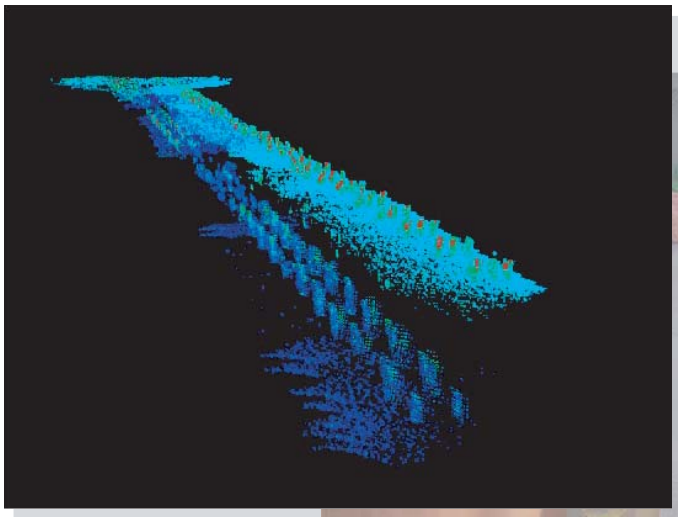
Environmental Assessment of Testing Equipment Under Development at the University of South Florida, Center for Ocean Technology



United States Coast Guard
Research and Development Center

September 2006

Acronyms and Abbreviations

°F	degrees Fahrenheit
AIS	Automatic Information System
ANSI	American National Standards Institute
APLMRI	Atlantic Protected Living Marine Resources Initiative
AUV	autonomous underwater vehicle
CEQ	Council on Environmental Quality
CFMC	Caribbean Fishery Management Council
CFR	Code of Federal Regulations
COMDTINST	Commandant's Instruction
COT	Center for Ocean Technology [University of South Florida]
COTS	Commercial Off The Shelf
cw	continuous wave power
dB	decibels
DC	Direct Current
DHS	Department of Homeland Security
DOD	Department of Defense
dwt	dead weight tons
EA	Environmental Assessment
EEZ	Exclusive Economic Zone
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EO	Executive Order
ESA	Endangered Species Act
FERC	Federal Energy Regulatory Commission
FMP	fishery management plan
FONSI	Finding of No Significant Impact
ft	feet
GMFMC	Gulf of Mexico Fishery Management Council
GOM	Gulf of Mexico
GSMFC	Gulf of Mexico States Marine Fisheries Commission
HAPC	habitat areas of particular concern
Hz	Hertz
IAS	Integrated Anti-swimmer System
IDS	Integrated Deepwater System
IED	improvised explosive device
IWC	International Whale Commission
J/cm^2	Joules per square centimeter
kHz	KiloHertz
km	kilometer
LED	Light Emitting Diode
LNG	liquefied natural gas
m	meter
MAFMC	Mid-Atlantic Fishery Management Council
MHLS	Maritime Homeland Security
mHZ	megaHertz
mi	miles
MK	Mark
MMPA	Marine Mammal Protection Act
MPE	Maximum Permissible Exposure
MPEH™	Main Pass Energy Hub™
ms	millisecond
MSA	Magnuson-Stevens Fisheries Conservation and Management Act
MSST	Maritime Safety and Security Team
MTS	Marine Transportation System
MTSA	Marine Transportation Security Act
mW	megaWatt
NA	Not applicable

Continued on back inside cover →

USCG

ENVIRONMENTAL ASSESSMENT

OF

TESTING EQUIPMENT UNDER DEVELOPMENT AT THE UNIVERSITY OF SOUTH FLORIDA, CENTER FOR OCEAN TECHNOLOGY

This USCG environmental assessment was prepared in accordance with Commandant's Manual Instruction M16475.1D and is in compliance with the National Environmental Policy Act of 1969 (P.L. 91–190) and the Council of Environmental Quality Regulations dated 28 November 1978 (40 CFR Parts 1500–1508).

This environmental assessment serves as a concise public document to briefly provide sufficient evidence and analysis for determining the need to prepare an environmental impact statement or a finding of no significant impact.

This environmental assessment concisely describes the proposed action, the need for the proposal, the alternatives, and the environmental impacts of the proposal and alternatives. This environmental assessment also contains a comparative analysis of the action and alternatives, a statement of the environmental significance of the preferred alternative, and a list of the agencies and persons consulted during the preparation of the environmental assessment.

31 Aug 06	Scot T. Tripp	Underwater Systems Specialist
Date	*Preparer/Environmental Project Manager (as applicable)	Title/Position
19 Sep 06	[illegible]	CHIEF, CG-443
Date	**Environmental Reviewer	Title/Position

In reaching my decision/recommendation on the USCG's proposed action, I have considered the information contained in this environmental assessment on the potential for environmental impacts.

18 OCT 06	[illegible]	CO
Date	Responsible Official	Title/Position

* The USCG preparer signs for NEPA documents prepared in-house. The USCG environmental project manager signs for NEPA documents prepared by an applicant, a contractor, or another outside party.
** Signature of the Environmental Reviewer for the Bridge Administration Program may be that of the preparer's.

USCG
FINDING OF NO SIGNIFICANT IMPACT

FOR

TESTING EQUIPMENT UNDER DEVELOPMENT AT THE UNIVERSITY OF SOUTH FLORIDA, CENTER FOR OCEAN TECHNOLOGY

The United States Coast Guard (USCG) Research and Development Center (R&DC) proposes to test equipment through the University of South Florida (USF), Center for Ocean Technology (COT) to support the development of portable underwater inspection/detection systems. The testing would support development of portable underwater systems designed to detect, classify, and identify conventional explosives, improvised explosive devices (IEDs), or other destructive devices that could be attached to ship hulls, piers, and underwater infrastructure. The systems, composed of commercially available equipment, would include sonar and laser imaging and navigation equipment mounted on remotely operated vehicles (ROVs), autonomous underwater vehicles (AUVs), and poles suspended from surface vessels. Security systems developed through the proposed testing would be available for deployment by USCG Sector Commanders (formerly known as Captains of the Ports) at different locations around the country.

An Environmental Assessment (EA) was prepared to evaluate the effects of the equipment testing in five study areas. In Louisiana, testing would occur in the lower Mississippi River Port Complex from the mouth of the Mississippi River north to the Port of Baton Rouge. In Florida, testing would occur in the Port of Tampa/St. Petersburg, Port of Miami, Port Everglades/Ft. Lauderdale, and Port of Jacksonville. Study areas would include the shipping approaches to these ports in an area approximately 20 miles (32.2 kilometers [km]) seaward of each port's initial entrance buoy. The proposed equipment testing would not occur in ecologically sensitive areas such as seagrass areas and wetlands; marine sanctuaries; North Atlantic right whale (*Eubalaena glacialis)* or Johnson's seagrass (*Halophila johnsonii*) critical habitat; known locations of hardbottom habitats (including coral, vermetid, and coquina reefs); near or on beaches; in offshore (seaward of the coast) waters less than 18 feet (5.5 meters [m]) deep; where manatees are known to congregate (warmwater refuge sites such as power plant cooling water discharges and areas between power plant cooling water discharges that are in close proximity); marine mammal choke points (such as the mouths of tributaries where manatees are known to congregate); off the coast of Port Everglades/Ft. Lauderdale from 1 January through 1 May, when North Atlantic right whales could be present; or in any area that is designated as "restricted" for environmental reasons in the *Coast Pilot 5 – 33rd Edition* and *Coast Pilot 4 – 37th Edition* (NOAA, 2005a; NOAA, 2005b). A 200-m buffer would be maintained between the equipment testing procedures and the exclusion areas presented in Figures 2-2

through 2-5 (in the attached EA). In addition, AUVs would only be operated in the offshore study areas and in main shipping channels.

The underwater detection systems would be deployed for testing purposes only and would be monitored by USF COT at all times of deployment. For testing, the proposed detection systems would be deployed for short durations of approximately 8 to 10 hours. Equipment testing would be conducted approximately 40 days per year. The equipment would be used at a range necessary to survey ship hulls, piers, or other underwater infrastructure. The expected maximum distance from these structures should be no greater than 330 feet (100 m) during a wide area survey and 16 feet (5 m) during a targeted inspection. In some cases, target vessels would be arranged ahead of time. In other cases, the researchers can radio to vessels in the area and request permission to survey the hulls. In all cases, the surface vessel supporting the equipment testing and deploying the systems would obtain permission from the Coast Guard Sector Commander to conduct the testing in the operating area of the port.

Operational protocols that would be implemented to avoid adverse effects on protected marine mammals and other species include:

- Tested equipment would be monitored (by USCG-trained marine mammal observers) at all times.
- A safety zone of 660 feet (200 m) (beyond the 160-decibel (dB) contour for each equipment type) would be visually monitored (by a USCG-trained marine mammal observer) for marine mammal and sea turtle activity for 20 minutes prior to turning on the system. For sonar testing after dark, night vision devices would be used to monitor safety zones.
- If sonar were deployed and marine mammals or sea turtles were observed which could approach the safety zone, the system would be shut down until the marine mammal or sea turtles exited the area.
- Sonar equipment would not be placed in a location such that it would interfere with obvious marine mammal throughways or cause choke-points where sonar could deter marine mammals' or sea turtles' movement (e.g., testing would not occur near the mouths of tributaries where manatees are known to congregate, on or near beaches, or in offshore waters less than 18 feet [5.5 m] deep).
- A 660-foot (200-m) buffer would be maintained between the equipment testing procedures and the exclusion areas presented in Figures 2-2 through 2-5 (in the attached EA).
- The vessel strike avoidance and reporting measures provided by National Marine Fisheries Service (NMFS), Southeast Region would be followed (Appendix B).
- Support vessels would not anchor while in the Port of Miami and Port Everglades/Ft. Lauderdale offshore study areas. If branching corals are observed with imaging equipment in the Port of Miami and Port Everglades/Ft. Lauderdale offshore study areas, testing will be moved to a different location.

Operational protocols that would be implemented to minimize or avoid potential impacts on existing vessel traffic include

- Testing would not be conducted in designated channels without prior authorization and coordination with the USCG or other appropriate marine authorities.
- Equipment would not be deployed in a location or at a time when activities might interfere with the operation of other vessels or where vessel traffic might interfere with the equipment testing.
- Field testing would not be conducted in areas generally prohibited to other vessels.
- Equipment testing on commercial vessels entering the harbor would only be conducted in direct cooperation with the USCG. Testing would not be scheduled without appropriate communication and coordination with the vessel master or owner as well as any applicable port pilot authority.

This project has been thoroughly reviewed by the USCG, and it has been determined by the undersigned that this project will have no significant impact on the human environment including transportation, waterborne noise, marine mammals, sea turtles, protected fisheries, and public safety.

This Finding of No Significant Impact (FONSI) is based on the attached contractor-prepared EA, which has been independently evaluated by the USCG and determined to adequately and accurately discuss the environmental issues and impacts of the proposed project and provides sufficient evidence and analysis for determining that an environmental impact statement is not required. The USCG takes full responsibility for the accuracy, scope, and content of the attached EA.

19 Sept '06		CHIEF, CG-443
Date	Environmental Reviewer	Title/Position

I have considered the information contained in the EA, which is the basis for this FONSI. Based on the information in the EA and this FONSI document, I agree that the proposed action as described above, and in the EA, will have no significant impact on the environment.

18 OCT '06		CO
Date	Responsible Official	Title/Position

ENVIRONMENTAL ASSESSMENT OF TESTING EQUIPMENT UNDER DEVELOPMENT AT THE UNIVERSITY OF SOUTH FLORIDA, CENTER FOR OCEAN TECHNOLOGY

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ENVIRONMENTAL ASSESSMENT OF TESTING EQUIPMENT UNDER DEVELOPMENT AT THE UNIVERSITY OF SOUTH FLORIDA, CENTER FOR OCEAN TECHNOLOGY

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1. Purpose of and Need for the Proposed Action

1.1 Introduction

The United States Coast Guard (USCG) Research and Development Center (R&DC) proposes to test equipment through the University of South Florida (USF), Center for Ocean Technology (COT) to support the development of portable underwater inspection/detection systems (also referred to as systems). The systems would be designed to detect, classify, and identify conventional explosives, improvised explosive devices (IEDs), or other destructive devices that could be attached to ship hulls, piers, and underwater infrastructure. The commercially available equipment would include sonar and laser imaging and navigation equipment mounted on remotely operated vehicles (ROVs), autonomous underwater vehicles (AUVs), or poles suspended from surface vessels. Security systems developed through the proposed testing would be available for deployment by USCG Sector Commanders (formerly known as Captains of the Port) at different locations around the country.

The USCG, one of the country's five armed services, is the nation's oldest maritime agency and is the lead Federal agency for Maritime Homeland Security (MHLS)[1]. As an agency of the Federal government, the USCG affords the nation a single maritime service dedicated to saving lives at sea and enforcing the nation's maritime laws. The USCG has continued to protect the nation throughout its long history and has served proudly in every conflict. National defense responsibilities remain one of the USCG's most important functions.

Today, the USCG operates in all maritime regions:

- Approximately 95,000 miles of U.S. coastlines, including inland waterways and harbors
- More than 3.36 million square miles of Exclusive Economic Zone (EEZ) and U.S. territorial seas
- International waters and other maritime regions of importance to the United States.

The events of September 11, 2001, significantly changed the nation's homeland security posture. Terrorism is a clear and present danger to the United States. The USCG has dramatically shifted its mission activities to reflect its role as a leader in MHLS. On March 1, 2003, in response to growing national security demands, the newly formed Department of Homeland Security (DHS) assumed control of the USCG from the U.S. Department of Transportation (USDOT) in the largest reorganization of the Federal government since the 1940s (Public Law [P.L.] 107-296). The reorganization resulted in the USCG being designated as the lead Federal agency for MHLS. The USCG's heightened maritime security posture will remain in place indefinitely.

1.2 Coast Guard Missions

The USCG is the only maritime service with regulatory and law enforcement authority, military capabilities, and humanitarian operations. USCG activities in warfare encompass critical elements of naval operations in littoral regions, including port security and safety, military environmental response, maritime interception, coastal control, and force protection. More than two centuries of littoral warfare operations at home and overseas have honed the USCG's skills most needed in support of the nation's

[1] MHLS is the concerted national effort led by the USCG to secure the homeland associated with or in the U.S. Maritime Domain from terrorist attacks.

military and naval strategies for the 21st century. The USCG's missions include maritime law enforcement, maritime safety, national defense, and marine environmental protection.

Under the newly formed DHS, one of the USCG's primary missions is to protect the U.S. Maritime Domain[2] and the U.S. Marine Transportation System[3] (MTS) and deny their use and exploitation by terrorists as a means for attacks on U.S. territory, population, and critical infrastructure. The Maritime Transportation Security Act (MTSA) of 2002 contains several provisions relating to the USCG's role in MHLS. It creates a U.S. maritime security system and requires Federal agencies, ports, and vessel owners to take numerous steps to upgrade security. The MTSA requires the USCG to develop national and regional area maritime transportation security plans. It also requires ports, waterfront terminals, and certain types of vessels to submit security and incident response plans to the USCG for approval.

The USCG has several additional roles:

- Protect ports, the flow of legitimate commerce, and the MTS from terrorism
- Maintain maritime border security against illegal drugs, undocumented aliens, firearms, and weapons of mass destruction
- Ensure that U.S. military assets can be rapidly deployed and resupplied by keeping USCG units at a high state of readiness, and by keeping marine transportation open for the transit of assets and personnel from other branches of the armed forces
- Protect against illegal fishing and indiscriminate destruction of living marine resources
- Prevent and respond to oil and hazardous material spills—both accidental and intentional
- Coordinate efforts and intelligence with Federal, state, and local agencies.

In response to the increased homeland security threat level, the USCG is engaged in Operations Liberty Shield and Iraqi Freedom. Operation Liberty Shield is a multidepartment, multiagency, national team effort to protect American citizens and infrastructure while minimizing disruption to our economy and way of life. Overseas, the USCG is playing a crucial role supporting the other military services in the implementation of Operation Iraqi Freedom. Several USCG cutters and aircraft, operated by reserve and active-duty personnel, are deployed in the Persian Gulf region and in the Mediterranean to perform waterside security, maritime force protection, and environmental response duties.

In addition, the USCG and Department of Defense (DOD) are partners in two major actions: Operation Enduring Freedom and Operation Noble Eagle. Operation Enduring Freedom involves U.S. military operations associated with the war on terrorism outside the United States. Operation Noble Eagle involves U.S. military operations associated with homeland defense and civil support to Federal, state, and local agencies in the United States, including the increased security measures taken after the terrorist attacks on September 11, 2001. The operation involves joint agency coordination and cooperation to ensure our nation and its borders are protected from future attacks. The increased USCG maritime security presence prevents and deters those who would cause harm to innocent Americans.

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[2] The U.S. Maritime Domain encompasses all U.S. ports, inland waterways, harbors, navigable waters, Great Lakes, territorial seas, contiguous waters, custom waters, coastal seas, littoral areas, the U.S. EEZ, and oceanic regions of U.S. national interest, as well as the sea lanes to the United States, U.S. maritime approaches, and high seas surrounding the Nation.

[3] The U.S. MTS consists of waterways, ports, and their intermodal connections, vessels, vehicles, and system users, as well as Federal maritime navigation systems.

1.3 Purpose of and Need for Action

The purpose of the Proposed Action is to develop portable underwater inspection/detection systems to enhance the USCG's underwater security capabilities to protect personnel, ships, and property from sabotage or other subversive acts.

The Proposed Action is needed to identify the most effective portable underwater inspection/detection systems that would enable the USCG to protect the MTS and critical infrastructure in and around U.S. ports and waterways from underwater threats, including delivery of conventional explosives, IEDs, and other offensive devices. USCG forces must accomplish this mission while minimizing impacts on the environment and without unduly interfering with legitimate trade and commerce.

Intelligence reports establish credible threats to U.S. ports both above and below the water. These threats include explosives and other offensive devices that might be attached to ship hulls, piers, or other underwater infrastructure. Operational commanders responsible for maritime security must have capabilities to detect, classify, and identify potentially offensive devices in order to neutralize the threat. Risk analyses indicate that active systems are needed to provide an effective capability.

Due to the nature of the threats and the possibility of the need for timely action to counteract the threat, the technology must be available immediately (i.e., commercially available), proven effective, and affordable with respect to both procurement and operations. Testing in real world conditions is necessary to evaluate the systems' actual performance in relation to the operational requirements anticipated by the USCG.

1.4 Scope

This environmental assessment (EA) assesses the potential environmental effects of testing equipment to develop a portable underwater inspection/detection capability. This document has been prepared to comply with the Commandant's Manual Instruction on National Environmental Policy Act (NEPA) Implementing Procedures and Policy for Considering Environmental Impacts (Commandant's Instruction [COMDTINST] M16475.1D), National Environmental Policy Act (NEPA) of 1969, the Council on Environmental Quality (CEQ) and USCG regulations for implementing NEPA, and USCG policy[4]. Its purpose is to inform decisionmakers and the public of the likely environmental consequences of the Proposed Action and alternatives.

An interdisciplinary team of environmental scientists, biologists, economists, engineers, historians, and technicians has analyzed the Proposed Action and alternatives in light of existing conditions and has identified relevant beneficial and adverse impacts associated with the action. The EA examines potential impacts of the Proposed Action and No Action Alternative on relevant resource areas, including underwater acoustics, biological resources, transportation, and public safety.

This EA examines the potential environmental impacts associated with the testing and evaluation of equipment by the USF COT at specified locations. Systems acquisition, training of operators, equipment fielding, and operations are matters that are not yet ripe for decision and are, accordingly, beyond the scope of this present evaluation. In the event the USCG determines that further actions such as, systems

[4] National Environmental Policy Act of 1969, P.L. 91-190, 42 U.S.C. 4321–4347, as amended; Council on Environmental Quality *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act*, Title 40 *Code of Federal Regulations* Parts 1500–1508; and Commandant's Instruction M16475.1D, *National Environmental Policy Act Implementing Procedures and Policy for Considering Environmental Impacts*.

acquisition following the equipment testing, are warranted, appropriate environmental impact analyses will be conducted consistent with NEPA and USCG policy.

The decision to be made is how best the USCG might implement the proposed equipment testing. The decision will take into account maritime operational and environmental considerations, public input, and the results of this analysis.

1.5 Public Involvement Process

To announce the availability of the draft EA and draft Finding of No Significant Impact (FONSI) (if applicable), an advertisement was published in local newspapers and letters were sent to interested parties, and all appropriate Federal, state, and local agencies (Appendices A and B). The USCG accepted comments on the Proposed Action during a 30-day public review period.

Federal and state agencies consulted during the preparation of this EA include the National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS), U.S. Fish and Wildlife Service (USFWS), and Florida and Louisiana Coastal Zone Management Programs.

1.6 Organization of the EA

The following describes the organization of this EA.

Section 1: Purpose of and Need for the Proposed Action. As required under NEPA, this section provides an overview of the action, describes the area in which the Proposed Action would occur, and explains the public involvement process.

Section 2: Proposed Action and Alternatives. This section describes the Proposed Action and the No Action Alternative and provides a comparison of the alternatives that are evaluated in detail.

Section 3: Affected Environment. This section describes the existing environmental conditions in the areas in which the Proposed Action would occur.

Section 4: Environmental Consequences. Using the information in Section 3, this section identifies the potential for significant environmental impacts on each resource area under the Proposed Action and the No Action Alternative.

Section 5: Cumulative Impacts. This section discusses the potential cumulative impacts that could result from the impacts of the Proposed Action, in combination with past, present, and reasonably foreseeable future actions that would also occur in the study areas and would have impacts similar to the testing of underwater inspection/detection systems.

Section 6: This section presents a summary of the environmental analysis.

Sections 7 and 8. These sections provide a list of preparers and references for the EA.

Appendices. This EA includes four appendices that provide additional information. Appendix A contains a copy of the Interested Party distribution list, letter with attachments, and copies of the newspaper announcements. No responses to the to the Interested Party letter were received from the general public. Appendix B includes the correspondence relating to Endangered Species Act (ESA) consultation, Essential Fish Habitat (EFH) consultation, and Federal Coastal Zone Management Consistency determination. Appendix C includes relevant agency coordination letters regarding the

Galveston and San Pedro Integrated Anti-swimmer System (IAS) EAs and the nationwide Programmatic EA. Appendix D includes a list of those regulations, laws, and executive orders that might reasonably be expected to apply to the Proposed Action.

Acronyms and abbreviations are used throughout the document to avoid unnecessary length. A list of these acronyms and abbreviations can be found on the front and back inside covers of this EA.

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2. Proposed Action and Alternatives

2.1 Proposed Action

The USCG R&DC proposes to test equipment through the USF COT to support the development of underwater detection/inspection systems. The portable underwater systems would be designed to detect, classify, and identify conventional explosives, IEDs, or other destructive devices that could be attached to ship hulls, piers, and underwater infrastructure. System components subject to testing efforts would consist of the following commercially available equipment:

- Transponders and acoustic modems (for AUV navigation and communication only), sonar, lasers, and cameras for navigation and imaging
- Processors for communication with the system, data storage, and analysis of images and data
- Thrusters and stabilization equipment to propel and steer ROVs or AUVs through the water.

The following sections provide details on study areas, equipment, and testing procedures.

2.1.1 Study Areas

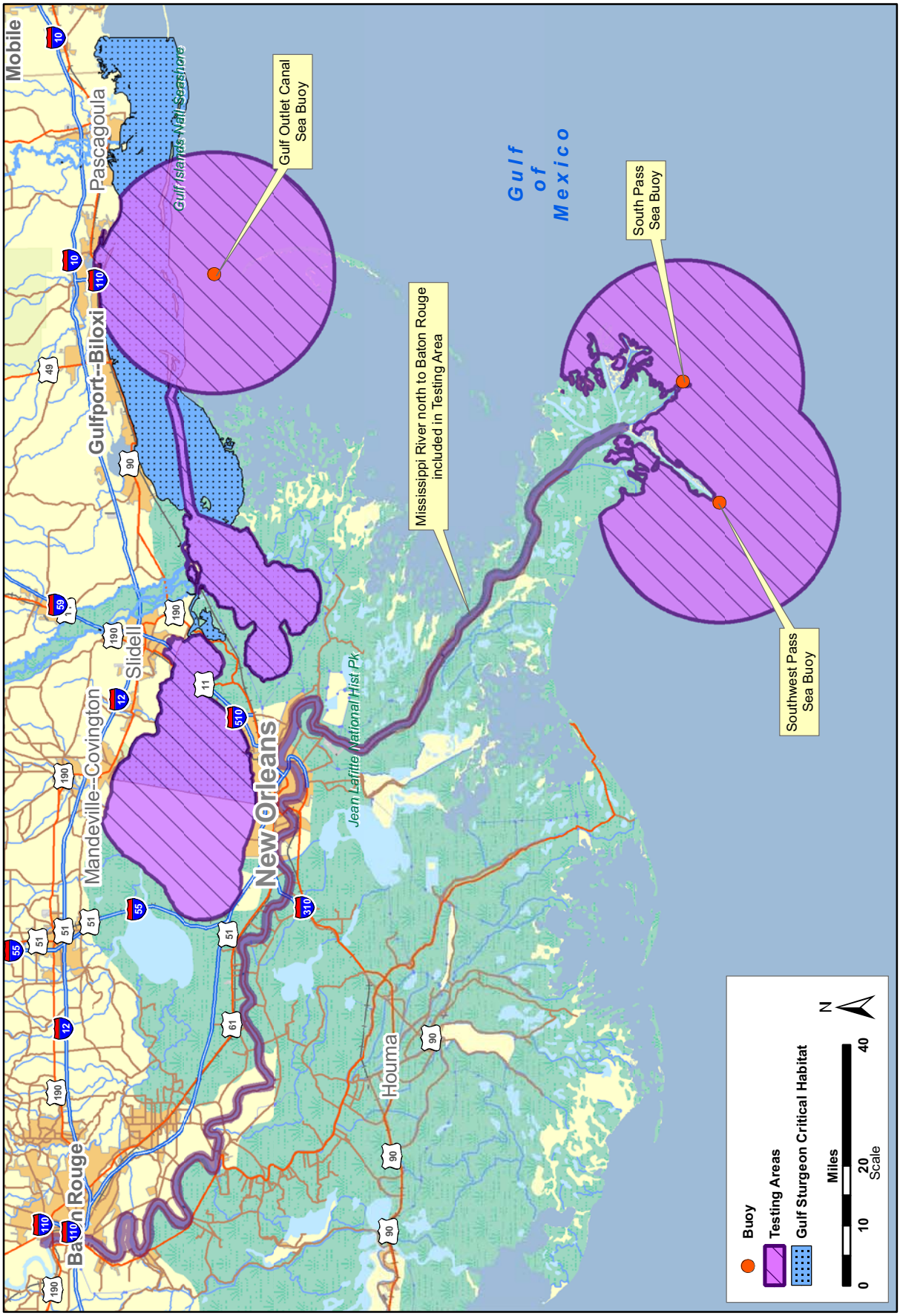
Field testing of system components and prototypes would be conducted in both active port environments and in offshore (seaward of the coast) approaches used by commercial vessels entering U.S. ports. The proposed systems would be developed and maintained at the USF COT in St. Petersburg, Florida. As shown in Figures 2-1 through 2-5, field testing would be conducted in five primary study areas. In Louisiana, testing would occur in the lower Mississippi River port complex. In Florida, testing would occur in the Port of Tampa/St. Petersburg, Port of Miami, Port Everglades/Ft. Lauderdale, and Port of Jacksonville. Offshore portions of the study areas would include shipping approaches to these ports and a 20-mile radius area around each port's initial entrance buoy. In Section 3, the study areas are split into two groups for ease of analysis: the study areas on the Gulf of Mexico (GOM) (the lower Mississippi River port complex and Port of Tampa/St. Petersburg) and the study areas on the East Coast of Florida (Port of Miami, Port Everglades/Ft. Lauderdale, and Port of Jacksonville).

Because the systems would be designed to maintain safety of commercial trafficways, the proposed testing would be conducted in areas where commercial and military vessels would be expected to operate (i.e., busy ports, offshore anchorages, and offshore fairways). As presented in Figures 2-1 through 2-5, the proposed equipment testing would not occur in ecologically sensitive areas such as seagrass areas and wetlands; marine sanctuaries; North Atlantic right whale (Eubalaena glacialis) or Johnson's seagrass (Holphila johnsonii) critical habitat; known locations of hardbottom habitats (including coral, vermetid, and coquina reefs); near or on beaches; offshore (seaward of the coast) waters less than 18 feet (5.5 m) deep; where manatees are known to congregate (warmwater refuge sites such as power plant cooling water discharges and areas between power plant cooling water discharges that are in close proximity); marine mammal choke points (such as the mouths of tributaries where manatees are known to congregate); off the coast of Port Everglades/Ft. Lauderdale from 1 January through 1 May, when North Atlantic right whales could be present; or in any area that is designated as "restricted" for environmental reasons in the Coast Pilot 5 – 33rd Edition and Coast Pilot 4 – 37th Edition (NOAA, 2005a; NOAA, 2005b). A 200-meter (m) buffer would be maintained between the equipment testing procedures and the exclusion areas presented in Figures 2-2 through 2-5. In addition, AUVs would only be operated in the offshore study areas and in main shipping channels. Table 2-1 provides a broad description of the study areas. Figures 2-1 to 2-5 identify the locations of the study areas.

Table 2-1. Study Areas Where Equipment Testing Would Occur

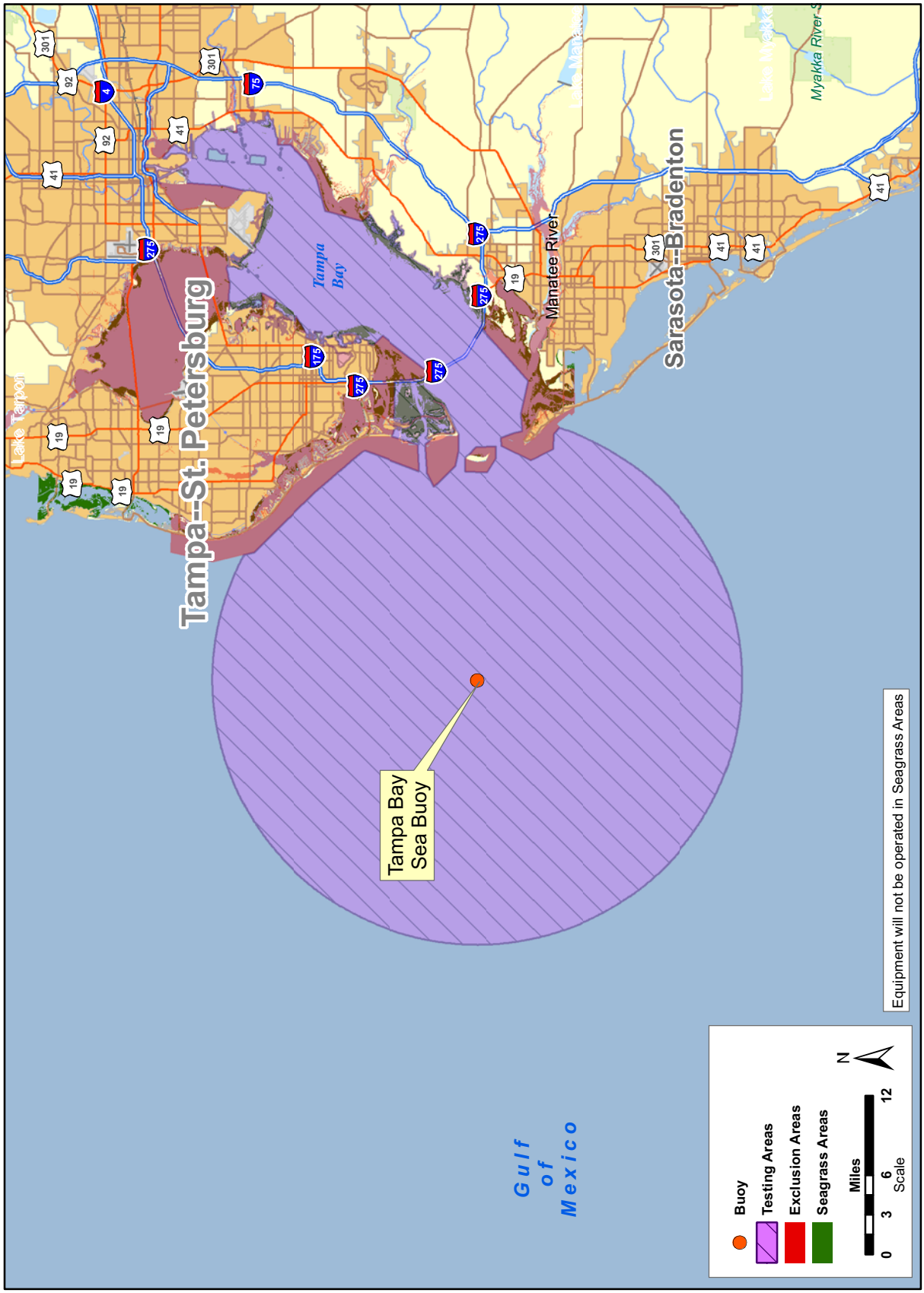
Study Area	Description
Gulf of Mexico[a]	
Lower Mississippi River Port Complex, Louisiana (Figure 2-1)	The Lower Mississippi River Port Complex Study Area includes the areas within the 20-mile radii seaward of the buoys marking the entrances of the Southwest Pass, South Pass, and Gulf Outlet Canal of the Mississippi River; the areas of developed port infrastructure within the Mississippi River from the entrances at Southwest Pass, South Pass, and the Gulf Outlet Canal north to Baton Rouge; and the areas of developed infrastructure within Lake Pontchartrain and Lake Borgne.
Port of Tampa/St. Petersburg, Florida (Figure 2-2)	The Port of Tampa/St. Petersburg Study Area includes the area within the 20-mile radius seaward of the buoy marking the entrance of Tampa Bay, the shipping channel from the buoy to the areas of developed port infrastructure within the main stem of Tampa Bay from Interstate 275 to the 587 Bridge in Old Tampa Bay, and the areas of developed port infrastructure in Hillsborough Bay.
East Coast of Florida[a]	
Port of Miami, Florida (Figure 2-3)	The Port of Miami Study Area includes the area within a 20-mile radius seaward of the buoy that marks the entrance of the Port of Miami. The Port of Miami Study Area includes only the areas of developed port infrastructure, commercial anchorages, and commercial fairways. This area does not include the Biscayne Bay National Park or the Florida Keys National Marine Sanctuary.
Port Everglades/Ft. Lauderdale, Florida (Figure 2-4)	The Port Everglades/Ft. Lauderdale Study Area includes the area within the 20-mile radius seaward of the buoy marking the entrance to Port Everglades, and the areas of developed port infrastructure associated with and in the vicinity of Port Everglades and Ft. Lauderdale.
Port of Jacksonville, Florida (Figure 2-5)	The Port of Jacksonville Study Area includes the developed port infrastructure in the St. John's River in the Port of Jacksonville (including the main channel of the St. Johns River, from the Interstate 295 Bridge north-northeast to the area of the river east of Blount Island Marine Terminal and adjacent to Fort Caroline National Memorial). The Port of Jacksonville Study Area does not include adjacent coastal waters or right whale critical habitat.

Note: [a] The proposed equipment testing would not occur in ecologically sensitive areas such as seagrass areas and wetlands; marine sanctuaries; North Atlantic right whale (*Eubalaena glacialis)* or Johnson's seagrass (*Holphila johnsonii*) critical habitat; known locations of hardbottom habitats (including coral, vermetid, and coquina reefs); near or on beaches; in offshore (seaward of the coast) waters less than 18 feet (5.5 m) deep; where manatees are known to congregate (warmwater refuge sites such as power plant cooling water discharges and areas between power plant cooling water discharges that are in close proximity); marine mammal choke points (such as the mouths of tributaries where manatees are known to congregate); off the coast of Port Everglades/Ft. Lauderdale from 1 January through 1 May, when North Atlantic right whales could be present; or in any area that is designated as "restricted" for environmental reasons in the *Coast Pilot 5 – 33rd Edition* and *Coast Pilot 4 – 37th Edition* (NOAA, 2005a; NOAA, 2005b). In addition, AUVs would only be operated in the offshore study areas and in main shipping channels.



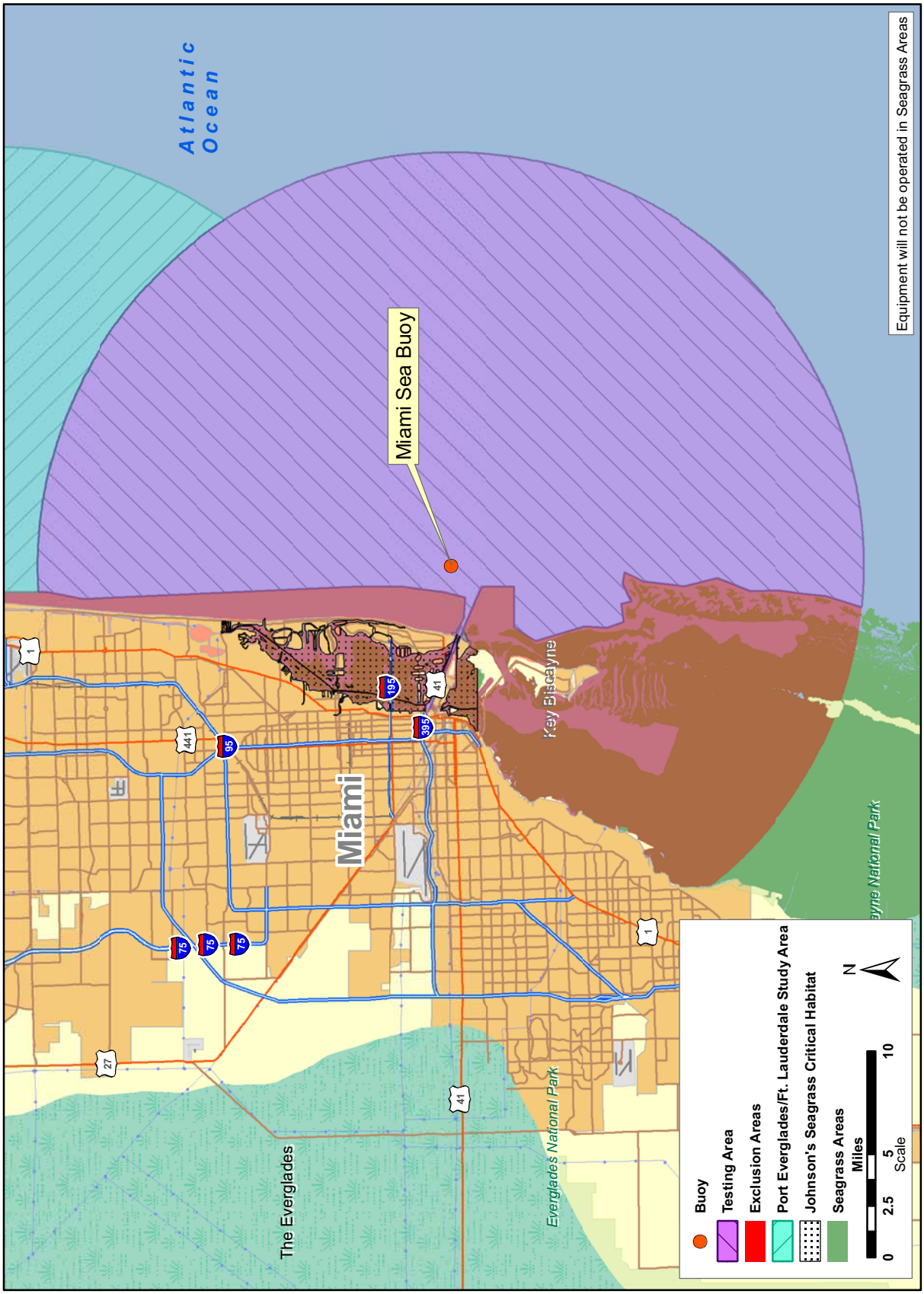
Source: Adapted from USF, 2006

Figure 2-1. Lower Mississippi River Port Complex Study Area



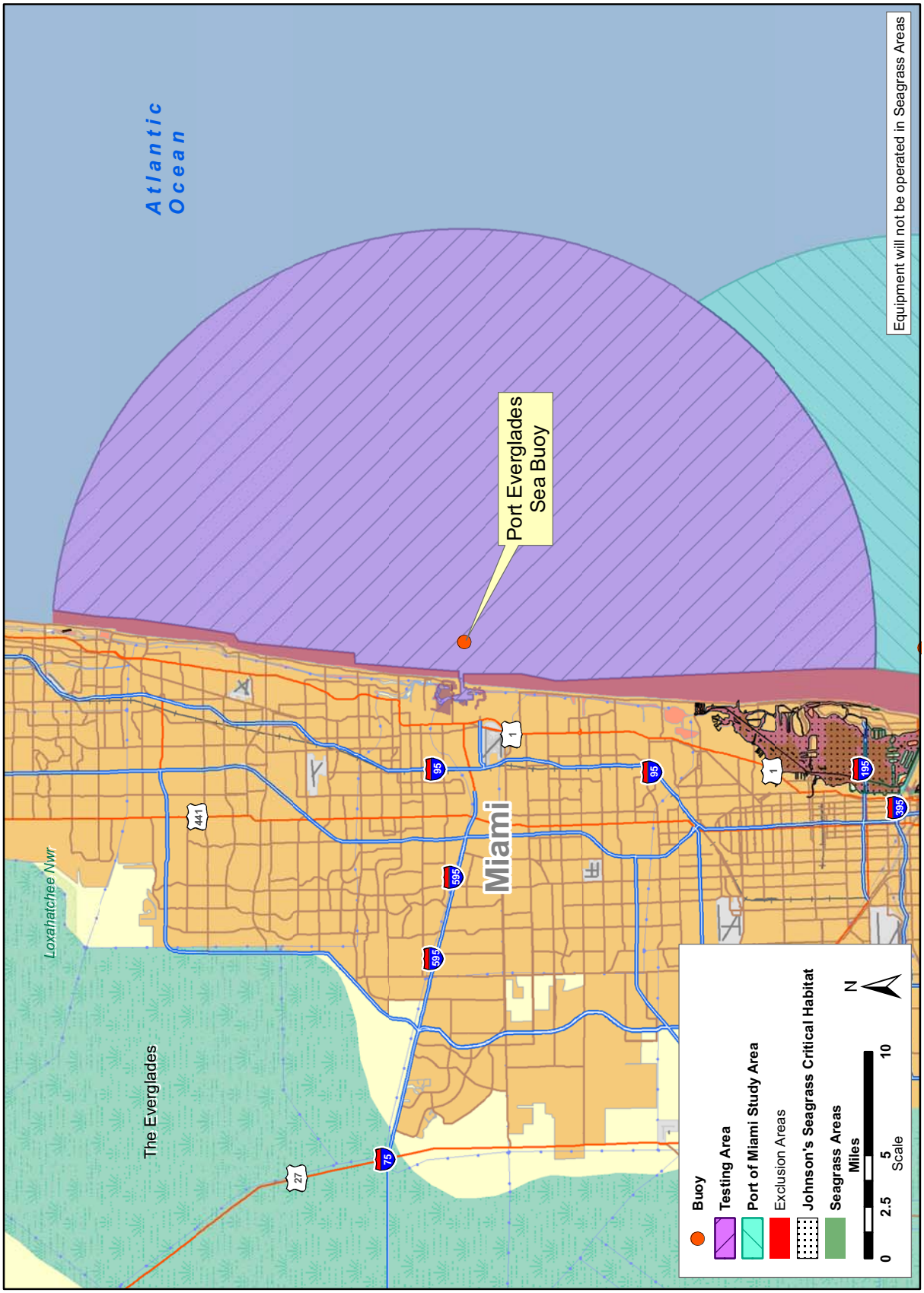
Source: Adapted from USF, 2006

Figure 2-2. Port of Tampa/St. Petersburg, Florida Study Area



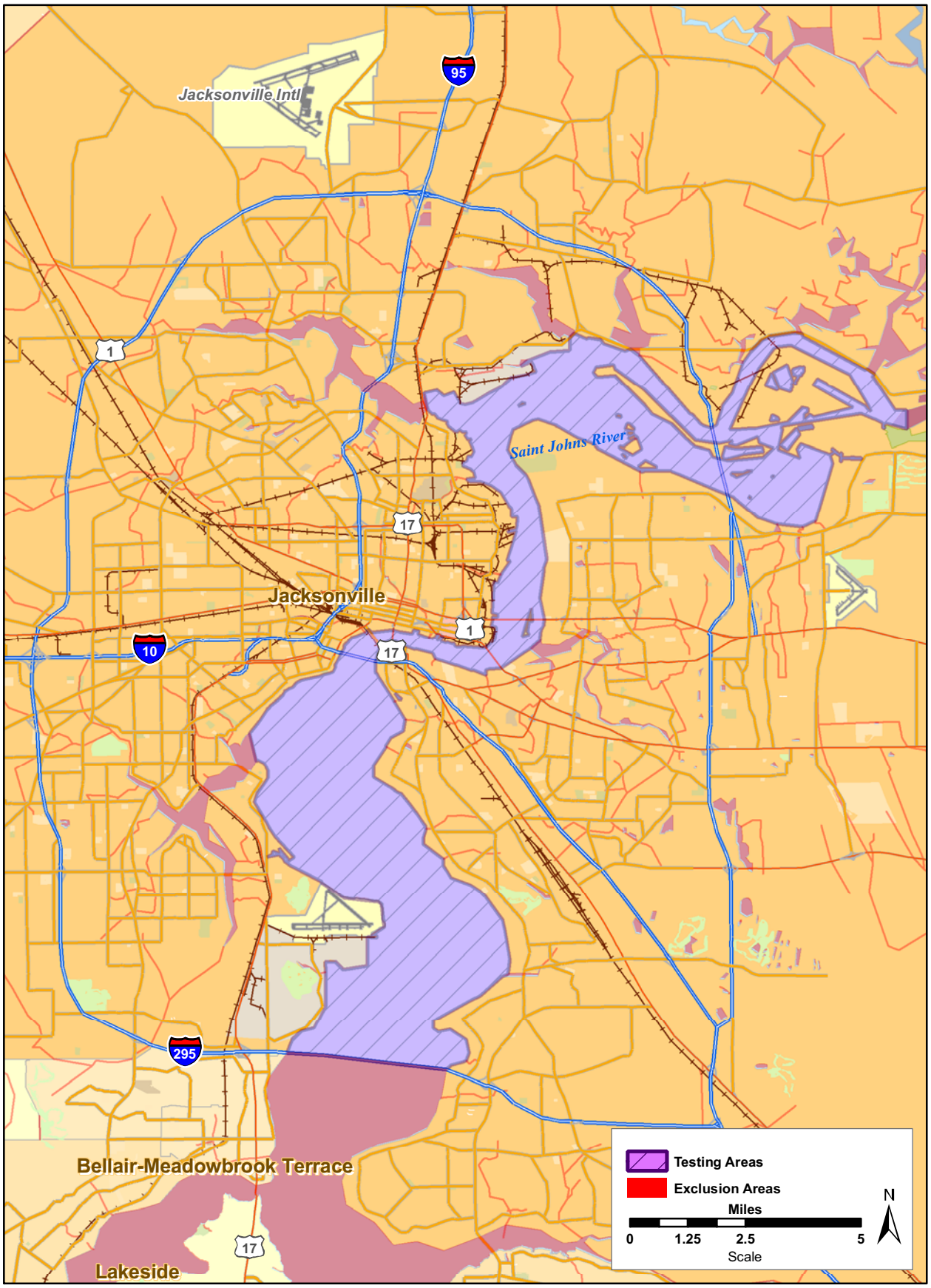
Source: Adapted from USF, 2006

Figure 2-3. Port of Miami, Florida Study Area



Source: Adapted from USF, 2006

Figure 2-4. Port Everglades/Ft. Lauderdale, Florida Study Area



Source: Adapted from USF, 2006

Figure 2-5. Port of Jacksonville, Florida Study Area

2.1.2 Equipment

Components of the portable underwater inspection/detection systems would be deployed for testing purposes only. They would be monitored by USF COT at all times of deployment. The safety standards set for each type of equipment are listed below. The technology for the underwater inspection/detection systems must be readily available, proven effective, and affordable with respect to both procurement and operations. The USF COT would not be limited to any specific or single manufacturers' equipment. The USF COT would integrate (without modifying) "Commercial Off The Shelf (COTS)" equipment into the underwater inspection/detection systems. All equipment would be maintained by the manufacturers.

The systems would be expected to operate in fresh, salt, and brackish waters; day or night regardless of visibility; and in air and water temperatures and thermoclines normal for a port/harbor environment (arctic to subtropical). Testing in real world conditions would be necessary to evaluate the systems' actual performance in relation to the operational requirements anticipated by the USCG; testing would use underwater components deployed from a surface vessel. Equipment would be transported to and from study locations using existing vehicles and vessels.

The proposed systems would be tested on three different platforms: ROVs, AUVs, and poles suspended from surface vessels. The systems would be deployed and controlled from a surface support vessel[5]. The ROVs would be approximately 5 feet long, 3.5 feet tall, and 3 feet wide, and would weigh approximately 1,000 pounds. The AUV would be approximately 8 to 10 feet long, 12.75 inches in diameter, and would weigh approximately 500 pounds. Note that these sizes are approximations and actual sizes would depend on the configuration of the equipment used. Equipment that would propel and steer the ROVs or AUVs through the water is described in Table 2-2.

Table 2-2. Equipment Used for the Inspection/Detection Systems

Purpose	Description	Materials	Equipment Example
Propulsion	Thruster – Variable-speed electric-powered propeller drives to maneuver submersible vehicles at speeds up to 5 knots.	Enclosed electric motor using food grade mineral oil for lubrication and heat dissipation.	Deep Sea Systems THL 404-8 Sea Horse True Servo Thruster
Stabilization	Gyroscope – Inertial reference system with no moving parts. Detects changes in orientation and spin.	Pan and tilt units can be pressure-balanced and oil-filled. Internal laser in a ring laser gyroscope.	Deep Sea Systems Pan and Tilt Unit, CDL Mini Ring Laser Gyroscope

[5] A typical surface support vessel would be the *RV Gilbert*, a 42-foot craft owned by the U.S. Geological Survey and made available for use by the USF COT. The *RV Gilbert* is equipped with a hydraulic sea crane capable of deploying and retrieving an ROV or AUV (USF, undated).

Acoustic components that would be integrated into the systems would include transponders (used for AUV navigation) and acoustic modems (used for communication with AUV) (17–40 kiloHertz [kHz]), high frequency sonar (used for device detection) (150–999 kHz), and ultra-high-frequency sonar (used for device identification) (1,000–3,500 kHz). Specifications for the acoustic equipment that would be tested with the proposed systems are presented in Table 2-3. It is important to note that the transponders and acoustic modems would only be used for AUV navigation offshore and in main shipping channels in ports. While in inshore shipping channels, AUV transponders would be constrained to a 188 decibel (dB) sound pressure level (SPL). Transponders would have a 15-millisecond (ms) ping every second. The acoustic modem would have approximately a 1-second ping every 15 or 30 seconds. For testing, the proposed inspection/detection systems would be deployed for short durations of approximately 8 to 10 hours. The equipment would only be used during this time. Equipment testing would occur approximately 40 days per year.

There are no Occupational Safety and Health Administration (OSHA) standards specifically for sonars, but there are a variety of OSHA standards and directives, other Federal standards, and national consensus standards that regulate the generation of and exposure to noise. Neither Florida nor Louisiana has occupational noise regulations. The U.S. Navy's (USN) regulations prohibit divers from working where the SPL exceeds 200 dB re 1 microPascal (µPa) at 1 m without a wetsuit hood, and where the SPL exceeds 215 dB re 1 µPa at 1 m with a wetsuit hood.

An array of optical equipment would also be integrated into the systems for navigation and detailed imaging. Low-powered lasers, including point lasers for close-quarters navigation and line lasers for detailed imaging would be used. Laser components would typically be used less than 16 ft (5 m) from a target. The light emissions of low-powered lasers attenuate within a short distance. Other optical equipment would include Light Emitting Diode (LED) lighting and video cameras. The specifications of the optical equipment proposed for the equipment testing are presented in Table 2-4.

Laser light hazards are addressed in OSHA standards, directives, and standard interpretations, as well as national consensus standards such as the American Standards National Institute (ANSI). Neither Florida nor Louisiana has occupational laser hazard regulations. There are no applicable exposure criteria for lasers, but the following documents provide safety guidance:

- 29 Code of Federal Regulations (CFR) 1910.133, Eye and Face Protection
- ANSI Z136.1-2000, Safe Use of Lasers
- ANSI Z136.6-2000, Safe Use of Lasers in an Outdoor Environment.

Standard sacrificial zinc anodes identical to those used for recreational vessels would be attached to the underwater equipment to prevent metal corrosion.

2.1.3 Testing Procedures

Testing could occur during the day or night in fresh, salt, and brackish waters of the five study areas. Equipment would be transported to and from study locations using existing vehicles and vessels of opportunity. Equipment testing would be conducted from a support vessel with some connection to the USCG or the USF COT. The support vessel would only be operated by qualified individuals. All speed regulations through manatee areas would be followed.

Table 2-3. Acoustic Components of the Inspection/Detection Systems

Type	Frequency Range (kHz)	Maximum Source Level (dB re 1 µPa at 1m)	Maximum Distance (m)[a] to 160-dB, 130-dB, 120-dB Contour			Equipment Example	Comment
			160 dB	130 dB	120 dB		
Inshore Shipping Channel Navigation and Communication (Transponders and Acoustic Modems) - Medium Frequency	17–33	17 kHz @ 188 dB	25	700	1,900	Trackpoint II Plus USBL; AAE USBL transponder; Micro Modem; Edgetech	Similar to commercially available depth sounder
Offshore Navigation, Communication (Transponders and Acoustic Modems) - Medium Frequency	16–33	16 kHz @ 196 dB	100	1,600	4,000	Trackpoint II Plus USBL; AAE USBL transponder; Micro Modem; Edgetech	Similar to commercially available depth sounder
Detection-High Frequency	150–999	150 kHz @ 190 dB 317 kHz @ 216 dB 614 kHz @ 217 dB	90	250	380	Echoscope Mark I and II; Tritech Mini King; Klein; Edgetech	Similar to the land-based sonar used for the IAS used by the USCG (USCG, 2005a; USCG, 2005b)
Identification-Ultra-High Frequency	1,000–3,500	1,000 kHz @ 200 dB 1,229 kHz @ 214 dB	20	35	45	Didson; Blue View; RDI	Similar to the portable sonar used for the IAS (USCG, 2005a; USCG, 2005b)

Notes: [a] The maximum distance to a dB-level was calculated using the equations RL = SL - TLss - TLab where RL is the received level (in dB re 1 µPa at 1 m), SL is the Source Level (dB re 1 µPa at 1 m), TLss is spherical spreading in water (20*log10[distance in meters]), and TLab is the absorption coefficient multiplied by distance in meters. The absorption coefficient (α) is sound energy loss in dB/m and is calculated for frequencies below 200 kHz based on the equation $\alpha = A_2 f_2 f^2 / f_2^2 + f^2$ where $A_2 = (48.83 \times 10^{-8} + 65.34 \times 10^{-10}\ T)$ sec/m, $f_2 = 1.55 \times 10^7 (T+273.1) \exp[-3052(T + 273.1)]$ Hz, f = frequency in Hz, T = temperature in degrees Celsius and T was assumed to be 25 degrees Celsius (Au 1993). The absorption coefficient for frequencies above 200 kHz was calculated based on the equations $\alpha = (0.036 f^{1.5})/1000$ where f = the frequency in kHz (Richardson et al., 1995).

Table 2-4. Lasers and Other Optical Components of Inspection/Detection Systems Under Development

Type	Wavelength (nm)	Power (mW)	Effective Distance	Laser Rating	Equipment Example
Point Laser – Navigation	630–670 nm	3 mW	7 ft (2 m)	Class IIIA	Tritech Image Scaling System
Line Laser – Imaging	Green laser at ~532 nm; Red laser at ~685 nm	Green laser-440 mW; Red laser < 100 mW	Green laser <16 ft (5 m); Red laser ~7 ft (2 m)	Class IIIB	USF Laser Line Scanner
LED	NA	550 mW @ 24 volts DC	7–10 ft (2–3 m)	NA	Tritech International subsea LED lights
Video camera	NA	NA	NA	NA	Deep Sea Systems underwater cameras

Notes: NA = Not Applicable
nm = nanometer
mW = megaWatt

Because the systems would be designed to maintain safety of commercial trafficways, testing would only take place in areas where commercial and military vessels would operate (i.e., busy ports, offshore anchorages, and offshore fairways). As presented in Figures 2-1 through 2-5, the proposed equipment testing would not occur in ecologically sensitive areas such as seagrass areas and wetlands; marine sanctuaries; North Atlantic right whale (*Eubalaena glacialis)* or Johnson's seagrass (*Holphila johnsonii*) critical habitat; known locations of hardbottom habitats (including coral, vermetid, and coquina reefs); near or on beaches; in offshore (seaward of the coast) waters less than 18 ft (5.5 m) deep; where manatees are known to congregate (warmwater refuge sites such as power plant cooling water discharges and areas between power plant cooling water discharges that are in close proximity); at marine mammal choke points (such as the mouths of tributaries where manatees are known to congregate); off the coast of Port Everglades/Ft. Lauderdale from 1 January through 1 May, when North Atlantic right whales could be present; or in any area that is designated as "restricted" for environmental reasons in the *Coast Pilot 5 – 33rd Edition* and *Coast Pilot 4 – 37th Edition* (NOAA, 2005a; NOAA, 2005b). In addition, AUVs would only be operated in the offshore study areas and in main shipping channels. While in inshore shipping channels, AUV transponders would be constrained to a 188-dB SPL.

The equipment would be used at a range necessary to survey ship hulls, piers, or other underwater infrastructure. The expected maximum distance from these structures should be no greater than 330 feet (100 m) during a wide area survey and 16 ft (5 m) during a targeted inspection. Up to two platform types (e.g., ROV and AUV) or component groups (e.g., different groups of lasers and sonars) could be deployed during any single testing event. Under normal conditions, it would not be expected that sonar and lasers would be directed into open water, but only toward the intended target. Testing would not block marine species such as marine mammals and sea turtles from foraging, breeding, or nesting areas.

For testing, the proposed inspection/detection systems would be deployed for short durations of approximately 8 to 10 hours. The equipment would only be used during this time. Equipment testing

would occur approximately 40 days per year. The targets for the equipment testing would include typical harbor targets such as commercial and military vessels and underwater port infrastructure such as jetties, seawalls, and bridge abutments. In some cases, target vessels would be arranged ahead of time. In other cases, the researchers could radio to vessels in the area and request permission to survey the hulls. The target and support vessels could be moving or stationary. A stationary vessel could be anchored or docked. A moving vessel could be underway or drifting. It is unlikely that the support vessel would be drifting. In all cases, the surface vessel supporting the testing and deploying the systems would obtain permission from the Coast Guard Sector Commander to conduct the testing in the operating area of the port. A detailed operations plan for review by the USCG R&DC would be developed for each discrete set of testing surveys that would occur.

The following measures would be implemented to minimize or avoid potential impacts on existing vessel traffic:

- Testing would not be conducted in designated channels without prior authorization and coordination with the USCG or other appropriate marine authorities.
- Tested equipment would not be deployed in a location or at a time when activities might interfere with the operation of other vessels or where vessel traffic might interfere with equipment testing.
- Field testing would not be conducted in areas generally prohibited to other vessels.
- Equipment testing on commercial vessels entering the harbor would only be conducted in direct cooperation with the USCG. Testing would not be scheduled without appropriate communication and coordination with the vessel master or owner, as well as any applicable port pilot authority.

Sonar and lasers on ROVs and on poles suspended from surface vessels associated with the inspection/detection systems would be shut down to avoid environmental impacts. As part of the Proposed Action, the following measures would be implemented during all equipment testing:

- Tested equipment would be monitored (by USCG-trained marine mammal observers) at all times.
- A safety zone of 660 feet (200 m) (beyond the 160-dB contour for each equipment type) would be visually monitored (by a USCG-trained marine mammal observer) for marine mammal and sea turtle activity for 20 minutes prior to turning on the system. For sonar testing after dark, night vision devices would be used to monitor safety zones.
- If sonar were deployed and marine mammals or sea turtles were observed which could approach the safety zone, the system would be shut down until the marine mammal or sea turtles exited the area.
- Sonar equipment would not be placed in a location such that it would interfere with obvious marine mammal throughways or cause choke-points where sonar could deter marine mammals' or sea turtles' movement (e.g., testing would not occur near the mouths of tributaries where manatees are known to congregate, on or near beaches, or in offshore waters less than 18 ft [5.5 m] deep).
- A 200-m buffer would be maintained between the equipment testing procedures and the exclusion areas presented in Figures 2-2 through 2-5.
- The vessel strike avoidance and reporting measures provided by NMFS, Southeast Region would be followed (Appendix B).
- Support vessels would not anchor while in the Port of Miami and Port Everglades/Ft. Lauderdale offshore study areas. If branching corals are observed with imaging equipment in the Port of

Miami and Port Everglades/Ft. Lauderdale offshore study areas, testing will be moved to a different location.

