USE OF DISPERSANTS IN REGION IV

prepared for

REGION IV REGIONAL RESPONSE TEAM
RESPONSE AND TECHNOLOGY COMMITTEE
DISPERSANT WORKGROUP

Use of Dispersants in Region IV

Prepared for

Region IV Regional Response Team
Response and Technology Committee
Dispersant Workgroup

Region IV Regional Response Team
Ocean and Coastal Waters Dispersant Use Policy

RECORD OF CHANGES

Change Number	Effective Date	Date Entered	Entered By:	Page Check

Region IV Regional Response Team

From: Region IV Regional Response Team

To: Distribution

Subject: LETTER OF PROMULGATION

1. The Region IV Regional Response Team (RRT IV) has approved the attached policy for use of dispersants on oil in ocean and coastal waters throughout the RRT IV area of responsibility effective as of this date. This policy hereby replaces any other policies, guidelines or plans now in force throughout RRT IV. This policy will be used in accordance with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).

2. This policy may become part of the local Area Contingency Plans (ACP) maintained by the U.S. Coast Guard Marine Safety Offices throughout RRT IV.

3. This policy shall be followed as closely as possible, but has not provided for every possible contingency that might occur. Deviations from this policy are authorized when necessary in the best interest of safety or protection of resources. The RRT IV must be made aware of any deviation as soon as possible.

4. This policy cannot be changed or altered without notice and opportunity for comment provided to each signatory official or designated representative to the RRT IV.

5. Any signatory official or designated representative to the RRT IV can petition the RRT IV to amend or revise the policy and/or withdraw approval at any time.

6. All comments and requests for revision shall be directed to the RRT IV Response and Technology Committee for consideration by the RRT IV.

7. The RRT IV Response and Technology Committee will remain abreast of developments and changes for dispesant use which may provide cause for recommending revision to this policy. Additionally, the Response and Technology Committee may be tasked at any time by members of the RRT IV to provide additional information or guidelines pertaining to dispersant use if available.

8. This Letter of Promulgation remains in effect until canceled by a competent authority.

DATE of EFFECT: 08 Oct 1996

U.S. Environmental Protection Agency RRT IV Co-Chair: //s//
Mr. Myron D. Lair

U.S. Coast Guard RRT IV Co-Chair: //s//
Captain R. C. Wigger

Encl: (1) RRT IV Dispersant Use Policy

DISTRIBUTION LIST

Copies of this policy and subsequent changes will be distributed as follows:
(one copy to each of the listed recipients)

COAST GUARD
Commandant (G-MEP)
LANTAREA OPCEN
National Strike Force Coordination Center
Atlantic Strike Team
Gulf Strike Team
CGD Seven (m)
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MSO Wilmington
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FEDERAL AGENCIES
U.S. EPA Region IV
U.S. Department of the Interior Region IV
U.S. Department of Commerce Region IV
U.S. Fish and Wildlife Service Region IV
National Marine Fisheries Service Region IV
NOAA National Marine Sanctuaries, Florida Keys National Marine Sanctuary
NOAA National Marine Sanctuaries, Grays Reef National Marine Sanctuary
NOAA HAZMAT Reference Library Seattle, Washington
NOAA Biological Assessment Team, Seattle, Washington
NOAA HAZMAT USCG Commandant (G-MEP)
NOAA Scientific Support Coordinator, CGD Seven

STATE AND LOCAL AGENCIES
State of North Carolina, RRT IV representative
State of South Carolina, RRT IV representative
State of Georgia, RRT IV representative
State of Florida, RRT IV representative
State of Alabama, RRT IV representative
State of Mississippi, RRT IV representative

NON-GOVERNMENT AGENCIES
Marine Spill Response Corporation, SE region
Clean Caribbean Corporation
Chevron Oil
Shell Oil

If you would like to be added to this distribution list please contact the Region IV Regional Response Team Response and Technology Chairperson or your agency representative to the regional response team.

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REGION IV
REGIONAL RESPONSE TEAM
POLICY FOR
USE OF DISPERSANTS
IN OCEAN AND COASTAL WATERS

INTRODUCTION

Following an oil spill, response actions should be designed to minimize environmental impact. While physical control and recovery techniques are the traditional response measures, other countermeasures also need to be considered. Dispersants are chemicals that orient at the water-oil interface and, by reducing the surface tension, cause all or part of the slick to be dispersed into the water column. Scientific studies indicate that using dispersants can, under certain conditions, significantly reduce the negative short-term and long-term environmental impacts of oil spills.

This Region IV Dispersant Use Policy is set forth by the Federal Region IV Regional Response Team (RRT) for the use of dispersants in response to oil spills on coastal or ocean waters. Its fundamental underlying precept is that dispersing all or part of the slick in offshore waters can prevent the potentially more devastating impacts of oil on sensitive environments inshore. Effective use of dispersants has a limited window of opportunity due to weathering characteristics of oils, which are rapidly affected by the physical environment. Therefore, the effective application of dispersants often requires that pre-approval for dispersant use be given prior to an incident.

This RRT IV Dispersant Use Policy includes pre-authorization agreements, consistent with the National Contingency Plan (NCP), which permit the limited use of dispersants in specifically designated areas. Within pre-approved areas, further consultation by the Coast Guard OSC is not required, as long as the appropriate RRT agencies are immediately notified and the relevant Protocols are followed. This plan is not intended to exclude or prevent the use of mechanical, in-situ burning, biological, or other cleanup methods. Instead, it encourages appropriate combinations of techniques to minimize a spill's effect.

Pre-authorization is not limited to only those organizations with pre-established contracts with dispersant application operators. Due to the time-critical elements involved in a dispersant-use decision however, RRT IV strongly recommends that contractual arrangements for provision of the necessary equipment and personnel for aerial spraying operations be established prior to an incident to avoid unnecessary delays in implementation of this policy.

RRT IV believes that this Dispersant Use Plan represents a conservative approach to dispersant pre-approval, and that institution of this policy will help to ensure a more rapid and effective response to oil spills in Region IV. It is hoped that this careful and measured endorsement of dispersant use in selected Region IV waters will lead to an increased availability of dispersants and associated dispersant application equipment in the region. Questions, concerns, and recommendations relating to this policy may be addressed to the Chair of the Response and Technology Committee or either Co-Chair of the Region IV Regional Response Team.

The Region IV Dispersant Plan is divided into an Introduction, followed by five sections and several appendices. The Introduction highlights important aspects of the policy and a general outline is given.

Section I provides the purpose, authority, and scope of the policy.

Section II describes the established ocean and coastal water zones for pre-authorized and conditional use of dispersants in exclusively federal waters.

Section III lists pre-approval, provisions, and protocols for use of dispersants as required by this policy.

Section IV is a signature page where the RRT IV members representing the United States Coast Guard (USCG), the United States Environmental Protection Agency (EPA), the United States Department of the Interior (DOI), the United States Department of Commerce (DOC), and the coastal states within the RRT IV region have by signature agreed to adopt this policy for their respective agency or state.

Section V contains appendices and includes:

- Maps delineating zones of dispersant use per-authorization.
- Letters of Agreement from the coastal states within RRT IV for which this policy covers, that establish specific conditions for conducting any dispersant applications on state waters or special federally managed areas if applicable.
- Biological assessments and letters pertaining to section 7 consultations with the National Marine Fisheries Service (NMFS) and the United States Fish and Wildlife Service (USFW) for protection of endangered species during dispersant application operations.
- The intent of RRT IV to adopt the current monitoring program for dispersant application operations in the RRT IV region which is supported by the U.S. Coast Guard National Strike Force.
- Dispersant application equipment, stockpile location, and contact information.
- Technical Product Bulletins for dispersants currently listed on the EPA National Product Schedule and available for use.
- Documentation forms, dispersant use decision elements and application procedures.
- Dispersant use operational planning and implementation guidance.
- Guidance and reference information.

No one document could contain all of the information, which may be pertinent to an OSC during the decision-making process. Therefore, RRT IV highly recommends that the OSC draw on the expertise of state and local officials, the NOAA Scientific Support Coordinator (SSC), and any other relevant sources of information when making a dispersant-use decision.

SECTION I

Purpose

This Policy implements Subpart J of the National Oil and Hazardous Substances Contingency Plan (NCP) and provides pre-authorization for the limited use of dispersants by the pre-designated USCG On-Scene Coordinator (OSC) on oil discharges impacting federal waters within Federal Region IV boundaries. The above agencies agree that, in certain circumstances, the complete physical containment, collection, and removal of oil discharges may not be possible. The use of dispersants may therefore be considered to prevent a substantial threat to the public health or welfare, or to minimize serious environmental damage. This policy establishes criteria under which dispersants may be applied to the waters under federal jurisdiction within Federal Region IV or as established by separate state Letters of Agreement.

Authority

Subpart J of the National Oil and Hazardous Substances Contingency Plan (NCP) provides that the Regional Response Team (RRT) representatives to the EPA, DOC, DOI and the affected State(s) may pre-approve the use of chemical countermeasures for oil spill response. Commandant, U.S. Coast Guard, has pre-designated the USCG Captains of the Port as On-Scene Coordinators for coastal spills; and has delegated authority and responsibility for compliance with Section 311 of the Federal Water Pollution Control Act, as amended, to them. The EPA, DOI, and DOC have delegated their authority for authorization of pre-approval of dispersants to their Regional Response Team representatives.

RRT IV representatives from the states of North Carolina, South Carolina, Georgia, Florida, Alabama and Mississippi have been delegated authority by their respective agencies or state governments to represent natural resource concerns and to serve as consultants to the OSC on these matters.

