives to the Proposed Action**

Four alternative reef sites have been considered as well as the No Action alternative of continued retention in the Navy inactive ships inventory. Other alternatives eliminated from further consideration include experimental or target use (no Fleet requirement for ex-ORISKANY), title transfer to MARAD (applies only to merchant type ships), ship donation for museum or memorial use (considered in the early 1990's but determined to be not viable), foreign military sale transfer (no allied country interest in obtaining ex-ORISKANY), and ship dismantling (not viable due to a defaulted sales contract in 1995-97, unsuccessful subsequent attempts to resell, and high cost to scrap under Navy procurement contracts).

### **Potential Impacts of the Proposed Action**

No significant environmental impacts have been identified for the proposed action. Environmental preparation of the ship will be completed in accordance with U.S. Environmental Protection Agency (EPA) document "Draft – National Guidance: Best Management Practices for Preparing Vessels Intended to Create Artificial Reefs" to remove hazardous materials, including

PCBs and other materials of concern, and placement of the ship in a location permitted by the Army Corps of Engineers. Prior to sinking, the Navy would seek risk-based disposal approval, under the Toxic Substances Control Act (TSCA), from the cognizant EPA office. The proposed action would not affect threatened or endangered species or adversely affect essential fish habitat and is not likely to result in the takes of marine mammals.

## **1.0 PURPOSE AND NEED FOR THE PROPOSED ACTION**

### **1.1 PURPOSE AND NEED**

This Environmental Assessment-Overseas Environmental Assessment (EA-OEA) has been prepared by the Department of the Navy to consider environmental effects within the United States in accordance with the National Environmental Policy Act (NEPA) of 1969 and outside the United States in accordance with Executive Order 12114, “Environmental Effects Abroad of Major Federal Actions” dated January 4, 1979. The Proposed Action is to sink and transfer to a state ex-ORISKANY for use as an artificial reef at a permitted reef site. Based on overall material condition of the vessel, ex-ORISKANY is the Navy Inactive Ship Program’s highest ship disposal priority. There is an essential need to continue the reduction of the inactive ship inventory to reduce expenses associate with maintaining ships that are pending disposal. Further, Congress earmarked \$2.8 M in the Fiscal Year 2003 National Defense Appropriations Act specifically for the disposal of ex-ORISKANY.

### **1.2 BACKGROUND**

#### **1.2.1 ORISKANY**

##### **1.2.1.1 HISTORY OF THE VESSEL**

On August 7, 1943, Congress authorized the construction of the aircraft carrier USS ORISKANY (CV-34). The keel of this ESSEX-class carrier was laid by the New York Navy Yard (later the New York Naval Shipyard) on May 1, 1944, and she was launched on October 13, 1945, a little over a month and a half after surrender documents were signed in Tokyo Bay ending World War II in the Pacific. USS ORISKANY was ultimately completed, however, three months after hostilities broke out in Korea. On September 25, 1950, ORISKANY was commissioned at the New York Naval Shipyard.

USS ORISKANY began her last cruise on September 16, 1975. Significantly she celebrated her silver anniversary during the second week of the cruise, marking 25 years of service. She also recorded her 200,000th arrested landing during the deployment.

USS ORISKANY pilots were well rewarded for their efforts during their combat deployments. Among the rewards won by the pilots who flew off the ship: 4 Navy Crosses, 6 Silver Stars, 2 Legions of Merit, 96 Distinguished Flying Crosses, 6 Bronze Stars, 146 Air Medals, 192 Navy Commendation Medals, 127 Navy Achievement Medals, 10 Purple Hearts, 65 CINCPACFLT Letters of Commendation and 77 COMSEVENTHFLT Letters of Commendation. In addition, 832 Air Medals were recommended and approved under the Strike/Flight system. The ship was also twice awarded the Navy Unit Commendation.

##### **1.2.1.2 EFFORTS TO DONATE VESSEL AS A MUSEUM**

USS ORISKANY was decommissioned on September 30, 1976 and retained as a mobilization asset until stricken from the Naval Vessel Register on July 25, 1989. The ship was initially designated for use as a ship museum. Congressional legislation was initiated by a U.S. non-profit

organization to transfer the ship to the "City of America" project, however the project failed due to lack of financing. No other donation interest has been expressed in ex-ORISKANY. Four other ships of the class are already preserved as ship museums: ex-YORKTOWN (CVS 10) in Charleston, SC; ex-INTREPID (CVS 11) in New York City; ex-HORNET (CVS 12) in Alameda, CA; and ex-LEXINGTON (CV/AVT 16) in Corpus Christi, TX. Further efforts to donate ex-ORISKANY were determined not viable and the ship was redesignated by OPNAV for scrapping.

Ex-ORISKANY was evaluated by the Naval Historical Center in 1995, along with other ships in the Navy inactive ships inventory, for determination of eligibility for listing on the National Register of Historic Places. A Naval Historical Center letter of November 3, 1995, discusses the eligibility of those ships for listing on the National Register (considering association with historic events or persons, distinctive characteristics, and likelihood to yield information important in history) and provides a list of those vessels considered eligible. Ex-ORISKANY was not included on that list.

As part of the ship's inactivation process, items of historic value were removed and transferred to the Curator of the Navy. Additionally, the ORISKANY Museum, Oriskany, NY, removed numerous items from this ship in the 1990s.

#### 1.2.1.3 EFFORTS TO DISMANTLE AND RECYCLE VESSEL

In 1995, the Defense Reutilization and Marketing Service (DRMS) sold the scrapping rights to the ship to Pegasus International, Inc., for dismantling in Vallejo, CA. The DRMS sales contract was terminated for default in 1997 due to non-performance, and physical custody of the ship reverted back to the Navy. DRMS unsuccessfully attempted to sell the scrapping rights two additional times. The Navy towed the ship to the Maritime Administration's (MARAD) Beaumont, TX, NDRF in 1999 due to a lack of inactive ships storage capacity on the West Coast. The estimated cost to dismantle ex-ORISKANY under a Navy ship disposal contract is \$12M, however, scrapping of aircraft carriers remains unfunded. Dismantling and recycling of ex-ORISKANY is a cost-prohibitive option.

#### 1.2.2 Navy Authority to Convey Vessels for Reefing

The Navy obtained new statutory authority in Section 1013 of Public Law 108-136, the National Defense Authorization Act for fiscal year 2004, to transfer any vessel stricken from the Naval Vessel Register to any state, commonwealth, or possession of the United States, or any municipal corporation or political subdivision thereof, for use as an artificial reef. This law requires:

- (1) that the recipient use, site, construct, monitor, and manage the vessel only as an artificial reef in accordance with the requirements of the National Fishing Enhancement Act of 1984 (33 U.S.C. 2101 et seq.), except that the recipient may use the artificial reef to enhance diving opportunities if that use does not have an adverse effect on fishery resources (as that term is defined in section 2(14) of the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1802(14));*

- (2) the recipient obtain, and bear all responsibility for complying with, applicable federal, state, interstate, and local permits for using, siting, constructing, monitoring, and managing the vessel as an artificial reef; and*
- (3) that the Secretary of the Navy shall ensure that the preparation of a vessel transferred for use as an artificial reef is conducted in accordance with the environmental best management practices developed pursuant to section 3504(b) of the Bob Stump National Defense Authorization Act for Fiscal Year 2003 (Public Law 107-314; 16 U.S.C. 1220 note); and any applicable environmental laws.*

### **1.2.3 State Artificial Reef Programs**

Nearly all of the Atlantic and Gulf states have active artificial reef programs based on guidance contained in the National Artificial Reef Plan developed by the Department of Commerce, National Oceanic and Atmospheric Administration (NOAA), and according to the requirements of the National Fishing Enhancement Act of 1984. The RAND Report on Disposal Options for Ships, 2001, documents that the Atlantic and Gulf Coast state reef authorities reported that over 846 vessels have been used for reefs during the past 25 years and that there is near-term demand for hundreds more. States with active reef building programs include: Massachusetts, New York, New Jersey, Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, and Texas. Artificial reef building materials include steel-hulled vessels, as well as other materials of opportunity.

Under the MARAD Artificial Reef Program, numerous vessels have been donated and transferred to states for use as artificial reefs. Since 1973, 47 ships have been sunk for use as artificial reefs along shoreline coastal states of the Atlantic Ocean, Gulf of Mexico, and Pacific Ocean including states reviewed for this EA/OEA. Since 1976, MARAD has transferred eight vessels to the state of Florida that have been sunk as artificial reefs. Ex-SPIEGEL GROVE is the latest vessel, sunk at Florida Keys National Marine Sanctuary in 2002. MARAD transferred one vessel to Georgia that was sunk as an artificial reef in 1975. Since 1978, MARAD has transferred two vessels to the state of South Carolina that have been sunk for use as artificial reefs. Since 1975, MARAD has transferred five vessels to the state of Mississippi that have been sunk for use as artificial reefs. And in Texas, MARAD has transferred 12 vessels that have been sunk as for use as artificial reefs, since 1976.

In a project conducted in cooperation with the U.S. Fish and Wildlife Service, the Gulf states Marine Fisheries Commission produced a document, Guidelines for Marine Artificial Reef Materials, January 1997, which reported the following benefits from the use of steel-hull vessels as artificial reefs:

- Vessels make interesting diving locations and provide a social and economic benefit to the local community through the dive charter and recreational/charter fishing industry.
- Vessels have life spans as artificial reefs that may exceed 50 years, depending on vessel type, physical condition, location of deployment, and storm severity.
- Vessels, due to high vertical profile, attract both pelagic (animals that live in the open sea, away from the sea bottom) and demersal (fish that live on or near the ocean bottom, commonly referred to as benthic) fishes. Vertical surfaces produce upwelling conditions, current shadows, and other current speed and direction alterations that are attractive to

schooling forage fishes, which in turn attract species of commercial and recreational importance.

- Depending on location, vessels may seasonally hold a large biomass of commercially and recreationally important fish species.
- Vessels provide diving alternatives to natural reef sites where physical damage to natural reefs through anchor damage, grounding, handling, crawling on, specimen collecting, and spear fishing have accelerated deterioration of natural reefs and their associated fauna.

Through the auspices of their interstate marine fisheries commissions, the states coordinate information exchange and development of policies for artificial reef development activities. Both the Atlantic and Gulf States Marine Fisheries Commissions are active proponents of artificial reefs as tools to enhance recreational and commercial fishing and fish habitat, and for recreational diving. The Joint Artificial Reef Technical Committee of these two commissions, supported by the Pacific States Marine Fisheries Commission, has developed a joint policy on the use of artificial reefs by their member states.<sup>1</sup> The policy provides guidelines for artificial reef siting, materials, construction, and management. This document is incorporated by reference herein as the basis of the state artificial reef programs evaluated under this EA.

The following describes the artificial reef programs among the states that applied for ex-ORISKANY.

## **FLORIDA**

The Florida Fish and Wildlife Conservation Commission (FWCC), Division of Marine Fisheries currently administers Florida's artificial reef program. The state of Florida artificial reef program has in excess of 500 artificial reef sites that have received permits from the ACOE. The state artificial reef program operates under Section 370.25, Florida Statutes, to provide technical assistance, and federal and state grant funding, for the planning, siting, construction, and assessment of artificial reefs placed in Florida coastal waters. Under the program, reefs have been constructed with one or more of the following intended objectives: 1) enhance private recreational and charter fishing and diving opportunities; 2) provide a socio-economic benefit to local coastal communities; 3) increase reef fish habitat; 4) reduce user conflicts; 5) facilitate reef related research; and 6) while accomplishing objectives 1-5, do no harm to fishery resources, essential fish habitat (EFH), or human health. Other reef building objectives undertaken in Florida, but outside the purveyance of the FWCC, include mitigation or restoration reefs to replace hard-bottom habitat lost through such activities as beach re-nourishment.

The Florida artificial reef program is not exclusively run at a state agency level where the state holds all the reef area permits. Because of the extent of coastline and statewide involvement in reef activities, the FWCC program continues as a cooperative partnership started over twenty years ago with local coastal governments. Today, some local coastal cities, and qualified non-profit corporations also work directly with the FWCC in artificial reef development and monitoring activities.

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<sup>1</sup> Coastal Artificial Reef Planning Guide, *Joint Artificial Reef Technical Committee of the Atlantic And Gulf States Marine Fisheries Commissions*, December 1998.

The FWCC artificial reef program does not issue permits for artificial reef sites. This regulatory responsibility is carried out by the U.S. Army Corps of Engineers (COE) for proposed artificial reef areas in federal waters, and by both the COE and the Florida Department of Environmental Protection (DEP) in state waters. Both of these regulatory agencies accept comments from FWCC and other interested parties during the artificial reef application review process. The local coastal governments who are applicants for new reef sites undergo a rigorous individual permit application process that may span a 6- to 9-month period.

## **GEORGIA**

Georgia's artificial reef program is administered by the Georgia Department of Natural Resources, Coastal Resources Division. Georgia identified greater than 20 artificial reef sites that are managed by the state. Funding for the program relies on the Federal Aid in Sport Fish Restoration Program, state appropriations, and the assistance of fishing clubs, coastal businesses, and private individuals. The goals of Georgia's artificial reef program include: 1) the development of long-term fisheries habitat; 2) the creation of additional and more accessible recreational fishing opportunities; and 3) the enhancement and support of local and regional fisheries management efforts.

Most of the artificial reefs off Georgia's coast are located 6 to 23 nautical miles offshore in 30- to 75-foot water depths. Two experimental "deepwater" artificial reefs have also been initiated in 120- to 170-foot water depths at 50 to 70 nautical miles offshore, to address a growing "bluewater" fishery.

## **SOUTH CAROLINA**

Artificial reef development in South Carolina's coastal and offshore waters is managed through the South Carolina Department of Natural Resources, Marine Resources Division (MRD). South Carolina has in excess of 40 artificial reefs that have been permitted by the ACOE. The state's Marine Artificial Reef Program, first established in 1973, is a part of MRD's Office of Fisheries Management (OFM). As of January 1996, the OFM held permits for the continued development of 38 artificial reef construction sites along the South Carolina coast. These sites are located in waters from 9 to 110 feet deep, ranging from inshore locations to areas as far as 35 miles offshore.

South Carolina's marine artificial reefs are constructed from a wide variety of materials ranging from various forms of suitable scrap, to specifically designed and constructed reef habitat structures. Steel-hulled vessels are the most commonly employed scrap material in reef construction, with over 100 vessels having been sunk off the state since 1969. Other scrap materials recycled on South Carolina reefs include steel and concrete bridges, concrete culvert pipe, steel dry dock work platforms, ex-military aircraft, and even intercontinental ballistic missiles.

## **MISSISSIPPI**

The Mississippi Department of Marine Resources administers Mississippi's artificial reef program. Mississippi DMR identified 44 near-shore artificial reefs that are managed by the state. The department promotes, constructs, monitors, and maintains artificial fishing reefs in the

marine waters of the state of Mississippi and in adjacent federal waters; accept grants and donations of money or materials from public and private sources for such reefs; and applies for any federal permits necessary for the construction or maintenance of artificial fishing reefs in federal waters.

## **TEXAS**

The Texas Parks and Wildlife Department (TPWD) administers Texas' artificial reef program. Texas has in excess of 24 artificial reef sites that are permitted by the ACOE. The Artificial Reef Act of 1989 directed the Parks and Wildlife Department to promote and enhance the artificial reef potential off Texas. To fulfill this purpose, the department developed the Texas Artificial Reef Plan adopted by the Parks and Wildlife Commission in 1990. The goals of the Texas Artificial Reef Plan are to enhance the fishery resources biologically, commercially, and recreationally. The program utilizes a 10-person citizen advisory committee representing major interest groups in the Gulf of Mexico to create new sites, evaluate material donations, and minimize user conflicts.

The first highly successful artificial reef development occurred during the mid-1970s when 12 obsolete Liberty Ships were sunk at five different sites in the Gulf of Mexico. These sites are still productive today and, in fact, are being enhanced with additional durable and stable materials. The decline in oil and gas activity in the Gulf in the 1980s resulted in an increased number of oil and gas rigs being scrapped. Recognition that these de facto reefs provided a valuable habitat and should be preserved lead to the creation of comprehensive planning guides for artificial reef development concentrating on obsolete oil and gas rigs, known as the "Rigs to Reefs" program.

One of the main criteria for the program is to actively pursue complex, stable, and durable structures in a form as close to their current form as possible. Oil and gas platforms are the primary reef building material of choice, since they already serve as artificial reefs in the Gulf of Mexico and also meet the material criteria of the program. The Texas program promotes the use of "partially mechanically removed" structures to minimize damage to the benthic communities attached to the structure, and to minimize loss of reef fish from the use of explosives when toppling structures in place to create artificial reefs. These standing structures allow the maximum biological profile to remain higher in the water column and still meet safe navigational clearances.

## **2.0 PROPOSED ACTION AND ALTERNATIVES**

### **2.1 PROPOSED ACTION**

The proposed action is to sink and transfer ex-ORISKANY to a state for use as an artificial reef at a permitted reef site. The ship is being environmentally prepared for reefing in accordance with EPA document: “Draft – National Guidance: Best Management Practices for Preparing Vessels Intended to Create Artificial Reefs.” This work is being accomplished concurrently with EPA’s finalization of the Draft – Best Management Practices (BMPs) document. Environmental preparation work is currently being completed in Corpus Christi, Texas. Any change in the final version will be incorporated into the scope of work for preparing ex-ORISKANY. Sinking of the ship is contingent upon EPA’s completion of the Best Management Practices document and upon EPA’s issuance of a risk-based PCB disposal approval to allow solid materials containing PCB concentrations of 50 ppm or greater to remain onboard. EPA’s issuance of a risk-based PCB disposal approval will be supported by the Navy’s shallow water reefing studies, completed in July 2003 and March 2004. The ship remediation contract requires ex-ORISKANY to be returned from Corpus Christi, Texas to MARAD Beaumont, TX, however, and an option exists to tow the ship directly to the selected state’s reef site if the Best Management Practices document and the risk-based PCB disposal approval are obtained in time. Upon announcement of the state selected to receive ex-ORISKANY, the Navy will execute a ship transfer contract with the selected state. Under this agreement, title of ex-ORISKANY is expected to transfer from the Navy to the selected state concurrent with the sinking of the ship at the state’s permitted reef site.

#### **2.1.1 Environmental Preparation of Ship in Accordance with EPA Best Management Practices**

The Navy will be responsible for preparing ex-ORISKANY in accordance with EPA document (which is currently in draft form): “National Guidance: Best Management Practices for Preparing Vessels Intended to Create Artificial Reefs.” Section 3504(b) of Public Law 107-314, the National Defense Authorization Act for fiscal year 2003, required MARAD and EPA to develop the Best Management Practices. Section 3516 of Public Law 108-136, the National Defense Authorization Act for fiscal year 2004, includes a document completion deadline of March 31, 2004. The EPA guidance document was developed in response to the Maritime Administration’s (MARAD) request for the U.S. Environmental Protection Agency (EPA) to provide national environmentally based best management practices for the preparation of vessels to be sunk with the intention of creating artificial reefs in permitted artificial reef construction areas.

Navy ships contain a wide variety of materials of concern, including hazardous materials. These materials of concern include, but are not limited to: fuels and oil, asbestos, polychlorinated biphenyls (PCBs), paints, other materials of environmental concern (e.g., mercury, refrigerants), and debris (e.g., vessel debris, floatable, introduced material). The following lists specific examples of materials of concern and respective narrative goals for mitigation as part of ship preparation conducted in accordance with the draft EPA BMPs. Future revisions and modifications added to finalize these BMPs would be fully reviewed and reflected in the ship preparation actions conducted for the proposed action. States may have additional environmental preparation requirements, which the state is responsible for accomplishing.