2.2 Alternatives Analysis

NEPA requires an agency to consider reasonable alternatives to a proposed action. Considering alternatives helps to ensure that ultimate decisions concerning the proposed action are well-founded, are in the national interest, and are consistent with national security and other national policy goals and objectives. To warrant detailed evaluation by the USCG, an alternative must be reasonable and satisfy the purpose and need.

Alternatives that were considered but eliminated from further consideration include (1) using another research facility (rather than USF COT) for the testing, (2) engineering new components to meet operational requirements anticipated by the USCG, (3) testing the systems in a laboratory setting, and (4) performing the testing in other locations.

The first alternative of using another research facility was considered but eliminated because the USF COT had a number of qualifications that would bring unique value to the mission. A key consideration was USF COT's current work with the USN to develop systems with capabilities similar to those required by USCG. The USCG R&DC proposes to test the USN's conceptual design to determine and evaluate the systems' performance capabilities in relation to the operational requirements anticipated by the USCG. Using another entity could result in duplicating work already accomplished at USF COT for the USN. Duplication of this work would increase the time before which the technology would be available and increase the expense to the USCG R&DC. This would not meet the need stated in Section 1.3 that the technology must be available immediately (i.e., commercially available), proven effective, and affordable with respect to both procurement and operations. For these reasons, this alternative is not reasonable and, accordingly, it is not evaluated in detail in this EA.

The USCG considered designing new system components to develop systems specific to the mission requirements. A quick assessment of this alternative indicated that the development time and production time of custom built system components would be unacceptably long when compared to the urgent nature of the potential threat and the availability of commercial equipment with suitable specifications to meet the mission objective. This second alternative would not meet the need as stated in Section 1.3 that the technology must be readily available, proven effective, and affordable with respect to both procurement and operations. For these reasons, this alternative is not reasonable and, accordingly, it is not evaluated in detail in this EA.

The third alternative of testing the equipment in a laboratory setting was eliminated because the equipment is already proven technology that is commercially available, meaning that it has gone through rigorous laboratory testing. In addition, testing in the laboratory would not meet the need stated in Section 1.3 that the systems need to be tested in real world conditions to determine actual performance capabilities in order to develop operationally compatible systems (based on operational requirements anticipated by the USCG). For these reasons, this alternative is not reasonable and, accordingly, it is not evaluated in detail in this EA.

The USCG R&DC considered testing the equipment in other major ports in the GOM and Atlantic Ocean. To be suitable for testing, a port had to meet the following criteria:

- Active Port infrastructure
- Existing relationship with USF COT to provide access and support resources
- Proximity to St. Petersburg

- Worst-case operational scenarios.

To be suitable for the testing, the port had to be active with frequent commercial or military ship traffic. Larger active ports would allow for testing under realistic and worst-case operational scenarios, eliminating smaller ports for systems testing only.

For logistical and economic reasons, ports with an existing relationship with UCF COT were preferred because the testing could be more easily accomplished and cost-saving local resources could be provided. Also for logistical and economic reasons, ports nearest the USF COT in St. Petersburg, Florida, were preferred. These criteria eliminated more distant ports.

Lower Mississippi River Port Complex has support resources available because of a prior working relationship between, USF, USCG R&DC, and USCG District 8. Because the USF COT is located in the St. Petersburg on Tampa Bay, it would be highly accessible. The state of Florida had already been operating the equipment in the Port of Jacksonville, meaning that both locations support resources would be available and would also be easily accessible. The five ports also offer opportunity for testing under realistic and varied operational scenarios. The Lower Mississippi is the largest port in the country and one of the busiest ports in the world. It is important for the import of raw materials and finished products en route to the Midwest. The Port of Tampa is the largest port in Florida, it is important for the shipment of fuel into the state. The cruise industry is important in the Ports of Miami, Ft. Lauderdale, and Jacksonville, which are also important shipping ports. Based on these screening criteria, USCG R&DC identified the Lower Mississippi River Port Complex, Ports of St. Petersburg/Tampa, Port of Miami, Port of Ft. Lauderdale/Port Everglades, and the Port of Jacksonville as desirable areas for testing. These represent major ports with varying infrastructure and high security risks that are easily accessible from the USF COT's location in St. Petersburg, Florida. More detailed information about these ports is presented in Section 3.2.2.

2.3 No Action Alternative

The continuation of the existing conditions without implementation of the Proposed Action is referred to as the No Action Alternative. NEPA implementing regulations require that a No Action Alternative be analyzed to provide a baseline for comparison with the action alternatives. The No Action Alternative identifies and describes the potential environmental impacts if the action agency does not choose the Proposed Action or one of the other action alternatives, if applicable. The No Action Alternative serves as the benchmark against which Federal actions can be evaluated. Inclusion of the No Action Alternative is prescribed by the CEQ regulations and, therefore, will be carried forward for further analysis in this EA.

Under the No Action Alternative, the USCG would not conduct testing to develop underwater inspection/detection systems that would detect explosives, IEDs, and other offensive devices. However, the USF could continue to test the underwater inspection/detection systems for the USN and other entities.

If the No Action Alternative were selected, development of systems that are operationally compatible with the future needs of Coast Guard Sector Commanders (based on operational requirements anticipated by the USCG) would be delayed. This delay could increase the possibility of a successful terrorist attack occurring in U.S. ports and waterways. As stated in Section 1.3, risk analyses indicate that Coast Guard Sector Commanders need the capability to detect explosives, IEDs, and other offensive devices that might be attached to ship hulls, piers, and other underwater infrastructure. The USCG would continue to implement additional MHLS measures. Timeliness with respect to systems acquisition is essential to minimize the potential threat and to provide the USCG with the requisite capability to respond. However,

the No Action Alternative would not fulfill the USCG's requirement for sufficient protection of the MTS and critical infrastructure in and around U.S. ports and waterways from underwater threats.

2.4 Comparison of the Environmental Impacts of the Alternatives

The Proposed Action meets the USCG's purpose and need, and has the potential for future beneficial impacts on security and safety. As determined in this EA, the Proposed Action would pose no foreseeable significant environmental impacts.

Testing the underwater inspection/detection systems in the proposed study areas would not result in foreseeable significant impacts (based on the number of times and duration the systems would be deployed for testing, the amount of energy put into the water when the systems are deployed, and the mitigation measures to avoid impacts that are being proposed as part of the Proposed Action). In addition, the testing would only take place in busy areas that are currently used by commercial and military vessels (i.e., ports, offshore anchorages, and offshore fairways). As presented in Figures 2-1 through 2-5, the proposed equipment testing would not occur in ecologically sensitive areas such as seagrass areas and wetlands; marine sanctuaries; North Atlantic right whale (*Eubalaena glacialis)* or Johnson's seagrass (*Holphila johnsonii*) critical habitat; known locations of hardbottom habitats (including coral, vermetid, and coquina reefs); near or on beaches; offshore (seaward of the coast) waters less than 18 ft (5.5 m) deep; where manatees are known to congregate (warmwater refuge sites such as power plant cooling water discharges and areas between power plant cooling water discharges that are in close proximity); marine mammal choke points (such as the mouths of tributaries where manatees are known to congregate); off the coast of Port Everglades/Ft. Lauderdale from 1 January through 1 May, when North Atlantic right whales could be present; or in any area that is designated as "restricted" for environmental reasons in the *Coast Pilot 5 – 33rd Edition* and *Coast Pilot 4 – 37th Edition* (NOAA, 2005a; NOAA, 2005b). A 660-foot (200-m) buffer would be maintained between the equipment testing procedures and the exclusion areas presented in Figures 2-2 through 2-5. In addition, AUVs would only be operated in the offshore study areas and in main shipping channels. While in inshore shipping channels, AUV transponders would be constrained to a 188-dB SPL.

As described in Section 4.3.2, testing the underwater inspection/detection systems in the study areas would result in negligible increases in the existing ambient sound levels. As described in Section 4.4.2, based on the frequencies and decibel levels of the sonar components and the power of the laser components, adverse impacts on biological resources are unlikely. In addition, developing the systems for use by the USCG would provide future beneficial impacts on public safety by reducing the risk of a successful terrorist attack, as described in Section 4.5.2. To date, the USCG has completed three EAs for the establishment and operation of the IAS at Galveston Bay, Texas; San Pedro Bay, California; and nationwide. The IAS has COTS sonar components, as does the systems that are proposed for this testing. The three EAs resulted in a FONSI. In all cases, no adverse impacts on threatened or endangered species or critical habitat were noted. NMFS' Southeast Regional Office sent a letter, dated April 15, 2004, indicating that the frequency ranges of the high- and ultra-high-frequency sonars associated with the IAS are highly unlikely to be audible for most sea turtles and that the impacts of the IAS on sea turtles "would not be expected under normal operation of the IAS and are so low as to be considered discountable." In a letter dated June 15, 2005, NMFS Headquarters provided its determination that "operation of the IAS in Galveston Bay and San Pedro Bay, in accordance with the mitigation measures [prescribed], is not likely to result in the take of marine mammals." In a letter dated March 20, 2006, NMFS Headquarters provided its concurrence with the USCG's determination that listed species or their critical habitat are not likely to be adversely affected by the operation of the IAS on a national level. These letters are presented in Appendix C.

Under the No Action Alternative, underwater inspection/detection systems that are operationally compatible with the needs of Coast Guard Sector Commanders (based on operational requirements anticipated by the USCG) would not be developed. The USCG would continue to implement additional MHLS measures, such as the operation of Maritime Safety and Security Teams (MSSTs) and the IASs. However, the No Action Alternative would not fulfill the USCG's requirement for sufficient protection of the MTS and critical infrastructure in and around U.S. ports and waterways from underwater threats. Without this capability, there could be the potential for significant adverse environmental impacts. Terrorists could have additional opportunities to strike at military or commercial vessels and facilities in these ports, creating health and safety hazards for the surrounding populace and impacting appropriate emergency responses, employment and trade, and marine life. The impacts could be immediate (loss of life) or enduring (disruption of commerce activities) and could have long-term economic effects. Recovery time would be dependent on the severity and extent of the loss. Table 2-5 summarizes the impacts associated with the Proposed Action and No Action Alternative.

Table 2-5. Impact Summary Matrix

Resource Area	Proposed Action	No Action Alternative
Transportation	Implementation of the Proposed Action is not expected to result in any adverse impacts on transportation in the study areas. The study areas are busy port areas.	If the No Action Alternative were selected, USF COT could continue to test underwater inspection/detection systems in the proposed study areas (without Federal oversight) and contribute to the traffic in the study areas.
Underwater Acoustics	Implementation of the Proposed Action would result in minor, temporary, and localized adverse impacts on existing ambient underwater sound levels. The area of potential impact for noise receptors would be 330 feet (100 m) or less. The use of the systems would be intermittent and of short duration (approximately 8–10 hours) activated approximately 40 days per year.	If the No Action Alternative were selected, USF COT could continue to test underwater inspection/detection systems in the proposed study areas (without Federal oversight), contributing to the ambient sound level.
Biological Resources	Implementation of the Proposed Action is not expected to result in any adverse impacts on biological resources that occur in the study areas. The frequencies of the signals produced by the sonar are above the perceptible range of most organisms. The area of potential impact for species that could be sensitive to the sonar would be 330 feet (100 m) or less.	If the No Action Alternative were selected, USF COT could continue to test underwater inspection/detection systems in the proposed study areas (without Federal oversight), which would result in minor adverse impacts on biological resources.
Public Safety	Implementation of the Proposed Action is not expected to impact public safety. The sonars and lasers would only be operated underwater in busy port areas. Nonparticipants (such as scuba divers) would not occur in the study areas. Beneficial impacts can reasonably be expected from the Proposed Action because underwater inspection/detection systems for future utilization by Coast Guard Sector Commanders would be developed that would meet USCG operational needs.	If the No Action Alternative were selected, USF COT could continue to test underwater inspection/detection systems in the proposed study areas (without Federal oversight). Development of these systems would likely be delayed, increasing the possibility of an adverse event occurring in U.S. ports and waterways.

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3. Affected Environment

3.1 Introduction

3.1.1 Resources for Analysis

This section describes the environmental and socioeconomic conditions most likely to be affected by the Proposed Action and serves as a baseline from which to identify and evaluate potential impacts from implementation of the Proposed Action. In compliance with NEPA, CEQ guidelines, and NEPA Implementing Procedures and Policy for Considering Environmental Impacts (COMDTINST M16475.1D), the description of the affected environment focuses on those conditions and resource areas that are potentially subject to impacts. These resources include water and sediment quality, soils and land use, socioeconomics, environmental justice, cultural resources, hazardous materials and waste management, biological resources, air quality and climate, underwater acoustics, and public safety. Because of the limited range of impacts associated with the testing of underwater inspection/detection equipment being proposed, some environmental resources and conditions that are often analyzed in an EA have been omitted from this analysis. The following paragraphs identify the omitted resource areas and the basis for such exclusions:

- ***Air Quality.*** Testing of the underwater inspection/detection equipment would not produce any emissions. Existing vessels would be used as support vessels and additional trips would not be required; therefore, no additional air emissions are expected. For these reasons no significant air quality impacts are anticipated from the testing of underwater inspection/detection systems. Accordingly, the USCG has omitted detailed examination of air quality.
- ***Water Quality.*** The Proposed Action would not produce any changes in water quality. The equipment testing would use existing vessels and would not require any additional trips. For these reasons no significant water quality impacts are anticipated from testing underwater inspection/detection systems. Accordingly, the USCG has omitted detailed examination of water quality.
- ***Soils and Land Use.*** The Proposed Action would not involve any physical disturbances, earth moving, or construction activities, nor would it involve any actions inconsistent with present and foreseeable land use patterns. Implementation of the Proposed Action would not alter the existing soil or land use at these locations. Accordingly, the USCG has omitted detailed examination of land use.
- ***Socioeconomics.*** The Proposed Action does not involve any activities that would contribute to changes in socioeconomic resources. No additional personnel would be required as a result of the Proposed Action. Therefore, there would be no significant impacts. Accordingly, the USCG has omitted detailed examination of socioeconomics.
- ***Environmental Justice.*** Implementation of the Proposed Action would not result in adverse impacts on any environmental resource area that would be expected to disproportionately affect minority and low-income populations. Therefore, no significant impacts would occur. Accordingly, the USCG has omitted detailed examination of environmental justice.
- ***Cultural Resources.*** The Proposed Action does not involve any activities that would impact cultural resources. The testing would not occur near any known historic properties. There would be no ground-disturbing activities; therefore, there would be no impact on archaeological sites. No construction is required. Therefore, no potential visual impacts would occur. The testing of the underwater inspection/detection systems would not impact setting, qualities of integrity, or

jeopardize a property's eligibility on the National Register of Historic Places (NRHP). Accordingly, the USCG has omitted detailed examination of cultural resources.

- ***Hazardous Materials and Hazardous Wastes.*** The Proposed Action would not involve hazardous materials or hazardous wastes. When not in use, the unit would be stored onshore; therefore, corrosion or any other type of fouling would not be an issue. Accordingly, the USCG has omitted detailed examination of hazardous materials and hazardous wastes.
- ***Wetlands and Nonthreatened and Nonendangered Seagrasses.*** The Proposed Action would avoid wetlands and seagrass areas. No construction is required. Therefore, there would be no significant impacts. Accordingly, the USCG has omitted detailed examination of wetlands and nonthreatened or nonendangered seagrasses. However, potential impacts on the endangered Johnson's seagrass were assessed at the request of NMFS, because the endangered Johnson's seagrass and its critical habitat occur adjacent to the Port of Ft. Lauderdale,/Port Everglades and Port of Miami Study Areas.
- ***Airborne Acoustics.*** The underwater inspection/detection systems employ underwater sonar technology and no source of airborne sound; therefore the Proposed Action would have no impact on airborne acoustics. Accordingly, the USCG has omitted detailed examination of airborne acoustics.

3.1.2 Study Areas

As described in Section 2.1.1, field testing would be conducted in five primary study areas, presented in Figures 2-1 through 2-5 (see Table 2-1). In this section, the study areas are split into two general areas, those in the GOM (the lower Mississippi River port complex and Port of Tampa/St. Petersburg) and those on the East Coast of Florida (Port of Miami, Port Everglades/Ft. Lauderdale, and Port of Jacksonville).

Because the underwater inspection/detection systems would be designed to maintain safety of commercial trafficways, the proposed testing would be conducted in areas where commercial and military vessels would be expected to operate (i.e., busy ports, offshore anchorages, and offshore fairways). As presented in Figures 2-1 through 2-5, the proposed equipment testing would not occur in ecologically sensitive areas such as seagrass areas and wetlands; marine sanctuaries; North Atlantic right whale (*Eubalaena glacialis)* or Johnson's seagrass (*Holphila johnsonii*) critical habitat; known locations of hardbottom habitats (including coral, vermetid, and coquina reefs); near or on beaches; offshore (seaward of the coast) waters less than 18 feet (5.5 m) deep; where manatees are known to congregate (warmwater refuge sites such as power plant cooling water discharges and areas between power plant cooling water discharges that are in close proximity); marine mammal choke points (such as the mouths of tributaries where manatees are known to congregate); off the coast of Port Everglades/Ft. Lauderdale from 1 January through 1 May, when North Atlantic right whales could be present; or in any area that is designated as "restricted" for environmental reasons in the *Coast Pilot 5 – 33rd Edition* and *Coast Pilot 4 – 37th Edition* (NOAA, 2005a; NOAA, 2005b). A 200-m buffer would be maintained between the equipment testing procedures and the exclusion areas, presented in Figures 2-2 through 2-5. In addition, AUVs would only be operated in the offshore study areas and in main shipping channels. While in inshore shipping channels, AUV transponders would be constrained to a 188-dB SPL.

As presented in Figures 2-1 through 2-5, equipment would not be placed in a location such that it would interfere with obvious marine mammal throughways or cause chokepoints (e.g., the mouths of tributaries where manatees are known to congregate) where sonar could deter marine mammals' movement. The zone of potential impact would be defined as the range in which the SPL for the sonars is above 160 dB re 1 μPa. Approximately 66 to 330 feet (20 to 100 m) from the sound heads, the SPL is expected to be at or below 160 dB re 1 μPa, depending on the frequency of the sonar unit (see Table 2-3). The equipment

would be used at a range necessary to survey ship hulls, piers, or other underwater infrastructure. The expected maximum distance from these structures should be no greater than 330 feet (100 m) during a wide area survey and 16 feet (5 m) during a targeted inspection. Because it is meant for a wide area survey, the AUV would only be used in the shipping channels and offshore.

3.1.3 Environmental Regulations, Laws, and Executive Orders

A table containing a listing of regulations, laws, and executive orders that might reasonably be expected to apply to the Proposed Action is included in Appendix D. It is not intended to be a complete description of the entire legal framework under which the USCG conducts its missions.

3.2 Transportation

3.2.1 Definition of the Resource

Transportation refers to the movement of vessels through designated shipping fairways in the vicinity of the proposed field testing activities. Transportation within the proposed study areas includes a variety of vessels engaged in commercial, recreational, Federal, and state functions. Transportation also includes the existing infrastructure of roads, rails, and inland waterways that could be affected by the Proposed Action.

3.2.2 Affected Environment

As discussed in Section 2.1.1, the proposed field testing of system components and prototypes would be conducted in both active port environments and in offshore approaches used by commercial vessels entering the U.S. ports. As shown in Figures 2-1 through 2-5, field testing would be conducted in and around eight major U.S. ports: Plaquemines, New Orleans, South Louisiana, and Baton Rouge on the Mississippi River in Louisiana; and Tampa/St. Petersburg (Tampa Bay), Miami, Port Everglades/Ft. Lauderdale, and Jacksonville in Florida. Additional testing would be conducted in the offshore approaches to these ports within a 20-mile radius of the initial seaward entrance buoy. The study areas represent areas where a wide-ranging domestic and foreign maritime industry operates.

3.2.2.1 Gulf of Mexico

Major trade shipping routes in the U.S. GOM occur via the Bay of Campeche, the Yucatán Channel, and the Straits of Florida. In 1999, 14 GOM ports ranked in the top 50 leading cargo ports in the United States.

3.2.2.1.1 Lower Mississippi River Port Complex Study Area

The Lower Mississippi River Port Complex Study Area, including the Ports of Baton Rouge, South Louisiana, New Orleans, and Plaquemines, is one of the busiest port systems in the world. These ports are critical for the movement of raw materials and finished products in support of the agricultural, mining, and industrial base of the state and other areas, particularly the Midwest. In 2003, the Port of Greater Baton Rouge ranked 9th in the nation in terms of cargo moved (USACE NDC, 2004; USEPA, 1998). In 2003, the Port of South Louisiana ranked first in the nation in terms of cargo moved (USACE NDC, 2004; USEPA, 1998). In 2003, the Port of New Orleans ranked fifth in the nation in terms of cargo moved (USACE NDC, 2004; USEPA, 1998). The Port of Plaquemines ranked tenth in the nation in terms of cargo moved (USACE NDC, 2004).

In 2004, 4,612 cargo vessels (oceangoing, self-propelled vessels of 10,000 dead weight tons [dwt] or greater) called at the lower Mississippi River Port Complex (MARAD, 2005). More than 6,000 additional vessels move through New Orleans into or out of the Mississippi River each year. As many as 600 tugboats operate on the Lower Mississippi River. Sightseeing vessels and casino boats are also common on the Mississippi River in and around New Orleans. The lower Mississippi River also supports large commercial fishing and recreational boating centers (PONO, 2003).

Recreational boats are also expected to operate in this area of the Mississippi River. There were 327,272 recreational boats registered in Louisiana in 2002.

Hurricane Katrina. The effects of Hurricane Katrina that hit the U.S. Gulf coast on August 29, 2005, severely damaged port infrastructure on the Lower Mississippi River. The Port of Baton Rouge is the only port in this complex that did not incur damage. As of mid-February 2006, the Port of New Orleans was receiving 100 percent of its cargo calls (approximately 20–22 cargo calls per week) (PONO, 2006).

3.2.2.1.2 Port of Tampa/St. Petersburg Study Area

In 2003, the Port of Tampa was ranked 16th in the nation in terms of cargo moved (USACE NDC, 2004). In 2004, 859 cargo vessels (oceangoing, self-propelled vessels of 10,000 dwt or greater) called at the Port of Tampa (MARAD, 2005). Imports into the Port of Tampa originate from Mexico, Trinidad, Ukraine, Canada, and Venezuela. Exports out of the Port of Tampa go to China, Australia, India, Japan, and Pakistan.

Commercial ships enter and leave Tampa Bay through a designated fairway. Pilots board cargo ships and other large commercial vessels in the vicinity of the sea buoy marking the entrance channel to the bay (TBPA, 2001).

In the Tampa Bay region there is approximately 1 recreational boat for every 17 residents. In 2004, there were approximately 119,413 recreational boats registered in Hillsborough, Pinellas, and Manatee counties (FFWCC, 2005a).

3.2.2.2 East Coast of Florida

3.2.2.2.1 Port of Miami Study Area

In 2003, the Port of Miami ranked 55th in the nation in terms of cargo moved (USACE NDC, 2004). In 2004, 1,247 cargo vessels (oceangoing, self-propelled vessels of 10,000 dwt or greater) called at the Port of Miami (MARAD, 2005). The Port of Miami is homeport to 18 cruise ships and received 735 cruise visits in 2003 (Port of Miami, 2005). The Port of Miami accommodated more than 4 million cruise passengers in 2003 and is promoted as the Cruise Capital of the World. In 2004, approximately 54,699 recreational boats were registered in Miami-Dade County (FFWCC, 2005a).

3.2.2.2.2 Port Everglades/Ft. Lauderdale

In 2003, the Port Everglades/Ft. Lauderdale ranked 33rd in the nation in terms of cargo moved (USACE NDC, 2004). Port Everglades/Fort Lauderdale are the home port to as many as 20 cruise ships. In 2004, 1,055 cargo vessels (oceangoing, self-propelled vessels of 10,000 dwt or greater) called at Port Everglades (MARAD, 2005). In 2004, approximately 47,255 recreational boats were registered in Broward County (FFWCC, 2005a).

3.2.2.2.3 Port of Jacksonville Study Area

In 2003, the Port of Jacksonville ranked 37th in the nation in terms of cargo moved (USACE NDC, 2004). The Port of Jacksonville Study Area is on the St. Johns River from the Interstate 295 Bridge north-northeast to the area of the river east of Blount Island Marine Terminal and adjacent to Fort Caroline National Memorial. In 2004, 1,441 cargo vessels (oceangoing, self-propelled vessels of 10,000 dwt or greater) called to the Port of Jacksonville (MARAD, 2005). During 2004, 50 cruise ships called at the port with more than 85,000 passengers (Jaxport, 2005). In 2004, approximately 33,072 recreational boats were registered in Duval County (FFWCC, 2005a).

3.3 Underwater Acoustics

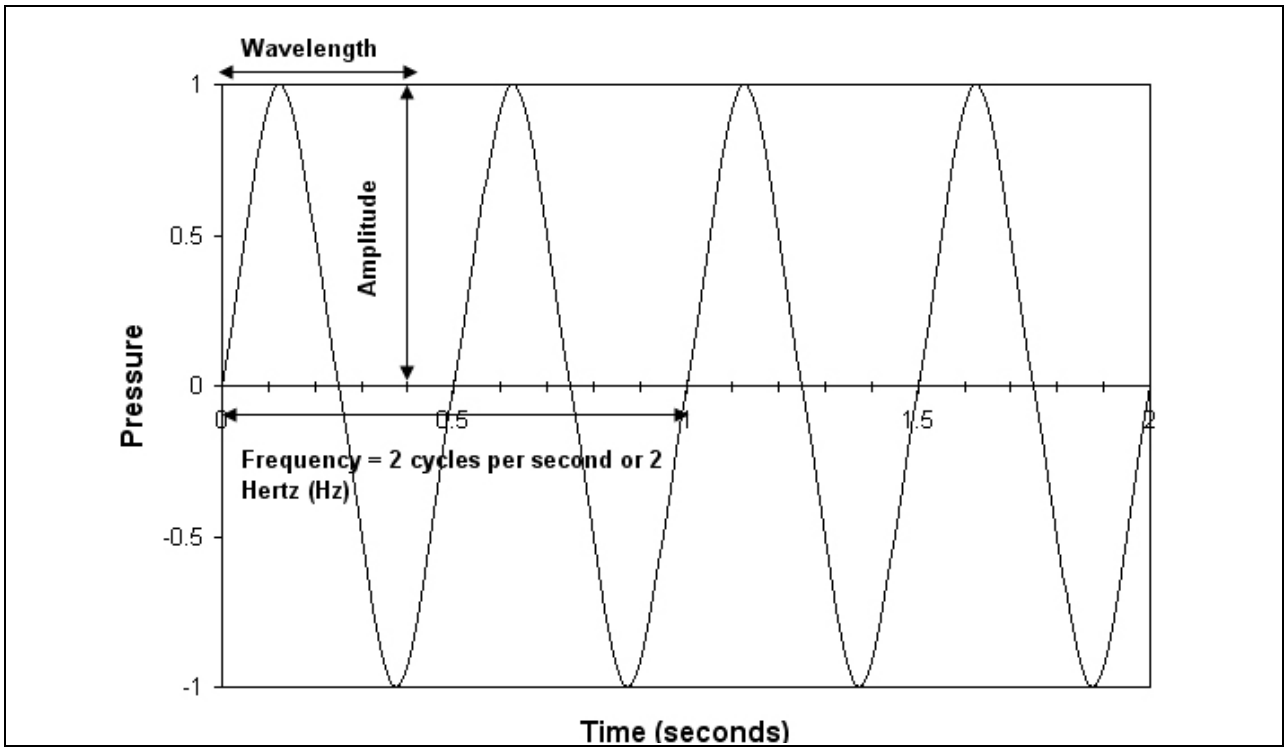
3.3.1 Definition of the Resource

The underwater acoustic environment consists of ambient sounds, defined as environmental background sound levels lacking a single source or point (Richardson et al., 1995). This section explains the sound level standards and describes the existing ambient sound levels in the study areas and the methodology used to discuss a change in sound levels. It is important to understand properties of sound in the underwater environment in order to assess the impact of the Proposed Action on existing ambient sound levels in Section 4.3. In addition, these concepts will be used to assess the impacts of the sound produced by the Proposed Action on biological resources and public safety in Sections 4.4 and 4.5, respectively. Because the underwater inspection/detection systems employ underwater sonar technology, only underwater acoustics are addressed in this section.

As presented in Figure 3-1, sound travels in waves and the basic components of sound waves are frequency, wavelength, and amplitude. Frequency is the number of pressure waves that pass by a reference point per unit of time and is measured in Hertz (Hz) or cycles per second. Wavelength is the distance between two peaks of a sound wave. The wavelength of a sound equals the speed of sound divided by the frequency of the wave. Lower frequency sounds have longer wavelengths than higher frequency sounds. Amplitude is the height of the sound pressure wave or the "loudness" of a sound and is typically measured using the dB scale (Figure 3-1) (NOAA, 2003). A dB is the ratio between a measured pressure (with sound) and a reference pressure (without sound). It is a logarithmic unit that accounts for large variations in amplitude; therefore, relatively small changes in dB ratings correspond to large changes in sound. The ambient sound level of a region is defined by the total acoustical energy being generated by unknown sources, including sounds from both natural and artificial sources. The magnitude and frequency of environmental sound levels can vary considerably over the course of the day and throughout the week, due in part to changing weather conditions.

When underwater objects vibrate, sound-pressure waves are created. These waves alternately compress and decompress water molecules as the sound wave travels. Underwater sound waves radiate in all directions away from the source (similar to ripples on the surface of a pond). The compressions and decompressions associated with sound waves are detected as changes in pressure by structures in ears and most man-made sound receptors such as hydrophones (NOAA, 2003).

SPL is the sound force per unit area, and is usually measured in μPa, where 1 Pa is the pressure resulting from a force of one Newton (a unit of force) exerted over an area of 1 square meter. The pressure that a vibrating object exerts on an area (i.e., the sound intensity level) is directly proportional to the vibrating object's velocity and the acoustic impedance or resistance (based on the density of the medium in which the sound is traveling) (e.g., water versus air) (NOAA, 2003).



Source: NOAA, 2003

Figure 3-1. The Basic Components of a Sound Wave

As stated above, the amplitude of a sound wave is measured in dB (a dB is the ratio between a measured pressure [with sound] and a reference pressure [without sound]). In water, the standard reference of SPL is 1 µPa, while in air, a standard sound reference pressure of 20 µPa is used. The source level usually represents the sound level at a distance of 1 meter from the source, referenced to 1 µPa (re 1 µPa at 1 m). The received level is the sound level at the listener's position which is more distant than the reference source level. Underwater loudness decreases rapidly with increasing source-receiver distance (USN, undated). This decrease (transmission loss) can be calculated using the equation:

$$RL = SL - TL_{ss} - TL_{ab}$$

where RL is the received level, SL is the source level, TL_{ss} is transmission loss due to spherical spreading in water ($20*\log_{10}$[distance]), and TL_{ab} is the absorption coefficient multiplied by distance.

While the absorption coefficient is dependent on frequency, salinity, and temperature (i.e., salinity and temperature because it is based on the density of the medium [e.g., in this case seawater] that the sound travels through), the factor that has the largest effect on the transmission loss is the frequency. The higher the frequency of the sound is, the greater the transmission loss or attenuation. The distance that each sonar would be attenuated to below 160 dB is presented in Table 2-3.

In many cases, underwater sound levels are reported only for limited frequency bands, while airborne sound levels are usually reported as an integrated value over a very wide range of frequencies. As such, airborne sounds are often measured using one of several frequency weighting scales (e.g., A-weighted or C-weighted scale), while underwater sound measurements typically do not have any frequency weighting applied (e.g., flat-weighted scale). It is difficult to compare sound levels in water to sound levels in air. Differences between the two include the reference levels, speed of propagation (which is nearly five times

faster in water than it is in air), and density of the medium (i.e., densities of air and water). In general, sound levels are lower in water than in air (USN, undated). This is not true for sound levels that are transmitted between air and water and are doubled in water at the air-water interface. This EA only reports sound levels for underwater sources and consistently uses dB re 1 µPa.

Since the wavelength of a sound equals the speed of sound divided by the frequency of the wave, lower frequency sounds have longer wavelengths than higher frequency sounds. For example, a 20-Hz sound wave is 246 feet (75 m) long in the water, but only 56 feet (17 m) long in the air (NOAA, 2003). In seawater, the rate at which sound is absorbed is proportional to the square of sound frequency; therefore, high-frequency sounds are absorbed quickly and don't travel as far through the water as low-frequency sounds. Salinity and temperature have lesser effect on the absorption of sound in water.

3.3.2 Affected Environment

Existing underwater ambient sound levels result from a combination of natural and anthropogenic (man-made) sources. The two largest and interrelated natural sources of sound are wind and waves. Wind and wave sound levels occur over a broad range of frequencies and the sound levels are related to the wind speed and sea conditions (Richardson et al., 1995). Other natural sources of sound that could occur in the study areas of underwater acoustics include sounds caused by precipitation (e.g., raindrops impacting the water surface) and sounds created by marine organisms such as fish, marine mammals, and shrimp.

The largest and most important source of anthropogenic sound is shipping. Other anthropogenic sound sources in the study areas include recreational boating, the operation of oil and gas platforms and drilling rigs, seismic exploration, dredging, shoreline construction (bulkheads, revetments, docks, and pile-driving), urban and industrial development, helicopters, and sonars. Sound levels generated from these activities can be generated through water or air, and might be stationary or transient. The intensity and frequency of the sound level emissions are highly variable, both between and among industry sources. In general, the frequencies of anthropogenic sounds attenuate rapidly and are below 1 kHz and higher frequency sound levels (Richardson et al., 1995).

Shipping is a major contribution to underwater SPLs, which range in frequency from 0.005 to 0.5 kHz (NRC, 2003). SPLs for various types of ships are presented in Table 3-1. The sound levels emitted from recreational boating are not quantified. Commercially available fish finders and depth sounders used during recreational boating activities have frequencies within the range of 50–200 kHz and a SPL of 201 dB (NRC, 2003). Fish finders have a short pulse-width (length of the sound pulse) and are typically designed to focus sound in a downward direction.

Table 3-1. Underwater Sound Pressure Levels (SPLs) for Various Vessels

Vessel (length) and Description	Frequency	Source Level (dB re 1 µPa at 1 m)
Outboard drive – 23 feet (2 engines, 80 horsepower each)	630, 1/3 octave	156
Twin Diesel – 112 feet	630, 1/3 octave	159
Small Supply Ships – 180 to 279 feet	1,000, 1/3 octave	125–135 (at 50 meters)
Freighter – 443 feet	41, 1/3 octave	172

Source: Richardson et al., 1995

Note: These underwater sound pressure levels cannot be directly compared to airborne decibel levels.

Seismic exploration uses low-frequency energy waves to map layers and features below the ocean floor. It also can be used to measure foundation stability, detect groundwater, locate mineral deposits, and search for oil and gas. Recently it has been estimated that a typical seismic array with 240 dB re 1 μPa at 1 m would have a received level of 180 dB re 1 μPa at approximately 738 feet (225 m) from the array (NRC, 2000).

Underwater sound levels from fixed structures such as drilling rigs and platforms range in intensity from 20 to 40 dB above background levels and range in frequency from 0.03 to 0.3 kHz (MMS, 2002a). Helicopters generate below-water sounds with frequencies generally below 0.5 kHz (MMS, 2002a). Helicopter sounds are usually transient and are very temporary in nature.

There are no specific data on ambient underwater sound levels for the proposed study areas. As stated above, the most important sources of sound are wind, waves, and shipping. Ambient underwater sound levels can range from 0.001 kHz to 100 kHz with higher decibel levels at the lower frequencies. However, intensity level depends on factors such as wind speed and distance from the other sources (e.g., shipping).

Because the study areas are busy port areas, it is assumed that existing ambient underwater sound levels would be dependent upon the levels of shipping and boating in each study area. Vessel traffic for each study area is described in Section 3.2.2. Other sources of man-made sound in the study areas include maintenance dredging and construction and maintenance of port infrastructures. Other characteristics that could affect sound propagation include substrate type and depth (Richardson et al., 1995). These characteristics are expected to be similar in each study area.

3.4 Biological Resources

3.4.1 Definition of the Resource

Biological resources include native or naturalized plants and animals, and the habitats in which they exist. Sensitive and protected biological resources include plant and animal species that are listed as threatened or endangered by the USFWS, NMFS, or a state regulatory agency, as well as species or habitats that are otherwise protected under Federal or state laws. Determining which species or habitats would be affected by a proposed action can be accomplished through literature reviews and coordination with appropriate Federal and state regulatory agency representatives, resource managers, and other knowledgeable experts.

Marine Mammals and Sea Turtles

The USCG plays an important role in protecting marine mammals and sea turtles because it enforces all U.S. laws within the EEZ. Several of these laws protect marine species, including the ESA, the Marine Mammal Protection Act (MMPA), the National Marine Sanctuaries Act (NMSA), a number of maritime Executive Orders (EOs), and various Federal and international laws. The USCG Protected Living Marine Resources Program (COMDTINST 16475.7) includes a number of policies, directions, and procedures that establish specific rules to ensure that impacts on marine mammals and sea turtles are avoided whenever possible. In addition, the USCG's Ocean Steward initiative and the Atlantic Protected Living Marine Resources Initiative (APLMRI) protects marine mammals from being harassed by nearby or repetitively approaching vessels by providing operational and speed guidelines. The APLMRI Environmental Impact Statement (EIS) concluded that implementing the APLMRI would decrease the risk of USCG vessel collisions with marine mammals, sea turtles, and other marine species in the coastal waters of the U.S. Atlantic Ocean. Based on the measures that would be implemented as part of the Proposed Action to avoid or minimize impacts on marine traffic and on protected marine species, the equipment testing would be consistent with the APLMRI.

The ESA of 1973 (16 United States Code [U.S.C.] 1531–1534), administered by the USFWS and NMFS, mandates the protection and conservation of threatened and endangered species and the ecosystems on which they depend. Under the ESA, an "endangered species" is defined as any species in danger of extinction throughout all or a significant portion of its range. A "threatened species" is defined as any species likely to become an endangered species in the foreseeable future. Section 7 of the ESA requires that all Federal agencies consult with the USFWS or NMFS, as applicable, before initiating any action that could affect a listed species. Section 7 of the ESA states that any project authorized, funded, or conducted by any Federal agency should not "… jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined to be critical."

Under the MMPA of 1972 (16 U.S.C. 1361 et seq.), all marine mammals are protected, regardless of whether or not they are listed under the ESA. The Secretary of Commerce is responsible for the protection of all cetaceans (whales, porpoises, and dolphins) and pinnipeds (seals and sea lions), except walruses, and has delegated authority for implementing the MMPA to NMFS. The Secretary of the Interior is responsible for walruses, polar bears, sea otters, manatees, and dugongs, and has delegated the responsibility of marine mammal conservation and protection to the USFWS. These responsibilities include providing oversight and advice to regulatory agencies on all Federal actions that might affect these species.

The MMPA prohibits the "take" of marine mammals, with certain exceptions, in waters under U.S. jurisdiction and by U.S. citizens on the high seas. Under Section 3 of the MMPA, "take" of marine mammals is defined as "harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal." "Harassment" is further defined as any act of pursuit, torment, or annoyance that has the potential to injure marine mammal stock in the wild, or that has the potential to disturb a marine mammal or marine mammal stock in the wild by disrupting behavioral patterns, including migration, breathing, nursing, breeding, feeding, and sheltering. In cases where U.S. citizens are engaged in activities (other than fishing) that result in "unavoidable" incidental take of marine mammals, the Secretary of Commerce can issue a "small take authorization." The authorization can be issued, after public notice and opportunity for public comment, if the Secretary of Commerce finds negligible impacts.

Fish

As part of its Living Marine Resource Protection mission, the USCG protects, conserves, and manages fisheries resources by enforcing domestic fisheries laws and ensuring the development of practical enforcement plans. Relevant laws pertaining to fish and fisheries management that the USCG enforces include

- Magnuson-Stevens Fisheries Conservation and Management Act (MSA) (16 U.S.C. 1801 et seq.)
- Lacey Act Amendments of 1981 (16 U.S.C. 3371 et seq.)
- Atlantic Coastal Fisheries Cooperative Management Act (16 U.S.C. 2431 et seq.)

Pursuant to Section 303(a)(7) of MSA, regional fishery management councils must identify EFH used by all life history stages of each managed species in fishery management plans (FMPs). EFH is defined as habitats that are necessary to the species for spawning, breeding, feeding, or growth to maturity. EFH that is judged to be particularly important to the long-term productivity of populations of one or more managed species, or to be particularly vulnerable to degradation, should be identified as habitat areas of particular concern (HAPC) to help provide additional focus for conservation efforts. Pursuant to Section 305(b)(2) of the MSA, Federal agencies shall consult with NMFS regarding any action federally

authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken, by such agency that might adversely affect EFH.

Coastal and Other Birds

In fulfilling its mission, the USCG protects threatened and endangered bird species under the ESA. It must also comply with the Migratory Bird Treaty Act (16 U.S.C. 703–712) and EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*.

Threatened and Endangered Seagrass

Seagrasses are marine flowering plants which generally attach to the substrate with roots. Seagrasses perform a number of irreplaceable ecological functions, which range from providing food for commercially, recreationally, and ecologically important organisms to chemical cycling and physical modification of the water column and sediments. Seagrasses occur in all of the coastal waters of the United States, with the exception of Georgia and South Carolina, where the freshwater inflow, height turbidity, and tidal amplitude prohibit their occurrence. Seagrasses usually occur in shallow water on sandy bottoms with relatively low wave energy (Thayer et al., 1997). Because USCG operations associated with the Proposed Action would not occur in seagrass beds, nonthreatened and nonendangered seagrasses have been removed from consideration. However, because it is endangered and because critical habitat occurs adjacent to the study area, potential impacts on Johnson's seagrass (*Halophila johnsonii*) are assessed.

3.4.2 Affected Environment

3.4.2.1 Gulf of Mexico

Marine Mammals

The marine mammal species that occur in the GOM study areas include Florida manatee (*Trichechus manatus latirostris*) (endangered), sperm whale (*Physeter macrocephalus*) (endangered), the bottlenose dolphin (*Tursiops truncates*), Atlantic spotted dolphin (*Stenella frontalis*), and Bryde's whale (*Balaenoptera edeni*).

Florida manatee. The Florida manatee (*Trichechus manatus latirostris*) is a subspecies of the endangered West Indian manatee and primarily occurs in Florida and southeastern Georgia. During the winter months, the United States' manatee population confines itself to the coastal waters of the southern half of peninsular Florida and springs and warmwater outfalls as far north as southeast Georgia. During summer months, they can migrate as far north as coastal Virginia on the east coast and the Louisiana coast on the GOM (USFWS, 1993). Individuals have also been recorded as far west as Texas (USFWS, 2001). The population of manatees in Florida was estimated to be at least 2,505 individuals in 2004 (based on a winter count) (FFWCC, 2005c). In the past decade, yearly mortality in Florida has averaged nearly 150 animals per year; double that of the preceding decade. The average proportion of first-year calves in the population is 10 percent with a range of 5 to 15 percent (USFWS, 1993).

Florida manatees are generalist herbivores whose ability to feed on virtually any vegetation and whose high tolerance for a broad range of salinity and turbidity conditions allow them to live in a wide variety of habitats. They favor abundantly vegetated nearshore marine, estuarine, or fresh waters which are shallow, warm, and calm (O'Shea and Kochman, 1990). Critical habitat for manatees in the GOM is designated on the west coast of Florida.

Manatee vocalizations have been recorded at 2.5 to 5 kHz (see Table 3-2) (Nowacek et al., 2003). A behavioral audiogram indicates that manatees can hear from 0.4 to 46 kHz, with best hearing at 6 to 20 kHz (Gerstein et al., 1999).

Sperm Whale. The sperm whale (*Physeter macrocephalus*) is the only large cetacean common to the GOM (NMFS, 2002a; MMS, 2001). Sperm whales are found in the waters of the GOM throughout the year, but are most common during the summer months. Sperm whales are the largest member of the suborder Odontoceti or toothed whales. The International Whale Commission (IWC) recognizes four populations of sperm whales worldwide: North Pacific, North Atlantic, Northern Indian Ocean, and southern hemisphere (NMFS, 2002a). Sperm whales generally occur in waters greater than 590 ft (180 m) deep. While they might be encountered almost anywhere on the high seas, their distribution shows a preference for continental margins, sea mounts, and areas of upwelling where food is abundant (NMFS, 2002a). It is unlikely that sperm whales would occur in the study area.

In general, sperm whales group by gender and age, with the females and juveniles based in tropical and subtropical waters and males in the higher latitudes, feeding in polar regions and returning to tropical waters to breed (Waring et al., 2003). In the northwestern Atlantic, sperm whales are distributed off Cape Hatteras in the winter, shifting to the waters off Delaware and Virginia north to the southern portion of Georges Bank in the spring. The distribution expands in the summer to include the areas east and north of Georges Bank and into the Northeast Channel region, as well as the continental shelf (in depths less than the 330 feet [100 m]) south of New England. In the fall, sperm whales shift to the continental shelf edge from the mid-Atlantic Bight to south of New England (Waring et al., 2003).

Sperm whale clicks have been recorded from 0.1 to 30 kHz (Richardson et al., 1995).

Bottlenose dolphin. The bottlenose dolphin is the most common cetacean in the GOM. Bottlenose dolphins use echolocation signals to hunt for prey and avoid obstacles. Underwater hearing ranges reported for bottlenose dolphins range from 0.1 kHz to 150 kHz with best sensitivities between 15 and 110 kHz (Brill et al., 2001). Bottlenose dolphins are reported to produce sounds such as whistling, barking, and clicking (Richardson et al., 1999). Whistles were reported at 0.8 to 24 kHz with dominant frequencies of 3.5 to 14.5 kHz (NRC, 2000). Clicks used for echolocation were reported at 110 to 130 kHz at SPLs ranging from 218 to 228 dB re 1µPa (see Table 3-2) (Richardson et al., 1995).

Atlantic spotted dolphin. The Atlantic spotted dolphin is distributed from New England to the GOM, through the Caribbean to Venezuela. They are common offshore dolphins in the GOM and western North Atlantic. Atlantic spotted dolphins usually occur 5 to 12 miles (8 to 20 kilometers [km]) offshore but move in closer to shore in the spring and summer (Würsig et al., 2000; Mullin and Fulling, 2003; Fulling et al., 2003). Atlantic spotted dolphin vocalizations range from 0.1 to 19.8 kHz, with peak sensitivities at 6.7 to 17.9 kHz (Lammers et al., 2003; Herzing, 1996; Richardson et al., 1995). They have two peak echolocation signal peaks, from 40 to 50 kHz and from 110 to 130 kHz. Intensity levels were as high as 210 dB (Au and Herzing, 2003).

Bryde's whale. The Bryde's whale is the most commonly observed baleen whale in the GOM, with 12 confirmed live sightings and 12 verified strandings (Würsig et al., 2000). The Bryde's whale is most commonly sighted in the DeSoto Canyon region off western Florida, near the 330-foot (100-m) isobath. Bryde's whales vocalize using frequencies ranging from 0.07 kHz to 0.900 kHz (see Table 3-2) (Richardson et al,, 1995).

Table 3-2. Reported Hearing Sensitivities, Vocalizations, and Transmissions of Marine Mammals that Occur in the Study Areas

Common Name	Scientific Name	Frequency Range (kHz)	Dominant Frequencies (kHz)
Baleen whales (Suborder Mysticeti)			
Bryde's whale	*Balaenoptera edeni* hearing sensitivity vocalizations	NA 0.07–0.900	NA 0.152–0.174 for moans
Humpback whale	*Megaptera novaeangliae* hearing sensitivity vocalizations	NA 0.03–8.2	0.4–3.6 [a] 0.025–4
Minke whale	*Balaenoptera acuturostrata* hearing sensitivity vocalizations	NA 0.06–20	NA 0.06–14.0 for moans, 0.85 for ratchets, and < 12 @ 151 dB for clicks
North Atlantic right whale	*Eubalaena glacialis* hearing sensitivity vocalizations	NA < 0.4	0.01–0.015 [b] NA
Toothed Whales (Suborder Odontoceti)			
Sperm whale	hearing sensitivity vocalizations	NA 0.1–30	NA 2–4, 10–16 @ 160–180 dB
Bottlenose dolphin	*Tursiops truncatus* hearing sensitivity vocalizations echolocation	0.04–150[c] 0.3–24 110–130 @ 218–228 dB	15–110 3.5–14.5 NA
Common dolphin	*Delphinus delphis* hearing sensitivity vocalizations echolocation	NA NA 23–67	NA < 0.5–18 NA
Atlantic spotted dolphin	*Stenella frontalis* vocalizations echolocation	0.1–19.8 NA	6.7–17.9 40–50, 110–130 @ 210 dB
Pantropical spotted dolphin	*Stenella attenuata* vocalizations echolocation	3.1-21.4 NA	6.7-7.8 NA

Table 3-2. Reported Hearing Sensitivities, Vocalizations, and Transmissions of Marine Mammals that Occur in the Study Areas (continued)

Common Name	Scientific Name	Frequency Range (kHz)	Dominant Frequencies (kHz)
Manatees (Family Trichechidae)			
Florida Manatee	*Trichechus manatus latirostris*		
	hearing sensitivity	0.4–46[c]	6–20[c]
	vocalizations	2.5–5.6	5.6

Sources: Nowacek et al., 2003; Gerstein et al., 1999; Brill et al., 2001; NPS, 2003; NRC, 2003; USN, 2001; Au and Herzing, 2003; Herzing, 1996; Richardson et al., 1995

Notes: [a] Based on disturbance data.

[b] Predicted hearing sensitivity.

[c] Tested hearing sensitivity.

NA = Not Available

Hearing Capabilities. Hearing capabilities have not been tested in many marine mammals (e.g., baleen whales). In these cases, information on hearing is based on the frequencies of sounds produced, behavioral observations, anatomical evidence, and extrapolations from what is known about other marine mammal hearing. Marine mammal hearing varies among species; however, as a group, marine mammal hearing ranges from 0.01 to 200 kHz. Broad generalizations can be made about groups of marine mammals. For example, most toothed whales (odontocetes) hear well in ultrasonic ranges, with functional hearing from 0.2 to 100 kHz. Some toothed whales are able to hear frequencies as high as 200 kHz (NRC, 2003). Models indicate that baleen whales (mysticetes) have lower frequency hearing, with some species that can hear as low as 0.01 kHz and most that cannot hear frequencies above 30 kHz (Richardson et al., 1995; NRC, 2003). Hearing sensitivities for marine mammals in the GOM study areas are presented in Table 3-2.

Sea Turtles

All five species of sea turtles that inhabit the GOM are federally listed as threatened or endangered (MMS, 2001). These species are the loggerhead sea turtle (*Caretta caretta*), green sea turtle (*Chelonia mydas*), leatherback sea turtle (*Dermochelys coriacea*), hawksbill sea turtle (*Eretmochelys imbricata*), and Kemp's ridley sea turtle (*Lepidochelys kempi*).

Sea turtle life history stages include eggs, hatchling, juvenile, and adult (MMS, 2002a). In general, sea turtles nest along the entire GOM coastline; however, specific nesting distributions by species are described below. Hatchling sea turtles move offshore in a swimming frenzy immediately after hatching. Post-frenzy hatchling sea turtles move to areas of convergence or to sargassum mats and undergo passive oceanic migrations (Wyneken, 2001). Juvenile sea turtles actively recruit to nearshore nursery habitat and move into adult foraging habitat when approaching sexual maturity. At the onset of nesting, adults move between foraging habitats and nesting beaches. Mating habitat depends on species and might occur off nesting beaches or remotely. Females reside near nesting beaches during nesting season (MMS, 2002a).

There are no designated critical habitats or migratory routes for sea turtles in the GOM. However, NMFS recognizes many coastal areas as preferred habitat (i.e., important habitats for the species within a specific geographic area) for sea turtles. For example, nearshore or inshore areas are preferred habitat for green sea turtles, while bays, especially in Louisiana and Texas, are preferred habitat for Kemp's ridley sea turtles (MMS, 2002a). Sargassum mats are also recognized as preferred habitat for juvenile sea turtles.

Loggerhead Sea Turtle. The loggerhead is the most abundant sea turtle in the GOM (MMS, 2002a). It has been Federally listed as a threatened species since 1978 (NMFS and USFWS, 1991; NMFS, 2002a). It is a worldwide species that inhabits temperate and tropical waters, including estuaries and continental shelves of both hemispheres (NMFS and USFWS, 1991; NMFS, 2002a). Five populations of loggerhead sea turtles exist worldwide: the Atlantic Ocean, Pacific Ocean, Indian Ocean, Caribbean Sea, and Mediterranean Sea populations (NMFS, 2002b). In the western Atlantic Ocean, the five major nesting aggregations are (1) a northern nesting aggregation that occurs from North Carolina to northeast Florida about 20 ºN latitude; (2) a south Florida nesting aggregation from 29 ºN latitude on the east coast to Sarasota on the west coast; (3) a Florida panhandle nesting aggregation, occurring at Eglin Air Force Base and the beaches near Panama City, Florida; (4) a Yucatán nesting aggregation occurring on the eastern Yucatán Peninsula, Mexico; and (5) a Dry Tortugas nesting aggregation occurring on the islands of the Dry Tortugas, near Key West, Florida (NMFS,2002a, b).

In the southeastern U.S., female loggerhead sea turtles mate from late April through early September (NMFS and USFWS, 1991). Individual females might nest several times within one season, but usually at intervals of every 2 to 3 years. For their first 7 to 12 years, loggerhead turtles inhabit the pelagic waters near the North Atlantic Gyre and are called pelagic immatures. When loggerhead sea turtles reach 16 to 24 in (40 to 60 cm) straight-line carapace length, they begin to recruit to coastal inshore and nearshore waters of the continental shelf throughout the U.S. Atlantic and GOM, and are referred to as benthic immatures. Benthic immatures occur in waters from Cape Cod, Massachusetts, to southern Texas. They forage off the Northeastern U.S. and migrate south in the fall as temperatures drop (NMFS, 2002a).

Loggerhead sea turtle hearing ranges from 0.25 kHz to 0.75 kHz with peak sensitivity at 0.25 kHz (Richardson et al., 1995).

Green Sea Turtle. The green sea turtle breeding colony populations in Florida and on the Pacific coast of Mexico are listed as endangered; all other populations have been listed as threatened (USFWS, 2002c). The green sea turtle nests in tropical and subtropical waters worldwide. The green sea turtle inhabits shallow waters (except when migrating) inside reefs, bays, and inlets and tends to be found in areas with marine grass and algae (USFWS, 2002c). Green sea turtles are found in western Atlantic waters of the United States, from Massachusetts to Texas, as well as in Puerto Rico and the U.S. Virgin Islands (MMS, 1999).

In the United States, green sea turtles nest in North Carolina, South Carolina, Georgia, Florida, U.S. Virgin Islands, and Puerto Rico. Green sea turtles occur in small numbers over seagrass beds along the south Texas coast and the Florida Gulf coast. The east coast of Florida is considered a principal nesting area for green sea turtles. Green sea turtles rarely nest in the GOM, but nesting has been reported at Eglin Air Force Base, on the Florida Panhandle (MMS, 1999). No critical habitat has been designated in the GOM.

Green sea turtles are known to make extensive migrations between nesting and feeding habitats (NMFS, 2002a). Hatchling green sea turtles eat a variety of plants and animals (USFWS, 2002c) and forage in areas such as coral reefs, emergent rocky bottom, sargassum mats, and lagoons and bays (MMS, 2001). Feeding grounds in the GOM include nearshore south Texas waters; the upper west coast of Florida; and the northwestern coast of the Yucatán Peninsula, Mexico.

Preliminary data indicate that green sea turtles are capable of hearing sounds ranging from 0.1 kHz to 0.5 kHz, with a threshold between 107 dB and 119 dB at 0.2 kHz, and a threshold between 121 dB and 131 dB at 0.4 kHz (ONR, undated).

Leatherback Sea Turtle. The leatherback sea turtle is listed as endangered (USFWS, 2002a). It is primarily a pelagic species and is distributed in temperate and tropical waters worldwide. The leatherback is the largest, deepest diving, most migratory, widest ranging, and most pelagic sea turtle (USFWS, 2002a). Nesting grounds are found circumglobally. Leatherbacks undergo extensive migrations from feeding grounds to nesting beaches. Once they nest, they move offshore and use both coastal and pelagic waters (NMFS, 2002a). U.S. nesting sites include the Florida east coast; Sandy Point Beach, U.S. Virgin Islands; and Puerto Rico. Nesting occurs from March through July. No critical habitat has been designated in the GOM.

Hawksbill Sea Turtle. The hawksbill sea turtle is listed as endangered. Although the hawksbill sea turtle is the least common sea turtle in the GOM, it has been recorded in waters of all of the states along the GOM (NMFS and USFWS, 1993). Hawksbill sea turtles have been sighted near coral reefs south of Florida and only a very few have been documented as far west as Texas (NMFS, 2002a). This species is primarily coastal and seldom seen in waters deeper than 66 feet (20 m). Hawksbill sea turtles inhabit rocky areas, coral reefs, shallow coastal areas, lagoons or oceanic islands, and narrow creeks and passes. The species is found in tropical and subtropical waters in the Atlantic, Pacific, and Indian Oceans. The global population of hawksbill sea turtles has declined 80 percent over the past 100 years, with only approximately 15,000 females nesting worldwide. Only five regional populations remain with more than 1,000 females nesting annually, in the Seychelles, Mexico, Indonesia, and two in Australia (USFWS, 2002b).

The highest densities of nests for the hawksbill sea turtle occur on the GOM and Caribbean coasts of the Yucatán Peninsula, Mexico. Nesting also occurs in lower densities on scattered beaches. In most locations, nesting occurs between April and November, but varies depending on the area. Nesting on GOM beaches is extremely rare, with only one nest on Padre Island, Texas, documented in 1998 (NMFS, 2002a). No critical habitat has been designated in the GOM.

Kemp's Ridley Sea Turtle. The Kemp's ridley sea turtle primarily inhabits coastal waters in the GOM and northwestern Atlantic Ocean. This species has been federally listed as endangered since 1978, and is considered the most endangered sea turtle in the world (NMFS and USFWS, 1992). Nesting is limited to beaches at Rancho Nuevo, a stretch of beach in southern Tamaulipas, Mexico. Nesting occurs from April into July (NMFS, 2002a).

Kemp's ridley sea turtles have been sighted within 9.3 mi (15 km) of shore and in depths less than 18 m (59 ft) (MMS, 2002b). Nearshore waters of the GOM are believed to provide important developmental habitat for juvenile Kemp's ridley sea turtles. The primary subadult habitat is along the northern GOM coast from Cedar Key, Florida, to Port Aransas, Texas (NMFS, 2002a). No critical habitat has been designated in the GOM.

Hearing Capabilities. Little is known about sea turtle hearing. Past research based on the physiology of the brain indicates that sea turtles are able to hear sounds with frequencies ranging from 0.08 to 2 kHz, with maximum sensitivity levels reported between 0.1 and 0.8 kHz and 0.3 and 0.4 kHz (Lenhardt, 1994; NRC, 2003).

Fisheries Resources and Essential Fish Habitat

Commercial and recreational fisheries resources in the GOM are managed by the states within the Gulf of Mexico States Marine Fisheries Commission (GSMFC) and federally by the Gulf of Mexico Fishery Management Council (GMFMC). Commercial fishery landings in the GOM totaled 1.6 billion pounds and were valued at $687.0 million in 2003 (NOAA Fisheries, 2003a).

Within the areas encompassed by the NMFS Southeast Region, EFH has been identified for hundreds of marine species covered by 20 FMPs, under the auspices of the GMFMC, South Atlantic Fishery Management Council (SAFMC), Caribbean Fishery Management Council (CFMC), or the NMFS. A generic FMP amendment delineating EFH and HAPC for species managed by the GMFMC was completed and approved in early 1999. The generic FMP subsequently was updated and revised in 2005 and became effective in January 2006 (70 FR 76216). Table 3-3 lists the federally managed species that occur in the GOM.