Scope

The USCG, EPA, DOI, DOC, and the coastal states of RRTIV have adopted the use of dispersants as an approved tool to respond to spilled or discharged oil on ocean and coastal waters within the jurisdiction of RRTIV. This policy includes protocols under which dispersant use must be conducted by the USCG On-Scene Coordinator on waters off the coasts of North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, and over special federally managed waters which are within the boundaries of the RRTIV region.

Offshore dispersant application to remediate oil spills occurring in federal Region IV will be conducted in accordance with this policy and, in addition, where applicable, in accordance with Letters of Agreement established between the USCG, EPA, DOI, DOC, and the affected State(s). The pre-approval to authorize the use of dispersants provided by this policy is in effect for the pre-designated USCG On-Scene Coordinator only.

SECTION II

Dispersant Use Pre-authorization and Application Zones

In general pre-authorization exists 3 miles seaward of any land providing that the water depth is at least 10 meters deep. Some special management areas are however, excluded from pre-authorization. Three zones have been established to delineate locations and conditions under which dispersant application operations may take place in waters of federal Region IV. They are:

1) GREEN ZONE -- PRE-AUTHORIZATION FOR DISPERSANT APPLICATION

The Green zone is defined as any offshore water within federal Region IV in which ALL of the following three conditions apply: 1) the waters are not classified within a "Yellow" or "Red" zone; 2) the waters are at least three miles seaward of any shoreline, and 3) the waters are at least 10 meters in depth.

Within the Green zone, the USCG, EPA, DOC, DOI, and the affected state(s) agree that the decision to apply dispersants rests solely with the pre-designated USCG OSC, and that no further approval, concurrence or consultation on the part of the USCG OSC with EPA, DOC, DOI or the State(s) is required.

For documentation purposes, the Dispersant Use "Documentation" Form, found in Appendix VII of this document will be included in the post-incident report, and will be available to EPA, DOC, DOI, and the affected State(s), at their request, when dispersant application operations commence.

All dispersant operations within the Green zone will be conducted in accordance with the Protocols outlined in section III of this policy. Additionally, the USCG OSC will make every reasonable effort to continuously evaluate the application of dispersants within the Green zone, and will allow RRT IV agencies and the affected State(s) the opportunity to comment.

Note: Special Case for West Coast of Florida

Florida state waters extend seaward into the Gulf of Mexico to a distance of nine miles whereas all other state coastal waters in RRT IV, including Florida's east coast, extend seaward to a distance of three miles. No case-by-case approval will be required or considered necessary from EPA, DOI, DOC, or the State of Florida for waters greater than 10 meters in depth that extend seaward in exc3ss of three miles on Florida's west coast unless otherwise designated as meeting the criteria for a case-by-case zone.

2) YELLOW ZONE -- WATERS REQUIRING CASE-BY-CASE APPROVAL

The Yellow zone is defined as any waters within federal Region IV which have not been designated as a "Red" zone, and in which **ANY** of the following conditions apply:

a) The waters fall under State, or special federal management jurisdiction. This includes any waters designated as marine reserves, National Marine Sanctuaries, National or State Wildlife Refuges, units of the National Park Service, or proposed or designated Critical Habitats.

b) The waters are within three miles of a shoreline, and/or falling under state jurisdiction.

c) The waters are less than 10 meters in depth.

d) The waters are in mangrove or coastal wetland ecosystems, or directly over living coral communities, which are in less than 10 meters of water. Coastal wetlands include submerged algal beds and submerged seagrass beds.

Where a Letter of Agreement is in effect between the USCG, EPA, DOI, DOC, and the affected State(s), the policy for pre-authorization established under the provisions of said LOA shall preempt the policy herein established for areas otherwise designated as falling within the Yellow zone. Established State LOAs are provided in appendix II of this Dispersant Use Plan. In the event that a Letter of Agreement is not in effect for an area falling within the Yellow zone, or the desired use of dispersants would modify existing agreements, the USCG will request authorization for dispersant use according to the following procedures.

If the USCG OSC believes dispersants should be applied within the Yellow zone, a request for authorization must be made to the RRT IV representatives of the EPA, DOI, DOC, and the affected State(s). The information contained on the documentation/application form in appendix VII must be provided to the RRT members. The OSC is only granted authority to conduct dispersant operations in the Yellow zone when concurrence has been given by EPA and the affected State(s), and after consultation with DOC and DOI.

RRT IV members will respond to the OSC's request for authorization within four hours. If a decision by RRT members cannot be reached within four hours, the OSC should be notified and informed of the delay, and the reasons behind it.

As with all dispersant use under this Agreement, application of dispersants within the Yellow zone, if approval is granted, will be conducted in accordance with the appropriate and relevant Protocols outlined in the PROTOCOLS section. Additionally, the USCG OSC will make every reasonable effort to continuously evaluate the application of dispersants within the Yellow zone, and will allow RRT IV agencies and the affected State(s) the opportunity to comment.

3) "RED" ZONE -- EXCLUSION ZONES:

The Red zone is that area, or areas, designated by the Region IV Response Team in which dispersant use is prohibited. No dispersant application operations will be conducted at any time in the Red zone unless: 1) dispersant application is necessary to prevent or mitigate a risk to human health and safety, and/or 2) an emergency modification of this Agreement is made on an incident-specific basis.

The Region IV Response Team has not currently designated any areas as Red zones, but retains the right to include areas for exclusion in the future. States may, through the establishment of Letters of Agreement, designate Red zones in areas falling under state jurisdiction. RRT IV encourages local Area Committees to recommend to RRT IV areas for pre-approval of dispersant use within their jurisdiction.

SECTION III

Protocols

THE FOLLOWING REQUIREMENTS APPLY TO THE APPLICATION OF ANY DISPERSANTS UNDER ANY PROVISION OF THIS POLICY:

1) Dispersants will only be used when they are expected to prevent or minimize substantial threat to the public health or welfare, or to mitigate or prevent environmental damage.

2) The USCG agrees that if a decision has been made to use dispersants under the provisions of this agreement, the USCG OSC will immediately notify the Regional Response Team members representing EPA, DOI, DOC, and the affected State(s). Notification will include a copy of the Material Safety Data Sheet (MSDS) of the dispersant product chosen if the MSDS is not already included in this regional Dispersant Plan. Additionally, notification will include, at a minimum:

a. Date, Time and Location of the incident
b. Type and amount of oil discharged;
c. Area affected;
d. The projected area of impact of the oil if not dispersed;
e. Reasons why mechanical or physical removal of the oil is not feasible, or will not on its own provide the optimal response method.
f. Dispersant to be used.
g. On-scene weather, wind, and forecasted weather.

3) The USCG agrees to make every effort to continuously evaluate the decision to use dispersants by considering the advice of the EPA, DOI, DOC, and the affected State(s), other members of the Region IV Regional Response Team, and any other agencies, groups or information sources which may be available. The use of dispersants will be discontinued if so requested by the RRT representative of the EPA, the affected State(s), DOI or DOC. Such a request may be verbal followed by written documentation.

4) The USCG OSC, must comply with all Occupational Health and Safety Administration (OSHA) regulations.

5) Barring any unforeseen circumstances (such as time constraints, safety considerations, or logistical concerns) the OSC will make every reasonable effort to provide designated representatives from the USCG, EPA, DOI, DOC and the affected State(s) with an opportunity to observe dispersant application operations. An inability to provide this opportunity will not, however, be cause for immediate cessation of application operations.

6) Monitoring will be conducted as feasible in order to help evaluate the decision to continue dispersant application and to document results. Recommended monitoring procedures are addressed in Appendix IV.

7) Prior to commencing application operations, an on-site survey will be conducted, in consultation with natural resource specialists, to determine if any threatened or endangered species are present in the projected application area or otherwise at risk from dispersant operations. Measures will be taken to prevent risk of any injury to wildlife, especially endangered or threatened species. Additional and ongoing survey flights in the area of application will be conducted as appropriate. The Right Whale Critical Habitat along portions of coastal Georgia and Florida, as outlined in the Section 7 consultation

with NMFS in appendix III, is of particular concern during December through March. During this time, the Right Whale Early Warning System should be contacted prior to dispersant operations to determine if there have been recent sightings of whales in the planned operational area. Avoidance procedures as outlined in the consultation must be followed during any dispersant application.

8) When dispersant application is proposed in a pre-approved area that is adjacent to or very near a more shallow area (less than 10M), due consideration shall be given to the trajectory of the dispersed oil. If state or federal rersources in adjacent shallow areas would be at risk, consultation with the resource trustee must be conducted. Appendix I contains maps showing to 10M depth contour to be used as a general reference. Nautical or bathemmetric charts should be consulted for more detail.

9) Any use of dispersants requires that a post-incident report be provided by the OSC, or a designated member of the OSC's staff, within 45 days of dispersant application operations. Recommendations for changes or modification to this Dispersant Use policy may be presented in the report, if appropriate. This report will be presented at a Region IV Regional Response Team meeting, if so requested by the RRT.

10) Only those products specifically listed in the EPA National Contingency Plan's (NCP's) Product Schedule as dispersants will be considered for use during dispersant application operations. (See appendix VI)

11) Information on the Documentation/Application Form in appendix VII shall be completed for all dispersant applications and provided to RRT IV members in a timely manner for documentation and informational purposes.

12) The dispersant use decision elements contained in section VII shall be reviewed by the OSC and used to help guide the decision to use or request the use of dispersants.

SECTION IV

Signature Page

I hereby attest and declare that by my signature that I approve this policy for dispersant use as presented herein for the agency or government I represent on the Region IV Response Team (RRT IV).