*Oil and Fuel:* Each ship carries stores of fuels and lubricants for its propulsion and auxiliary systems and for any embarked small vessels or aircraft. As part of ship preparation, all liquid hydrocarbons (fuels, oils) are removed so that no visible sheen is remaining on the tank surfaces (this includes all interior fittings, piping, structural members) or on the water surface when the equipment is flooded after sinking; no film or visible accumulation (i.e., spills on decking or rugs) is remaining on any vessel structure or component.

*Asbestos:* Navy ship construction and maintenance prior to the mid-1970s used asbestos-containing insulation materials. Other asbestos containing products such as gaskets, valve packing, and floor tiles were also used in past years. Many of the older vessels presently in the Navy Inactive Ships have asbestos materials onboard. Any loose or otherwise detached friable asbestos containing material that may become loose during vessel sinking will be removed as part of ship preparation. All accessible disturbed, deteriorated or damaged friable asbestos containing materials will also be removed or repaired. Non-friable asbestos containing materials, such as gaskets, will also be removed and disposed of if loose or disturbed.

*Paint:* Paint containing high concentrations of lead or chromium compounds was once commonly used on Navy ships. Older ships, including many of the ships in the Navy Inactive Ships, may contain multiple layers of old lead and chromium paint. Exfoliated paint will be removed as part of the ship preparation activity along with active exterior hull antifouling systems such as copper and organotin.

*Polychlorinated Biphenyls (PCBs):* Although restrictions on PCB use have been in place for over twenty years, many older vessels still have regulated PCB containing materials in place. PCBs may be found in shipboard electrical components (transformers, capacitors, and other electrical equipment), in electric cables, paint and ventilation gaskets. All liquid materials including sealed source fluid filled electronic components containing PCBs will be removed. All solid material containing PCBs greater than or equal to ( $\geq$ ) 50 parts per million (ppm) will remain onboard provided that a risk-based disposal approval has been granted under 40 CFR 761.62 (c).

A Human Health Risk Assessment and a Screening Level Ecological Risk Assessment conducted in partnership with EPA concluded that the risk level for sinking of other Navy vessels as artificial reefs with non-liquid PCB containing materials onboard would be acceptable according to EPA policy as long as the ship is mitigated (removal of PCB-containing materials) to the same degree or more compared to studied existing ship reefs. EPA has stated that building future artificial reefs with Navy vessels would be regulated as a PCB Bulk Product Waste (BPW) under 40 CFR 761.62(c). The sinking of ex-ORISKANY is contingent upon receiving from EPA this risk-based PCB disposal approval.

*Bilge and Ballast Water:* Bilge water in Navy ships can be contaminated with oil and oily wastes from fuel and lubricant leakage of equipment. Bilge water may also be contaminated with other potentially hazardous materials such as solvents, leachate, paint dust, and pesticides. Ballast water may also be contaminated with oily residues. In some ships, the ballast water has been treated with sodium chromate corrosion inhibitor, a hazardous material. Regulated bilge and ballast water will be removed as part of ship preparation.

*Mercury Wastes:* Mercury may be present in fluorescent light bulbs and in some shipboard gauges. Mercury materials will be removed as part of ship preparation.

*Ozone Depleting Substances:* Ozone depleting substances occur in shipboard air conditioning and refrigeration systems (largely Freon systems). Recovery of refrigerants will be accomplished as part of ship preparation.

*Radioactive Materials:* Some radiation detection equipment contains radioactive test sources and some high voltage electronic equipment contains radioactive electron tubes. Radioactive materials will be removed as part of ship preparation.

*Miscellaneous Materials:* Navy ships can contain a wide variety of other materials, many of them potentially hazardous, including antifreeze solutions in machinery exposed to low temperatures, batteries, HALON, and other hazardous materials. Other miscellaneous materials include loose floatable materials and debris that may be released from the ship during sinking activities. Materials, including miscellaneous materials, which may negatively impact the biological physical, or chemical characteristics of the marine environment, will be removed as part of ship preparation.

Hazardous and non-hazardous wastes generated by the vessel preparation activity will be managed in accordance with all applicable federal, state, and local regulations. The ship may undergo further preparation activity prior to its actual sinking as an artificial reef, under the responsibility of the state. The nature of the preparation will depend upon the applicable state's objective for the artificial reef and its intended use and placement, as well as the configuration of the ship.

### **2.1.2 Towing**

Pre-sinking preparation work such as pre-flooding of selected tanks and voids, the removal of certain external seachest blanks, and the opening of air vents through tank tops, doors and hatches will be accomplished prior to the final tow to the reef site. Towing will be conducted in accordance with commercial towing practices. Vessels designated for reefing will be rigged for tow by installing suitable towing equipment as required. All environmental preparation, required approvals and permits will be completed and in place prior to commencing tow to the selected site.

### **2.1.3 Sinking**

Upon arrival at the reef site, ex-ORISKANY will be secured to hold the ship's position prior to sinking. The ship will be sunk by explosives placed inside the ship in accordance with a sink plan developed by Naval Surface Warfare Center (NSWC), Carderock. Explosives will not penetrate the hull; however, the explosives will breach 17 sea suction intake pipes, resulting in water intrusion into the main machinery spaces between frames 67 and 166. Once the water level in the main machinery spaces reaches the fourth deck level, flooding of the port and starboard wing wall tanks will occur. This is designed to cause the ship to settle evenly into the water with minimal list or trim. The flooding level will then continue to rise to the second deck level, where the ship will lose positive buoyancy before the water level rises to the hangar deck level. The ship then descends to the seabed and remaining spaces are vented and flooded through open hatches and doors. Significant media and public interest is expected.

#### **2.1.4 State Long-Term Management/Monitoring**

An artificial reef is an effective management tool for fishery resources when developed with clear and realistic objectives. Reef management begins with defining the reef objectives, and developing strategies to achieve those objectives. Reef management strategies must also comply with any specific reef permit provisions, and existing regulations or resource management programs. Once the artificial reef is in place, monitoring and maintenance becomes part of the management process. Management and monitoring of fisheries at artificial reefs is implemented through the States in coordination with the regional fisheries management councils in accordance with the National Fishing Enhancement Act. ACOE site permits specify the terms and conditions for operation, maintenance, monitoring, and managing the use of the artificial reef for compliance with all applicable provisions and as are necessary to ensure the protection of the environment and human safety and property (33 CFR 320).

States may designate an artificial reef as part of a Special Management Zone (SMZ) to maintain compatibility with fisheries management objectives. This allows the states to develop a reef with specific management objectives (e.g., enhancement of a group of fish species in a particular environment) that can be supported through regulation and enforcement. Other examples include placing some reefs off-limits to certain user groups (e.g., recreational anglers, sports divers, spear-fishing, commercial fishing) or instituting site restrictions (e.g., anchoring guidelines, fishing gear restrictions, catch limits) in order to achieve management objectives.

States conduct monitoring of artificial reefs to assure compliance with provisions contained in the applicable reef permits and other applicable laws, and to evaluate the performance of the reef in terms of its objectives. Compliance monitoring typically documents the stability and structural integrity of the artificial reef throughout its life. Accurately establishing the reef position and depth for navigation is essential. Other regulatory provisions may require other types of monitoring.

#### **2.1.5 TSCA Risk-Based Disposal Approval**

In order to support a future program of transferring Navy vessels to states for use as artificial reefs, a screening-level ecological risk assessment and human health risk assessment was conducted to assess the potential risk of sunken Navy vessels. The study area encompassed an area of the inner continental shelf along South Carolina extending as far north as North Carolina and includes the locations of the vessels previously sampled off the South Carolina coast by the South Carolina Department of Natural Resources. The data used in the assessments included PCBs and metals measured in fish and invertebrate tissues collected from artificial reefs off the coast of South Carolina; PCBs measured in fish tissues collected from an ex-Navy ship reef (ex-VERMILLION LKA-190) sunk in 1987, and a reference reef; metals, PCBs, and PAHs measured in sediments from a deep water sunken vessel (ex-AGERHOLM DD 826); and data developed from laboratory leaching experiments on solid materials containing PCBs that could possibly be on ex-Navy warships. This work was the result of the interagency REEFEX Technical Working Group, initiated in July 1999 and consisting of representatives from the U.S. EPA, the U.S. Navy, and the South Carolina Department of Natural Resources. The Chief of Naval Operations sponsored this work. Technical and logistics support was provided by the Naval Sea Systems Command.

EPA draft document "National Guidance: Best Management Practices for Preparing Vessels Intended to Create Artificial Reefs" (EPA expects to finalize this document in May 2004 upon receipt of public comments) requires the removal of all solid material containing PCBs greater than or equal to ( $\geq$ ) 50 parts per million (ppm) unless a risk-based disposal permit has been granted under 40 CFR 761.62(c). The sinking of ex-ORISKANY is subject to the Navy first obtaining the risk-based PCB disposal approval. Solid materials containing PCBs greater than or equal to ( $\geq$ ) 50 ppm are not being removed from ex-ORISKANY in accordance with the EPA Best Management Practices document.

Upon announcement of the state selected to receive ex-ORISKANY for use as an artificial reef and as supported by the Navy's shallow water ship reefing studies (Human Health Risk Assessment (HHRA) and Screening-Level Ecological Risk Assessment (SERA)), the Navy will request a risk-based PCB disposal approval under 40 CFR 761.62(c) from EPA National Headquarters or the EPA regional office having jurisdiction for the selected state.

## **2.1.6 Permits for Construction and Management of Artificial Reefs**

### **2.1.6.1 PERMIT REQUIREMENTS**

All artificial reef construction activity requires the issuance of a Corps of Engineers permit in accordance with guidelines established in 33 CFR (Parts 320). The Corps issues permits pursuant to Section 10 of the Rivers and Harbors Act, and Section 403 of the Clean Water Act. Section 10 authority extends from the limit of tidal influence on the shoreline to the limit of the territorial sea (3 nautical miles in the Atlantic and 9 nautical miles in the Gulf of Mexico).

The Corps does not issue a different permit for each of the aforementioned statutes. Rather, the Corps conducts a project-specific analysis and issues a permit that conveys authorization pursuant to any of the aforementioned statutes, depending on the activities at issue. Corps of Engineers permits for artificial reef sites are issued at the district level and include reviews of the applicants' provisions for siting, constructing, monitoring, operating, maintaining, and managing the proposed artificial reef for consistency with the following standards:

- The enhancement of fishery resources to the maximum extent practicable;
- The facilitation of access and utilization by U.S. recreational and commercial fishermen;
- The minimization of conflicts among competing uses of the navigable waters or waters overlying the outer continental shelf (OCS) and of the resources in such waters;
- The minimization of environmental risks and risks to personal health and property;
- Observance of generally accepted principles of international law; and
- The prevention of any unreasonable obstructions to navigation.

Prior to approval of such a permit, the COE solicits comments from other concerned federal and state agencies and groups. At the federal level, comments are solicited from the Department of the Interior, Department of Transportation, Department of Commerce, Department of Defense, and the EPA. ACOE will issue the site permit only after review and analysis, including public notice and comment, preparation of additional NEPA documentation if required, and receipt of and certification of conformance with the state's Coastal Zone Management Plan, as applicable, in accordance with the Coastal Zone Management Act.

As noted in section 1.2.2 above, Public Law 108-136 requires the recipient to obtain applicable federal, state, interstate, and local permits for using, siting, constructing, monitoring, and managing vessels transferred by the Navy for use as artificial reefs.

## **2.2 ALTERNATIVE REEF SITE: FLORIDA**

The proposed Florida reef site is located near Escambia County, FL, in federal waters of the Exclusive Economic Zone (EEZ) in the northeastern portion of the Gulf of Mexico. The Florida Fish and Wildlife Conservation Commission (FWCC) evaluated several sites prior to designating this proposed site. The state evaluation incorporated public meetings and comments as well as additional environmental reviews by state regulatory authorities. This proposed site is located within an area designated as the Escambia East Large Area Artificial Reef Site (LAARS), which is managed by the state applicant, the FWCC and associated Escambia County Marine Resources Division (ECMRD). The LAARS received a permit for placement of artificial reef materials

from the Army Corps of Engineers (ACOE) in 1994 that was reauthorized in 2001. LAARS is a rectangular area encompassing approximately 77 miles<sup>2</sup> within the following coordinates:

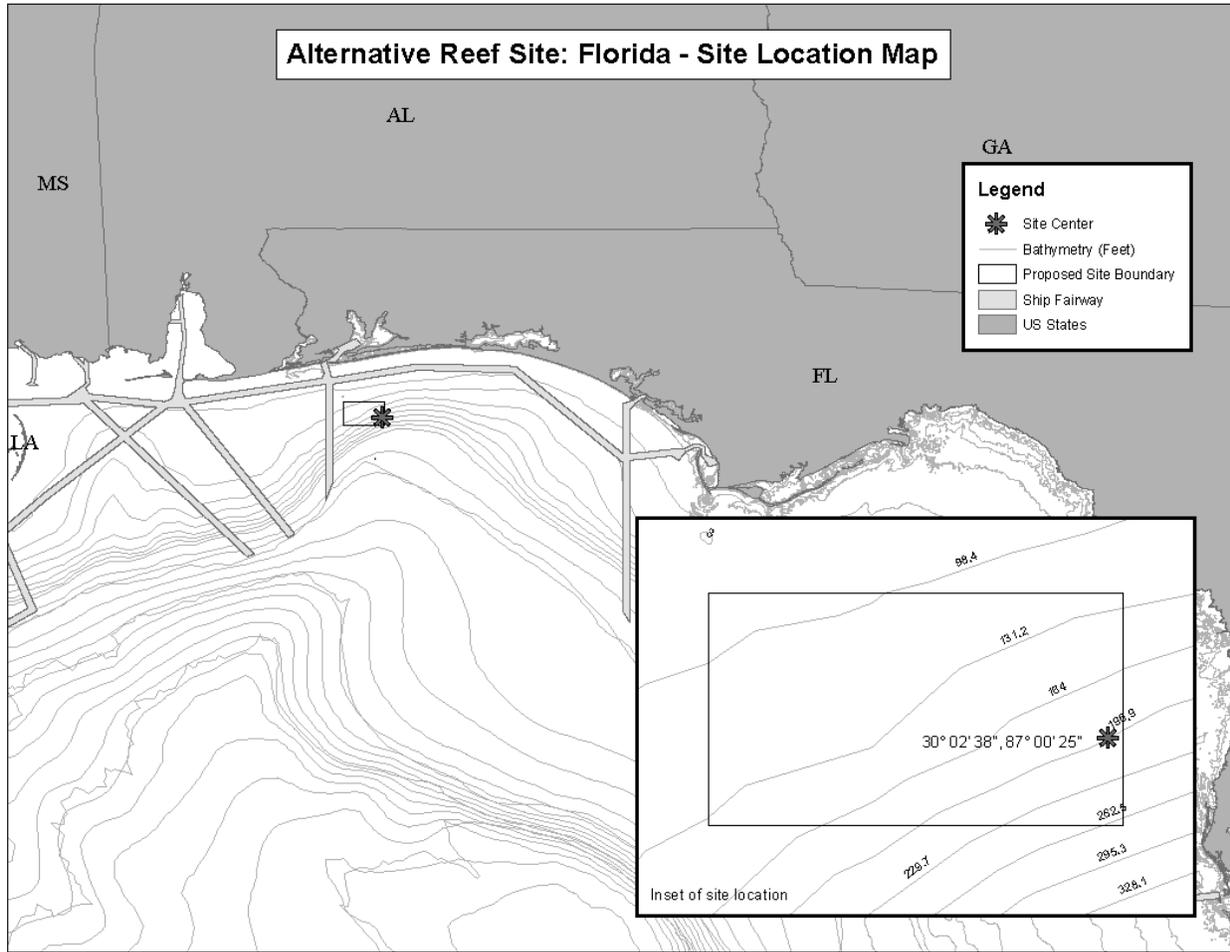
NE Corner	30° 07' 00" North latitude, 87° 00' 00" West longitude
SE Corner	30° 00' 00" North latitude, 87° 00' 00" West longitude
SW Corner	30° 00' 00" North latitude, 87° 12' 30" West longitude
NW Corner	30° 07' 00" North latitude, 87° 12' 30" West longitude

The proposed site is located 0.33 nautical miles (nm) from the east boundary of the LAARS area. The Florida alternative reef site is located approximately 17 nm from shore. The proposed site is 22.5 nm from Pensacola Pass at a bearing of 133 degrees, and 32.7 nm from Destin Pass at a bearing 236 degrees. The proposed site is mapped on NOAA (National Ocean Service (NOS) Chart 11360). A site location map is shown as Figure 1. Ex-ORISKANY will be placed in water 212 feet (ft) deep with a minimum navigational clearance of 55 ft in accordance with the ACOE permit. The ship will be oriented along its approximately 900-ft length from north to south parallel to prevailing and likely storm currents. The coordinates of the proposed site are:

30° 02' 38" North latitude (N/S orientation between 33" and 43")  
87° 00' 25" West longitude

Florida's proposed use for the artificial reef will be to enhance marine fish habitat, create additional hook-and-line fishing opportunities and to create a diving resource for commercial and private entities.