Coastal areas are essential breeding, nursery, and feeding areas for many marine fish and shellfish. Pursuant to the MSA, Federal agencies must consult with fishery managers concerning actions (including the issuance of permits for private activities) that might adversely impact EFH.

Hearing Capabilities. Hearing sensitivity is known for approximately 100 of the 250,000 extant species of fish (NRC, 2003). The hearing sensitivity of fish ranges from 0.5 to 200 kHz; however, most fish detect sound within 0.5 to 1 kHz (NRC, 2003; Popper, 2003). It has been reported that clupeid fish, such as Gulf menhaden (*Clupea harengus*) and American shad (*Alosa sapidissima*), respond to frequencies as high as 180 kHz, with thresholds for American shad around 155 dB SPL and for Gulf menhaden around 180 dB SPL (Mann et al., 2001). These species can also hear within lower frequencies (below 10 kHz), with thresholds being around 120 to 130 dB SPL. Known hearing sensitivities for fish are presented in Table 3-4.

Table 3-3. Federally Managed Fish Species in the GOM

Management Authority	Fishery Management Plan	Common Name	Scientific Name
GMFMC	Shrimp	brown shrimp	*Farfantepenaeus aztecus*
GMFMC	Shrimp	pink shrimp	*F. duorarum*
GMFMC	Shrimp	royal red shrimp	*Pleoticus robustus*
GMFMC	Shrimp	white shrimp	*Litopenaeus setiferus*
GMFMC	Red Drum	red drum	*Sciaenops ocellatus*
GMFMC	Stone Crab	Florida stone crab	*Menippe mercenaria*
GMFMC	Stone Crab	gulf stone crab	*M. adina*
GMFMC	Spiny Lobster	spiny lobster	*Panulirus argus*
GMFMC	Spiny Lobster	slipper lobster	*Scyllarides nodife*
GMFMC	Coral and Coral Reef Fishery Management Plan	varied coral species and coral reef communities comprised of several hundred species	
GMFMC	Reef Fish	almaco jack	*Seriola rivoliana*
GMFMC	Reef Fish	anchor tilefish	*Caulolatilus intermedius*
GMFMC	Reef Fish	banded rudderfish	*S. zonata*
GMFMC	Reef Fish	blackfin snapper	*Lutjanus buccanella*
GMFMC	Reef Fish	blackline tilefish	*Caulolatilus cyanops*
GMFMC	Reef Fish	black grouper	*Mycteroperca bonaci*
GMFMC	Reef Fish	blueline tilefish	*C. microps*
GMFMC	Reef Fish	cubera snapper	*L. cyanopterus*

Table 3-3. Federally Managed Fish Species in the GOM (continued)

Management Authority	Fishery Management Plan	Common Name	Scientific Name
GMFMC	Reef Fish	dog snapper	*L. jocu*
GMFMC	Reef Fish	dwarf sand perch	*Diplectrum bivittatum*
GMFMC	Reef Fish	gag grouper	*M. microlepis*
GMFMC	Reef Fish	goldface tilefish	*C. chrysops*
GMFMC	Reef Fish	goliath grouper	*Epinephelus itajara*
GMFMC	Reef Fish	gray snapper	*L. griseus*
GMFMC	Reef Fish	gray triggerfish	*Balistes capriscus*
GMFMC	Reef Fish	greater amberjack	*S. dumerili*
GMFMC	Reef Fish	hogfish	*Lachnolaimus maximus*
GMFMC	Reef Fish	lane snapper	*Lutjanus synagris*
GMFMC	Reef Fish	lesser amberjack	*S. fasciata*
GMFMC	Reef Fish	mahogany snapper	*L. mahogoni*
GMFMC	Reef Fish	marbled grouper	*E. inermis*
GMFMC	Reef Fish	misty grouper	*E. mystacinus*
GMFMC	Reef Fish	mutton snapper	*L. analis*
GMFMC	Reef Fish	Nassau grouper	*E. striatus*
GMFMC	Reef Fish	queen snapper	*Etelis oculatus*
GMFMC	Reef Fish	red hind	*Epinephelus guttatus*
GMFMC	Reef Fish	red grouper	*E. morio*
GMFMC	Reef Fish	rock hind	*E. adscensionis*
GMFMC	Reef Fish	sand perch	*Diplectrum formosum*
GMFMC	Reef Fish	scamp grouper	*M. phenax*
GMFMC	Reef Fish	schoolmaster	*L. apodus*
GMFMC	Reef Fish	silk snapper	*L. vivanus*
GMFMC	Reef Fish	snowy grouper	*E. niveatus*
GMFMC	Reef Fish	speckled hind	*E. drummondhayi*
GMFMC	Reef Fish	tilefish	*Lopholatilus chamaeleonticeps*
GMFMC	Reef Fish	vermilion snapper	*Rhomboplites aurorubens*
GMFMC	Reef Fish	Warsaw grouper	*E. nigritus*
GMFMC	Reef Fish	wenchman	*Pristipomoides aquilonaris*
GMFMC	Reef Fish	yellowedge grouper	*E .lavolimbatus*
GMFMC	Reef Fish	yellowfin grouper	*M. venenosa*
GMFMC	Reef Fish	yellowmouth grouper	*M. interstitialis*
GMFMC	Reef Fish	yellowtail snapper	*Ocyurus chrysurus*
NMFS	Billfish	blue marlin	*Makaira nigricans*
NMFS	Billfish	longbill spearfish	*Tetrapturus pfluegeri*

Table 3-3. Federally Managed Fish Species in the GOM (continued)

Management Authority	Fishery Management Plan	Common Name	Scientific Name
NMFS	Billfish	sailfish	*Istiophorus platypterus*
NMFS	Billfish	white marlin	*T. albidus*
NMFS	Swordfish	swordfish	*Xiphias gladius*
NMFS	Tuna	albacore	*Thunnus alalunga*
NMFS	Tuna	Atlantic bigeye	*T. obesus*
NMFS	Tuna	Atlantic yellowfin	*T. albacares*
NMFS	Tuna	skipjack	*Katsuwonus pelamis*
NMFS	Tuna	western Atlantic bluefin	*T. thynnus*
NMFS	Shark	Atlantic angel shark	*Squatina dumerili*
NMFS	Shark	Atlantic sharpnose shark	*Rhizoprionodon terraenovae*
NMFS	Shark	basking shark	*Cetorhinus maximus*
NMFS	Shark	bigeye sand tiger	*Odontaspis noronhai*
NMFS	Shark	bigeye sixgill shark	*Hexanchus vitulus*
NMFS	Shark	bigeye thresher shark	*Alopias superciliosus*
NMFS	Shark	bignose shark	*Carcharhinus altimus*
NMFS	Shark	Blacknose shark	*C. acronotus*
NMFS	Shark	blacktip shark	*C. limbatus*
NMFS	Shark	blue shark	*Prionace glauca*
NMFS	Shark	bonnethead	*Sphyrna tiburo*
NMFS	Shark	bull shark	*C. leucas*
NMFS	Shark	Caribbean reef shark	*C. perezi*
NMFS	Shark	Caribbean sharpnose shark	*R. porosus*
NMFS	Shark	common thresher shark	*A. vulpinus*
NMFS	Shark	dusky shark	*C. obscurus*
NMFS	Shark	finetooth shark	*C. isodon*
NMFS	Shark	Galapagos shark	*C. galapagensis*
NMFS	Shark	great hammerhead	*S. mokarran*
NMFS	Shark	lemon shark	*Negaprion brevirostris*
NMFS	Shark	longfin mako shark	*Isurus paucus*
NMFS	Shark	narrowtooth shark	*C. brachyurus*
NMFS	Shark	night shark	*C. signatus*
NMFS	Shark	nurse shark	*Ginglymostoma cirratum*
NMFS	Shark	oceanic whitetip shark	*C. longimanus*
NMFS	Shark	porbeagle shark	*Lamna nasus*
NMFS	Shark	sandbar shark	*C. plumbeus*
NMFS	Shark	sand tiger shark	*O. taurus*

Table 3-3. Federally Managed Fish Species in the GOM (continued)

Management Authority	Fishery Management Plan	Common Name	Scientific Name
NMFS	Shark	scalloped hammerhead	*S. lewini*
NMFS	Shark	Sharpnose sevengill shark	*Heptranchi perlo*
NMFS	Shark	shortfin mako shark	*I. oxyrinchus*
NMFS	Shark	silky shark	*C. falciformis*
NMFS	Shark	sixgill shark	*H. griseus*
NMFS	Shark	smalltail shark	*C. porosus*
NMFS	Shark	smooth hammerhead	*S. zygaena*
NMFS	Shark	spinner shark	*C. brevipinna*
NMFS	Shark	tiger shark	*Galeocerdo cuvieri*
NMFS	Shark	whale shark	*Rhinocodon typus*
NMFS	Shark	white shark	*Carcharodon carcharias*

Source: NMFS 2006

Table 3-4. Reported Hearing Sensitivities of Marine Fish

Order	Description of Order	Common Name	Scientific Name	Hearing Range (kHz)
Perciformes [a]	Tunas (Scombridae)	Yellowfin	*Thunnus albacares*	0.05–1.1 (best hearing from 0.3–0.5)
		Kawakawa	*Euthynnus affini*	0.05–1.1 not as sensitive as *Thunnus albacares*
	Damselfish (Pomacentridae)	Various species	*Eupomacentrus* spp.	0.1–1.2 (best hearing from 0.3–0.6)
		Goby	*Gobius niger*	0.1–0.16
		Perch	*Perca fluviatilis*	0.1–0.16
		Pike perch	*Lucioperca Sandra*	0.1–0.16
	Serranidae (Sea basses)	Red hind	*Epinephalus guttatus*	0.1–1 (best hearing from 0.2–0.4)
	Snappers	Schoolmaster	*Lutjanus apodus*	0.1–1 (best hearing from 0.2–0.6)
	Drums and croakers (Sciaenidae)	Chubbyu	*Equetus acuminatus*	0.1–2 (best hearing from 0.2–1)

Table 3-4. Reported Hearing Sensitivities of Marine Fish (continued)

Order	Description of Order	Common Name	Scientific Name	Hearing Range (kHz)
Perciformes [a] (continued)	Grunts (Haemulidae)	Blue-striped grunt	*Haemulon sciurus*	0.75–1.0 (best hearing from 0.75–0.8)
	Wrasses (Labridae)	Blue-head wrasse	*Thalossoma birasciatum*	0.1–1.2 (best hearing from 0.2–0.4)
		Tautog	*Tautoga onitis*	0.1–0.16
Batrachoidformes	Toadfish	Oyster toadfish	*Opsanuss tau*	0.1–0.16
Scorpaeniformes	Searobins	Slender searobin	*Prionotus scitulus*	0.1–0.6 (best hearing from 0.3–0.4)
Pleuronectiformes	Flounders, sole, halibut	Plaice	*Pleuronectes platessa*	0.03–0.2
		Dab	*Limanda limanda*	0.1–0.2
Anguilliformes	Eels	American eel	*Anguilla anguilla*	up to 0.3
Abuleiformes	Bonefish	Bonefish	*Abula vulpes*	0.05–0.7
Salmoniformes	Salmon, trout, char	Atlantic salmon	*Salmo salar*	0.03–0.4
Gadiformes	Cods, hakes, haddock, pollock	Atlantic cod	*Gadus morhua*	0.01–0.5
		Haddock	*Melanogrammus aegelfinus*	0.03–0.47
		Pollock	*Pollachius pollachius*	0.03–0.47
		Ling	*Molva molva*	0.04–0.55
Siluriformes	Freshwater catfish	Freshwater catfish	*Ictalurus nebulosus*	0.05–3+
Cypriniformes	Minnows, suckers, carp	Goldfish	*Carassius auratus*	
		Chub	*Semotilus atromaculatus*	
		Japanese carp	*Cyprinus carpio*	
Beryciformes	Squirrelfish		*Myripristis kuntee*	0.1–3 (best hearing from 0.3–2)
			Holocentrus ascencionis	0.3–2
			Holocentris vexillaris	0.1–1.2
			Adioryx xantherythrus	≤ 1

Table 3-4. Reported Hearing Sensitivities of Marine Fish (continued)

Order	Description of Order	Common Name	Scientific Name	Hearing Range (kHz)
Clupeiformes	Herrings, shads, sardines, and anchovies	American shad	*Alosa sapidissima*	10–180+
		Blueback herring	*Alosa aestivalis*	200+
		Herring	*Clupea harengus*	0.03–4 (best hearing from 0.3–1)
		Gulf menhaden	*Brevoortia patronus*	10–180+
		Sardines and anchovies	*Harengula* sp., *Anchoa* sp., *Sardinella* sp.	< 4
Acipenseriformes	Sturgeon	Lake sturgeon	*Acipenser fulvescens*	0.1 – 2 (best hearing at 0.1-0.4)
Heterodontiformes	Bullhead sharks	Horn shark	*Heterdontus francisci*	0.02–0.16
Carcharhiniformes	Ground sharks	Bull shark	*Carcharhinu leucas*	0.4-0.6

Sources: NPS, 2003; Mann et al., 2001; Plachta and Popper, 2003; NRC, 2003; Tavolga et al., 1981; Mann et al., 1998; Meyer and Popper, 2005

Note: [a] Perciformes is such a diverse group of fish that they are broken down by taxonomic family.

Threatened and Endangered Fish

Gulf Sturgeon. The Gulf sturgeon (*Acipenser oxyrinchus desotoi*) is listed as a threatened species and occurs in the GOM. Gulf sturgeons spawn in the headwaters of rivers and spend the summer in the mid to lower river. Habitat includes coastal rivers and their associated marine habitat. Gulf sturgeon can be found in the GOM from the Suwannee River in Florida to the Pearl River in Louisiana (USGS, 2005). Critical habitat has been designated for the Gulf sturgeon within the major river systems that support the seven currently reproducing subpopulations and their associated marine habitats. These river systems are (from west to east) the Pearl, Pascagoula, Escambia, Yellow/Blackwater, Choctawhatchee, Apalachicola, and Suwannee Rivers (65 Federal Register [FR] 69693–69717). Gulf sturgeon critical habitat Unit 8 occurs in the Lower Mississippi River Port Complex study area in portions of the Pearl and Bogue Chitto rivers, Lake Pontchartrain east of the Lake Pontchartrain Causeway, all of Little Lake, The Rigolets, Lake St. Catherine, and Lake Borgne (see Figure 2-1).

Primary constituent elements essential for the conservation of Gulf sturgeon are those habitat components that support feeding, resting, sheltering, reproduction, and migration, and include physical features necessary for maintaining natural processes that support those habitat components. The primary constituent elements for Gulf sturgeon include

- Abundant prey items within riverine habitats for larval and juvenile life stages, and within estuarine and marine habitats for juvenile, subadult, and adult life stages
- Riverine spawning sites with substrates suitable for egg deposition and development, such as limestone outcrops and cut limestone banks, bedrock, large gravel or cobble beds, marl, soapstone, or hard clay

- Riverine aggregation areas (also referred to as resting, holding, and staging areas) are: used by adult, subadult, and juveniles; generally found in holes below normal riverbend depths; believed necessary for minimizing energy expenditures during freshwater residency and possibly for osmoregulatory functions
- A flow regime (i.e., the magnitude, frequency, duration, seasonality, and rate-of-change of freshwater discharge over time) necessary for normal behavior, growth, and survival of all life stages in the riverine environment, including migration, breeding site selection, courtship, egg fertilization, resting, and staging; and egg sheltering, resting, and larvae staging
- Water quality, including temperature, salinity, pH, hardness, turbidity, oxygen, content, and other chemical characteristics, necessary for normal behavior, growth, and viability of all life stages
- Sediment quality, including texture and other chemical characteristics necessary for normal behavior, growth, and viability of all life stages
- Safe and unobstructed migratory pathways, necessary for passage within and between riverine, estuarine, and marine habitats (e.g., a river unobstructed by a permanent structure, or a dammed river that still allows for passage).

As presented in Table 3-4, sturgeon hearing ranges from 0.1 to 2 kHz, with best hearing at 0.1 to 0.4 kHz (Meyer and Popper, 2005).

Smalltooth Sawfish. The smalltooth sawfish (*Prestis pictinata*) is listed as an endangered species and occurs in the GOM. Sawfish species inhabit shallow coastal waters of tropical seas and estuaries throughout the world. They are usually found in shallow waters very close to shore over muddy and sandy bottoms. They are often found in sheltered bays, on shallow banks, and in estuaries or river mouths. Certain species of sawfish are known to ascend inland in large river systems, and are among the few elasmobranchs known to inhabit freshwater systems in many parts of the world (NOAA Fisheries, 2003b).

Historically, the U.S. population of the smalltooth sawfish was common throughout the GOM from Texas to Florida, and along the east coast from Florida to Cape Hatteras. The current range of this species has been reduced to peninsular Florida, and smalltooth sawfish are relatively common only in the Everglades region at the southern tip of the state. No accurate estimates of abundance trends over time are available for this species (NOAA Fisheries, 2003b). No critical habitat has been designated in the GOM.

Smalltooth sawfish are in the same subclass as sharks (elasmobranches). As presented in Table 3-4, known elasmobranch hearing ranges from 0.02 to 0.6 kHz (NRC, 2003; Tavolga et al., 1981).

Pallid Sturgeon. The pallid sturgeon (*Scaphirhynchus albus*), is an endangered fish found in the Mississippi, Missouri, Atchafalaya, and lower Yellowstone rivers. Pallid sturgeons have adapted to living near the bottom of large silty rivers with a natural hydrograph (USFWS, 2006). The preferred habitat for pallid sturgeon includes a diversity of water depths and velocities formed by braided channels, sand bars, sand flats, and gravel bars (USFWS, 2006). Habitat loss through river channelization and dams has adversely affected this species throughout its range.

As presented in Table 3-4, sturgeon hearing ranges from 0.1 to 2 kHz, with best hearing at 0.1 to 0.4 kHz (Meyer and Popper, 2005).

Coastal and Other Birds

The threatened and endangered birds that occur in the GOM and inhabit or frequent coastal areas and waters of the inner continental shelf include the bald eagle (*Haliaeetus leucocephalus*), brown pelican (*Pelicanus occidentalis*), Florida scrub-jay (*Aphelocoma coeruluscens*), piping plover (*Charadrius melodus*), and the wood stork (*Mycteria americana*). Studies with other (noncoastal) species indicate that birds are sensitive to low frequency sounds in the air. However, there are little data on seabird hearing underwater, and there is no evidence that seabirds are affected by changes in underwater sound (USN, 2001).

Bald Eagle. The bald eagle is listed as threatened. It is a terrestrial raptor that is widely distributed across the southern United States, including coastal habitats along the GOM (USCG and MARAD, 2003). Bald eagles nest in Louisiana from October through mid-May. Eagles typically nest in bald cypress trees near fresh to intermediate marshes or open water in the southeastern parishes (Firmin, 2003). Areas with high numbers of nests in Louisiana include the Lake Verret Basin south to Houma, the southern marsh ridge from Houma to Bayou Vista, the north shore of Lake Pontchartrain, and the Lake Salvador area (MMS, 2002b). In Florida, bald eagles nest almost year round. More than 70 percent of occupied nesting territories in the southeast are in Florida (FFWCC, 2005b). No critical habitat has been designated for bald eagles in the GOM.

Brown Pelican. The brown pelican is listed as endangered in Mississippi, Louisiana, and Texas. It is one of two pelican species in North America. Associated primarily with coastal waters, brown pelicans are known to nest on Raccoon Point on Isles Dernieres, Queen Bess Island, Plover Island (Baptiste Collette), Wine Island, Rabbit Island (Calcasieu Lake), and islands in the Chandeleur chain. Pelicans change nesting sites as their habitats change. Thus, pelicans might also be found nesting on mud lumps at the mouth of South Pass (Mississippi River Delta) and on small islands in St. Bernard Parish. In winter, spring, and summer, nests are built in mangrove trees or other shrubby vegetation, although occasional ground nesting might occur (Firmin, 2003).

Brown pelicans feed in shallow estuarine waters, using sand spits and offshore sand bars as rest and roost areas along coastal Louisiana. They are known to forage as far as 32 km (20 mi) off the shore of the GOM coast, and it is possible that they could range slightly farther than 32 km (20 mi) offshore if they become lost or disoriented (Firmin, 2003). No critical habitat has been designated for brown pelicans in the GOM.

Florida Scrub Jay. The Florida scrub jay is listed as threatened. Scrub jays are nonmigratory birds and habitat is restricted to small, isolated patches of scrub on peninsular Florida. Habitat consists of dense thickets of scrub oaks less than 3 m in height interspersed with bare sand. Scrub jay habitat occurs on fine, white, drained sand along the Florida coastline and in sand dunes. Florida scrub jays have been extirpated or reduced in number in many counties along the Florida GOM coast (USFWS, 1990). No critical habitat has been designated for Florida scrub jays in the GOM.

Piping Plover. The piping plover is listed as endangered. The piping plover and its designated critical habitat occur along the GOM shoreline. Piping plovers winter in Louisiana, and are generally present for 8 to 10 months; they arrive from the breeding grounds as early as late July and remain until late March or April. Piping plovers feed extensively on intertidal beaches, mud flats, sand flats, algal flats, and wash-over passes with no or very sparse emergent vegetation; they also require unvegetated or sparsely vegetated areas for roosting. Roosting areas have debris, detritus, or microtopographic relief offering refuge to piping plovers from high winds and cold weather. In most areas, wintering piping plovers are dependant on a mosaic of sites distributed throughout the landscape, as the suitability of a particular site

for foraging or roosting is dependent on local weather and tidal conditions. Piping plovers move among nesting sites as environmental conditions change (Firmin, 2003).

Critical habitat for the wintering piping plover occurs along the Louisiana and Florida GOM shorelines. Designated piping plover critical habitat includes those specific areas that are essential to the conservation of that species. The primary constituent elements for piping plover wintering habitat are those that support foraging, roosting, and sheltering, and have the physical features necessary for maintaining the natural processes that support those habitat components. Constituent elements are found in geologically dynamic coastal areas that contain intertidal beaches and flats between annual low tide and annual high tide, and associated dune systems and flats above annual high tide. Important components of intertidal flats include sand flats or mud flats with no or very sparse emergent vegetation. Adjacent unvegetated or sparsely vegetated sand, mud, or algal flats above high tide are also important, especially for roosting plovers (Firmin, 2003).

Wood Stork. The wood stork is listed as endangered in Alabama, Florida, Georgia, and South Carolina. It is a large, long-legged wading bird with white plumage and black wing feathers and tail. Wood storks nest in large rookeries and nesting periods vary geographically. Nests are typically located in the upper branches of cypress trees or in mangrove swamps. Wood storks have nested in man-made structures. Breeding is restricted to Alabama, Florida, Georgia, and South Carolina. After breeding, wood storks move northward, as far as Arkansas, Tennessee, and North Carolina.

Wood stork habitat includes freshwater and brackish wetlands. Small fish are the primary diet of wood storks. They feed in freshwater marshes, tidal creeks, or flooded tidal pools and often in large flocks. No critical habitat has been designated for wood storks in the GOM.

Threatened and Endangered Seagrass

No threatened or endangered seagrasses or critical habitats occur in or adjacent to the GOM study areas.

3.4.2.1.1 Lower Mississippi River Port Complex Study Area

The unique aspects of the Lower Mississippi River Port Complex Study Area in Louisiana are discussed in the following sections.

Marine Mammals

Marine mammals that might occur in the Lower Mississippi River Port Complex Study Area are the Bryde's whale, bottlenose dolphin, Atlantic spotted dolphin, and the Florida manatee. It is unlikely that a sperm whale would occur in this study area. The Florida manatee occasionally enters Lakes Pontchartrain and Maurepas, as well as associated coastal waters and streams, during the months of June through September. Manatees have been reported in the Amite, Blind, Tchefuncte, and Tickfaw Rivers, as well as in canals within the adjacent coastal marshes of Louisiana. Manatees have also been occasionally observed elsewhere along the Louisiana Gulf Coast. No marine mammal critical habitat has been designated in the study area.

Sea Turtles

The loggerhead, green, leatherback, hawksbill, and Kemp's ridley sea turtles could occur in the Lower Mississippi River Port Complex Study Area. No sea turtle critical habitat has been designated in the study area.

Fish

Federally managed species in the GOM that might be found in the Lower Mississippi River Port Complex Study Area are presented in Table 3-3. Threatened and endangered fish species that could occur in Lower Mississippi River Port Complex Study Area are the Gulf sturgeon and the smalltooth sawfish. Critical habitat Unit 8 for the Gulf sturgeon occurs within the lower Mississippi River Port Complex Study Area. No critical habitat has been designated for the smalltooth sawfish or pallid sturgeon in the study area.

Coastal and Other Birds

Threatened and endangered bird species in the Lower Mississippi River Port Complex Study Area include the bald eagle, brown pelican, and piping plover. Critical habitat for the wintering piping plover occurs along the Louisiana GOM shoreline. No critical habitat has been designated for the bald eagle or brown pelican in the study area.

Threatened and Endangered Seagrass

No threatened or endangered seagrass or critical habitat occurs in or adjacent to the Lower Mississippi River Port Complex Study Area.

3.4.2.1.2 Port of Tampa/St. Petersburg Study Area

The unique aspects of the Port of Tampa/St. Petersburg Study Area are discussed in the following sections.

Marine Mammals

Marine mammals that might occur in the Port of Tampa/St. Petersburg Study Area are the bottlenose dolphin, Atlantic spotted dolphin, and the Florida manatee. Critical habitat for the Florida manatee has been designated in portions of the study area, including the Little Manatee River (downstream from the U.S. Highway 301 bridge, Hillsborough County) and the Manatee River (downstream from the Lake Manatee Dam, Manatee County).

Sea Turtles

The loggerhead, green, leatherback, and Kemp's ridley sea turtles could occur in the Port of Tampa/St. Petersburg Study Area. No sea turtle critical habitat has been designated in the study area.

Fish

Federally managed species in the GOM that might be found Port of Tampa/St. Petersburg Study Area are presented in Table 3-3. The Gulf sturgeon is the only threatened species in the Port of Tampa/St. Petersburg Study Area. No critical habitat has been designated for the Gulf sturgeon in the study area.

Coastal and Other Birds

Threatened and endangered bird species in the Port of Tampa/St. Petersburg Study Area include the bald eagle, piping plover, Florida scrub jay, and wood stork. Critical habitat for the wintering piping plover occurs in the study area, along the Florida GOM shoreline. No critical habitat has been designated for the bald eagle, Florida scrub jay, or wood stork.

Threatened and Endangered Seagrass

No threatened or endangered seagrass or critical habitat occurs in or adjacent to the Port of Tampa/St. Petersburg Study Area.

3.4.2.2 East Coast of Florida

Marine Mammals

Several species of marine mammals have been known to inhabit the east coast of Florida, including the humpback whale (*Megaptera novaeangliae)*, Minke whale (*Balaenoptera acutorostrata*), North Atlantic right whale, bottlenose dolphin, Atlantic spotted dolphin, pantropical spotted dolphin (*Stenella attenuata*), and Florida manatee (Würsig et al., 2000; Mullin and Fulling, 2003). The bottlenose dolphin and Atlantic spotted dolphin are fully described in Section 3.4.2.1. The humpback whale, northern right whale, and Florida manatee are federally listed as endangered under the ESA.

Humpback Whales. Humpback whales inhabit all of the world's oceans, but they typically feed and breed in nearshore and near-island habitats. The global humpback whale population can be divided into groups based on the region in which they live. The humpback whales occurring along the Florida east coast belong to a large group that feeds along the northeastern coast of North America (including the Gulf of Maine, Gulf of Saint Lawrence, Newfoundland, Labrador, and western Greenland) during the spring, summer, and fall. During the cold winter months, a large portion of this group migrates south to mate and calve in the West Indies. During their stay, they do not feed, but rely on the energy stored in their blubber to sustain them. After breeding is complete, the group returns to the cool, nutrient-rich waters of the northeast to feed. Humpback whales have been federally listed as endangered throughout their range since 1970, and are further protected under the MMPA. No critical habitat has been designated on the east coast of Florida.

Humpbacks produce a variety of sounds with frequencies ranging from 0.02 kHz to 8.2 kHz (see Table 3-2). No data are available on humpback hearing sensitivity (Richardson et al., 1995).

North Atlantic Right Whale. The endangered northern right whale is the rarest of all large whale species. North Atlantic right whales reside in shallow waters bordering islands and coastlines, where they feed on populations of krill and copepods. Historically, the western population has ranged from the Labrador coast to Delaware Bay, and south to the GOM, Florida, and Bermuda. Currently, right whales are usually found in one of five areas: the Bay of Fundy; the Browns and Baccaro Banks (south of Nova Scotia); and off the shores of Massachusetts, Georgia, and Florida. Each year in the late fall, pregnant females migrate from coldwater feeding and nursery grounds to winter in the warmwater breeding and calving grounds off the southeastern United States and the Caribbean. Between 7 and 17 calves are born along the coasts of Florida and Georgia each year. It is not known where the rest of the population winters, but up to 20 percent might remain in the coastal waters off Massachusetts (CRS, 1995). Critical habitat has been designated for the northern right whale calving grounds. Critical habitat encompasses a 5- to 15-mile-wide strip along 240 miles from Georgia to Florida.

Northern right whales produce low frequency moans below 0.4 kHz (see Table 3-2). No data are available on right whale hearing sensitivity (USN, 2001).

Florida Manatee. The same Florida manatee population inhabits the east coast of Florida as the GOM. The life history characteristics of this species are described in Section 3.4.2.1. Critical habitat for the manatee has been designated as Biscayne Bay (comprising all adjoining and connected lakes, rivers, canals, and waterways from the southern tip of Key Biscayne northward to, and including, Maule Lake,

Dade County) and all of the waters of Card, Barnes, Blackwater, Little Blackwater, Manatee, and Buttonwood Sounds between Key Largo (Monroe County) and the mainland of Dade County (USFWS, 1993). Manatee hearing is described in Section 3.4.2.1 and Table 3-2.

Minke Whale. Minke whales occur in oceans worldwide. In the northwestern Atlantic, minke whales are common from Canada and New England in the summer to the Florida Keys in the winter (Würsig et al., 2000). Minke whale vocalizations range from 0.06 to 20 kHz, with peak sensitivity at 0.06 through 14 kHz.

Pantropical Spotted Dolphin. Pantropical spotted dolphins occur in tropical and subtropical oceans worldwide. In the western North Atlantic they are found from Cape Hatteras, North Carolina, to the Antilles, West Indies, and to the equator (Würsig et al., 2000). Pantropical spotted dolphins were one of the most common cetaceans in a 1998 survey in the western North Atlantic (Mullin and Fulling, 2003). Pantropical spotted dolphin vocalizations range from 3.1 to 21.4 kHz, with peak sensitivities at 6.7 to 17.9 kHz (Richardson et al., 1995).

Common Dolphin. Common dolphins (*Delphinus delphis*) occur from Newfoundland to the Caribbean. They are not as common off the coast of Florida as they were in the 1960s. Common dolphin vocalizations range from 0.5 to 18 kHz and echolocation signals range from 23 to 67 kHz.

Sea Turtles and Other Protected Marine Reptiles

Five species of sea turtles inhabit Florida's coastal waters: the green, hawksbill, Kemp's ridley, leatherback, and loggerhead sea turtles. The loggerhead is the most common species found in Florida and Kemp's ridley is the rarest (FFWCC, 2004). Sea turtle hearing is discussed in Section 3.4.2.1. The American crocodile (*Crocodylus acutus*) is a federally listed endangered species inhabiting the east coast of Florida.

Loggerhead Sea Turtle. The same loggerhead sea turtle population inhabits the east coast of Florida as the GOM. The life history characteristics of this species are described in Section 3.4.2.1. Four nesting subpopulations of loggerheads have been identified in the western North Atlantic, and primary nesting sites are along the east coast of Florida, with additional sites in Georgia, North Carolina, South Carolina, and the Florida Gulf coast. Recent evidence suggests that the number of nesting females in Florida appears to be stable, and that the number of adults in the south Florida subpopulation has increased significantly over the past 25 years. However, there does not appear to be an associated increase in the number of benthic immature loggerheads, and nesting trends are generally thought to be declining (NOAA, 2004). No critical habitat has been designated on the east coast of Florida.

Green Sea Turtle. The same green sea turtle population inhabits the east coast of Florida as the GOM. The life history characteristics of this species are described in Section 3.4.2.1. The Florida population of green sea turtles is considered to be endangered. Present estimates for the Florida green turtle population range between 200 and 1,100 nesting females. The majority of these females come ashore to lay their eggs from early June through late September (NOAA, 2004). No critical habitat has been designated on the east coast of Florida.

Leatherback Sea Turtle. The same leatherback sea turtle population inhabits the east coast of Florida as the GOM. The life history characteristics of this species are described in Section 3.4.2.1. Nesting grounds are found around the world and about 30 to 60 leatherbacks nest in Florida each year (FFWCC, 2004). No critical habitat has been designated on the east coast of Florida.

Hawksbill Sea Turtle. The same hawksbill sea turtle population inhabits the east coast of Florida, as the GOM. The life history characteristics of this species are described in Section 3.4.2.1. Hawksbills are sited with some regularity in southeastern Florida and the Florida Keys, where they nest in small numbers (NOAA, 2004). No critical habitat has been designated on the east coast of Florida.

Kemp's Ridley Sea Turtle. The same Kemp's ridley sea turtle population inhabits the east coast of Florida as the GOM. The life history characteristics of this species are described in Section 3.4.2.1. Kemp's ridley sea turtle occurs along the east coast of Florida. There are no nesting sites on the east coast of Florida. No critical habitat has been designated along the east coast of Florida.

American Crocodile. The American crocodile is listed as endangered. It ranges from the southern tip of Florida, through the Atlantic and Pacific coasts of southern Mexico, Central America, and northern South America; and the Caribbean islands of Cuba, Jamaica, and Hispaniola. American crocodile habitat consists of freshwater or brackish water coastal habitats such as the saltwater sections of rivers, coastal lagoons, and mangrove swamps. However, populations are known to occur in inland freshwater areas, including a number of reservoirs (USFWS, 2000). No critical habitat has been designated on the east coast of Florida. Little information is known about crocodile hearing, but crocodiles produce low frequency moans while mating and during communication with each other (Goodisman, 2002).

Fish

The SAFMC manages fisheries on the east coast of Florida. The Mid-Atlantic Fishery Management Council (MAFMC) manages bluefish, which also have EFH on the east coast of Florida. Commercial fishery landings on the east coast of Florida totaled 23.5 million pounds and were valued at $33.0 million in 2003 (NOAA Fisheries, 2003a). Federally finfish and shellfish (crustaceans and mollusks) that occur on the east coast of Florida are presented in Table 3-5. Fish hearing sensitivity is discussed in Section 3.4.2.1 and fish hearing sensitivities are listed in Table 3-4.

Threatened and Endangered Fish

Shortnose sturgeon. The shortnose sturgeon (*Acipenser brevirostrum*) is the only federally listed endangered fish species known to occur on the east coast of Florida. This species is a large, bony, anadromous fish that typically lives in fresh tidal water and saline estuaries and migrates upstream in coastal rivers to spawn. Measuring up to 4 feet in length, the shortnose sturgeon is the smallest of the three sturgeon species that inhabit eastern North American rivers from Florida to New Brunswick, Canada. The shortnose sturgeon spends a greater portion of its life in slow-moving, brackish, or fresh water than other sturgeon species (NOAA Fisheries, 2001). The shortnose sturgeon was listed by NMFS as endangered in 1967 and retained its endangered status with the passage of the ESA in 1973. No critical habitat has been designated on the east coast of Florida.

As presented in Table 3-4, known sturgeon is hearing ranges from 0.1 to 2 kHz, with best hearing at 0.1 to 0.4 kHz (Meyer and Popper, 2005).

Coastal and Other Birds

Seven threatened and endangered coastal bird species are found on the east coast of Florida, including the whooping crane (*Grus americana*), bald eagle, piping plover, wood stork, and roseate tern (*Sterna dougalli dougalli*). The whooping crane has been reintroduced as a nonessential experimental population and is not considered endangered in Florida. The brown pelican has been removed from the "List of Endangered and Threatened Wildlife" in Florida.

Table 3-5. Federally Managed Fish Species on the East Coast of Florida

Management Authority	Fishery Management Plan	Common Name	Scientific Name
SAFMC	Shrimp	brown shrimp	*Farfantepenaeus aztecus*
SAFMC	Shrimp	pink shrimp	*F. duorarum*
SAFMC	Shrimp	rock shrimp	*Sicyonia brevirostris*
SAFMC	Shrimp	royal red shrimp	*Pleoticus robustus*
SAFMC	Shrimp	white shrimp	*Litopenaeus setiferus*
SAFMC	Coastal Migratory Pelagics	Cobia	*Rachycentron canadum*
SAFMC	Coastal Migratory Pelagics	king mackerel	*Scomberomorus cavalla*
SAFMC	Coastal Migratory Pelagics	Spanish mackerel	*S. maculatus*
SAFMC	Golden Crab	golden crab	*Chaceon fenneri*
SAFMC	Snapper Grouper	spiny lobster	*Panulirus argus*
SAFMC	Snapper Grouper	blackfin snapper	*Lutjanus buccanella*
SAFMC	Snapper Grouper	blueline tilefish	*Caulolatilus microps*
SAFMC	Snapper Grouper	gray snapper	*L. griseus*
SAFMC	Snapper Grouper	greater amberjack	*Seriola dumerili*
SAFMC	Snapper Grouper	jewfish	*Epinephelus itajara*
SAFMC	Snapper Grouper	mutton snapper	*L. analis*
SAFMC	Snapper Grouper	red porgy	*Pagrus pagrus*
SAFMC	Snapper Grouper	red snapper	*L. campechanus*
SAFMC	Snapper Grouper	scamp	*Mycteroperca phenax*
SAFMC	Snapper Grouper	silk snapper	*L. vivanus*
SAFMC	Snapper Grouper	snowy grouper	*E. niveatus*
SAFMC	Red Drum	red drum	*Sciaenops ocellatus*
SAFMC	Coral and Coral Reef	varied coral species and coral reef communities	N/A
SAFMC	Calico Scallop	calico scallop	*Argopecten gibbus*
SAFMC	Dolphin-Wahoo	common dolphin	*Coryphaena hippurus*
SAFMC	Dolphin-Wahoo	pompano dolphin	*C. equiselis*
SAFMC	Dolphin-Wahoo	wahoo	*Acanthocybium solanderi*
SAFMC	Sargassum	Sargassum	*Sargassum sp.*
MAFMC	Summer Flounder, Scup, Black Sea Bass	black sea bass	*Centropristus striata*
MAFMC	Summer Flounder, Scup, Black Sea Bass	scup	*Stenotomus chrysops*
MAFMC	Summer Flounder, Scup, Black Sea Bass	summer flounder	*Paralichthys dentatus*
MAFMC	Squid, Mackerel, Butterfish	Atlantic butterfish	*Peprilus triacanthus*

Table 3-5. Federally Managed Fish Species on the East Coast of Florida (continued)

Management Authority	Fishery Management Plan	Common Name	Scientific Name
MAFMC	Squid, Mackerel, Butterfish	Atlantic mackerel	*Scomber scombrus*
MAFMC	Squid, Mackerel, Butterfish	long finned squid	*Loligo pealei*
MAFMC	Squid, Mackerel, Butterfish	short finned squid	*Illex illecebrosus*
MAFMC	Bluefish	bluefish	*Pomatomus saltatrix*
MAFMC	Dogfish	spiny dogfish	*Squalus acanthias*
NMFS	Billfish	See Table 3-3	
NMFS	Swordfish	See Table 3-3	
NMFS	Shark	See Table 3-3	
NMFS	Tuna	See Table 3-3	

Source: NMFS 2004

Roseate Tern. The roseate tern is listed as threatened in Florida, Puerto Rico, and the U.S. Virgin Islands (the Caribbean population). It is a pale, medium-sized, black-capped tern with light-gray wings and back. The roseate tern nests on sandy beaches with no cover close to the waterline.

Breeding occurs in large colonies on a variety of cays or islands with rocky, grassy, coral rubble, or sand substrate. The population primarily winters in Brazil, where they might roost on sandbars or beaches at river mouths, estuaries, or ocean front. No critical habitat has been designated on the east coast of Florida.

Threatened and Endangered Seagrass

Johnson's Seagrass. Johnson's seagrass (*Halophila johnsonii*) is found along the east coast of Florida, from central Biscayne Bay to north to Sebastian Inlet. Its distribution is disjunct and patchy, with the largest patches being reported within Lake Worth Inlet. Johnson's seagrass has pairs of smooth, marginated, spatulate leaves. Its limited distribution might be related to its asexual reproduction and its dependence on substrate stability. Human impacts on Johnson's seagrass include prop scarring, dredging, siltation, and altered water quality. Populations near inlets are likely to experience erosional forces and siltation associated with storms (NOAA Fisheries, undated). Critical habitat for Johnson's seagrass is designated on the east coast of Florida from Sebastian Inlet to south central Biscayne Bay (65 Federal Register 17786) and occurs adjacent to the Port Everglades/Ft. Lauderdale and Port of Miami study areas (see Figures 2-3 and 2-4).

Threatened and Endangered Corals

Elkhorn Coral. Elkhorn coral (*Acropora palmata*) was listed as threatened on May 9, 2006. Elkhorn coral is a large branching coral with exceptionally thick and sturdy antler-like branches. Elkhorn coral is found on coral reefs in southern Florida and the Bahamas, and throughout the Caribbean Sea. Its northern limit is Biscayne Bay National Park and it extends south to Venezuela; it is not found in Bermuda. This coral is associated with hardbottom habitat. Colonies prefer exposed reef crest and fore reef environments in depths of less than 20 ft (6 m), although isolated corals may occur in depths to 66 ft (20 m). Since 1980, populations have collapsed throughout their range from disease outbreaks, with losses

compounded locally by hurricanes, increased predation, bleaching, and other factors. This species is also particularly susceptible to damage from sedimentation (NMFS, 2006).

Staghorn Coral. Staghorn coral (*Acropora cervicornis*) was listed as threatened on May 9, 2006. Staghorn coral is a branching coral with cylindrical branches ranging from a few centimeters to over two meters in length and height. This coral is associated with hardbottom habitat. It occurs in back reef and fore reef environments from 0 to 98 ft (0 to 30 m) depth. Staghorn coral is found throughout the Florida Keys, the Bahamas, and the Caribbean islands. This coral occurs in the western Gulf of Mexico, but is absent from U.S. waters in the Gulf of Mexico, as well as Bermuda and the west coast of South America. The northern limit is near Boca Raton, Florida. Since 1980, populations have collapsed throughout their range from disease outbreaks, with losses compounded locally by hurricanes, increased predation, bleaching, and other factors. This species is also particularly susceptible to damage from sedimentation and sensitive to temperature and salinity variation. Populations have declined by up to 98% throughout the range, and localized extirpations have occurred (NMFS, 2006).

3.4.2.2.1 Port of Miami Study Area

The unique aspects of the Port of Miami Study Area are discussed in the following sections.

Marine Mammals

Marine mammals that might occur in the Port of Miami Study Area include the humpback, minke, and northern right whale; and the bottlenose and common dolphin. The Florida manatee occurs in the study area and critical habitat has been designated. Critical habitat includes Biscayne Bay (comprising all adjoining and connected lakes, rivers, canals, and waterways from the southern tip of Key Biscayne northward to, and including, Maule Lake, Dade County) (USFWS, 1993). No critical habitat has been designated for the humpback whale or northern right whale in this study area.

Sea Turtles and Other Protected Marine Reptiles

The loggerhead, green, leatherback, hawksbill, and Kemp's ridley sea turtles, and the American crocodile occur in the Port of Miami Study Area. No sea turtle critical habitat has been designated in the study area.

Fish

Federally managed finfish and shellfish that have EFH in the study area are presented in Table 3-5. No threatened or endangered fish species occur in the Port of Miami Study Area.

Coastal and Other Birds

Threatened and endangered bird species in the Port of Miami Study Area include the bald eagle, roseate tern, and wood stork. No critical habitat has been designated for these species in the study area.

Threatened and Endangered Seagrass

Johnson's seagrass and its critical habitat occur adjacent to the Port of Miami Study Area (see Figure 2-3).

Threatened and Endangered Corals

Elkhorn and Staghorn corals might occur in the Port of Miami Study Area. Note that Biscayne National Park is excluded from the Port of Miami Study Area (see Figure 2-3).

3.4.2.2.2 Port Everglades/Ft. Lauderdale Study Area

The unique aspects of the Port Everglades/Ft. Lauderdale Study Area are discussed in the following sections.

Marine Mammals

Marine mammals that might occur in the Port Everglades/Ft. Lauderdale Study Area include the humpback, minke, and North Atlantic right whales; and the bottlenose and common dolphin. The Florida manatee also occurs in the study area. No marine mammal critical habitat has been designated in the study area.

Sea Turtles and Other Protected Marine Reptiles

The green, hawksbill, leatherback, and loggerhead sea turtles inhabit the Port Everglades/Ft. Lauderdale Study Area. No critical habitat has been designated for these species. The endangered American crocodile inhabits the study area and no critical habitat has been designated.

Fish

Federally managed finfish and shellfish that might be found in the study area are presented in Table 3-5. No threatened or endangered fish species occur in the Port Everglades/Ft. Lauderdale Study Area.

Coastal and Other Birds

The wood stork is the only endangered bird species in the Port Everglades/Ft. Lauderdale Study Area. No critical habitat has been designated.

Threatened and Endangered Seagrass

Johnson's seagrass occurs adjacent to the Port Everglades/Ft. Lauderdale Study Area (see Figure 2-4).

Threatened and Endangered Corals

Elkhorn and Staghorn corals might occur in the Port Everglades/Fort Lauderdale Study Area.

3.4.2.2.3 Port of Jacksonville Study Area

The unique aspects of the Port of Jacksonville Study Area are discussed in the following sections.

Marine Mammals

The Florida manatee inhabits the Port of Jacksonville Study Area. Florida manatee critical habitat has been designated as the St. Johns River, including Lake George, and including Blue Springs and Silver Glen Springs from their points of origin to their confluences with the St. Johns River.

Sea Turtles and Other Protected Marine Reptiles

No sea turtles or other protected marine reptiles inhabit the Port of Jacksonville Study Area.

Fish

The shortnose sturgeon is the only federally listed endangered fish species known to occur in the study area. No critical habitat has been designated in the study area. Federally managed finfish and shellfish that might be found in the study area are presented in Table 3-5.

Coastal and Other Birds

Threatened and endangered bird species in the Port of Jacksonville Study Area include the bald eagle, piping plover, and wood stork. No critical habitat has been designated in the study area.

Threatened and Endangered Seagrass

No threatened or endangered seagrass or critical habitat occurs in or adjacent to the Port of Jacksonville Study Area.

3.5 Public Safety

3.5.1 Definition of the Resource

A safe environment is one in which there is no, or an optimally reduced, potential for death, serious bodily injury or illness, or property damage. Public safety is one of the USCG's primary missions, as the USCG is the prominent overseer of the safety of the MTS. Major members of the MTS include Federal agencies, commercial groups, state and local groups, and public and community groups. The MTS contains physical elements, including the waterways; ports; and the network of railroads, roadways, and pipelines that connect the waterborne portions of the system to the rest of the nation. The physical elements also include the vessels and vehicles that move goods and people within the system. The physical network is supported by a series of systems that also facilitate the movement of goods and people, and provide access for recreation and to natural resources.

Public safety also addresses the health and safety of the general public, such as boaters, pier fishers, and scuba divers. Port safety includes the safety of the personnel, vessels, and property that are located or travel within the ports and their associated offshore approaches. Sonar, laser, and port safety are described in general terms and not for the individual ports, because there would be no differences in equipment testing among the ports.

Public safety does not include the health and safety of the USF COT workers and contractors performing equipment testing activities. These personnel would be responsible for following all applicable Federal, state, and local safety regulations; industrial hygiene programs; and worker compensation programs.

Sonar Safety

The term sonar is an acronym for Sound Navigation and Ranging. Sonar systems generate sound waves and record the reflections. Sonar hazards to humans can be evaluated in terms of noise and damage to the ears. Standards and methodologies used to describe noise are described in detail in Section 3.3.

Laser Safety

The term laser is an acronym for Light Amplification by Stimulated Emission of Radiation. A laser produces an intense, coherent, directional beam of light by stimulating electronic or molecular transitions to lower energy levels. A laser consists of an optical cavity, a pumping system, and an appropriate lasing medium. The optical cavity contains the media to be excited with mirrors to redirect the produced photons back along the same general path. The pumping system uses photons from another source to transfer energy to the media. The laser medium can be a solid (state), gas, dye (in liquid), or semiconductor. Lasers are commonly designated by the type of lasing material employed. The wavelength output from a laser depends upon the medium being excited. Laser safety hazards to humans consist of damage to the eyes and skin from optical radiation (OSHA, 1999).

Port Safety

U.S. ports must provide safe and efficient rapid turnaround capabilities to accommodate expanding trade and the increasing size and speed of oceangoing ships, many of which are foreign. U.S. ports also handle a large volume of coastal and inland traffic. Port safety could once be evaluated in terms of the risk of collision. Today, port safety evaluations must also include the prevention and response to terrorist threats and activities.

3.5.2 Affected Environment

The portable underwater inspection/detection systems would be developed and maintained at the USF COT in St. Petersburg, Florida. However, they would be operated in the eight ports in five study areas in Florida and Louisiana noted in Section 2.1.1. The study areas would include the ports themselves, as well as the shipping approaches to these ports in an area approximately 20 miles (32.2 km) seaward of each port's initial entrance buoy, and are described in detail in Table 2-1 and Figures 2-1 through 2-5. The selected ports are busy waterways and are not expected to contain members of the general public (e.g., involved in recreational activities such as swimming, scuba diving, or snorkeling). Information on the level of shipping and boating activities in individual ports is described in Section 3.2.2.

The researchers are experienced with using these pieces of equipment and would be expected to follow all Federal, state, and local health and safety and maritime regulations and protocols.

Sonar Safety

There are no OSHA standards specifically for sonars, but there are a variety of OSHA standards and directives, other Federal standards, and national consensus standards that regulate the generation and exposure to noise. Neither Florida nor Louisiana has occupational noise regulations.

Human response to noise varies according to the type and characteristics of the noise, the distance between the source and the receptor, receptor sensitivity, and time of day. Human hearing varies in sensitivity for different sound frequencies. The ear is most sensitive to sound frequencies between 0.8 kHz and 8.0 kHz and is least sensitive to sound frequencies below 0.4 kHz or above 12.5 kHz.

A diver's tolerance to noise can be compared to the USN's regulations, which prohibit divers from working where the SPL exceeds 200 dB re 1 μPa at 1 m without a wetsuit hood, or 215 dB re 1 μPa at 1 m with a wetsuit hood, (USN, 2002).

Laser Safety

A laser generates intense, directional beams of light. Laser safety hazards to humans consist of damage to the eyes and skin from intense radiation. A laser beam of sufficient power can theoretically produce light intensities at magnitudes that are greater than conventional light sources and even larger than those produced when directly viewing the sun. Sufficient intensities could cause permanent blindness (OSHA, 1999).

The most common cause of laser-induced tissue damage is thermal in nature, where the tissue proteins are denatured due to the temperature rise following absorption of laser energy. The thermal damage process (burns) is generally associated with lasers operating at exposure times greater than 10 microseconds and in the wavelength region from the near ultraviolet to the far infrared (315 nanometers [nm]–103,000 nm). Tissue damage can also be caused by thermally induced acoustic waves following exposures to sub-microsecond laser exposures (OSHA, 1999).

With respect to repetitively pulsed or scanning lasers, the major mechanism involved in laser-induced biological damage is a thermal process wherein the effects of the pulses are additive. The principal thermal effects of laser exposure depend upon the following factors (OSHA, 1999):

- The absorption and scattering coefficients of the tissues at the laser wavelength
- Irradiance or radiant exposure of the laser beam
- Duration of the exposure and pulse repetition characteristics, where applicable
- Extent of the local vascular flow at the irradiated area
- Size of the area irradiated.

Typical effects of light on human eyes and skin based on different wavelengths are presented in Table 3-6. The effects of light depend on the wavelengths, the duration of the exposure, and the intensity of the light. The hazards associated with skin exposure are of less importance than eye hazards; however, with the expanding use of higher-power laser systems (Class IV), particularly ultraviolet lasers, the unprotected skin of personnel could be exposed to extremely hazardous levels of the beam power if used in an unenclosed system design (OSHA, 1999).

Lasers are divided into four hazard classifications based on their potential for causing injury, based on wavelength and intensity. Each laser classification has a different level exposure control associated with it to protect humans from injury. The following are the laser hazard classifications (OSHA, 1999).

- **Class I:** Cannot emit laser radiation at known hazard levels (typically continuous wave power [cw] of 0.4 microWatts [μW] at ultraviolet, visible, near-infrared, and infrared wavelengths). Users of Class I laser products are generally exempt from radiation hazard controls during operation and maintenance (but not necessarily during service).
- **Class IA:** A special designation that is based on a 1,000-second exposure and applies only to lasers that are "not intended for viewing" such as a supermarket laser scanner. The upper power limit of Class IA is 4.0 megaWatts (mW) (at visible wavelengths). The emission from a Class IA laser is defined such that the emission does not exceed the Class I limit for emission duration of 1,000 seconds.
- **Class II:** Low-power visible lasers that emit above Class I levels but at a radiant power not above 1 mW (at visible wavelengths). The concept is that the human aversion reaction to bright light will protect a person. Only limited exposure controls are specified.

Table 3-6. The Effects of Light on Human Eyes and Skin

Dominant Wavelengths (nm)	Eye Effects	Skin Effects
Ultraviolet A (315–400 nm)	Photochemical UV cataract	Pigment darkening Skin burn
Ultraviolet C (200–280 nm)	Photokeratitis	Erythema (sunburn) Skin cancer
Ultraviolet B (280–315 nm)	Photokeratitis	Accelerated skin aging Increased pigmentation
Visible (400–780 nm)	Photochemical and thermal retinal injury	Photosensitive reactions Skin burn
Infrared A (780–1,400 nm)	Cataract, retinal burns	Skin burn
Infrared B (1,400–3,000 nm)	Corneal burn Aqueous flare IR cataract	Skin burn
Infrared C (3,000–1,000,000 nm)	Corneal burn only	Skin burn

Note: nm = nanometers

- **Class IIIA:** Intermediate power lasers (cw: 1–5 mW) (at ultraviolet, visible, near-infrared, and infrared wavelengths). Only hazardous when eye is exposed to all or part of a laser beam (intrabeam viewing). Some limited exposure controls are usually recommended.
- **Class IIIB:** Moderate power lasers (cw: 5–500 mW, pulsed: 10 Joules per squared centimeter (J/cm^2) or the diffuse reflection limit, whichever is lower) (at ultraviolet, visible, near-infrared, and infrared wavelengths). In general Class IIIB lasers will not be a fire hazard, nor are they generally capable of producing a hazardous diffuse reflection. Specific exposure controls are recommended.
- **Class IV:** High power lasers (cw: 500 mW, pulsed: 10 J/cm^2 or the diffuse reflection limit) (at ultraviolet, visible, near-infrared, and infrared wavelengths) are hazardous to view under any condition (directly or diffusely scattered) and are a potential fire hazard and a skin hazard. Significant exposure controls are required of Class IV laser facilities.

The intensity of the lasers will be reduced by their use underwater. The intensity of light is reduced underwater by absorption and scattering. Absorption removes light while scattering changes the direction or propagation of light. Scattering does not directly remove light from the water, but rather increases the probability that it will be absorbed, by increasing the distance that the light must travel (CBP, 2000). The attenuation coefficient (measured in a fraction per a distance) quantifies the rate at which light is attenuated as a result of all absorbing and scattering components of the water column. The attenuation coefficient for pure salt water is 0.052/m, and for water typical of a harbor (i.e., Bayboro area of Tampa Bay) is 2.0/m (Kloske, 2005). Components of seawater that affect light absorption and scattering include total suspended solids, phytoplankton, and dissolved organic materials (i.e., humus).

Port Safety

Port safety includes the safety of the personnel, vessels, and property that are located in or travel within the ports and their associated offshore approaches. The USCG is responsible for maintaining port security and safety.

U.S. ports are vulnerable to threats both above and below the water including explosives and other offensive devices that might be attached to ship hulls, piers, or other underwater infrastructure. Operational commanders responsible for maritime security must have capabilities to detect, classify, and identify potentially offensive devices in order to neutralize the threat. Risk analyses indicate that active systems are needed to provide an effective capability.

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4. Environmental Consequences

4.1 Introduction

This section assesses potential environmental consequences associated with the Proposed Action and No Action Alternative. Potential impacts are addressed in the context of the scope of the Proposed Action as described in Section 2.0 and in consideration of the potentially affected environment as characterized in Section 3.0.

The Proposed Action is to test equipment through the USF COT to support the development of underwater inspection/detection systems. The portable underwater systems would be designed to detect, classify, and identify underwater threats which include conventional explosives, IEDs, or other destructive devices that could be attached to ship hulls, piers, and underwater infrastructure. System components subject to testing would consist of the following commercially available equipment:

- Sonar, lasers, and cameras for navigation and imaging
- Processors for communication with the systems, data storage, and analysis of images and data
- Thrusters and stabilization equipment to propel and steer ROVs or AUVs through the water.

Under the No Action Alternative, the USCG would not conduct testing to develop underwater inspection/detection systems that would detect explosives, IEDs, and other offensive devices. However, the USF could continue to test the underwater inspection/detection systems for the USN and other entities.

4.2 Transportation

This section evaluates the significance of the impacts of the Proposed Action and No Action Alternatives on transportation.

4.2.1 Significance Criteria

If implementation of the Proposed Action would result in any of the following outcomes, then the impacts would be considered significant:

- Cause long-term interference with access to transportation routes
- Cause crowding of routes resulting in substantially increased risks of collisions, allisions, or other mishaps (e.g., grounding)
- Affect large populations or represent a substantial degree of change over current conditions.

4.2.2 Potential Impacts

No impacts on transportation would be expected as a result of implementation of the Proposed Action. Field testing activities would be conducted in designated channels or where other vessels might normally operate. Currently the field testing team has no dedicated support vessels and would not result in additional marine traffic. To conduct open water equipment testing, the team would identify public or private vessels (with some connection to the USCG or USF COT) that were of an adequate size and

design to support the equipment testing. These support vessels would only be operated by qualified individuals and would be operated in a manner consistent with their capabilities and use.

When testing equipment is deployed, the support vessel would generally have limited ability to maneuver or give way to other vessels. As the burdened vessels, other boats would be required to change course or operate in a manner that would avoid or give way to the field testing activities. Prior to conducting equipment testing, the researchers would gain permission from the appropriate Coast Guard Sector Commander, who would apprise the appropriate harbormaster of the equipment testing activities. All additional applicable and appropriate measures and regulations would be employed to warn and give notice that the vessel was engaged in testing and should be avoided. The support vessel would not anchor in marked channels or where anchoring is generally prohibited. Field testing would not be conducted in any areas generally prohibited to other vessel traffic for environmental or safety considerations.

The ROVs and AUVs (including the propulsion and stabilization systems) used for the underwater inspection/detection systems are not expected to result in adverse impacts on transportation. The ROV and AUV would be propelled at speeds of up to 5 knots. Field testing would include surveying a variety of underwater infrastructure including telephone line cables, pipelines, bridge supports, bulkheads, pier, and dock facilities. Before deploying an ROV, AUV, or other equipment, the crew would survey the area to identify any nonrelated vessel traffic or other activity that could disturb the testing or that might be disturbed by the testing. Field testing would not begin until there was a sufficient area around the support vessel clear of all nonrelated traffic to conduct testing with a minimum of interference.

An important application of the proposed equipment would be to survey a ship's hull below the waterline before that ship enters a port. To conduct these tests under actual field conditions the researchers propose to make arrangements with large commercial vessels entering or operating in ports for hull surveys. These activities would be conducted in cooperation with the appropriate authorities including the vessel master or owner, the USCG, or the port pilots to ensure that the equipment testing did not interfere with commerce. Maneuvering a smaller vessel in proximity to a large cargo vessel has some inherent risk. Modern technology and vessel-operating procedures combine to make commercial shipping safe. The chance of a collision between a support vessel and a structure is unlikely. All practical and appropriate communications and operating procedures would be maintained at all times to minimize the chances of a collision, of an allision, of creating a navigation hazard (as associated with support vessels), or of creating an unanticipated interference with the movements of shipping.