_____//s//_____ __8/29/96___
Captain Richard C. Wigger (Date)
United States Coast Guard
RRT IV Co-chair

_____//s//_____ __8/29/96___
Mr. Myron D. Lair (Date)
United States Environmental Protection Agency
RRT IV Co-chair

_____//s//_____ __8/30/96___
Mr. James H. Lee (Date)
U.S. Department of the Interior
Region IV Response Team representative

_____//s//_____ __9/4/96___
Commander Gary Petrae (Date)
U.S. Department of Commerce
Region IV Response Team representative

_____//s//_____ __8/28/96___
Ms. Linda Forehand (Date)
State of North Carolina
Region IV Response Team representative

_____//s//_____ __8/30/96___
Mr. R. Lewis Shaw (Date)
Deputy Commissioner
Environmental Quality Control
Department of Health and Environmental Control
State of South Carolina

_____//s//_____ __8/28/96___
Dr. Albert K. Langley (Date)
State of Georgia
Environmental Protection Division
Department of Natural Resources
Region IV RRT member

_____//s//_____ __8/27/96___
Mr. Douglas C. White (Date)
State of Florida
Region IV Response Team representative

_____//s//_____ __9/26/96___
Mr. E. John Williford (Date)
State of Alabama
Region IV Response Team representative

_____//s//_____ __8/29/96___
Mr. Robert J. Rogers (Date)
State of Mississippi
Region IV Response Team representative

APPENDIX I

Zone Maps

In general pre-authorization exists 3 miles seaward of any land providing that the water depth is at least 10 meters deep. Some special management areas are however, excluded from pre-authorization. Any pre-authorization granted within state's waters will be addressed in a separate Letter of Agreement between the state, The USCG, the EPA, DOI, and DOC. The maps contained in this section serve as a general reference to indicate locations, distance from shore, and distance from the 10 meter contour for the pre-authorized zones throughout RRT region IV.

- **North Carolina**
- **Lower North Carolina to Upper Georgia**
- **Lower Georgia, Upper Florida East Coast**
- **Central Florida East Coast**
- **Southern Florida**
- **Central Florida West Coast**
- **Upper Florida West Coast**
- **Western Florida, Alabama, Mississippi**

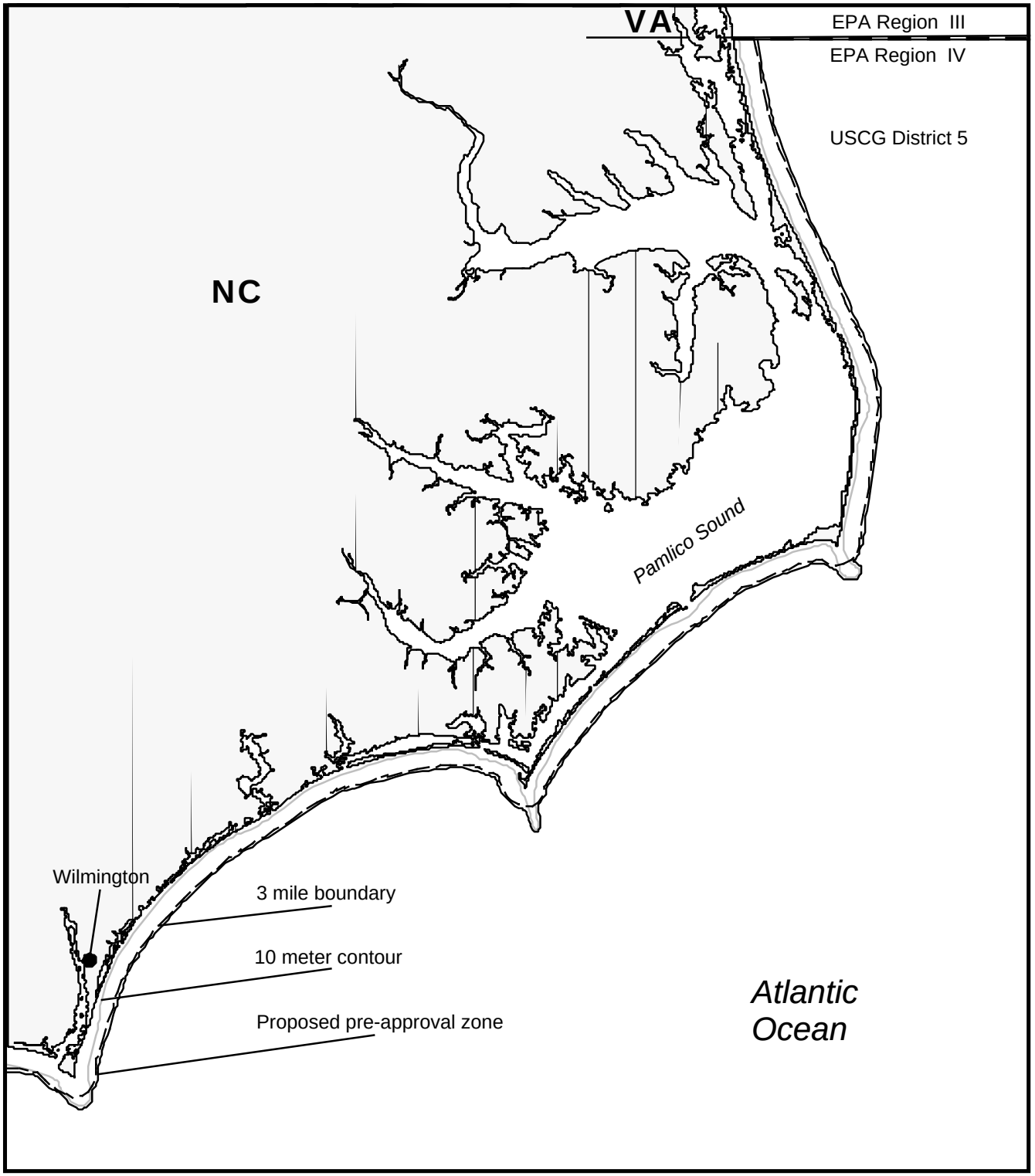
Region IV Regional Response Team

Dispersant Pre-Approval Zones

prepared by NOAA

Nautical miles
0 20

USE ONLY AS A GENERAL REFERENCE Graphic does not show precise locations of boundaries



NC map

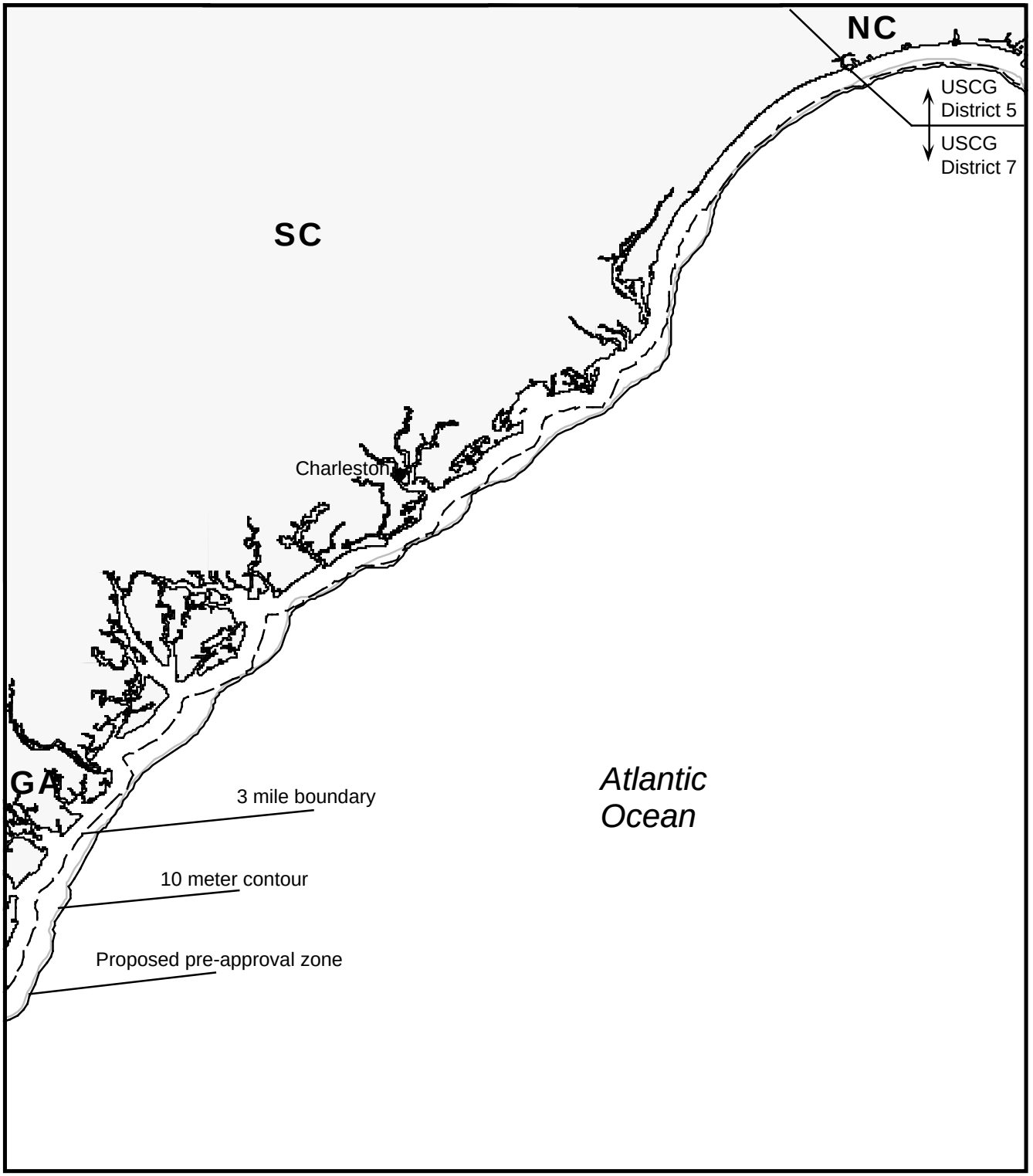
Region IV Regional Response Team

Dispersant Pre-Approval Zones

prepared by NOAA

Nautical miles
0 20

USE ONLY AS A GENERAL REFERENCE Graphic does not show precise locations of boundaries