**FIGURE 1: FLORIDA SITE LOCATION MAP.**



**2.3 ALTERNATIVE REEF SITE: GEORGIA/SOUTH CAROLINA**

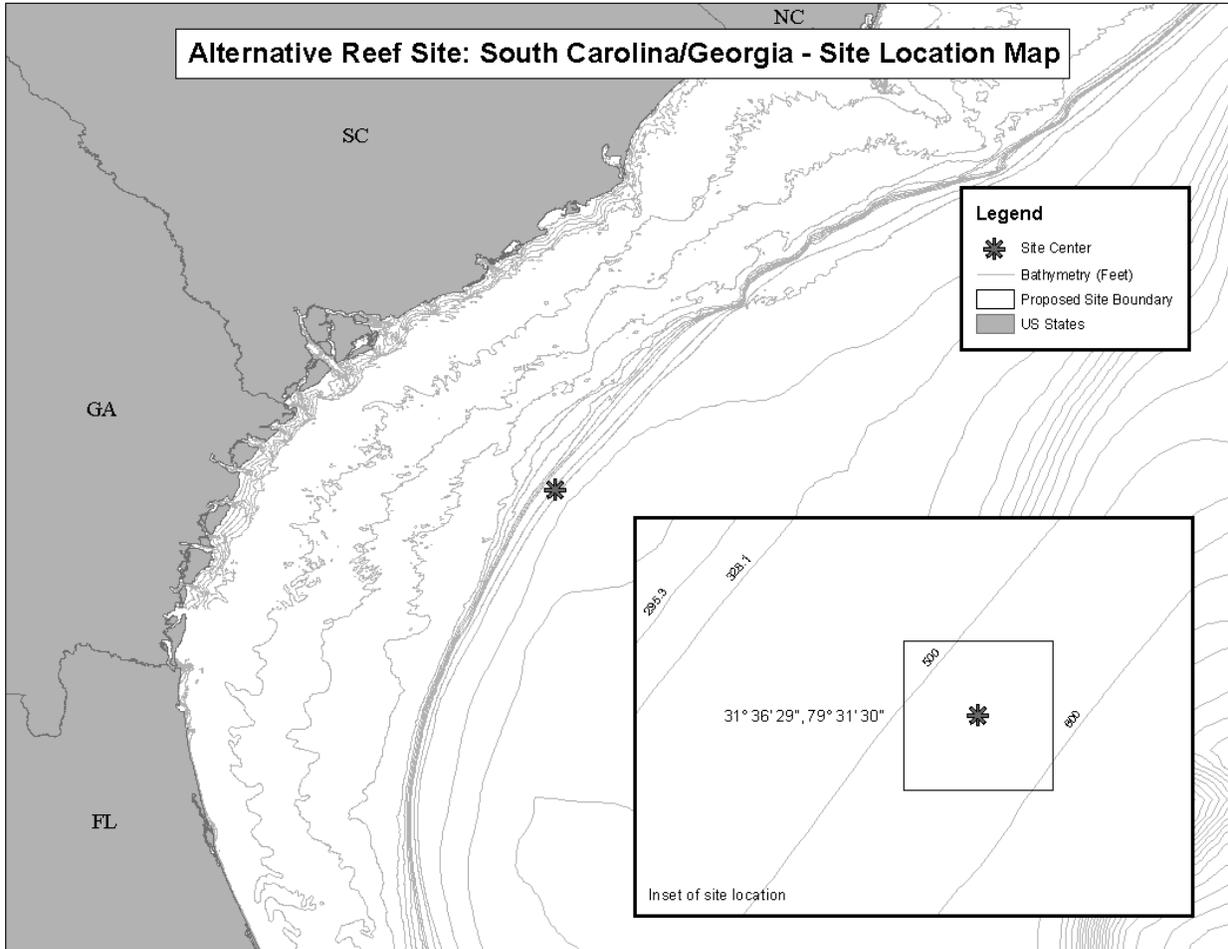
This proposed alternative reef site is located off of the Georgia/South Carolina coast inside the waters of the EEZ. This proposed reef site is located offshore approximately 75 nm southeast of Hilton Head Island, SC, and 75 nm southeast of Tybee Island, GA. The proposed site is an approximately six-square-mile area within the following coordinates:

Center	31°34'00" North latitude, 79°39'00" West longitude
NE Corner	31°38'00" North latitude, 79°31'00" West longitude
SE Corner	31°34'00" North latitude, 79°31'00" West longitude
SW Corner	31°34'00" North latitude, 79°39'00" West longitude
NW Corner	31°38'00" North latitude, 79°35'00" West longitude

Ex-ORISKANY will be placed at water depth between 400 ft and 600 ft, and the resultant navigational clearance will be between 250 and 450 ft. The reef will be sited and managed for the primary purpose of protecting and assisting in the rebuilding of commercially important fish species stocks of snowy grouper. The area would be considered a Special Management Zone (SMZ) and gear restrictions/prohibitions would be implemented to maximize protection of bottom dwelling species. Blue water recreational sport fishing for popular pelagic species such as dolphin, wahoo, tuna, and even billfishes would be allowed within this SMZ, as these

activities would not impact the bottom fish communities that are the primary conservation focus of the reef. A site location map for the Georgia/South Carolina alternative reef site is shown on Figure 2.

**FIGURE 2: SOUTH CAROLINA/GEORGIA SITE LOCATION MAP**



## 2.4 ALTERNATIVE REEF SITE: MISSISSIPPI

The proposed Mississippi site is located in federal waters of the EEZ within the north-central portion of the Gulf of Mexico approximately 65 nm south/southeast of Pascagoula, MS. This region is known as the Mississippi – Alabama Shelf, a triangular shaped region between the Mississippi River Delta and DeSoto Canyon.

This proposed reef site is located within an area designated as the Main Pass Block 278, and is managed by the Mississippi Department of Marine Resources (DMR) Derelict Vessel Removal Program, and Mississippi Gulf Fishing Banks, Inc. The proposed site is located within a rectangular area encompassing approximately .5 square miles within the following coordinates:

NE Corner	29° 17' 21.48" North latitude, 88° 16' 55.08" West longitude
SE Corner	29° 16' 38.40" North latitude, 88° 16' 55.08" West longitude
SW Corner	29° 16' 38.40" North latitude, 88° 17' 44.52" West longitude
NW Corner	29° 17' 21.48" North latitude, 88° 17' 44.52" West longitude

Because the proposed site is located in relatively deep water of approximately 288 ft, the force of currents produced by a major storm event will be reduced. The high profile of ex-ORISKANY (~160 feet from keel to top of conning tower) minimizes the chances that the ship, as a reef, will be covered with a mass of sediment from large-scale waves or transport phenomena. Hurricane events are the most severe weather activity in the Gulf of Mexico; high winds and larger-than-normal wave crests are known to create bottom disturbances. However, due to the size of the ship, it is not anticipated that hurricane-driven currents would move the reef.

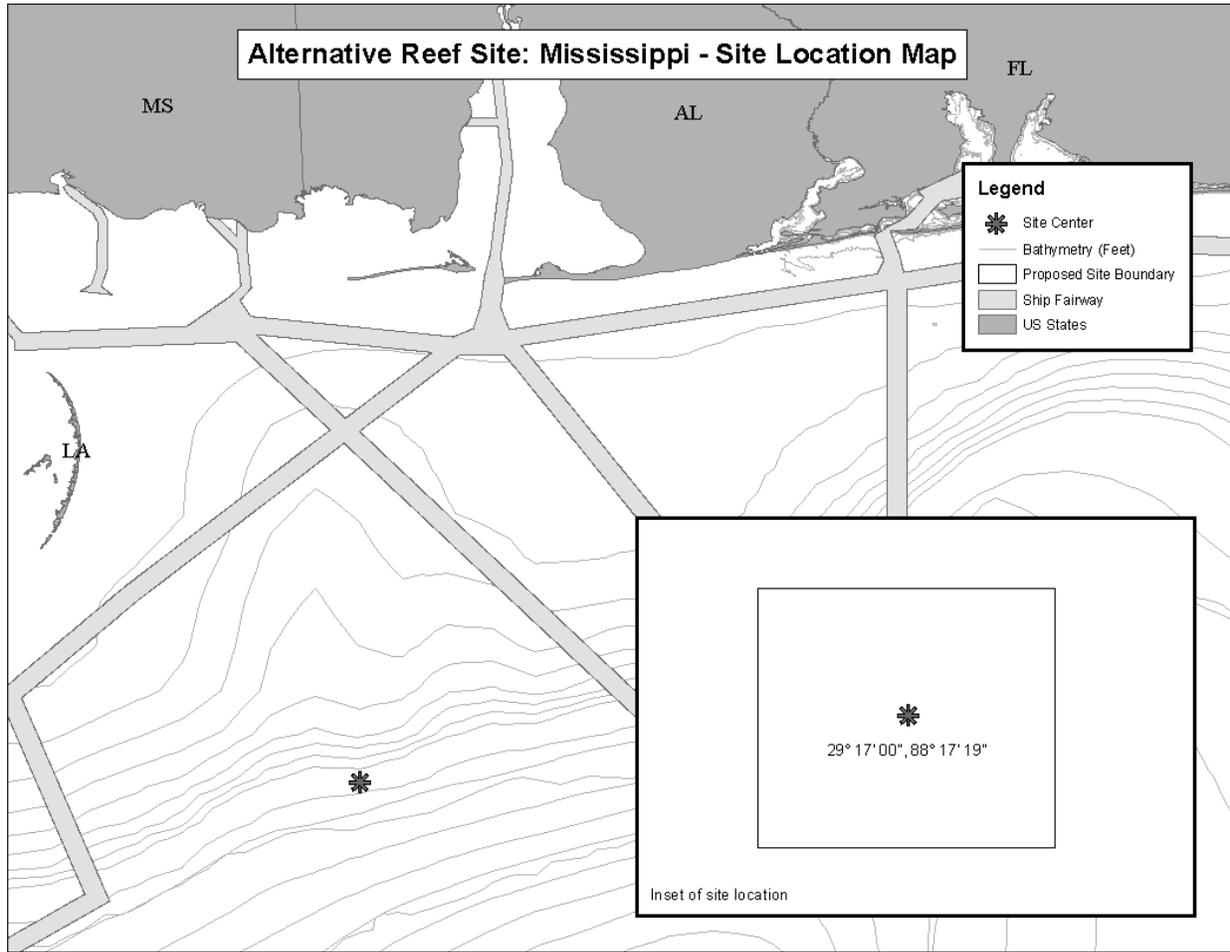
This proposed reef site would have a total depth of approximately 288 ft at mean low water (MLW). Ex-ORISKANY could, at the maximum, extend approximately 157 ft into the water column. This would allow for 131 ft of clearance for boat traffic at mean low water. Ex-ORISKANY will be placed within the confines of a designated 4,000-foot by 4,000-foot area and will be oriented along its approximately 900-foot length from northeast to southwest.

The coordinates of the proposed site are:

29° 17' 0.00" North latitude  
88° 17' 19.26" West longitude

Mississippi's proposed use for the artificial reef will be to enhance marine fish habitat, create additional hook-and-line fishing opportunities, and to create a diving resource for commercial and private entities. A site location map for the Mississippi alternative reef site is shown on Figure 3.

FIGURE 3: MISSISSIPPI SITE LOCATION MAP



## 2.5 ALTERNATIVE REEF SITE: TEXAS

The proposed Texas reef site is located near Nueces County, TX, in federal waters of the EEZ in the northwestern portion of the Gulf of Mexico. The proposed site was selected under the Texas Artificial Reef Program, which employs a thorough protocol for selection of artificial reef sites. New reef sites are analyzed to evaluate water depth, bottom type, proximity to natural reefs, presence of shipwrecks and other non-natural obstructions, and impact to commercial fisheries. The proposed reef site is Outer Continental Shelf (OCS) Block Mustang Island A-20. There are an additional 14 permitted sites with water depths adequate to accommodate ex-ORISKANY.

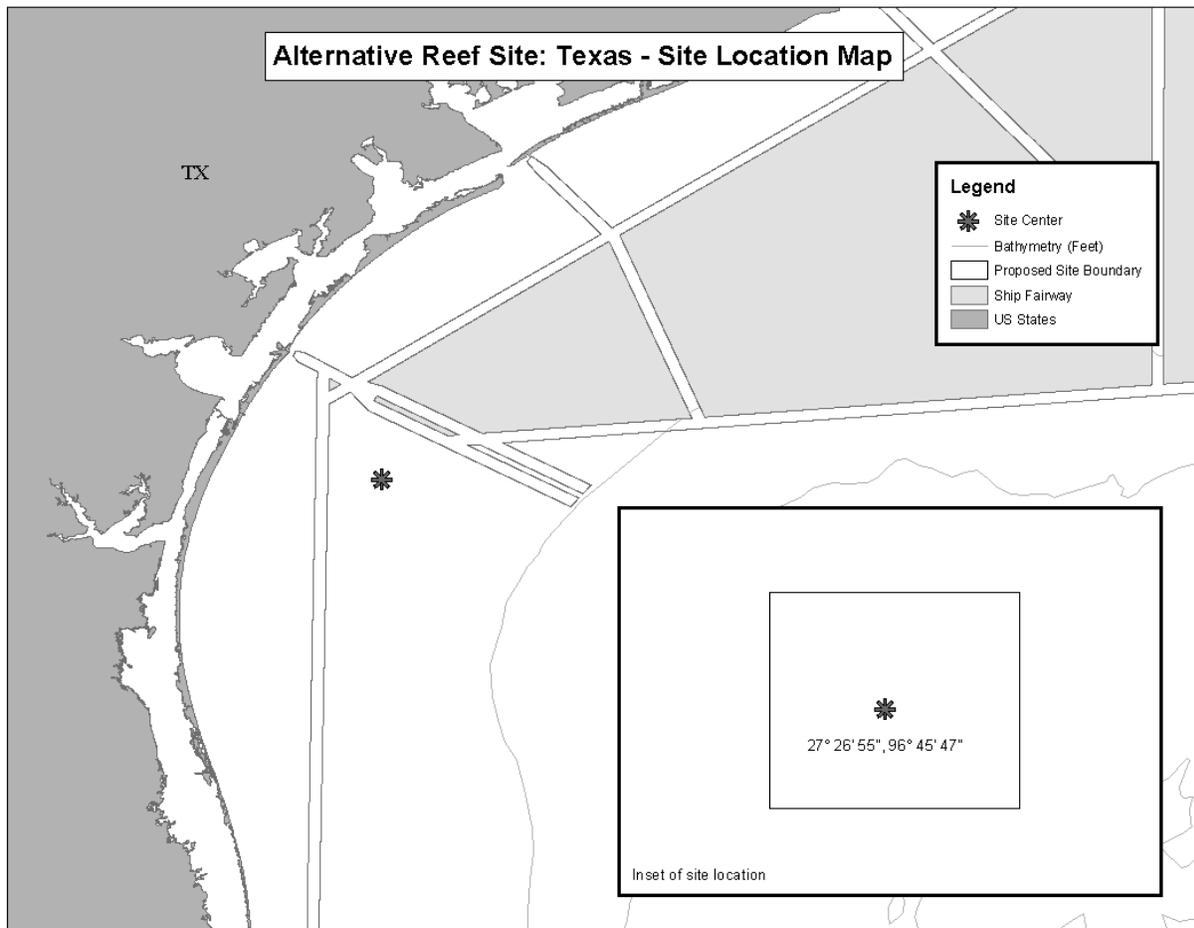
The proposed site is 39 statute miles or 34 nm from Aransas Pass. Ex-ORISKANY will be placed in water 212 to 214 feet deep at Mean Low Water with a minimum navigational clearance of 50 feet in accordance with the ACOE permit application. The ship would be placed within the confines of a designated 2,640-ft by 2,640-ft area. The ship would be oriented along its approximately 900-foot length from north to south parallel to prevailing and likely storm currents.

The coordinates of the proposed site are:

	Latitude	Longitude
Permitted Center	27°26'55.847"	96°45'47.146"
NW Corner	27°27'02.473"	96°45'54.371"
NE Corner	27°27'02.293"	96°45'39.719"
SE Corner	27°26'49.222"	96°45'39.921"
SW Corner	27°26'49.402"	96°45'54.572"

The state's proposed use for the artificial reef is to enhance natural fisheries habitat, provide habitat for threatened and endangered species, and benefit the public with increased fishing and diving opportunities. A site location map for the Texas alternative reef site is shown on Figure 4.

**FIGURE 4: TEXAS SITE LOCATION MAP**



## 2.6 NO ACTION ALTERNATIVE

The No Action alternative includes continuation of storage of the vessel with associated operations and maintenance activities conducted at MARAD's facility in Beaumont, TX.

## **2.7 OTHER ALTERNATIVES ELIMINATED FROM FURTHER CONSIDERATION**

The Ship Disposition Review (SDR) is an annual review by the Chief of Naval Operations (OPNAV N43) of the existing Navy Inactive Ships inventory and of the ships' material conditions. For ships that are determined to be excess to Navy requirements, the SDR evaluates requests for (1) Use by the Navy for experimental or target use as governed by 40 CFR 229.2, (2) Transfers of merchant-type ships to the Maritime Administration (MARAD) and other governmental agencies, (3) Ship donations as museums or memorials to qualified nonprofit organizations in accordance with Title 10, United States Code (USC) 7306, and (4) Ship transfers to allied navies under the Arms Export Control Act in accordance with the CNO's strategic planning. Ships not required for the previous purposes are authorized for dismantlement or artificial reefing. Under the SDR process, the disposition of ex-ORISKANY was reviewed by OPNAV on a yearly basis and was first designated for potential donation, then for dismantling, and lastly for sinking as an artificial reef. Experimental or target use was not considered as there were no Fleet requests to obtain ex-ORISKANY for such use. Transfer to MARAD was not considered because under 32 CFR 736, only merchant-type ships are eligible for such transfers. Also, foreign military sale transfer was not considered as there were no allied navy requests to obtain ex-ORISKANY. While the ship had been designated for donation, Congressional legislation was initiated in the early 1990's by a U.S. non-profit organization to transfer the ship to the "City of America" project, however the project failed due to lack of financing. No other ship donation interest has subsequently been expressed in ex-ORISKANY. Further efforts to donate ex-ORISKANY were determined not viable and the ship was redesignated by OPNAV for scrapping. In 1995, the Defense Reutilization and Marketing Service (DRMS) sold the scrapping rights to the ship to Pegasus International, Inc., for dismantling in Vallejo, CA. The DRMS sales contract was terminated for default in 1997 due to non-performance and physical custody of the ship reverted back to the Navy. DRMS unsuccessfully attempted to sell the scrapping rights two additional times. The estimated cost to dismantle ex-ORISKANY under a Navy ship disposal contract is \$12M, however, scrapping of aircraft carriers remains unfunded. Therefore, dismantling and recycling of ex-ORISKANY was determined to be a cost-prohibitive option.

## **3.0 AFFECTED ENVIRONMENT**

### **3.1 ALTERNATIVE REEF SITE: FLORIDA**

#### **3.1.1 Description of the Proposed Reef Site**

The proposed site for Florida is located in the northeastern portion of the Gulf of Mexico in a region known as Perdido Shoal, a relict deltaic accumulation of sand over limestone (McBride et al. 1990) sloping less than 5% to the south. The seafloor in the site vicinity is characterized by minimal outcroppings of limestone covering approximately three percent of the bottom surface. The site is located in an area with water depth of 212 ft. and is designated as a “Fish Haven” known as the LAARS that is permitted by the ACOE for placement of materials for artificial reefs. It is managed for commercial and recreational fishing and diving uses by the FWCC and ECMRD. Artificial reefs in the area are managed in accordance with a formal artificial reef plan.

#### **3.1.2 Air Quality**

The U.S. EPA’s Aerometric Quality System (AQS) data are available throughout the year 2003. The state of Florida has no non-attainment areas for any of the six criteria pollutants in its coastal counties (USEPA, 2003). The proposed alternative site is well offshore and is located in an area that is not classified for priority pollutants under the Clean Air Act (CAA). Ambient air quality and impacts are expected to be similar for all the alternative sites.

#### **3.1.3 Water Quality**

Because the proposed site is located well offshore, water quality is expected to be excellent. Open ocean waters typically have high water clarity, dissolved oxygen (DO) concentrations at or near saturation, and low concentrations of nutrients, suspended matter, and contaminants such as trace metals. Water quality in the northern Gulf of Mexico is influenced by water from the Mississippi River to the west. These waters carry fine sand sediments that affect water clarity and quality as well as substrate deposition. Water clarity and quality increases with distance from the Mississippi River to the site and the West Coast of Florida.

A three-year, large-scale marine environmental baseline study conducted from 1974 to 1977 in the eastern Gulf of Mexico (GOM) resulted in an overview of the Mississippi, Alabama, and Florida (MAFLA) OCS environment to 200 m (656 ft) water depth (SUSIO, 1977; Dames and Moore, 1979). Analysis of water, sediments, and biota for hydrocarbons indicated that the MAFLA area is pristine, with some influence of anthropogenic and petrogenic hydrocarbons from river sources. Analysis of trace metal contamination for the nine trace metals analyzed (barium, cadmium, chromium, copper, iron, lead, nickel, vanadium, and zinc) also indicated no contamination. Revisits conducted a decade later found no contamination from trace metals and transient hydrocarbon increases dissipated by the loop current in the Alabama and Mississippi areas (Brooks, 1990).

MMS (2003) summarized information from a report regarding water quality on the shelf from DeSoto Canyon to Tarpon Springs and from the coast to 200 m (656 ft) water depth. Several small rivers and the Loop Current are the primary influences on water quality in this region.

Because there is very little onshore development in this area, the waters and surface sediments are uncontaminated. The Loop Current flushes the area with clear, low-nutrient water.

*Water Currents:* Water currents near the proposed site are characterized by mild fringes and eddies of the Loop Current. Prevailing currents in the summer are to the east, and to the west in winter. The wind and tides are drivers for northeastern Gulf of Mexico region. Wind driven currents are typically at speeds less than 0.5 knots and are tempered by depth and distance from estuaries. No significant sediment transport by typical currents is expected at the site location based on depth in excess of 200 m (656 ft). In addition, the high elevation of the ship prevents burial by transported sediments. Measured wave heights average two to three feet in summer and three to four feet in winter (NOAA NBDC). The northeastern Gulf of Mexico region is subject to periodic major storm events during hurricane season from June to November.