4.2.2.1 Proposed Measures to Avoided Impacts

The following measures would be implemented to minimize or avoid potential impacts on existing vessel traffic:

- Testing would not be conducted in designated channels without prior authorization and coordination with the USCG or other appropriate marine authorities.
- Equipment would not be deployed in a location or at a time when activities might interfere with the operation of other vessels or where vessel traffic might interfere with the equipment testing.
- Field testing would not be conducted in areas generally prohibited to other vessels.
- Equipment testing on commercial vessels entering the harbor would only be conducted in direct cooperation with the USCG. Testing would not be scheduled without appropriate communication and coordination with the vessel master or owner as well as any applicable port pilot authority.

4.2.3 No Action Alternative

Under the No Action Alternative, existing conditions would remain as is and the USCG R&DC would not conduct testing of underwater inspection/detection systems. Existing conditions would prevail and, as part of existing conditions, USF COT could continue to test underwater inspection/detection systems for USN and other entities.

4.3 Underwater Acoustics

This section evaluates the significance of the impacts of the Proposed Action and No Action Alternatives on existing ambient sound levels. The significance criteria of impacts of underwater sounds on marine organisms and other biological resources are discussed in Section 4.4.1 and on humans are discussed in Section 4.5.1.

4.3.1 Significance Criteria

The significance of the impacts on existing ambient sound levels are based on the duration and magnitude of a change in sound level, often caused by a noise event. Physically, there is no distinction between sound and noise. Sound is a sensory perception. The complex pattern of sound waves is labeled noise, music, speech, and so on. Thus, noise is defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise annoying. Therefore, the following significance criteria were developed. If the Proposed Action results in either of the following outcomes, the impacts would be considered significant:

- A substantial permanent increase in existing ambient sound levels resulting in noise
- A substantial temporary or periodic increase in existing sound levels resulting in noise.

4.3.2 Potential Impacts

Temporary, minor, and localized increases in ambient underwater sound levels would occur as a result of the Proposed Action. Acoustic components that would be integrated into the systems would include transponders (used for AUV navigation) and acoustic modems (used for communication with AUV) (17-40 kHz), high frequency sonar (used for device detection) (150–999 kHz), and ultra-high-frequency sonar (used for device identification) (1,000–3,500 kHz). Detailed specifications for these types of sonar are presented in Table 2-3.

It is important to note that the transponders and acoustic modems would only be used for AUV navigation offshore and in main shipping channels in ports. AUVs would only be operated in the offshore study areas and in main shipping channels. While in inshore shipping channels, AUV transponders would be constrained to a 188-dB SPL. Transponders would have a 15 ms ping every second. The acoustic modem would have approximately a 1-second ping every 15 or 30 seconds.

The equipment would be used at a range necessary to survey ship hulls, piers, or other underwater infrastructure. The expected maximum distance from these structures should be no greater than 330 feet (100 m) during a wide area survey and 16 feet (5 m) during a targeted inspection. Laser components would be utilized no further than 16 feet (5 m) from the target. Under normal conditions, it would not be expected that sonar and lasers would be directed into open water, but only toward the intended target. Sound would spread omni-directionally, but would continue to lose intensity in all directions as it spreads and is reflected off the target. Equipment testing would not block marine species such as marine

mammals and sea turtles from foraging, breeding, or nesting areas. For testing, the proposed inspection/detection systems would be deployed for short durations of approximately 8 to 10 hours. Testing would occur approximately 40 days per year.

The proposed equipment testing would be conducted in areas where commercial and military vessels would be expected to operate (i.e., busy ports, offshore anchorages, and offshore fairways). As described in Section 3.3, existing ambient sound levels in these areas are unknown, but are a result of natural and anthropogenic causes, most notably wind and shipping, respectively. As presented in Figures 2-1 through 2-5, the equipment testing would not occur in ecologically sensitive areas such as seagrass areas and wetlands; marine sanctuaries; North Atlantic right whale (*Eubalaena glacialis)* or Johnson's seagrass (*Holphila johnsonii*) critical habitat; known locations of hardbottom habitats (including coral, vermetid, and coquina reefs); near or on beaches; offshore (seaward of the coast) waters less than 18 feet (5.5 m) deep; where manatees are known to congregate (warmwater refuge sites such as power plant cooling water discharges and areas between power plant cooling water discharges that are in close proximity); marine mammal choke points (such as the mouths of tributaries where manatees are known to congregate); off the coast of Port Everglades/Ft. Lauderdale from 1 January through 1 May, when North Atlantic right whales could be present; or in any area that is designated as "restricted" for environmental reasons in the *Coast Pilot 5 – 33rd Edition* and *Coast Pilot 4 – 37th Edition* (NOAA, 2005a; NOAA, 2005b).

Based on the expected distance of the inspections, the short-term transient use and rapid attenuation of the sonar, and the busy port environments where the testing would occur, testing of the underwater inspection/detection systems is not expected to have a substantial permanent increase nor a substantial temporary or periodic increase on the existing ambient underwater sound levels at locations where it is deployed. Therefore no significant impact is anticipated to occur on underwater acoustics as a result of the Proposed Action.

4.3.3 No Action Alternative

Under the No Action Alternative, existing conditions would remain as is and the USCG R&DC would not conduct testing of underwater inspection/detection systems for the USCG. If this alternative is selected, USF COT could continue to test underwater inspection/detection systems for USN and other entities. Under this alternative approach to underwater inspection/detection systems, the USCG would wait until a product was made available through a commercial avenue and then begin to evaluate its potential for USCG operational use. This could greatly increase the time before usable underwater inspection/detection systems were available for USCG operations. There would likely be no difference in the underwater ambient sound levels between the two approaches.

4.4 Biological Resources

4.4.1 Significance Criteria

This section evaluates the potential impacts on biological resources under the Proposed Action and the No Action Alternative. The significance of impact on biological resources is based on the following four factors:

- Importance (i.e., legal, commercial, recreational, ecological, or scientific) of the resource
- Proportion of the resource that would be affected relative to its occurrence in the region

- Sensitivity of the resource to proposed activities
- Duration of ecological ramifications.

Impacts on biological resources are significant if species or habitats of high concern are adversely affected over relatively large areas. Impacts are also considered significant if disturbances cause reductions in population size or distribution of a species of importance. Threatened or endangered species, if present, will be discussed under each biological resource area.

There is no scientific consensus regarding absolute thresholds for significance regarding noise (MMS, 2002b). Assessment of potential risk to a particular species must often begin with an estimate of frequency ranges to which the animal's hearing is most sensitive, and the associated thresholds. The range of sounds produced by a species is generally associated with ranges of good hearing sensitivity, but many species exhibit good hearing sensitivity well outside the frequency range of sounds they produce (USN, 2002). Scientific research indicates that best hearing thresholds for marine vertebrates range from about 60 dB re 1 μPa at 0.1 kHz to about 40 dB re 1 μPa at 10 kHz.

Marine Mammals

Impacts on marine mammals would be significant if the Proposed Action resulted in any of the following outcomes:

- Permanent loss of habitat.
- Temporary loss of habitat that adversely affects a substantial number of a specific species.
- Direct loss (take) of a substantial number of a specific species. Take might include MMPA Level A harassment, defined as pursuit, torment, or annoyance that has the potential to injure.
- Permanent loss of breeding areas.
- Temporary loss of breeding areas that adversely affects a substantial number of a specific species.
- Substantial interference with movement of any resident species that results in the inability of the species to survive.

The general consensus is that an increase in SPL of 160 dB re 1 μPa is the threshold above which some marine mammals have shown behavioral changes (McInnis, 2004). This threshold would be considered noise, based on the definition of noise presented in Section 4.3.1.

Sea Turtles and Other Protected Marine Reptiles

Impacts on sea turtles and the American crocodile would be significant if the Proposed Action resulted in any of the following outcomes:

- Permanent loss of critical habitat
- Temporary loss of critical habitat that adversely affects a substantial number of a specific species
- Direct loss (take) of a substantial number of a specific species
- Permanent loss of breeding areas
- Temporary loss of breeding or nesting areas that adversely affects a substantial number of a specific species
- Substantial interference with movement of any resident species that results in the inability of the species to survive.

Fish

Fisheries impacts could result primarily from impacts on fish habitat or changes to fish populations. Impacts on fisheries would be significant if the Proposed Action resulted in any of the following outcomes:

- Permanent loss of breeding areas, HAPC, or critical habitat
- Temporary loss of critical habitat that adversely affects a substantial number of a specific species
- Direct loss (take) of a substantial number of threatened or endangered fish species
- Substantial interference with movement of any resident species that results in the inability of the species to survive
- Substantial interference with movement of any resident species or migration of anadromous or catadromous species.

Coastal and Other Birds

Impacts on coastal and other birds, particularly diving birds, would be significant if the Proposed Action resulted in any of the following outcomes:

- Harassment of nesting and foraging areas
- Permanent loss of critical habitat
- Temporary loss of critical habitat that adversely affects a substantial number of a specific species
- Direct loss (take) of a substantial number of a threatened or endangered bird species
- Permanent loss of breeding areas
- Temporary loss of breeding or nesting areas that adversely affects a substantial number of a threatened or endangered bird species
- Substantial interference with movement of any resident species that results in the inability of the species to survive.

Threatened and Endangered Seagrass

Impacts on threatened and endangered seagrass would be significant if the Proposed Action resulted in any of the following outcomes:

- Permanent loss of critical habitat
- Temporary loss of critical habitat that adversely affects recolonization by threatened or endangered seagrass

Threatened and Endangered Corals

Impacts on threatened and endangered corals would be significant if the Proposed Action resulted in any of the following outcomes:

- Permanent loss of critical habitat

- Temporary loss of critical habitat that adversely affects recolonization by threatened or endangered corals
- Direct loss (take) of threatened or endangered corals.

4.4.2 Potential Impacts

Marine Mammals

The hearing and vocalization frequencies of marine mammals that occur in the study areas are presented in Table 3-2. Animals only respond to sound if they can hear it or feel it (NRC, 2003). Responses can be short- or long-term and will vary depending on factors such as hearing sensitivity; past exposure to the noise; individual noise tolerance; age, sex, and presence of offspring; the loudness of the noise; whether the sound is stationary or moving; sound transmission; and location (e.g., confinement) (NRC, 2003). Short-term responses of marine mammals to audible sound include swimming away from the source; changes in surfacing, breathing, and diving patterns; changes in group composition; and changes in vocalization (NRC, 2003). Long-term responses include habitat abandonment or increased tolerance of a noise.

Based on the measures proposed to avoid impacts on marine mammals and other protected species (listed below), underwater inspection/detection systems' sonar operations are not expected to result in adverse impacts on marine mammals. The species that are expected to be capable of detecting the transponders and acoustic modems (16–40 kHz) are the Florida manatee, Minke whale, bottlenose dolphin, common dolphin, Atlantic spotted dolphin, and pantropical spotted dolphin (refer to marine mammals hearing sensitivities presented in Table 3-2). However, the AUVs would only be operated offshore and in main shipping channels. While being operated in inshore shipping channels, acoustic transponders would be constrained to an SPL of 188 dB. As presented in Table, 2-3, the sound produced by the acoustic transponders is expected to reach an SPL below 160 dB (the threshold above which some marine mammals have shown behavioral changes [McInnis, 2004]) at 330 feet (100 m) and below 130 dB at 2,300 feet (700 m). Based on the exclusion areas presented in the EA, as proposed by the USF, plus an additional 660-foot (200-m) buffer, it is unlikely that sound from the acoustic transponders and modems would ensonify important manatee areas at levels that would have any measurable impact on manatees in those areas.

The bottlenose and common dolphins are also expected to be capable of detecting the high-frequency sonars (150–999 kHz) at150 kHz. However, this is the upper end of these dolphins' hearing ranges and they are unlikely to be sensitive to sound at this frequency. As presented in Table, 2-3, the sound produced by the acoustic transponders is expected to reach an SPL below 160 dB (the threshold above which some marine mammals have shown behavioral changes [McInnis, 2004]) at 330 feet (100 m) and below 130 dB at 720 feet (220 m).

It is unlikely that any marine mammals are capable of hearing the ultra-high-frequency sonars (1,000–3,500 kHz) used for device identification. The signal transmitted by this sonar is higher than the known hearing sensitivities for marine mammals, which are generally reported to be between 0.04 kHz and 150 kHz. As presented in Table 2-3, the sound produced by the acoustic transponders is expected to reach an SPL below 160 dB (the threshold above which some marine mammals have shown behavioral changes [McInnis, 2004]) at 66 feet (20 m) and below 130 dB at 115 feet (35 m). North Atlantic right whales would not be capable of hearing any of the acoustic components of the systems that are being tested (Richardson et al., 1995; NRC, 2005).

As presented in Figures 2-1 through 2-5, the proposed equipment testing would not occur in ecologically sensitive areas such as seagrass areas and wetlands; marine sanctuaries; manatee, right whale, or Johnson's seagrass critical habitat; known locations of hardbottom habitats (including coral, vermetid, and coquina reefs); near or on beaches; offshore (seaward of the coast) waters less than 18 feet (5.5 m) deep; where manatees are known to congregate (warmwater refuge sites such as power plant cooling water discharges and areas between power plant cooling water discharges that are in close proximity); marine mammal choke points (such as the mouths of tributaries where manatees are known to congregate); off the coast of Port Everglades/Ft. Lauderdale, while North Atlantic right whales could occur there from 1 January through 1 May; in any area that is designated as "restricted" for environmental reasons in the *Coast Pilot 5 – 33rd Edition* and *Coast Pilot 4 – 37th Edition* (NOAA, 2005a; NOAA, 2005b). A 200-m buffer would be maintained between the equipment testing procedures and the exclusion areas presented in Figures 2-2 through 2-5. In addition, AUVs (the only system that would incorporate acoustic sources that would be audible to manatees) would only be operated in the offshore study areas and in main shipping channels. While in inshore shipping channels, AUV transponders would be constrained to a 188-dB SPL.

The sonar operations would be conducted in areas where commercial and military vessels would operate (i.e., busy ports, offshore anchorages, and offshore fairways). USCG-trained marine mammal observers would be present during all equipment testing cruises. Support vessels would be operated by experienced professionals. Vessel trips to support the equipment testing would not constitute additional trips for the already existing support vessels. Support vessels would follow all applicable manatee speed restrictions.

Noise generated by the sonars would be negligible compared to ambient sound levels. Under normal conditions sonars would not be directed into open water, but only toward the intended target. The expected maximum distance from targeted structures should be no more than 330 feet (100 m) for a wide area survey and 16 feet (5 m) during a targeted inspection. As part of the Proposed Action, the following measures would be implemented during all equipment testing cruises:

- Tested equipment would be monitored (by USCG-trained marine mammal observers) at all times.
- A safety zone of 660 feet (200 m) (beyond the 160-dB contour for each equipment type) would be visually monitored (by a USCG-trained marine mammal observer) for marine mammal activity for 20 minutes prior to turning on the system. For sonar testing after dark, night vision devices would be used to monitor safety zones.
- If sonar were deployed and marine mammals were observed which could approach the safety zone, the system would be shut down until the marine mammal exited the area.
- Sonar equipment would not be placed in a location such that it would interfere with obvious marine mammal throughways or cause choke-points where sonar could deter marine mammals' or sea turtles' movement (e.g., testing would not occur near the mouths of tributaries where manatees are known to congregate).
- A 200-m buffer would be maintained between the equipment testing procedures and the exclusion areas presented in Figures 2-2 through 2-5.
- The vessel strike avoidance and reporting measures provided by NMFS, Southeast Region would be followed (Appendix B).

It is unlikely that these marine mammals would be adversely affected (physically or behaviorally) outside of the 200-m safety zone because the noise level would be attenuated below 160 dB (the threshold above which some marine mammals have shown behavioral changes [McInnis, 2004]). If the sonars are deployed and marine mammal activity that could approach or enter the 160-dB contour (660-foot [200-m]

safety zone) is noted, the systems would be shut down until the marine mammals have left the safety zone. There is a negligible risk that marine mammals might not be seen before sonar operations are conducted. Based on the rapid attenuation of the signals and by avoiding the mouths of tributaries where manatees are known to congregate, the testing would not block marine mammals from foraging, breeding, or nesting areas.

The operation of the lasers associated with the underwater inspection/detection systems is not expected to result in adverse impacts on marine mammals. Lasers that meet current human laser safety standards would have no harmful impacts on the eyes of marine mammals (Zorn et al., 1998). Marine mammal eyes are less sensitive to laser radiation than the human eye. The point laser used for navigation is a Class IIIA laser. This laser classification is only hazardous when the human eye is exposed to all or part of a laser beam. Under normal use, the Class IIIA laser cannot cause biological damage to the human eye or skin and therefore would not cause damage to marine mammal eyes or skin.

The line laser is rated as a Class IIIB laser. Absorption and scatter of the line lasers would occur as soon as it is turned on (see Section 3.5.2). In a typical port environment and in clear seawater, it is expected that the laser beams would lose most of their power in less than 3.3 feet (1 m). Both lasers have effective distances of less than 16 feet (5 m). Under water this laser is not expected to cause damage to human eyes, or skin, or marine mammal eyes or skin.

Under normal conditions, lasers would not be directed into open water, but only toward the intended target. The lasers would only be used for the detailed targeted inspections. The expected maximum distance from targeted structures should be no more than 16 feet (5 m) during a targeted inspection. Laser use would also be temporary and short-term. Effective laser distance is expected to be about 7 to 10 feet (2 to 3 m). This would reduce the possibility of a marine mammal coming into contact with a laser. The 660-foot (200-m) safety zone around the system would be visually monitored by a USCG-trained observer for 20 minutes prior to using lasers to ensure it was clear of marine mammals. If marine mammal activity approached the safety zone during operations, the underwater inspection/detection system would be shut down and retrieved until the activity exited the area. The testing would not block marine mammals from foraging, breeding, or nesting areas.

Equipment testing support vessels would follow all applicable vessel regulations, including manatee speed regulations and NMFS vessel avoidance and reporting measures. Equipment testing would not occur in North Atlantic right whale critical habitat and areas where manatees are known to congregate. The ROVs and AUVs (including the propulsion and stabilization systems) used for the underwater inspection/detection systems are not expected to result in adverse impacts on marine mammals. The ROV and AUV would be propelled at speeds of up to 5 knots. The 660-foot (200-m) safety zone around the system would be visually monitored by a USCG-trained marine mammal observer for 20 minutes prior to using an ROV or AUV to ensure it was clear of marine mammals. If marine mammal activity approached the safety zone during operations, the ROV or AUV would be shut down and retrieved. Operations would only resume when the activity exited the area. In addition, equipment testing would only occur 8 to 10 hours a day for 40 days per year. With all of the avoidance measure working together, the likelihood of a collision between a support vessel, ROV, or AUV with a marine mammal is so low that it would be discountable.

The Proposed Action (including sonar, laser, and vessel operations) is not likely to adversely affect marine mammals, based on the following:

- Equipment testing would avoid all ecologically sensitive areas.
- The effective distance for all lasers is 7 to 10 feet (2 to 3 m).

- All sound associated with the systems that are being tested would attenuate below 160 dB (the threshold above which some marine mammals have shown behavioral changes [McInnis, 2004]) in 330 feet (100 m).
- A 660-foot (200-m) safety zone would be monitored by USCG-trained observers for marine mammal activity and all equipment would be shut down if marine mammals or sea turtles would approach the safety zone.
- NMFS vessel collision avoidance measures would be followed.
- Equipment testing would only occur 8 to 10 hours a day for 40 days per year.

Sea Turtles and Other Protected Marine Reptiles

Five species of sea turtles potentially occur in the study areas. The underwater inspection/detection systems sonar operations are not expected to result in any impacts on sea turtles. While little information is available on sea turtle hearing, it is known that sea turtle hearing generally ranges from 0.08 to 2 kHz. Therefore, it is expected that the sonars used for the proposed underwater inspection/detection systems, which operate at frequencies of 16 kHz and higher, would be imperceptible to sea turtles. The 660-foot (200-m) safety zone around the system would be visually monitored (by USCG-trained observers) for 20 minutes prior to using lasers to ensure it was clear of sea turtles. If sea turtle activity approached the safety zone during operations, the laser would be shut down until the activity exited the area. Testing would not occur on or near beaches and in offshore waters less than 18 feet (5.5m) deep. Therefore, testing would not block sea turtles from foraging, breeding, or nesting areas.

The American crocodile occurs in the Port of Miami and Port Everglades/Ft. Lauderdale Study Areas. Little information is known about their hearing, but crocodiles produce low-frequency sounds during mating. Therefore, it is expected that all acoustic components associated with the system that would be tested, would be imperceptible to crocodiles.

The underwater inspection/detection systems' laser operations are not expected to result in adverse impacts on sea turtles or the American crocodile. Under normal conditions, lasers would not be directed into open water, but only toward the intended target. The lasers would only be used for the detailed targeted inspections. The expected maximum distance from targeted structures should be no more than 5 m during a targeted inspection. Absorption and scatter of the line lasers would occur as soon as it is turned on (see Section 3.5.2). In a typical port environment and in clear seawater, it is expected that the laser beams would lose most of their power in less than 3.3 feet (1 m). Both lasers have effective distances of less than 16 feet (5 m). Laser use would also be temporary and short-term. This would reduce the possibility of a sea turtle or American crocodile coming into contact with a laser.

The ROVs and AUVs (including the propulsion and stabilization systems) used for the underwater inspection/detection systems are not expected to result in adverse impacts on sea turtles and the American crocodile. The ROV and AUV would be propelled at speeds of up to 5 knots and the ROV is easily maneuverable. The 660-foot (200-m) safety zone around the system would be visually monitored for 20 minutes prior to using an ROV or AUV to ensure it was clear of sea turtles. If sea turtle activity approached the safety zone during operations, the ROV or AUV would be shut down and retrieved until the activity exited the area. Therefore, it is unlikely that sea turtles or the American crocodile would come into contact with the ROV or AUV.

The Proposed Action (including sonar, laser, and vessel operations) is not likely to adversely affect sea turtles, based on the following:

- Equipment testing would avoid all ecologically sensitive areas.
- All sound associated with the systems is imperceptible to sea turtles.
- The effective distances for all lasers is 7 to 10 feet (2 to 3 m).
- A 660-foot (200-m) safety zone would be monitored by USCG-trained observers for sea turtle activity and all equipment would be shut down if sea turtles would approach the safety zone.
- NMFS vessel collision avoidance measures would be followed.
- Equipment testing would only occur 8 to 10 hours a day for 40 days per year.

Fish

The underwater inspection/detection systems operation would not result in adverse impacts on EFH. Minor behavioral disruptions of some species could from the high-frequency sonar operations. The high-frequency sonars would operate within the perceptible range of some clupeid fish occurring in the study areas, including Gulf menhaden and American shad (Table 3-4). The ultra-high-frequency sonar operates at frequencies higher than fish species are capable of perceiving (Table 3-4). The sonar operations would be conducted in areas where commercial and military vessels would operate (i.e., busy ports, offshore anchorages, and offshore fairways). Noise generated by the sonar would be negligible compared to ambient sound levels. If fish left the area, they would likely return when the sonar use was completed.

The underwater inspection/detection systems' laser operations are not expected to result in adverse impacts on fisheries or EFH. Absorption and scatter of the line lasers would occur as soon as the laser is turned on (see Section 3.5.2). In a typical port environment and in clear seawater, it is expected that the laser beams would lose most of their power in less than 3.3 feet (1 m). Both lasers have effective distances of less than 16 feet (5 m). Laser use would be temporary and short-term. This would reduce the possibility of fish coming into contact with a laser.

The ROVs and AUVs used for the underwater inspection/detection systems would not result in adverse impacts on fisheries or EFH, particularly minor behavioral disruptions. The ROV and AUV would be propelled at speeds of up to 5 knots. Fish could be disrupted by the ROV or AUV and leave the area. However, fish would likely return when use of the ROV or AUV was completed.

The Proposed Action is not expected to result in adverse impacts on Gulf sturgeon, pallid sturgeon, shortnose sturgeon, or smalltooth sawfish. Specifically, all acoustic components associated with the Proposed Action are well above the known hearing ranges of sturgeon and elasmobranchs. Therefore, these threatened and endangered species would not be adversely affected.

The Proposed Action would not destroy or adversely modify any of the PCEs of the Gulf sturgeon Critical Habitat Unit 8. PCEs include water and sediment quality; abundant food and prey items for subadult and adult lifestages, such as amphipods, lancelets, polychaetes, gastropods, ghost shrimp, isopods, mollusks, and crustaceans within estuarine and marine habitats; flow regimes; river aggregation areas (holding and staging areas); and migratory pathways. Specifically, all acoustic components associated with the Proposed Action are well above the known hearing range for sturgeon, as such aggregation areas would not be disturbed and migratory pathways would not be disrupted.

Coastal and Other Birds

Several species of federally endangered or threatened birds are known to breed and forage in the study areas. Under normal circumstances, underwater inspection/detection systems operations are limited to developed shoreline infrastructure and would not be operated in or near any bird habitat.

The underwater inspection/detection systems' sonar operations are not expected to result in more than minor adverse impacts on coastal and other birds. Localized, short-term increases in underwater noise could potentially affect coastal birds, particularly diving birds, but diving birds spend relatively minimal time underwater and would only be exposed to short durations of underwater sound. Birds are sensitive to low-frequency sounds in air and can likely hear these sounds underwater. The systems have transponders, acoustic modems, and high- and ultra-high-frequency sonars and might not be perceptible to coastal and other birds. The sonar operations would be conducted in areas where commercial and military vessels would operate (i.e., busy ports, offshore anchorages, and offshore fairways). Noise generated by the sonar would be negligible compared to ambient sound levels. Therefore, impacts on coastal birds from sonar operations are expected to be minimal.

Underwater noise could result in an indirect, minor impact on coastal diving birds. This conclusion is based on the fact that some species of prey for coastal diving birds might have the ability to hear the sonar. As discussed above, the ultra-high-frequency sonar operates at frequencies higher than fish species are capable of perceiving (Table 3-4). However, the transponders, acoustic modems, and high-frequency sonar would operate within the perceptible range of some clupeid fish occurring in the study areas, including Gulf menhaden and American shad (Table 3-4). Noise generated by the sonar would be negligible compared to ambient sound levels and would be temporary. If fish left the area, they would likely return when the sonar use was completed.

No adverse impacts on coastal birds are expected to occur as a result of laser operations. Absorption and scatter of the line lasers would occur as soon as they are turned on (see Section 3.5.2). In a typical port environment and in clear seawater, it is expected that the laser beams would lose most of their power in less than 3.3 feet (1 m). Both lasers have effective distances of less than 16 feet (5 m). The lasers would only be used underwater and would not come in contact with birds.

The ROVs and AUVs used for the underwater inspection/detection systems could result in an indirect, minor impact on coastal diving birds. Fish that are prey for coastal diving birds could be disrupted by the ROV or AUV and leave the area. However, fish would likely return when use of the ROV or AUV was completed.

Threatened and Endangered Seagrass

The endangered Johnson's seagrass and its critical habitat occur adjacent to the Port of Miami and Port Everglades/Ft. Lauderdale Study Areas. However, these areas would be avoided by all operations associated with the Proposed Action. Therefore neither Johnson's seagrass, nor its critical habitat would be adversely affected by the Proposed Action.

Threatened and Endangered Corals

The threatened elkhorn and staghorn corals might occur within the Port of Miami and Port Everglades/Ft. Lauderdale Study Areas. The acoustic components of the portable underwater systems would not impact these corals. It is possible, but not probable that operation of the ROV or AUV and anchoring by the support vessel could adversely impact these corals. To avoid potential impacts, known locations of hardbottom habitats (including coral, vermetid, and coquina reefs) would be avoided by equipment

testing; support vessels would not anchor in the Port of Miami and Port Everglades/Ft. Lauderdale offshore study areas; and if branching corals are observed with imaging equipment in the Port of Miami and Port Everglades/Ft. Lauderdale offshore study areas, testing will be moved to a different location. Therefore, elkhorn and staghorn corals would not be adversely affected by the Proposed Action.

4.4.3 No Action Alternative

Under the No Action Alternative, existing conditions would remain as is and the USCG R&DC would not conduct testing on the underwater inspection/detection systems. If this alternative is selected, USF COT could continue to test underwater inspection/detection systems for USN and other entities.

4.5 Public Safety

This section evaluates the significance of the impacts of the Proposed Action and No Action Alternative on public safety. In addition to the impacts of sonars and lasers on humans, the general impacts on public safety in terms of port safety and the USCG's role as the lead Federal agency for MHLS will also be addressed.

4.5.1 Significance Criteria

Sonar Safety

The significance of sonar impacts on humans is based on the duration and magnitude of the sound level. The noise impacts on humans from sonar would be considered significant if the sound levels associated with the Proposed Action exceed 200 dB re 1 µPa at 3.3 feet (1 m) (without a wetsuit hood) and up to 215 dB re 1 µPa at 3.3 feet (1 m) (with a wetsuit hood) (based on USN regulations) (USN, 2002).

Laser Safety

The significance of laser impacts on humans is based on the duration and magnitude of the light emitted. Impacts on humans from lasers would be considered significant if implementation of the Proposed Action could result in damage to eyes or skin. If the Proposed Action resulted in humans being directly exposed to a laser beam longer than the Maximum Permissible Exposure (MPE) set by ANSI for a specific laser hazard classification, then impacts of implementation of the Proposed Action would be considered significant (OSHA, 1999).

Port Safety

If implementation of the Proposed Action were to substantially increase risks associated with the safety of personnel, vessels, and property at the test areas, or substantially hinder the ability to respond to an emergency, it would represent a significant impact. Impacts were assessed based on the potential impacts of equipment testing activities.

4.5.2 Potential Impacts

Sonar Safety

The portable underwater systems are not expected to affect nonparticipants, such as recreational scuba divers. The portable underwater systems would be tested in areas such as busy ports, offshore anchorages, and commercial fairways where recreational scuba divers would not be. While commercial

divers could occur in the port area, they would not be expected to occur in the 660-foot (200-m) safety zone (based on monitoring of the safety zone and coordination with appropriate port personnel). The sound level of all the sonar components would attenuate to below 160 dB re 1 μPa within 330 feet (100 m). This is well below the significance criteria for the impacts on humans without a wetsuit hood (approximately 200 dB re 1 μPa at 3.3 feet [1 m]). Therefore, the risks to humans from the sonars would be negligible. Refer to Section 4.3 for additional information on the impact of the Proposed Action on existing ambient sound levels.

Laser Safety

No impacts on public safety are expected to result from the use of lasers associated with the Proposed Action. The point laser is rated as a Class IIIA laser. This laser classification is only hazardous when the eye is exposed to all or part of a laser beam (intrabeam viewing). Intrabeam viewing of the laser would not be expected because the laser would only be used underwater and the laser would be scattered almost immediately.

The line laser is rated as a Class IIIB laser. Absorption and scatter of the line laser would occur as soon as it is turned on (see Section 3.5.2). In a typical port environment and in clear seawater, it is expected that the laser beams would lose most of their power in less than 1 m. Both lasers have effective distances of less than 5 m. Under water this laser is not expected to cause damage to human eye or skin.

Recreational divers are not expected to occur in the busy port environments where the underwater inspection/detection systems would be used. While commercial divers could occur in the port area, the harbormaster would be aware of any commercial or agency diving operations going on in the port area. The harbormaster would inform the researchers, who would avoid the area with the commercial diving. In addition, the 660-foot (200-m) safety zone would be monitored and appropriate action will be taken to ensure the safety of the divers.

Port Safety

No adverse impacts would be expected from the Proposed Action. The portable underwater inspection/detection systems would be used within 330 feet (100 m) of their examination targets and the ROVs and AUVs (including the stabilization and propulsion systems) would be propelled at speeds of up to 5 knots. Therefore, implementation of the Proposed Action would result in a negligible increase in the short-term risks of collisions between the portable underwater systems and support vessels with vessels, piers, and underwater infrastructure (as described in Section 4.2.2). If a collision occurred, the impact (based on the size of the ROVs and AUVs) would be expected to be negligible. However, the researchers would gain permission from Coast Guard Sector Commanders and harbormasters prior to conducting any testing. Researchers would coordinate with vessel masters or owners before inspecting the hulls of any vessels. Testing would only occur from support vessels operated by qualified individuals. These factors would greatly decrease the probability of collisions and allisions. See Section 4.2.2 for additional information on the impact that implementation of the Proposed Action would have on transportation.

Short-term minor beneficial impacts on public safety could occur due to testing the portable underwater inspection/detection systems. Testing of these systems on vessels, piers, and underwater infrastructure would slightly increase the detection of destructive devices, and could deter the placement of destructive devices. USF COT personnel would immediately contact the DOD if a destructive device were found.

4.5.3 No Action Alternative

Under the No Action Alternative, existing conditions would remain as is and the USCG R&DC would not conduct testing on the underwater inspection/detection systems. If this alternative is selected, USF COT could continue to test underwater inspection/detection systems for the USN and other entities.

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5. Cumulative Impacts

5.1 Cumulative Impacts Methods

Cumulative impacts are defined as "the impacts that result from the incremental impact of the action, when added to other past, present, and foreseeable future action regardless of what agency (Federal or non-Federal) or person undertakes such other actions" (40 CFR 1508.7). Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time by various agencies (Federal, state, and local) or individuals.

Other existing or reasonably foreseeable future actions are included in the cumulative impacts analysis if their impacts would fall within the same geographic area and timeframe as those of the Proposed Action. For the purposes of this analysis, the timeframe of the Proposed Action is the expected duration of the testing activities. The geographic scope of the Proposed Action is described in Section 2.1.1 and shown in Figures 2-1 through 2-5.

This cumulative impacts analysis considers past and reasonably foreseeable programs, known or planned USCG projects, and nonspecific threats that could impact each resource area and might add to the incremental impacts of the operation of the underwater inspection/detection systems in the study areas or surrounding areas. Projects that are in the planning stages, or will not be finalized until further studies have been completed, and have no target dates are considered too speculative and have been dismissed from further consideration. For the purposes of this EA, only those resources identified in Section 3.0 that might be impacted by the Proposed Action will be carried over into the cumulative impacts discussions.

Information about ongoing and future projects and programs has been identified from Internet searches, other NEPA documents, local newspaper articles, and discussions with knowledgeable USCG personnel. Based on professional judgment, potential impacts are identified as minor, moderate, or high; and beneficial or adverse whenever possible.

5.2 Coastal and Marine Uses

A large portion of the United States economy depends on use of the oceans (USCOP, 2004). Therefore, increases in human population, urbanization, and industrialization result in increases in activities that impact the oceans and the valuable resources within the U.S. EEZ. These activities include marine transportation and ports; marine fishing; offshore energy, minerals, and emerging uses; human health uses; tourism and recreation; and coastal development and real estate (USCOP, 2004). Overseas trade through U.S. ports is expected to double over the next 20 years (USCOP, 2004). General impacts that result from an increase of coastal and marine use (including coastal development and urbanization) include water degradation; an increase in ocean noise; increased risk of collision with marine mammals and sea turtles; increased risk of entanglement of marine mammals, sea turtles, and sea birds; interference with the migration of coastal and marine birds and sea turtles from light pollution; seawater intake; and thermal discharge.

The Proposed Actions would occur in busy deepwater ports (see Table 2-1 and Figures 2-1 through 2-5). Shipping and boating in these ports are primary activities that affect ambient underwater sound levels. Other activities that have taken place in the past include construction of infrastructure, dredging, and industry.

5.3 USCG Programs and Projects

In addition to the marine and coastal uses cited above, the USCG has increased safety and security measures on U.S. ports and waterways since September 11, 2001. Past, ongoing, and reasonably foreseeable USCG programs, including various Homeland Security activities implemented or to be implemented by the USCG, are identified and briefly discussed in Table 5-1. Unless otherwise noted, NEPA documentation on pertinent USCG projects and programs can be downloaded at <*http://www.uscg.mil/systems/gse/gsec-3H.htm*> or obtained by contacting Environmental Management, Room 6109, Headquarters United States Coast Guard, Assistant Commandant for Engineering and Logistics, Environmental Management, 2100 Second Street SW, Washington, DC 20593.

Table 5-1. USCG Programs and Projects Evaluated for Potential Cumulative Impacts

Proposed, Existing, or Reasonably Foreseeable Action	Potential Cumulative Impacts
Response Boat Acquisitions	No significant adverse impacts on air quality, ambient noise levels, biological resources, or water quality.
Stand-up and Operation of MSSTs	No significant adverse impacts on biological resources, no significant adverse impacts on existing ambient noise levels, and beneficial impacts on public safety.
Establishment and Operation of the Mark 11 Static Barrier Running Gear Entanglement System (MK 11 RGES)	Potential for minor adverse impacts on biological resources and beneficial impacts on public safety.
Integrated Deepwater System Program	A range of adverse impacts on biological resources. Beneficial impacts on public safety.
Establishment of Safety and Security Zones	Beneficial impacts on public safety, no significant impacts on tribal fishing rights.
Proposed Licensing of Approximately 40 Nearshore Liquefied Natural Gas (LNG) Terminals.	A range of adverse impacts on biological resources.
Installation and Operation of the Integrated Anti-swimmer System (IAS)	Minor adverse impacts on water and sediment quality and noise. Potential for minor adverse impacts on biological resources. Beneficial impacts on public safety.
Use of the Underwater Inspection/Detection Systems	The impacts of using the underwater inspection/detection systems are expected to be similar to the impacts described in this EA and to the impacts associated with the IAS.
Nationwide Automatic Identification System (NAIS) Project	It is likely that the NAIS project would provide beneficial impacts on public safety.

Response Boat Acquisitions. The Response Boat Acquisitions involves the USCG acquiring and operating 880 response boats-small and response boats-medium to add to or replace aging and inefficient assets with standard, more reliable, and more environmentally sound assets. These boats would be located at the 44 Groups/Activities Offices, 186 multimission stations, and 24 Marine Safety Offices that currently operate nonstandard vessels or 41-foot Utility Boats. The project scope includes all USCG facilities along the coastal United States,and the Great Lakes states, Hawaii, Alaska, Guam, Puerto Rico, and the U.S. Virgin Islands. The project area includes the coastal zone areas where the 41-foot utility boats and nonstandard boats currently operate. The NEPA documentation for this project (*Final Programmatic Environmental Assessment [PEA] of the U.S. Coast Guard Response Boat Acquisitions*) is complete. A FONSI statement was signed for this PEA.

Stand-up of the Maritime Safety and Security Teams. The stand-up of the MSSTs includes the stationing of active-duty personnel and reservists and the addition of six new response boats, four tow vehicles, and two 15-passenger vans, at various ports. The MSSTs will improve the security of the existing port infrastructure and the Intercoastal Waterway on an ongoing basis. Minor adverse impacts on biological resources could be a result of the operation of the MSST boats. The MSST boats could increase the existing ambient noise levels of the areas where they operate. The MSST boats are equipped with four-stroke engines, which are not expected to significantly increase ambient noise levels or disturb biological resources. The MSST boats are highly maneuverable and would operate at transit speeds of up to 15 knots in highly trafficked, busy port areas (under normal operations). Impacts on marine mammals, sea turtles, or other protected species are expected to be minor. The NEPA documentation for the MSSTs that were stood up from 2002 to 2004 is complete. FONSI statements have been issued for all the complete MSST EAs.

The area of responsibility of MSST 91112 (established in New Orleans, Louisiana) would overlap with the Lower Mississippi River Port Complex Study Area. The area of responsibility of MSST 91114 (established in Miami, Florida) would overlap with the Port of Miami Study Area. Because the MSSTs are portable they could operate in any of the study areas covered under the Proposed Action.

Establishment and Operation of the Mark (MK) 11 Static Barrier Running Gear Entanglement System (RGES). The USCG is proposing to establish and operate a MK 11 Static Barrier RGES as part of a layered defense strategy within Security and Safety Zones at various U.S. ports throughout the U.S. Maritime Domain, when necessary. The MK 11 Static Barrier RGES would be used to establish a "line of demarcation" within a Security or Safety Zone, providing a barrier around a high-value asset, and allowing security forces sufficient time to react and counter a threat. The MK 11 Static Barrier RGES would improve the USCG's capabilities to intercept and interdict, if necessary, small boats or watercraft by using an entanglement device that would foul the propellers of unauthorized vessels attempting to approach a restricted area. The MK 11 Static Barrier RGES would not duplicate existing protective measures, but would provide complementary, nonredundant capabilities for port security.

Establishment and operation of the MK 11 Static Barrier RGES with mitigation measures would not be expected to result in significant adverse impacts on biological resources. The operation of the MK 11 Static Barrier RGES would increase the risk of entanglement of marine species, including those protected under the MMPA and the ESA. The mitigation measures are designed to avoid these impacts, when possible. When not possible, the mitigation measures are designed to minimize impacts on marine protected species. For example, personnel tending the MK 11 Static Barrier RGES would have the on-scene capabilities of freeing an entangled animal, in the unlikely event an entanglement should occur, reducing the risk of injury. Additional minor adverse impacts, such as effects of anchors on seagrass, sediments, and other sensitive benthic habitats, could occur. Beneficial impacts on public safety could occur from establishment and operation of the MK 11 Static Barrier RGES. No adverse impacts on Native American treaty fishing rights are expected. The RGES would be deployed within a Safety and

Security Zone and would not exclude Native American tribes from their fishing areas or restrict them from any additional areas beyond the Safety and Security Zone. Entry into Safety and Security Zones is prohibited unless specifically authorized by the Coast Guard Sector Commander. The NEPA process for this project is in progress.

Integrated Deepwater System Program. The USCG initiated the Integrated Deepwater System (IDS) Program in 1996 to continue to meet America's 21st-century maritime threats and challenges. The IDS Program is a long-term acquisition program to upgrade existing USCG assets by renovating, modernizing, or replacing current assets. The IDS Program is the largest and most innovative acquisition in the USCG's history and is expected to be completed in approximately 20 years.

The IDS is not just "new ships and aircraft," but an integrated approach to upgrading existing assets while transitioning to newer, more capable platforms with improved systems for command, control, communications, computers, intelligence, surveillance, and reconnaissance; and innovative logistics support. This new system will significantly contribute to the USCG's maritime domain awareness, as well as improve the ability to intercept, engage, and deter those activities that pose a direct challenge to U.S. sovereignty and security. The IDS Program will provide the USCG the means to extend layered maritime defenses from U.S. ports and coastal areas to hundreds of miles offshore. The NEPA documentation for this project is complete.

Establishment of Safety and Security Zones. As part of the Diplomatic Security and Antiterrorism Act of 1986 (P.L. 99-399), Congress amended Section 7 of the Port and Waterways Safety Act of 1972 (33 U.S.C. 1226) to allow the USCG to take actions, including the establishment of Safety and Security Zones, to prevent or respond to acts of terrorism against individuals, vessels, or public or commercial structures (implementing regulations in 33 CFR Part 165). The USCG also has authority to establish Security Zones pursuant to the MSA (50 U.S.C. 191 et seq.) (implementing regulations in 33 CFR 6.01 and 6.04).

A Safety Zone is defined as a water area, shore area, or water and shore area in which access is limited to authorized persons, vehicles, or vessels for safety or environmental purposes.

A Security Zone is an area of land, water, or land and water which is designated by the Coast Guard Sector Commander or District Commander to protect any vessel, harbor, port, or waterfront facility (in the United States and all territory and water, continental or insular, that is subject to the jurisdiction of the United States) from damage, destruction, or injury caused by sabotage or other subversive acts, accidents, or other causes of a similar nature. A Security Zone might be stationary and described by fixed limits or a zone around a vessel in motion. Except in situations that involve extraordinary circumstance, the USCG has determined that the establishment of Safety and Security Zones have been categorically excluded from NEPA analysis.

Proposed Licensing of Nearshore Liquefied Natural Gas (LNG) Terminals and LNG Deepwater Ports. The Federal Energy Regulatory Commission (FERC) is responsible for authorizing the siting and construction of onshore LNG terminals (including LNG terminals within state waters). The USCG is responsible for authorizing the siting and construction of LNG deepwater ports. Therefore, FERC and the USCG are required to complete environmental reviews of these projects. The environmental reviews are usually documented in the form of an EIS. There are no nearshore LNG terminals in the geographic scope of the Proposed Action. There is no LNG terminal in the Lower Mississippi River Port Complex Study Area. The Main Pass Energy Hub™ (MPEH™) would be approximately 16 miles southeast of the coast of Louisiana and would occur in the Lower Mississippi River Port Complex Study Area. The NEPA process for the *EIS for the MPEH™ Deepwater Port License Application* is ongoing. The Draft

EIS can be downloaded from <*http://dms.dot.gov/search/searchFormSimple.cfm*> using Docket Number 17696.

Installation and Operation of the Integrated Anti-Swimmer System. The USCG is proposing to establish and operate the IAS at various USCG MSST locations. The purpose of establishment of the IAS is to improve the Coast Guard's capabilities to detect, track, classify, and alert security forces of potential underwater threats to designated high-value vessels or critical port infrastructure. The IAS uses five primary components: a land-based sonar, a portable sonar, a data processor, a vehicle guidance system, and an underwater loud hailer. The land-based sonar has a source level of 206 dB at 90 kHz. The portable sonar has a frequency of 1.0 megahertz (mHz) and 1.8 mHz. The underwater loud hailer would have a source level of 180 dB at 1 kHz and would be used only if a potential threat was detected. The land-based, data processor, and components of the vehicle guidance system would be based onshore. The portable sonar, underwater loud hailer, and remaining components of the vehicle guidance system are designed for use on an MSST Defender Class boat operating in direct coordination with the onshore IAS components.

The use of zinc anodes for the IAS would have minor adverse impacts on water and sediment quality. The IAS would result in minor adverse impacts on existing ambient waterborne noise levels. The IAS could have temporary minor adverse impacts on marine organisms at a location where the IAS is operating. Beneficial impacts on public safety could occur from the installation and operation of the IAS. The NEPA process for this project is in progress.

Use of the Underwater Inspection/Detection Systems. Should the field testing of the underwater inspection/detection systems prove successful, the USCG would acquire additional underwater inspection/detection systems for future use by Coast Guard Sector Commanders for the purpose of port security. Currently, there is no target date for the use of the underwater inspection/detection systems by Coast Guard Sector Commanders. Initially, the USCG would acquire approximately two underwater inspection systems for both the Atlantic and Pacific coasts. Eventually, the USCG would like to acquire the underwater detection system for each major port in the United States, but it is unlikely that this would occur in the next 5 years. The NEPA process for acquisition and use of the underwater inspection/detection systems would start once the systems are approved for use.

Nationwide Automatic Identification System (NAIS) Project. The Coast Guard is preparing a Programmatic EIS for the NAIS project. The NAIS project involves installing Automatic Identification System (AIS) equipment and related support systems on and around communications towers or other structures along 95,000 miles of coastline and inland rivers. The NAIS would facilitate ship-to-ship, ship-to-shore, and shore-to-ship communication, including vessel position, speed, course, destination, and other data of critical interest for maritime safety and security. The information provided by this system will support national maritime interests—from the safety of ports through collision avoidance, to the safety of the nation through detection and classification of vessels when they are still thousands of miles offshore. The NAIS would not be a source of underwater noise and would likely provide beneficial impacts on marine transportation and public safety. The NAIS is not likely to adversely affect the biological resources addressed in this EA.

5.4 Cumulative Impacts on Resource Areas Analyzed

5.4.1 Transportation

The Proposed Action, the response boats acquisition, the MSSTs, the RGES, the IDS Program, the establishment of Safety and Security Zones, the IAS, and use of the underwater inspection/detection

systems would indirectly affect marine transportation and shipping. The response boat acquisition and the IDS program would only replace existing assets. The MSSTs would add vessels. The IAS and RGES would be associated with Safety and Security Zones which have the potential to change marine traffic patterns. The NAIS project is expected to provide beneficial impacts on marine transportation. The underwater inspection systems would be used to inspect the hulls of vessels and other port infrastructure in a manner similar to that described in this EA (prior to turning the IAS on to ensure the area of interest was clear of threats). The Proposed Action would also use existing vessels and would not result in any increase in shipping. The Proposed Action could represent a minor change in marine shipping and transportation but not an increase. The cumulative impact is expected to be negligible.

5.4.2 Underwater Acoustics

The Proposed Action could interact with other activities occurring in the Proposed Study areas to produce an increase in ambient underwater sound level in the Proposed Study areas. However, the increase in sound resulting from the Proposed Action would only be temporary (40 days for 8 to 10 hours per day) and localized (an increase in 160 dB for approximately 330 feet [100 m]). Activities that occur in the ports that add to the existing ambient sound levels include shipping and boating, helicopters, dredging, construction and maintenance of infrastructure, and industry. The Proposed Action, the response boats acquisition, the MSSTs, the IDS Program, and the IAS would also result in an increase of underwater ambient noise levels. The response boat acquisition and the IDS program would only replace existing assets and therefore would not result in an overall increase in noise. The NAIS project is not expected to result in underwater sound. The MSSTs and the IAS could result in minor increases in noise. However, it is unlikely that the testing of the sonar equipment would occur while the IAS is being operated; the underwater inspection/detection systems would be used prior to turning the IAS on to ensure the area of interest was clear of threats. The underwater inspection systems would be used to inspect the hulls of vessels and other port infrastructure in a manner similar to that described in this EA. Because the Proposed Action would result in a minor localized increase in noise, the cumulative impact is expected to be so low as to be negligible.

5.4.3 Biological Resources

Marine Mammals

Major threats to marine mammals include marine fishing and shipping resulting in entanglement, vessel collisions, and ocean noise. The Proposed Action could interact with other activities occurring in the Proposed Study areas to produce an increase in ambient underwater sound level. However, the increase in sound resulting from the Proposed Action would only be temporary (40 days for 8 to 10 hours per day) and localized (an increase in 160 dB for approximately 330 feet [100 m]). Activities that occur in the ports that add to the existing ambient sound levels include shipping and boating, helicopters, dredging, construction and maintenance of infrastructure, and industry. The Proposed Action, the response boats acquisition, the MSSTs, the IDS Program, and the IAS would also result in an increase of underwater ambient noise levels. The response boat acquisition and the IDS program would only replace existing assets and therefore would not result in an overall increase in noise. The NAIS project is not expected to result in impacts on marine mammals. The MSSTs and the IAS could result in minor increases in noise. However, it is unlikely that the testing of the sonar equipment would occur while the IAS is being operated; the underwater inspection/detection systems would be used prior to turning the IAS on to ensure the area of interest was clear of threats. The underwater inspection systems would be used to inspect the hulls of vessels and other port infrastructure in a manner similar to that described in this EA. The Proposed Action would result in a minor localized increase in noise.

Cumulative impacts on marine mammals from the Proposed Action in conjunction with the current threats to marine mammals could result in an increased risk of behavioral disruption associated with waterborne noise. However, the increased risk of behavioral disruption relating to the Proposed Action would be temporary, localized, and minor. Therefore, the incremental contribution of the Proposed Action would be negligible when compared to other threats to marine mammals.

Sea Turtles and Other Protected Marine Reptiles

Threats to sea turtles include entanglement in fishing gear, vessel collisions, and ingestion of marine debris. General impacts from an increase in population and coastal development can also affect sea turtles. Beach nourishment and shoreline hardening can affect nesting, and pollution can affect submerged aquatic vegetation, which is an important food source for sea turtles. No significant adverse impacts on sea turtles are expected to result from the MSSTs, IDS Program, or IAS. The NAIS project is not expected to result in impacts on sea turtles or other marine reptiles. The MK 11 Static Barrier RGES could represent a minor increase in risk of entanglement for sea turtles but is not expected to result in serious injury of any sea turtles. The Proposed Action is not expected to result in adverse impacts on sea turtles and other protected marine reptiles. Therefore the Proposed Action would not add to the severity of the impacts resulting from the current threats to sea turtles and other protected marine reptiles.

Fisheries Resources and EFH

Threats to fish include overfishing, habitat degradation caused by fishing (such as trawls and dredges), habitat loss caused by dams (in the case of the shortnose sturgeon), introduced species, and a general degradation of water quality. The MK 11 Static Barrier RGES could represent minor impacts on EFH and HAPC resulting in minor degradation of benthic habitat. The Proposed Action could represent a minor increase in underwater noise that might result in minor behavioral disruptions of fish.

Cumulative impacts on fisheries resources from the Proposed Action in conjunction with the current threats to fisheries resources and EFH could result in an increased risk of behavioral disruption associated with underwater noise. However, the increased risk of behavioral disruption relating to the Proposed Action would be temporary, localized, and minor. Therefore, the incremental contribution of the Proposed Action would be negligible when compared to other threats to fisheries resources and EFH.

Coastal and Other Birds

Threats to coastal and other birds include entanglement in fishing gear such as longlines, ingestion of marine debris, and habitat loss caused by coastal development. The IAS and the Proposed Action could represent minor increases in underwater noise which could temporarily displace fish that are prey to some diving birds, but are not expected to result in serious injury or behavioral disruption of coastal and other birds. Therefore, the Proposed Action would not add to the severity of the impacts resulting from the current threats to coastal and other birds.

Threatened and Endangered Seagrass

Threats to Johnson's seagrass include prop scarring, dredging, siltation, and altered water quality. Populations near inlets are likely to experience erosional forces and siltation associated with storms (NOAA Fisheries, undated). The Proposed Action is not expected to result in adverse impacts on Johnson's seagrass. Therefore the Proposed Action would not add to the severity of the impacts resulting from the current threats to Johnson's seagrass.

Threatened and Endangered Corals

Threats to elkhorn and staghorn corals include disease outbreaks, with losses compounded locally by hurricanes, increased predation, bleaching, and other factors. These species are also particularly susceptible to damage from sedimentation (NMFS, 2006). The Proposed Action is not expected to result in adverse impacts on elkhorn and staghorn corals. Therefore the Proposed Action would not add to the severity of the impacts resulting from the current threats to elkhorn and staghorn corals.

5.4.4 Public Safety

The Proposed Action, the MSSTs, the IAS, the IDS Program, the establishment of Safety and Security Zones, the NAIS Project, and the MK 11 Static Barrier RGES would result in cumulative beneficial impacts on public safety. The MSSTs, the IAS, the IDS Program, the MK 11 Static Barrier RGES and the Proposed Action do not duplicate existing protective measures and would result in beneficial impacts on public safety.

5.5 Relationship between the Short-term Use of the Environment and Long-term Productivity

Short-term uses of the biophysical components of human environment associated with the implementation of the Proposed Action include direct impacts of using busy ports, offshore anchorages, and commercial fairways for equipment testing. Long-term uses of human environment include those impacts that occur over a period of more than 5 years, including permanent resource loss. There are no activities associated with the Proposed Action that would result in short-term resource uses that compromise long-term productivity. The Proposed Action would not result in a change of land use and does not represent a significant loss of open space. The Proposed Action would not consume large amounts of material.

5.6 Unavoidable Impacts

Unavoidable minor adverse impacts would result from implementation of the Proposed Action. Unavoidable adverse impacts are anticipated to be primarily short-term and localized.

Biological Resources. The Proposed Action has the potential to result in minor adverse impacts on clupeid fish. All impacts would be temporary in nature. Although unavoidable, impacts on biological resources are not considered significant. It is unlikely that the Proposed Action would result in adverse impacts on marine mammals, sea turtles, Johnson's seagrass, or threatened or endangered fish.

Underwater Acoustics. The Proposed Action would result in temporary, minor, and localized adverse impacts on existing ambient sound levels. Although unavoidable, noise impacts are not considered significant.

5.7 Irreversible and Irretrievable Commitment of Resources

An irreversible or irretrievable commitment of resources refers to impacts on or losses to resources that cannot be reversed or recovered. Examples are when a species becomes extinct or when wetlands are permanently converted to open water. In either case, the loss is permanent. The irreversible environmental changes that would result from implementation of the Proposed Action involve the consumption of material resources, energy resources, land, biological habitat, and human resources. The use of these resources is considered to be permanent.

Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the impacts that use of these resources will have on future generations. Irreversible impacts primarily result from use or destruction of a specific resource that cannot be replaced within a reasonable time frame (e.g., energy and minerals).

Material Resources. Material resources used for the Proposed Action include materials used to build the components of the underwater inspection/detection systems. None of the materials that would be consumed are considered scarce and would not limit other unrelated construction activities.

Energy Resources. Energy resources used for the Proposed Action would be irretrievably lost. These include petroleum-based products and electricity. Consumption of these energy resources would not place a significant demand on their availability in the region. Therefore, no significant impacts would be expected.

Human Resources. The use of human resources associated with the Proposed Action is not considered an irretrievable loss. The personnel from USF COT are currently employed by the USF COT and would likely be employed by the USF COT if the Proposed Action were not implemented.

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6. Summary of Environmental Analysis

6.1 Testing Locations

Field testing of system components and prototypes would be conducted in both ports and approaches to U.S. ports. The proposed systems would be developed and maintained at the USF COT in St. Petersburg, Florida. As shown in Figures 2-1 through 2-5 and Table 2-1, field testing would be conducted in five primary study areas. In Louisiana, testing would occur in the lower Mississippi River port complex. In Florida, testing would occur in the Port of Tampa/St. Petersburg, Port of Miami, Port Everglades/Ft. Lauderdale, and Port of Jacksonville. Study areas would include shipping approaches to these ports in an area approximately 20 miles (32.2 km) seaward of each port's initial entrance buoy. As presented in Figures 2-1 through 2-5, equipment testing would not occur in ecologically sensitive areas such as seagrass areas and wetlands; marine sanctuaries; North Atlantic right whale (*Eubalaena glacialis)* or Johnson's seagrass (*Holphila johnsonii*) critical habitat; known locations of hardbottom habitats (including coral, vermetid, and coquina reefs); near or on beaches; offshore (seaward of the coast) waters less than 18 feet (5.5 m) deep; where manatees are known to congregate (warmwater refuge sites such as power plant cooling water discharges and areas between power plant cooling water discharges that are in close proximity); marine mammal choke points (such as the mouths of tributaries where manatees are known to congregate); off the coast of Port Everglades/Ft. Lauderdale from 1 January through 1 May, when North Atlantic right whales could be present; or in any area that is designated as "restricted" for environmental reasons in the *Coast Pilot 5 – 33rd Edition* and *Coast Pilot 4 – 37th Edition* (NOAA, 2005a; NOAA, 2005b). A 200-m buffer would be maintained between the equipment testing procedures and the exclusion areas presented in Figures 2-2 through 2-5. In addition, AUVs would only be operated in the offshore study areas and in main shipping channels. While in inshore shipping channels, AUV transponders would be constrained to a 188-dB SPL.

6.2 Equipment

Components of the underwater inspection/detection systems would be deployed for testing purposes only. The technology for the underwater inspection/detection systems must be readily available, proven effective, and affordable, with respect to both procurement and operations. The USF COT would not be limited to any single manufacturers' equipment.

Testing would use underwater components deployed from a surface vessel. Equipment would be transported to and from study locations using existing vehicles and vessels. The proposed systems would be tested on three different platforms: ROVs, AUVs, and poles suspended from surface vessels deployed and controlled from a surface support vessel. Equipment that would propel and steer the ROVs or AUVs through the water is described in Table 2-2.

Acoustic components that would be integrated into the systems would include transponders (used for AUV navigation) and acoustic modems (used for communication with AUV) (17–40 kHz), high frequency sonar (used for device detection) (150–999 kHz), and ultra-high-frequency sonar (used for device identification) (1,000–3,500 kHz). Specifications for the types of sonar that would be tested with the proposed systems are presented in Table 2-3.

An array of optical equipment would also be integrated into the systems for navigation and detailed imaging. Low-powered lasers including point lasers would be used for close-quarters navigation and line lasers would be used for detailed imaging. The lasers are low-powered; their light emissions would attenuate within a short distance. Other optical equipment would include LED lighting and video cameras. The specifications of the optical equipment proposed for testing are presented in Table 2-4.

6.3 Testing Procedures

Testing in real world conditions is necessary to evaluate the systems' actual performance in relation to the operational requirements anticipated by the USCG. Testing could occur during the day or night in fresh, salt, and brackish waters regardless of visibility, and in air and water temperatures and thermoclines normal for a port/harbor environment (arctic to subtropical).

Because the systems would be designed to maintain safety of commercial trafficways, testing would only take place in areas where commercial and military vessels would operate (i.e., busy ports, offshore anchorages, and offshore fairways). Testing would not take place in ecologically sensitive areas as stated above.

The equipment would be used at a range necessary to survey ship hulls, piers, or other underwater infrastructure. The expected maximum distance from these structures should be no greater than 330 feet (100 m) during a wide area survey and 16 feet (5 m) during a targeted inspection. Under normal conditions, it would not be expected that sonar and lasers would be directed into open water, but only toward the intended target. Equipment testing would not block marine species such as marine mammals and sea turtles from foraging, breeding, or nesting areas.