NC, SC, GA map

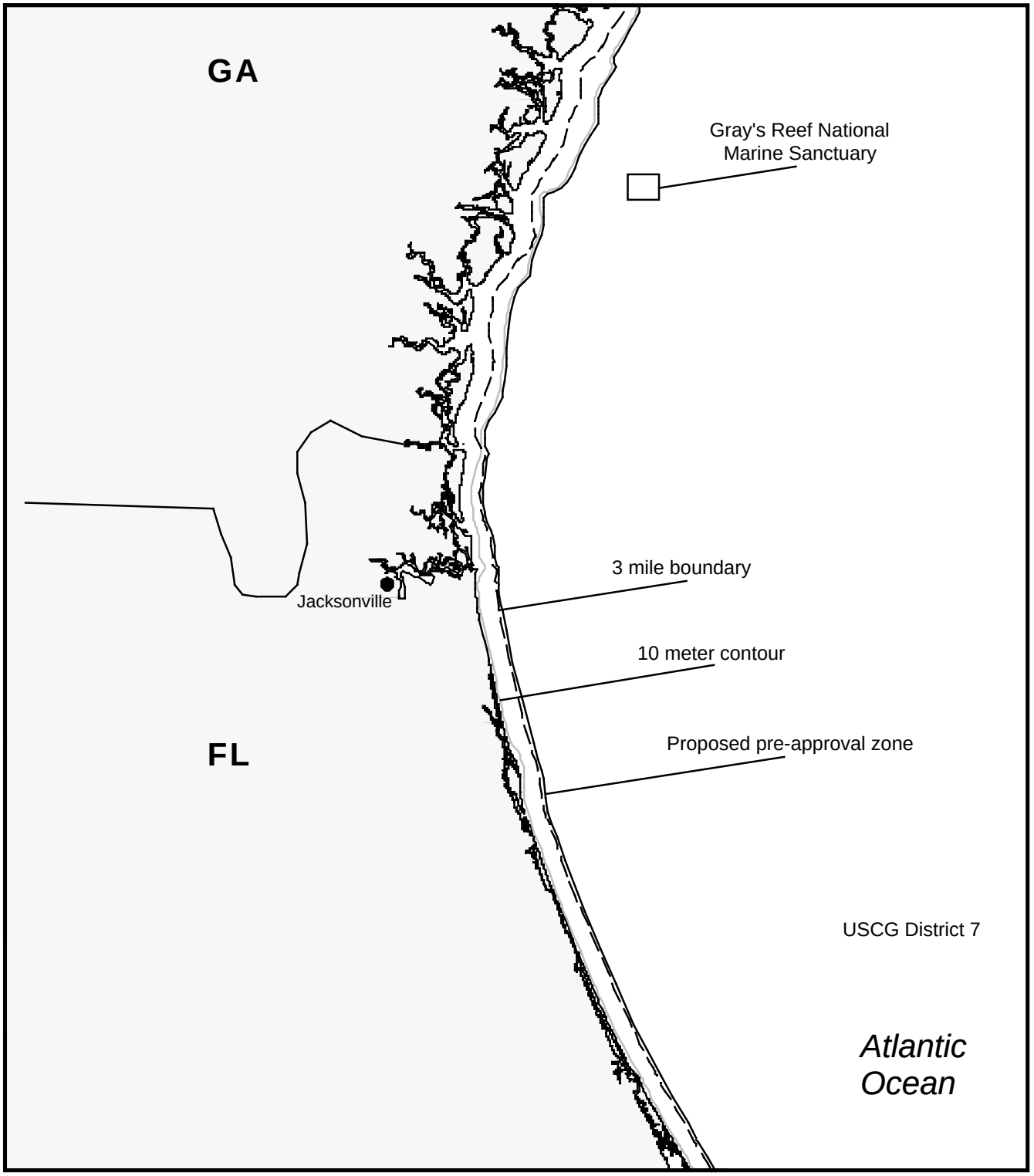
Region IV Regional Response Team

Dispersant Pre-Approval Zones

prepared by NOAA

Nautical miles
0 20

USE ONLY AS A GENERAL REFERENCE Graphic does not show precise locations of boundaries



FL, GA map 9/95

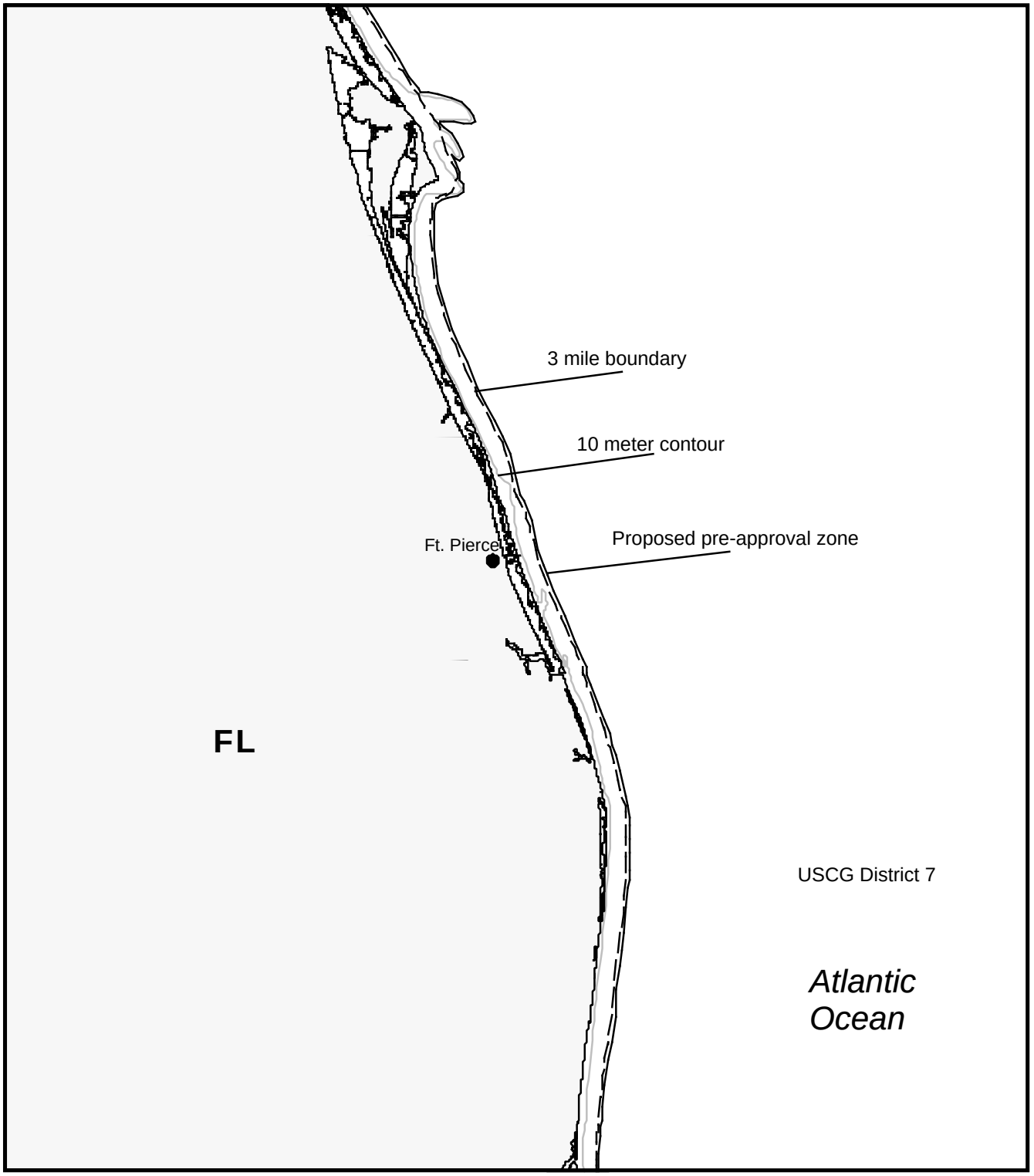
Region IV Regional Response Team

Dispersant Pre-Approval Zones

prepared by NOAA

Nautical miles
0 20

USE ONLY AS A GENERAL REFERENCE Graphic does not show precise locations of boundaries