Analysis conducted by the FWCC indicated the force of currents produced by a major storm event would be reduced because of depth and unlikely to move the vessel on the bottom. Moreover, relatively thick sediment depths at the location would add further anchoring for the vessel resulting in improved stability. The stability analysis conducted by FWCC indicated that a 50-year storm would not impact the vessel stability even if from the broad side of the vessel. State of Florida regulations require artificial reef applicants to demonstrate ability to withstand a 20-year event.

*Data Buoys:* The closest data buoy (NOAA NBDC) is buoy #42040 located 64 miles south of Dauphin Island, AL, to the west of the vicinity. This buoy provides wind speed and wave height data for the site vicinity.

#### **3.1.4 Substrate**

The substrate in the vicinity of the proposed site is characterized as fine sandy unconsolidated deltaic type sediments underlain by limestone. Limestone outcroppings cover approximately three percent of the bottom surface area (Thompson et al. 1999). The limestone outcroppings serve as live bottom habitats for soft corals and other reef dwelling organisms including fish; however, these habitats are ephemeral in nature because they get covered by sandy sediments periodically from currents resulting from major storm events.

No sediment thickness data was available for the site; however, information provided by FWCC and ECMRD for other portions of the LAARS in the immediate vicinity of the site identified a sediment thickness up to several feet thick. In addition, surveys of the area conducted by FWCC and ECMRD identified the closest limestone outcropping approximately 3,600 ft from the proposed site.

*Ordnance and other Dumping Areas:* Based on review of NOAA NOS Chart 11360 and information contained in the NOAA Ocean Planning Information System (OPIS) Mapping Tool, there are no identified dumping or ordnance dumping sites located in the vicinity of the site.

#### **3.1.5 Biological Resources**

The biological resources in the vicinity of the site are characterized by habitats typical of many locations with sandy substrates in the northeastern Gulf of Mexico region. The area includes

minimal coverage with live bottom habitats including soft corals and other reef species that may be present on limestone outcroppings that cover approximately three percent of the sea floor. However, FWCC has identified that the closest hard/live bottom outcropping is approximately 3,600 ft from the proposed site.

*Fish Species:* Spanish mackerel, red drum, jack crevelle, bonito, tarpon, speckled trout, red snapper, cobia, shark, black drum, sheephead, and flounder occur offshore of Florida and are important for fishing in the vicinity of the site. The most commercially and recreationally important fish species in the vicinity is the red snapper according to the FWCC. Shrimp and menhaden are also commercially important in the vicinity. The LAARS area currently has 24 manmade artificial reef locations that provide hard substrate materials for reef dwelling fish species. However, the closest artificial reef location is more than 1.5 nm from the proposed site.

*Protected habitats:* Based on review of sources information available from NOAA and the OPIS Mapping Tool, no protected areas or critical habitat areas are listed as Marine Protected Areas in the eastern Gulf of Mexico region that includes the proposed site.

FWCC and ECMRD indicated that live bottom benthic habitats in the vicinity of the proposed site could include the presence of soft corals, non-reef building stony corals, sea fans, sea whips, and sponges. Outcroppings do not include tropical hard coral areas and are ephemeral in nature based on shifting sediments during storm events. Live bottoms attract other species such as sea turtles and mammals. The closest limestone outcropping was identified 3,600 ft from the proposed site.

In the offshore waters of the northern Gulf of Mexico, up to 29 marine mammal species may occur, including seven mysticetes, 21 odontocetes, and one exotic pinniped. This listing is based on an extensive review of sightings and stranding reports for the Gulf of Mexico (Jefferson and Schiro, 1997). The sperm whale is the only endangered cetacean likely to occur in the vicinity in the site. There is a resident population of sperm whales in the northern Gulf of Mexico.

Five species of sea turtles may occur in the vicinity of the proposed site location. All are protected under the Endangered Species Act (ESA). The hawksbill sea turtle (*Eretmochelys imbricata*), Kemp's Ridley sea turtle (*Lepidochelys kempii*), and leatherback sea turtle (*Dermochelys coriacea*) are endangered species. The loggerhead sea turtle (*Caretta caretta*) is a threatened species. The Atlantic green sea turtle (*Chelonia mydas*) is threatened, except for the Florida breeding population, which is endangered.

### **3.1.6 Socioeconomic Environment**

Review of the information regarding features relevant to the socioeconomic environment affected identified the following.

*Fishing:* The Escambia LAARS permitted artificial reef site has been in existence for nearly a decade and contains public and private artificial reefs scattered throughout the site. Because of the designation on the nautical chart as an "obstruction" area, and the presence of artificial reef structures, commercial trawling within the site is highly unlikely. According to FWCC the LAARS is managed in accordance with an artificial reef management plan developed for the

area. Commercial hook and line fishing currently occurs at existing artificial reefs located within the LAARS.

*Artificial Reefs:* FWCC and ECMRD report there are 24 publicly constructed artificial reefs in LAARS, including concrete prefabricated artificial reef modules, concrete bridge rubble, concrete culverts, steel (M60) battle tanks, steel tugboats and barges, and two retired energy platform jackets. Most artificial reefs are located at the northwestern portion of LAARS and the closest structure is more than 1.5 nm west of the proposed site.

*Oil and Gas Platforms:* Lease block information available from the Minerals Management Service (MMS) and information contained on NOAA NOS Chart 11360 indicates no oil or gas platforms in the vicinity of the site.

*Petroleum Lease Blocks:* MMS information indicates that the closest sites are two outer continental shelf (OCS) leases approximately 11 nm southwest of the proposed site. Oil and gas activities have been prohibited for a number of years in the region.

*Communications Cables:* NOAA NOS Chart 11360 indicates no communication cables in the vicinity of the site.

*Safety Fairways (Shipping Channels):* No safety fairways are located in the vicinity, the NOAA NOS navigational chart depicts the closest fairway is 14 nm north of the site. Two Fairway anchorages also exist that bracket the fairway near the entrance to Pensacola Pass approximately 18 nm to the northwest of the proposed site.

*Submerged Pipelines:* According NOAA NOS Chart 11360, no submerged pipelines are located in the vicinity of the site.

### **3.1.7 Cultural Resources**

Review of the information regarding features relevant to the cultural resources environment affected identified the following.

*Submerged Cultural Resources:* According to the Florida Department of State, no cultural resources including historical shipwrecks are located in the vicinity of the proposed site.

*Diving:* Recreational diving in the LAARS includes diving at the 24 other artificial reefs that have been placed there. The preferred diving depth for most dive charters is 70-100 ft (Ditton et al. 1999). An Artificial Reef Plan has been developed for the LAARS areas that includes aspects and elements for diving activities and the periodic artificial reef monitoring that is in part conducted by information gathering via diving.

## **3.2 ALTERNATIVE REEF SITE: GEORGIA/SOUTH CAROLINA**

### **3.2.1 Description of Proposed Artificial Reef Site**

The proposed site is located off the southeast Atlantic Coast, approximately 50 nm offshore of the Georgia/South Carolina coasts. The region is rich in marine life with significant

oceanographic features. Physical features such as the Gulf Stream and the Charleston Bump influence the distribution and abundance of many species in the area. Several species of concern have been sited in the vicinity of the proposed site, including several protected sea turtle species and many species of marine mammals including the highly endangered North Atlantic Right Whale (MRA, 2002).

The water depth at the proposed artificial reef site varies between 400-600<sup>+</sup> ft. The site is located over open ocean water and is influenced by the western wall of the Gulf Stream.

### **3.2.2 Air Quality**

The USEPA's Aerometric Quality System (AQS) data are available through the year 2003. Coastal counties along the states of Georgia and South Carolina have no non-attainment areas for any of the six criteria pollutants (USEPA, 2003). The proposed alternative site is well offshore and is located in an area that is not classified for priority pollutants under the Clean Air Act.

### **3.2.3 Water Quality**

Because the proposed reef site is well offshore, water quality is expected to be excellent. Open waters tend to have high water clarity, dissolved oxygen concentrations at or near saturation, and low concentrations of nutrients, suspended matter, and contaminants such as trace metals and hydrocarbons (Alexander et al., 1977; Trefry, 1979).

*Waves and Currents:* Since the proposed site is subject to major storm events in the form of hurricanes, significant currents are generated. However, based on the depth of the proposed artificial reef site, e.g., 400-600 ft, the force of the currents will be significantly reduced with regard to movement and stability of the ship.

*Data Buoys:* The closest data buoy station TYBG1 - U.S. Navy Tower R8, is located approximately 17 nm west of the proposed site. This buoy provides wind speed and wave height data for the site vicinity.

### **3.2.4 Substrate**

The coastlines of the U.S. are characterized by an extension of the continental landmass known as the continental shelf. This shelf is relatively shallow, and is tens of meters deep compared to the thousands of meters deep in the open ocean, and extends outward to the continental slope where the deep ocean truly begins. The continental shelf regions also contain the highest amount of benthic life. Most of the sands on the continental shelf are remnants of delta and riverine sediments. Continental slope sediments in the South Atlantic area are primarily composed of silt and clay (Tucholke, 1987). No sediment thickness data was available for the immediate vicinity of the site. The site also lies close to the continental shelf; therefore when the exact drop point is determined, consideration should be given when deciding the exact drop location.

A review of OPIS Mapping Tool illustrates that the ocean floor in the vicinity of the proposed artificial reef consists of both hard and soft bottom areas. As mentioned in the previous paragraph, soft bottom areas consist primarily of silt and clay sediment, where hard bottom areas

consist of consolidated sedimentary rock. These hard bottom areas are known to make ideal habitats for deepwater fish in this location.

*Ordnance and other Dumping Areas:* Based on review of the NOAA NOS Chart 11496 and of information contained in the NOAA OPIS Mapping Tool, there are no identified dumping or ordnance dumping sites located in the vicinity of the site.

### **3.2.5 Biological Resources**

The proposed reef site is a region rich in marine life with significant oceanographic features. Physical features such as the Gulf Stream and the Charleston Bump influence the distribution and abundance of many species in the area.

There have been sightings of the North Atlantic Right Whale in the vicinity of the proposed site. However, the waters of the proposed reef site are not part of the critical habitat of the North Atlantic Right Whale. The closest designated critical habitat for the Northern Right Whale is greater than 100 miles southwest of the proposed site location (MRA, 2002).

The fish fauna in the area is diverse, with hundreds of species representing a broad taxonomic range (Schwartz 1989). However, none of the species within the area are listed as threatened or endangered under the ESA. However, one species of concern does exist here, the snowy grouper. One purpose of creating the artificial reef would be to provide a habitat for this commercially important fish species (Florida and Georgia Department of Natural Resources).

Five species of sea turtles may occur in the area of proposed site. All are protected under the ESA. The hawksbill sea turtle (*Eretmochelys imbricata*), Kemp's Ridley sea turtle (*Lepidochelys kempii*), and leatherback sea turtle (*Dermochelys coriacea*) are endangered species. The loggerhead sea turtle (*Caretta caretta*) is a threatened species. The Atlantic green sea turtle (*Chelonia mydas*) is threatened, except for the Florida breeding population, which is listed as endangered (MRA, 2002).

Based on review of sources of information available from NOAA and the OPIS Mapping Tool, no protected areas or critical habitat areas are listed as Marine Protected Areas in the region that includes the proposed reef site.

### **3.2.6 Socioeconomic Environment**

*Fishing:* Commercial fisheries in North Carolina, South Carolina, Georgia, and the east coast of Florida harvested 110,000 tons of finfish and shellfish in 2000, with an economic value of over \$215,000,000 (NMFS, 2001a). Much of the fishing effort resulting in these landings occurred within the proposed site area. Dominant fisheries include croaker, shrimp, vermilion snapper, and shark. Gear types commonly used within the area include longlines, gillnets, otter trawls, and pots/traps. Seasonal fishing effort within the area depends on the distribution and abundance of the target fish stocks. Some fisheries operate year-round while others are highly seasonal. Fishery seasons and effort may change between years as a result of state and federal regulations brought about by such concerns as small stock sizes and high fishing pressures. The reproductive potential and success of fishery stocks, as well as essential fish habitats (EFHs), are also taken

into consideration when making management decisions regarding regulation of season length and catch quotas. Some species have landing quotas that, when reached, close that fishery; while other fisheries have dates and/or geographical areas designated as closed for fishing (MRA, 2002).

*Artificial Reef:* According to the OPIS Mapping Tool, no artificial reefs are located in the immediate vicinity of the site. However, since 1984, the South Carolina Department of Natural Resources (DNR) and Georgia DNR have applied for and received Special Management Zone (SMZ) designations for artificial reefs established within federal waters off both states (29 SPZs off SC; 19 SPZs off GA). The site will be designated as a SPZ if ex-ORISKANY artificial reef is sited.

*Oil and Gas Platforms:* Minerals Management Service (MMS) information indicates that no oil or gas platforms exist in the vicinity of the proposed artificial reef area.

*Petroleum Lease Blocks:* Based on information available from the Minerals Management Service, there are currently no leases in existence for oil and gas exploration off the Atlantic Coast.

*Communications Cables:* NOAA NOS Chart 11496 indicates no communication cables in the vicinity.

*Safety Fairways (Shipping Channels):* NOAA NOS Chart 11496 indicates that no safety fairways are located in the vicinity of the proposed site.

*Submerged Pipelines:* NOAA NOS Chart 11496 shows no submerged pipelines located in the vicinity of the proposed site.

### **3.2.7 Cultural Resources**

*Submerged Cultural Resources:* According to the Georgia DNR, no cultural resources including historical shipwrecks are located in the vicinity of the site.

## **3.3 ALTERNATIVE REEF SITE: MISSISSIPPI**

### **3.3.1 Description of Proposed Artificial Reef Site**

The proposed reef site is located in a region known as the Mississippi – Alabama Shelf, a triangular shaped region between the Mississippi River Delta and DeSoto Canyon. The continental shelf topography and sediment distribution results from combined sea level transgressive-regressive episodes and deltaic progradation and destruction (Vittor et al. 1985). The seafloor in the site vicinity is characterized by mixed clastic and carbonate depositional systems, which thins consistently to the south. The site is located in an area with water depth of 288 ft at mean low water.

### **3.3.2 Air Quality**

The state of Mississippi has no non-attainment areas for any of the six criteria pollutants among its coastal counties (USEPA, 2001). The proposed site is well offshore and is located in an area that is not classified for priority pollutants under the Clean Air Act.

### **3.3.3 Water Quality**

As described for similar sites within the Gulf of Mexico, water quality within the Gulf of Mexico is influenced by freshwater inflows from rivers. These waters carry fine sand sediments that affect water clarity and quality, as well as substrate deposition. In the northern Gulf of Mexico, nutrient inputs from both the Mississippi and Atchafalaya Rivers generate enhanced primary production on the continental shelf. Annual average productivity has been measured as being approximately  $550 \text{ gC m}^{-2} \text{ y}^{-1}$  (Lohrenz et al. 1999). Upwelling is believed to provide additional sources of nutrients, and may occur due to bottom Ekman transport associated with currents on the Outer Continental Shelf (OCS) (Sahl et al. 1993). Contaminations by trace metals and hydrocarbons in the water column, sediments, and organisms reflect minimal anthropogenic contamination (Vittor et al. 1985).

Because the proposed reef site is well offshore, water quality is expected to be excellent. Open waters tend to have high water clarity, dissolved oxygen concentrations at or near saturation, and low concentrations of nutrients, suspended matter, and contaminants such as trace metals and hydrocarbons (Alexander et al. 1977; Trefry, 1979).

A three-year, large-scale marine environmental baseline study conducted from 1974 to 1977 in the eastern Gulf of Mexico region resulted in an overview of the Mississippi, Alabama, and Florida (MAFLA) OCS environment to 200 meters (SUSIO, 1977; Dames and Moore, 1979). Analysis of water, sediments, and biota for hydrocarbons indicated that the MAFLA area is pristine, with some influence of anthropogenic and petrogenic hydrocarbons from river sources. Analysis of trace metal contamination for the nine trace metals analyzed (barium, cadmium, chromium, copper, iron, lead, nickel, vanadium, and zinc) also indicated no contamination. Revisits conducted a decade later found no contamination from trace metals and transient hydrocarbon increases dissipated by the loop current in the Alabama and Mississippi areas (Brooks, 1990).

The SAIC (1997) summarized information about water quality on the shelf from DeSoto Canyon to Tarpon Springs, and from the coast to 200 meters of water depth. Several small rivers and the Loop Current are the primary influences on water quality in this region. Because there is very little onshore development in this area, the waters and surface sediments are uncontaminated. The Loop Current flushes the area with clear, low-nutrient water.

*Waves and Currents:* Since the proposed site is subject to major storm events in the form of hurricanes, significant currents are generated. However, based on the depth of the proposed reef site (i.e., 288 ft), the force of the currents will be significantly reduced with regard to movement and stability of the ship. Average tidal range within the Gulf of Mexico is 2 ft or less.

### **3.3.4 Substrate**

The substrate in the vicinity of the site is characterized as a very fine sand and mud layer with an underlying sand unit. Sedimentary deposits are largely the product of fluvial discharge associated with the Mississippi and Atchafalaya Rivers. Burred channels and pinnacles reaching heights of 20 m (60 ft) or more can be found singly or in clumps along the seafloor in this area. These features are often oriented in a northwest to southwest direction and are surrounded by a sand bottom (CSA, 1992). Tropical and subtropical suspension-feeding invertebrates dominate biological communities occurring on the pinnacles. Generally, the upper portions of the pinnacles support more diverse and abundant communities, while the base of the pinnacles are reduced in both numbers and types of organisms. No true hard bottom areas are known to exist in this area (CSA, 1992); however, if these low relief features were present, it is very likely that they would be covered by shifting sand, effectively reducing the epibiota and fish populations associated with these types of communities.

### **3.3.5 Biological Resources**

*Benthic:* Benthic biomass of communities on the Gulf of Mexico continental shelf varies widely in space and time. Rabalais et al. (1999) conducted an investigation of continental shelf benthic communities of the Gulf of Mexico and found meiofaunal distributions east of the Mississippi Delta to be patchy spatially and seasonally. Overall, the soft, muddy seabed floor does not offer much substrate for algae or invertebrates, resulting in reduced numbers of individuals and low community diversity.

*Fish:* Although much of the U.S. continental shelf in the Gulf of Mexico region lacks significant structural complexity, numerous oil drilling platforms and other man-made structures in the north-central Gulf of Mexico area do provide additional habitat that attracts fish (Hastings et al. 1976; Sonnier et al. 1976). Hastings, et al. (1976) found that the diversity and abundance of fish around artificial structures varies by season, with the highest numbers in the summer. Cooler water temperatures in the fall and winter seasons result in an offshore and/or southward movement of fish. Without the structural complexity of the drilling platforms or other man-made structures, the proposed reef site currently supports relatively few fish species.

Recreational fishing of Spanish mackerel, red drum, jack crevelle, bonito, tarpon, speckled trout, red snapper, cobia, shark, black drum, sheephead, and flounder occurs offshore of Mississippi, while commercial fishing interests in Mississippi consist primarily of menhaden and shrimp.

*Habitats of Particular Concern:* There are no natural coral reefs present within this part of the Gulf of Mexico.

*Protected Habitats:* Based on a review of information available from NOAA and MMS, no Marine Protected Areas or critical habitat areas are listed in the north-central Gulf of Mexico region, which includes the proposed reef site.