The proposed inspection/detection systems would be deployed for short durations of approximately 8 to 10 hours. The equipment would only be used during this time. Testing would be conducted approximately 40 days per year. The targets for the equipment testing would include typical harbor targets such as commercial and military vessels and underwater port infrastructure such as jetties, seawalls, and bridge abutments. In some cases, target vessels would be arranged ahead of time. In other cases, the researchers can radio to vessels in the area and request permission to survey the hulls. In all cases, the surface vessel supporting the testing would obtain permission from the Coast Guard Sector Commander to conduct the testing. A detailed operations plan for review by the USCG R&DC would be developed for each discrete set of testing cruises that would occur.

Up to two platform types (e.g., ROV and AUV) or component groups (e.g., different groups of lasers or sonars) could be deployed during any single testing event. Sonar and lasers on ROVs and on poles suspended from surface vessels associated with the inspection/detection systems could be shut down to avoid or minimize environmental impacts, including impacts on protected marine species, during testing. As part of the Proposed Action, the following measures would be implemented during all testing cruises.

- Tested equipment would be monitored (by USCG-trained marine mammal observers) at all times.
- A safety zone of 660 feet (200 m) (beyond the 160-dB contour for each equipment type) would be visually monitored (by a USCG-trained marine mammal observer) for marine mammal and sea turtle activity for 20 minutes prior to turning on the system. For sonar testing after dark, night vision devices would be used to monitor safety zones.
- If sonar were deployed and marine mammals or sea turtles were observed which could approach the safety zone, the system would be shut down until the marine mammal or sea turtles exited the area.
- Sonar equipment would not be placed in a location such that it would interfere with obvious marine mammal throughways or cause choke-points where sonar could deter marine mammals' or sea turtles' movement (e.g., testing would not occur near the mouths of tributaries where manatees are known to congregate, on or near beaches, or in offshore waters less than 18 feet deep).

- A 660-foot (200-m) buffer would be maintained between the equipment testing procedures and the exclusion areas presented in Figures 2-2 through 2-5.
- The vessel strike avoidance and reporting measures provided by NMFS, Southeast Region would be followed (Appendix B).
- Support vessels would not anchor while in the Port of Miami and Port Everglades/Ft. Lauderdale offshore study areas. If branching corals are observed with imaging equipment in the Port of Miami and Port Everglades/Ft. Lauderdale offshore study areas, testing will be moved to a different location.

Operational protocols that would be implemented to minimize or avoid potential impacts on existing vessel traffic include

- Testing would not be conducted in designated channels without prior authorization and coordination with the USCG or other appropriate marine authorities.
- Equipment would not be deployed in a location or at a time when activities might interfere with the operation of other vessels or where vessel traffic might interfere with the equipment testing.
- Field testing would not be conducted in areas generally prohibited to other vessels.
- Equipment testing on commercial vessels entering the harbor would only be conducted in direct cooperation with the USCG. Testing would not be scheduled without appropriate communication and coordination with the vessel master or owner as well as any applicable port Pilot authority.

6.4 Conclusion

The Proposed Action meets the USCG's purpose and need, and would not have significant impacts on the quality of the human environment. There is no evidence that protected species or EFH would be adversely affected. The cumulative impact of the Proposed Action on marine transportation, waterborne noise, marine mammals, sea turtles, and protected fisheries, and public safety is expected to be negligible (described in Section 5.4). In addition, implementation of the Proposed Action has the potential for future beneficial impacts on security and safety.

As described in Section 4.3.2, using the underwater inspection/detection systems in the study areas would result in a negligible increase in existing ambient sound levels. As described in Section 4.4.2, based on the frequencies and decibel levels of the sonar components, the power of the laser components, no significant adverse impacts on biological resources are likely.

The Proposed Action (including sonar, laser, and vessel operations) is not likely to adversely affect protected species, including manatees, sperm whale, North Atlantic right whale, nonthreatened and nonendangered marine mammals, sea turtles, Gulf sturgeon, pallid sturgeon, shortnose sturgeon, smalltooth sawfish, Johnson's seagrass, elkhorn coral and staghorn coral based on the following:

- Sperm whales are unlikely to occur in the study areas.
- Equipment testing would avoid all ecologically sensitive areas including areas where manatees are known to congregate; right whale critical habitat, off the coast of Ft. Lauderdale and Port everglades when North Atlantic right whales could occur there from 1 January through 1 May; and Johnson's seagrass critical habitat; known locations of hardbottom habitats (including coral, vermetid, and coquina reefs).

- All sound associated with the systems that are being tested would attenuate below 160 dB (the threshold above which some marine mammals have shown behavioral changes [McInnis, 2004]) in 330 feet (100 m).
- All sound associated with the systems that are being tested are imperceptible to sea turtles, threatened and endangered fish, and most marine mammals.
- The effective distance for all lasers is 7 to 10 feet (2 to 3 m).
- A 660-foot (200-m) safety zone would be monitored by USCG-trained observers for marine mammal and sea turtle activity and all equipment would be shut down if marine mammals or sea turtles would approach the safety zone.
- A 660-foot (200-m) buffer would be maintained between the equipment testing procedures and the exclusion areas presented in Figures 2-2 through 2-5.
- NMFS vessel collision avoidance measures would be followed.
- Support vessels would not anchor while in the Port of Miami and Port Everglades/Ft. Lauderdale offshore study areas. If branching corals are observed with imaging equipment in the Port of Miami and Port Everglades/Ft. Lauderdale offshore study areas, testing will be moved to a different location.
- Equipment testing would only occur 8 to 10 hours a day for 40 days per year.

To date, the USCG has completed three EAs for the establishment and operation of the IAS at Galveston Bay, Texas; San Pedro Bay, California; and a nationwide PEA, which have COTS sonar components proposed for this research. All three EAs resulted in a FONSI. In both cases, no adverse impacts on threatened or endangered species or critical habitat were noted. NMFS' Southeast Regional Office sent a letter, dated April 15, 2004, indicating that the frequency ranges of the high- and ultra-high-frequency sonars associated with the IAS are highly unlikely to be audible for most sea turtles and that the impacts of the IAS on sea turtles "would not be expected under normal operation of the IAS and are so low as to be considered discountable." In a letter dated June 15, 2005, NMFS Headquarters provided its determination that "operation of the IAS in Galveston Bay and San Pedro Bay, in accordance with the mitigation measures [prescribed], is not likely to result in the take of marine mammals." In a letter dated March 20, 2006, NMFS Headquarters provided its concurrence with the USCG's determination that neither listed species nor their critical habitat would be adversely affected by the operation of the IAS on a national level. These letters are presented in Appendix C. Table 2-5 summarizes the impacts associated with the Proposed Action and No Action Alternative.

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B.S. Environmental Science
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M.S. Fisheries Science
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Years of Experience: 32

Mary Young
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B.S. Environmental Science
Years of Experience: 3

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APPENDIX A

INTERESTED PARTY LETTER, MAILING LIST, AND NEWSPAPER ANNOUNCEMENT

U.S. Department of Homeland Security
United States Coast Guard

Commanding Officer
U.S. Coast Guard
Research and Development Center

1082 Shennecossett Road
Groton, CT 06340-6048
Staff Symbol: CO
Phone: (860) 441-2601
Fax: (860) 441-2792

3913/765904
2005-1206
MAR 03 2006

Dear Interested Party:

The U.S. Coast Guard (CG) has prepared a draft Environmental Assessment (EA) and draft Finding of No Significant Impact (FONSI) of field activities associated with testing equipment under development at the University of South Florida (USF), Center for Ocean Technology (COT). Preparation of the EA is being conducted in accordance with the National Environmental Policy Act (NEPA) of 1969 (Section 102[2][c]) and its implementing regulations (40 Code of Federal Regulations [CFR], Part 1500) and CG policy (Commandant's Instruction M16475.1D, Procedures for Considering Environmental Impacts).

The CG Research and Development Center (R&DC) is proposing to fund field research at the USF COT. This research would support development of portable underwater systems designed to detect, classify and identify conventional explosives, improvised explosive devices, or other offensive devices that may be attached to ships' hulls, piers and other underwater infrastructure. The systems would be comprised of commercially available equipment, including sonars and lasers for underwater imaging and navigation and would be mounted on remotely operated vehicles, autonomous underwater vehicles, or poles. USF COT is currently developing similar technology for the U.S. Navy. Testing in real-world conditions is required to evaluate the systems' actual performance capabilities in relation to the operational requirements anticipated by the CG. The systems would be developed for future deployment by Sector Commanders at different locations around the country. The draft EA presents a detailed description of the proposed action, including illustrations of the study areas where the equipment will be tested.

Public input is important to the preparation of the EA. Your concerns and comments regarding the field activities associated with testing equipment under development at the USF COT and the possible environmental impacts are important to the CG. You are invited to request a copy of the draft EA and/or submit comments by 30 calendar days from the date on this letter using only one of the following means:

(1) By mail to:
Commanding Officer
Attn: Mr. Scot T. Tripp
USCG Research and Development Center
1082 Shennecossett Road
Groton, CT 06340-6048

(2) Or, by fax to Mr. Scot T. Tripp at (860) 441-2792

(3) Or by E-mail to Scot.T.Tripp@uscg.mil

3913/765904
2005-1206
MAR 03 2006

You may also download the draft EA and make comments using the Department of Transportation, Docket Management System (DMS) web site, http://dms.dot.gov. When using this method reference Docket Number USCG-2005-23450. Comments may also be delivered to the DMS by the following means:

DMS Mail:
Docket Management Facility
U.S. Department of Transportation
400 Seventh Street SW
Washington, DC 20590-0001

DMS Fax: 202-493-2251

DMS Hand Delivery: Room PL-401 on the Plaza level of the Nassif Building, 400 Seventh Street SW, Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal Holidays. The telephone number is 202-366-9329.

In choosing from these means, please give due regard to the continuing difficulties and delays associated with delivery of mail through the U.S. Postal Service to Federal facilities. Written comments should include your name and address. The CG will consider all comments received no later than the close of business 30 calendar days from the date of this letter in the development and completion of the EA.

Sincerely,

T.W. JONES
Captain, U.S. Coast Guard

Enclosure

Appendix A

Interested Party Mailing List

United States Senate

The Honorable Mel Martinez
United States Senator, Florida
317 Hart Senate Office Building
Washington, DC 20510

The Honorable Bill Nelson
United States Senator, Florida
716 Hart Senate Office building
Washington, DC 20510

The Honorable David Vitter
United States Senator, Louisiana
825-A Hart Senate Office Building
Washington, DC 20510

The Honorable Mary Landrieu
United States Senator, Louisiana
724 Hart Senate Office Building
Washington, DC 20510

United States House of Representatives

The Honorable Michael Bilirakis
United States Representative, Florida
2408 Rayburn House Office Building
Washington, DC 20515-0909

The Honorable F. Allen Boyd, Jr.
United States Representative, Florida
1227 Longworth House Office Building
Washington, DC 20515-0902

The Honorable Ander Crenshaw
United States Representative, Florida
127 Cannon House Office Building
Washington, DC 20515-0904

The Honorable Debbie Wasserman Schultz
United States Representative, Florida
118 Cannon House Office Building
Washington, DC 20515-0920

The Honorable Mark Foley
United States Representative, Florida
104 Cannon House Office Building
Washington, DC 20515-0916

The Honorable Connie Mack
United States Representative, Florida
317 Cannon House Office Building
Washington, DC 20515-0914

The Honorable Kendrick B. Meek
United States Representative, Florida
1039 Longworth House Office Building
Washington, DC 20515-0917

The Honorable John Mica
United States Representative, Florida
2313 Rayburn House Office Building
Washington, DC 20515-0907

The Honorable Jeff Miller
United States Representative, Florida
324 Cannon House Office Building
Washington, DC 20515-0901

The Honorable Katherine Harris
United States Representative, Florida
116 Cannon House Office Building
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The Honorable Ileana Ros-Lehtinen
United States Representative, Florida
2160 Rayburn House Office Building
Washington, DC 20515-0918

The Honorable E. Clay Shaw, Jr.
United States Representative, Florida
1236 Longworth House Office Building
Washington, DC 20515-0922

The Honorable Ginny Brown-Waite
United States Representative, Florida
414 Cannon House Office Building
Washington, DC 20515-0905

The Honorable Dave Weldon
United States Representative, Florida
2347 Rayburn House Office Building
Washington, DC 20515-0915

The Honorable C.W. (Bill) Young
United States Representative, Florida
2407 Rayburn House Office Building
Washington, DC 20515-0910

The Honorable Charles W. Boustany, Jr.
United States Representative, Louisiana
1117 Longworth House Office Building
Washington, DC 20515-1807

The Honorable Charlie Melancon
United States Representative, Louisiana
404 Cannon House Office Building
Washington, DC 20515-1803

The Honorable William Jefferson
United States Representative, Louisiana
2113 Rayburn House Office Building
Washington, DC 20515-1802

The Honorable Bobby Jindal
United States Representative, Louisiana
1205 Longworth House Office Building
Washington, DC 20515-1801

U.S. Environmental Protection Agency

Mr. Heinz Mueller
Chief, Office of Environmental Assessment
Region 4
U.S. Environmental Protection Agency
61 Forsyth Street, SW
Atlanta, GA 30303

Mr. Michael P. Jansky
Regional Environmental Review Coordinator
Region 6, Office of Planning and Coordination
U.S. Environmental Protection Agency
Mail Code 6EN-XP
1445 Ross Avenue
Dallas, TX 75202-2733

State Historic Preservation Offices

Mr. Frederick Gaske
State Historic Preservation Officer
Florida Division of Historical Resources
Department of State
500 S. Bronough Street
Room 305
Tallahassee, FL 32399-0250

Ms. Pamela A. Breaux
State Historic Preservation Officer
Louisiana Department of Culture, Recreation & Tourism
P.O. Box 44247
Baton Rouge, LA 70804

Other Federal Agency Contacts

Mr. Horst Greczmiel
Council on Environmental Quality
360 Old Executive Office Building, NW
Washington, DC 20501

Ms. Andree DuVarney
National Environmental Coordinator
U.S. Department of Agriculture
Natural Resources Conservation Service
14th and Independence Avenue, SW
P.O. Box 2890
Washington, DC 20013

Mr. A. Forester Einarsen
NEPA Coordinator
U.S. Army Corps of Engineers
Office of Environmental Policy (CECW-AR-E)
20 Massachusetts Avenue
Washington, DC 20314-1000

Mr. Rhey Solomon
Director, NEPA Staff
U.S. Department of Agriculture
Forest Service
P.O. Box 96090
Washington, DC 20090-6090

Dr. Willie Taylor
U.S. Department of the Interior
Office of Environmental Policy and Compliance
Main Interior Building, MS 2340
1849 C Street, NW
Washington, DC 20240

Ms. Camille Mittleholtz
Environmental Team Leader
U.S. Department of Transportation
Office of Transportation Policy
400 7th Street, SW
Room 10309
Washington, DC 20590-001

Mr. Don Klima
Director, Office of Planning and Review
Advisory Council on Historic Preservation
1100 Pennsylvania Avenue, NW #809
The Old Post Office Building
Washington, DC 20004

NEPA Single State Points of Contact

Ms. Jasmin Raffington
Coordinator, Florida State Clearinghouse
Department of Community Affairs
2555 Shumard Oak Boulevard
Tallahassee, FL 32399-2100

State Environmental Departments

Dr. Mike McDaniel
Secretary
Louisiana Department of Environmental Quality
P.O. Box 4301
Baton Rouge, LA 70821-4301

Port Authorities

Mr. Rick Ferrin
Executive Director
Jacksonville Port Authority
P.O. Box 3005
2831 Talleyrand Avenue
Jacksonville, FL 32206-0005

Mr. Phillip Allen
Interim Port Director
Port Everglades Business Office
1850 Eller Drive
Fort Lauderdale, FL 33316

Mr. Charles A. Towsley
Director
Dante B. Fascell Port of Miami-Dade
Administrative Offices
1015 N. America Way
2nd Floor
Miami, FL 33132

Mr. Richard Wainio
Port Director/CEO
Tampa Port Authority
1101 Channelside Drive
Tampa, FL 33602

Port of St. Petersburg
250 8th Avenue
St. Petersburg, FL 33701

Mr. Gary LaGrange
President/Chief Executive Officer
Port of New Orleans
P.O. Box 60046
New Orleans, LA 70160

Mr. Roger P. Richard
Chief Executive Officer
Port of Greater Baton Rouge
2425 Ernest Wilson Drive
P.O. Box 380
Port Allen, LA 70767-0380

Mr. Joseph Accardo
Executive Director
Port of South Louisiana
171 Belle Terre Boulevard
P.O. Box 909
LaPlace, LA 70069-0909

Mr. Urban Treuil
Port Manager
Plaquemines Port, Harbor & Terminal District
Edna LaFrance Office Building
124 Ednd LaFrance Road
Braithwaite, LA 70040-9715

Mr. Robert J. Scafidel
Executive Port Director
St. Bernard Port, Harbor & Terminal District
200 Marlin Drive
Chalmette, LA 70043

PUBLIC NOTICE

Environmental Assessment of Testing Equipment Under Development at the University of South Florida, Center for Ocean Technology
U.S. Coast Guard

The United States Coast Guard (USCG) is announcing the availability of the draft Environmental Assessment (EA) and draft Finding of No Significant Impact (FONSI) of field activities associated with testing equipment under development at the University of South Florida (USF), Center for Ocean Technology (COT). The EA is being conducted in accordance with the National Environmental Policy Act (NEPA) of 1969 (Section 102[2][c]) and its implementing regulations at 40 Code of Federal Regulations, Part 1500. This research would support development of a portable underwater system designed to detect, classify and identify conventional explosives, improvised explosive devices, or other offensive devices that may be attached to ships' hulls, piers and other underwater infrastructure. Testing in real world conditions is required to evaluate the system's actual performance in relation to the operational requirements anticipated by the USCG. The system would be developed for future deployment by Sector Commanders at different locations around the country.

The draft EA addresses the overall environmental impacts of testing equipment under development at the USF COT. Your concerns and comments regarding the field activities associated with testing equipment under development at the USF COT and the possible environmental impacts are important to the USCG. You are invited to submit comments by April 10, 2006 using only one of the following means:

(1) By mail to: CG R&DC
Underwater Inspection Systems
1082 Shennecossett Road
Groton, CT 06340
Attn: Mr. Scot T. Tripp

(2) Or, by fax to Mr. Scot T. Tripp at (860) 441-2792

(3) Or by E-mail to stripp@rdc.uscg.mil

You may also download the draft EA and make comments using the Department of Transportation, Docket Management System (DMS) web site, http://dms.dot.gov. When using this method reference Docket Number USCG-2005-23450. Comments may be delivered to the DMS by the following means:

(4) By mail to: Docket Management Facility
U.S. Department of Transportation,
400 Seventh Street SW
Washington, DC 20590-0001

(5) Or, by fax to 202-493-2251

(6) Or, DMS Hand Delivery: Room PL-401 on the Plaza level of the Nassif Building, 400 Seventh Street SW., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal Holidays. The telephone number is 202-366-9329.

In choosing from these means, please give due regard to the continuing difficulties and delays associated with delivery of mail through the U.S. Postal Service to Federal facilities.

Written comments should include your name and address. The USCG will consider all comments received by the close of business April 10, 2006 in the development and completion of the EA.

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APPENDIX B

AGENCY CONSULTATION AND COORDINATION

U.S. Department of Homeland Security
United States Coast Guard

Commanding Officer
U.S. Coast Guard
Research and Development Center

1082 Shennecossett Road
Groton, CT 06340-6048
Staff Symbol: CO
Phone: (860) 441-2601
Fax: (860) 441-2792

3913/765904
2005-1096
MAR 03 2006

Mr. Miles Croom
Assistant Regional Administrator for Habitat Conservation
U. S. Department of Commerce
National Oceanic and Atmospheric Administration F/SER4
9721 Executive Center Drive North
St. Petersburg, FL 33702

Dear Mr. Croom:

The U. S. Coast Guard (CG) has prepared a draft Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) of field activities associated with testing equipment under development at the University of South Florida (USF), Center for Ocean Technology (COT). Preparation of the EA is being conducted in accordance with the National Environmental Policy Act (NEPA) of 1969 (Section 102[2][c]) and its implementing regulations (40 Code of Federal Regulations, Part 1500) and CG policy (Commandant's Instruction M16475.1D, Procedures for Considering Environmental Impacts).

The CG Research and Development Center is proposing to fund field research at the USF COT. This research would support development of portable underwater systems designed to detect, classify and identify conventional explosives, improvised explosive devices (IEDs), or other offensive devices that may be attached to ships' hulls, piers and other underwater infrastructure. The systems would be comprised of commercially available equipment, including sonars and lasers for underwater imaging and navigation and would be mounted on remotely operated vehicles (ROVs), autonomous underwater vehicles (AUVs), or poles. USF COT is currently developing similar technology for the US Navy. Testing in real-world conditions is required to evaluate the systems' actual performance capabilities in relation to the operational requirements anticipated by the CG. The systems would be developed for future deployment by CG field commands at different locations around the country. The enclosed CD-ROM containing the draft EA (enclosure (1)) presents a more detailed description of the Proposed Action, including illustrations of the study areas where the equipment will be tested.

We do not believe that the Proposed Action would have an adverse impact on essential fish habitat. As such, and in accordance with Section 305(b) of the Magnuson-Stevens Act, as amended, we do not believe an essential fish habitat (EFH) consultation is required at this time. However, your concerns and comments regarding the draft EA and field activities associated with testing equipment under development at the University of South Florida (USF), Center for Ocean Technology (COT), and its possible impacts on EFH are important to the CG.

3913/765904
2005-1096
MAR 03 2006

We will also consult with the U.S. Fish and Wildlife Service and NOAA Fisheries Protected Resources Division regarding the presence of threatened and endangered species under their respective jurisdictions.

Thank you for your assistance. We look forward to working with your office on this project. Please send any comments to the CG through one of the following methods. These comments should be received no later than 60 calendar days from the date of this letter.

(1) By mail to:
Commanding Officer
Attn: Mr. Scot T. Tripp
USCG Research and Development Center
1082 Shennecossett Road
Groton, CT 06340-6048

(2) By fax to Mr. Scot T. Tripp at (860) 441-2792

(3) Or by E-mail to Scot.T.Tripp@uscg.mil.

Sincerely,

T. W. JONES
Captain, U. S. Coast Guard

Enclosure

U.S. Department of Homeland Security
United States Coast Guard

Commanding Officer
U.S. Coast Guard
Research and Development Center

1082 Shennecossett Road
Groton, CT 06340-6048
Staff Symbol: CO
Phone: (860) 441-2601
Fax: (860) 441-2792

3913/765904
2005-1097
MAR 03 2006

Mr. David Bernhart
Assistant Regional Administrator for Protected Resources
U. S. Department of Commerce
National Oceanic and Atmospheric Administration F/SER3
263 13th Avenue South
St. Petersburg, FL 33701

Dear Mr. Bernhart:

The U.S. Coast Guard (CG) has prepared a draft Environmental Assessment (EA) and draft Finding of No Significant Impact (FONSI) of field activities associated with testing equipment under development at the University of South Florida (USF), Center for Ocean Technology (COT). Preparation of the EA is being conducted in accordance with the National Environmental Policy Act (NEPA) of 1969 (Section 102[2][c]) and its implementing regulations (40 Code of Federal Regulations, Part 1500) and USCG policy (Commandant's Instruction M16475.1D, Procedures for Considering Environmental Impacts).

The CG Research and Development Center is proposing to fund field research at the USF COT. This research would support development of portable underwater systems designed to detect, classify and identify conventional explosives, improvised explosive devices (IEDs), or other offensive devices that may be attached to ships' hulls, piers and other underwater infrastructure. The systems would be comprised of commercially available equipment, including sonars and lasers for underwater imaging and navigation and would be mounted on remotely operated vehicles (ROVs), autonomous underwater vehicles (AUVs), or poles. USF COT is currently developing similar technology for the U.S. Navy. Testing in real-world conditions is required to evaluate the systems' actual performance capabilities in relation to the operational requirements anticipated by the CG. The systems would be developed for future deployment by CG field commands at different locations around the country. The enclosed CD-ROM containing the draft EA (enclosure (1)) presents a more detailed description of the Proposed Action, including illustrations of the study areas where the equipment will be tested.

In accordance with Section 7 of the Endangered Species Act, as amended, we seek to informally consult with NOAA Fisheries regarding the proposed testing of equipment in the proposed study areas. We intend to have the EA stand as our Biological Assessment (BA) for this proposal. In order to fully assess the potential impacts associated with the Proposed Action on protected resources, we are requesting comments on the draft EA and a list of any additional concerns that NOAA Fisheries may have regarding the potential impacts of the Proposed Action on federally listed species or other marine mammals.

3913/765904
2005-1097
MAR 03 2006

We will also consult with the U.S. Fish and Wildlife Service regarding the presence of threatened and endangered species under their jurisdiction and NOAA Fisheries' Habitat Conservation Division regarding essential fish habitat within the region of interest.

We look forward to working with your office on this project. Please send any comments to the CG through one of the following methods. These comments should be received no later than 60 calendar days from the date of this letter.

(1) By mail to:
Commanding Officer
Attn: Mr. Scot T. Tripp
USCG Research and Development Center
1082 Shennecossett Road
Groton, CT 06340-6048

(2) By fax to Mr. Scot T. Tripp at (860) 441-2792

(3) Or by E-mail to Scot.T.Tripp@uscg.mil.

Sincerely,

T. W. JONES
Captain, U. S. Coast Guard

Enclosure

U.S. Department of Homeland Security
United States Coast Guard

Commanding Officer
Research and Development Center
United States Coast Guard

1082 Shennecossett Road
Groton, CT 06340-6048
Staff Symbol: CO
Phone: (860) 441-2601
Fax: (860) 441-2792

3913/765904
2005-1098
MAR 03 2006

Mr. David Hankla
USFWS-Jacksonville, FL
Ecological Services Field Office
6620 Southpoint Drive, South, #310
Jacksonville, FL 32216

Dear Mr. Hankla:

The U.S. Coast Guard (CG) has prepared a draft Environmental Assessment (EA) and draft Finding of No Significant Impact (FONSI) of field activities associated with testing equipment under development at the University of South Florida (USF), Center for Ocean Technology (COT). Preparation of the EA is being conducted in accordance with the National Environmental Policy Act (NEPA) of 1969 (Section 102[2][c]) and its implementing regulations (40 Code of Federal Regulations, Part 1500) and USCG policy (Commandant's Instruction M16475.1D, Procedures for Considering Environmental Impacts).

The CG Research and Development Center is proposing to fund field research at the USF COT. This research would support development of portable underwater systems designed to detect, classify and identify conventional explosives, improvised explosive devices (IEDs), or other offensive devices that may be attached to ships' hulls, piers and other underwater infrastructure. The systems would be comprised of commercially available equipment, including sonars and lasers for underwater imaging and navigation that would be mounted on remotely operated vehicles (ROVs), autonomous underwater vehicles (AUVs), or poles. USF COT is currently developing similar technology for the U.S. Navy. Testing in real-world conditions is required to evaluate the systems' actual performance capabilities in relation to the operational requirements anticipated by the CG. The systems would be developed for future deployment by CG field commands at different locations around the country. The enclosed CD-ROM containing the draft EA presents a more detailed description of the Proposed Action, including illustrations of the study areas where the equipment will be tested.

In accordance with Section 7 of the Endangered Species Act, as amended, we seek to initiate informal consultation with the Service regarding the testing of equipment in the Florida ports. We intend to have the EA stand as our Biological Assessment (BA) for this proposal. In order to fully assess the potential impacts associated with the Proposed Action on protected resources, we are requesting comments on the draft EA and a list of any additional concerns that USFWS may have regarding the potential impacts of the Proposed Action on federally listed species.

3913/765904
2005-1098
MAR 03 2006

We will also consult with the U.S. Fish and Wildlife Service's Baton Rouge, LA, Field Office and NOAA Fisheries regarding the presence of threatened and endangered species under their jurisdiction and essential fish habitat within the region of interest.

We look forward to working with your office on this project. Please send any comments to the CG through one of the following methods. These comments should be received no later than 60 calendar days from the date of this letter.

(1) By mail to:
Commanding Officer
Attn: Mr. Scot T. Tripp
USCG R&D Center
1082 Shennecossett Road
Groton, CT 06340-6048

(2) By fax to Mr. Scot T. Tripp at (860) 441-2792

(3) Or by E-mail to Scot.T.Tripp@uscg.mil.

Sincerely,

T. W. JONES
Captain, U.S. Coast Guard

Enclosure

U.S. Department of Homeland Security
United States Coast Guard

Commanding Officer
U.S. Coast Guard
Research and Development Center

1082 Shennecossett Road
Groton, CT 06340-6048
Staff Symbol: CO
Phone: (860) 441-2601
Fax: (860) 441-2792

3913/765904
2005-1086
MAR 03 2006

Mr. Russell Watson
USFWS-Lafayette, LA
Endangered Species
646 Cajundome Blvd. #400
Lafayette, LA 70506

Dear Mr. Watson:

The U.S. Coast Guard (CG) has prepared a draft Environmental Assessment (EA) and draft Finding of No Significant Impact (FONSI) of field activities associated with testing equipment under development at the University of South Florida (USF), Center for Ocean Technology (COT). Preparation of the EA is being conducted in accordance with the National Environmental Policy Act (NEPA) of 1969 (Section 102[2][c]) and its implementing regulations (40 Code of Federal Regulations [CFR], Part 1500) and CG policy (Commandant's Instruction M16475.1D, Procedures for Considering Environmental Impacts).

The CG Research and Development Center is proposing to fund field research at the USF COT. This research would support development of portable underwater systems designed to detect, classify, and identify conventional explosives, improvised explosive devices (IEDs), or other offensive devices that may be attached to ships' hulls, piers and other underwater infrastructure. The systems would be comprised of commercially available equipment, including sonars and lasers for underwater imaging and navigation and would be mounted on remotely operated vehicles (ROVs), autonomous underwater vehicles (AUVs), or poles. USF COT is currently developing similar technology for the U. S. Navy. Testing in real-world conditions is required to evaluate the systems' actual performance capabilities in relation to the operational requirements anticipated by the CG. The systems would be developed for future deployment by CG field commands at different locations around the country. The enclosed CD-ROM containing the draft EA (enclosure (1)) presents a more detailed description of the Proposed Action, including illustrations of the study areas where the equipment will be tested.

In accordance with Section 7 of the Endangered Species Act, as amended, we seek to initiate informal consultation with the Service regarding the testing of equipment in the Lower Mississippi River Port Complex, Louisiana. We intend to have the EA stand as our Biological Assessment (BA) for this proposal. In order to fully assess the potential impacts associated with the Proposed Action on protected resources, we are requesting comments on the draft EA and a list of any additional concerns that USFWS may have regarding the potential impacts of the Proposed Action on federally listed species.

3913/765904
2005-1086
MAR 03 2006

We will also consult with the USFWS Jacksonville Florida Field Office and NOAA Fisheries regarding the presence of threatened and endangered species under their jurisdiction and essential fish habitat within the study areas.

Please send any comments to the CG through one of the following methods. These comments should be received no later than 60 calendar days from the date of this letter.

(1) By mail to:
Commanding Officer
Attn: Mr. Scot T. Tripp
USCG Research and Development Center
1082 Shennecossett Road
Groton, CT 06340-6048

(2) By fax to Mr. Scot T. Tripp at (860) 441-2792

(3) Or by E-mail to Scot.T.Tripp@uscg.mil.

Thank you for your assistance. If you have questions about the proposed testing of equipment under development please contact Mr. Scot T. Tripp at (860) 441-2680. We look forward to working with your office on this project.

Sincerely,

T. W. JONES
Captain, U. S. Coast Guard

Enclosure

U.S. Department of Homeland Security
United States Coast Guard

Commanding Officer
U.S. Coast Guard
Research and Development Center

1082 Shennecossett Road
Groton, CT 06340-6048
Staff Symbol: CO/TD
Phone: (860) 441-2601
Fax: (860) 441-2792

3913/765904
2005-1207
MAR 03 2006

Ms. Lynn Griffin
Director
Florida Coastal Management Program
Department of Environmental Protection
Mail Station #47
3900 Commonwealth Boulevard
Tallahassee, FL 32399-3000

Dear Ms. Griffin:

The U.S. Coast Guard (CG) has prepared a draft Environmental Assessment (EA) of field activities associated with testing equipment under development at the University of South Florida (USF), Center for Ocean Technology (COT). Preparation of the EA is being conducted in accordance with the National Environmental Policy Act (NEPA) of 1969 (Section 102[2][c]) and its implementing regulations (40 Code of Federal Regulations, Part 1500) and CG policy (Commandant's Instruction M16475.1D, Procedures for Considering Environmental Impacts).

Enclosed for your review is the Draft Environmental Assessment regarding the Proposed Action (enclosure (1), CD-ROM) and the CG's Consistency Determination (enclosure (2)). The Consistency Determination was developed in accordance with the Coastal Zone Management Act (CZMA) Section 307(c)(1) and Title 15 Code of Federal Regulations (CFR) Part 930, subpart C, for the Proposed Action. Pursuant to 15 CFR Section 930.41, you have sixty (60) days from the receipt of this letter and accompanying information in which to concur with or object to the CG's Consistency Determination, or to request an extension. The State's concurrence will be presumed if the State's response is not received by the CG on the 60th day from the date of this letter. The State's response should be sent using only one of the methods listed below.

(1) By mail to:
Commanding Officer
Attn: Mr. Scot T. Trip
USCG R&D Center
1082 Shennecossett Road
Groton, CT 06340-6048

(2) Or, by fax to Mr. Scot T. Tripp at (860) 441-2792

(3) Or by E-mail to Scot.T.Tripp@uscg.mil

3913/765904
2005-1207
MAR 03 2006

Thank you for your assistance. If you have questions about the proposed testing of equipment under development, please contact Mr. Scot T. Tripp at (860) 441-2680. We look forward to working with your office on this project.

Sincerely,

T. W. JONES
Captain, U.S. Coast Guard

2 Enclosures

ENCLOSURE 2:
U.S. COAST GUARD COASTAL ZONE MANAGEMENT ACT (CZMA)
CONSISTENCY DETERMINATION

This document provides the Florida Department of Environmental Protection, Office of Intergovernmental Programs, Coastal Zone Management Program with the United States Coast Guard's (CG) Consistency Determination (CZMA Section 307[c][1] and 15 CFR Part 930, subpart C) regarding testing equipment in the Ports of St. Petersburg/Tampa, Port of Miami, Port of Ft. Lauderdale/Port Everglades, and Port of Jacksonville. The equipment is under development at the University of South Florida (USF), Center for Ocean Technology (COT) in St. Petersburg, Florida.

Necessary Data and Information:
The CG is announcing the availability of a draft Environmental Assessment (EA) for testing equipment under development at the University of South Florida, Center for Ocean Technology. The research would support development of portable underwater systems designed to detect, classify, and identify conventional explosives, improvised explosive devices (IEDs), or other destructive devices that could be attached to ships' hulls, piers and underwater infrastructure. The systems would be comprised of commercially available equipment, including sonar and laser imaging and navigation equipment mounted on remotely operated vehicles (ROVs), autonomous underwater vehicles (AUVs), or pole-mounts. Security systems developed through the proposed research would be available for deployment by Coast Guard Sector Commanders (formerly known as Captains of the Ports) at different locations around the country.

Under Florida's Coastal Zone Management Act (Title XXVIII, Chapter 380, Section 23), the Florida Department of Environmental Protection may review all "federal development projects and activities of federal agencies which significantly affect coastal waters and the adjacent shorelands of the state" to ensure that they "are conducted in accordance with the state's coastal management program." The EA will assess the impacts of the Proposed Action on coastal resources that are provided under the 23 State Statutes that compose the Florida Coastal Management Plan.

The CG has initiated informal consultation with the U.S. Fish and Wildlife Service (USFWS) and NOAA Fisheries to explore potential impacts to species protected under the Endangered Species Act (16 U.S.C. §§1531-1544) and the Marine Mammal Protection Act (16 U.S.C. §§1361-1421). If necessary, all permits required will be obtained.

However, at this time no significant impacts on Florida's coastal resources are anticipated. The Proposed Action is consistent with state policies regarding living resources, water resources and beach and shore preservation, and should not present any foreseeable effects on these resources. Furthermore, in accordance with Florida's legislative policy for conservation (Title XXXV, Chapter 582, Section 5), the Proposed Action serves to "protect the tax base, protect public lands, and protect and promote the public health, safety and general welfare of the people" by providing enhanced port security.

Based upon the preceding information, data and analysis, the CG finds that testing the equipment under development in Florida coastal waters is consistent to the maximum extent practicable with the enforceable policies of the Florida Coastal Management Program.

Pursuant to 15 CFR Section 930.41, the Florida Coastal Management Program has sixty (60) days from the receipt of this letter and accompanying information in which to concur with or object to this CG Consistency Determination, or to request an extension. The State's concurrence will be presumed if the State's response is not received by the CG on the 60th day from the date on this Consistency Determination's cover letter. You may submit comments through Mr. Scot Tripp (address on cover letter).

U.S. Department of Homeland Security
United States Coast Guard

Commanding Officer
U.S. Coast Guard
Research and Development Center

1082 Shennecossett Road
Groton, CT 06340-6048
Staff Symbol: CO/TD
Phone: (860) 441-2601
Fax: (860) 441-2792

3913/765904
2005-1210
MAR 03 2006

Mr. Gerry Dusvynski
Acting Assistant Secretary
Louisiana Coastal Resources Program
Department of Natural Resources
Coastal Management Division
625 North Fourth Street
P.O. Box 44487
Baton Rouge, LA 70802

Dear Mr. Dusvynski:

The U.S. Coast Guard (CG) has prepared a draft Environmental Assessment (EA) of field activities associated with testing equipment under development at the University of South Florida (USF), Center for Ocean Technology (COT). Preparation of the EA is being conducted in accordance with the National Environmental Policy Act (NEPA) of 1969 (Section 102[2][c]) and its implementing regulations (40 Code of Federal Regulations, Part 1500) and CG policy (Commandant's Instruction M16475.1D, Procedures for Considering Environmental Impacts).

Enclosed for your review is the Draft Environmental Assessment regarding the Proposed Action (enclosure (1), CD-ROM) and the CG's Consistency Determination (enclosure (2)). The Consistency Determination was developed in accordance with the Coastal Zone Management Act (CZMA) Section 307(c)(1) and Title 15 Code of Federal Regulations (CFR) Part 930, subpart C, for the Proposed Action. Pursuant to 15 CFR Section 930.41, you have sixty (60) days from the receipt of this letter and accompanying information in which to concur with or object to the CG's Consistency Determination, or to request an extension. The State's concurrence will be presumed if the State's response is not received by the CG on the 60th calendar day from the date of this letter. The State's response should be sent using only one of the methods listed below.

(1) By mail to:
Commanding Officer
Attn: Mr. Scot T Tripp
USCG R&D Center
1082 Shennecossett Road
Groton, CT 06340-6048

(2) Or, by fax to Mr. Scot T. Tripp at (860) 441-2792

(3) Or by E-mail to Scot.T.Tripp@uscg.mil

3913/765904
2005-1210
MAR 03 2006

Thank you for your assistance. If you have questions about the proposed testing of equipment under development, contact Mr. Scot T. Tripp at (860) 441-2680. We look forward to working with your office on this project.

Sincerely,

T. W. JONES
Captain, U.S. Coast Guard

2 Enclosures

ENCLOSURE 2:
USCG COASTAL ZONE MANAGEMENT ACT (CZMA) CONSISTENCY DETERMINATION

This document provides the Louisiana Department of Natural Resources, Office of Coastal Restoration and Management, Coastal Management Division with the United States Coast Guard's (USCG) Consistency Determination (CZMA Section 307[c][1] and 15 CFR Part 930, subpart C) regarding testing equipment in the lower Mississippi River port complex. The equipment is under development at the University of South Florida (USF), Center for Ocean Technology (COT) in St Petersburg, Florida.

Necessary Data and Information:
The USCG is announcing the availability of a draft Environmental Assessment (EA) and draft Finding of No Significant Impact (FONSI) of field activities associated with testing equipment under development at the University of South Florida, Center for Ocean Technology. The research would support development of portable underwater systems designed to detect, classify, and identify conventional explosives, improvised explosive devices (IEDs), or other destructive devices that could be attached to ships' hulls, piers and underwater infrastructure. The systems, comprised of commercially available equipment, would include sonar and laser imaging and navigation equipment mounted on remotely operated vehicles (ROVs), autonomous underwater vehicles (AUVs), or pole-mounts. Security systems developed through the proposed research would be available for deployment by Sector Commanders (formerly known as Captains of the Ports) at different locations around the country.

Under Louisiana's State and Local Coastal Resources Management Act (Louisiana Revised Statutes, Title 49, Section 214.32), "any governmental body undertaking, conducting, or supporting activities directly affecting the coastal zone shall ensure that such activities shall be consistent to the maximum extent practicable with the state program and any affected approved local program having geographical jurisdiction over the action." The EA will assess the impacts of the Proposed Action on coastal resources in accordance with the policies enumerated in Louisiana Administrative Code (L.A.C.), Title 43, Chapter 7, Section 701.F, Guidelines Applicable to All Uses.

The USCG has initiated informal consultation with the U.S. Fish and Wildlife Service (USFWS) and NOAA-Fisheries to explore potential impacts to species protected under the Endangered Species Act (16 U.S.C. §§1531-1544) and the Marine Mammal Protection Act (16 U.S.C. §§1361-1421). If necessary, all permits required will be obtained.

However, at this time, no significant impacts on Louisiana's coastal resources are anticipated. The Proposed Action, which serves to enhance public safety and port security, is consistent with the guidelines listed in 43 L.A.C 701 in that it is a water-dependent activity serving regional, state and national interests, while avoiding adverse impacts to biological, cultural, historical and archeological resources.

Based upon the preceding information, data and analysis, the USCG finds that testing equipment under development in Louisiana coastal waters is consistent to the maximum extent practicable with the enforceable policies of the Louisiana Coastal Management Program.

Pursuant to 15 CFR Section 930.41, the Louisiana Coastal Management Program has sixty (60) days from the receipt of this letter and accompanying information in which to concur with or object to this USCG Consistency Determination, or to request an extension. The State's concurrence will be presumed if the State's response is not received by the USCG on the 60th day from the date on this Consistency Determination's cover letter. You may submit comments through Mr. Scot Tripp (address on cover letter).

FLORIDA DEPARTMENT OF STATE
Sue M. Cobb
Secretary of State
DIVISION OF HISTORICAL RESOURCES

April 27, 2006

Capt. T.W. Jones
United States Coast Guard
Research and Development Center
1082 Shennecossett Road
Groton, Connecticutt 06340-6048

RE: DHR Number: 2006-2186/ Date Additional Information Received: April 13, 2006
United States Coast Guard Research and Development Center
Draft Environmental Assessment (EA) of Testing Equipment Under Development at the University of South Florida, Center for Ocean Technology/ Pinellas County

Dear Capt. Jones:

Our office received and reviewed the above referenced project in accordance with Section 106 of the *National Historic Preservation Act of 1966*, as amended and *36 CFR Part 800: Protection of Historic Properties* and the *National Environmental Policy Act of 1969, as amended.* The State Historic Preservation Officer is to advise Federal agencies as they identify historic properties (archaeological, architectural, and historical) listed, or eligible for listing, in the *National Register of Historic Places*, assess effects upon them, and consider alternatives to avoid or minimize adverse effects.

We reviewed Sections 3.1.1, Cultural Resources, of the referenced draft EA, and concur with the determination that it is unlikely that historic properties will be affected because of the nature and/or location of the proposed project.

If there are any questions concerning our comments, please contact Janice Maddox, Historic Sites Specialist, by electronic mail at jmaddox@dos.state.fl.us, or by phone at 850/245-6333. Thank you for your interest in protecting Florida's historic properties.

Sincerely,

Frederick P. Gaske

Frederick P. Gaske, Director, and
State Historic Preservation Officer

500 S. Bronough Street • Tallahassee, FL 32399-0250 • http://www.flheritage.com

☐ Director's Office (850) 245-6300 • FAX: 245-6436
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☐ Central Florida Regional Office (813) 272-3843 • FAX: 272-2340

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE

Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701-5511
(727) 824-5317; FAX (727) 824-5300
http://sero.nmfs.noaa.gov/

May 2, 2006 F/SER4:DD

Commanding Officer
U.S. Coast Guard
Research and Development Center
1082 Shennecossett Road
Groton, Connecticut 06340-6048

Attn: Mr. Scot T. Tripp

NOAA's National Marine Fisheries Service (NMFS), Southeast Region, Habitat Conservation Division has received your March 3, 2006, request for review of the Draft Environmental Assessment (EA) for the testing of portable underwater systems designed to detect, classify, and identify threatening or offensive devices that may be attached to ships' hulls, piers, and other underwater infrastructure. Testing equipment is under development at the University of South Florida Center for Ocean Technology (USF COT) and would be evaluated under real-world conditions at five study areas. The EA evaluates the effects associated with research into and evaluation of equipment by the USF COT at locations associated with the Lower Mississippi River Ports Complex, Louisiana, and the Ports of Tampa/St. Petersburg, Miami, Fort Lauderdale (Port Everglades), and Jacksonville, Florida, that include the shipping approaches to the ports in an area approximately 20 miles seaward of each port's initial entrance buoy.

General comments

The NMFS finds the identification and discussion of affected biological resources to be narrowly focused on species afforded protection by the Endangered Species Act (ESA) and Marine Mammals Protection Act (MMPA) as well as species where essential fish habitat (EFH) has been identified in accordance with the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act). Additionally, with regard to EFH the discussion is again narrowly focused on the managed fishery species rather than the habitat components that are afforded protection by the EFH consultation requirements of the Magnuson-Stevens Act. A more comprehensive discussion of the physical and biological environment would appear to be warranted.

The EA correctly concludes that the study areas are located in areas identified as EFH in the 1998 and 2005 Amendments to the Fishery Management Plans (FMP) prepared by the South Atlantic Fishery Management Council (SAFMC) and Gulf of Mexico Fishery Management Council (GMFMC), respectively. The Port of Jacksonville study area also lies within the range of habitats used by bluefish identified as EFH by the Mid-Atlantic Fishery Management Council (MAFMC). Representative categories of EFH in the Gulf of Mexico project areas include: estuarine emergent wetlands; mangrove wetlands; submerged aquatic vegetation; algal flats; mud, sand, shell, and rock substrates; estuarine and marine water column; and, live bottoms. Similarly, categories of EFH in the South Atlantic project areas include: estuarine emergent wetlands; estuarine scrub/shrub mangroves; submerged aquatic vegetation; oyster reefs and shell banks; intertidal flats; palustrine emergent and forested wetlands; aquatic beds; estuarine and marine water column; live/hard bottoms; coral and coral reefs; artificial/manmade reefs; and, Sargassum.

The EA also correctly notes that as specified in the Magnuson-Stevens Act, EFH consultation is required for federal actions which may adversely affect EFH.

Specific comments

Page 3-18; line 15: We recommend striking "Office of Highly Migratory Species" as the agency is responsible for fisheries management.

Page 3-18; lines 17-20: Within the area encompassed by the NMFS Southeast Region, EFH has been identified for hundreds of marine species covered by 20 FMPs, under the auspices of the Gulf of Mexico, South Atlantic, or Caribbean FMC or the NMFS. A generic FMP amendment delineating EFH and Habitat Areas of Particular Concern (HAPC) for species managed by the Gulf of Mexico FMC was completed and approved in early 1999. The generic FMP subsequently was updated and revised in 2005 and became effective in January 2006 (70 FR 76216).

Page 3-19; Table 3-3: We recommend replacing this table with the species lists found in Appendixes 2 and 3 of the enclosed *Essential Fish Habitat: A Marine Fish Habitat Conservation Mandate For Federal Agencies - Gulf of Mexico Region.* Table 3-3 as presented in the Draft EA focuses solely on those species with EFH descriptions approved in 1998 and erroneously identifies the life-stage as the protected component. Rather it is the habitat designated as EFH for that species' life history stage that is afforded protection by the consultation requirements of the Magnuson-Stevens Act.

Page 3-25; line 11: We recommend replacing "Fish with EFH.." with "Federally managed species in the Gulf of Mexico that may be found…".

Page 3-26; lines 7-9: We recommend replacing "Fish with EFH.." with "Federally managed species in the Gulf of Mexico that may be found…" and adding "…in the study area." to the last sentence.

Page 3-29; line 14: Again, we recommend striking "Office of Highly Migratory Species" as the agency is responsible for fisheries management.

Pages 3-30 & 3-31; Table 3-5: We recommend replacing this table with the species lists found in Appendixes 2 and 3 of the enclosed *Essential Fish Habitat: A Marine Fish Habitat Conservation Mandate For Federal Agencies – South Atlantic Region*. Table 3-5 as presented in the Draft EA focuses solely on those species with EFH descriptions approved in 1998 and erroneously identifies the life-stage as the protected component. Rather it is the habitat designated as EFH for that species' life history stage that is afforded protection by the consultation requirements of the Magnuson-Stevens Act.

Page 3-32; line 13: We recommend replacing "…that have EFH…" with "…that may be found…".

Page 3-33; lines 6 and 22: We recommend replacing "…that have EFH…" with "…that may be found…".

Page 4-11; lines 8-9 & 23-24: These sections state that the proposed actions could result in minor adverse impacts to EFH. These sections therefore contradict the Conclusions stated in Section 6.4 (page 6-3) and the views of the USCG in your March 3, 2006, EFH Coordination letter indicating that the proposed action would not have an adverse impact on essential fish habitat and EFH consultation is not required.

Conclusion

In its current form the EA fails to accurately describe EFH, but as the federal action agency in this matter, the U.S. Coast Guard (USCG) has determined that the proposed actions would not adversely affect EFH. NMFS has evaluated the type and level of impacts that might occur on EFH and to whether associated environmental harm can be reasonably offset. Based on our review, we agree with your determination.

Thank you for the opportunity to provide these comments. Please be advised that separate comments may be provided by the NMFS Protected Resources Division. Related questions or comments should be directed to the attention of Mr. David Dale at (727) 824-5317 or by e-mail at David.Dale@noaa.gov.

Sincerely,

/ for

Miles M. Croom
Assistant Regional Administrator
Habitat Conservation Division

Enclosures

cc (via electronic mail):
F/SER4
F/SER3-Hawk
F/SER46-Ruebsamen

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
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263 13th Avenue South
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APR 28 2006

F/SER32:KPB

Mr. Scot T. Tripp
USCG Research and Development Center
1082 Shennecosset Road
Groton, CT 06340-6048

Dear Mr. Tripp:

The National Marine Fisheries Service (NMFS) has received your March 3, 2006, letter and draft environmental assessment (DEA) for field activities associated with testing equipment under development at the University of South Florida, Center for Ocean Technology. The proposed action is to develop underwater detection/inspection systems to enhance the U.S. Coast Guard's underwater security capabilities. You have requested comments on the draft EA and a list of any potential concerns regarding species listed or critical habitat designated under the Endangered Species Act (ESA).

Comments on the Study Areas

The study area maps and description should show the water depths and biologically sensitive areas that will be avoided by the testing. The study area maps show a rather large area in both terrestrial and aquatic environments, in some cases extending approximately 30 to 40 miles offshore (e.g., the ports of the Lower Mississippi, Fort Lauderdale/Everglades, and Miami study areas). If the study areas extend that far offshore, additional marine mammals species protected under the Marine Mammal Protection Act may be required to be included in the effects analysis. NMFS recommends clearly demarcating the boundaries of each study, showing water depth, bottom features, Gulf sturgeon critical habitat, sea turtle nesting beaches, and other biologically important areas.

Listed Species in Each Study Area

The action area of the project includes all areas to be affected directly or indirectly by the action, and not merely the immediate area involved in the action (50 CFR 402.02). The action area for this project is considered to be all the estuarine and marine environments affected in the five study areas associated with the equipment testing for this project in the Atlantic Ocean and Gulf of Mexico as shown in Figures 2-2 to 2-5 in the DEA. The species listed and critical habitat designated in the study areas appear in Table 1.

Table 1. Protected species under NMFS' jurisdiction in the port study areas described in the draft EA.

	PORT STUDY AREA				
	Jacksonville	Fort Lauderdale/Port Everglades	Miami	St. Petersburg/ Tampa	Lower Mississippi River Complex
Endangered					
Kemp's ridley sea turtle		•	•	•	•
leatherback sea turtle		•	•		•
hawksbill sea turtle					
green sea turtle[a]		•	•	•	
smalltooth sawfish		•	•	•	
shortnose sturgeon	•				
humpback whale		•	•	•	
North Atlantic right whale		•			
sperm whale					•
Johnson's seagrass		•	•		
Threatened					
Gulf sturgeon					•
green sea turtle[b]					•
Critical Habitat					
Gulf sturgeon unit 8					•
Johnson's seagrass, Hobe Sound and Jupiter Inlet unit			•		
Jonhson's seagrass, Northern Biscayne Bay unit			•	•	

[a] Endangered Florida breeding population
[b] Threatened throughout range, except Florida where endangered

The DEA does not identify all the species and critical habitats potentially occurring in the study areas. NMSF recommends an analysis of effects be completed on each species for all actions occurring in the study areas. The potential for each species to be affected should be assessed in the EA, as well as an analysis of the effects of the action on critical habitat. Conclusions should be made regarding the effects of the proposed action (i.e., will there be take as defined in the ESA), and each conclusion should include a request for concurrence from NMFS. Additional information on the preparation of an ESA analysis and section 7 consultation requirements and terminology is enclosed with this letter.

NMFS agrees that the potential for the sonar testing to adversely affect listed species will be greatest at relatively close ranges and believes that the mitigations proposed for marine mammals are sufficient, but additional details such as observer training, identifying "choke" points, and such, should be discussed in greater detail during consultation on this project. In regard to sound propagation, the EA assumes the propagation characteristics will be the same for all environments. No propagation model is shown or referenced to verify that the 200-m safety zone for marine mammals is sufficient to monitor for a zone of influence to 160 dB. Propagation of the sounds produced from the test equipment within rivers, channels, and bays will be very different than in open-water environments. The study areas described suggest that some areas may be ensonified that may create a barrier to the passage of animals. The ensonification of a river or mouth of an inlet or bay could have consequences on the migratory behavior of listed species and movement of marine mammals through preferred habitats that could affect foraging, nursing, breeding, or access to sheltering areas. We recommend that the attenuation of sound be modeled for each equipment type in the representative environments of each study area.

Thank you for your cooperation in conserving our protected resources. Please contact the Protected Resources Division, at (727) 551-5789 or at Kyle.Baker@noaa.gov with any questions about this letter.

Sincerely,

David Bernhart
Assistant Regional Administrator
for Protected Resources

Enclosure

Ref: I/SER/2006/00956
File: 1514-22.H.2

National Marine Fisheries Service
Recommendations for the Contents of
Biological Assessments and Biological Evaluations

When preparing a Biological Assessment (BA) or Biological Evaluation (BE), keep in mind that the people who read or review this document may not be familiar with the project area or what is proposed by the project. Therefore your BA or BE should present a clear line of reasoning that explains the proposed project and how you determined the effects of the project on each threatened or endangered species, or critical habitat, in the project area. Try to avoid technical jargon not readily understandable to people outside your agency or area of expertise. Remember, this is a **public document**. Some things to consider and, if appropriate, to include in your BA or BE, follow.

1. What is the difference between a Biological Evaluation and a Biological Assessment?

By regulation, a Biological Assessment is prepared for "major construction activities" — defined as "a construction project (or other undertaking having similar physical effects) which is a major Federal action significantly affecting the quality of the human environment (as referred to in the National Environmental Policy Act of 1969 (NEPA) [(42 U.S.C. 4332(2)(C)])." A BA is required if listed species or critical habitat may be present in the action area. A BA also may be recommended for other activities to ensure the agency's early involvement and increase the chances for resolution during informal consultation. Recommended contents for a BA are described in 50 CFR 402.12(f).

Biological Evaluation is a generic term for all other types of analyses in support of consultations. Although agencies are not required to prepare a Biological Assessment for non-major construction activities, **if a listed species or critical habitat is likely to be affected, the agency must provide the Service with an evaluation on the likely effects of the action.** Often this information is referred to as a BE. The Service uses this documentation along with any other available information to decide if concurrence with the agency's determination is warranted. Recommended contents are the same as for a BA, as referenced above.

The BAs and BEs should not be confused with Environmental Assessments (EA) or Environmental Impact Statements (EIS) which may be required for NEPA projects. These EAs and EISs are designed to provide an analysis of multiple possible alternative actions on a variety of environmental, cultural, and social resources, and often use different definitions or standards. However, if an EA or EIS contains the information otherwise found in a BE or BA regarding the project and the potential impacts to listed species, it may be submitted in lieu of a BE or BA.

2. What are you proposing to do?

Describe the project. A project description will vary, depending on the complexity of the project. For example, describing the construction or removal of a fixed aid-to-navigation in the Intracoastal Waterway, or the abandonment/dismantling of an oil-producing-platform may be relatively simple, but describing a the extent and amplitude of potential impacts of military training exercises involving different military assets, combinations of weaponry, locations, and seasons would necessarily be more detailed and complex. Include figures and tables if they will help others understand your proposed action and its relationship with the species' habitat.

How are you (or the project proponent) planning on carrying out the project? What tools or methods may

be used? How will the site be accessed? When will the project begin, and how long will it last?

Describe the "action area" (all areas to be affected directly or indirectly by the Federal action and not merely the immediate areas involved in the action [50 CFR 402.02]). Always include a map (topographic maps are particularly helpful). Provide photographs including aerials, if available. Describe the project area (i.e., topography, vegetation, condition/trend).

Describe current management or activities relevant to the project area. How will your project change the area?

Supporting documents are very helpful. If you have a blasting plan, best management practices document, sawfish/sea turtle/sturgeon conservation construction guidelines, research proposal, NEPA or other planning document or any other documents regarding the project, attach them to the BA or BE.

3. What threatened or endangered species, or critical habitat, may occur in the project area?

A request for a species list may be submitted to the Service, or the Federal action agency or its designated representative may develop the list. If you have information to develop your own lists, the Service should be contacted periodically to ensure that changes in species' status or additions/deletions to the list are included. Sources of biological information on federally-protected sea turtles, sturgeon, Gulf sturgeon (and Gulf sturgeon critical habitat), and other listed species and candidate species can be found at the following website addresses: NMFS Southeast Regional Office, Protected Resources Division (http://sero.nmfs.noaa.gov/pr/protres.htm); NMFS Office of Protected Resources (http://www.nmfs.noaa.gov/pr/species); U.S. Fish and Wildlife Service (http://noflorida.fws.gov/SeaTurtles/seaturtle-info.htm); http://www.nmfs.noaa.gov/pr/; http://www.sad.usace.army.mil/protected%20resources/turtles.htm; http://endangered.fws.gov/wildlife.html#Species; the Ocean Conservancy (http://www.ene-ocean.org/main.php3); the Caribbean Conservation Corporation (http://www.cccturtle.org/); Florida Fish and Wildlife Conservation Commission (http://floridaconservation.org/psm/turtles/turtle.htm); http://www.turtles.org; http://www/seaturtle.org; http://alabama.fws.gov/gs/; http://obis.env.duke.edu/data/sp_profiles.php; www.mote.org/~colins/Sawfish/SawfishHomePage.html; www.floridasawfish.com; http://www.flmnh.ufl.edu/fish/Sharks/sawfish/srt/srt.htm; www.flmnh.ufl.edu/fish/sharks/InNews/sawprop.htm; also, from members of the public or academic community, and from books and various informational booklets. Due to budget constraints and staff shortages, we are only able to provide general, state-wide, or country-wide (territory-wide) species lists.

Use your familiarity with the project area when you develop your species lists. Sometimes a species may occur in the larger regional area near your project, but the habitat necessary to support the species is not in the project area (including areas that may be beyond the immediate project boundaries, but within the area of influence of the project. If, for example, you know that the specific habitat type used by a species does not occur in the project area, it does not need to appear on the species list for the project. However, documentation of your reasoning is helpful for Service biologists or anyone else that may review the document.

4. Have you surveyed for species that are known to occur or have potential habitat in the proposed project area?

The "not known to occur here" approach is a common flaw in many BA/BEs. The operative word here is "known." Unless adequate surveys have been conducted or adequate information sources have been

referenced, this statement is difficult to interpret. It begs the questions "Have you looked?" and "How have you looked?" Always reference your information sources.

Include a clear description of your survey methods so the reader can have confidence in your results. Answer such questions as:

How intensive was the survey? Did you look for suitable habitat or did you look for individuals? Did the survey cover the entire project area or only part of it? Include maps of areas surveyed if appropriate.

Who did the surveys and when? Was the survey done during the time of year/day when the plant is growing or when the animal can be found (its active period)? Did the survey follow accepted protocols?

If you are not sure how to do a good survey for the species, the Service recommends contacting species experts. Specialized training is required before you can obtain a permit to survey for some species.