Middle Eastern Florida map

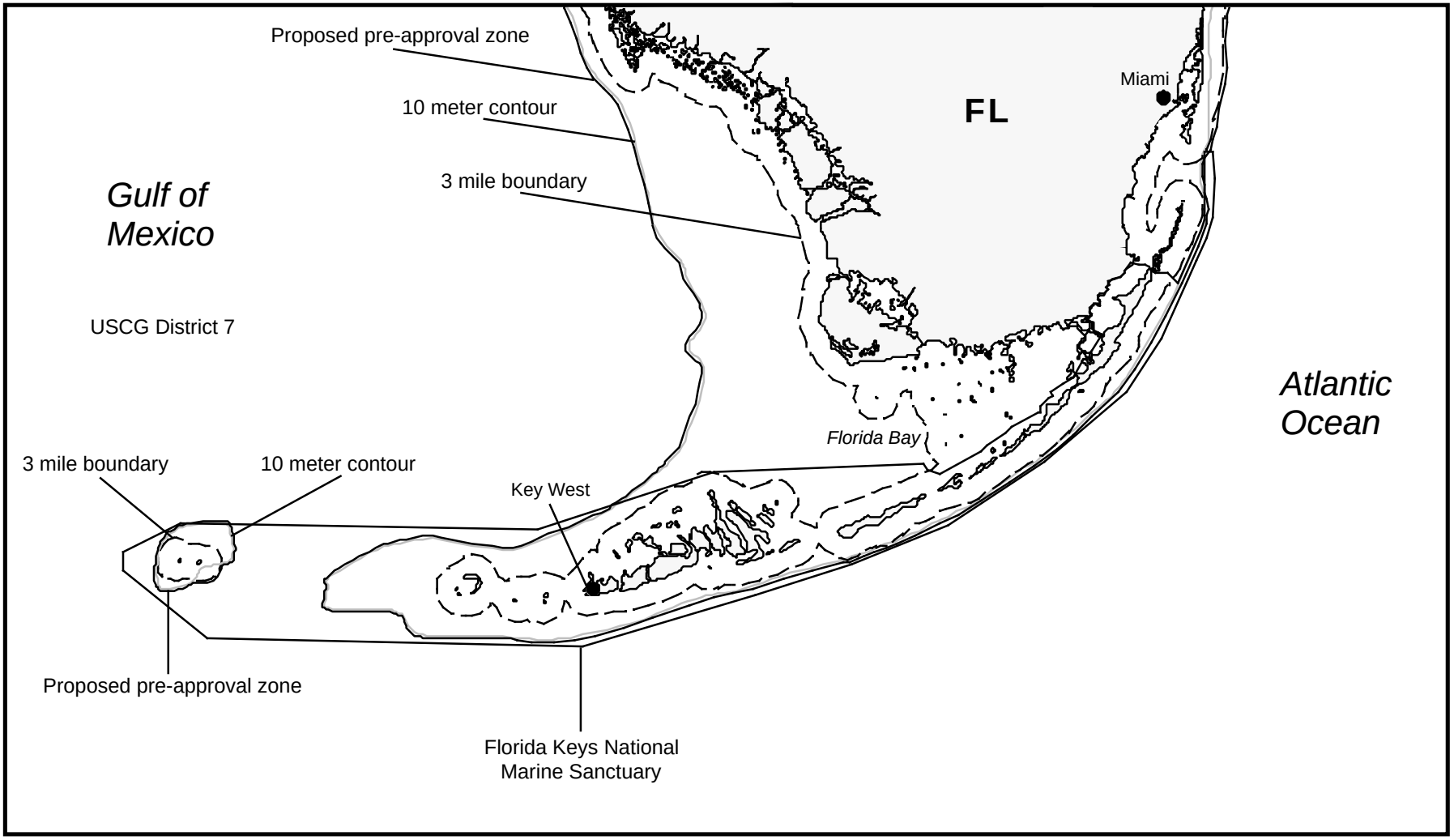
Region IV Regional Response Team

Dispersant Pre-Approval Zones
prepared by NOAA

Nautical miles
0 20

USE ONLY AS A GENERAL REFERENCE

Graphic does not show precise locations of boundaries



Southern Florida map 9/95

Region IV Regional Response Team

Dispersant Pre-Approval Zones

prepared by NOAA

Nautical miles
0 20

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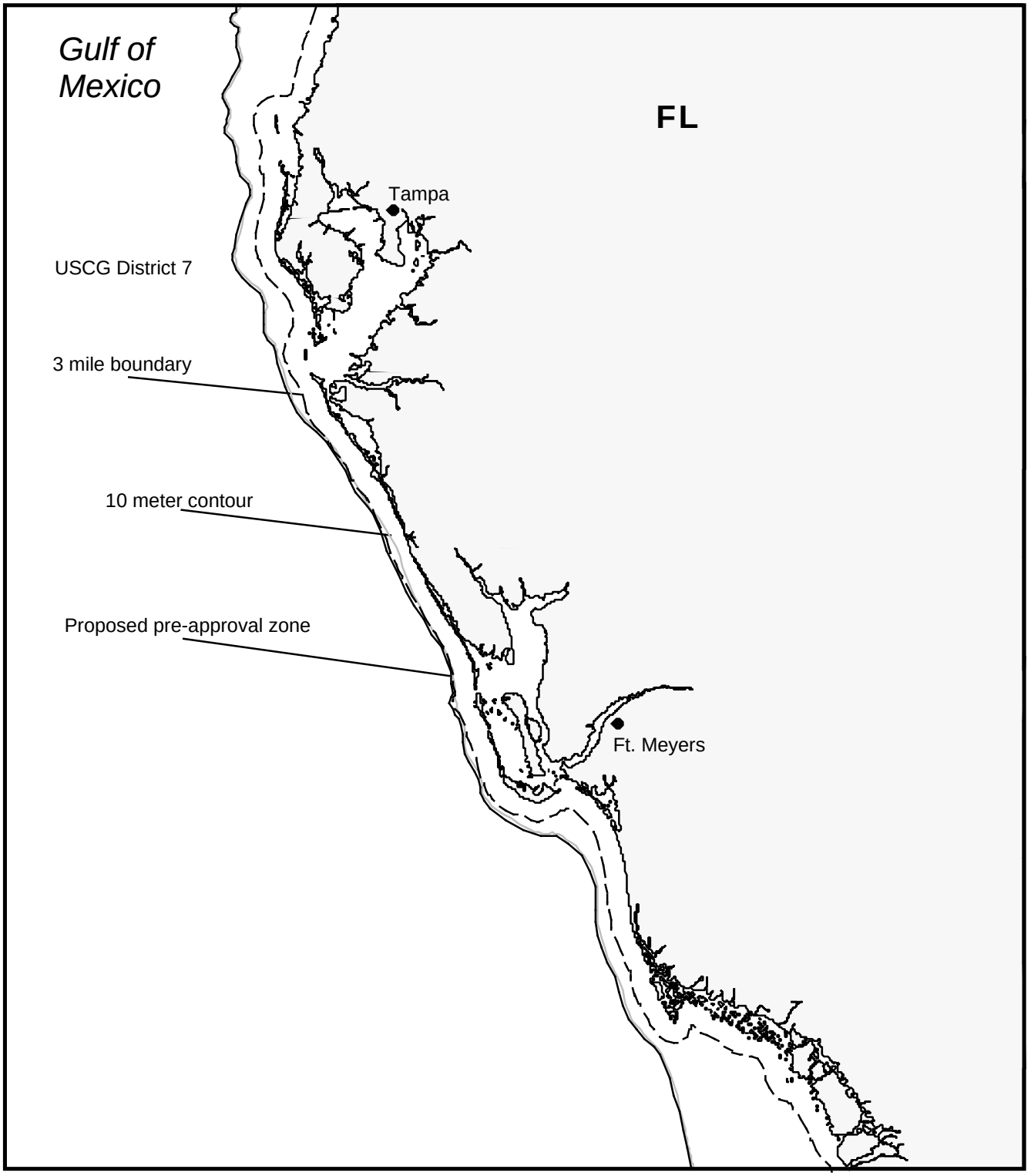