Due to increased nutrient enrichment from the Mississippi River water that contains high nutrient loads from land-based sources, adverse impacts to the Mississippi River Delta region of the Gulf of Mexico have resulted. A common effect of this phenomenon is the excessive production of algae, which can kill benthic marine organisms by reducing the concentration of dissolved oxygen in bottom waters through the decomposition of large amounts of organic material. The area impacted by this over-enrichment results in bottom water hypoxia, and can be found

predominantly to the west of the Mississippi River Delta area of the north-central region of the Gulf of Mexico. This area of bottom hypoxia is not located near the proposed reef site, and does not have an influence on dissolved oxygen (DO) levels at the proposed reef site.

*Marine Mammals:* Of the 29 species occurring in the eastern Gulf of Mexico region, all are cetaceans (whales and dolphins), with the exception of the West Indian Manatee. While it is possible that the 29 species of marine mammals may occur within the eastern Gulf of Mexico region, only 21 of those species regularly occur there. The cetacean fauna of the northern Gulf of Mexico's continental shelf ordinarily consists of the bottlenose dolphin and the Atlantic spotted dolphin. Beyond the shelf's edge, the cetacean community consists of 19 species, including the Bryde's whale, the sperm whale, pygmy and dwarf sperm whales, three species of beaked whales, and 12 members of the oceanic dolphin family (Jefferson and Schiro, 1997).

Oceanographic features such as eddies are important factors in cetacean distribution, as their prey are attracted to the increased primary productivity associated with some of these features. The continental shelf is very narrow near the Mississippi River Delta, and the nutrient rich river plume extends into deep waters where primary productivity and zooplankton abundance are amplified. This region off the Mississippi River Delta appears to attract a large number of oceanic cetaceans, especially sperm whales.

In the northern Gulf of Mexico, there are large numbers of cetacean sightings on the continental shelf (particularly along the shore), near the continental shelf break, and into the waters with a bottom depth greater than 3,000 meters (MRA, 2003).

*Threatened and Endangered Species:* Seven marine mammal species with stranding or sighting records in the eastern Gulf of Mexico region are currently listed as endangered: five baleen whale species (blue, fin, humpback, North Atlantic right, and sei), one toothed whale species (sperm whale), and one sirenian (West Indian manatee) (MRA, 2003). Based on visual observations, these species could occur in the vicinity of the proposed site.

Currently, no endangered or threatened species are known to utilize this area as primary habitat for breeding or resting, nor has this area been designated as critical habitat.

*Sea Turtles:* Of the seven living species of sea turtle, five have been documented to occur in the eastern Gulf of Mexico and Florida Straights regions that includes the proposed site. These include the green, hawksbill, loggerhead, Kemp's Ridley, and leatherback sea turtles. All five of these sea turtle species are protected under the ESA. The hawksbill, Kemp's Ridley, and leatherback sea turtles are listed as endangered, and the loggerhead sea turtle is listed as threatened. As a species, the green sea turtle is also listed as threatened although specific nesting populations are currently listed as endangered. Of the five sea turtle species, loggerheads are the most common inhabitants of the Gulf of Mexico followed by the Kemp's Ridley (MRA, 2003).

### **3.3.6 Socioeconomic Environment**

*Artificial Reefs:* There are no other artificial reefs within the vicinity of the site. The nearest Mississippi permitted reef sites are located approximately 25 nm north/northwest of the proposed site.

*Fishing:* Commercial shrimping is a highly productive industry within the Gulf of Mexico. Preliminary data on shrimping frequency indicates a high level of shrimping occurs in the Gulf of Mexico waters in the vicinity of the proposed area. However, several hangs in the proximity of the proposed site inhibit commercial fishing and shrimp trawlers generally avoid the area.

Recreational fishing of Spanish mackerel, red drum, jack crevelle, bonito, tarpon, speckled trout, red snapper, cobia, shark, black drum, sheephead, and flounder occurs offshore of Mississippi. Other commercial fishing interests in Mississippi include menhaden.

*Petroleum Lease Blocks:* Based on MMS petroleum lease block data, the Mississippi proposed reef site is located in the southeast quadrant of a currently inactive petroleum lease block. Eight other petroleum lease blocks border the lease block that contains the site, two of which are inactive (east and south sides), and six of which are active (north, west, southwest, and southeast sides). Based on the location of the proposed reef site within the inactive petroleum lease block, the closest active petroleum lease block is approximately 0.17 nm to the southeast.

*Oil and Gas Platforms:* Oil and gas platform location information contained on NOAA NOS Chart 11362 indicates that there are no oil or gas platforms in close proximity to the proposed site. The nearest oil or gas platform is located approximately 2.5 nm southeast of the proposed site. There is a cluster of oil and/or gas platforms located approximately 9.5 nm to the southwest of the proposed reef site.

*Communications Cables:* The presence of communication cables at the proposed site location was unknown at the time of the application submittal. However, the Federal Communications Committee (FCC) has been contacted and has provided a list of companies, company contacts, and landing points for cable in the United States. The state of Mississippi is currently contacting these companies in an effort to determine if communication cables are present at the proposed reef site.

*Safety Fairways (Shipping Channels):* There are no shipping channels present in the proposed reef site. The nearest safety fairways are approximately 28 nm northeast and northwest of the proposed reef site.

*Submerged Pipelines:* According the Mississippi DMR there are no oil and gas pipelines present in the proposed reef site.

*Diving:* Most recreational diving in the Gulf of Mexico waters off of Mississippi occurs in and around oil drilling platforms and other man-made structures. The recommended maximum recreational diving depth by most organizations is 130 ft, with most charters preferring to limit divers between 70 – 100 ft. These areas are visited most frequently in the summer months (June-August), and visited less frequently in the spring (Ditton et al. 1995).

### **3.3.7 Cultural Resources**

*Submerged Cultural Resources:* Over 400 shipwrecks have been documented in the Gulf of Mexico; however, none are known to exist in or around the proposed reef site.

The Automated Wreck and Obstructions Information System (AWOIS) data documents several previously sunken vessels in the general vicinity of the reef site; however none are known to exist within 25 nm of the reef site.

### **3.4 ALTERNATIVE REEF SITE: TEXAS**

#### **3.4.1 Description of Proposed Artificial Reef Site**

The proposed site for Texas is located in the northwestern portion of Gulf of Mexico east of Corpus Christi, TX. The proposed site is in a portion of the Gulf of Mexico that is characterized as generally flat or gently sloping. The seafloor in the site vicinity is comprised of mud, clay or fine-grained sand.

Because the proposed site is located in relatively deep water of 212-214 ft, the force of currents produced by a major storm event will be reduced. The high profile of ex-ORISKANY (~160 feet from keel to top of conning tower) minimizes the chances the ship, as a reef, will be covered with a mass of sediment from large-scale waves or transport phenomena. Hurricane events are the most severe weather activity in the Gulf of Mexico; high winds and larger-than-normal wave crests create bottom disturbances. However, due to the size of the ship, it is not anticipated hurricane-driven currents would move the reef.

#### **3.4.2 Air Quality**

With the exceptions of Galveston and Houston Counties, the state of Texas has no non-attainment areas for any of the six criteria pollutants among its coastal counties (USEPA, 2001). Galveston and Houston Counties are located greater than 180 miles from the proposed location, and therefore, do not have a significant impact to air quality in the vicinity. The proposed site is well offshore and is located in an area that is not classified for priority pollutants under the Clean Air Act.

#### **3.4.3 Water Quality**

As described for similar sites within the Gulf of Mexico, water quality is influenced by freshwater inflows from rivers. These waters carry fine sand sediments that affect water clarity and quality, as well as substrate deposition. These waters form estuaries, a transition zone between the freshwater from rivers and higher salinity waters from ocean tides.

A three-year study conducted by the MMS gathered samples for water quality, sediment samples, and specimens, as well as measurements of salinity and temperature in the Gulf of Mexico near South Texas at depths of 18-134 m (MMS, 1980). The study found that the biotic communities were moderately diverse and ecologically pristine. The distribution and abundance of benthic invertebrates and fishes was predominantly dependent on the depth and type of substrate. Contaminations by trace metals and hydrocarbons were relatively non-existent in the water column, sediments, and organisms.

*Water Currents:* Water currents at the Texas site are characterized as mild; warm-core and cold-core eddies/rings may spin off from the Loop Current in the western portion of the Gulf of Mexico. Wind driven currents are typically at speeds less than 0.5 knot and are tempered by

depth and distance from estuaries. No significant sediment transport by typical currents is expected at the site location based on its depth in excess of 200 ft. In addition, the high elevation of the ship prevents burial by transported sediments. Measured wave heights (tidal range) average 2 feet or less.

#### **3.4.4 Substrate**

Off of Texas, the Gulf of Mexico coastline exhibits a shelf extending from 40 to 110 miles off the coast. The Texas coast has 36 different banks, which rise off the shelf floor. The proposed site is in the vicinity of the Aransas Bank, which is geographically/geologically distinct from the shelf-edge banks. These areas show a reduced biota and have relatively low relief, few hard-substrate outcrops, and a thicker sediment cover than the other banks. The seabed of the proposed site is flat to gently sloping. The seabed is composed of mud, clay, and fine-grained sand.

No sediment thickness data was available for the immediate vicinity of the site.

#### **3.4.5 Biological Resources**

The biological resources in the vicinity of the Texas site are characterized by habitats typical of many locations with sandy substrates in the Northwestern Gulf of Mexico. The area includes minimal hard-bottom coverage. The soft, muddy seabed floor does not offer much substrate for algae or invertebrates to attach to.

The proposed area currently supports relatively few fish species for habitat. Recreational fishing of red snapper, kingfish, dorado, yellowfin and blackfin tuna, ling, wahoo, shark, amberjack and vermilion snapper are often caught offshore of Port Aransas, TX in the vicinity of the proposed area (TPWD, 2004).

*Protected Habitats:* Based on a review of information available from NOAA and Minerals Management Service (MMS), no Marine Protected Areas or critical habitat areas are listed in the western Gulf of Mexico region that includes the proposed site. There are no natural coral reefs present within this part of the Gulf of Mexico.

As stated earlier for other sites, 29 species of marine mammals are known to occur in the Gulf of Mexico (Davis et al. 1998). There are 28 species of cetaceans – 7 mysticete (i.e., baleen whales), 21 odontocete (i.e., toothed whales and dolphins) – and 1 sirenian species, the manatee (Jefferson et al. 1992). The most common species found in the all-water depths offshore of Corpus Christi, TX, is the bottlenose dolphin, *Tursiops truncatus*. The sperm whale is the only endangered cetacean likely to occur in the northern Gulf of Mexico, predominantly found in deep ocean waters (over 500 m in depth).

Recent studies have attempted to determine the distribution and abundance of whales and dolphins in areas along the continental slope in the north-central and western Gulf of Mexico using aerial and shipboard surveys, shipboard acoustic surveys, hydrographic data, and tagging and tracking of sperm whales. Davis, et al. (1995) found that there were three distinct depth ranges for the presence of cetaceans in the area. Species found on the continental shelf or along the shelf break (approximately 100 m or 328 ft) included the Atlantic spotted dolphin and

bottlenose dolphin. Species found along the mid-to-upper slope (400 m or 1,313 ft) consisted only of Risso's dolphin. Sperm whales, pygmy/dwarf sperm whales, pantropical spotted dolphins, striped dolphins, and Mesoplodon spp. were found in deep waters along the mid-to-lower slope in water over 1,000 m (3,280 ft) deep (Davis et al. 1995). Sperm whales have been confirmed by visual surveys as present in the northern Gulf of Mexico in deep-ocean water depths in all seasons, but sightings are more common during the summer months (NOAA, 2002).

Fritts and Reynolds (1981) reported on aerial surveys of marine mammals, birds, and sea turtles that were conducted at four survey areas in the Gulf of Mexico. This pilot study was designed to develop techniques and collect preliminary data on vertebrate fauna of the OCS waters. Sperm whales were documented in waters off Texas. Marine turtles were common in the eastern Gulf of Mexico but virtually absent from western gulf survey areas. A recent study by McDaniel et al. (2000) also reports that the relative abundance of sea turtles sighted in the eastern Gulf of Mexico is greater sightings in the western Gulf of Mexico. Nearshore sea turtle abundances were proportionately higher than in offshore western Gulf of Mexico areas, with the greatest density of sea turtles found in the 0-60-ft depth areas.

No endangered or threatened species are known to utilize this area as primary habitat for foraging, breeding, or resting, nor has this area been designated as critical habitat.

### **3.4.6 Socioeconomic Environment**

Review of the information regarding features relevant to the socioeconomic environment affected identified the following.

*Fishing:* Commercial shrimping is a highly productive industry within the Gulf of Mexico. The Texas shrimp fishery is one of the most valuable and one of the largest seafood industries in the U.S. The Texas Parks and Wildlife Department sells about 7,000 commercial shrimp boat licenses and about 2,000 non-commercial shrimp trawl licenses each year. Texas landings exceeded 73 million pounds of shrimp in 1989, worth more than 142 million dollars to the commercial fishermen. Preliminary data on shrimping frequency indicates a high level of shrimping occurs in the Gulf of Mexico waters in the vicinity of the proposed area. McDaniel et al. (2000) reported that shrimping intensities in the western Gulf of Mexico were highest near shore and taper off gradually at deeper depths. For the Texas site, several hangs in the proximity of the proposed site inhibit commercial fishing and shrimp trawlers generally avoid the area (e.g., because fishing nets and trawling devices get caught on the hangs).

The Texas Parks and Wildlife Department's weekly fishing reports for 2003 identify the following species for recreational fishing offshore of Port Aransas, TX in the vicinity of the proposed area: red snapper, kingfish, dorado, yellowfin and blackfin tuna, ling, wahoo, shark, amberjack and vermilion snapper (TPWD, 2004).

*Petroleum Lease Blocks:* MMS information indicates that there are four property owners and/or lessees whose property adjoins the proposed site (MU A-20); however, they will not be affected by the presence of reefed material at this site. In fact, one property owner has drilled three test wells within this OCS Block of the site and has temporarily abandoned the wells at the seafloor.

*Oil and Gas Platforms:* Lease block information available from MMS and information contained on NOAA NOS Chart 11307 indicates no oil or gas platforms are located in the vicinity of the Texas site. The nearest oil and gas platforms are located over 3 nm from the proposed reef site. There is no indication that the owners/lessees have any future plans to drill in the area due to the lack of natural resources in these lease blocks.

*Communications Cables:* NOAA NOS Chart 11307 indicates no communication cables are present in the vicinity of the proposed site.

*Safety Fairways (Shipping Channels):* There are no shipping channels present in the proposed Texas site. Shipping channels are located 9-13 nm from the proposed site.

*Submerged Pipelines:* There are no oil and gas pipelines present near the proposed Texas site. The nearest oil and gas pipelines are located over 3 nm from the proposed reef site.

*Diving:* Most recreational diving in the Gulf of Mexico waters of Texas occurs at the Flower Gardens National Marine Sanctuary. The preferred diving depth for most dive charters is 70-100 ft (Ditton et al. 1999). The Texas Parks and Wildlife Department reef sites off Galveston, Port Aransas, and Freeport are reported as the most popular destinations for boat captains. These areas are visited most frequently in the summer months (June-August), and visited less frequently in the spring (Ditton et al. 1995).

### **3.4.7 Cultural Resources**

*Submerged Cultural Resources:* Over 400 shipwrecks have been documented in the Gulf of Mexico. The Texas Artificial Reef Program reports that the Automated Wreck and Obstructions Information System (AWOIS) data documents a previously sunken vessel in the immediate vicinity of that portion of MU-A-20 which was selected as the reef site. The shipwreck of the *John Phillips* (sunk in 1980) is listed in the vicinity of the proposed area (27°23'01.14"N latitude/96°40'00.90"W longitude), greater than 120 miles from the proposed site.

## **3.5 NO ACTION ALTERNATIVE**

The No Action alternative involves continued storage and maintenance at the MARAD Beaumont NDRF site. The MARAD Beaumont site is located in southeastern Texas on the Neches River system immediately southeast of the City of Beaumont, TX. MARAD vessels are anchored in a basin north of the Neches River shipping channel. Land-based facilities are accessed off County Highway 347, and include parking, excess boat and material storage, and other support service facilities.

The site consists of offices, warehouse space, small industrial shops, and pier-side and/or harbor-bottom mooring fixtures for vessel mooring. The sites operate small craft for inactive vessel access, provide equipment or material storage or workspace, and may operate floating cranes or fixed cranes. Piers and moorings are provided with electricity for lighting, dehumidification systems, cathodic protection, and fire and flooding alarm systems.

This MARAD site is a light industrial facility that has operations that utilize hazardous materials such as paints and generate small quantities of hazardous and non-hazardous wastes during

normal work. Operations at the MARAD Beaumont site are conducted in accordance with federal and state environmental requirements.

Ex-ORISKANY has been inactivated. Inactivation includes preserving ship systems; sealing openings in the ship, such as smoke stacks and hatches; removing materials; cleaning tanks, bilges, and void compartments; sealing the propeller shaft(s); and removing equipment that may be needed elsewhere. On arrival at the MARAD NDRF site, dehumidification, cathodic protection and fire and flooding alarm systems are installed and the ship is moored as appropriate, with electric power provided to operate the preservation equipment. Navy (or NDRF) personnel or their contractor representatives make periodic inspections of the ship to identify any discrepancies from preparation requirements.

The No Action alternative does not provide for disposal or reuse of the vessel. Accordingly, this alternative merely delays the final disposition of ex-ORISKANY to some unknown point in the future. There is limited space available at existing facilities for long-term storage. In addition, long-term storage poses increasing risk of accidental sinking from hull corrosion or storms, as well as environmental damage from spills or leaks. High maintenance costs are also an issue. Ex-ORISKANY is an aging vessel and may have increasing corrosion or environmental incidents; therefore, this vessel requires more extensive maintenance than younger vessels.

## **4.0 ENVIRONMENTAL CONSEQUENCES**

### **4.1 GENERAL IMPACTS**

The approach used in the evaluation of direct and indirect environmental consequences was to consider the potential for each alternative to impact any one of the four primary environmental and socioeconomic concerns. These are:

- Physical Environment, including air resources, water resources, substrate resources, energy utilization, and noise;
- Biological Environment, including benthic organisms, fish and other pelagic organisms, marine mammals, and threatened and endangered species;
- Socioeconomic Environment, including navigation, and costs and benefits; and
- Cultural Resources, including both historic Navy vessels and submerged resources.

The potential for impacts from proposed action is described and evaluated below. As part of the process for the proposed action, environmental preparation as well as protective measures to prevent impacts will be completed, and are identified and discussed in narrative sections where applicable. Potential cumulative environmental impacts are also described and evaluated, as appropriate.

#### **4.1.1 Hazardous Substances**

The Navy has analyzed potential impacts to human health and the environment associated with creating artificial reefs with Navy vessels in Navy's shallow water ship reefing studies (Draft Human Health Risk Assessment (HHRA) and Screening level Ecological Risk Assessment (SERA)). These studies address potential impacts to human health and the environment from shipboard hazardous materials and results are reviewed below.

The risk assessments were conducted in partnership with the EPA, and development of the studies included technical peer review, comment, and oversight. EPA scientists have been involved in the Human Health Risk Assessment, Screening level Ecological Risk Assessment, and PCB Leach-Rate projects from the beginning. The EPA Office of Pollution Prevention and Toxic Substances has provided representation to the technical working groups that were responsible for directing those studies and reviewing the results. Navy and EPA have continued to maintain this partnership with the understanding that the final reports for those studies will be representative of the review process that they have participated in and that each party accepts the report's findings and conclusions. As stated in Section 2.1.5, the Navy will request a risk-based PCB disposal approval under 40 CFR 761.62(c) from EPA National Headquarters or the EPA regional office having jurisdiction for the selected state, prior to conducting the proposed action.