Remember that your evaluation of potential impacts from a project does not end if the species is/are not found in the project area. You must still evaluate what effects would be expected to the habitat, even if it is not known to be occupied, because impacts to habitat that may result indirectly in death or injury to individuals of listed species would constitute "take".

5. Provide background information on the threatened or endangered species in the project area.

Describe the species in terms of overall range and population status. How many populations are known? How many occur in the project area? What part of the population will be affected by this project? Will the population's viability be affected? What is the current habitat condition and population size and status? Describe related items of past management for the species, such as stocking programs, habitat improvements, or loss of habitat or individuals caused by previous projects.

6. How will the project affect the threatened or endangered species or critical habitat that occur in the project area?

If you believe the project will not affect the species, explain why. Effects analyses must include evaluating whether adverse impacts to species' habitats, whether designated or not, could indirectly harm or kill listed species.

If you think the project may affect the species, explain what the effects might be. The Endangered Species Act requires you consider all effects when determining if an action funded, permitted, or carried out by a Federal agency may affect listed species. Effects you must consider include direct, indirect, and cumulative effects. Effects include those caused by interrelated and interdependent actions, not just the proposed action. Direct effects are those caused by the action and occur at the same time and place as the action. Indirect effects are caused by the action and are later in time but are reasonably certain to occur. Interrelated actions are those that are part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no significant independent utility apart from the action under consideration. Interrelated or interdependent actions can include actions under the jurisdiction of other federal agencies, state agencies, or private parties. Cumulative effects are those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal actions subject to consultation.

Describe measures that have or will be taken to avoid or eliminate adverse effects or enhance beneficial

effects to the species. Refer to conversations you had with species experts to achieve these results.

Consider recovery potential if the project area contains historic range for a species.

Evaluate impacts to designated critical habitat areas by reviewing any project effects to the physical or biological features essential to the conservation of the species.

7. What is your decision? The Federal action agency must make a determination of effect.

Quite frequently, effect determinations are not necessarily *wrong;* they simply are not justified in the assessment. The assessment should lead the reviewer through a discussion of effects to a logical, well-supported conclusion. Do not assume that the Service biologist is familiar with the project and/or its location and that there is no need to fully explain the impact the project may have on listed species. If there is little or no connection or rationale provided to lead the reader from the project description to the effect determination, we cannot assume conditions that are not presented in the assessment. Decisions must be justified biologically. The responsibility for making and supporting the determination of effect falls on the Federal action agency; however, the Service cannot merely "rubber stamp" the action agency's determination and may ask the agency to revisit its decision or provide more data if the conclusion is not adequately supported by biological information.

You have three choices for each listed species or area of critical habitat:

1. "No effect" is the appropriate conclusion when a listed species will not be affected, either because the species will not be present or because the project does not have any elements with the potential to affect the species. "No effect" does not include a *small* effect or an effect that is *unlikely* to occur: if effects are insignificant (in size) or discountable (extremely unlikely), a "may affect, but not likely to adversely affect" determination is appropriate. A "no effect" determination does **not** require written concurrence from the Service and ends ESA consultation requirements unless the project is subsequently modified in such manner that effects may ensue.

2. "May affect - is not likely to adversely affect" (NLAA) means that all effects are either beneficial, insignificant, or discountable. Beneficial effects have concurrent positive effects without any adverse effects to the species or habitat (i.e., there cannot be "balancing," wherein the benefits of the project would be expected to outweigh the adverse effects - see #3 below). Insignificant effects relate to the magnitude or extent of the impact (i.e., they must be small and would not rise to the level of a take of a species). Discountable effects are those extremely unlikely to occur. Based on best judgment, a person would not: (1) be able to meaningfully measure, detect, or evaluate insignificant effects; or (2) expect discountable effects to occur. A "NLAA" determination by the action agency requires **written** concurrence from the Service.

3. "May affect - is likely to adversely affect" means that all adverse effects cannot be avoided. A combination of beneficial and adverse effects is still "likely to adversely affect," even if the net effect is neutral or positive. Adverse effects do not qualify as discountable simply because we are not certain they will occur. The probability of occurrence must be extremely small to achieve discountability. Likewise, adverse effects do not meet the definition of insignificant because they are less than major. If the adverse effect can be detected in any way or if it can be meaningfully articulated in a discussion of the results, then it is not insignificant, it is likely to adversely affect. This requires formal consultation with the Service.

A fourth finding is possible for proposed species or proposed critical habitat:

4. "Is likely to jeopardize/destroy or adversely modify proposed species/critical habitat" is the appropriate

conclusion when the action agency identifies situations in which the proposed action is likely to jeopardize a species proposed for listing, or destroy or adversely modify critical habitat proposed for designation. If this conclusion is reached, conference is required.

List the species experts you contacted when preparing the BE or BA but avoid statements that place the responsibility for the decision of "may affect" or "no effect" on the shoulders of the species experts. Remember, this decision is made by the Federal action agency.

Provide supporting documentation, especially any agency reports or data that may not be available to the Service. Include a list of literature cited.

Originally prepared: January 1997
U.S. Fish and Wildlife Service
Arizona Ecological Services Field Office

Revised: January 2006
National Marine Fisheries Service
Protected Resources Division
263 13th Avenue South
St. Petersburg, FL 33701
(727) 824-5312

OUTLINE EXAMPLE FOR A BIOLOGICAL ASSESSMENT OR BIOLOGICAL EVALUATION

Cover Letter - **VERY IMPORTANT** - Include purpose of consultation, project title, and consultation number (if available). A determination needs to be made for each species and for each area of critical habitat. You have three options: 1) a "no effect" determination; 2) request concurrence with an "is not likely to adversely affect" determination; 3) make a "may affect, is likely to adversely affect" determination, and request "formal" consultation. If proposed species or critical habitat are included, state whether the project is likely to result in jeopardy to proposed species, or the destruction or adverse modification of proposed critical habitat. If the critical habitat is divided into units, specify which critical habitat unit(s) will be affected.

Attached to Cover Letter: Biological Assessment or Biological Evaluation document, broken down as follows:

Title: e.g., BA (or BE) for "Project X"; date prepared, and by whom.

A. Project Description - Describe the proposed action and the action area. Be specific and quantify whenever possible.

For Each Species:

1. Description of affected environment (quantify whenever possible)
2. Description of species biology
3. Describe current conditions for each species
    a. Range-wide
    b. In the project area
    c. Cumulative effects of State and private actions in the project area
    d. Other consultations of the Federal action agency in the area to date
4. Describe critical habitat (if applicable)
5. Fully describe effects of proposed action on each species and/or critical habitat, and species' response to the proposed action.
    a. Direct effects
    b. Indirect effects
    c. Interrelated and interdependent actions
    d. Potential incidental take resulting from project activities

Factors to be considered/included/discussed when analyzing the effects of the proposed action on each species and/or critical habitat include: 1) Proximity of the action to the species, management units, or designated critical habitat units; 2) geographic area(s) where the disturbance/action occurs); timing (relationship to sensitive periods of a species' lifecycle; 3) duration (the effects of a proposed action on listed species or critical habitat depend largely on the duration of its effects); 4) disturbance frequency (the mean number of events per unit of time affects a species differently depending on its recovery rate); 5) disturbance intensity (the effect of the disturbance on a population or species as a function of the population or species' state after the disturbance); 6) disturbance severity (the effect of a disturbance on a population or species or habitat as a function of recovery rate – i.e., how long will it take to recover)

6. Conservation Measures (protective measures to avoid or minimize effects for each species)
7. Conclusions (effects determination for each species and critical habitat)
8. Literature Cited
9. Lists of Contacts Made/Preparers
10. Maps/Photographs

Guidance on Preparing an Initiation Package for Endangered Species Consultation

This document is intended to provide general guidance on the type and detail of information that should be provided to initiate consultation with U.S. Fish and Wildlife Service (USFWS) and/or National Marine Fisheries Service (NMFS). This is not intended to be an exhaustive document as specific projects may require more or less information in order to initiate consultation. Also, note that this contains guidance on the information required to initiate formal consultation procedures with USFWS and/or NMFS. Additional information needs may be identified during consultation. Texts in italics below are examples. Normal text is guidance. A glossary of terms is appended.

INTRODUCTION

Here is an example of introductory language:

The purpose of this initiation package is to review the proposed [project name] in sufficient detail to determine to what extent the proposed action may affect any of the threatened, endangered, proposed species and designated or proposed critical habitats listed below. In addition, the following information is provided to comply with statutory requirements to use the best scientific and commercial information available when assessing the risks posed to listed and/or proposed species and designated and/or proposed critical habitat by proposed federal actions. This initiation package is prepared in accordance with legal requirements set forth under regulations implementing Section 7 of the Endangered Species Act (50 CFR 402; 16 U.S.C. 1536 (c)).

Threatened, Endangered, Proposed Threatened or Proposed Endangered Species

Example language:

The following listed and proposed species may be affected by the proposed action:

common name (Scientific name) ***T***

common name (Scientific name) ***E***

common name (Scientific name) ***PT***

common name (Scientific name) ***PE***

This list should include all of the species from the species lists you obtained from USFWS and NMFS. If it doesn't, include a brief explanation here and a more detailed explanation in your record to help USFWS, NMFS and future staff understand your thought process for excluding a species from consideration.

Critical Habitat

Example language:

The action addressed within this document falls within Critical Habitat for [identify species].

CONSULTATION TO DATE

"Consultation" under the ESA consists of discussions between the action agency, the applicant (if any), and USFWS and/or NMFS. It is the sharing of information about the proposed action and related actions, the species and environments affected, and means of achieving project purposes while conserving the species and their habitats. Under the ESA, consultation can be either informal or formal. Both processes are similar, but informal consultation may result in formal consultation if there is a likelihood of

unavoidable take. Formal consultation has statutory timeframes and other requirements (such as the submission of the information in this package and a written biological opinion by USFWS or NMFS).

Summarize any consultation that has occurred thus far. Identify when consultation was requested (if not concurrent with this document). Be sure to summarize meetings, site visits and correspondence that were important to the decision-making process.

DESCRIPTION OF THE PROPOSED ACTION

The purpose of this section is to provide a clear and concise description of the proposed activity and any interrelated or interdependent actions.

The following information is necessary for the consultation process on an action:

1. The action agency proposing the action.

2. The authority(ies) the action agency will use to undertake, approve, or fund the action.

3. The applicant, if any.

4. The action to be authorized, funded, or carried out.

5. The location of the action.

5. When the action will occur, and how long it will last.

6. How the action will be carried out

7. The purpose of the action.

8. Any interrelated or interdependent actions, or that none exist to the best of your knowledge.

Describe and specify: **WHO** is going to do the action and under what authority, include the name and office of the action agency and the name and address of the applicant; **WHAT** the project or action is; **WHERE** the project is (refer to attached maps); **WHEN** the action is going to take place, including time line and implementation schedules; **HOW** the action will be accomplished, including the various activities that comprise the whole action, the methods, and the types of equipment used; **WHY** the action is proposed, including its purpose and need; and **WHAT OTHER** interrelated and interdependent actions are known. This combination of actions are what is being consulted on for the 7(a)(2) analysis.

Include a clear description of all conservation measures and project mitigation such as avoidance measures, seasonal restrictions, compensation, restoration/creation (on-site and in-kind, off-site and in-kind, on-site and out-of-kind, off-site and out-of-kind), and use of mitigation or conservation banks.

Here are some examples of commonly overlooked items to include in your project description:

Type of project

Project location

Project footprint

Avoidance areas

Start and end times

Construction access

Staging/laydown areas

Construction equipment and techniques

Habitat status on site

Habitat between work areas and endangered species locations

Permanent vs. temporary impacts

Surrounding land-use

Hydrology and drainage patterns

Duration of "temporary" impacts

Prevailing winds and expected seasonal shifts

Restoration areas

Conservation measures

Compensation and set-asides

Bank ratios and amounts

Mitigation: what kind and who is responsible?

Dust, erosion, and sedimentation controls

Whether the project is growth-inducing or facilitates growth

Whether the project is part of a larger project or plan

What permits will need to be obtained

Action Area

Describe all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action. This includes any interrelated and interdependent actions. Remember that the action area is not based simply on the Federal action and should not be limited to the location of the Federal action. The same applies to the applicant's action. The action area is defined by measurable or detectable changes in land, air and water, or to other measurable factors that may elicit a response in the species or critical habitat.

To determine the action area, we recommend that you first break the action down into its components (*e.g.*, vegetation clearing, construction of cofferdams, storage areas, borrow areas, operations, maintenance, etc.,) to assess the potential impacts resulting from each component.

Determine the impacts that are expected to result from each component. For example, instream actions may mobilize sediments that travel downstream as increased turbidity and then settle out as sediments on the stream substrate. Sound levels from machinery may be detectable hundreds of feet, thousands of feet, or even miles away. Use these distances when delineating the extent of your action area. Note: don't forget to subsequently reconstruct the action to assess the combined stressors of the components. You may find that some stressors are synergistically minimized or avoided, whereas other stressors may increase.

Finally, describe the action area, including features and habitat types. Include photographs and an area map as well as a vicinity map. The vicinity map for terrestrial projects should be at a 1:24,000 scale with the USGS quad name included.

SPECIES ACCOUNTS AND STATUS OF THE SPECIES IN THE ACTION AREA

Provide local information on affected individuals and populations, such as presence, numbers, life history, etc. Identify which threats to the species' persistence identified at the time of listing are likely to be present in the action area. Identify any additional threats that are likely to be present in the action area.

If the species has a distribution that is constrained by limiting factors, identify where in the action area factors are present that could support the species and where they are absent or limiting. For example, if a

species is limited to a narrow thermal range and a narrow humidity range, show where in the action area the temperatures are sufficient to support the species, where the humidity is sufficient to support the species, and where those areas overlap.

Include aspects of the species' biology that relate to the impact of the action, such as sensitivity to or tolerance of: noise, light, heat, cold, inundation, smoke, sediments, dust, etc. For example, if the species is sensitive to loud sounds or vibration, and your project involves loud tools or equipment, reference that aspect of their biology. Include citations for all sources of information

Describe habitat use in terms of breeding, feeding, and sheltering. Describe habitat condition and habitat designations such as: critical habitat (provide unit name or number, if applicable), essential habitat, important habitat, recovery area, recovery unit (provide unit name or number, if applicable). Also discuss habitat use patterns, including seasonal use and migration (if relevant), and identify habitat needs.

Identify and quantify the listed-species habitat remaining in the action area. GIS layers are useful here, as are land ownership patterns--especially local land trusts and open space designations.

Identify any recovery plan implementation that is occurring in the action area, especially priority one action items from recovery plans.

Include survey information. For all monitoring and survey reports, please clearly identify how it was done, when, where, and by whom. If survey protocols were followed, reference the name and date of the protocol. If survey protocols were modified, provide an explanation of how the surveying occurred and the reasoning for modifying the protocol.

Keep it relevant. It is unnecessary to discuss biology that is totally unrelated to project impacts--*e.g.*, discussion of pelage color, teat number, and number of digits fore and aft when the project is a seasonal wetland establishment.

Utilize the best scientific and commercial information available. Use and cite recent publications/journal articles/agency data and technical reports. Include local information, relative to the action area, views of recognized experts, results from recent studies, and information on life history, population dynamics, trends and distribution. Reference field notes, unpublished data, research in progress, etc.

Things to consider:

Existing threats to species

Fragmentation

Urban growth area

Drainage patterns

Information on local sightings and populations

Population trends

Home range and dispersal

Sensitivity of endangered species to: dust, noise, head, desiccation, etc.

Trap stress/mortality

Predators

ENVIRONMENTAL BASELINE AND CUMULATIVE EFFECTS

Provide information on past, present and future state, local, private, or tribal activities in the action area: specifically, the positive or negative impacts those activities have had on the species or habitat in the area in terms of abundance, reproduction, distribution, diversity, and habitat quality or function. Include the impacts of past and present federal actions as well. Don't forget to describe the impacts of past existence and operation of the action under consultation (for continuing actions).

Cumulative effects include the effects of future State, Tribal, local or private actions that are reasonably certain to occur in the action area. Future Federal actions that are unrelated (*i.e.*, not interrelated or interdependent) to the proposed action are not considered in this analysis because they will be subject to separate consultation pursuant to section 7 of the Act. (Note: Cumulative effects under ESA are ***not*** the same as the definition under NEPA. Be careful not to mix them up.) Describe the impacts of these cumulative effects in terms of abundance, reproduction, distribution, diversity, and habitat quality or function.

Present all known and relative effects to population, *e.g.*, fish stocking, fishing, hunting, other recreation, illegal collecting, private wells, development, grazing, local trust programs, etc. Include impacts to the listed and proposed species in the area that you know are occurring and that are unrelated to your action--*e.g.*, road kills from off-road vehicle use, poaching, trespass, etc.

EFFECTS OF THE ACTION

The purpose of this section is to document your analysis of the potential impacts the proposed action will have on species and/or critical habitats. This analysis has two possible conclusions for listed species and designated critical habitat:

(1) May Affect, Not Likely to Adversely Affect – the appropriate conclusion when effects on a listed species are expected to be *discountable, insignificant*, or completely *beneficial*.

Beneficial effects – contemporaneous positive effects without any adverse effects

Insignificant effects – relate to the size of the impact and should never reach the scale where take would occur.

Discountable effects – those that are extremely unlikely to occur. Based on best judgment, a person would not: (1) be able to meaningfully measure, detect, or evaluate insignificant effects; or (2) expect discountable effects to occur.

(2) May Affect, Likely to Adversely Affect – the appropriate finding if *any* adverse effect may occur to listed species or critical habitat as a direct or indirect result of the proposed action or its interrelated or interdependent actions, and the effect is not discountable, insignificant, or beneficial.

A finding of "may affect" is the primary trigger for initiating section 7 consultation. Further analysis leads to one of the two conclusions above. In the case of a determination that an action is "not likely to adversely affect" a species or critical habitat, you can request USFWS and/or NMFS concurrence with this determination and consultation can be concluded upon receipt of our concurrence. Determinations of "likely to adversely affect" require further consultation between the action agency and USFWS and NMFS. These consultations typically lead to the preparation of a biological opinion, although they can also lead to incorporation of additional protective measures that render the project "not likely to adversely affect" listed species or designated critical habitat. Any actions that are likely to result in the incidental take of a listed species are automatically considered "likely to adversely affect."

In the case of proposed species or proposed critical habitat, the possible conclusions are:

Species

Likely to Jeopardize the Continued Existence

Not Likely to Jeopardize the Continued Existence

Critical Habitat

Likely to Destroy or Adversely Modify

Not Likely to Destroy or Adversely Modify

The effects analysis includes assessment of:

Direct and indirect effects (stressors) of Federal action

Direct and indirect effects (stressors) of applicant's action

Direct and indirect effects (stressors) of interrelated or interdependent actions

Direct and indirect effects (stressors) of conservation and minimization measures

Remember: Direct and indirect effects under ESA are **not** the same as direct and indirect effects under NEPA. Be careful not to mix them up. Under ESA, direct effects are those that are caused by the action(s) and occur at the time of the action(s), and indirect effects are those that are caused by the action(s) and are later in time, but are still reasonably certain to occur.

Based on the various components of your action that you used to determine the extent of the action area, this analysis assesses the potential stressors resulting from each component and predicts the likely responses species and critical habitat will have. Note: don't forget to subsequently reconstruct the action to assess the combined stressors of the components. You may find that some stressors are synergistically minimized or avoided, whereas other stressors may increase.

Describe the stressors that are expected to result from each component. For example, instream actions may mobilize sediments that travel downstream as increased turbidity and then settle out as sediments on the stream substrate. Sound levels from machinery may be detectable hundreds of feet, thousands of feet, or even miles away. Describe these stressors in terms of their intensity, frequency, and duration.

Once you have determined the expected stressors resulting from an activity, the next step is to assess the overlap between those stressors and individuals of the species or components of critical habitat. The purpose of determining this overlap is to accurately and completely assess the potential exposure of species and habitat to the stressors resulting from the action. This exposure is the necessary precursor to any possible response those species and habitat may have. Your conclusions of "not likely to adverse affect" or "likely to adversely affect" are based in large part on this response.

To determine exposure, here is a basic set of questions you might answer:

- What are the specific stressors causing the exposure
- Where the exposure to the stressors would occur
- When the exposure to stressors would occur
- How long the exposure to stressors would occur
- What is the frequency of exposure to stressor
- What is the intensity of exposure to stressor
- How many individuals would be exposed
- Which populations those individuals represent
- What life stage would be exposed

For critical habitat, the questions would be similar but would focus on constituent elements of critical habitat.

Remember that exposure to a stressor is not always direct. For example, in some cases individuals of a species may be directly exposed to the sediment mobilized during construction. However, in other cases, individuals of the species would be exposed indirectly when sediment mobilized during construction settles out in downstream areas, rendering those areas unusable for later spawning or foraging.

Here are some examples of stressors you should address:

Exposure to abiotic factors affecting land, air, or water

Exposure to biotic factors affecting species behavior

Spatial or temporal changes in primary constituent elements of critical habitat

Loss or gain of habitat--direct and indirect

Fragmentation of habitat

Loss or gain of forage and/or foraging potential

Loss or gain of shelter/cover

Loss or gain of access through adjacent habitat/loss of corridors

Once you have determined that a species or critical habitat will be exposed to an action, the next step is to determine the potential response or range of responses the exposed individuals or components of critical habitat will have to those levels and types of exposure.

This is where the use of the best scientific and commercial information available becomes crucial. Your analysis must take this information into consideration and the resulting document must reflect the use of this information and your reasoning and inference based on that information. Bear in mind that this analysis may not be the final word on the expected responses as further consultation with USFWS or NMFS may refine this analysis.

Be sure to describe the expected responses clearly and focus your analysis towards determining if any of the possible responses will result in the death or injury of individuals, reduced reproductive success or capacity, or the temporary or permanent blockage or destruction of biologically significant habitats (*e.g.*, foraging, spawning, or lekking grounds; migratory corridors, etc.,). Any of these above responses are likely to qualify as adverse effects. If the available information indicates that no observable response is expected from the levels and types of exposure, the action may be unlikely to adversely affect a species or critical habitat. However, remember that no observable response may actually mask an invisible internal response such as increased stress hormone levels, elevated heart rate, etc. Depending on the fitness of the exposed individual and the surrounding environment (including other threats), these "invisible" responses may lead to more serious consequences. We recommend working with your NMFS or USFWS contact to determine the appropriate conclusion.

Don't forget to consider:

Individual responses based on the species biology and sensitivity to exposure

The combined effects of existing threats and new exposure

The combined effects of limiting factors and new exposure

Disrupted reproduction and/or loss of reproduction

Exposure and response of species and critical habitat to interrelated and interdependent actions

Understanding and avoiding the common flaws in developing an effect determination will save you considerable time. These common flaws are: the "Displacement" Approach (*i.e.*, the species will move out of the way; there are plenty of places for them to go); the "Not Known to Occur Here" Approach (*i.e.*, looking at survey results, or lack of results, instead of the Recovery Plan for the species); the "We'll Tell You Later" Approach (*i.e.*, if we find any, then we'll let you know and that is when we will consult); or the "Leap of Faith" Approach (*i.e.*, the agency wants the USFWS or NMFS to accept a determination based on trust, rather than the best scientific and commercially available information.). Sticking to flawed determinations will cost everyone time, money, and aggravation.

Analysis of alternate actions

This analysis is required for actions that involve preparation of an EIS. For all other actions, a summary of alternatives discussed in other environmental documents is useful.

OTHER RELEVANT INFORMATION

Provide any other relevant available information the action, the affected listed species, or critical habitat. This could include local research, studies on the species that have preliminary results, and scientific and commercial information on aspects of the project.

CONCLUSION

This is where you put your overall effect determination after you have analyzed the exposure and response of species and habitat to the stressors resulting from the proposed action and interrelated or interdependent actions. Effect determinations must be based on a sound reasoning from exposure to response and must be consistent with types of actions in the project description, the biology in the species accounts, the habitat status and condition, changes to the existing environment, and the best scientific and commercial information available.

Again, the two potential conclusions for **listed species** are:

Not likely to adversely affect species

Likely to adversely affect species

The two potential conclusions for **designated critical habitat** are:

Not likely to adversely affect critical habitat

Likely to adversely affect critical habitat

The two potential conclusions for **proposed species** are:

Not likely to jeopardize species

Likely to adversely jeopardize species

The potential conclusions for **proposed critical habitat** are, under informal and formal consultation respectively:

Not likely to adversely affect species

Likely to adversely affect species

Not likely to destroy or adversely modify critical habitat

Likely to destroy or adversely modify critical habitat

Include the basis for the conclusion, such as discussion of any specific measures or features of the project that support the conclusion and discussion of species expected response, status, biology, or baseline conditions that also support conclusion.

If you make a "no effect" determination, it doesn't need to be in the assessment, but you might have to defend it. Keep the documentation for your administrative record.

LIST OF DOCUMENTS

Provide a list of the documents that have bearing on the project or the consultation, this includes relevant reports, including any environmental impact statements, environmental assessment, or biological

assessment prepared for the project. Include all planning documents as well as the documents prepared in conformance with state environmental laws

IMPORTANT NOTE: Each of these documents must be provided with the initiation package consultation for the Services to be able to proceed with formal consultation.

LITERATURE CITED

We are all charged with using the best scientific and commercial information available. To demonstrate you did this, it is a good idea to keep copies of search requests in your record. If you used a personal communication as a reference, include the contact information (name, address, phone number, affiliation) in your record.

LIST OF CONTACTS/CONTRIBUTORS/PREPARERS

Please include contact information for contributors and preparers as well as local experts contacted for species or habitat information.

GLOSSARY

Action Area - all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action.

Beneficial Effects – contemporaneous positive effects without any adverse effects.

Cumulative Effects – are those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur in the action area of the Federal action subject to consultation.

Discountable Effects – those that are extremely unlikely to occur. Based on best judgment, a person would not: (1) be able to meaningfully measure, detect, or evaluate insignificant effects; or (2) expect discountable effects to occur.

Effects of the Action – refers to the direct and *indirect effects* of an action on the species or critical habitat, together with the effects of other activities that are *interrelated* or *interdependent* with that action, that will be added to the environmental baseline.

Environmental Baseline – includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of State or private actions that are contemporaneous with the consultation in process.

Indirect Effects - Indirect effects are those that are caused by the action(s) and are later in time, but are still reasonably certain to occur.

Insignificant Effects – relate to the size of the impact and should never reach the scale where take would occur.

Interdependent Actions - Interdependent actions are those that have no significant independent utility apart from the action that is under consideration, *i.e.* other actions would not occur "but for" this action.

Interrelated Actions - Interrelated actions are those that are part of a larger action and depend on the larger action for their justification, *i.e.* this action would not occur "but for" a larger action.

Likely to Jeopardize the Continued Existence of – to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species.

May Affect, Likely to Adversely Affect – the appropriate finding if any adverse effect may occur to listed species or critical habitat as a direct or indirect result of the proposed action or its interrelated or interdependent actions, and the effect is not discountable, insignificant, or beneficial. Requires that a biological opinion be prepared by the Service.

May Affect, Not Likely to Adversely Affect – the appropriate conclusion when effects on a listed species are expected to be *discountable*, *insignificant*, or completely *beneficial*. Requires written concurrence from the Service.

No Effect – the appropriate conclusion when a listed species will not be affected, either because the species will not be present or because the project does not have any elements with the potential to affect the species. A "no effect" determination does **not** require written concurrence from the Service and ends ESA consultation requirements. Action agency should document their reasoning for this conclusion in their file.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
646 Cajundome Blvd.
Suite 400
Lafayette, Louisiana 70506

May 9, 2006

Commanding Officer
Attn: Mr. Scott T. Tripp
USCG Research and Development Center
1082 Shennecossett Road
Groton, Ct 06340-6048

Dear Mr. Tripp:

Please reference your March 3, 2006, letter (received in this office on March 10, 2006) requesting comments on the draft Environmental Assessment of Testing Equipment Under Development at the University of South Florida, Center for Ocean technology (EA), and any additional concerns regarding federally listed species. The proposed activities in Louisiana would occur within the Lower Mississippi River Port Complex Study area. That area would include areas within the 20-mile radii seaward of the buoys marking the entrances of the Southwest Pass, South Pass, and Gulf Outlet Canal of the Mississippi River; the areas of developed port infrastructure within the Mississippi River from the entrances at Southwest Pass, South Pass, and the Gulf Outlet Canal north to Baton Rouge; and, the areas of developed infrastructure within the Lake Pontchartrain and Lake Borgne. In Florida, research is proposed in the Ports of St. Petersburg/Tampa, Port of Miami, Port of Ft. Lauderdale/Port of Everglades, and Port of Jacksonville. The systems to be tested would be comprised of commercially available equipment, and would include sonar and laser imaging and navigation equipment mounted on remotely operated vehicles, autonomous underwater vehicles, and pole mounts. Additionally, your letter indicated that you intend to have the EA stand as your Biological Assessment for the proposed activities. The U.S. Fish and Wildlife Service (Service) has reviewed the information you provided, and offers the following comments in accordance with the National Environmental policy Act (NEPA), the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.), and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.).

General Comments

The draft EA is thorough and well-organized. The EA addresses the following federally listed species under the Service's jurisdiction in Louisiana and Florida: the endangered West Indian manatee (*Trichechus manatus*), the threatened bald eagle (*Haliaeetus leucocephalus*), the endangered brown pelican (*Pelecanus occidentalis*), threatened piping plover (*Charadrius melodus*) and its critical habitat, the threatened loggerhead sea turtle(*Caretta caretta*), the threatened green sea turtle (*Chelonia mydas*), the endangered leatherback sea turtle (*Dermochelys coriacea*), the endangered hawksbill sea turtle (*Eretmochelys imbricata*), the endangered Kemp's ridley sea turtle (*Lepidochelys kempii*), and the threatened Gulf sturgeon (*Acipenser oxyrhynchus desotoi*). The EA fails to include, however, the endangered pallid sturgeon (*Scaphirhynchus albus*), the endangered shortnose sturgeon (*Acipenser brevirostrum*), and the presence of Gulf sturgeon critical habitat in Lake Pontchartrain. We offer the following information to assist you in revising the draft EA:

Pallid Sturgeon

The pallid sturgeon is an endangered fish found in both the Mississippi and Atchafalaya Rivers (with known concentrations in the vicinity of the Old River Control Structure Complex); it is possibly found in the Red River as well. The pallid sturgeon is adapted to large, free-flowing, turbid rivers with a diverse assemblage of physical characteristics that are in a constant state of change. Detailed habitat requirements of this fish are not known, but it is believed to spawn in Louisiana. Habitat loss through river channelization and dams has adversely affected this species throughout its range.

Gulf Sturgeon

On March 19, 2003, the Fish and Wildlife Service and National marine Fisheries Service (NMFS) published a final rule in the Federal Register (Volume 68, No. 53) designating critical habitat for the Gulf sturgeon in Louisiana, Mississippi, Alabama, and Florida. Portions of the Pearl and Bogue Chitto Rivers, Lake Pontchartrain east of the Lake Pontchartrain Causeway, all of Little Lake, The Rigolets, Lake St. Catherine, and Lake Borgne within Louisiana were included in that designation. The primary constituent elements essential for the conservation of Gulf sturgeon are those habitat components that support feeding, resting, sheltering, reproduction, migration, and physical features necessary for maintaining the natural processes that support those habitat components. The primary constituent elements for Gulf sturgeon critical habitat include:

- abundant prey items within riverine habitats for larval and juvenile life stages, and within estuarine and marine habitats for juvenile, sub-adult, and adult life stages;
- riverine spawning sites with substrates suitable for egg deposition and development, such as limestone outcrops and cut limestone banks, bedrock, large gravel or cobble beds, marl, soapstone, or hard clay;
- riverine aggregation areas, also referred to as resting, holding and staging areas, used by adult, sub-adult, and/or juveniles, generally, but not always, located in holes below normal riverbend depths, believed necessary for minimizing energy expenditures during freshwater residency and possibly for osmoregulatory functions;
- a flow regime (i.e., the magnitude, frequency, duration, seasonality, and rate-of-change of freshwater discharge over time) necessary for normal behavior, growth, and survival of all life stages in the riverine environment, including migration, breeding site selection, courtship, egg fertilization, resting, and staging; and necessary for maintaining spawning sites in suitable condition for egg attachment, egg sheltering, resting, and larvae staging;

- water quality, including temperature, salinity, pH, hardness, turbidity, oxygen content, and other chemical characteristics, necessary for normal behavior, growth, and viability of all life stages;

- sediment quality, including texture and other chemical characteristics, necessary for normal behavior, growth, and viability of all life stages; and

- safe and unobstructed migratory pathways necessary for passage within and between riverine, estuarine, and marine habitats (e.g., a river unobstructed by a permanent structure, or a dammed river that still allows for passage).

Additionally, as discussed in the Gulf sturgeon critical habitat final rule (Federal Register Volume 68, No. 53), the jurisdiction for Section 7 consultation is shared between the Service and NMFS. The Service is responsible for consultations on the Gulf sturgeon and its critical habitat in riverine units. In estuarine units, the Service will consult with the U.S. Coast Guard (responsibilities are divided based upon the action agency). The NMFS is responsible for consultations in marine units. For Federal projects that extend into the jurisdiction of both Services (such as the proposed project) the Service will be the lead consulting agency and will consult internally with NMFS.

Shortnose Sturgeon
The shortnose sturgeon occurs primarily in rivers from southeastern Canada to northeast Florida. This species was listed as endangered in 1967 due to dam construction on rivers used for spawning. Other factors that have been noted for the population decline include habitat alteration from dredging and mortalities incidental to other fish harvesting operations. The NMFS is the lead agency for this species.

Sea Turtles
The Service is responsible for endangered and threatened sea turtles when they are on land (i.e., nesting). The NMFS is responsible for sea turtles when they are in the aquatic environment (i.e., foraging in the near-shore waters, bays and sounds of Louisiana). The proposed action would occur in the aquatic environment and thus, NMFS would be the agency to conduct the Section 7 consultation for those species.

Manatee
There is a possibility that manatees may be affected by the testing proposed by the USCG in the port areas where this species occurs. Regarding the devices, it is important to know what the operational frequencies are so that the Service can assess whether or not they are within the manatees' range of detection. Similarly, more information is needed with regard to the use of lasers in order to assess their effect, if any, on manatees. Detection devices aside, the use of vessels as research and monitoring platforms may be a concern if these platforms are operated in sensitive manatee areas in a manner unsafe for manatees, as are the use of cables, float lines, and other entangling gear, equipment known in the past to entangle manatees. When Section 7 consultation is requested, the Service would ask that this information be made available to the appropriate field office in the initiation package.

If the proposed project has not been initiated within one year, follow-up consultation should be accomplished with the Service prior to making expenditures because our information on threatened and endangered species and their critical habitat is updated annually. If the scope or location of the proposed project is changed, consultation should occur as soon as such changes are made.

The Service appreciates the cooperation of the U.S. Coast Guard in the planning stages of the proposed activity, as well as the opportunity to provide comments. If you have any additional questions or require further information: for Louisiana, please contact Deborah Fuller (337/291-3124) of this office; for Florida, please contact Rob Bittner (904/232-2580, extension 120).

Sincerely,

Russell C. Watson
Supervisor
Louisiana Field Office

cc: NMFS, St. Petersburg, FL
FWS, Jacksonville, FL
LDWF, Natural Heritage Program, Baton Rouge, LA

Department of
Environmental Protection

Jeb Bush
Governor

Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

Colleen M. Castille
Secretary

May 31, 2006

Mr. Scot T. Tripp
Underwater Inspection Systems
U.S. Coast Guard, R&D Center
1082 Shennecossett Road
Groton, CT 06340-6048

RE: U.S. Coast Guard – Draft Environmental Assessment of Testing Equipment Under Development at the University of South Florida, Center for Ocean Technology – of Interest to the State of Florida.
SAI # FL200603102000C

Dear Mr. Tripp:

The Florida State Clearinghouse, pursuant to Presidential Executive Order 12372, Gubernatorial Executive Order 95-359, the Coastal Zone Management Act, 16 U.S.C. §§1451-1464, as amended, and the National Environmental Policy Act, 42 U.S.C. §§ 4321, 4331-4335, 4341-4347, as amended, has coordinated a review of the referenced draft environmental assessment (EA).

The Florida Fish and Wildlife Conservation Commission (FWC) advises that testing and utilization of the proposed underwater inspection/detection systems may disturb and adversely affect the behavior of Florida manatees, North Atlantic right whales, and other marine species frequenting the waters in and around the subject Florida ports. The FWC has provided comments and recommendations regarding potential marine mammal impacts to U.S. Coast Guard and University of South Florida staff and requests additional data. Please continue to coordinate with the FWC to resolve the referenced issues and ensure consistency with the provisions of Chapters 370 and 372, *Florida Statutes*. For further details and recommendations, please refer to the enclosed FWC letter.

Based on the information contained in the draft EA and the enclosed state agency comments, the state has determined that, at this stage, the proposed activity is consistent with the Florida Coastal Management Program (FCMP). The federal agency must, however, address the concerns identified by FWC staff prior to project implementation. All subsequent environmental documents must be reviewed to determine the project's continued consistency with the FCMP. The state's continued concurrence with the project will be based, in part, on the adequate resolution of issues identified during this and subsequent reviews.

Thank you for the opportunity to review the proposed project. Should you have any questions regarding this letter, please contact Ms. Lauren P. Milligan at (850) 245-2170.

Sincerely,

Sally B. Mann, Director
Office of Intergovernmental Programs

SBM/lm
Enclosure

cc: Mary Ann Poole, FWC

Florida State Clearinghouse

FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION

RODNEY BARRETO Miami
SANDRA T. KAUPE Palm Beach
H.A. "HERKY" HUFFMAN Enterprise
DAVID K. MEEHAN St. Petersburg
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May 24, 2006

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MAY 30 2006
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Ms. Lauren Milligan
Environmental Consultant
Florida State Clearinghouse
Department of Environmental Protection
3900 Commonwealth Boulevard, Mail Station 47
Tallahassee, Florida 32399-3000

RE: FL200603102000C, Multi-County, Draft Environmental Assessment of Testing Equipment under Development at the University of South Florida, Center for Ocean Technology prepared by the United States Coast Guard Research and Development Center

Dear Ms. Milligan:

The Division of Habitat and Species Conservation, Imperiled Species Management Section, of the Florida Fish and Wildlife Conservation Commission (FWC) has coordinated agency review of the Draft Environmental Assessment (DEA) of Testing Equipment under Development at the University of South Florida (USF), Center for Ocean Technology, prepared by the United States Coast Guard Research (USCG) and Development Center in February 2006. We note that many of the issues we include in this letter have already been discussed with the USCG and USF in a teleconference call on May 15, 2006, and we are pleased that they have already agreed to implement some of our recommendations. These parties have also asked for data layers from the FWRI in order to better plan and revise the document. This letter documents many of our concerns discussed at that teleconference call.

Project Description

The USCG Research and Development Center is proposing to conduct research through the USF Center for Ocean Technology to evaluate port security systems to identify "the most effective underwater inspection/detection systems that would enable the USCG to protect the MTS [Marine Transportation System] and critical infrastructure in and around U.S. Ports and waterways from underwater threats, including delivery of conventional explosives, IEDs

[improvised explosive devices], and other offensive devices" (p. 1-3 of the DEA). This action is in response to the Maritime Transportation Security Act of 2002, which requires the USCG and others to upgrade security at the Nation's ports.

The proposed research would help to identify the most effective underwater inspection/detection systems toward that end. They propose to deploy portable underwater systems designed to detect, classify, and identify conventional explosives, IEDs, or other destructive devices that could be attached to ships' hulls, piers, and underwater infrastructure. The proposed systems are comprised of sonar and laser imaging and navigation equipment mounted on remotely operated vehicles (ROVs), autonomous underwater vehicles (AUVs), and pole-mounts. The research would be conducted in five study areas: Louisiana on the lower Mississippi River; and Florida at the Ports of St. Petersburg/Tampa, Miami, Everglades/Ft. Lauderdale, and Jacksonville. Study areas would include shipping approaches to these ports in an area approximately 20 miles seaward of each port's initial entrance buoy. This research would occur approximately 40 days per year for duration of 8 to10 hours per deployment. The equipment would range from 5 to 100 meters from the structure targeted for inspection and all pointable devices (e.g., sonar and laser) would be directed at the structure rather than open-water areas. Operational protocols call for monitoring test equipment at all times, visually inspecting the "safety zone" for marine mammal activity for at least 20 minutes before deployment (using night vision devices when necessary), shutting down sonar if marine mammals are detected in the vicinity, and avoiding any area that is deemed to be a marine mammal throughway.

The testing has been reviewed and deemed by the USCG to have no significant effect on the environment, including transportation, waterborne noise, marine mammals, sea turtles, protected fisheries, and public safety. They suggest that the conclusion of no foreseeable significant impacts of the proposed project in this Environmental Assessment (EA) precludes the need for a full Environmental Impact Statement (EIS).

Potentially Affected Resources

Florida Manatee (*Trichechus manatus latirostris* - endangered)
All of the proposed study sites in the DEA fall within the geographic range of the Florida manatee, with the highest concentrations of manatees being near the four proposed Florida locations: Port of Jacksonville, Ports of St. Petersburg/Tampa, Port of Everglades/Ft. Lauderdale, and the Port of Miami. Manatee use of these areas is documented by aerial survey, mortality and satellite telemetry data. Additionally, all of the proposed study areas in Florida are located near areas of extremely high manatee use known as congregation areas. These areas are essential habitat for the Florida manatee. The significance of these areas is briefly described below.

Port of Jacksonville: The St. Johns River, with tributaries throughout Jacksonville, meanders north about 40 miles through Duval County before discharging into the Atlantic Ocean. The Florida manatee inhabits the waters of

Jacksonville year round, with highest concentrations occurring during summer months. Florida manatees exhibit an array of activities in these waters including traveling, mating, resting, and feeding. Historical aerial survey data show that numbers of manatees sighted increased as ambient water temperatures rose (>70°F), and decreased as ambient water temperatures fell (<70°F) in late winter. Small numbers of manatees remain in northeast Florida in winter months.

Synoptic data collected between 1991 and 2006 show that 10 manatees have been observed within the project area identified for the Port of Jacksonville. Additionally, 79 aerial flights conducted between 1990 and 1997 identified a total of 1,047 manatees. The low number of manatees in the synoptic data set is consistent with the more northern location and colder winter water in Jacksonville as compared to the other Florida ports.

According to the map provided on page 2-7 of the draft report, several tributaries of the St. Johns River are not considered part of the project area. Several of these areas should be considered as part of the area of impact based on the distance the actual testing may extend into shallow-water areas, since the impacts may propagate farther in shallower water. The synoptic and aerial survey data described in the previous paragraph are based on the boundaries as identified in the DEA. We note that the USCG has agreed that this may be the case and has agreed to model this.

Ports of St. Petersburg/Tampa: There are three principal warm-water discharge areas in the Tampa Bay region that attract manatees. Two are located in Hillsborough County [Tampa Electric Company's (TECO) Big Bend generating plant and Port Sutton plant] and one is located in Pinellas County (Florida Power and Light Corporation's Bartow power plant). The project map shows that the study area is immediately adjacent to the TECO power plants, where significant numbers of manatees (300+) aggregate in the wintertime.

Synoptic data collected between 1991 and 2006 show that 1,426 manatees have been observed within the project area identified for the Ports of St. Petersburg/Tampa. Additionally, 89 aerial flights conducted between 1987 and 1994 identified a total of 1,501 manatees.

According to the map provided on page 2-4 of the draft report, several tributaries along the bay are not considered part of the project area. It is our opinion that several of these areas should be considered as part of the area of impact. The synoptic and aerial survey data described in the previous paragraph are based on the boundaries as identified in the DEA.

Port of Ft. Lauderdale/Everglades: While evidence suggests that some manatees are found in Broward County year-round, the population is essentially seasonally

migratory, with large winter aggregations of animals occupying the areas adjacent to two power plants (Lauderdale and Port Everglades). The importance of these facilities as warm-water refuges to manatees has been well documented; and they have been determined to be among the most important manatee aggregation sites for the Atlantic population. While manatees occur in Broward County year-round, significantly greater numbers of animals occupy county waters during the winter months, with an average of more than 100 animals observed per survey flight during the months of December, January, and February. Broward County had fewer than 20 manatees per month as observed from March to November during these distributional surveys. Aerial survey data (including synoptic survey data) suggest that the New River and the Atlantic Intracoastal Waterway (AIW) serve as important migratory corridors for manatees. Manatees also appear to utilize the Atlantic Ocean; however, sighting frequency is much lower than in the AIW.

Synoptic data collected between 1991 and 2006 show that 5,044 manatees have been observed within the area identified for the Port of Ft. Lauderdale/Everglades. Additionally, 48 aerial flights conducted between 1988 and 1990 identified a total of 1,209 manatees.

Port of Miami: Data from regular aerial surveys, manatee monitoring for other permitted projects, opportunistic sightings, tagged and tracked animals, and carcass recovery document that the waters surrounding the Port of Miami, including existing dredged channels, are utilized by manatees. Manatees have been most frequently observed in channels and seagrass beds south and west of the port. These areas are included in "essential manatee habitat" as defined in the Miami-Dade Manatee Protection Plan, which has been approved by the state of Florida. In addition, portions of the seagrass beds south of the Port are part of a state-designated manatee protection "no-entry" zone, one of only two such zones in Miami-Dade County. Aerial survey data collected by Miami-Dade County from 1989 to present have documented manatee adults and calves resting, feeding, drinking, mating, and traveling in the existing channels and in adjoining areas on numerous occasions in all seasons. Satellite telemetry data collected by the U.S. Geological Survey Sirenia Project documenting the movement of several tagged adult manatees show that these individuals were tracked in the port proper or traversed the general area while traveling between nearshore tributaries and seagrass feeding habitat. Synoptic data collected between 1991 and 2006 show that 2,065 manatees have been observed within the project area identified for the Port of Miami. Additionally, 87 aerial flights conducted between 1989 and 1994 identified a total of 1,443 manatees.

North Atlantic Right Whale (*Eubalaena glacialis* - endangered)
One of the proposed study sites falls within the geographic range of the North Atlantic right whale (*Eubalaena glacialis*), one of the most endangered large whales in the world, with an

estimated population of approximately 350 individuals (Kraus *et al.,* 2001). Some North Atlantic right whales migrate south from their summer feeding grounds in the northeastern U.S. to their winter calving grounds in northeastern Florida. Mainly adult females and calves, along with some juveniles and adult males, migrate to the southeastern calving grounds each winter, and may remain in the area for four to five months. The calving grounds are federally designated critical habitat (found between 31°15' N to 28° 00' N) for this species. Recent modeling efforts indicate that the loss of as few as two females per year may ensure the extinction of the species (Caswell *et al.*, 1999). The winter inhabitants off the coast of Florida include the most vulnerable component of the right whale population.

The study area illustrated in the DEA for the Port of Jacksonville lies closest to the critical habitat and calving grounds of the right whale, although the DEA indicates that the proposed site for testing activity lies well upriver and is not expected to impact coastal areas that would include critical habitat. While we agree with this assessment, we note that whales may nevertheless be present in the open ocean portion of the test area, and on rare occasions have been observed within the St. Johns River.

Typically, right whales do not migrate as far south as the next closest study area, Port Everglades/Fort Lauderdale, which lies just south of 26°10' N. The potential for right whale presence declines south from Port of Jacksonville and into the Gulf of Mexico with increasing distance from the critical habitat, but right whales have been known to venture south along the Florida Coastline, and even rarely into the Gulf of Mexico. A mother and calf were observed and photographed off Miami Harbor on January 30, 2004. One early recorded sighting of right whales in the Gulf of Mexico was near Sarasota in March 1963. This past winter (January 2006), two right whales were photographed off Texas and the west coast of Florida.

Other Marine Species

The DEA does not document all potentially affected marine species. All potentially affected marine mammals must be considered because they are all protected under the Marine Mammal Protection Act. Two good sources for species information are Waring *et al.* (2004) and Mullin and Fulling (2003).

General Issues of Concern

Although we agree with the DEA in that the study sites occur in areas of high navigational traffic, we believe it is important to recognize that ecologically sensitive areas do nevertheless fall within the range of potential impact. Activities described in the DEA may therefore impact marine mammals and other wildlife.

Comprehensiveness of the Species Considered: It is important to both adequately evaluate potential impacts and measure the actual impacts on manatees, whales, sea turtles, diving birds, dolphins, and marine fishes in detail to accurately determine the impacts of this project for short-term, long-term or permanent affects. While we have no specific recommendations with regard

to birds and fishes, we fully support studies that would address potential impacts, particularly in terms of providing information to design a permanent system to detect destructive devises. We note that observers must be capable of determining their presence and documenting any observed responses to the project.

Effects on Manatees: Disturbing manatees within essential manatee habitat can alter their behavior, which may in turn endanger their survival. If manatees are disturbed by the proposed activities, movement to other suitable habitat can result in overcrowding of animals at other existing high-use areas. This overcrowding can lead to increased competition of food resources. Excessive and unnecessary animal movements into less disturbed areas may increase the risk to manatees of watercraft injury and/or death. Additionally, manatees are not cold-weather tolerant. The proximity of some of these study sites to warm-water discharges makes these areas extremely important manatee habitat. If manatees choose to leave the area due to disturbances related to this project, there is the possibility of an increase in manatee deaths caused by cold stress.

Ability to Detect Manatees and Right Whales by Sight: It is our experience that visual inspection for marine animals is ineffective at night, even with artificial lighting. Shipboard lookouts offer essential but not optimal protections. The amount of dive time in conjunction with weather/visibility issues limits the ability of observers to detect marine mammals. Some of the proposed test regions have seriously reduced visibility and thus, special techniques may need to be employed to inspect the area for marine mammals. From a ship, right whales can be more difficult to identify than other cetaceans because they lack dorsal fins. The DEA does not state whether the visual inspection will be performed by trained observers, which should be required of all lookouts, nor does is indicate how throughways and pathways would be determined for marine mammals.

Potential for Behavioral Impacts: It is important to evaluate any behavioral changes that could be caused by these devices and so we recommend that they be required as part of the study process. The safety factors outlined in the DEA only consider the physical damage to hearing; however, there is evidence that sounds may also indirectly cause physiological damage because of changes in behavior (see Cox *et al.*, and Rommel *et al.*, in press). Changes in behavior are still considered "takes" under federal law. Auditory characteristics of cetaceans are largely conjecture because these characteristics are poorly studied. Behavioral responses of cetaceans to sound are mainly derived from studies on captive animals (Schlundt *et al.,* 2000). Schlundt *et al.* (2000) conducted studies that used animals trained to remain on station despite obvious agitation. Cetacean behavioral responses in the wild will likely differ from those in captivity. For example, right whales have been recorded to show strong behavioral responses to signals as low as 133 dB re: 1 μPa (Nowacek *et al.,* 2004). These responses were energetically costly for right whales, from both elevated fluke stroke rates and lost foraging time.

Specific Recommendations and Questions for Clarification

1. We recommend that Dr. David Mann (University of South Florida) and Dr. Douglas Nowacek (Florida State University) be consulted for revisions to this document. We further recommend including additional information concerning hearing and associated impacts on marine mammals, including references to relevant literature. Effect on the hearing of marine mammals should not be the only important potential impact of these studies; the potential impacts to their behavior should be addressed as well. Dr. Mann and Dr. Nowacek are experts in the field of marine mammal and acoustic studies and could be consulted for clarification of the DEA and for study of impacts during proposed activities. Mote Marine Laboratory and the FWC's Fish and Wildlife Research Institute (FWRI) also have qualified staff regarding behavioral work on manatees.

2. In a letter from the United States Marine Mammal Commission to the Department of the Navy (Cottingham 2006), it was suggested that the Navy consult with the National Marine Fisheries Service. We concur with this recommendation, and also recommend adding the U.S. Fish and Wildlife Service for manatees.

3. Due to the proximity of right whale critical habitat, we recommend that any studies at the Port of Jacksonville occur outside of the right whale calving season, avoiding activities between November 15 and May 1. Additionally, although it is unusual for right whales to travel south of critical habitat, restricting activity between January 1 through May 1 at the Port of Ft. Lauderdale/Everglades to avoid the potential for interaction would seem prudent, given recorded sightings of right whales south of critical habitat.

4. We are pleased that the USCG has agreed to model the propagation of sound at various depths. We recommend that the model runs address the differences of depth and topography for each of the sites to ensure that the maximum distances to the 160 dB isopleths are accurate. Are the "maximum distance" estimates to the 160 dB isopleths in the environmental assessment calculated for deep or shallow water? Is there a chance of shallow water increasing any of these distances? It would be especially important to measure and model sound propagation in the Port of Jacksonville, given the proximity to right whale critical habitat and the occasional occurrence within the river. Due to behavioral responses seen by right whales in response to signals as low as 133 dB re: 1 μPa (Nowacek *et al.*, 2004), we recommend using 130dB as opposed to the 160dB currently being used to evaluate the potential impact to marine mammals.

5. We recommend that estimates of hearing capabilities in marine mammals, including manatees, be revisited (Table 3-2 of the draft EA). The threshold sensitivities of the cetaceans that are included in the table are far below the levels proposed (160 dB). The proposal states that a low amount of energy will be used for the sonars. The proposed sonars to be used range from mid-frequency to ultra-high frequency with sound pressure levels (SPLs) ranging from 190 dB re: 1 μPa to 217 dB re: 1 μPa at 1 m. A marine mammal just outside the 200-meter safe zone for the mid-frequency sonar could receive nearly 150 dB re: 1 μPa (based on a nominal source of 196 dB re: 1 μPa @ 1 m from the source and the standard 6 dB decrease in SPL with a doubling

of distance). Manatees and cetaceans have perception thresholds of about 50 dB, although limited data on manatee hearing are available (Gerstein *et al.* 1999). It would be inaccurate to assume that the animals would not hear the sonar; however, using 130dB as the threshold would alleviate some of our concerns relating to the potential harassment of marine mammals.

6. We recommend that it be clarified what methods will be used to monitor for marine mammals within the 200-meter safety zone and what "night vision devices" are proposed to assist in this visual inspection. Please elaborate on any data showing that these devices have been effective in the proposed circumstances. Additionally, all observers should be qualified, by training and previous experience, in marine mammal observation techniques. Observers should also be tasked with recording marine animal behavioral effects of the activities during the course of the study. Although passive aural detection requires that the animals be vocalizing, listening devices might provide an additional avenue for identifying the presence of marine mammals. Due to the visibility limitations in most of these areas, we recommend using passive listening devices in order to detect marine mammals.

7. We recommend that the DEA clarify the limit of actual testing impacts on maps and show how the waterways outside of the work areas (such as tributaries, manatee aggregation areas, etc.) will be avoided and designate an appropriate distance be maintained as a buffer from the areas.

8. Please correct all references to manatees being able to echolocate, as they do not echolocate.

9. Please clarify within the document the number of ROV/AUVs expected to be deployed simultaneously at any one project site. What kinds of noise do the ROV/AUVs themselves make? Can an ROV/AUV operator detect a marine mammal (which should have some acoustic characteristics of a human underwater)? Have marine mammal behavioral responses to ROV/AUVs themselves (with or without loud noises) been evaluated? From the description of the visual inspections, it is difficult to determine whether a marine mammal that was missed by visual inspections would be detected via instruments on the ROV/AUV.

10. Please clarify how the signals from all sources are to be generated, and determine if there is any possibility that harmonics generated by the equipment could be within the hearing range of any marine mammal.

Conclusion

As stated in the beginning of this letter, many of these issues have already been discussed with the U.S. Coast Guard and USF in a teleconference call on May 15, 2006. We are pleased that they have already agreed to implement some of our recommendations, and that they have requested data layers from the FWRI in order to better plan and revise the document. These datasets are in the process of being compiled for delivery; however, we would like to reiterate that there are limitations to each dataset that may not be readily apparent even with the metadata.

We encourage the USCG to contact us for additional clarification as they use these datasets. Finally, our detailed recommendations are provided so that the DEA can be amended and corrected as appropriate prior to publication of a final document.

We fully support efforts to maintain and improve the safety of our ports. To that end, we look forward to continued collaboration so that the tests minimize potential impacts to fish and wildlife resources, and also so that the data collected can benefit the analysis that would be needed for a permanent program. We note that the intensity of a permanent program may warrant a full EIS; therefore, we support the quantification of impacts gathered by this testing program, particularly as they relate to impacts to fish and wildlife resources. We anticipate that this information will be valuable in determining how to avoid and minimize potential impacts, particularly to listed species, when a permanent program is in place.

It is not clear at this time if the testing would be consistent with Chapters 370 and 372, Florida Statutes, under the Florida Coastal Management Program/Coastal Zone Consistency Act, so we are further committed to working with the USCG and USF to ensure that this will be the case when the final EA is prepared. We appreciate the opportunity to provide input on this project and are available to provide additional assistance for our suggested mitigation proposals, if needed. Please do not hesitate to contact me at 850-488-6661 if you would like to coordinate further, or Sentiel Rommel or Chérie Keller at 727-896-8626 if you have any technical questions regarding these comments.

Sincerely,

Mary Ann Poole

Mary Ann Poole, Director
Office of Policy and Stakeholder Coord.

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cc: David Hankla, USFWS, Jacksonville

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Mr. Miles Croom
Assistant Regional Administrator for Habitat Conservation
U.S. Department of Commerce
National Oceanic and Atmospheric Administration F/SER4
9721 Executive Center Drive North
St. Petersburg, FL 33702

Dear Mr. Croom:

Enclosed is the Final Environmental Assessment (EA) of Testing Equipment Under Development at the University of South Florida (USF), Center for Ocean Technology (COT) and Finding of No Significant Impact (FONSI). The U.S. Coast Guard (CG) has revised the EA in response to the comments that you submitted regarding the proposed action (dated May 2, 2006), as well as comments received from the U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS) Protected Resources Division, and the Florida Department of Environmental Protection (FDEP). Preparation of the EA was conducted in accordance with the National Environmental Policy Act (NEPA) of 1969 (Section 102(2)(c)) and its implementing regulations (40 Code of Federal Regulations (CFR), Part 1500) and CG policy (Commandant Instruction M16475.1D, Procedures for Considering Environmental Impacts).

The CG appreciates the comments your office provided. We have reviewed the comments and have revised the EA accordingly. Because no impacts on essential fish habitat (EFH) are expected, no additional detail on EFH was added to the EA. Adding this detail would be beyond the scope necessary for an EA, based on the context and extent of the potential impacts.

Thank you again for your comments. The CG appreciates the long standing cooperation our agencies have enjoyed. If you have questions about the proposed testing of equipment under development please contact Mr. Scot T. Tripp at (860) 441-2680.

Sincerely,

T. W. JONES
Captain, U.S. Coast Guard

Enclosure

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Mr. David Bernhart
Assistant Regional Administrator for Protected Resources
U.S. Department of Commerce
National Oceanic and Atmospheric Administration F/SER3
263 13th Avenue South
St. Petersburg, FL 33701

Dear Mr. Bernhart:

Enclosed is the Final Environmental Assessment (EA) of Testing Equipment Under Development at the University of South Florida (USF), Center for Ocean Technology (COT) and Finding of No Significant Impact (FONSI). The U.S. Coast Guard (CG) has revised the EA in response to the comments that you submitted regarding the proposed action (dated April 28, 2006), as well as comments received from the U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), Habitat Conservation Division, and the Florida Department of Environmental Protection (FDEP). Preparation of the EA was conducted in accordance with the National Environmental Policy Act (NEPA) of 1969 (Section 102(2)(c)) and its implementing regulations (40 Code of Federal Regulations (CFR), Part 1500) and CG policy (Commandant Instruction M16475.1D, Procedures for Considering Environmental Impacts).

Pursuant to the analysis found in the EA, the CG requests your concurrence with our conclusion that implementation of the proposed action, when conducted in accordance with the operational protocols and precautionary measures described in the EA and below, is not likely to adversely affect threatened or endangered species, adversely modify or destroy designated critical habitat or take marine mammals.

The CG appreciates the comments your office provided. We have reviewed the comments and have revised the EA accordingly. Specifically, an analysis of the potential effects of the proposed action on the endangered sperm whale (*Scaphirhynuchus albus*) and the Gulf sturgeon (*Acipenser oxyrhynchus desotoi*) critical habitat in Lake Pontchartrain are addressed in Sections 3.4.2.1 and 4.4.2; Johnson's seagrass (*Halophila johnsonii*) and Johnson's seagrass critical habitat are addressed in Sections 3.4.2.2 and 4.4.2; and because they were listed as threatened on May 9, 2006, elkhorn coral (*Acropora palmata*) and staghorn (*Acropora cervicornis*) are addressed in Sections 3.4.2.2 and 4.4.2. Please note that information regarding the shortnose sturgeon (*Acipenser brevirostrum*) is addressed on page 3-29 of Sections 3.4.2.2 and 4.4.2 of the EA.