Middle Western Florida map

Region IV Regional Response Team

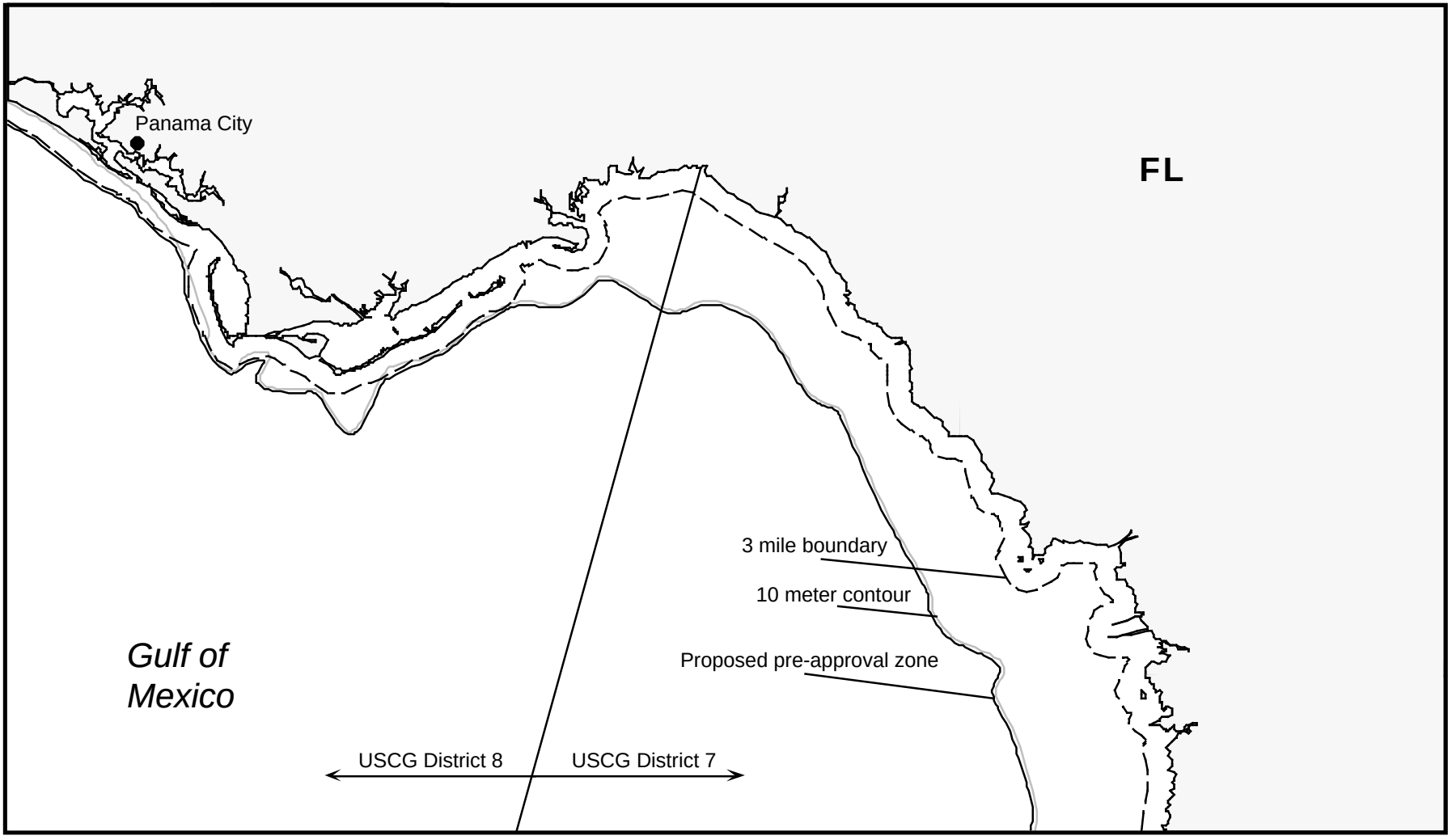
Dispersant Pre-Approval Zones

prepared by NOAA

Nautical miles
0 20

USE ONLY AS A GENERAL REFERENCE

Graphic does not show precise locations of boundaries



Upper Western Florida map

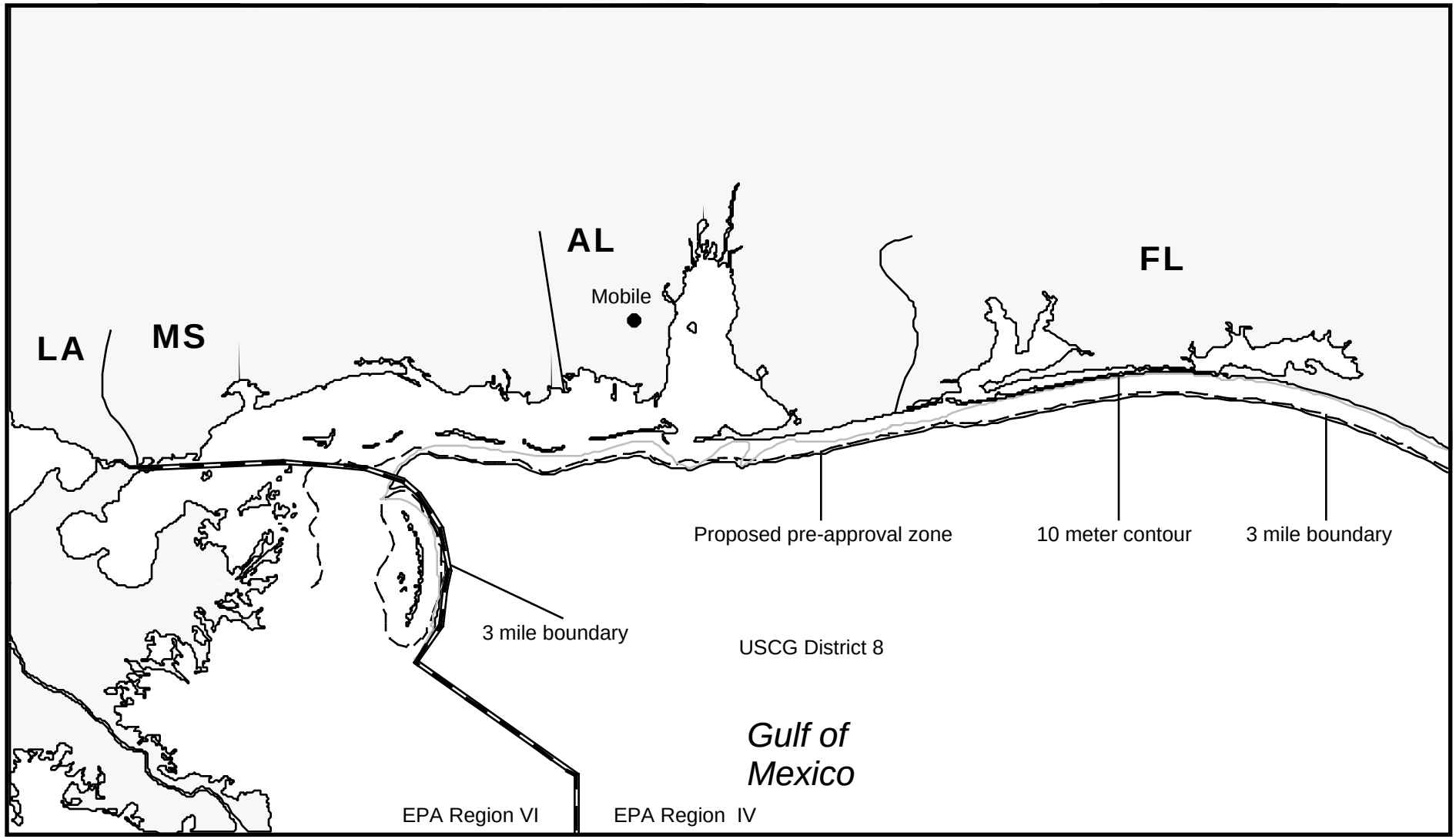
Region IV Regional Response Team

Dispersant Pre-Approval Zones
prepared by NOAA

Nautical miles
0 20

USE ONLY AS A GENERAL REFERENCE

Graphic does not show precise locations of boundaries



LA, MS, AL, FL map2

APPENDIX II

Letters of Agreement

Where applicable, other State and Federal Trustee documents relevant to a dispersant-use decision have also been included. Until such time as an LOA or other policy document is completed for use of dispersants within a State's waters or specially managed Federal Resource, dispersant use decisions will be made on a case-by-case basis, in accordance with this Region IV Dispersant Policy and the National Contingency Plan.

- **North Carolina**
- **South Carolina**
- **Georgia**
- **Florida**
- **Alabama**
- **Mississippi**
- **Federal Trustees**

North Carolina

No LOA or special agreement is in place for North Carolina at this time.

South Carolina

No LOA or special agreement is in place for South Carolina at this time.

Georgia

LETTER OF AGREEMENT
ON LIMITED USE OF DISPERSANTS
DURING OIL DISCHARGES OCCURRING OR AFFECTING STATE WATERS
AMONG REGION IV REGIONAL RESPONSE TEAM REPRESENTATIVES OF THE: U.S. COAST GUARD (USCG) -- SEVENTH DISTRICT,
U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA),
U.S. DEPARTMENT OF THE INTERIOR (DOI)
U.S. DEPARTMENT OF COMMERCE (USDOC)
AND THE STATE OF GEORGIA

I. PURPOSE

The U. S. Environmental Protection Agency (EPA), U.S. Department of Commerce (DOC), U.S. Department of the Interior (DOI), the U.S. Coast Guard (USCG) and the State of Georgia recognize that, while mechanical removal is the preferred method of dealing with oil discharges into the waters of the State of Georgia, in certain instances the physical containment, collection, and removal of the oil may not be possible, and the effective use of dispersants must be considered to prevent a substantial threat to public health or welfare, or to minimize environmental and/or economic damages. Accordingly, the above said agencies hereby grant the USCG On-Scene Coordinator (OSC) approval to authorize the use of dispersants as an oil spill countermeasure in or on the waters of the State of Georgia, within the following parameters.

II. AUTHORITY

Subpart J of the National Oil and Hazardous Substances Contingency Plan (NCP) provides that States, with the concurrence of the EPA, DOC, and DOI representatives to the Regional Response Team, may pre-approve the application of dispersants by the USCG OSC. The Governor of the State of Georgia has designated the Secretary of the Department of Natural Resources to coordinate State approval for proper usage of dispersants for response to oil spills. Commandant, U.S. Coast Guard has designated the USCG Captain of the Port as the OSC for oil discharges in the coastal zone. The authority to order the use of dispersants on oil discharges granted in this Agreement is vested solely in the individual who is the predesignated USCG OSC. This authority may not be delegated.

This Letter of Agreement is intended only to improve the management of existing oil spill responsibilities and improve coordination between agencies. Neither this Letter of Agreement, nor any actions to implement it, shall create, or shall be construed to create, any right or benefit, substantive or procedural (including without limitation any right or benefit under the Administrative Procedure Act), legally enforceable by any party against the United States or the State of Georgia, their agencies, or instrumentalities, officers, employees, or any other person.

III. AREA OF DESIGNATED PRE-APPROVAL IN GEORGIA STATE WATERS

The predesignated USCG OSC is granted authorization to apply dispersants as an oil spill countermeasure in the waters of the State of Georgia according to the following guidelines. No further approval from the State, the EPA, or other agencies is required to conduct dispersant application operations within these pre-approved areas subject to the "Provisions" listed below and the following conditions:

Dispersants shall not be applied in, on, or over waters containing reefs; waters designated as marine reserves; in a National Marine Sanctuary, National or State Wildlife Refuge; in proposed or designated Critical Habitat; in mangrove areas; or waters in coastal wetlands; except with the prior and express concurrence of the State, EPA, DOC, and DOI. Coastal wetlands include: submerged algal beds (rocky or unconsolidated bottom) and submerged sea grass beds.

Dispersants shall not be applied in harbors, bays, rivers, lakes, or other inland waters.

Dispersants may be used as an oil spill countermeasure in open waters in the State of Georgia that are 30 feet or greater in depth excluding the Gray's Reef National Marine Sanctuary. The sanctuary is described on NOAA nautical chart 11509 and is bounded by the following coordinates, beginning at 31 deg. 21' 45"N, 80 deg. 55' 17"W commencing then to coordinate 31 deg. 21' 45"N, 80 deg. 55' 17"W commencing then to coordinate 31 deg. 25' 15"N, 80 deg. 49' 42"W then to 31 deg. 21' 45"N, 80 deg. 49' 42"W then back to point of origin.

IV. PROVISIONS

1) Dispersants may be used on all discharges when their use will save human life. The following additional conditions assume risk to human life is not a factor.