The SERA and HHRA contained the results of studies conducted at sites located along the coastline of South Carolina. In addition, the risk assessments included results of studies from a deepwater site off the coast of San Diego, California as well as laboratory leach rate studies. The ex-VERMILLION was the primary focus of the risk assessments because it represented an artificial reef site created from a Navy vessel. Ex-VERMILLION, a Navy-commissioned merchant vessel, was constructed in 1944 and stricken in 1977. The vessel was sunk as an

artificial reef in 1987. Ex-VERMILLION dimensions are: length 459 ft 2 in, beam 63 ft, and height 55 ft. The artificial reef site has a depth of approximately 92 feet and is located on the continental shelf along off the coastline of Georgetown, South Carolina. Information obtained regarding ship preparation methods utilized at the time of vessel sinking identified that oils and other fluids were removed from the vessel as well as liquid forms of PCBs located in identified electrical capacitors and other types of electronic equipment.

The paper entitled, *Assessing the Ecological Risk of Creating Artificial Reefs from ex-Warships, September 2003*, summarizes the SERA. The paper states that risk assessment included analyses of data collected regarding existing artificial reefs from Navy Liberty-class warships located off the coast of South Carolina and utilized data for sediment aspects and benchmarking from a previous study of a vessel sunk in deep water under the SINKEX program. The risk assessment utilized data from sampling and analysis of fish tissues, site sediments, and laboratory leach rate data for PCBs for specific shipboard material types. The paper concluded that:

- Risk of sediment exposure was negligible
- There was negligible to low risk of exposure to demersal fish and reef invertebrates
- Low risk of exposure to dolphins and fish eating birds
- Negligible to low ecological risk of exposure to PCBs will not pose an unacceptable risk to the environment

The HHRA concludes that contamination at the studied reef site is unlikely to pose a significant health risk to the sports fisherman from ingestion of the predominant sports fish.

Based on review of the SERA and HHRA, there was no significant impact to human health and the environment identified for the ex-VERMILLION site, the primary Navy ship artificial reef location evaluated. Further, the Navy believes that substantive conclusions from the SERA and HHRA are also applicable for the proposed action at three of the four alternative reef site locations for the following reasons:

- Ex-ORISKANY and ex-VERMILLION are of the same vintage (i.e., 1944), and as such were commissioned and maintained by the US Navy during similar timeframes. Accordingly, construction materials and parts for the ships were purchased from items that were readily available from commercial industry when built, and during subsequent Navy maintenance periods. Based on construction and maintenance dates, and contemporaneous use of similar shipboard materials, PCB loading would be comparable.
- Environmental preparation standards for the proposed action (Section 2.1.1- Draft – BMPs) would meet or exceed environmental preparation utilized to prepare ex-VERMILLION when sunk as an artificial reef in 1987. Specifically, environmental preparation in accordance with the Draft – BMPs would exceed previously utilized preparation methods in the case of removal of all loose floatable materials and through a significantly increased level of diligence accomplished during materials removal resulting from designated ship condition inspections. Inspections conducted by the State and Coast Guard to ensure environmental ship preparation are completed in accordance with the BMP standards.

- The range of physical conditions at sites in the study areas are consistent with the alternative reef site locations for the proposed action with the exception of the Georgia/South Carolina alternative reef site, which is located along the Atlantic Continental Shelf in deep water. However, this reef location would be designated for habitat development and fishing of reef species would be prohibited by the State. The remaining sites have comparable navigational clearance (45-60) and therefore possess a similar vertical profile for reef habitat. Further, the proposed alternative sites all have good water quality and comparable substrate materials and water currents. Steady state water quality as affected by PCB leaching would be comparable.

Ex-VERMILLION and ex-ORISKANY are both ex-Navy warships of similar vintage, and therefore are likely to have comparable PCB loadings. Although ex-ORISKANY is a larger vessel, and therefore would include more electrical cables, felt gaskets, bulkhead insulation, etc., that potentially contain regulated PCB concentrations, this differential would likely be more than offset by the fact that ex-ORISKANY, prior to sinking, will undergo environmental preparations in accordance with the EPA BMPs and be subject to a risk-based PCB disposal approval by EPA. These requirements were not in place when ex-VERMILLION was prepared for sinking as an artificial reef. As discussed in this document, ex-ORISKANY will be remediated in accordance with best management practices being developed by U.S. EPA and MARAD. These preparations will include all remediation practices typically undertaken prior to SINKEXs, and additional steps as well. Furthermore, the range of physical conditions at the three of the four sites is not substantially different than at the ex-VERMILLION site. The fourth site is located farther offshore and in considerably deeper water, and fishing will be restricted by the State. Therefore, the environmental effects of sinking ex-ORISKANY can be anticipated to be no greater than those currently exhibited by ex-VERMILLION, which were studied in detail.

Based on the conclusions stated in the HHRA and SERA, and considering the similarities between the environments of the ex-VERMILLION artificial reef and the proposed action, the Navy believes that the transfer of ex-ORISKANY for sinking as an artificial reef at any of the four proposed sites would not significantly affect the environment. Prior to sinking ex-ORISKANY at any of the sites, however, the Navy will seek from the cognizant EPA office a risk-based disposal approval, under the Toxic Substances Control Act. Should such approval not be given for the site selected, the Navy would select an alternative site, and again apply for the approval. Under no circumstances would the proposed sinking as an artificial reef occur without this risk-based disposal approval.

## **4.2 ALTERNATIVE REEF SITE: FLORIDA**

### **4.2.1 Air Quality**

The state of Florida has no non-attainment areas in its coastal counties (USEPA, 2003). Reefing activities will produce few air emissions. There will be low levels of air emissions associated with routine activities of towing the ship to the site and the sinking actions/monitoring. Carbon monoxide and ozone are the primary air pollutants resulting from the reefing activities. The principal sources of these pollutants are transportation, mechanized equipment, and combustion equipment. Related air emissions would not be different than normal traffic upon U.S. waterways. The air emissions associated with reefing ex-ORISKANY would be comparable with the baseline of the No Action alternative.

#### 4.2.1.1 INCREASED TRAFFIC TO SITE

An increase of fishing and diving activities is expected in the vicinity of the site as a result of the proposed action. Accordingly, there may be a localized increase in air emissions from boating activities at locations at and in transit to the site. However, based on the offshore location and good air quality in nearby coastal counties, any resultant emissions are anticipated to quickly dissipate and not to adversely impact the environment's air quality.

#### 4.2.2 Water Quality

The Navy and the FWCC will prepare ex-ORISKANY to meet all applicable federal and state requirements for sinking the ship through the use of private contractors. The EPA, in coordination with the Navy and other agencies, has developed ship preparation guidelines entitled "*Draft – National Guidance – Best Management Practices for Preparing Vessels Intended to Create Artificial Reefs.*" It is noted that the EPA Best Management Practices (BMPs) are currently in draft form, and any future revisions and modifications added to finalize these BMPs would be fully reviewed and reflected in the ship preparation actions conducted for ex-ORISKANY. The shipboard materials of concern include, but are not limited to: fuels and oil, asbestos, PCBs, paints, other materials of environmental concern (e.g., mercury, refrigerants) and debris (e.g., vessel debris, and floatable or introduced material). Ship preparation in accordance with these established BMPs will ensure there are no significant adverse impacts from hazardous materials.

Additional shipboard materials may be removed as determined by pending state agency water quality reviews. If the state proposes to accomplish additional work beyond the scope of the EPA BMPs, the process for the state to fund and accomplish that work prior to vessel sinking and title transfer would be addressed under the ship transfer contract negotiated between the Navy and the receiving state.

Prior to the sinking of ex-ORISKANY at the proposed Florida site, verifications are conducted to ensure that preparation per the draft BMPs was completed, and the ship subject to inspection by the U.S. Coast Guard (USCG) and/or FLDEP. At least three inspections will be conducted as noted by the FWCC application to verify completion of BMPs and other required conditions. Based on ship preparation actions completed per a national guidance standard and completion of subsequent verifications, no adverse effects to marine water quality are anticipated from the proposed action.

#### 4.2.3 Substrate

Placing a ship on the ocean floor as an artificial reef covers the natural substrate, replacing it with the artificial reef substrate. The amount and type of the natural substrate that is thus eliminated is dependent upon the size of the ship. Ex-ORISKANY will cover approximately 90,000 ft of substrate surface. However, approximately 300,000 ft<sup>2</sup> of hard surface artificial reef habitat will be created by this action.

Artificial reefs are typically situated in areas where the distribution of reef and reef-like habitats is limited, i.e., areas where large expanses of the sea bottom are covered by silt, mud, and sand.

These silt, mud, and sand substrates provide habitat for polychaete worms, crustaceans, and other benthic invertebrates that provide an important food source for other marine organisms. However, silt, mud, and sand substrates are quite common, and are not considered a limiting environmental factor.

The proposed site is located in an area characterized by sandy unconsolidated sediments and minimal limestone outcroppings forming hard bottom habitats covering approximately three percent of the bottom's surface. The closest limestone outcropping has been identified approximately 3,600 ft from the site and is not anticipated to be adversely impacted by the reefing action.

#### **4.2.4 Biological Resources**

The sinking of ex-ORISKANY will create 300,000 ft<sup>2</sup> of hard surface habitat that will enhance biological resources at the Florida site. Accordingly, the proposed action is anticipated to significantly enhance the benthic habitat by increasing biological density and the species diversity, as well as increase the number and diversity of pelagic species attracted to the site. The site subsequently will be managed in accordance with a formal artificial reef management plan for the LAARS site that incorporates biological resource considerations.

##### **4.2.4.1 THREATENED AND ENDANGERED SPECIES**

Based on review of sources information available from NOAA and the OPIS Mapping Tool, no protected areas or critical habitat areas are listed as Marine Protected Areas in the eastern Gulf of Mexico region that includes the site.

Five species of sea turtles may occur in the vicinity of the proposed site location. All are protected under the ESA. However, based on the short duration and low noise levels anticipated during the sinking action, the proposed action will not affect endangered species.

The smallest possible explosive charges will be utilized that will be restricted to the interior of the vessel at sea chest valves. To provide further protection and prevent animal takes, measures will be implemented as part of the sink plan, including clearing the area visually from shipboard positions and continued monitoring. These actions will be performed for all of the proposed alternative sites. For the Florida site, actions will be coordinated and implemented with the USCG and state agencies, including FWCC and ECMRD prior to and during the action at the Florida site. Section 5.0 contains further discussion of planned mitigation.

The SERA and HHRA artificial reef studies concluded that risk of sediment exposure was negligible; there was negligible to low risk of exposure to demersal fish and reef invertebrates; low risk to dolphins and fish eating birds; and negligible to low ecological risk of exposure to PCBs will not pose an unacceptable risk to the environment.

Based on the above discussion, threatened or endangered species at the Florida site will not be affected by the proposed action.

#### 4.2.4.2 MARINE MAMMALS

In the offshore waters of the northern Gulf of Mexico, up to 29 marine mammal species may occur, including seven mysticetes, 21 odontocetes, and one exotic pinniped. This listing is based on an extensive review of sightings and stranding reports for the Gulf of Mexico (Jefferson and Schiro, 1997). The sperm whale is the only endangered cetacean likely to occur in the vicinity of the site. There is a resident population of sperm whales in the northern Gulf of Mexico.

The Navy will coordinate protective measures with the USCG, FWCC and ECMRD to implement similar protective and observation procedures for marine mammals, as discussed above (Section 4.2.4.1). Section 5.0 contains further discussion of planned protective measures. Based on implementation of these measures, proposed action is not likely to result in a take at the Florida alternative reef site.

#### 4.2.4.3 ESSENTIAL FISH HABITAT

In 1996, the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) was reauthorized and amended by the Sustainable Fisheries Act (SFA). The SFA provides a new habitat conservation tool, the Essential Fish Habitat (EFH) mandate. The EFH mandate requires that the regional FMCs, through federal Fishery Management Plans (FMP), describe and identify EFH for each federally managed species, minimize to the extent practicable adverse effects on fisheries resources, and identify other actions to encourage the conservation and enhancement of such habitats. Habitats including hard/live bottoms limestone outcroppings and other hard bottom habitats from manmade artificial reefs that are located in the LAARS area are subject to management as EFH in accordance with these requirements. However, the closest manmade reef location is in excess of 1.5 nm from the proposed site, and closest hard bottom outcropping is located approximately 3,600 feet from the proposed site. Based on their distances from the proposed site, these habitats will not be adversely impacted by the proposed action.

The site is located within a LAARS artificial reefing area designated as essential habitat, federal fisheries management zone (FZ), and is a “Fish Haven” for stressed reef fish species. The LAARS area fisheries are managed by the FWCC and ECMRD.

Although the sinking action may result in the take of some fish in the vicinity at the time, managed fish populations are not anticipated to be adversely impacted. Creation of the artificial reef from ex-ORISKANY will result in the creation of 300,000 ft<sup>2</sup> of hard surface reef habitat that should enhance fish populations and diversity at the site.

The sinking actions will be conducted in accordance with ACOE permit (No. 199402365) conditions specified for reefing of steel hulled vessels. The proposed ex-ORISKANY reef site is to be integrated with the Escambia County Artificial Reef Plan (ECARP) managed by the FWCC. Goals of the ECARP include:

- Enhance the sea floor of the marine and estuarine waters of, and adjacent to, Escambia County by the placement of stable and durable artificial reef materials for the purpose of creating habitat for reef-associated species of fishes and invertebrates.
- Increase regional abundance of marine life species.
- Reduce negative impacts to natural reefs.

- Provide fishing and diving opportunities for the residents and tourists of Escambia County.
- Increase fishing and diving success, and artificial reef user satisfaction.

The SERA and HHRA artificial reef studies concluded that risk of sediment exposure was negligible; there was negligible to low risk of exposure to demersal fish and reef invertebrates. Additionally, contamination at the artificial reef site was unlikely to pose a significant health risk to the sports fisherman from ingestion of the predominant sports fish.

Based on the above considerations, no adverse effect to fisheries resources is anticipated from the proposed action at the Florida alternative reef site location.

#### **4.2.5 Socioeconomic Environment**

Recreational fishing and diving will not be negatively impacted by the addition of ex-ORISKANY to this site. Commercial fishing should not be impacted based on the absence of trawling in the LAARS area based on a large number of hangs from artificial reefs. Hook-and-line commercial and recreational fishing is expected to be continued and be enhanced by additional habitat from the reef materials. The addition of ex-ORISKANY will provide a major diving attraction and ease diving impacts on other artificial reefs in the LAARS.

##### **4.2.5.1 INCREASED FISHING**

The future colonization of ex-ORISKANY will be economically and recreationally important as additional fish species will provide commercial hook-and-line, as well as recreational anglers and divers, a new and unique location. Due to the size of ex-ORISKANY, anglers will have more fishing sites to choose from, thereby easing fishing pressures in other areas in that portion of the LAARS.

With this heavy demand for fishing on artificial structures, the creation of ex-ORISKANY reef will help aid in increasing optimum yield of finfish and other marine life. The addition of ex-ORISKANY reef site and its proximity to shore and a metropolitan area will help to facilitate access and utilization of fishery resources for recreational and commercial fishermen as noted under the National Fisheries Enhancement Act (33 USC 2101). In addition, the addition of ex-ORISKANY will reduce the burden from fishing on other artificial reef sites within the LAARS. FWCC states that management of the artificial reef will be conducted in accordance with the National Fishing Enhancement Act and existing management plans developed by the regional fisheries management councils per the Magnuson-Stevens Fishery Conservation and Management Act.

##### **4.2.5.2 INCREASED DIVING**

As mentioned above, the colonization of ex-ORISKANY will be economically and recreationally important to recreational divers a new and unique location to dive. Diving charters to ex-ORISKANY site will ease diving impacts on the 24 other artificial reefs within the LAARS permit area.

#### **4.2.6 Cultural Resources**

Based on the absence of identified cultural resources in the vicinity, no impacts to cultural resources are anticipated from the sinking and use of ex-ORISKANY at the proposed Florida Site.

FWCC identified that there would be positive impacts from the placement of this ship at the site that would be amplified by the legacy and continued presence of nearby Naval Air Station in Pensacola, FL.

#### **4.2.7 Cumulative Effects**

No adverse cumulative effects are anticipated from performing the proposed action at this alternative site. The proposed artificial reef area is expected to create additional new habitat and provide long-term reef habitat for reef dwelling organisms and fish.

### **4.3 ALTERNATIVE REEF SITE: GEORGIA/SOUTH CAROLINA**

#### **4.3.1 Air Quality**

Georgia and South Carolina have no non-attainment areas (USEPA, 2003). Reefing activities will produce few air emissions. There will be low levels of air emissions associated with routine activities of towing the ship to the site and the sinking actions/monitoring. Carbon monoxide and ozone are the primary air pollutants resulting from the reefing activities. The principal sources of these pollutants are transportation, mechanized equipment, and combustion equipment. Related air emissions would not be different than normal traffic upon U.S. waterways. The air emissions associated with reefing ex-ORISKANY would be comparable with the baseline of the No Action alternative.

##### **4.3.1.1 INCREASED TRAFFIC TO SITE**

An increase of fishing activities is expected in the vicinity of the site as a result of the proposed action. Accordingly, there may be a localized increase in air emissions from boating activities at locations at and in transit to the site. However, based on the offshore location and good air quality in nearby coastal counties, any resultant emissions are anticipated to quickly dissipate and not to adversely impact the environment's air quality.

#### **4.3.2 Water Quality**

The Navy and the state applicant (e.g., Departments of Natural Resources for Georgia and South Carolina) will prepare ex-ORISKANY to meet all applicable federal and state requirements for sinking the ship through the use of private contractors. The EPA, in coordination with the Navy and other agencies, has developed ship preparation guidelines entitled "*National Guidance – Best Management Practices for Preparing Vessels Intended to Create Artificial Reefs*". It is noted that the EPA BMPs are currently in draft form, and any future revisions and modifications added to finalize these BMPs would be fully reviewed and reflected in the ship preparation actions

conducted for ex-ORISKANY. The shipboard materials of concern include, but are not limited to: fuels and oil, asbestos, PCBs, paints, other materials of environmental concern (e.g., mercury, refrigerants) and debris (e.g., vessel debris, and floatable or introduced material). Ship preparation in accordance with these established BMPs will ensure there are no significant adverse impacts from hazardous materials.

#### **4.3.3 Substrate**

Placing a ship on the ocean floor as an artificial reef covers the natural substrate, replacing it with the artificial reef substrate. The amount and type of the natural substrate that is thus eliminated is dependent upon the size of the ship. Ex-ORISKANY will cover approximately 90,000 ft<sup>2</sup> of substrate surface. However, over 300,000 ft<sup>2</sup> of hard surface artificial reef habitat will be created by this action.

#### **4.3.4 Biological Resources**

The South Atlantic Fishery Management Council (SAFMC) expects the addition of ex-ORISKANY will provide a reef habitat to insure the persistence of healthy fish stocks, fisheries, and habitats. Such areas may be over natural or artificial bottom and may include prohibition of harvest on a permanent or lesser time period to accomplish needed conservation goals.

The high vertical profile of ex-ORISKANY would attract both pelagic (animals that live in the open sea, away from the sea bottom) and demersal (fish that live on or near the ocean bottom, commonly referred to as benthic) fishes. Ex-ORISKANY will also provide habitat for species that feed nocturnally over soft bottoms away from the artificial reef, but which return during the day for cover. In addition to resident species, ex-ORISKANY may attract transient species, which may be present at a reef for periods of a few hours to a few days.