The operational frequencies of all acoustic components of the systems appear in Table 2-3. The hearing range of manatees was revised in the EA. Based on consultation with the Florida Fish and Wildlife Commission (see revised Figures 2-2 through 2-5), the CG has revised the operational study areas to avoid areas where manatees congregate. The data in the EA and the operating parameters of the test equipment supports the conclusion that manatees are only capable of detecting the transponders and acoustic modems (16–40 kHz) which are components of the AUV system. However, the AUV system will only be operated offshore and in main shipping channels, not in proximity to areas where manatees congregate. While being operated in inshore shipping channels, acoustic transponders will be constrained to an SPL of 188 decibels (dB) with sound attenuating to below 160 dB within 330 feet (100 m). Test procedures include implementation of a 660-foot (200-m) safety zone, monitored by CG-trained observers during testing. Additionally, a 660-foot (200-m) buffer will be maintained between the test site and the exclusion area. Furthermore, as stated in the EA, the laser will never be directed into the open water, but will be less than 16 feet (5 m) from the intended target (Sections 2.1.2, 4.3.2, and 4.4.2). Please note that cables, float lines and entanglement devices are not associated with this project. To summarize, operational protocols and protective measures that will be implemented to minimize adverse effects on protected marine mammals, sea turtles and other protected species include:

- A safety zone of 660 feet (200 m) (which will be beyond the 160-dB contour for each equipment type) will be visually monitored by a CG-trained marine mammal observer for marine mammal and sea turtle activity for 20 minutes prior to commencing testing. Night vision devices will be used to monitor safety zones after dark.

- An additional 660-foot (200-m) buffer will be maintained between the test site and the exclusion areas presented in Figures 2-2 through 2-5.

- Data suggests that all sound associated with the systems being tested will attenuate below 160 dB, the threshold above which some marine mammals have shown behavioral changes, (*see e.g.,* McInnis, 2004), within 330 feet (100 m).

- Equipment testing will avoid all ecologically sensitive areas, such as seagrass areas and wetlands; marine sanctuaries; North Atlantic right whale (*Eubalaena glacialis)* or Johnson's seagrass (*Halophila johnsonii*) critical habitat; known locations of hardbottom habitats (including coral, vermetid, and coquina reefs); areas where manatees are known to congregate; off the coast of Port Everglades/Ft. Lauderdale from 1 January through 1 May, when North Atlantic right whales could be present; however, in the event sonar is deployed and marine mammals or sea turtles are observed which may approach the safety zone, the system will be shut down until the marine mammals or sea turtles exit the area.

- Sonar equipment will not be placed in a location such that it would interfere with obvious marine mammal throughways or choke-points where sonar may deter marine mammal or sea turtle movement (i.e., testing will not occur near the mouths of tributaries where manatees are known to congregate, on or near beaches where sea turtles nest, or in offshore waters less than 18 feet [5.5 m] deep).

- The vessel strike avoidance and reporting measures provided by NMFS, Southeast Region will be followed (Appendix C).
- All sound associated with the systems being tested are imperceptible to sea turtles, threatened and endangered fish, and most marine mammals.
- Support vessels would not anchor while in the Port of Miami and Port Everglades/Ft. Lauderdale offshore study areas; if branching corals are observed with imaging equipment in the Port of Miami and Port Everglades/Ft. Lauderdale offshore study areas, testing will be moved to a different location.
- The effective distance for all lasers is only 7 to 10 feet (2 to 3 m).
- Equipment testing will only occur 8 to 10 hours a day for 40 days per year.

A complete analysis of the effects of the Proposed Action is presented is Section 4.4.2. The Proposed Action (including sonar, laser, and vessel operations) is not expected to result in adverse effects to protected species, including manatees, sea turtles, Gulf sturgeon, pallid sturgeon, and shortnose sturgeon.

Thank you again for your comments. The CG appreciates the long standing cooperation our agencies have enjoyed. We request that the NMFS concur with our determination that testing of the equipment under development at USF, COT will not adversely affect any listed species or marine mammals under your purview. Please provide your concurrence within two weeks of receipt of this letter. Thank you for your assistance. If you have questions about the proposed testing of equipment under development or you cannot meet the requested two-week deadline, please contact Mr. Scot T. Tripp at (860) 441-2680.

Sincerely,

for

T. W. JONES
Captain, U.S. Coast Guard

Enclosure

U.S. Department of Homeland Security
United States Coast Guard

Research and Development Center
United States Coast Guard

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3913/765904
2006-0839
AUG - 2 2006

Mr. Russell Watson
USFWS-Lafayette, LA
Endangered Species
646 Cajundome Blvd. #400
Lafayette, LA 70506

Dear Mr. Watson:

Enclosed is the Final Environmental Assessment (EA) of Testing Equipment Under Development at the University of South Florida (USF), Center for Ocean Technology (COT) and Finding of No Significant Impact (FONSI). The U.S. Coast Guard (CG) has revised the EA in response to the comments that you submitted regarding the proposed action (dated May 9, 2006), as well as comments received from the National Marine Fisheries Service (NMFS) and the Florida Department of Environmental Protection (FDEP). Preparation of the EA was conducted in accordance with the National Environmental Policy Act (NEPA) of 1969 (Section 102(2)(c) and its implementing regulations (40 Code of Federal Regulations (CFR), Part 1500) and CG policy (Commandant Instruction M16475.1D, Procedures for Considering Environmental Impacts).

Pursuant to the analysis found in the EA, the CG requests your concurrence with our conclusion that implementation of the proposed action, when conducted in accordance with the operational protocols and precautionary measures described in the EA and below, is not likely to adversely affect threatened or endangered species, adversely modify or destroy designated critical habitat or take marine mammals.

The CG appreciates the comments your office provided. We have reviewed the comments and have revised the EA accordingly. Specifically, the environmental impacts of the proposed action on the endangered pallid sturgeon (*Scaphirhynuchus albus*) and the Gulf sturgeon (*Acipenser oxyrhynchus desotoi*) critical habitat in Lake Pontchartrain are addressed in Sections 3.4.2.1 and 4.4.2. Please note that information regarding the shortnose sturgeon (*Acipenser brevirostrum*) is addressed on page 3-29 of Sections 3.4.2.2 and 4.4.2 of the EA.

The operational frequencies of all acoustic components of the systems appear in Table 2-3. The hearing range of manatees was revised in the EA. Based on consultation with the Florida Fish and Wildlife Commission (see revised Figures 2-2 through 2-5), the CG has revised the operational study areas to avoid areas where manatees congregate. The data in the EA and the operating parameters of the test equipment supports the conclusion that manatees are only capable of detecting the transponders and acoustic modems (16–40 kHz) which are components of the AUV system. However, the AUV system will only be operated offshore and in main shipping channels, not in proximity to areas where manatees congregate. While being operated in inshore shipping channels, acoustic transponders will be constrained to an SPL of 188 decibels (dB) with sound attenuating to below 160 dB within 330 feet (100 m). Test procedures include implementation of a 660-foot (200-m) safety zone, monitored by CG-trained observers during testing. Additionally, a 660-foot (200-m) buffer will be maintained between the test site and the exclusion area. Furthermore, as stated in the EA, the laser will never be directed into the open water, but will be less than 16 feet (5 m) from the intended target (Sections 2.1.2, 4.3.2, and 4.4.2). Please note that cables, float lines and entanglement devices are not associated with this project. To summarize, operational protocols and protective measures that will be implemented to minimize adverse effects on protected marine mammals, sea turtles and other protected species include:

- A safety zone of 660 feet (200 m) (which will be beyond the 160-dB contour for each equipment type) will be visually monitored by a CG-trained marine mammal observer for marine mammal and sea turtle activity for 20 minutes prior to commencing testing. Night vision devices will be used to monitor safety zones after dark.

- An additional 660-foot (200-m) buffer will be maintained between the test site and the exclusion areas presented in Figures 2-2 through 2-5.

- Data suggests that all sound associated with the systems being tested will attenuate below 160 dB, the threshold above which some marine mammals have shown behavioral changes, (*see e.g.*, McInnis, 2004), within 330 feet (100 m).

- Equipment testing will avoid all ecologically sensitive areas, such as seagrass areas and wetlands; marine sanctuaries; North Atlantic right whale (*Eubalaena glacialis)* or Johnson's seagrass (*Halophila johnsonii*) critical habitat; known locations of hardbottom habitats (including coral, vermetid, and coquina reefs); areas where manatees are known to congregate; off the coast of Port Everglades/Ft. Lauderdale from 1 January through 1 May, when North Atlantic right whales could be present; however, in the event sonar is deployed and marine mammals or sea turtles are observed which may approach the safety zone, the system will be shut down until the marine mammals or sea turtles exit the area.

- Sonar equipment will not be placed in a location such that it would interfere with obvious marine mammal throughways or choke-points where sonar may deter marine mammal or sea turtle movement (i.e., testing will not occur near the mouths of tributaries where manatees are known to congregate, on or near beaches where sea turtles nest, or in offshore waters less than 18 feet [5.5 m] deep).

- The vessel strike avoidance and reporting measures provided by NMFS, Southeast Region will be followed (Appendix C).

- All sound associated with the systems being tested are imperceptible to sea turtles, threatened and endangered fish, and most marine mammals.

- Support vessels would not anchor while in the Port of Miami and Port Everglades/Ft. Lauderdale offshore study areas; if branching corals are observed with imaging equipment in the Port of Miami and Port Everglades/Ft. Lauderdale offshore study areas, testing will be moved to a different location.

- The effective distance for all lasers is only 7 to 10 feet (2 to 3 m).

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A complete analysis of the effects of the Proposed Action is presented is Section 4.4.2. The Proposed Action (including sonar, laser, and vessel operations) is not expected to result in adverse effects to protected species, including manatees, sea turtles, Gulf sturgeon, pallid sturgeon, and shortnose sturgeon.

Thank you again for your comments. The CG appreciates the long standing cooperation our agencies have enjoyed. We request that the USFWS concur with our determination that testing of the equipment under development at USF, COT will not adversely affect any listed species or marine mammals under your purview. Please provide your concurrence within two weeks of receipt of this letter. Thank you for your assistance. If you have questions about the proposed testing of equipment under development or you cannot meet the requested two-week deadline, please contact Mr. Scot T. Tripp at (860) 441-2680.

Sincerely,

for

T. W. JONES
Captain, U.S. Coast Guard

Enclosure

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3913/765904
2006-0841
AUG - 2 2006

Mr. David Hankla
USFWS-Jacksonville, FL
Ecological Services Field Office
6620 Southpoint Drive, South, #310
Jacksonville, FL 32216

Dear Mr. Hankla:

Enclosed is the Final Environmental Assessment (EA) for Testing Equipment Under Development at the University of South Florida (USF), Center for Ocean Technology (COT) and draft Finding of No Significant Impact (FONSI). U.S. Coast Guard (CG) has revised the EA in response to comments that Mr. Russel Watson submitted regarding the proposed action (dated May 9, 2006), as well as comments received from the National Marine Fisheries Service (NMFS) and the Florida Department of Environmental Protection (FDEP). Preparation of the EA was conducted in accordance with the National Environmental Policy Act (NEPA) of 1969 (Section 102(2)(c)) and its implementing regulations (40 Code of Federal Regulations (CFR), Part 1500) and CG policy (Commandant Instruction M16475.1D, Procedures for Considering Environmental Impacts).

Pursuant to the analysis found in the EA, the CG requests your concurrence with our conclusion that implementation of the proposed action, when conducted in accordance with the operational protocols and precautionary measures described in the EA and below, is not likely to adversely affect threatened or endangered species, adversely modify or destroy designated critical habitat or take marine mammals.

The CG appreciates the comments your office provided. We have reviewed the comments and revised the EA accordingly. Specifically, the environmental impacts of the proposed action on the endangered pallid sturgeon (*Scaphirhynuchus albus*) and the Gulf sturgeon (*Acipenser oxyrhynchus desotoi*) critical habitat in Lake Pontchartrain are addressed in Sections 3.4.2.1 and 4.4.2. Please note that information regarding the shortnose sturgeon (*Acipenser brevirostrum*) is addressed on page 3-29 of Sections 3.4.2.2 and 4.2.2 of the EA.

The operational frequencies of all acoustic components of the systems appear in Table 2-3. The hearing range of manatees was revised in the EA. Based on consultation with the Florida Fish and Wildlife Commission (see revised Figures 2-2 through 2-5), the CG has revised the operational study areas to avoid areas where manatees congregate. The data in the EA and the operating parameters of the test equipment supports the conclusion that manatees are only capable of detecting the transponders and acoustic modems (16–40 kHz) which are components of the AUV system. However, the AUV system will only be operated offshore and in main shipping channels, not in proximity to areas where manatees congregate. While being operated in inshore shipping channels, acoustic transponders will be constrained to an SPL of 188 decibels (dB) with sound attenuating to below 160 dB within 330 feet (100 m). Test procedures include implementation of a 660-foot (200-m) safety zone, monitored by CG-trained observers during testing. Additionally, a 660-foot (200-m) buffer will be maintained between the test site and the exclusion area. Furthermore, as stated in the EA, the laser will never be directed into the open water, but will be less than 16 feet (5 m) from the intended target (Sections 2.1.2, 4.3.2, and 4.4.2). Please note that cables, float lines and entanglement devices are not associated with this project. To summarize, operational protocols and protective measures that will be implemented to minimize adverse effects on protected marine mammals, sea turtles and other protected species include:

- A safety zone of 660 feet (200 m) (which will be beyond the 160-dB contour for each equipment type) will be visually monitored by a CG-trained marine mammal observer for marine mammal and sea turtle activity for 20 minutes prior to commencing testing. Night vision devices will be used to monitor safety zones after dark.
- An additional 660-foot (200-m) buffer will be maintained between the test site and the exclusion areas presented in Figures 2-2 through 2-5.
- Data suggests that all sound associated with the systems being tested will attenuate below 160 dB, the threshold above which some marine mammals have shown behavioral changes, (*see e.g.,* McInnis, 2004), within 330 feet (100 m).
- Equipment testing will avoid all ecologically sensitive areas, such as seagrass areas and wetlands; marine sanctuaries; North Atlantic right whale (*Eubalaena glacialis)* or Johnson's seagrass (*Halophila johnsonii*) critical habitat; known locations of hardbottom habitats (including coral, vermetid, and coquina reefs); areas where manatees are known to congregate; off the coast of Port Everglades/Ft. Lauderdale from 1 January through 1 May, when North Atlantic right whales could be present; however, in the event sonar is deployed and marine mammals or sea turtles are observed which may approach the safety zone, the system will be shut down until the marine mammals or sea turtles exit the area.
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- The vessel strike avoidance and reporting measures provided by NMFS, Southeast Region will be followed (Appendix C).
- All sound associated with the systems being tested are imperceptible to sea turtles, threatened and endangered fish, and most marine mammals.

- Support vessels would not anchor while in the Port of Miami and Port Everglades/Ft. Lauderdale offshore study areas; if branching corals are observed with imaging equipment in the Port of Miami and Port Everglades/Ft. Lauderdale offshore study areas, testing will be moved to a different location.

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A complete analysis of the effects of the Proposed Action is presented is Section 4.4.2. The Proposed Action (including sonar, laser, and vessel operations) is not expected to result in adverse effects to protected species, including manatees, sea turtles, Gulf sturgeon, pallid sturgeon, and shortnose sturgeon.

Thank you again for your comments. The CG appreciates the long standing cooperation our agencies have enjoyed. We request that the USFWS concur with our determination that testing of the equipment under development at USF, COT will not adversely affect any listed species or marine mammals under your purview. Please provide your concurrence within two weeks of receipt of this letter. Thank you for your assistance. If you have questions about the proposed testing of equipment under development or you cannot meet the requested two-week deadline, please contact Mr. Scot T. Tripp at (860) 441-2680.

Sincerely,

for

T. W. JONES
Captain, U.S. Coast Guard

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3913/765904
2006-0838

AUG - 2 2006

Ms. Sally Mann, Director
Florida Department of Environmental Protection
Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

Dear Ms. Mann:

Enclosed is the Final Environmental Assessment (EA) of Testing Equipment Under Development at the University of South Florida (USF), Center for Ocean Technology (COT) and Finding of No Significant Impact (FONSI). The U.S. Coast Guard (CG) has revised the EA in response to the comments that you submitted regarding the proposed action (dated May 31, 2006), as well as comments received from the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS). Preparation of the EA was conducted in accordance with the National Environmental Policy Act (NEPA) of 1969 (Section 102(2)(c)) and its implementing regulations (40 Code of Federal Regulations (CFR), Part 1500) and CG policy (Commandant Instruction M16475.1D, Procedures for Considering Environmental Impacts).

The CG appreciates the comments your office provided. We have reviewed the comments and have revised accordingly. Responses to your specific comments are also enclosed.

The operational frequencies of all acoustic components of the systems appear in Table 2-3. The hearing range of manatees was revised in the EA. Based on consultation with the Florida Fish and Wildlife Commission (see revised Figures 2-2 through 2-5), the CG has revised the operational study areas to avoid areas where manatees are known to congregate. The data in the EA and the operating parameters of the test equipment supports the conclusion that manatees are only capable of detecting the transponders and acoustic modems (16–40 kHz) which are components of the AUV system. However, the AUV system will only be operated offshore and in main shipping channels, not in proximity to areas where manatees congregate. While being operated in inshore shipping channels, acoustic transponders will be constrained to an SPL of 188 decibels (dB) with sound attenuating to below 160 dB within 330 feet (100 m). Test procedures include implementation of a 660-foot (200-m) safety zone, monitored by CG-trained observers during testing. Additionally, a 660-foot (200-m) buffer will be maintained between the test site and the exclusion area. Furthermore, as stated in the EA, the laser will never be directed into the open water, but will be less than 16 feet (5 m) from the intended target (Sections 2.1.2, 4.3.2, and 4.4.2). Please note that cables, float lines and entanglement devices are not associated with this project. To summarize, operational protocols and protective measures that will be implemented to minimize adverse effects on protected marine mammals, sea turtles and other protected species include:

- A safety zone of 660 feet (200 m) (which will be beyond the 160-dB contour for each equipment type) will be visually monitored by a CG-trained marine mammal observer for marine mammal and sea turtle activity for 20 minutes prior to commencing testing. Night vision devices will be used to monitor safety zones after dark.
- An additional 660-foot (200-m) buffer will be maintained between the test site and the exclusion areas presented in Figures 2-2 through 2-5.
- Data suggests that all sound associated with the systems being tested will attenuate below 160 dB, the threshold above which some marine mammals have shown behavioral changes, (*see e.g.*, McInnis, 2004), within 330 feet (100 m).
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- The vessel strike avoidance and reporting measures provided by NMFS, Southeast Region will be followed (Appendix C).
- All sound associated with the systems being tested are imperceptible to sea turtles, threatened and endangered fish, and most marine mammals.
- Support vessels would not anchor while in the Port of Miami and Port Everglades/Ft. Lauderdale offshore study areas; if branching corals are observed with imaging equipment in the Port of Miami and Port Everglades/Ft. Lauderdale offshore study areas, testing will be moved to a different location.
- The effective distance for all lasers is only 7 to 10 feet (2 to 3 m).
- Equipment testing will only occur 8 to 10 hours a day for 40 days per year.

The CG has entered informal consultation with the USFWS and NMFS under the Endangered Species Act (ESA) (16 U.S.C. §§1531-1544). Pursuant to the analysis found in the EA, the CG concluded that implementation of the proposed action, when conducted in accordance with the operational protocols and precautionary measures described in the EA and above, is not likely to adversely affect threatened or endangered species, adversely modify or destroy designated critical habitat or take marine mammals. Additionally, no significant impacts on any of Florida's coastal resources are anticipated.

Thank you again for your comments. The CG appreciates the long standing cooperation our agencies have enjoyed. If you have questions about the proposed testing of equipment under development, please contact Mr. Scot T. Tripp at (860) 441-2680.

Sincerely,

for

T. W. JONES
Captain, U.S. Coast Guard

Enclosures

Copy: Ms. Mary Ann Poole

Enclosure:
Response to Florida Department of Environmental Protection
Comments Dated May 31, 2006

Comment Number	Comment	Response
1	***Potentially Affected Resources, Florida Manatee*, Port of Jacksonville, Page 3, Paragraph 3, Milligan May 24, 2006 Letter.** Several tributaries in the St. Johns River should be considered part of the area of impact, based on the distance the actual testing may extend into shallow-water areas, since the impacts may propagate farther in shallower water.	Because the systems would be designed to maintain safety of commercial traffic ways, the proposed testing would be conducted in areas where commercial and military vessels would be expected to operate (i.e., busy ports, offshore anchorages, and offshore fairways). Testing will not be conducted in tributaries that are not currently open to ocean going commercial traffic. The EA has been revised to include maps that identify sensitive areas that will be avoided during testing (Figures 2-2 through 2-5). Under the equipment testing procedures outlined in the EA there is no reasonable scenario or parabolic effect that would allow the sound produced by the equipment being tested to propagate further than currently estimated in the EA. As discussed in the EA important manatee areas and other areas where manatees are known to congregate. Please see revised Figure 2-2 through 2-5. Sound from the proposed AUV recovery transponder and acoustic modems are the only equipment that is within the hearing range of manatees. To further avoid any measurable impacts the SPL of the transponders will be maintained at 188 dB when testing in the inshore shipping channels. Transponders would have a 15 milisecond (ms) ping every second. The acoustic modem would have approximately a 1 second ping every 15 or 30 seconds. Based on the propagation loss estimations, the 130 dB contour for the transponders and acoustic modems would not extend further than 700 m from the testing (Table 2-3). Based on the exclusion areas presented in the EA as proposed by USF and an additional 200-m buffer, it is unlikely that sound from the acoustic transponders and modems would ensonify important manatee areas at levels that would have any measurable impact on manatees in those areas.

2	***Potentially Affected Resources, Florida Manatee*, Ports of St. Petersburg/Tampa, Page 3, Paragraph 4, Milligan May 24, 2006 Letter.** There are three principal warm-water discharge areas in the Tampa/Bay region that attract manatees. Two are located in Hillsborough County [Tampa Electric Company's (TECO) Big Bend generating plant and Port Sutton plant] and on is located in Pinellas County (Florida Power and Light Corporation's Bartow power plant)....It is our opinion that several of these areas should be considered as part of the area of impact.	These areas will be avoided by the equipment testing. Please see revised Figure 2-2.
3	***Potentially Affected Resources, Florida Manatee*, Port of Miami, Page 4, Paragraph 3, Milligan May 24, 2006 Letter.** Manatees have been most frequently observed in channels and seagrass beds south and west of the port. These areas are included in "essential manatee habitat" as defined in the Miami-Dade Manatee Protection Plan, which has been approved by the state of Florida. In addition, portions of the seagrass beds south of the Port are part of state-designated manatee protection "no-entry" zone, one of only two such zone in Miami-Dade County.	These areas will be avoided. Additionally, all seagrass beds in the Florida study areas will be avoided. Please see revised Figures 2-2 through 2-5.
4	***Potentially Affected Resources, North Atlantic Right Whale*, Page 5, Paragraph 2, Milligan May 24, 2006 Letter.** ...we note that whales may be present in the open ocean portion of the test area, and on rare occasions have been observed within the St. Johns River.	As presented in Figure 2-5, no portion of the Port of Jacksonville Study Area is in the open ocean. Additionally, the acoustic equipment is well above the known hearing range of right whales and would not affect right whales. The potential for a whale to occur in the St. Johns River contemporaneously with equipment testing is so low, it is discountable. As such, testing equipment will not be restricted in the St. Johns River. However, the Coast Guard has agreed to both 1) implement NMFS measures to avoid vessel collisions and 2) avoid testing in areas offshore of Ft. Lauderdale/Port Everglades when right whales would be most likely to occur there (1 January through 1 May).

	***Potentially Affected Resources*, <u>Other Marine Species</u>, Page 5, Paragraph 4, Milligan May 24, 2006 Letter.** The DEA does not document all potentially affected marine species. All potentially affected marine mammals must be considered because they are all protected under the Marine Mammal Protection Act. Two good sources for species information are Waring *et al.* (2004) and Mullin and Fulling (2003).	All marine mammals and other species potentially affected have been considered. Species that were added include the Atlantic spotted dolphin, pantropical spotted dolphin, sperm whale, Johnson's seagrass, and elkhorn and staghorn corals. The threatened and endangered species considered were based on lists provided NMFS and USFWS.
5	***Potentially Affected Resources, General Issues of Concern*, <u>Comprehensiveness of Species Considered</u>, Page 5, Paragraph 6, Milligan May 24, 2006 Letter.** It is important to both adequately evaluate potential impacts and measure the actual impacts on manatees, whales, sea turtles, diving birds, dolphin, and marine fishes in detail to accurately determine the impacts of this project for short-term, long-term or permanent affects.	Potential effects of these marine animals have been assessed in the EA.
6	***Potentially Affected Resources, General Issues of Concern*, <u>Comprehensiveness of Species Considered</u>, Page 6, Paragraph 1 (continued from page 5), Milligan May 24, 2006 Letter.** We note that observers must be capable of determining their [marine animals] presence and documenting any observed responses.	Comment noted.
7	***Potentially Affected Resources, General Issues of Concern*, <u>Effects on Manatees</u>, Page 6, Paragraph 2, Milligan May 24, 2006 Letter.** Disturbing manatees within essential manatee habitat can alter their behavior, which may in turn endanger their survival. If manatees are disturbed by the proposed activities, movement to other suitable habitat can result in overcrowding of animals at other existing high-use areas.	Equipment testing would avoid areas where manatees are known to congregate. Please see revised Figure 2-2 through 2-5. Based on the propagation loss estimations, signals from the transponders and acoustic modems would dissipate to 130 dB in approximately 700 m. Based on the exclusion areas presented in Figures 2-2 through 2-3, transponder and acoustic modem signals would not extend into important manatee areas. Additionally, a 200-m safety zone will be monitored (CG-trained marine mammal observers) for marine mammal and sea turtle activity. If marine mammal (or sea turtle) activity approached this safety zone, the equipment would be shut down. (See also response to Comment 1)

8	***Potentially Affected Resources, General Issues of Concern*, <u>Effects on Manatees</u>, Page 6, Paragraph 2, Milligan May 24, 2006 Letter.** The proximity of some of these study sites to warm-water discharges makes these areas extremely important manatee habitat. If manatees choose to leave the area due to disturbances related to this project, there is the possibility of an increase in manatee deaths caused by cold stress.	Areas of warm water discharge will be avoided by equipment testing. Please see revised Figures 2-2 through 2-5.
9	***Potentially Affected Resources, General Issues of Concern*, <u>Ability to Detect Manatees for Right Whales by Sight</u>, Page 6, Paragraph 3, Milligan May 24, 2006 Letter.** The DEA does not state whether the visual inspection will be performed by trained observers, which should be required of all lookouts, nor does it indicate how throughways and pathways would be determined for marine mammals.	The EA has been revised to clarify that the marine mammal observer will be CG-trained.
10	***Potentially Affected Resources, General Issues of Concern*, <u>Potential for Behavioral Impacts</u>, Page 6, Paragraph 4, Milligan May 24, 2006 Letter.** Schlundt *et al.* (2000) conducted studies that used animals trained to remain on station despite obvious agitation. Cetacean behavioral responses in the wild will likely differ from those in captivity. For example, right whales have been recorded to show string behavioral responses to signals as low as 133dB.	The sounds detected by right whale in the Schlundt et al. (2000) study were specifically designed to alert right whales. These signals were 0.5 and 0.8 kHz, which is well below the frequencies produced by the equipment being tested. All scientific evidence indicates that the sounds produced by the equipment being tested are imperceptible at right whales.
SR1	**Specific Recommendations, Page 7, Milligan May 24, 2006 Letter.** We recommend that Dr. David Mann (University of South Florida) and Dr. Douglas Nowacek (Florida State University) be consulted for revisions to this document. We further recommend including additional information concerning hearing and associated impacts on marine mammals, including references to relevant literature.	The EA has been reviewed by Dr. Mann and her comments will be incorporated as appropriate The hearing sensitivity data reported in the EA for marine mammals were revisited. Where available, more recent data were used.

SR2	**Specific Recommendations, Page 7, Milligan May 24, 2006 Letter.** In a letter from the United States Marine Mammal Commission to the Department of the Navy (Cottingham 2006), it was suggested that the Navy consult with the National Marine Fisheries Service. We concur with this recommendation, and also recommend adding the U.S. Fish and Wildlife Service for manatees.	Both the NMFS and USFWS have been consulted regarding the EA, as presented in Appendix C.
SR3	**Specific Recommendations, Page 7, Milligan May 24, 2006 Letter.** Due to the proximity of right whale critical habitat, we recommend that any studies at the Port of Jacksonville occur outside of the right whale calving season, avoiding activities between November 15 and May 1. Additionally, although it is unusual for right whales to travel south of critical habitat, restricting activity between January 1 through May 1 at the Port of Ft. Lauderdale/Everglades to avoid the potential for interaction would seem prudent, given recorded sightings of right whales south of the critical habitat.	Activities will not be restricted in the Port of Jacksonville because of the potential for the presence of right whales is so low. If a right whale is known to be in the Port of Jacksonville Study Area (which is completely inshore, no equipment testing will be conducted). Additionally, all scientific evidence indicates that the sounds produced by the equipment being tested are imperceptible to right whales. NMFS vessel avoidance measures will be followed. The likelihood of a support vessel encountering a right whale in the Port of Jacksonville is so low as to be discountable. Activities will be restricted offshore areas of the Port Everglades/Ft. Lauderdale Study Area from 1 January through 1 May. Please see the revised EA.

SR4	**Specific Recommendations, Page 7, Milligan May 24, 2006 Letter.** We are pleased that the USCG has agreed to model the propagation of sound at various depths. We recommend that the model runs address the differences of depth and topography for each of the sites to ensure that the maximum distances to the 160 db isopleths are accurate. Are the "maximum distance" estimates to the 160 dB isopleths in the environmental assessment calculated for deep or shallow water? Is there a chance of shallow water increasing any of these distances? It would be especially important to measure and model sound propagation in the Port of Jacksonville, given the proximity to right whale critical habitat and the occasional occurrence within the river. Due to behavioral responses seen by right whales in response to signals as low as 133 db re: 1μPa (Nowacek *et al.*, 2004), we recommend using 130 dB as opposed to the 160 dB currently being used to evaluate the potential impact to marine mammals.	Rather than conducting extensive sound propagation modeling to include all the variations of topography, depth, and water characteristics, it was decided that all equipment testing would avoid tributaries plus the additional 200-m buffer. Based on this exclusion, the propagation loss presented in the EA is sufficient for the scope of the EA. However, the EA was revised to reflect a more appropriate attenuation loss coefficient and reflects the propagation loss to the 130 db contour. Based on the propagation loss estimation, the 130 dB contour for the transponders and acoustic modems would not extend 700 m from the testing. Under the equipment testing procedures outlined in the EA there is no reasonable scenario or parabolic effect that would allow the sound produced by the equipment being tested to propagate further than currently estimated in the EA. Although behavioral responses have been seen by right whales in response to signals as low as 133 db re:1μPa (Nowacek *et al.*, 2004), it should be noted that this was in the whale's hearing range and was actually whale vocalizations being played back. In the Port of Jacksonville, the lowest frequency that would be used in testing will be 375 khz which is well above the right whale's hearing range (< 0.4 khz - see Table 3.2). Therefore the 160 db contour is considered reasonable for the scope of this EA. Based on the exclusion areas proposed by USF and an additional 200-m buffer, it is unlikely that sound from the acoustic transponders and modems would ensonify important manatee areas. The transponders and acoustic modems are the only equipment that is within the hearing range of manatees and will be operated offshore and in the main shipping channels only. The SPL of the transponders will be maintained at 188 dB while in the inshore shipping channels. Transponders would have a 15 milisecond (ms) ping every second. The acoustic modem would have approximately a 1 second ping every 15 or 30 seconds.

SR5	**Specific Recommendations, Page 7, Milligan May 24, 2006 Letter.** We recommend that estimates of hearing capabilities in marine mammals, including manatees, be revisited (Table 3-2 of the draft EA). The threshold sensitivities of the cetaceans that are included in the table are far below the levels proposed (160 dB). The proposal states that a low amount of energy will be used for the sonars. The proposed sonars to be used range from mid-frequency to ultra-high frequency with sound pressure levels (SPLs) ranging from 190 dB re: 1 μPa to 217 dB re: 1μPa at 1 m. A marine mammal just outside the 200-meter safe zone for the mid-frequency sonar could receive nearly 150 db re: 1μPa (based on a nominal source of 196 dB re: 1μPa @ 1 μPa @ 1 m from the source and the standard 6 dB decrease in SPL with a doubling of distance). Manatees and cetaceans have perception thresholds of about 50 dB, although limited data on manatee hearing are available (Gerstein *et al.*, 1999). It would be inaccurate to assume that the animals would not hear the sonar; however using 130 dB as the threshold would alleviate some of our concerns relating to the potential harassment of marine mammals.	The hearing sensitivity data reported in the EA for marine mammals have been revised where appropriate. Additionally, the EA will be reviewed by Dr. Mann and his comments will be incorporated. The 160-dB threshold is based on advice given to USCG from NMFS (McInnis,2004). Based on the propagation loss estimation, the 130 dB contour for the transponders and acoustic modems would not extend 700 m from the testing. Based on the exclusion areas proposed by USF and an additional 200-m buffer, it is unlikely that sound from the acoustic transponders and modems would ensonify important manatee areas. The transponders and acoustic modems are the only equipment that is within the hearing range of manatees and will be operated offshore and in the main shipping channels only. The SPL of the transponders will be maintained at 188 dB while in the inshore

SR6	**Specific Recommendations, Page 8, Milligan May 24, 2006 Letter.** We recommend that it be clarified what methods will be used to monitor for marine mammals within the 200-meter safety zone and what "night vision devices" are proposed to assist in this visual inspection. Please elaborate on any data showing that these devices have been effective in the proposed circumstances. Additionally, all observers should be qualified, by training and previous experience, in marine mammal observation techniques. Observers should also be tasked with recording marine animal behavioral effects of the activities during the course of the study. Although passive aural detection requires that the animals be vocalizing, listening devices might provide an additional avenue for identifying the presence of marine mammals. Due to the visibility limitations in most of these areas, we recommend using passive listening devices in order to detect marine mammals.	USCG-trained marine mammal observers will use standard USCG methods to monitor for marine mammal activity. The use of night vision devices to monitor for marine mammals was based on advice from NMFS for other USCG sonar based activity. Based on ambient sound levels in the proposed study areas, it is unlikely that passive aural detection would be effective.
SR7	**Specific Recommendations, Page 8, Milligan May 24, 2006 Letter.** We recommend that the DEA clarify the limit of actual testing impacts on maps and show how the waterway outside of the work areas (such as tributaries, manatee aggregation areas, etc.) will be avoided and designate an appropriate distance be maintained as a buffer from the areas.	Figures 2-2 through 2-5 were revised as requested.
SR8	**Specific Recommendations, Page 8, Milligan May 24, 2006 Letter.** Please correct all references to manatees being able to echolocate, as they do not echolocate.	All references to manatee echolocation were corrected.

SR9	**Specific Recommendations, Page 8, Milligan May 24, 2006 Letter.** Please clarify within the document the number of ROV/AUVs expected to be deployed simultaneously at any one project site. What kinds of noise do the ROV/AUVs themselves make? Can an ROV/AUV operator detect a marine mammal (which should have some acoustic characteristics of a human underwater)? Have marine mammal behavioral responses to ROV/AUVs themselves (with or without loud noises) been evaluated? From the description of the visual inspections, it is difficult to determine whether a marine mammal that was missed by visual inspections would be detected via instruments on the ROV/AUV.	The document indicates that up to two platforms (1 each of an ROV, AUV, or pole-mount). It is not anticipated that the noise from an ROV or AUV propulsion systems would be substantively different than any other vehicle or vessel that would occur in the proposed study area (busy port areas).
SR10	**Specific Recommendations, Page 8, Milligan May 24, 2006 Letter.** Please clarify how the signals from all sources are to be generated, and determine if there is any possibility that harmonics generated by the equipment could be within the hearing range of any marine mammal.	Under the equipment testing procedures outlined in the EA there is no reasonable scenario, parabolic effect, or expected harmonics that would generate sound within the hearing range of any marine mammal other than what is addressed in the EA.

SR=Specific Recommendation

United States Department of the Interior

FISH AND WILDLIFE SERVICE
646 Cajundome Blvd.
Suite 400
Lafayette, Louisiana 70506

September 19, 2006

Commanding Officer
Attn: Mr. Scott T. Tripp
USCG Research and Development Center
1082 Shennecossett Road
Groton, Ct 06340-6048

Dear Mr. Tripp:

Please reference your August 2, 2006, letter (received in this office on August 11, 2006) and enclosed Final Environmental Assessment (EA) Testing Equipment Under Development at the University of South Florida, Center for Ocean Technology and associated Finding of No Significant Impact. In that letter you requested U.S. Fish and Wildlife Service (Service) concurrence with your determination that the proposed activities are not likely to adversely the endangered West Indian manatee (*Trichechus manatus*), the threatened bald eagle (*Haliaeetus leucocephalus*), the endangered brown pelican (*Pelecanus occidentalis*), the threatened piping plover (*Charadrius melodus*) and its critical habitat, the threatened Gulf sturgeon (*Acipenser oxyrhynchus desotoi*) and its critical habitat, and the endangered pallid sturgeon (*Scaphirhynchus albus*). The proposed activities in Louisiana would occur within the Lower Mississippi River Port Complex Study area. That area would include areas within the 20-mile radii seaward of the buoys marking the entrances of the Southwest Pass, South Pass, and Gulf Outlet Canal of the Mississippi River; the areas of developed port infrastructure within the Mississippi River from the entrances at Southwest Pass, South Pass, and the Gulf Outlet Canal north to Baton Rouge; and, the areas of developed infrastructure within the Lake Pontchartrain and Lake Borgne. In Florida, research is proposed in the Ports of St. Petersburg/Tampa, Port of Miami, Port of Ft. Lauderdale/Port of Everglades, and Port of Jacksonville. The systems to be tested would be comprised of commercially available equipment, and would include sonar and laser imaging and navigation equipment mounted on remotely operated vehicles, autonomous underwater vehicles, and pole mounts. In order to address additional Service concerns, the Service requested, and Mr. Tripp agreed (via his September 14, 2006, electronic mail), to allow the Service until September 19, 2006, to provide comments. The Service has reviewed the information you provided, and offers the following comments in accordance with the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.), and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.).

According to the EA, the following operational protocols will be implemented to minimize adverse affecting protected marine mammals, sea turtles, and other protected species: (1) a safety zone of 660 feet (ft) will be visually monitored by a Coast Guard-trained marine mammal observer for marine mammal and sea turtle activity for 20 minutes prior to commencing testing; (2) an additional 660-ft. buffer will be maintained between the test site and exclusion areas identified in Figures 2-2 through 2-5 in the EA; (3) equipment testing will avoid all ecologically sensitive areas as detailed in the EA including areas where manatees are known to congregate; (4) in the event that sonar is deployed and marine mammals or sea turtles are observed which may approach the safety zone, the system will be shut down until they exit the area; (5) sonar equipment will not be placed in a location such that it would interfere with obvious marine mammal throughways or choke-points where sonar may deter marine mammal or sea turtle movement; (6) as discussed in the EA, all sounds associated with the systems being tested are imperceptible to sea turtles, threatened and endangered fishes and most marine mammals, and the effective distance for lasers is 7 to 10 feet; and, (7) equipment testing will only occur 8 to 10 hours a day for 40 days per year.

Additionally, in a September 15, 2006, telephone conversation, Mr. Tripp indicated to Mr. John Milio (of the Service's Jacksonville, Florida Field Office) that there are no plans to conduct testing after dark, although there may be a few occasions where testing may extend into the early evening hours. Mr. Tripp also indicated that Tampa Bay is the only port where testing is being considered; the ports of Jacksonville, Miami, and Port Everglades, are being considered for prototype demonstrations after testing is complete. Because the Port Sutton and TECO-Big Bend areas on the northeastern shore of Tampa Bay contain, or are contiguous to, warm water manatee refugia, the Service requested no testing be considered in those areas during the months of December through February. Mr. Tripp agreed to those restrictions.

Therefore, based on the information presented in the EA and subsequent conditions as described by Mr. Tripp, the Service concurs that the proposed action may affect, but is not likely to adversely affect the West Indian manatee, the bald eagle, the brown pelican, the piping plover or its critical habitat, the gulf sturgeon or its critical habitat, and the pallid sturgeon.

The Service appreciates the cooperation of the U.S. Coast Guard in the planning stages of the proposed activity. If you have any additional questions or require further information: for testing in Louisiana, please contact Deborah Fuller (337/291-3124) of this office; for testing in Florida, please contact John Milio (904/232-2580).

Sincerely,

Russell C. Watson
Supervisor
Louisiana Field Office

cc: NMFS, St. Petersburg, FL
FWS, Jacksonville, FL
LDWF, Natural Heritage Program, Baton Rouge, LA

UNITED STATES DEPARTMENT OF COMMERCE
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OCT 18 2006

F/SER32:KPB

Mr. Scot T. Tripp
USCG Research and Development Center
1082 Shennecosset Road
Groton, CT 06340-6048

Dear Mr. Tripp:

The National Marine Fisheries Service (NMFS) has received your August 2, 2006, letter and draft environmental assessment (DEA) for field activities associated with testing equipment under development at the University of South Florida (USF), Center for Ocean Technology (COT). The proposed action is to develop underwater detection/inspection systems to enhance the U.S. Coast Guard's underwater security capabilities. NMFS previously provided comments on this project in a letter dated April 28, 2006. You have requested concurrence with your determination that, with the proposed harm avoidance measures, the project may affect, but is not likely to adversely affect, species listed or critical habitat designated under the Endangered Species Act (ESA) under the purview of NMFS.

Description of the Proposed Action

The United States Coast Guard (USCG) Research and Development Center proposes to test equipment through the USF COT to support the development of portable underwater inspection/detection systems. The purpose of the testing is to identify the most effective portable underwater inspection/detection systems that would enable the USCG to protect the infrastructure in and around U.S. ports and waterways from underwater threats. All equipment is commercially available and is being tested to assess the potential for underwater inspection/detection capabilities to detect, classify, and identify conventional explosives, improvised explosive devices (IEDs), or other destructive devices that could be attached to ship hulls, piers, and underwater infrastructure. The equipment would include sonar and laser imaging and navigation equipment mounted on remotely operated vehicles (ROVs), autonomous underwater vehicles (AUVs), or poles suspended from surface vessels.

Components of the portable underwater inspection/detection systems would be deployed for testing purposes only. All systems would be monitored at all times during deployment. The systems are proposed to operate in anticipated future operational conditions of fresh, salt, and brackish waters; day or night regardless of visibility; and in air and water temperatures and thermoclines typically encountered in port/harbor environments. Equipment testing would last for approximately 8 to 10 hours per day for about a total of 40 days of testing between all the testing locations.

The equipment would be used at a range necessary to survey ship hulls, piers, or other underwater infrastructure. The expected maximum distance from these structures during acoustic testing should be no greater than 330 ft (100 m) during a wide area survey and 16 ft (5 m) during a targeted inspection. Lasers have a limited effective range and will be used at distances of 16 ft or less from the targets. The targets for the equipment testing would include commercial and military vessels and underwater port infrastructure such as jetties, seawalls, and bridge abutments. In some cases, target vessels would be arranged ahead of time. In other cases, the researchers could radio to vessels in the area and request permission to survey the hulls. The target and support vessels could be moving or stationary (e.g., anchored, docked, or drifting).

Up to two platform types (e.g., ROV and AUV) or component groups (e.g., different groups of lasers and sonars) could be deployed during any single testing event. The proposed systems would be tested on three different platforms: ROVs, AUVs, and poles suspended from surface vessels. The systems would be deployed and controlled from the surface support vessel. The ROV proposed for use is approximately 5 ft long, 3.5 ft tall, and 3 ft wide, and weighs approximately 1,000 lb. The AUV would only be used in the shipping channels and offshore, because it is only intended for uses during wide area testing. The AUV would be approximately 8 to 10 ft long, 1 ft in diameter, and would weigh approximately 500 lb. Submersible vehicles would be propelled by variable speed electric-powered propeller drives to maneuver these vehicles at speeds up to 5 knots. Because the systems would be designed to maintain safety of commercial traffic routes, testing would only take place in areas where commercial and military vessels would operate (i.e., busy ports, offshore anchorages, and offshore fairways). Under normal conditions, it would not be expected that sonar and lasers would be directed into open water, but only toward the intended target.

Acoustic and Optical Equipment

Acoustic components that would be integrated into the systems would include transponders (used for AUV navigation) and acoustic modems (used for communication with AUV) (17–40 kiloHertz [kHz]), high-frequency sonar used for device detection, and ultra-high-frequency sonar used for device identification (Table 1). Transponders and acoustic modems would only be used for AUV navigation offshore and in main shipping channels in ports, while in inshore shipping channels, AUV transponders would be constrained to a 188-decibel (dB) sound pressure level (SPL). Transponders would have a 15-millisecond (ms) ping every second. The acoustic modem would have approximately a 1-second ping every 15 or 30 seconds.

An array of optical equipment would also be integrated into the systems for navigation and detailed imaging. Low-powered lasers, including point lasers for close-quarters navigation and line lasers for detailed imaging, would be used. The light emissions of low-powered lasers attenuate within a short distance. Laser use would be temporary and short-term. Other optical equipment would include Light Emitting Diode (LED) lighting and video cameras.

Table 1. Sound-producing equipment used in the test areas.

Equipment	Function	Frequency (kHz)	Source Level (dB re 1 μPa-1m)	Attenuation to 160 dB/120 dB (m)
Trackpoint II Plus USBL; AAE USBL transponder; Micro Modem Edgetech	Inshore shipping channel navigation and communication	17-33	17 kHz at 188 dB	25/1,900
Trackpoint II Plus USBL; AAE USBL transponder; Micro Modem Edgetech	Offshore shipping channel navigation and communication	16-33	16 kHz at 196 dB	100/4,000
Echoscope Mark I and II; Tritech Mini King; Klein Edgetech	Detection	150-999	150 kHz at 190 dB 317 kHz at 216 dB 614 kHz at 217 dB	90/380
Didson, Blue View; RDI	Identification	1,000-3,500	1,000 kHz at 200 dB 1,229 kHz at 214 dB	20/45

Proposed Harm Avoidance Measures

The USCG has proposed the following measures to avoid harm to listed species and critical habitat considered in this consultation:

- Equipment testing will occur during daylight hours only.
- Tested equipment would be monitored by at least two USCG-trained observers at all times.
- A 660-ft safety zone (200 m) will be visually monitored for marine mammals and sea turtles for at least 20 minutes by USCG-trained observers prior to turning on the system. In the event North Atlantic right whales are observed in the area, a 1,500-ft (457 m) safety zone would be required pursuant to federal regulations that prohibits approaches to right whales within 500 yards (50 CFR 224.103 (c)).
- If marine mammals or sea turtles are observed within or approaching the 660-ft safety zone, all systems in use (AUVs, ROVs, sonars, or laser) would be shut down until the marine mammal or sea turtles exited the area.
- Equipment testing would avoid all ecologically sensitive areas (exclusion areas) including areas where manatees are known to congregate; Gulf sturgeon critical habitat, Johnson's seagrass critical habitat, and known locations of hard-bottom habitats (including coral, Vermetid reefs, and coquina reefs).
- A 660-foot (200-m) buffer would be maintained between the equipment testing procedures and the exclusion areas.

- North Atlantic right whale interactions will be avoided in the Ft. Lauderdale and Port Everglades study areas by limiting equipment testing to inshore portions of the study area from 1 January through 1 May when North Atlantic right whales would be expected to most frequently occur in nearshore and offshore waters of those areas.
- Support vessels would not anchor while in the Port of Miami and Port Everglades/Ft. Lauderdale offshore study areas. If branching corals are observed with imaging equipment in the Port of Miami and Port Everglades/Ft. Lauderdale offshore study areas, testing will be moved to a different location.
- Sonar testing will be limited to source levels of 188 dB re 1 Pa in shipping channels due to the potential for increased sound propagation in these types of environments.
- NMFS' vessel strike avoidance measures (enclosed) would be followed for sea turtles and marine mammals.
- Sonar equipment would not be placed in a location such that it would interfere with obvious marine mammal throughways or cause choke-points where sonar could deter marine mammals' or sea turtles' movement (e.g., testing would not occur near the mouths of tributaries, on or near beaches, or in offshore waters less than 18 feet (5.5 m) deep.

Action Area

The action area of the project includes all areas to be affected directly or indirectly by the action, and not merely the immediate area involved in the action (50 CFR 402.02). The action area for this project is considered to be all the estuarine and marine environments affected in the five port study areas listed in the enclosed table, which include eight ports in the Atlantic Ocean and Gulf of Mexico as shown in Figures 2-3 to 2-7 and described in Table 2-1 of DEA. In summary, field testing would be conducted in and around the following eight major U.S. ports: Plaquemines, New Orleans, South Louisiana, and Baton Rouge on the Mississippi River in Louisiana; and Tampa/St. Petersburg (Tampa Bay), Miami, Port Everglades/Ft. Lauderdale, and Jacksonville in Florida. Additionally, the action area includes areas ensonified and illuminated by the testing of acoustic equipment, and the shipping approaches to these ports in an area approximately 20 mi (32.2 km) seaward of each port's initial entrance buoy, with the exception of the Jacksonville study area, in which testing will only occur in the St. Johns River.

Listed Species and Critical Habitat

The listed species found and critical habitats designated in the action area appear in Table 2. Since there are five distinct geographic regions comprising the action area, a breakdown of the listed species occurring and critical habitat designated in each study area is enclosed.

Table 2. Threatened and endangered species potentially occurring and critical habitat designated in the action area.

Common Name	Scientific Name	Status
Marine Mammals		
humpback whale	*Megaptera novaeangliae*	endangered
North Atlantic right whale	*Eubalaena glacialis*	endangered
Sea Turtles		
leatherback sea turtle	*Dermochelys coriacea*	endangered
Kemp's ridley sea turtle	*Lepidochelys kempii*	endangered
hawksbill sea turtle	*Eretmochelys imbricata*	endangered
green sea turtle[a]	*Chelonia mydas*	threatened
loggerhead sea turtle	*Caretta caretta*	threatened
Fishes		
smalltooth sawfish	*Pristis pectinata*	endangered
Gulf sturgeon[b]	*Acipenser oxyrinchus desotoi*	threatened
Corals		
elkhorn coral	*Acropora palmata*	threatened
staghorn coral	*Acropora cervicornis*	threatened
Plants		
Johnson's seagrass[b]	*Halophila johnsonii*	threatened

[a]Green turtles are listed as threatened, except for breeding populations of green turtles in Florida and on the Pacific Coast of Mexico, which are listed as endangered.
[b]Critical habitat for this species is designated in the action area.

Effects Considered and Discounted

The frequency ranges on the sonar systems that will be tested (Table 1) are probably imperceptible to sea turtles, Gulf sturgeon, and smalltooth sawfish. These species are considered low-frequency generalists having hearing ranges in approximately the range of 100 Hz to 2,000 Hz for both sea turtles and Gulf sturgeon and shortnose sturgeon, and in the range of 20 Hz to 600 Hz for smalltooth sawfish. Measurements of humpback whale basilar membranes have resulted in an estimated hearing range of approximately 100 Hz to 8 kHz,[1] and perhaps up to 10kHz from the frequency of vocalizations. Based on this information, all sonars tested should not be audible to humpback whales. Additionally, the noise produced from sonar testing is not anticipated to have any physiological effects on listed species of corals or plants. Operation of sonar equipment is not expected to have any effects on the above listed species; however, North Atlantic right whales are considered in the *Effects of the Action* section below.

[1] Helweg, D.A., D.S. Houser, and P.W.B. Moore. 2000. An integrated approach to the creation of a humpback whale hearing model. Technical Report 1835. SPAWAR, San Diego, Ca. 20 pp.

Effects to Critical Habitat Considered and Discounted

As noted in the enclosed table of species listed and critical habitat designated in each study area for USF COT equipment testing, the following listed species' critical habitats are designated in the action area:

- Johnson's seagrass Lake Wyman unit in the Fort Lauderdale/Port Everglades study area,
- Johnson's seagrass Northern Biscayne Bay unit in the Miami study area, and
- Gulf sturgeon critical habitat unit 8 in the Lower Mississippi River Complex study area.

The USCG proposes to avoid all critical habitat areas within the testing areas. However, testing may occur in areas adjacent to areas designated as critical habitat that could potentially result in short-term light and noise inputs, having potentially indirect effects in areas designated as critical habitat. However, the USCG has proposed a 660-foot (200-m) buffer to be maintained between the equipment testing sites and all exclusion areas, including those critical habitat areas listed above. Therefore, short-term light and noise inputs will not have the potential to affect any primary constituent elements (PCEs) of critical habitat designated for Gulf sturgeon or Johnson's seagrass.

Effects of the Action

Based on our review of the proposed action, the primary effects of the action are associated with potential impacts associated with support vessel operation, ROV and AUV operation, sonar testing, and laser testing.

Vessel Operation

North Atlantic right whales and humpback whales may potentially be found in the Fort Lauderdale/Port Everglades and Miami study areas. Occurrences during winter months for humpback whales during the migration period to and from calving grounds in the Caribbean, and for North Atlantic right whales during the calving season off the coast of Florida may be expected. Sea turtles may be expected to occur in any of the study areas any time of year. Listed species of fish, coral, and plants are not susceptible to injury from support vessel operation in the action area and are not discussed further. In general, the incidence of strikes with marine mammals is more frequent with juveniles and calfs than with adult animals. Some individuals may be able to detect and avoid underway vessels; however, the behavior of some individuals and age classes, and the behavioral characteristics of some species (such as right whales), may result in an increased vulnerability to disturbance and injury from vessels. Reports of sea turtle strandings in Florida indicate evidence of such interactions, such as propeller cuts or scars,

missing anatomical parts, and cracked carapaces. In some cases, the cause of the stranding or death is attributed to a vessel-related injury.

Reported ship collision accounts suggest that serious injury to whales rarely occurs at speeds below 10 knots.[2] A vessel's operational speed influences the probability of animal detection and reaction time. At slower vessel speeds, a particular location ahead of the vessel is within visual range for a longer period of time before the vessel arrives at that location. Although similar data do not exist for sea turtles, NMFS believes increasing reaction times to avoid striking marine mammals would also benefit sea turtles when they are observed near an underway vessel. The specific type of vessels that may be used could not be identified during consultation on this project; however, large vessels typically implicated in severe injury and death of marine mammals will not be used. Also, vessels will be anchored, adrift, or traveling at a slow rate of speed while conducting equipment tests. However, vessels traveling at high rates of speed between study areas could potentially strike and injure marine mammals and sea turtles.

USCG will require USF COT to implement NMFS' Vessel Strike Avoidance and Injured/Dead Protected Species Reporting policy (enclosed) in the action area to minimize the potential risks to marine mammals. All testing will occur during daylight hours so detection of any nearby humpback whales, North Atlantic right whales, and sea turtles is probable. Additionally, right whale habitat will be avoided off the Fort Lauderdale/Port Everglades study area from 1 January to 1 May and will further reduce the potential for interactions with this species. NMFS believes that with implementation of the above measures, the likelihood of collisions with listed sea turtles and marine mammals is discountable.

ROV and AUV Operation

ROV and AUV operation have the potential to strike or disturb listed species. The ROV and AUV would be propelled at speeds of up to 5 knots and are highly maneuverable. Operational speeds of 5 knots or less have a low likelihood of injuring a listed species in the event an impact was to occur. Additionally, if a marine mammal or sea turtle approaches the safety zone during operations, the ROV or AUV will be shut down and retrieved; thus, interactions between these underwater vehicles is very low, avoiding any potential for strikes or behavioral disturbances to listed species. Although any potential harm to sea turtles and marine mammals will be reduced to discountable levels, potential disturbance to the listed species in the study area that are not readily observable at the surface is discussed below.

Likely behavioral reactions of smalltooth sawfish, Gulf sturgeon, and shortnose sturgeon to ROV or AUV operation would be to leave the area where testing was occurring. However, these species would likely return when use of the ROV or AUV was completed. Any potential disturbances are expected to be short-term and minor in a relatively small area, and are considered insignificant.

[2] Laist, D.W., A.R. Knowlton, J.G. Mead, A.S. Collet, and M. Podesta. 2001. Collisions between ships and whales. Marine Mammal Science 17: 35-75.

Johnson's seagrass, elkhorn coral, and staghorn coral may potentially occur within the Port of Miami and Port Everglades/Ft. Lauderdale Study Areas. It is possible that operation of the ROV or AUV and anchoring by the support vessel could adversely impact these species. The ROV and AUV will house equipment to inspect seawalls, hulls of vessels, and other targets not typically associated with benthic flora and fauna. Due to the high maneuverability of these underwater vehicles and their intended use in offshore areas above the seafloor and in shipping channels, impacts to benthic organisms such as seagrasses and corals are not anticipated. Additionally, the USCG proposes to avoid known areas of Johnson's seagrass and hard-bottom habitats, and will avoid any branching coral formations observed with imaging equipment during testing. Based on the above information, the probability of impacts to Johnson's seagrass, elkhorn coral, and staghorn coral from ROV or AUV operation and anchoring is so low, it is considered discountable.

Sonar Testing

Marine mammals would only be expected to respond to a sound if they can hear it or feel it. North Atlantic right whale hearing has been estimated to occur in approximately the 10 Hz to 22 kHz range based on established marine mammal models[3] using thickness/width measurements of the basilar membrane from stranded animals. Based on the hearing abilities of right whales, the frequencies produced by some of the equipment (Table 1) may be audible to this species.

Short-term responses of right whales to these sources could include swimming away from the source; changes in surfacing, breathing, and diving patterns; changes in group composition; and changes in vocalization. Long-term responses could include habitat abandonment or increased tolerance of a noise. The USCG proposes to monitor for marine mammals and shutdown operations if any marine mammal is approaching the 160-dB isopleth from the source. Additionally, seasonal restriction on testing in the Fort Lauderdale/Port Everglades study area will further reduce the chance of encountering a right whale during testing. Based on the proposed measures listed above to avoid harm to right whales, the likelihood of any underwater inspection/detection sonar operations affecting right whales is so low, it is considered discountable.

Lasers

Lasers that meet current human laser safety standards would have no harmful impacts on the eyes of listed species. The point laser used for navigation is a Class IIIA laser. This laser classification is only hazardous when the human eye is exposed to all or part of a laser beam. Under normal use, the Class IIIA laser cannot cause biological damage to the human eye or skin; therefore, it is not expected to cause damage to eyes or skin of listed species. As a precautionary measure, if a listed species in observed approaching the safety zone during testing, the laser would be shut down until the species exited the area. Based upon this information, any potential

[3] Parks, S.E., D.R. Ketten, J.T. O/Malley, and J.T. Arruda. 2001. Hearing in the North Atlantic right whale: Anatomical predictions. Journal of the Acoustical Society of America 115(5): 2442

effects from the operation of lasers associated with the testing of the underwater inspection and detection equipment will be insignificant.

Conclusions

After considering the potential effects on listed species, designated critical habitat, and the proposed harm avoidance measures to avoid those potential effects, NMFS concludes that listed species and designated critical habitat are not likely to be adversely affected by this project. This concludes the USCG's consultation responsibilities with NMFS under section 7 of the ESA for *Testing Equipment Under Development at the University of South Florida, Center for Ocean Technology*. Consultation must be initiated if a take occurs or new information reveals effects of the action not previously considered, or the identified action is subsequently modified in a manner that causes an effect to listed species or critical habitat in a manner or to an extent not previously considered, or if a new species is listed or critical habitat designated that may be affected by the identified action. Enclosed is additional information regarding other statutory requirements that may apply to this action, as well as NMFS' Public Consultation Tracking System to allow you to track the status of ESA consultations.

Odontocetes may be present in the study areas and have been considered in the harm avoidance measures proposed by the USCG. If you believe injury or harassment may still occur, an incidental take authorization under Marine Mammal Protection Act (MMPA) Section 101 (a)(5) may be necessary. Please contact Kenneth Hollingshead of our Headquarters Protected Resources staff at (301) 713-2055 for additional information regarding an MMPA take authorization.

Thank you for your cooperation in conserving our protected resources. Please contact Kyle Baker, fishery biologist, at (727) 551-5789 or at Kyle.Baker@noaa.gov with any questions regarding this letter.