2) Unless specifically noted otherwise, the Protocols outlined in the "Letter of Agreement for Use of Dispersants in Federal Waters" apply to the use of dispersants in waters of the State of Georgia.

3) If a decision has been made to apply dispersants in Georgia waters, under the authority granted by this Agreement, the OSC will immediately notify the Region IV Response Team representatives of the State, EPA, DOC, and DOI. This notification will include, at a minimum:

    a. Date, Time and Location of the incident;
    b. Type and amount of oil discharged;
    c. Area affected;
    d. The projected area of impact of the oil if not dispersed;
    e. Reasons why mechanical removal or in-situ burning of the oil is not feasible, or will not on its own provide the optimal response method.
    f. Dispersant to be used.
    g. On-scene weather, wind, and forecasted weather.

4) Any official request, by a Trustee representative of anyof the above said agencies, to discontinue dispersant application operations, if submitted in a timely fashion to the OSC, will be grounds for immediate cessation of dispersant operations.

5) Monitoring of dispersant application operations shall be performed in accordance with stated Region IV Regional Response Team policy.

6) The EPA maintains a list of mitigating agents such as dispersants on the Product Schedule List in the National Contingency Plan. Any product to be used as a dispersant under this Agreement must be registered, as a dispersant, on this List.

V. AMENDMENTS

This Letter of Agreement may be amended in writing in whole or in part as is mutually agreeable to all parties thereto.

VI. CANCELLATION

This Letter of Agreement may be cancelled in whole or in part by any of the participating agencies. Cancellation will take place 30 days following delivery of written notification to each of the agencies participating in this Letter of Agreement.

VII. SIGNATURE PAGE

_____//s//_____ ____1/30/96___
Captain Gerald Abrams DATE
Chief, Marine Safety Division
Seventh Coast Guard District
Co-Chair, Region IV RRT

_____//s//_____ ___8/10/95___
Mr. Myron D. Lair DATE
Director, Removal and
Emergency Preparedness Programs
U.S. Environmental Protection Agency
Co-chair, Region IV RRT

_____//s//_____ ___2/2/96____
Mr. Jim Lee DATE
U.S. Department of the Interior
Region IV RRT member

_____//s//_____ ___2/5/96___
Ms. Denise Klimas DATE
U.S. Department of Commerce
Region IV RRT member

_____//s//_____ ___7/31/95___
Dr. Albert K. Langley DATE
State of Georgia
Environmental Protection Division
Department of Natural Resources
Region IV RRT member

Florida

No LOA or special agreement is in place for Florida at this time.

Alabama

No LOA or special agreement is in place for Alabama at this time.

Mississippi

No LOA or special agreement is in place for Mississippi at this time.

Federal Trustees

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Gray's Reef National Marine Sanctuary
10 Ocean Science Circle
Savannah GA 31411

March 9, 1994

Mr. Waynon Johnson
NOAA-Hazmat
c/o US EPA, Waste Division
345 Courtland St, NE
Atlanta, GA 30365

Dear Mr. Johnson;

We have reviewed the draft Letter of Agreement on the use of dispersants in waters off the State of Georgia. In accordance with Title III of the Marine Protection, Research and Sanctuaries Act of 1972, as amended, this office is responsible for protection and preservation of the live bottom ecosystem and other natural resources of the Gray's Reef National Marine Sanctuary.

We recognize that the use of dispersants may be warranted in certain circumstances at the sanctuary and we do not oppose consideration and their application when necessary. However we do not consider it appropriate to preauthorize their use in any circumstances as approved by the On Scene Coordinator. Therefore to ensure that decisions on the use of dispersants in the sanctuary are made on a case by case basis and receive the concurrance of this office, we request that Gray's Reef National Marine Sanctuary be excluded from the areas subject to preapproval under the terms of this agreement. The sanctuary is described on nautical chart 11509 and is bounded by the following coordinates, beginning at 31° 21' 45"N, 80° 55' 17"W commencing to coordinate 31° 25' 15"N, 80° 55' 17"W to coordinate 31° 25' 15"N, 80° 49' 42"W then to 31° 21' 45"N, 80° 49' 42"W then back to the point of origin.

Thank you for the opportunity to review this document. If you have any questions, please contact me or Lt. Cheryl Callahan at (912) 598-2345.

Sincerely,

Reed Bohne
Manager

APPENDIX III

Biological Assessments and Section 7 Consultations for Threatened and Endangered Species

This appendix addresses concerns for biological resources and critical habitats as identified by the resource trustees from NMFS and USFW.

- **National Marine Fisheries Service (NMFS)**
- **United States Fish and Wildlife Service (USFWS)**

Biological Assessment of Effects on Listed Species of Region IV Regional Response Team Oil Spill Dispersant Use Policy

Description of Proposed Action

The proposed action is adoption of a Region IV Regional Response Team (RRT IV) policy for dispersant use in ocean and coastal waters in response to offshore oil spills. This RRT IV Dispersant Use Policy preauthorizes limited use of dispersants by the pre-designated United States Coast Guard(USCG) On-Scene Coordinator (OSC) on oil discharges impacting Federal waters and other specifically designated areas as outlined in individual Letters of Agreement (LOA) with states within Federal Region IV jurisdiction. In general, pre-authorization is granted three miles seaward of land providing waters are at least ten meters deep. Some special management areas are excluded from pre-authorization. The Dispersant Use Policy implements Subpart J of the National Oil and Hazardous Substances Contingency Plan (NCP) and is signed by the USCG, U.S. Environmental Protection Agency (USEPA), U.S. Department of Interior (USDOI), the U.S. Department of Commerce (USDOC), and the coastal states of RRT IV (North Carolina, South Carolina, Georgia, Florida, Alabama, and Mississippi).

The Dispersant Use Policy recognizes that, under certain circumstances, timely and complete physical containment, collection, and removal of oil discharges may not be possible. In such cases, the use of dispersants may reduce risk to the environment and human health. By breaking a cohesive surface slick into small droplets that disperse into the water column, dispersants can prevent an offshore oil slick from contaminating wildlife and critical habitat in nearshore and shoreline areas as well as minimize exposure of wildlife at the water surface.

Because effective use of dispersants has a limited and normally small window of opportunity, RRT IV strongly recommends that dispersant application begin as soon as possible following an oil spill when appropriate. Accordingly, employment of dispersants usually requires that authorization for use be given prior to a spill incident. Within areas pre-authorized for dispersant use by the Policy, further consultation by the United States Coast Guard On-Scene Coordinator is not required, provided the appropriate RRT agencies are immediately notified and the applicable protocols are followed. The Dispersant Use Plan is not intended to exclude or replace the use of mechanical, in-situ burning, or other open-water cleanup methods but to enable and encourage the use of all appropriate techniques in the strategy to remove oil from the water surface and, thereby, minimize environmental impacts of a spill.

Prior to beginning a dispersant application, an on-site survey will be conducted to determine if any threatened or endangered species are present in the area or otherwise at risk from dispersant operations. Appropriate natural resource specialists familiar with local resource concerns and representing the resource trustee will be consulted prior to conducting disperant operations to determine if any threatened or endangered species are at risk from dispersant operations. Measures will be taken to prevent risk of injury to any wildlife, especially listed species. Examples of potential protection measures include temporary employment of deterrent techniques and physical removal of individuals of listed species under the approval of the trustee agency. If the risk to listed species cannot be eliminated or reduced sufficiently, dispersants will not be applied unless they are necessary to prevent a serious threat to human safety.

If a decision to use dispersants is made, the Federal OSC will immediately notify the USEPA, USDOC, USDOI, and appropriate state(s) through RRT representatives. Dispersant application will be discontinued if so requested by an RRT representative. A post-incident briefing will be held within 45 days following a dispersant application to exchange information on its effectiveness and effects and to determine whether changes to the Dispersant Use Policy are necessary.

Description of Pre-authorization Area

Three zones have been established to delineate locations and conditions under which dispersant application operations may take place in waters of Federal Region IV as follows:

1) Green Zone: Pre-authorization for Dispersant Application

Green Zone is defined as any offshore water within Federal Region IV in which ALL of the following conditions apply:

a) the waters are not classified within a "Yellow" or "Red" zone;

b) the waters are at least three miles form any shoreline, and falling outside of any state's jurisdiction; and

c) the water is at least ten meters deep.

Within the Green zone, the USCG, USEPA, DOC, DOI, and affected state(s) agree that the decision to apply dispersants rests solely with the pre-designated USCG OSC, and that no further approval, concurrence, or consultation on the part of the USCG OSC with EPA, DOC, DOI or the state(s) is required.

All dispersant operations within the Green zone will be conducted in accordance with the Protocols outlined in the Dispersant Use Policy.

2) Yellow Zone: Waters Requiring Case-by-Case Approval

The Yellow zone is defined as any waters within Federal Region IV which have not been designated as a "Red" zone, and in which ANY of the following conditions apply:

a) the waters fall under State or Federal special management jurisdiction. This includes any waters designated as marine reserves, National Marine Sanctuaries, national or state wildlife refuges, units of the National Park Service, or proposed or designated critical habitats;

b) the waters are within three miles of a shoreline, and/or fall under state jurisdiction;

c) the waters are less than ten meters deep;

d) the waters are in mangrove or coastal wetland ecosystems, or directly over coral reefs which are in less than 10 meters of water. Coastal wetlands include submerged algal and seagrass beds.