Tuna, dolphin and wahoo, as well as other recreationally popular pelagic species are known to be attracted to areas where disruptions occur in the flow of currents (particularly the Gulf Stream), and areas where prominent bottom geologically derived features or relief occur. The Charleston Bump, an area of significant bottom relief in deep waters off the coast of South Carolina, is known to hold concentrations of many pelagic fish species when other areas do not. Georgetown Hole, another significant bottom feature roughly 48 nm offshore of Georgetown, SC, serves as a convenient and reliably productive area for boats departing from areas along the northern part of the South Carolina coast.

Establishing the proposed ex-ORISKANY SMZ reef near the 100-fathom curve off both the South Carolina and Georgia coasts would create favorable conditions to attract and concentrate tuna, dolphin, and wahoo on a more regular basis. There is no question that properly managed and regulated, such a reef structure would serve as a spawning haven for many economically important deepwater grouper species.

##### **4.3.4.1 THREATENED AND ENDANGERED SPECIES**

During the state site selection process for each artificial reef, the proposed artificial reef location is reviewed for use by threatened and endangered species, and any potential impacts evaluated and addressed in the site-specific artificial reef permit. Ships are placed in commonly occurring

ocean substrate habitats, such as sandy bottoms that are not unique environments for threatened or endangered species. As noted in 3.2.5, five species of sea turtles may occur in the area of proposed site. All are protected under the ESA.

The sinking of ex-ORISKANY would include protective measures coordinated with the USCG and states to prevent harassment of marine mammals and sea turtles (Section 5.0).

The SERA and HHRA artificial reef studies concluded that risk of sediment exposure was negligible; there was negligible to low risk of exposure to demersal fish and reef invertebrates; low risk to dolphins and fish eating birds; and negligible to low ecological risk of exposure to PCBs will not pose an unacceptable risk to the environment.

Based on these considerations, reuse of a Navy ship as an artificial reef is anticipated to have no effects on threatened or endangered species.

#### 4.3.4.2 MARINE MAMMALS

The smallest possible quantities of explosives will be utilized for vessel sinking (to be placed at vessel sea chest valves), and charges will be restricted to the interior of the vessel. Therefore, it is anticipated that noise transmitted to the ocean environment will be similar to those levels expected from engines, etc. during routine operations while the ship is underway. Based on these restrictions, no threshold shift impact is anticipated. As stated in Section 3.2.5, North Atlantic Right Whales have been sited in the vicinity of the site, however, the proposed site is not part of the designated critical habitat or marine protected areas for the species. To avoid injury or takes to marine mammals, measures to prevent harm to marine mammals and sea turtles will be coordinated with the USCG and state organizations (Section 5.0). Based on the implementation of protective measures, the proposed action is unlikely to result in a take of marine mammals.

#### 4.3.4.3 ESSENTIAL FISH HABITAT

The fish fauna at the proposed reef site is diverse, with hundreds of species representing a broad taxonomic range (Schwartz, 1989). None of the species within the proposed site is listed as threatened or endangered under the ESA.

Sinking ex-ORISKANY as a deepwater SMZ artificial reef would provide 300,000 ft<sup>2</sup> of hard reef substrate, and provide significant bottom relief in a specific location where none currently exists, thus augmenting limited, productive natural hard bottom ledge systems within the offshore environment. Naturally occurring offshore ledges in the 300- to 1,000-ft depth range are considered EFH for many deepwater reef fishes, and play a critical role in the life histories, long-term health and sustainability of several key species found off the coasts of South Carolina and Georgia.

Georgia DNR and South Carolina DNR propose to establish and designate the proposed alternative reef site as a special management zone (SMZ). Specifically, the artificial reef will be designed to protect the habitat of the snowy grouper. While commercial fishing will be permitted above the site location, fishing will be limited to water depths well above the reef site thereby effectively restricting fishing of reef species EFH.

The SERA and HHRA artificial reef studies concluded that risk of sediment exposure was negligible; there was negligible to low risk of exposure to demersal fish and reef invertebrates. Additionally, contamination at the artificial reef site was unlikely to pose a significant health risk to the sports fisherman from ingestion of the predominant sports fish.

Based on the above considerations, the proposed action will result in no adverse effects to fisheries resources at the Georgia/South Carolina alternative reef site.

#### **4.3.5 Socioeconomic Environment**

Recreational fishing will not be negatively impacted by the addition of ex-ORISKANY to this site. Commercial fishing should not be impacted due to the proximity of hangs in the site determined for the ship that are avoided by trawlers.

##### **4.3.5.1 INCREASED FISHING**

Marine Protection Areas (MPAs) will protect, restore, and improve essential EFHs. The proposed reef will be sited in such a way that it will be able to directly mesh with the current SAFMC process and proposed options for potential development of a deepwater (MPA) site through Amendment 14 to the Federal Snapper Grouper Management Plan. Once established, the proposed SMZ reef would be able to stand alone and initiate protection and benefit to snowy grouper stock taking residency on the artificial reef. If/when one of the two recommended options for MPA status is approved, the proposed SMZ site will automatically be incorporated into the larger MPA, and operate under the same fisheries management regulations.

Due to the extreme water depths and gear requirements, there is limited, if any, recreational interest in demersal fish species that may occur near the proposed ex-ORISKANY SMZ reef site. Recreational fisheries found in the deeper outer continental shelf waters off South Carolina and Georgia typically troll for “bluewater” gamefish such as tunas, dolphin, and wahoo. These species are the most popular among offshore recreational anglers and the most frequently targeted in deep water. A national survey of marine recreational fishing in the U.S. reports that over the last six years an average of 32,500 of these fish were landed annually by South Carolina recreational fishermen alone.

##### **4.3.5.2 INCREASED DIVING**

Since the ship will be sunk in water depths much greater than 130 feet, increased diving opportunities will not be applicable at this proposed site.

#### **4.3.6 Cultural Resources**

No submerged cultural resources exist in the vicinity of the proposed reef site; therefore, no impacts to cultural resources are expected.

#### **4.3.7 Cumulative Effects**

Cumulative adverse impacts are not anticipated as a result of the proposed action. Overall, the placement of Navy ships as artificial reefs will benefit many species of marine life, and will

enhance recreational fishing and sports diving. The completion of environmental ship preparation and use of protective measures during ship sinking, combined with proper site selection and reef management by the states, precludes direct or indirect adverse cumulative effects.

#### **4.4 ALTERNATIVE REEF SITE: MISSISSIPPI**

##### **4.4.1 Air Quality**

The proposed site is well offshore and is located in an area that is not classified for priority pollutants under the Clean Air Act. Ambient air quality and impacts are expected to be similar for all the alternative sites.

Mississippi has no non-attainment areas in its coastal counties (EPA, 2001). Reefing activities will produce few air emissions. There will be low levels of air emissions associated with routine activities of towing the ship to the site and the sinking actions/monitoring. Carbon monoxide and ozone are the primary air pollutants resulting from the reefing activities. The principal sources of these pollutants are transportation, mechanized equipment, and combustion equipment. Related air emissions would not be different than normal traffic upon U.S. waterways. The air emissions associated with reefing ex-ORISKANY would be comparable with the baseline of the No Action alternative.

##### **4.4.1.1 INCREASED TRAFFIC TO SITE**

An increase of fishing and diving activities is expected in the vicinity of the site as a result of the proposed action. Accordingly, there may be a localized increase in air emissions from boating activities at locations at and in transit to the site. However, based on the offshore location and good air quality in nearby coastal counties, any resultant emissions are anticipated to quickly dissipate and not to adversely impact the environment's air quality.

##### **4.4.1.2 WATER QUALITY**

The U.S. Navy will prepare ex-ORISKANY to meet all applicable federal and state requirements for sinking the ship through the use of private contractors. The EPA, in coordination with the Navy and other agencies, has developed ship preparation guidelines entitled "National Guidance – Best Management Practices for Preparing Vessels Intended to Create Artificial Reefs". It is noted that the EPA BMPs are currently in draft form, and any future revisions and modifications added to finalize these Draft BMPs would be fully reviewed and reflected in the ship preparation actions conducted for ex-ORISKANY. The shipboard materials of concern include, but are not limited to: fuels and oil, asbestos, PCBs, paints, other materials of environmental concern (e.g., mercury, refrigerants), and debris (e.g., vessel debris, and floatable or introduced material). Ship preparation conducted in accordance with these established BMPs will ensure that there are no significant adverse impacts from hazardous materials.

##### **4.4.2 Substrate**

Reefing of ex-ORISKANY will add hard-surface substrate to an environment that is largely devoid of natural hard-bottom outcroppings and natural reefs. In the long term, the reef is

expected to undergo natural colonization on the ship by encrusting invertebrates, motile invertebrates, and reef-fish species. Top-line predators (transient or permanent residents) will ultimately visit or inhabit the site. The addition of ex-ORISKANY will provide substrate for habitat-limited sessile invertebrates such as barnacles, oysters, mussels, bryozoans, hydroids, sponges, and corals to attach to. Motile invertebrates and fish species will be able to use the encrusting organisms as a source of food and shelter.

The amount and type of the natural substrate that is eliminated is dependent upon the size of the ship. Ex-ORISKANY will cover approximately 90,000 ft<sup>2</sup> of substrate surface. However, approximately 300,000 ft<sup>2</sup> of hard surface artificial reef habitat will be created by this action.

#### **4.4.3 Biological Resources**

The Mississippi DMR, Derelict Vessel Removal Program goal (short-term) is to provide reef habitat for the enhancement of fishing and diving opportunities. The long-term goals are to diversify habitat by addition of hard structure where it does not currently exist, to support and enhance populations of important fish and invertebrate species associated with artificial reefs, and to promote the use of artificial reefs as management tools.

Ex-ORISKANY will provide substrate for habitat-limited sessile invertebrates such as barnacles, oysters, mussels, bryozoans, hydroids, sponges, and corals to attach to. Motile invertebrates and fish species will be able to use the encrusting organisms as a source of food and shelter. Ex-ORISKANY will provide the basis for the development of an interactive food web.

The high vertical profile of ex-ORISKANY will attract both pelagic (animals that live in the open sea, away from the sea bottom) and demersal (fish that live on or near the ocean bottom, commonly referred to as benthic) fishes. Ex-ORISKANY will also provide habitat for species that feed nocturnally over soft bottoms away from the artificial reef, but which return during the day to seek cover. In addition to resident species, ex-ORISKANY may attract transient species, which may be present at a reef for periods of a few hours to a few days.

##### **4.4.3.1 THREATENED AND ENDANGERED SPECIES**

Currently, no endangered or threatened species are known to utilize this area as primary habitat for breeding or resting, nor has this area been designated as critical habitat. The addition of the artificial reef will likely bring visiting endangered sea turtles such as the hawksbill, green, leatherback, loggerhead and Kemp's Ridley at the site.

Five species of sea turtles may occur in the vicinity of the proposed site location. All are protected under the ESA. However, based on the short duration and low noise levels anticipated during the sinking action, the proposed action will not affect endangered species.

The sinking of ex-ORISKANY will include elements of a Marine Mammal and Sea Turtle Protective Measures Plan to avoid any harm to these species, (Section 5.0).

The SERA and HHRA artificial reef studies concluded that risk of sediment exposure was negligible; there was negligible to low risk of exposure to demersal fish and reef invertebrates;

low risk to dolphins and fish eating birds; and negligible to low ecological risk of exposure to PCBs will not pose an unacceptable risk to the environment.

Based on the above considerations, the proposed action is anticipated to have no affect on endangered species.

#### 4.4.3.2 MARINE MAMMALS

Currently, no endangered or threatened marine mammal species are known to utilize this area as primary habitat for breeding or resting, nor has this area been designated as critical habitat. In the offshore waters of the northern Gulf of Mexico, up to 29 marine mammal species may occur, including seven mysticetes, 21 odontocetes, and one exotic pinniped. This listing is based on an extensive review of sightings and stranding reports for the Gulf of Mexico (Jefferson and Schiro, 1997). The sperm whale is the only endangered cetacean likely to occur in the vicinity of the site. There is a resident population of sperm whales in the northern Gulf of Mexico.

The smallest possible quantities of explosives will be utilized for vessel sinking (to be placed at vessel sea chest valves), and charges will be restricted to the interior of the vessel. Therefore, it is anticipated that noise transmitted to the ocean environment will be similar to those levels expected from engines, etc., during routine operations while the ship is underway.

The sinking of ex-ORISKANY will include protective measures to avoid any takes to these species (Section 5.0). Based on the above considerations, the proposed action is not likely to result in a take of marine mammals.

#### 4.4.3.3 ESSENTIAL FISH HABITAT

Creating new, and enhancing existing, habitat is one of the recommendations in the Generic Amendment for Addressing Essential Fish Habitat Requirements in existing Fishery Management Plans of the Gulf of Mexico (GMFMC, 1998), and in the Environmental Impact Statement (EIS) for the Generic Essential Fish Habitat Amendment to the (existing) Fishery Management Plans of the Gulf of Mexico (GMFMC, 2003). Based on the above analysis there would be a positive impact on the substrate environment via creation of extensive new hard surface reef habitat from the artificial reef.

The SERA and HHRA artificial reef studies concluded that risk of sediment exposure was negligible; there was negligible to low risk of exposure to demersal fish and reef invertebrates. Additionally, contamination at the artificial reef site was unlikely to pose a significant health risk to the sports fisherman from ingestion of the predominant sports fish.

Based on the above information, the proposed action is not anticipated to have an adverse effect on fisheries resources.

#### 4.4.4 Socioeconomic Environment

The Mississippi DMR, Derelict Vessel Removal Program expects that both the recreational fishing and diving industries will not be negatively impacted by the addition of ex-ORISKANY to this site. In fact, the program expects to realize immediate benefits to the recreational fishing and diving industries as a result of the sinking of ex-ORISKANY. The deployment of reefs,

such as the proposed ex-ORISKANY reef, has been found to attract pelagic fish species (i.e., mackerels, tunas, and jacks) in addition to attracting reef obligate species (i.e., red snapper and grouper). Red snapper catches have increased steadily over time off of the Mississippi coast as the artificial reef development program has progressed and matured. These artificial reefs have allowed the reef fishery to proliferate as evidenced by a 72% increase in the charter license sales in Mississippi since the early 1990s. Mississippi estimates that the effect of these additional reefs to the state economy has been approximately \$78.4M.

The proposed Mississippi alternative reef site is not located at an active petroleum lease block as designated by MMS, therefore no impacts are anticipated regarding exploration or production activities within the lease block containing the site. The nearest active petroleum lease block is located approximately 0.17 nm to the southeast of the proposed site. The closest production platforms are located approximately 2.5 nm from the site; therefore based on distance no impacts are expected regarding platforms.

However, petroleum exploration activities and potential future production operations may be conducted at the adjacent active lease blocks, in the vicinity of the site. Below is a discussion of MMS programs and controls that address activities at the petroleum lease blocks with active leases.

In an effort to improve and enhance safe operating procedures and reduce the potential for pollution in the OCS region, MMS conceived the Safety and Environmental Management Program (SEMP) in 1991. The SEMP is a plan for designing, managing, and conducting OCS operations in a manner that emphasizes the importance of human behavior in offshore safety and pollution prevention. Additionally, petroleum lease block conditions/terms can include special stipulations that are legally binding contractual provisions that can be attached to OCS oil and natural gas leases in response to MMS, coastal States, fishing groups, Federal agencies, and others. These stipulations may require the following:

- Biological surveys of sensitive seafloor habitats;
- Special environmental training for operational personnel;
- Special waste-discharge procedures; and
- Special operating procedures near military bases or their zones of activity.

The OCS Lands Act Amendments (OCSLAA) authorizes MMS to inspect oil and natural gas operations and to schedule annual onsite inspections of each OCS facility subject to any environmental or safety regulation. Additionally, the OCSLAA requires MMS to conduct periodic inspections to ensure compliance with environmental and safety regulations without advance notice to operators. The MMS uses a national checklist called the Potential Incident of Noncompliance List for these annual inspections. Upon detection of a violation, MMS issues an Incident of Noncompliance (INC) to the operator and uses one of two main enforcement actions (warning or shut-in), depending on the severity of the violation. Passage of the Oil Pollution Act of 1990 expanded MMS's authority to impose penalties (civil) for regulatory violations that constitute a serious hazard to safety or the environment.

Based on the above considerations including distance and MMS programs and controls, no impacts regarding platforms or lease blocks are anticipated from the proposed action at the MS alternative site.

Additionally, the Mississippi commercial fishing industry supports a high level of shrimping in the Gulf of Mexico waters in the vicinity of the proposed area. However, several hangs in the proximity of the proposed site inhibit commercial fishing and shrimp trawlers generally avoid the area, resulting in little impact on current commercial industries.

#### 4.4.4.1 INCREASED FISHING

The future colonization of ex-ORISKANY will be economically and recreationally important, as additional fish species will provide recreational anglers and divers a new and unique location. It is anticipated that fishing will increase due to the proposed action in the region and the vicinity of the site. However, due to the scale and attraction of ex-ORISKANY, anglers will have more fishing sites to choose from, which may ease fishing pressures in other nearby areas of the Gulf of Mexico.

With this heavy demand for fishing on artificial structures, the creation of ex-ORISKANY reef will help aid in increasing optimum yield of finfish and other marine life. The addition of ex-ORISKANY reef site and its proximity to shore and a metropolitan area will help to facilitate access and utilization of fishery resources for recreational and commercial fishermen as noted under the National Fisheries Enhancement Act (33 USC 2101).

The deployment of reefs, such as the proposed ex-ORISKANY reef, has been found to attract pelagic fish species (i.e., mackerels, tunas, and jacks) in addition to attracting reef obligate species (i.e., red snapper and grouper). Red snapper catches have increased steadily over time off of the Mississippi coast as the artificial reef development program has progressed and matured. These artificial reefs have allowed reef fishery to proliferate as evidenced by a 72% increase in the charter license sales in Mississippi since the early 1990s. Mississippi DMR estimates that the effect of these additional reefs to the state economy has been approximately \$78.4M.

#### 4.4.4.2 INCREASED DIVING

As mentioned above, the colonization of ex-ORISKANY will be economically and recreationally important to recreational divers by providing a new and unique location to dive.

#### 4.4.5 Cultural Resources

Based on the analysis provided above, and the absence of submerged cultural resources in the vicinity of the proposed site, no impacts are anticipated to cultural resources.

#### 4.4.6 Cumulative Effects

Based on the results of the analysis provided above, no cumulative environmental effects are expected as a result of the deployment of an artificial reef at this proposed reef site. The

proposed artificial reef area is expected to create additional new habitat and provide long-term reef habitat for reef dwelling organisms and fish.

## **4.5 ALTERNATIVE REEF SITE: TEXAS**

### **4.5.1 Air Quality**

The state of Texas has no non-attainment areas in its coastal counties in the vicinity of the site (USEPA, 2001). The proposed Texas site is well offshore and is located in an area that is not classified for priority pollutants under the CAA. Reefing activities will produce few air emissions. There will be low levels of air emissions associated with routine activities of towing the ship to the site and the sinking actions/monitoring. Carbon monoxide and ozone are the primary air pollutants resulting from the reefing activities. The principal sources of these pollutants are transportation, mechanized equipment, and combustion equipment. Related air emissions would not be different from normal traffic upon U.S. waterways. The air emissions associated with reefing ex-ORISKANY would be comparable with the baseline of the No Action alternative.

#### **4.5.1.1 INCREASED TRAFFIC TO SITE**

An increase of fishing and diving activities is expected in the vicinity of the site as a result of the proposed action. Accordingly, there may be a localized increase in air emissions from boating activities at locations at and in transit to the site. However, based on the offshore location and good air quality in nearby coastal counties, any resultant emissions are anticipated to quickly dissipate and not to adversely impact the environment's air quality.