Sincerely,

Roy E. Crabtree. Ph.D.
Regional Administrator

Enclosures (3)

Ref: I/SER/2006/04053
File: 1514-22.H

Table of species listed and critical habitat designated in each study location for USF COT equipment testing.

	PORT STUDY AREA				
	Jacksonville	Fort Lauderdale/ Port Everglades	Miami	St. Petersburg/ Tampa	Lower Mississippi River Complex
Endangered					
Kemp's ridley sea turtle	•	•	•	•	•
leatherback sea turtle	•	•	•	•	•
hawksbill sea turtle	•	•	•	•	
green sea turtle[a]	•	•	•	•	
smalltooth sawfish	•	•	•	•	
shortnose sturgeon	•				
humpback whale	•	•	•		
North Atlantic right whale		•	•		
Johnson's seagrass		•	•		
Threatened					
green sea turtle[b]					•
loggerhead sea turtle					
Gulf sturgeon					
elkhorn coral		•	•		•
staghorn coral		•	•		
Critical Habitat					
North Atlantic right whale	•				•
Gulf sturgeon unit 8			•		
Johnson's seagrass, Lake Wyman unit		•			
Jonhson's seagrass, Northern Biscayne Bay unit		•	•		

[a] Endangered Florida breeding population
[b] Threatened throughout range, except Florida where endangered

Vessel Strike Avoidance Measures and Injured or Dead Protected Species Reporting
National Marine Fisheries Service, Southeast Region

Background

The National Marine Fisheries Service (NMFS) has determined that collisions with vessels can injure or kill protected species (e.g., endangered and threatened species, and marine mammals). The following standard measures must be implemented to reduce the risk associated with vessel strikes or disturbance of these protected species to discountable levels. NMFS should be contacted to identify any additional conservation and recovery issues of concern.

Protected Species Identification Training

Vessel crews should use an Atlantic and Gulf of Mexico reference guide that helps identify the species of marine mammals and sea turtles that might be encountered in U.S. waters of the Atlantic Ocean, including the Caribbean and Gulf of Mexico. Additional training should be provided regarding information and resources available regarding federal laws and regulations for protected species, ship strike information, critical habitat, migratory routes and seasonal abundance, and recent sightings of protected species.

Vessel Strike Avoidance

The following measures must be taken in order to avoid causing injury or death to marine mammals and sea turtles:

1. Vessel operators and crews must maintain a vigilant watch for marine mammals and sea turtles to avoid striking sighted protected species.

2. When whales are sighted, maintain a distance of 100 yards or greater between the whale and the vessel.

3. When sea turtles or small cetaceans are sighted, attempt to maintain a distance of 50 yards or greater between the animal and the vessel whenever possible.

4. When small cetaceans are sighted while a vessel is underway (e.g., bow-riding), attempt to remain parallel to the animal's course. Avoid excessive speed or abrupt changes in direction until the cetacean has left the area.

5. Reduce vessel speed to 10 knots or less when mother/calf pairs, groups, or large assemblages of cetaceans are observed near an underway vessel, when safety permits. A single cetacean at the surface may indicate the presence of submerged animals in the vicinity; therefore, prudent precautionary measures should always be exercised. The vessel should attempt to route around the animals, maintaining a minimum distance of 100 yards whenever possible.

6. Whales may surface in unpredictable locations or approach slowly moving vessels. When an animal is sighted in the vessel's path or in close proximity to a moving vessel, reduce speed and shift the engine to neutral. Do not engage the engines until the animals are clear of the area.

Additional Requirements for the North Atlantic Right Whale

1. If a sighted whale is believed to be a North Atlantic right whale, federal regulation requires a minimum distance of 500 yards be maintained from the animal (50 CFR 224.103 (c)).

2. Vessels entering North Atlantic right whale critical habitat are required to report into the Mandatory Ship Reporting System.

3. Mariners should check with various communication media for general information regarding avoiding ship strikes and specific information regarding North Atlantic right whale sighting locations. These include NOAA weather radio, U.S. Coast Guard NAVTEX broadcasts, and Notices to Mariners.

Injured or Dead Protected Species Reporting

Vessel crews must report sightings of any injured or dead protected species immediately, regardless of whether the injury or death is caused by your vessel.

Report marine mammals to the Southeast U.S. Stranding Hotline: 305-862-2850
Report sea turtles to the NMFS Southeast Regional Office: 727-824-5312

In addition, if the injury or death was caused by a collision with your vessel, you must notify the U.S. Coast Guard (USCG) immediately of the strike by email (email and/or phone number contact information provided by the USCG). The report should include the following information:

a. the time, date, and location (latitude/longitude) of the incident;

b. the name and type of the vessel involved;

c. the vessel's speed during the incident;

d. a description of the incident;

e. water depth;

f. environmental conditions (e.g., wind speed and direction, sea state, cloud cover, and visibility);

g. the species identification or description of the animal, if possible; and

h. the fate of the animal.

If a USCG-related industry activity is responsible for the injury or death, the responsible parties should remain available to assist the respective salvage and stranding network as needed.

Additional Considerations for ESA Section 7 Consultations (Revised 12-6-2005)

Marine Mammal Protection Act (MMPA) Recommendations: The Endangered Species Act (ESA) section 7 process does not authorize incidental takes of listed or non-listed marine mammals. If such takes may occur an incidental take authorization under MMPA section 101 (a)(5) is necessary. Contact Ken Hollingshead of our NMFS Headquarters' Protected Resources staff at (301) 713-2323 for more information on MMPA permitting procedures.

Essential Fish Habitat (EFH) Recommendations: In addition to its protected species/critical habitat consultation requirements with NMFS' Protected Resources Division (PRD) pursuant to section 7 of the ESA, prior to proceeding with the proposed action the action agency must also consult with NMFS' Habitat Conservation Division (HCD) pursuant to the Magnuson-Stevens Fishery Conservation and Management Act's (MSA) requirements for essential fish habitat (EFH) consultation (16 U.S.C. 1855 (b)(2) and 50 CFR 600.905-.930, subpart K). The action agency should also ensure that the applicant understands the ESA and EFH processes; that ESA and EFH consultations are separate, distinct, and guided by different statutes, goals, and time lines for responding to the action agency; and that the action agency will (and the applicant may) receive separate consultation correspondence on NMFS letterhead from HCD regarding their concerns and/or finalizing EFH consultation.

Public Consultation Tracking System (PCTS) Guidance: PCTS is an online query system allowing federal agencies and U.S. Army Corps of Engineers' (COE) permit applicants to track the status of NMFS consultations under ESA section 7 and under MSA sections 305(b)2 and 305(b)(4): Essential Fish Habitat. Access PCTS via: www.nmfs.noaa.gov/pcts. Federal agencies are required to enter an agency-specific username and password to query the Federal Agency Site. The Corps Permit Site allows COE permit applicants the ability to check on the current status of Clean Water Act section 404 permit actions for which NMFS has conducted an ESA section 7 consultation with the COE since the beginning of the 2001 fiscal year (no password needed).

For COE-permitted projects, click on "Enter Corps Permit Site." From the "Choose Agency Subdivision (Required)" list, pick the appropriate COE district. At "Enter Agency Permit Number" type in the COE district identifier, hyphen, year, hyphen, number. The COE is in the processing of converting its permit application database to PCTS-compatible "ORM." An example permit number is: SAJ-2005-000001234-IPS-1. For the Jacksonville District, which has already converted to ORM, permit application numbers should be entered as SAJ (hyphen), followed by 4-digit year (hyphen), followed by permit application numeric identifier with no preceding zeros. E.g., SAJ-2005-123, SAJ-2005-1234, SAJ-2005-12345.

For inquiries regarding applications processed by Corps districts that have not yet made the conversion to ORM (e.g., Mobile District), enter the 9-digit numeric identifier, or convert the existing COE-assigned application number to 9 numeric digits by deleting all letters, hyphens, and commas; converting the year to 4-digit format (e.g., -04 to 2004); and adding additional zeros in front of the numeric identifier to make a total of 9 numeric digits. E.g., AL05-982-F converts to 200500982; MS05-04401-A converts to 200504401. PCTS questions should be directed to Eric Hawk at Eric.Hawk@noaa.gov. Requests for username and password should be directed to April Wolstencroft (PCTSUsersupport@noaa.gov).

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APPENDIX C

INTEGRATED ANTISWIMMER SYSTEM (IAS)
AGENCY COORDINATION LETTERS

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
9721 Executive Center Drive North
St. Petersburg, FL 33702
(727) 570-5312, FAX 570-5517
http://caldera.sero.nmfs.gov

APR 15 2004

F/SER3:KPB

K.G. Quigley, Captain
Commandant (G-OPD)
United States Coast Guard
2100 Second Street, S.W.
Washington, DC 20593-0001

Dear Captain Quigley:

We have reviewed your letter received on April 5, 2004, and associated documents regarding the U.S. Coast Guard's (USCG) establishment and operation of an Integrated Anti-Swimmer System (IAS) operating out of Galveston, Texas. Your letter responds to a correspondence from our office dated February 12, 2003, in which additional information was requested concerning the IAS. You also request consultation on the possible effects on the species listed under the Endangered Species Act of 1973 (ESA).

The USCG is proposing to establish and operate an IAS to be co-located with the Maritime Safety and Security Team operating out of Galveston, Texas. The IAS would operate on an as-needed basis and would be deployed where and when additional protection is necessary. The IAS will assist in detecting, tracking, intercepting, and interdicting, if necessary, a combat swimmer/diver. The purpose of the IAS is to improve existing security capabilities. The IAS has four primary components: the Kongsberg SM 2000 sonar (SM 2000), the Security Vehicle Acoustic Guidance (SVAG) system, the Dual High Frequency Identification Sonar (DIDSON), and the underwater loud hailer.

The IAS is expected to operate in typical harbor, anchorage, and wharf environments including fresh, salt, and brackish waters. The operation of the IAS would be limited to the waters within approximately 300 meters of specific, existing shore-side, port infrastructure or docked ships associated with the inshore waters of the Galveston Bay and the Galveston Channel. The action area includes the City of Galveston and the Intracoastal waterway, from Texas City up the Texas coastline to the border with the State of Louisiana. The IAS will not operate in offshore waters.

ESA-listed species under the purview of the National Marine Fisheries Service (NOAA Fisheries) which potentially occur in the action area include the loggerhead (*Caretta caretta*), Kemp's ridley (*Lepidochelys kempii*), hawksbill (*Eretmochelys imbricata*), green (*Chelonia mydas*), and leatherback (*Dermochelys coriacea*) sea turtles. Although sea turtles are expected to be present in the action area, the SM 2000 (90 kHz) and DIDSON (1,000-1,800 kHz) operate at frequency levels that are highly unlikely to be audible to sea turtles at the source levels of operation of 206 and 202 db re 1 μPa respectively. However, the frequency range of the underwater loud hailer (0.2-20 kHz) does have the potential to result in effects to sea turtles such as stress, rapid swimming, and avoidance of the area. Such effects could potentially disrupt important behaviors such as feeding or breeding; however, the use of the underwater loud hailer is expected to be rare. The loud hailer would only be used under suspicion of potential threats to alert swimmers. Therefore, impacts to sea turtles associated with operation of the loud hailer would not be expected under normal operation of the IAS and are so low as to be considered discountable.

In 2003 a sawfish was reported off the southeastern coast of Texas. The species was not verified and may have been either the endangered smalltooth sawfish (*Pristis pectinata*) or the largetooth sawfish (*Pristis perotteti*), which is a species of concern. Reported occurrences of both these species in Texas waters are rare. Historically, the smalltooth sawfish was common along the Texas coast, but the current range of this species is confined mainly to peninsular Florida, although some may occur along the Gulf of Mexico coast, including Texas. Smalltooth sawfish are usually found in shallow waters very close to shore over muddy and sandy bottoms; therefore, if individuals remain in Texas, they could potentially be present in the habitat types in which the IAS is proposed to operate. Since no known breeding or juvenile habitats are known to occur in Texas, and abundances are likely low, NOAA Fisheries believes the risk of any harm to smalltooth sawfish is so low as to be considered discountable. However, the USCG should include smalltooth sawfish in future environmental assessments for action occurring in the Gulf of Mexico.

Based on the information provided, NOAA Fisheries concurs with the USCG's determination that the proposed activity will not likely adversely affect endangered and threatened species under the purview of NOAA Fisheries. No critical habitat is present; therefore, none will be affected.

This concludes consultation responsibilities under section 7 of the ESA. A new consultation should be initiated if there is a take, new information reveals impacts of the identified activity that may affect listed species or their critical habitat, a new species is listed, the identified activity is subsequently modified or critical habitat designated that may be affected by the identified activity.

We look forward to the continued cooperation between our two agencies in conserving our endangered and threatened resources. If you have any questions, please contact Kyle Baker, fishery biologist, at the number above or via e-mail at Kyle.Baker@noaa.gov.

Sincerely,

Miles M. Croom

for Roy E. Crabtree, Ph.D.
Regional Administrator

cc: F/PR
File: 1514.22.g.2
Ref. No. I/SER/2003/01587

U.S. Department of Homeland Security
United States Coast Guard

Commandant
United States Coast Guard

2100 Second Street, S.W.
Washington, DC 20593-0001
Staff Symbol: G-OPD
Phone: (202) 267-2039
Fax: (202) 267-4278
Email:

5090
14 June 2005

MEMORANDUM

From: CAPT K.G. Quigley
COMDT (G-OPD)

Reply to
Attn of:

To: Ms. Monica DeAngelis
Protected Resources, Southwest Region
U.S. Department of Commerce
National Oceanic and Atmospheric Administration, National Marine Fisheries Service
501 Ocean Blvd., Long Beach, CA 90802-4213

Subj: ENVIRONMENTAL ASSESSMENT AND ESA SECTION 7 CONSULTATION ON THE OPERATION OF AN INTEGRATED ANTI-SWIMMER SYSTEM - SAN PEDRO, CALIFORNIA

1. In accordance with Section 7(a)(2) of the Endangered Species Act, as amended, the U.S. Coast Guard (USCG) seeks to finalize informal consultation with the NMFS Southwest Regional office regarding the proposed establishment and operation of the Integrated Anti-Swimmer System (IAS) in San Pedro, CA. The USCG has concluded that establishing and operating the IAS out of San Pedro, CA is not likely to adversely affect protected resources under NMFS' jurisdiction and seeks your concurrence for same.

2. The USCG has completed preparation of the Environmental Assessment (EA) for the establishment and operation of the IAS to be co-located with the Maritime Safety and Security Team (MSST) operating out of San Pedro, CA. Preparation of the EA was conducted in accordance with the National Environmental Policy Act (NEPA) of 1969 (Section 102[2][c]) and its implementing regulations, 40 Code of Federal Regulations, Part 1500. The purpose of the Proposed Action is to enhance the USCG's underwater swimmer detection capability in the San Pedro, CA region, and as a result, protect personnel ships and property from sabotage and or other subversive acts. The IAS is not duplicative of existing protective measures, but provides complimentary, non-redundant capabilities that close significant readiness gaps in the nation's ports. The result of our EA was a finding of no significant impact.

3. The IAS is comprised of three separate components that may cause underwater noise: the Kongsberg SM 2000 sonar (SM 2000), the Dual High Frequency Identification Sonar (DIDSON), and the underwater loud hailer. Information regarding the frequency and source level for each of these sources is found in the EA. The EA provides detailed information regarding the region of influence during IAS operation.

4. In order to fully understand the potential impacts of IAS deployment, the Coast Guard submitted draft copies of the San Pedro EA to the NMFS Southwest Regional office and NMFS headquarters for comment. Our primary concern was to determine whether the operation of the IAS was likely to adversely affect species listed under authority of the Endangered Species Act or

whether takes of non-listed marine mammals were likely under the Marine Mammal Protection Act.

5. As required by the ESA section 7(a)(2), consultation is required where a federal activity may affect listed or threatened species or adversely modify critical habitat. In a letter dated 15 April 2004 from the NMFS Southeast Regional Office to the Coast Guard, your agency concurred with the Coast Guard's determination that operation of the IAS in the Galveston Bay, TX area is not likely to adversely affect endangered and threatened species under the purview of NOAA Fisheries. No critical habitat is present in Galveston Bay; therefore, none will be affected. In a letter dated 8 January 2004, the NMFS Southeast Regional Office also concurred with the Coast Guard's determination that operation of the IAS would not have adverse impacts on Essential Fish Habitat. Based on the results of the San Pedro EA (and the EA that addressed environmental impacts in Galveston Bay, TX), NMFS headquarters has determined that operation of the IAS in both Galveston Bay, TX and San Pedro Bay, CA is not likely to result in the take of marine mammals.

6. The Coast Guard and NMFS have engaged in a lengthy informal consultation process. By letter dated May 14, 2005, your office identified certain species, e.g., the Steller sea lion that may occur in the IAS ROI. This letter also concurred with the Coast Guard's determination that "this project is not likely to affect sea turtles." As a result of those consultations, the Coast Guard incorporated recommendations from NMFS into our operating procedures that help to insure the IAS will not result in takes of marine mammals, adversely affect listed species or essential fish habitat. The Coast Guard's standard operating procedures include the following protocols as recommended by NMFS:

- USCG personnel will monitor the IAS at all times of deployment.
- If IAS is deployed and marine mammal activity is noted which may approach or enter the 160 dB isopleth (200 meter precautionary zone), the operational commander will take prudent measures to avoid impacting the wildlife which, situation permitting, may include shutting down the system.
- When conducting training activities, if marine mammals are detected which may approach or enter the 160 dB isopleth (200 meter precautionary zone), the loud hailer shall not be energized until the marine mammals have left the IAS 200 meter precautionary zone.
- As there is no warm-up period for the SM 2000, the precautionary zone will be visually monitored for 20 minutes prior to turning on the device to be sure it is clear of marine mammals. If the SM 2000 is started during nighttime, night vision devices will be used to monitor the safety zone.
- Barring exceptional circumstances that require such deployment, the IAS will not be placed in a location such that it interferes with obvious marine mammal throughways, or prevents entry or exit of marine mammals into and out of an area, e.g., the mouth of a bay or narrow choke-points, where sonar may deter them from traveling through or by.
- Continued implementation of existing USCG programs to guard against adverse impacts to marine mammals, e.g., the Ocean Steward Plan.

7. To summarize, the result of the Coast Guard's environmental analysis on the deployment of IAS in San Pedro Bay, CA indicates that such deployment would not have a significant impact on marine mammals, listed species or essential fish habitat. The relevant criterion that leads to this conclusion includes:

- The Coast Guard's intent to use the IAS only to protect human life on moored ships or existing, critical infrastructure/facilities; i.e., IAS is not intended for operations in open ocean environments.
- The significant benefit to the public health and welfare that prevention of a terrorist attack will convey.
- The significant benefit to the environment that prevention of a terrorist attack will convey.
- The temporary duration of the IAS mission at any specific location.
- The IAS will be monitored at all times during operation.
- The SM 2000 and the DIDSON components of the IAS operate at a frequency generally beyond the hearing of most marine mammals, listed species and fish species.
- The location of the IAS sound head in the water (directly connected to a pier or other shoreside fixture) limits potential encounters by marine mammals.
- The limited geographic zone of potential impact from the sound head (approximately 200 meters) where the high frequency sonar noise may fall within the hearing range of some marine mammals and fish.
- The operation of the loud hailer will only occur where a specific threat has been identified and will be a temporary and transient source of sound.
- The limited and tightly controlled use of the underwater loud hailer and the response boat sonar (use only where a specific threat is identified).

8. I wish to convey that the IAS is a linchpin in the Coast Guard's strategy to provide the United States with credible assets that allow us to deter, detect and interdict threats to our critical port infrastructure. However, as an environmental law enforcement agency, we also take our duties of environmental stewardship very seriously. The Coast Guard values NOAA's expertise in the study of effects of anthropogenic underwater noise on marine mammals, listed species and other marine species. Our agencies have a long history of supporting each other in the conservation of marine species as is highlighted by recent collaboration in North Atlantic right whale disentanglement operations.

9. If you have questions regarding this letter, please contact Mr. Ken McDaniel at (202) 267-2039 or Ms. Kebby Kelley at (202) 267-6034.

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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Silver Spring, MD 20910

JUN 15 2005

Captain K.G. Quigley
United States Coast Guard
2100 Second Street, S.W.
Washington, DC 20593

Dear Captain Quigley:

The National Marine Fisheries Service (NMFS) has received your letter dated February 17, 2005, and the documents associated with that letter, in regard to the U.S. Coast Guard's (USCG) proposal to establish and operate an Integrated Anti-Swimmer System (IAS). We understand the purpose of the IAS is to protect the marine transportation system of the United States and critical infrastructure in and around U.S. ports and waterways from underwater threats through the use of acoustic detection, tracking and interdiction of these threats. Threats include swimmers and divers potentially using a variety of weapons, gear, and vehicles. The IAS will be co-located with, and used by, the USCG's newly established Maritime Safety and Security Teams (MSST) based out of those ports where the IAS will be employed.

The USCG has prepared Preliminary Final Environmental Assessments (EAs) for operation of an IAS in Galveston Bay, Texas, and San Pedro Bay, California, and is presently preparing a Programmatic EA (PEA) for operation of the IAS at various other ports around the country. Each EA provides detailed information regarding the area where the IAS would be operated the majority of the time, or the Region of Influence (ROI) for their discrete locations, while the PEA will address the environmental impacts of IAS deployment on a nation-wide or global scale.

The USCG provided draft copies of the San Pedro and Galveston IAS EAs to NMFS for review and comment on the proposed actions and mitigation measures. The USCG requests NMFS concur with its determination that: (1) deployment of the IAS in the areas described in the respective EAs will not have a significant environmental impact on the marine environment; (2) deployment of the IAS in the ROI as described in the San Pedro EA is not likely to adversely affect threatened or endangered species or critical habitat; and (3) deployment of the IAS as described in the EAs is unlikely to result in the incidental take of marine mammals. This letter responds only to your request regarding marine mammal impacts in Galveston Bay and San Pedro Bay and does not address whether deployment of the IAS will, or will not, have a significant impact on the Galveston Bay and San Pedro Bay environments. In regard to consultation under section 7 of the Endangered Species Act for the San Pedro Bay IAS, please contact the Southwest Region, NMFS on this action.

The taking of marine mammals, including behavioral harassment, is prohibited under the Marine Mammal Protection Act (MMPA), unless the activity is exempted by law or permitted under the MMPA. Based on the following information contained in the EAs and your letter, NMFS agrees

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that operation of the IAS in Galveston Bay and San Pedro Bay, in accordance with the mitigation measures described below, is not likely to result in the take of marine mammals in those bays.

The IAS is designed to detect underwater threats to the United States using four primary components: the Security Vehicle Acoustic Guidance system (SVAG), the Kongsberg SM 2000 (SM 2000) sonar, the Dual High Frequency Identification Sonar (DIDSON), and the underwater loud hailer; the latter three result in underwater noise.

The SM 2000 is a commercially available sound head that integrates with software developed at the Applied Research Laboratory-University of Texas. This high-frequency sonar (90 kHz) has a source level of 206 dB re 1 micro-Pa at 1 meter (dB/mPa/m). Under normal circumstances the SM 2000 would be operated from shore from either a pier or vessel tied to a pier and would be powered from an available electrical connection to the municipal power system. Sound pressure levels (SPLs) from this sonar are expected to attenuate quickly and drop to below 180 dB between 3 to 100 m (9.8-328 ft) from the sound head. This area is considered to be the zone of potential Level A harassment (USN 2002) for marine mammals that have sensitive hearing in the range of 90 kHz.

The DIDSON sonar will be located on a MSST response vessel, will not be running continuously, and will be used to positively identify a threat once it has been localized out to 20 or 30 yds (18 or 27 m). The DIDSON sonar has a source level of 202 dB/mPa/m with frequencies of 1.0 and 1.8 megahertz (mHz). Because of the high frequencies of this sonar, sound coming from this sonar will attenuate rapidly and will have a zone of potential impact much smaller than that of the SM 2000. These frequencies are significantly above the level for marine mammal hearing and, therefore, will not result in taking marine mammals.

The underwater loud hailer, a commercially available diver recall device that transmits human voices underwater, will also be located on a vessel and will not be used continuously. It is a temporary and transient sound source as it will be used only in the event a suspected human intruder is detected, allowing security teams to vocally contact unidentified divers before further action is considered. The loud hailer uses a Lubell underwater speaker, model LL-98, and operates in a low frequency range of 200 Hz to 20 kHz with a source level of 180 dB/mPa/m at 1 kHz. Because it will be used only to communicate with known diver presence based on detection by the SM 2000 and DIDSON sonars, no marine mammals would likely be incidentally taken by harassment while this unit is operating. Also, the loud hailer source is below SPLs that would cause injury or mortality to marine mammals for the duration of its nominal use.

The SVAG component of the IAS is not a source of underwater sound. With some parts of the SVAG located onshore and other parts located on a vessel, it uses radio frequencies and a global positioning system (GPS) to direct the MSST vessel to the underwater threat. MSST vessels are also considered a part of IAS and a source of waterborne noise and vessel traffic. However, no new vessels will be added to the fleet because of IAS.

The IAS is designed to operate to a depth of 100 feet (30 m) in fresh, salt, and brackish waters; day or night regardless of visibility; and in air and water temperatures and thermoclines normal for a port/harbor environment (arctic to sub-tropical). Under normal circumstances, in Galveston Bay,

the IAS' ROI would be limited to the waters within approximately 300 m (984 ft) of specific, existing shore-side port infrastructure or docked ships associated with the inshore waters of the Galveston Bay and Galveston Channel, including the City of Galveston and the Intracoastal Waterway, from Texas City up the Texas coastline to the border with the state of Louisiana.

Only one IAS system would be used in conjunction with the MSST in each of the two Bay areas. The IAS is transportable and could be moved anywhere in the ROI. Operation of the IAS would be limited to the waters within the ROI, and will not operate in offshore waters. The IAS would operate on an as-needed basis at a particular location where additional protection is necessary, determined by the asset that is being protected, for some defined period. It is estimated that the IAS would be transported to a new location by MSST about 1.5 times a month and would operate approximately 180 days a year. During that time, the IAS would be operated continuously. However, it is only the SM 2000 that would be "on all the time." Use of the other acoustical components is expected to be rare, have only very short periods of operation, and used only under the suspicion of potential threats.

Because an incidental take authorization has not been requested, it is appropriate to establish criteria to ensure that taking, including Level B harassment, does not occur incidental to conducting your activities. In your February 17, 2005, letter, the USCG committed to implement *fully* the following measures in order to ensure that no taking, including Level B harassment, will occur. We stress that NMFS' opinion that take is not likely is predicated on implementation of these mitigation measures:

(1) The IAS will be monitored by USCG personnel at all times of deployment. Those persons monitoring the IAS will shut down the SM 2000 whenever marine mammals are detected by the SM2000 approaching or about to enter the 160-dB isopleth (safety zone) at any time, even at night. The SM 2000 may be turned back on once marine mammals have left the safety zone.

(2) Because there is no ramp-up of the SM 2000, the 160-dB safety zone will be visually monitored for 20 minutes prior to turning on the SM 2000 to be sure it is clear of marine mammals. If the SM 2000 is started during nighttime, night vision devices will be used to monitor the safety zone.

(3) The IAS will not be placed in a location such that it interferes with obvious marine mammal throughways, or prevents entry or exit of marine mammals into and out of an area, such as the mouth of a bay or narrow choke-points where sonar may deter them from traveling through or by.

(4) Continued implementation of existing USCG programs to guard against adverse impacts to marine mammals, such as the Ocean Steward Plan.

The Galveston and San Pedro Bay areas have many sources of anthropogenic noise, including the operation of platforms and drilling rigs, seismic exploration, shipping, recreational boating, dredging, shoreline construction, urban and industrial development, and helicopters and sonars

(GBEP, 2002). Based on the rapid attenuation of SPL's from the SM 2000 and the fact that the DIDSON involves sound frequencies inaudible to marine mammals, and the transient and infrequent use of the DIDSON and the underwater loud hailer, the IAS is not expected to have contribute substantially to the existing ambient waterborne noise levels at locations in Galveston Bay and San Pedro Bay where it is deployed. While the IAS provides an alert when the SM2000 detects a human diver, it has the ability to discriminate between wildlife and humans. This ensures that a marine mammal won't be mistaken for a diver and effective mitigation (shut-down) can be employed so as to avoid inadvertently exposing marine mammals to either of the other IAS acoustic sources. When tested, the SM 2000 demonstrated an average threat detection range, which NMFS believes that this would allow the USCG to detect humans (and marine mammals) at SPLs lower than SPLs currently used as a criterion for Level B harassment (i.e., 160 dB re 1 microPa - m). However, the USCG should verify sound propagation for operation of the IAS, particulary the SM 2000, in Galveston Bay and San Pedro Bay to ensure that this presumption is correct. As noted at a previous meeting between our agencies, the USCG will collect these data and provide this data to NMFS when verification is completed.

If, for any reason, the USCG does not implement the mitigation described in this letter, this opinion concurring with your determination that marine mammal takes are not likely will not apply. In that case, we would recommend that the USCG apply for an incidental take authorization under section 101(a)(5) of the MMPA. This same recommendation would apply if the USCG subsequently obtains information during deployment of the IAS in Galveston Bay or San Pedro Bay indicating that marine mammals are being affected by the IAS. For additional information on this action, please contact Kenneth Hollingshead (301-713-2289, ext 128) of my staff.

Sincerely,

James H. Lecky
Director
Office of Protected Resources

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
501 West Ocean Boulevard, Suite 4200
Long Beach, California 90802- 4213

JUN 20 2005

In Reply, Refer to:
151401SWR04PR13781:MLD

Captain K.G. Quigley
United States Coast Guard
2100 Second Street, S.W.
Washington, DC 20593

Dear Captain Quigley:

NOAA's National Marine Fisheries Service (NMFS) has received your letter dated June 14, 2005, and the documents associated with that letter in regard to the U.S. Coast Guard's (USCG) proposal to establish and operate an Integrated Anti-Swimmer System (IAS) in San Pedro Bay, California. We understand that the purpose of the IAS is to enhance the USCG's underwater swimmer detection capability in San Pedro Bay, California, and as a result, protect personnel, ships, and property from sabotage and/or subversive acts through the use of acoustic detection, tracking, and interdiction of these threats. The IAS is comprised of three separate components that may cause underwater noise: the Kongsberg SM 2000 sonar (SM2000), the Dual High Frequency Identification Sonar (DIDSON), and the underwater loud hailer. The IAS will be co-located with, and used by, the USCG's Maritime Safety and Security Teams (MSST) based out of San Pedro, California. You have requested our concurrence that the operation of the IAS is not likely to adversely affect listed marine mammal species under the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

The USCG has prepared a Preliminary Final Environmental Assessment (EA) for operation of an IAS in San Pedro Bay, California. The EA provides detailed information for operating the IAS in San Pedro Bay and in the Region of Influence (ROI), geographically defined as the Ports of Los Angeles Harbor and Long Beach including coastal Los Angeles County. On April 26, 2005, Monica DeAngelis, of my staff, participated via conference call, in a meeting between the USCG and NMFS staff to discuss the operation of the IAS.

The SM2000 is a commercially available sound head that integrates with software developed at the Applied Research Laboratory at the University of Texas. The SM2000, uses a high frequency sonar (90 kHz) and has a source level of 206 dB re 1 μPa at 1 meter. Under normal circumstances, the SM2000 would operate from shore from either a pier or vessel moored to a pier, and would be powered from an electrical connection to the municipal power system. Sound pressure levels from the sonar are expected to attenuate quickly and drop to below 180 dB between 3 and 100 m (9.8-328 feet) from the sound head. This area is considered to be the zone for potential Level A harassment (USN 2002) for marine mammals that have sensitive hearing in the range of 90 kHz.

Although dolphins are not frequently found in San Pedro Bay near where in the IAS will be located, the frequency of the sonar (90 kHz) is within the dolphin's hearing range. The USCG stated on April 26, 2005, that the IAS system is able to distinguish between a marine mammal and any threat that may be in San Pedro Bay. A 200 m precautionary zone will be visually monitored for 20 minutes prior to turning on the device to ensure the zone is clear of marine mammals. If the system will be operated at night, then night vision devices will be used to monitor the zone. If the IAS is deployed and marine mammal activity is observed within the 200 m precautionary zone, the operational commander will take measures to avoid impacting wildlife, situation permitting, and may shut the system down. This ensures that a marine mammal will not be inadvertently mistaken for a diver and effective mitigation (shut-down) can be employed so as to avoid inadvertently exposing marine mammals to either of the IAS acoustic sources.

The DIDSON sonar will be located on a MSST response vessel, will not be running continuously, and will be used to positively identify a threat once it has been observed out to 20 or 30 yards (60 or 90 feet). The DIDSON sonar has a source level of 202 dB re 1 μPa at 1 meter with frequencies of 1.0 and 1.8 megahertz (mHz). The sound coming from the DIDSON sonar is much smaller than that of the SM2000. Thus, the 200 m precautionary zone established for the SM2000 should be sufficient to protect marine mammals when the DIDSON sonar is deployed. The frequency of the DIDSON sonar is above the hearing level for marine mammals, and thus, will not result in the taking of marine mammals.

The underwater loud hailer, a commercially available diver recall device that transmits human voices underwater, will also be located on a vessel and will not operate continuously. It is a temporary sound source and will be used only in the event that a human intruder is detected. This will allow security teams to vocally contact unidentified divers before further action is considered. In addition, the source level for the loud hailer is below the sound pressure level that could cause injury or mortality for marine mammals. Therefore, it is unlikely that take of marine mammals would occur while the loud hailer is operating.

The IAS is transportable and could be moved anywhere in the ROI, however, the operation of the IAS would be limited to the waters within the ROI, and would not operate offshore. The IAS would operate on an as-needed basis at a particular location where additional protection is needed.

Under the Marine Mammal Protection Act (MMPA), it is illegal to "take" a marine mammal, without prior authorization from NMFS. As discussed in the April 26, 2005, meeting, because an incidental harassment authorization has not been requested by the USCG, it is appropriate to establish criteria to ensure that taking, including Level B harassment, does not occur incidentally to conducting IAS operations. As detailed in numbers 6 and 7 in your June 14, 2005, letter, the USCG committed to implementing the protocols, recommended by NMFS, by including them in the USCG standard operating procedures to ensure that no taking, including Level B harassment, will occur. When tested, the SM2000 demonstrated an average threat detection range, which NMFS

believes would allow the USCG to detect humans (and marine mammals) at sound pressure levels lower than the sound pressure levels currently used as a criterion for Level B harassment (i.e., 160 dB re 1 μPa at 1 meter). However, the USCG should verify the sound propagation for operation of the IAS in San Pedro Bay, to ensure that this presumption is correct. As noted at the April 26, 2005, meeting, the USCG will collect and provide these data to NMFS when verification is complete.

Based on the information contained in the EA and your letter, NMFS agrees that operation of the IAS in San Pedro Bay, in accordance with the mitigation measures described, is not likely to adversely affect marine mammals in San Pedro Bay. Should additional information on listed or proposed ESA species become available, this determination may be reconsidered. If, for any reason, the USCG does not implement the mitigation measures described, this opinion concurring with your determination that marine mammal takes are not likely, will not apply. In that case, NMFS recommends that the USCG apply for an incidental take authorization under section 101(a)(5) of the MMPA.

These comments are provided in accordance with the ESA and MMPA. We appreciate your efforts to comply with Federal regulations and to conserve and protect marine mammals. Please contact Monica DeAngelis at 562-980-3232 or Monica.DeAngelis@noaa.gov if you have any questions concerning this letter or if you require additional information.

Sincerely,

for Rodney McInnis
Regional Administrator

cc: LT Curtis E. Borland, U.S. Coast Guard, Washington DC

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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Silver Spring, MD 20910

K.G. Quigley
CAPT, U.S. Coast Guard
Chief, Office of Security and Defense Operations
United States Coast Guard
2100 Second Street, S.W.
Washington, DC 20593-0001

MAR 20 2006

Dear Captain Quigley:

NOAA's National Marine Fisheries Service received your request for concurrence on the United States Coast Guard's determination that the operation of the Integrated Anti-Swimmer System (IAS) would not adversely affect listed species or designated critical habitat. After review of the revised *Programmatic Environmental Assessment of the Installation and Operation of the Integrated Anit-Swimmer System* (February 2006) and other documents, we agree with your determination.

The purpose of the IAS is to detect, track, classify, and alert security forces of potential underwater threats around high-value vessels and critical port facilities and infrastructure. Generally, the IAS would be used in or near economically and militarily significant ports, which are typically busy, heavily trafficked, and industrial. Use of the IAS outside of these ports would be rare and limited to a site of specific importance or response to a specific potential threat.

Most of the 13 Coast Guard Maritime Safety and Security Teams (MSST) across the United States would have their own IAS. The IAS would be deployed and operated on an as-needed basis, when and where additional protection is necessary. The IAS would also be used for training once per quarter. Assuming a maximum of 18 deployments per year for each unit for a total duration of 10 days, the unit may be in operation about 180 days per year within any one MSST region.

The IAS consists of a land-based sonar and a portable sonar for detection and tracking of underwater swimmers and threats at a range that allows opportunities to take action. The land-based sonar would be used from either a pier or vessel tied to a pier. The portable sonar would be on an MSST Defender Class boat. While the land-based sonar is operated continuously, the portable sonar would be used to positively identify a potential threat once it has been localized out to 30 yards. An underwater loudhailer, a submerged speaker that transmits human voices underwater, would also be used to communicate with unidentified divers or swimmers before further action is taken. Its use would normally be of very short duration and in close proximity to the person.

Standard IAS operating procedures would include the following protocols to avoid or minimize the probability that the IAS would adversely affect protected marine species:

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- USCG personnel will monitor the IAS at all times of deployment.
- If IAS is deployed and a marine mammal or sea turtle activity is noted to approach or enter the 160 dB isopleth (200-meter safety zone), the operational commander will take prudent measures to avoid impacting the wildlife which may, situation permitting, include shutting down the system.
- During IAS training, if marine mammals or sea turtles are detected approaching or entering the 200-meter safety zone, the system shall be shut down until the marine mammals or sea turtles have left the safety zone.
- Except for emergency situations where the USCG has specific intelligence indicating an imminent threat, the safety zone will be visually monitored for 20 minutes prior to turning on the device to be sure it is clear of marine mammals and sea turtles. If the land-based sonar is switched on after dark, night vision devices will be used to monitor the safety zone.
- Barring exceptional circumstances that require such deployment, the IAS will not be placed in a location such that it interferes with obvious marine mammal or sea turtle throughways, or prevents entry or exit of marine mammals into and out of an area, e.g., the mouth of a bay or narrow choke-points.

We analyzed the potential for adverse effects to endangered and threatened species, including the listed sea turtle, Pacific salmon, sturgeon species, the smalltooth sawfish, Steller sea lion, southern resident killer whale, and Hawaiian monk seal that may occur within the nearshore waters where the IAS would be deployed. Critical habitats designated for these species are in coastal areas, but the IAS is unlikely to be used in such habitats. A list of the species considered in the analysis is attached. Our analysis is based on the information provided in the *Programmatic Environmental Assessment of the Installation and Operation of the Integrated Anit-Swimmer System.*

The IAS emits sounds into the marine environment that could affect marine life. The following table describes the source level, frequency range, and attenuation of the sonars and loud hailer.

Type	Frequencies (kHz)	Maximum Source Level (dB re 1 μPa at 1 m)	Distance to the 160 dB re 1 μPa isopleth (m)[a]	Received Level at 200 m (dB re 1 μPa)
Land-based Sonar	90	206 dB @ 90 kHz	~140	154
Portable Sonar	1,000	202 dB @ 1,000 kHz	~17	0
	1,800	202 dB @ 1,800 kHz	~9	0
Underwater Loud Hailer	0.2–20	180 dB @ 1 kHz	~11	134

Notes: [a] The 160-dB isopleth is the contour where the sound level would attenuate from the source to 160 dB. The maximum distance to the 160-dB isopleth was calculated using the equations $RL = SL - TL_{ss} - TL_{ab}$ where RL is the received level (in dB re 1 μPa), SL is the Source Level (dB re 1 μPa at 1 m), TL_{ss} is spherical spreading in water ($20*\log_{10}$[distance in meters]), and TL_{ab} is the absorption coefficient multiplied by distance in meters. The absorption coefficient (α) is sound energy loss in dB/m and is calculated based on the equation $\alpha = (0.036f^{1.5})/1000$ where f = the frequency in kHz.

These sounds could only affect those marine species that are able to hear them. The *Environmental Assessment* summarizes the available data on hearing frequencies for most of the listed species. The sea turtle and fish species are believed to be able to hear low frequencies. Hard-shelled sea turtle hearing was measured to be between 0.08 to 2 kHz; leatherback sea turtles may be able to hear similarly given their similar anatomy. Salmon are reported to hear between 0.03 to 0.4 kHz and sturgeon between 0.05 to 1 kHz. Smalltooth sawfish are likely to also hear the low frequencies, i.e., less than 1 kHz, similar to sharks. The Steller sea lion may be able to hear frequencies up to 50 kHz, and the Hawaiian monk seal can hear up to 30 kHz. The southern resident killer whale, however, may be able to hear sounds up to 120 kHz.

The underwater loud hailer would be audible to all of the above species. However, the likelihood that any of these species would be exposed to the loudhailer is extremely low for several reasons. First, the IAS would generally be used in busy, industrial ports that are unlikely to support desirable habitats for listed species. Second, the loudhailer would be used infrequently and only when the sonars show that there is a diver or swimmer that presents a threat to the asset that is being protected. Third, the use of the loud hailer would normally be of very short duration and in close proximity to the suspected threat. Finally, for marine mammals and sea turtles, USCG personnel would monitor the IAS at all times, be able to detect marine mammals or sea turtles within the 200-m safety zone, and avoid exposing these species to the loud hailer. The combination of these factors minimizes the probability of exposure to a discountable level.

The portable sonar, operating at 1,000 or 1,800 kHz would not be audible to any of the listed species. The land-based sonar, operating at 90 kHz would be audible to only the southern resident killer whale. Although the land-based sonar would be used continuously during an operational mission, the ensonified area would be monitored and the system would be shut-down if a marine mammal (such as a killer whale or monk seal) approaches the 200-m safety zone. The IAS is capable of accurately distinguishing a marine mammal from a human diver or other object. The system alerts USCG security response personnel for a target that has been classified as a swimmer, diver, sea turtle, or marine mammal. The potential for southern resident killer whales to be exposed to the portable sonar is also extremely low, given the location of IAS deployment, the infrequent and short duration of deployment, and the mitigation measures.

Given that the likelihood that listed species discussed above would be exposed to the IAS sonars and loud hailer are so low as to be discountable, we conclude that such species would not likely be adversely affected and therefore concur with your determination. We acknowledge the IAS could benefit listed species because it would contribute to the prevention of terrorist attacks involving petroleum or chemical spills.

We appreciate your efforts in the development and implementation of measures for the IAS that serve to avoid impacts to threatened and endangered species. If you have any questions or concerns about this consultation, please feel free to contact me or Mi Ae Kim at 301-713-1401.

Sincerely,

James H. Lecky, Director
Office of Protected Resources

Attachment (1): *Threatened and endangered species that may be affected by the Coast Guard's Integrated Anti-Swimmer System (IAS) chart.*

Threatened and endangered species that may be affected by the Coast Guard's Integrated Anti-Swimmer System (IAS).

Species	Status
Hawaiian monk seal (*Monachus schauinslandi*)	Endangered
Steller sea lion (*Eumetopias jubatus*)	
Eastern stock	Threatened
Western stock	Endangered
Killer whale, southern resident (*Orcinus orca*)	Endangered
Green sea turtle (Chelonia mydas)	
Florida and Mexico's Pacific coast breeding colonies	Endangered
All other areas	Threatened
Hawksbill sea turtle (*Eretmochelys imbricata*)	Endangered
Kemp's ridley sea turtle (*Lepidochelys kempii*)	Endangered
Loggerhead sea turtle (*Caretta caretta*)	Threatened
Leatherback sea turtle (*Dermochelys coriacea*)	Endangered
Olive ridley sea turtle (*Lepidochelys olivacea*)	
Mexico's Pacific coast breeding colonies	Endangered
All other areas	Threatened
Atlantic salmon (*Salmo salar*), Gulf of Maine	Endangered
Chinook salmon (*Oncorhynchus tshawytscha*)	
California coastal	Threatened
Central Valley spring run	Threatened
Columbia River (lower)	Threatened
Columbia River (upper) spring run	Endangered
Puget Sound	Threatened
Sacramento River winter run	Endangered
Snake River fall run	Threatened
Snake River spring/summer run	Threatened
Willamette River (upper)	Threatened
Chum salmon (*Oncorhynchus keta*)	
Columbia River	Threatened
Hood Canal summer run	Threatened
Coho salmon (*Oncorhynchus kisutch*)	
Central California coast	Endangered
Lower Columbia River	Threatened
South Oregon & North California coast	Threatened
Sockeye salmon (*Oncorhynchus nerka*)	
Ozette Lake	Threatened
Snake River	Endangered
Smalltooth sawfish (*Pristis pectinata*)	Endangered
Gulf sturgeon (*Acipenser oxyrinchus desotoi*)	Threatened
Shortnose sturgeon (*Acipenser brevirostrum*)	Endangered
Steelhead trout (*Oncorhynchus mykiss*)	
California coast, central	Threatened
Snake River	Threatened
Columbia River (upper)	Endangered
California, southern	Endangered
Columbia River (middle)	Threatened
Columbia River (lower)	Threatened
Willamette River (upper)	Threatened
California, northern	Threatened
California coast, south central	Threatened
California central valley	Threatened

APPENDIX D

ENVIRONMENTAL REGULATIONS, LAWS, AND EXECUTIVE ORDERS

Table of Applicable Laws and Executive Orders

Title, Citation	Summary
Archaeological and Historical Preservation Act, 16 U.S.C. 469	Protects and preserves historical and archaeological data. Requires Federal agencies to identify and recover data from archaeological sites threatened by a proposed action(s).
Clean Air Act, 42 U.S.C. 7401-7671q, as amended	Establishes Federal standards for air pollutants. Prevents significant deterioration in areas of the country where air quality fails to meet Federal standards.
Clean Water Act, 33 U.S.C. 1251-1387 (also known as the Federal Water Pollution Control Act)	Comprehensively restores and maintains the chemical, physical, and biological integrity of the Nation's waters. Implemented and enforced by the U.S. Environmental Protection Agency (USEPA).
Coastal Barrier Resources Act, 16 U.S.C. 3501-3510	Discourages coastal barrier island degradation by prohibiting direct or indirect Federal financial funds (including flood insurance) for development, except for emergency life-saving activities.
Coastal Zone Management Act of 1972, 16 U.S.C. 1451-1464	Establishes a policy to preserve, protect, develop, and where possible, restore and enhance the resources of the Nation's coastal zone. Encourages and assists states in developing and implementing coastal zone management programs.
Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. 9601-9675 (also known as "Superfund")	Provides for liability, compensation, cleanup, and emergency response for hazardous substances released into the environment and cleanup of inactive hazardous substances disposal sites. Establishes a fund financed by hazardous waste generators to support cleanup and response actions.
Deepwater Port Act of 1974, 33 U.S.C. 1501-1524	Assigns responsibility to the Secretary of Transportation to license the construction and operation of all oil and natural gas deepwater ports located beyond the U.S. territorial sea and off the U.S. coast.
Endangered Species Act of 1973, 16 U.S.C. 1531-1543, as amended	Protects threatened, endangered, and candidate species of fish, wildlife, and plants and their designated critical habitats. Prohibits Federal action that jeopardizes the continued existence of endangered or threatened species. Requires consultation with U.S. Fish and Wildlife Service (USFWS) and National Oceanic and Atmospheric Administration (NOAA) Fisheries and a biological assessment when such species are present in an area affected by government activities.

Table of Applicable Laws and Executive Orders (continued)

Title, Citation	Summary
Fish and Wildlife Coordination Act, 16 U.S.C. 661-667e, as amended	Authorizes the Secretaries of Interior and Commerce to provide assistance to and cooperate with Federal and State agencies to protect, rear, stock, and increase the supply of game and fur-bearing animals, as well as to study the effects of domestic sewage, trade wastes, and other polluting substances on wildlife. The 1946 amendments require consultation with the USFWS and the state fish and wildlife agencies involving any waterbodies that are proposed or authorized, permitted or licensed to be impounded, diverted or otherwise controlled or modified by any agency under a Federal permit or license.
Magnuson-Stevens Fishery Conservation and Management Act, 16 U.S.C. 1801-1883, as amended	Establishes regional fisheries councils that set fishing quotas and restrictions in U.S. waters. Requires Federal agencies to consult with NOAA Fisheries on all actions (authorized, funded, or undertaken) that might adversely affect essential fish habitat.
Marine Mammal Protection Act of 1972, 16 U.S.C. 1361-1389, 1401-1407, 1538, 4107	Establishes a moratorium on the taking and importation of marine mammals. Prohibits harassing, hunting, capturing, collecting, or killing of marine mammals or attempting such actions. Requires permits for taking marine mammals. Requires consultations with USFWS and NOAA Fisheries if impacts on marine mammals are possible.
Marine Protection, Research, and Sanctuaries Act of 1972, 33 U.S.C. 1401-1445	Regulates dumping of materials into ocean waters. Provides a permitting process to control ocean dumping of dredged materials. Establishes the marine sanctuaries program.
Maritime Transportation Security Act of 2002, Pub. L. 107-295	Extends the Deepwater Port Act application to include facilities and operations related to natural gas.
Migratory Bird Treaty Act, 16 U.S.C. 703-712	Implements various treaties for protecting migratory birds; the taking, killing, or possession of migratory birds is unlawful.
National Environmental Policy Act of 1969, 42 U.S.C. 4321-4370e, as amended	Requires Federal agencies to use a systematic approach when assessing environmental impacts of government activities. Proposes an interdisciplinary approach in a decision-making process designed to identify unacceptable or unnecessary impacts to the environment.
National Historic Preservation Act, 16 U.S.C. 470-470x-6	Requires Federal agencies to consider the effect of any federally assisted undertaking or licensing on any district, site, building, structure, or object eligible for inclusion, or listed in the National Register of Historic Places (NRHP). Provides for the nomination, identification (through NRHP listing), and protection of significant historical and cultural properties.

Table of Applicable Laws and Executive Orders (continued)

Title, Citation	Summary
National Marine Sanctuaries Act, 16 U.S.C. 1431 et seq.	Authorizes the Secretary of Commerce to designate national marine sanctuaries based on statutory criteria and stipulated factors to be considered by the Secretary as a basis for designation. Stipulates consultation requirements with various Federal agencies, Congressional committees, state agencies and regional fishery councils.
Natural Gas Act of 1938, 15 U.S.C. 717	Designates the Federal Energy Regulatory Commission—an independent agency within the Department of Energy—to regulate the transmission and sale of natural gas for resale in interstate commerce.
Natural Gas Pipelines and Safety Act of 1968 and Hazardous Liquid Pipeline Safety Act of 1979, as amended, 49 U.S.C. 601	The Natural Gas Pipelines and Safety Act of 1968 authorizes the Department of Transportation to regulate pipeline transportation of natural (flammable, toxic, or corrosive) gas and other gases as well as the transportation and storage of liquefied natural gas (LNG). The Hazardous Liquid Pipeline Safety Act of 1979 authorizes the Department of Transportation to regulate pipeline transportation of hazardous liquids (crude oil, petroleum products, anhydrous ammonia, and carbon dioxide). Both of these Acts have been recodified as 49 U.S.C. Chapter 601.
Noise Control Act of 1972, 42 U.S.C. 4901-4918	Establishes a national policy to promote an environment free from noise that jeopardizes health and welfare. Authorizes the establishment of Federal noise emissions standards and provides relevant information to the public.
Nonindigenous Aquatic Nuisance Prevention Control Act of 1990, 16 U.S.C. 4701-4751	Establishes aquatic nuisance species.
Northwest Atlantic Fisheries Convention Act of 1995, 16 U.S.C. 5601-5610	Implements provisions of international conventions and establishes regulatory framework.
Occupational Safety and Health Act of 1970, 29 U.S.C. 651-678	Establishes standards to protect workers, including standards on industrial safety, noise, and health standards.
Outer Continental Shelf Lands Act of 1953, 43 U.S.C. 1331-1356, as amended	Defines the Outer Continental Shelf as all submerged lands lying seaward of State coastal waters that are three miles offshore. Delegates leasing authority to the Secretary of the Interior to promulgate regulations in an effort to reduce waste and conserve natural resources.

Table of Applicable Laws and Executive Orders (continued)

Title, Citation	Summary
Port and Waterways Safety Act, 33 U.S.C. 1221-1232	Sets boat operating and towing safety requirements and established enforcement provisions. Authorizes the U.S. Coast Guard (USCG) to establish vessel traffic service/separation schemes for ports, harbors, and other waters subject to congested vessel traffic.
Resource Conservation and Recovery Act, 42 U.S.C. 6901-6992k	Establishes requirements for safely managing and disposing of solid and hazardous waste and underground storage tanks.
Executive Order (EO) 12372, *Intergovernmental Review of Federal Programs*, July 14, 1982, 47 FR 30959 (6/16/82), as supplemented	Requires Federal agencies to consult with state and local governments when proposed Federal financial assistance or direct Federal development impacts interstate metropolitan urban centers or other interstate areas.
EO 12898, *Environmental Justice,* February 11, 1994, 59 FR 7629 (2/16/94), as amended	Requires certain Federal agencies, to the greatest extent practicable permitted by law, to make environmental justice part of their missions by identifying and addressing disproportionately high and adverse health or environmental effects on minority and low-income populations.
EO 13089, *Coral Reef Protection*, June 11 1998, 64 FR 232 (12/3/99)	Mandates that all Federal agencies whose actions may affect U.S. coral reef ecosystems (1) identify their actions that may affect U.S. coral reef ecosystems; (2) use their programs and authorities to protect and enhance the conditions of such ecosystems; and (3) to the extent permitted by law, ensure that any actions they authorize, fund, or carry out will not degrade the conditions of such ecosystems. Federal agencies shall, subject to the availability of appropriations, provide for the implementation of measures needed to research, monitor, manage, and restore affected ecosystems, including measures reducing impacts from pollution, sedimentation, and fishing.
EO 13148, *Greening the Government Through Leadership in Environmental Management*, April 21, 2000, 65 FR 24595 (4/26/00)	Designates the head of each Federal agency to ensure that all necessary actions are taken to integrate environmental accountability into agency day-to-day decision making and long-term planning processes, across all agency missions, activities, and functions. Establishes goals for environmental management, environmental compliance, right-to-know (informing the public and their workers of possible sources of pollution resulting from facility operations) and pollution prevention, and similar matters.
EO 13175*, Consultation and Coordination with Indian Tribal Governments,* November 6, 2000, 65 FR 67249 (11/09/00)	Requires Federal agencies to establish an accountable process that ensures meaningful and timely input from tribal officials in developing policies that have tribal implications.

Table of Applicable Laws and Executive Orders (continued)

Title, Citation	Summary
EO 13186*, Responsibilities of Federal Agencies to Protect Migratory Birds,* January 10, 2001, 66 FR 3853 (1/17/01)	Requires each agency to ensure that environmental analyses of Federal actions (required by the National Environmental Policy Act or other established environmental review processes) evaluate the effects of actions and agency plans on migratory birds, emphasizing species of concern. Agencies must support the conservation intent of migratory bird conventions by integrating bird conservation principles, measures, and practices into agency activities, and by avoiding or minimizing, to the extent practicable, adverse impacts on migratory bird resources when conducting agency actions.
EO 11593, *Protection and Enhancement of the Cultural Environment*, May 13, 1971, 36 FR 8921 (5/15/71)	Requires all Federal agencies to locate, identify, and record all cultural resources, including significant archaeological, historical, or architectural sites.

Note: This table only reflects those laws and EOs that may reasonably be expected to apply to the Proposed Action and alternatives.

Other laws and Executive Orders relevant to consideration of licensing of deepwater ports include, but are not limited to:

- Abandoned Shipwreck Act, 43 U.S.C. 2102, et seq.
- American Indian Religious Freedom Act, 42 U.S.C. 1996, et seq.
- Antiquities Act, 16 U.S.C. 433, et seq.; Archeological Resources Protection Act, 16 U.S.C. 470 aa-ll, et seq.
- Architectural Barriers Act, 42 U.S.C. 4151, et seq.
- Community Environmental Response Facilitation Act, 42 U.S.C. 9620, et seq.
- Department of Transportation Act, P.L. 89-670, 49 U.S.C. 303, Section 4(f), et seq.
- Emergency Planning and Community Right-to-Know Act, 42 U.S.C. 11001-11050, et seq.
- Environmental Quality Improvement Act, P.L. 98-581, 42 U.S.C. 4371, et seq.
- Farmlands Protection Policy Act, P.L. 97-98, 7 U.S.C. 4201, et seq.
- Federal Insecticide, Fungicide, and Rodenticide Act, P.L. 86-139, 7 U.S.C. 135, et seq.
- Federal Records Act, 44 U.S.C. 2101-3324, et seq.
- Fish and Wildlife Act of 1956, P.L. 85-888, 16 U.S.C. 742, et seq.
- Flood Disaster Protection Act, 42 U.S.C. 4001, et seq.
- Native American Graves Protection and Repatriation Act, 25 U.S.C. 3001, et seq.
- Pollution Prevention Act of 1990, 42 U.S.C. 13101-13109, et seq.
- Safe Drinking Water Act, P.L. 93-523, 42, U.S.C. 201, et seq.

- Toxic Substances Control Act, 7 U.S.C. 136, et seq.
- Wild and Scenic Rivers Act, P.L. 90-542, 16 U.S.C. 1271, et seq.
- EO 12902, dated March 8, 1994, *Energy Efficiency and Water Conservation at Federal Facilities*, 59 FR 11463
- EO 12114, dated January 9, 1979, *Environmental Effects Abroad of Major Federal Actions*, 44 FR 1957
- EO 12088, dated October 13, 1978, *Federal Compliance with Pollution Control Standards*, 43 FR 47707, as amended by EO 12580, dated January 23, 1987, and revoked (in part) by EO 13148, dated April 21, 2000
- EO 13132, dated August 4, 1999, *Federalism*, 64 FR 43255
- EO 11988, dated May 24, 1977, *Floodplain Management and Protection*, 42 FR 26951, as amended by EO 12148, dated July 20, 1979, 44 FR 43239
- EO 13007, dated May 24, 1996, *Historic Sites Act*, 16 U.S.C. 46, et seq.; Indian Sacred Sites, 61 FR 26771
- EO 12372, dated July 14, 1982, *Intergovernmental Review of Federal Programs*, 47 FR 30959, as amended by EO 12416, April 8, 1983, 48 FR 15587; supplemented by EO 13132, August 4, 1999, 64 FR 43255
- EO 13112, dated February 3, 1999, *Invasive Species*, 64 FR 6183, as amended by EO 13286, February 28, 2003, 68 FR 10619
- EO 13158, dated May 26, 2000, *Marine Protected Areas*, 65 FR 2490
- EO 11514, dated March 5, 1970, *Protection and Enhancement of Environmental Quality*, 35 FR 4247, as amended by EO 11541, July 1,1970, 35 FR 10737 and EO 11991, May 24, 1977, 42 FR 26967
- EO 13045, dated April 21, 1997, *Protection of Children from Environmental Health and Safety Risks*, 62 FR 19885, as amended by EO 13229, October 9, 2001, 66 FR 52013 and EO 13296, April 18, 2003, 68 FR 19931
- EO 11990, dated May 24, 1977, *Protection of Wetlands*, 42 FR 26961, as amended by EO 12608, September 9, 1987, 52 FR 34617
- EO 12962, dated June 7, 1995, *Recreational Fisheries*, 60 FR 307695
- EO 13123, *Greening the Government Through Efficient Energy Management*, dated June 3, 1999, 64 FR 30851

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NAIS	National Automatic Information System
NEPA	National Environmental Policy Act
nm	nanometer
NMFS	National Marine Fisheries Service
NMSA	National Marine Sanctuaries Act
NOAA	National Oceanic and Atmospheric Administration
NRHP	National Register of Historic Places
OSHA	Occupational Safety and Health Administration
P.L.	Public Law
PEA	Programmatic Environmental Assessment
R&DC	Research and Development Center [USCG]
RGES	Running Gear Entanglement System
ROV	remotely operated vehicle
SAFMC	South Atlantic Fishery Management Council
SPL	Sound pressure level
U.S.	United States
U.S.C.	United States Code
USCG	U.S. Coast Guard
USDOT	U.S. Department of Transportation
USF	University of South Florida
USFWS	U.S. Fish and Wildlife Service
USN	U.S. Navy
µPa	microPascal
µW	microWatts