### **4.5.2 Water Quality**

The Navy and the TPWD will prepare ex-ORISKANY to meet all applicable federal and state requirements for sinking the ship using private contractors. The EPA, in coordination with the Navy and other agencies, has developed ship preparation guidelines entitled "*National Guidance – Best Management Practices for Preparing Vessels Intended to Create Artificial Reefs.*" It is noted that the EPA BMPs are currently in draft form, and any future revisions and modifications added to finalize the BMPs would be fully reviewed and reflected in the ship preparation actions conducted for ex-ORISKANY. The shipboard materials of concern include, but are not limited to: fuels and oil, asbestos, PCBs, paints, other materials of environmental concern (e.g., mercury, refrigerants) and debris (e.g., vessel debris, and floatable or introduced material). Ship preparation in accordance with these established BMPs will ensure there are no significant adverse impacts from hazardous materials.

Prior to the sinking of ex-ORISKANY at the Texas site, verifications will be conducted to ensure that preparation per the EPA BMPs was completed. The ship will also be subject to inspection by the USCG and/or state environmental agencies. Based on ship preparation actions completed per a national guidance standard and completion of subsequent verifications, no adverse effects to marine water quality are anticipated from the proposed action.

### **4.5.3 Substrate**

Placing a ship on the ocean floor as an artificial reef covers the natural substrate, replacing it with the artificial reef substrate. The amount and type of the natural substrate that is thus eliminated is dependent upon the size of the ship. Ex-ORISKANY will cover approximately 90,000 feet of substrate surface. However, approximately 300,000 ft<sup>2</sup> of hard surface artificial reef habitat will be created.

Reefing of ex-ORISKANY will add hard-surface substrate to an environment that is largely devoid of natural hard-bottom outcroppings and natural reefs. In the long term, the reef is expected to undergo natural colonization on the ship by encrusting invertebrates, motile invertebrates, and reef-fish species. Top-line predators (transient or permanent residents) will ultimately visit or inhabit the site.

The addition of ex-ORISKANY will provide substrate for habitat-limited sessile invertebrates such as barnacles, oysters, mussels, bryozoans, hydroids, sponges, and corals to attach to. Motile invertebrates and fish species will be able to use the encrusting organisms as a source of food and shelter.

### **4.5.4 Biological Resources**

The sinking of ex-ORISKANY will create 300,000 ft<sup>2</sup> of hard surface habitat that will enhance biological resources at the Texas site. The site will be subsequently managed in accordance with a formal artificial reef management plan for the site that incorporates biological resource considerations.

The Texas Parks and Wildlife Department's Artificial Reef Program expects the addition of ex-ORISKANY will provide substrate for habitat-limited sessile invertebrates such as barnacles, oysters, mussels, bryozoans, hydroids, sponges, and corals to attach to. Motile invertebrates and fish species will be able to use the encrusting organisms as a source of food and shelter. Ex-ORISKANY will provide the basis for the development of an interactive food web.

The high vertical profile of ex-ORISKANY would attract both pelagic (animals that live in the open sea, away from the sea bottom) and demersal (fish that live on or near the ocean bottom, commonly referred to as benthic) fishes. Ex-ORISKANY will also provide habitat for species that feed nocturnally over soft bottoms away from the artificial reef, but which return during the day for cover. In addition to resident species, ex-ORISKANY may attract transient species, which may be present at a reef for periods of a few hours to a few days.

The Texas Parks and Wildlife Department's Artificial Reef Program anticipates resident fish species dependent upon sessile and motile invertebrates present on a mature reef site as a food source or for protection would include blennies (Blenniidae), small grazers such as butterfly fishes (Chaetodontidae) and large grazers such as sheepshead (*Archosargus probatocephalus*). Resident fish species relying on reef sites for cover that may be present may include the Atlantic spadefish (*Chaetodipterus faber*) and red snapper (*Lutjanus campechanus*). Other fish such as spadefish, lookdowns (*Selena vomer*), Atlantic moonfish (*Vomer setipinnis*) and creolefish (*Paranthis furcifer*) may be present feeding on macrozooplankton and suspended particulate matter. Ex-ORISKANY may provide cover and habitat for soft bottom motile species, such as

shrimp, swimming crabs, and fish – a common prey for red snapper. In addition, red snapper, tomtate (*Haemulon aurolineatum*), and some grouper may be present feeding at areas away from the reef at night and returning during the day for cover.

It is anticipated that large pelagic predators, such as mackerels (*Scombridae*) and jacks (*Caranx spp.*), may be present near the reef site in the pursuit of schools of prey species such as scad (*Decapterus punctatus*) and sardines (*Sardinella spp.*). Frequent visitors to the reef site are predicted to be other fish that feed on resident reef species, such as barracuda (*Sphraena barracuda*), almaco jack (*Seriola rivoliana*), hammerhead sharks (*Sphyrna spp.*) and cobia (*Rachycentron canadum*).

#### 4.5.4.1 THREATENED AND ENDANGERED SPECIES

Currently, no endangered or threatened species are known to utilize this area as primary habitat for foraging, breeding, or resting nor has this area been designated as critical habitat. The addition of the artificial reef may bring visiting endangered turtles such as the hawksbill, green, leatherback, loggerhead, and Kemp's Ridley at the site.

The smallest possible quantities of explosives will be utilized for vessel sinking (to be placed at vessel sea chest valves), and charges will be restricted to the interior of the vessel. Therefore, it is anticipated that noise transmitted to the ocean environment will be similar to those levels expected from engines, etc., during routine operations while the ship is underway. The sinking of ex-ORISKANY would include protective measures to avoid any harm to these species (Section 5.0).

The SERA and HHRA artificial reef studies concluded that risk of sediment exposure was negligible; there was negligible to low risk of exposure to demersal fish and reef invertebrates; low risk to dolphins and fish eating birds; and negligible to low ecological risk of exposure to PCBs will not pose an unacceptable risk to the environment.

Based on these considerations, the proposed action will not affect threatened and endangered species.

#### 4.5.4.2 MARINE MAMMALS

As discussed in Section 3.4.5, 29 species of marine mammals are known to occur in the Gulf of Mexico (Davis et al. 1998). The most common species found in the all-water depths offshore of Corpus Christi, TX is the bottlenose dolphin, *Tursiops truncatus*. The sperm whale is the only endangered cetacean likely to occur in the northern Gulf of Mexico, predominantly found in deep ocean waters (over 500 m in depth).

The proposed site will place the ex-ORISKANY 39 statute miles offshore at a depth of 212 to 214 ft. Marine mammal species commonly found on the continental shelf or along the shelf break (approximately 100 m or 328 ft) include the Atlantic spotted dolphin and bottlenose dolphin. Surveys conducted in 2003 identified sperm whales beyond the continental shelf and in deep-water depths from 500 m to waters over 1,000 m (Biggs et al., 2003). Sperm whales and common dolphins are not likely to be encountered at the depths for the proposed site (212 to 214 ft).

Currently, no marine mammal species are known to utilize the proposed area as primary habitat for foraging, breeding, or resting nor has this area been designated as critical habitat. As discussed for threatened and endangered species, the sinking of ex-ORISKANY would include measures to avoid any harm to marine mammals. The smallest possible quantities of explosives will be utilized for vessel sinking (to be placed at vessel sea chest valves), and charges will be restricted to the interior of the vessel. Therefore, it is anticipated that noise transmitted to the ocean environment will be similar to those levels expected from engines, etc., during routine operations while the ship is underway. The sinking of ex-ORISKANY would include protective measures to avoid any takes to marine mammals (Section 5.0).

#### 4.5.4.3 ESSENTIAL FISH HABITAT

Waters of the U.S. have undergone extensive analysis in recent years in response to overfishing and other threats to marine fisheries. Congress passed the Sustainable Fisheries Act in 1996 as an amendment to the 1976 Fishery Conservation and Management Act emphasizing the protection of essential fish habitat (EFH). Eight national fishery management councils were established to incorporate EFH into its existing and new fishery management plans.

Creating new, and enhancing existing, habitat is one of the recommendations in the *Generic Amendment for Addressing Essential Fish Habitat Requirements in (existing) Fishery Management Plans of the Gulf of Mexico* (GMFMC, 1998). The Texas Parks and Wildlife Department's Artificial Reef Program reported that these documents emphasize that habitat added by artificial reefs, especially off the coast of Texas, are essential to increasing hard surface area for sessile organisms to attach to.

Although the sinking action may result in the take of some fish in the vicinity at the time, managed fish populations are not anticipated to be adversely impacted. Creation of the artificial reef from ex-ORISKANY will result in the creation of 300,000 ft<sup>2</sup> of hard surface reef habitat that should enhance fish populations and diversity at the site.

The SERA and HHRA artificial reef studies concluded that risk of sediment exposure was negligible; there was negligible to low risk of exposure to demersal fish and reef invertebrates. Additionally, contamination at the artificial reef site was unlikely to pose a significant health risk to the sports fisherman from ingestion of the predominant sports fish.

Based on the above information, no adverse impacts to local fish populations are anticipated at the Texas site.

#### **4.5.5 Socioeconomic Environment**

Recreational fishing and diving will not be negatively impacted by the addition of ex-ORISKANY to this site. Commercial fishing should not be impacted due to the proximity of hangs in the site determined for the ship that are avoided by trawlers.

Neighboring petroleum lease blocks will not be affected by the presence of reefed material at this site. The OCS Block of this site has been drilled with three test wells, each abandoned at the seafloor. It is not anticipated that oil and gas drilling will occur near the proposed Texas site. The nearest oil and gas platforms are located over 3 nm from the proposed Texas site and will not be affected by the sinking exercise. There are no shipping channels present near the proposed Texas site; the nearest fairway is location 9-13 nm away and will not be impacted by the sinking exercise. The nearest submerged pipelines are located over 3 nm from the proposed Texas site and will not be affected by the sinking exercise. There are no communication cables present in the area.

##### **4.5.5.1 INCREASED FISHING**

The future colonization of ex-ORISKANY will be economically and recreationally important, as additional fish species will provide recreational anglers and divers a new and unique location.

Due to the size of ex-ORISKANY, anglers will have more fishing sites to choose from, thereby easing fishing pressures in other areas in that portion of the Gulf.

The Texas Parks and Wildlife Department's Artificial Reef Program reports that artificial reefs enhance the fishing opportunities for hook-and-line anglers targeting fish associated with artificial reefs. There are over 1.2 million saltwater recreational anglers in Texas. Of these, 47% (564,000) fished within the Gulf of Mexico from a boat and ~300,000 - 400,000 anglers fished at offshore platforms or artificial reefs (Ditton et al. 1990). Party boats took ~10,335 customers offshore to local Texas reefs and 35,724 offshore to all artificial reefs; trips to artificial reefs account for 40% of the total number of offshore trips (Ditton et al. 1995).

With this heavy demand for fishing on artificial structures, the creation of ex-ORISKANY reef will help aid in increasing optimum yield of finfish and other marine life. The addition of ex-ORISKANY reef site and its proximity to shore and a metropolitan area will help to facilitate access and utilization of fishery resources for recreational and commercial fishermen, as noted under the National Fisheries Enhancement Act (33 USC 2101).

##### **4.5.5.2 INCREASED DIVING**

As mentioned above, the colonization of ex-ORISKANY will be economically and recreationally important to recreational divers a new and unique location to dive. Diving charters to ex-ORISKANY site will ease diving impacts on the popular Flower Gardens Banks National Marine Sanctuary.

#### **4.5.6 Cultural Resources**

Cultural resources near the proposed Texas site will not be negatively impacted by the addition of ex-ORISKANY to this site. The nearest data buoy is land-based on Port Aransas, TX, and will not be impacted. There are no ordnance dumping sites in the vicinity of the proposed Texas site. The nearest artificial reef, Mustang Island Reef MU-828, and shipwreck, the *John Phillips*, will not be impacted.

#### **4.5.7 Cumulative Effects**

Cumulative impacts resulting from the addition of ex-ORISKANY to the marine environment are not expected. The ship will be cleaned of all hazardous materials and waste prior to the sinking exercise; the ship will not be leaking or discharging any liquids or materials. Increased fishing and diving activities may result over time as the artificial reef matures and species colonize and visit the reef; however, these activities would be similar to other fishing and diving areas. Therefore, the impacts to the marine environment are not expected to be significant.

#### **4.6 NO ACTION ALTERNATIVE**

Potential environmental consequences of the No Action Alternative stem from the long-term storage of ex-ORISKANY. Long-term storage occurs under an established Navy Inactive Ships Program at the MARAD Beaumont, TX, site. This site is operated by MARAD in accordance with applicable federal and state standards, and Navy administrative procedures and requirements. No adverse environmental effects are anticipated from continued ship storage and associated operations at this MARAD Inactive Fleet site. Therefore, the No Action alternative of continuing long-term storage of ex-ORISKANY within the Navy Inactive Ships Program at the MARAD Beaumont, TX, site will not have any significant adverse environmental impacts. However, continuing to hold inactive Navy vessels in long-term storage does not meet the Navy's needs by properly disposing of vessels considered unfit for service.

## **5.0 PROTECTIVE MEASURES**

The proposed action includes the following protective measures: (1) measures to minimize transmission of environmental noise to the marine environment; and (2) measures conducted as part of the sinking plan to ensure public safety and minimize risks to marine life.

1. *Measures To Minimize Noise.* The smallest possible quantities of explosives will be utilized for vessel sinking (to be placed at 17 vessel sea chest valves), and charges will be restricted to the interior of the vessel, detonated simultaneously. Therefore, it is anticipated that noise transmitted to the ocean environment will be minimized.
2. *Measures To Ensure Safety and Minimize Risks To Marine Life.* Measures to be taken as part of the sink plan to ensure safety of personnel participating and/or observing the sinking action and to minimize the risks to marine life will be coordinated with the USCG and state agencies. These planned measures are discussed in detail in the paragraphs below.

An exclusion zone and safety range of a radius to be determined in coordination with USCG and cognizant local officials would be established around the reef site to exclude all ship and submarine traffic not participating in the sinking action. Any traffic within this radius would be warned to alter course or would be escorted from the site. Notices to Airmen and Mariners would be published in advance of the sinking exercise as coordinated with the USCG. An immediate "hold" would be ordered if any unauthorized craft entered the exclusion zone and could not be contacted. The "hold" would continue until the exclusion zone was clear of unauthorized vessels. The size of the exclusion zone is necessary for operational security and to allow large vessels sufficient time to change course.

Protective measures will be coordinated and implemented as part of the sink plan to reduce or eliminate the impact on marine mammals and sea turtles. All components of these protective measures, including shipboard visual observers, must be in place on the day of the sinking action or the sinking action will be postponed. Pre-detonation monitoring would be conducted on the day of the sinking action to evaluate the proposed site and verify that the safety range is free of visually detectable marine mammals, sea turtles, large *Sargassum* rafts, and/or concentrations of jellyfish (possible indicators of sea turtle presence).

*Safety Range:* The concept of a safety range is an integral part of the protective measures. The area within the safety range would be monitored by all components of the protective measures team and detonation would not occur until the safety range is clear of detectable marine mammals and sea turtles, as well as indicators of sea turtle presence such as large *Sargassum* rafts and jellyfish aggregations. The purpose of the safety range is to prevent deaths and serious injuries to marine mammals and sea turtles. The safety range radius to be determined around the detonation point should ensure the protection of marine mammals and sea turtles from the sinking exercise. The safety range may be of the same radius utilized for the vessel exclusion zone.

*Weather Limitations:* Weather that supports the ability to view small marine life (e.g., sea turtles) is required for effective implementation of the protective measures. Operations are most affected by wind, visibility, and ocean surface conditions. Higher winds typically increase wave

height and create “white cap” conditions, both of which limit an observer’s ability to locate surfacing marine mammals.

To maximize detection of marine mammals and sea turtles, efforts would be conducted in sea states no greater than the following sea state: whitecaps on 33-50% of surface: 0.6 to 0.9 m (2- to 3-ft) waves. Weather data regarding sea state will be obtained from Navy weather agencies.

The state will coordinate monitoring activities with the USCG and local agencies to ensure resources are available and utilized. Shipboard monitoring would be staged from at least two of the tow vessels. At least six observers experienced in shipboard surveys and familiar with the marine life of the area would be present. The tow ships would be outfitted with 25X power binoculars (Bigeyes) to allow the observers to sight surfacing mammals from as far as 11.1 km (6 nm) and provide 360° overlapping coverage. Sighting locations would be based on bearing and distance.

Detonation would be postponed if:

1. Any marine mammals or sea turtles are visually detected within the safety range. The “hold detonation” would continue until the animal that caused the postponement is confirmed to be outside of the safety range.
2. Large *Sargassum* rafts or large concentrations of jellyfish are observed within the safety range. The “hold detonation” would continue until the *Sargassum* rafts or jellyfish that caused the postponement are confirmed to be outside of the safety range due to the current moving the *Sargassum* and/or jellyfish away from their last verified location.

*Post-Detonation Monitoring:* Post-detonation monitoring would commence immediately following the sinking of ex-ORISKANY for two days. Post-detonation monitoring is designed to determine the effectiveness of pre-detonation protective measures by reporting any sightings of dead or injured marine mammals or sea turtles. Dead animals would be retrieved, if possible, for evaluation. If any animals were observed in the general area during the post-detonation monitoring period, the location, number, species, and behavior would be recorded.

## **6.0 CONCLUSIONS**

Based upon the foregoing analysis, the Navy concludes that sinking ex-ORISKANY at any of the four proposed alternative reef sites would not have a significant environmental impacts. Ex-ORISKANY would undergo environmental preparations in accordance with best management practices developed by EPA and MARAD to remove hazardous materials, including PCBs, and other materials of concern. Prior to sinking, the Navy would seek risk-based disposal approval, under the Toxic Substances Control Act, from the cognizant EPA office. The proposed action would not affect threatened or endangered species or adversely affect essential fish habitat and is not likely to result in the takes of marine mammals.

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## **APPENDIX A: STATE ARTIFICIAL REEF PROGRAMS**

- Alabama: [http://www.dcnr.state.al.us/mr/artificial\\_reefs.htm](http://www.dcnr.state.al.us/mr/artificial_reefs.htm)  
<http://www.dcnr.state.al.us/mr/protocol.htm>
- Delaware: <http://www.dnrec.state.de.us/fw/artrf.htm>
- Florida: <http://www.floridaconservation.org/whos-who/00/reports/nov00/reefs.html>
- Georgia: <http://www.state.ga.us/dnr/coastal/>
- Louisiana: <http://www.wlf.state.la.us/apps/netgear/index.asp?cn=lawlf&pid=133>
- Maryland: <http://dnrweb.dnr.state.md.us/download/cleanmarina/10Lawsan.pdf>  
<http://www.mikey.net/aue/blenny.html>
- Massachusetts: <http://www.state.ma.us/dfwele/dmf/ProgramsAndProjects/artificia.htm>
- Mississippi: <http://billstatus.ls.state.ms.us/documents/1999%5Chtml%5CHB/1200-1299/HB1240PS.htm>
- New Jersey: <http://www.state.nj.us/dep/fgw/artreef.htm>
- New York: <http://www.dec.state.ny.us/website/dfwmr/marine/reefs00.html>
- North Carolina: <http://www.clis.com/ccsa/artifici.htm>
- South Carolina: <http://www.dnr.state.sc.us/marine/pub/seascience/artreef.html>
- Texas: <http://www.tpwd.state.tx.us/fish/reef/artreef.htm>  
<http://www.beak.com/info/features/abstracts/CulbertsonPeter.htm>
- Virginia: <http://www.mrc.state.va.us/anglersg.htm#varp>

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