Where a Letter of Agreement is in effect between the USCG, EPA, DOI, DOC, and the affected state(s), the policy for pre-authorization established under the provisions of said LOA shall preempt the Policy herein established for areas otherwise designated as falling within the Yellow zone. When an LOA is not in effect for an area falling within the Yellow zone, the USCG will request authorization for dispersant use according to the following procedures:

If the USCG OSC believes dispersants should be applied within the Yellow zone, a request for authorization must be submitted to the RRT IV representatives of the EPA, DOI, DOC, and the affected state(s) according to the procedures in Appendix I of the Dispersant Use Policy for requesting approval in areas not pre-authorized. The OSC is granted authority to conduct dispersant operation in the Yellow zone only when concurrence has been given by EPA and the affected state(s), and consultation with DOC and DOI has been completed.

As with all dispersant use under the LOA, application of dispersants within the Yellow zone, if approval is granted, will be conducted in accordance with the appropriate and relevant Protocols outlined in the Dispersant Use Policy. Additionally, the USCG OSC will make every reasonable effort to continuously evaluate the application of dispersants within the Yellow zone, and will allow RRT IV agencies and the affected State(s) the opportunity to comment.

3) Red Zone: Exclusion zones:

The Red zone includes areas designated by the Region IV Response Team in which dispersant use is prohibited. No dispersant application operations will be conducted at any time in the Red zone unless:

a) dispersant application is necessary to prevent or mitigate a risk to human health and safety, and/or

b) an emergency modification of this LOA is made on an incident-specific basis.

The Region IV Response Team has not designated any areas as Red zones but retains the right to include areas in the future if deemed appropriate. States may, through the establishment of Letters of Agreement, designate Red zones in areas falling under state jurisdiction.

Description of Oil Dispersants

Chemical dispersants are products applied to oil on the water surface to enhance formation of fine oil droplets, which enter the water column and are dispersed by currents. Some physical dispersion occurs naturally following oil spills due to agitation created by wave action and ocean turbulence. Chemical dispersants enhance and speed-up this natural process, accomplishing in minutes to hours what otherwise requires days to weeks. The advantages of rapid dispersion early in a spill include minimizing direct contact of wildlife with a surface slick and reducing the amount of oil impacting sensitive nearshore and shoreline areas. Whereas untreated oil floating on the water surface can be beached by wind, dispersed oil droplets are unlikely to strand ashore because they are not subject to wind action. Movement of dispersed oil droplets is determined by currents that do not penetrate the beach face.

Dispersants, which are typically applied from vessel or aircraft mounted spray systems, offer several operational advantages. Dispersant application enables treatment of large areas of spilled oil much more quickly than can be accomplished with mechanical methods and prior to significant expansion of the slick with time. Dispersants can be applied in rough weather and sea conditions under which use of booms, skimmers, and other mechanical equipment may be impractical. To be effective, however, dispersants generally must be applied within the first few hours following an oil spill. This is a result of the fact that when oil is released to the marine environment it is immediately subject to a wide variety of weathering processes. Weathering quickly increases the viscosity of the oil, making dispersion by the addition of chemical dispersants difficult if not impossible over time. Depending on the type of oil spilled and the environmental conditions, the window of opportunity for successful use of dispersants can be as short as hours.

The key components of chemical dispersants are one or more surface-active agents, or surfactants. Surfactants contain molecules with both water-compatible (hydrophilic) and oil-compatible (lipophilic or hydrophobic) groups. The surfactant molecules reduce the oil/water interfacial surface tension, enabling the oil layer to be broken into fine droplets with minimal mixing energy, thereby enhancing natural dispersion. Surfactants also tend to prevent coalescence of oil droplets and reduce adherence to solid particles and surfaces, such as sediments and feathers. In addition to surfactants, most dispersant formulations also contain a solvent carrier to reduce viscosity of the surfactant so that the dispersant can be sprayed uniformly. The solvent may also enhance mixing and penetration of the surfactant into more viscous oils. Though early dispersants contained agents highly toxic to marine life, manufacturers have refined formulations of more recent generations of dispersants to dramatically reduce toxicity. Modern dispersants contain solvents composed of nonaromatic hydrocarbons or water-miscible concentrates (alcohols or glycols) as well as less toxic surfactants. The exact dispersant-to-oil application ratio, usually planned at 1:10, is determined by the nature of the oil and sea conditions.

By dispersing oil into the water column, the spreading or dilution becomes three-dimensional. The subsurface oil concentration initially increases, but diminishes rapidly with distance and time due to physical transport processes. This is in contrast to untreated oil concentrated at the water surface, which can coalesce in surface convergence zones even after it has spread out to very low concentrations. The highest concentration of chemically dispersed oil typically occurs in the top meter of water during the first hour following treatment (Rycroft et. al., 1994). Available data suggest that concentrations of more than ten parts per million (ppm) of dispersed oil are unlikely beyond ten meters (depth) of the slick and that even within one meter depth of the slick, concentrations rarely exceed 100 ppm. The continuous mixing and dilution capabilities of open water lead to uniformity and are sufficient to rapidly reduce these concentrations. Field studies show that water column concentrations decline to undetectable or background levels within several hours following application of a dispersant (SEA, 1995). Under untreated slicks, oil concentrations typically range from a few parts per million to less than 0.1 ppm, diminishing with depth and time.

The dispersed oil droplets, ranging in size from microns to a few millimeters, break down by natural processes, such as biodegradation. Microbial biodegradation of oil appears to be enhanced by dispersal because of the larger surface area available as compared to a surface slick. Dispersants also prevent formation of tarballs and oil-in-water emulsions (mousse), which tend to be resistant to biodegradation due to their low surface area. The chemical dispersants applied, like the oil droplets, are diluted by diffusion and convective mixing. Much of the solvent fraction evaporates immediately after the dispersing is applied. The surfactants are readily biodegraded.

Description of Listed Species Present

Cetaceans

Endangered cetaceans that occur in the area under considerations include four mysticete species: right, humpback, finback, and sei whales. Right whales (*Eubaleana glacialis*) are of greatest concern because they are the most severely depleted large whale species and because they often feed by skimming the surface of the water, primarily on dense concentrations of zooplankton. Right whales occur in the area primarily in winter and calve in the coastal waters of Georgia and northeast Florida (NMFS, 1990). Humpback whales (*Megaptera novaeangliae*) occur in the area most commonly during their winter breeding season. Krill and small schooling fishes are the mainstay of the humpback's diet. Finback whales (*Balaenoptera physalus*) winter in the area, primarily in offshore waters, and feed on small schooling fishes, pelagic crustaceans, and squid (NMFS, 1989). Sei whales (*Balaenoptera borealis*) occur in the northern part of the area and generally skim feed on surface plankton, small schooling fishes, and squid. These baleen whale species are all opportunistic feeders and may feed at or near the surface (McKenzie and Nicolas, 1988).

One endangered odontocete, the sperm whale (*Physeter macrocephalus*) occurs in the area and is most likely to be found at the edge of the continental shelf or in deep oceanic waters. They tend to inhabit areas with a water depth of 600 meters or more and are uncommon in waters less than 300 meters deep. Sperm whales are deep diving and feed primarily on squid and deep water fishes.

Sea Turtles

Six listed sea turtle species occur in the area under consideration. Kemp's (Atlantic) ridley, leatherback, and hawksbill sea turtles are endangered. Kemp's ridley (*Lepidochelys kempii*), the most endangered of these species, occurs mainly in coastal areas of the Gulf of Mexico and the northwestern Atlantic Ocean. Adults are most frequently sighted off southwestern Florida. This species is a shallow-water benthic feeders, preying largely on crabs (USFWS and NMFS, 1992). Young Kemp's ridleys use sargassum mats and seagrass beds for refuge and foraging (Ernst *et al.*, 1994). Leatherback turtles (*Dermochelys coriacea*) occur throughout the area and have been reported to nest on beaches in Florida and, to a lesser extent, Georgia and North Carolina. Leatherback nesting in the U.S. Caribbean is reported in the Virgin Islands (St. Croix, St. Thomas, St. John) and Puerto Rico, including Islas Culebra, Vieques, and Mona (NMFS, 1992). Leatherbacks are considered to be a highly pelagic species but occasionally enter the shallow coastal waters of bays and estuaries. They may concentrate near and follow drifting schools of jellyfish, their primary prey (NMFS, 1992). Hawksbill sea turtles (*Eretmochelys imbricata*) are predominantly tropical. Adult hawksbills characteristically inhabit shallow rocky areas and coral reefs but also occur in mangrove-bordered bays, estuaries, and lagoons and occasionally in deep waters. Juveniles occupy the deeper water pelagic environment, often associated with floating patches of sargassum mats. Hawksbill turtles are omnivorous opportunists and seem to prefer invertebrates, particularly sponges (Ernst *et al.*, 1994).

Green, loggerhead, and olive (Pacific) ridley sea turtles are listed as threatened. Atlantic green sea turtles *(Chelonia mydas*) occur in U.S. Atlantic waters around the U.S. Virgin Islands, Puerto Rico, and along the continental U.S. from Texas to Massachusetts. They are endangered in Florida and threatened elsewhere. They nest along the east coast of Florida and in smaller numbers in the U.S. Virgin Islands, Puerto Rico and along the Florida panhandle. Important nesting areas in Florida include Brevard, Indian River, St. Lucie, Martin, Palm Beach, and Broward Counties. Their preferred habitat appears to be lagoons and shoals with an abundance of marine grasses. Adult green sea turtles are primarily herbivorous, foraging on algae and seagrasses; juveniles may eat a variety of invertebrates as well. Areas that are known as important feeding areas for green turtles in Florida include Indian

River Lagoon, Florida Keys, Florida Bay, Homosassa, Crystal River and Cedar Key (NMFS, 1991a). Loggerhead turtles (*Caretta caretta*) occur throughout the area under consideration. In the western Atlantic the great bulk of loggerhead nesting occurs along the southeastern coast of the U.S., with approximately 80 percent occurring in Brevard, Indian River, St. Lucie, Martin, Palm Beach and Broward Counties in Florida (NMFS, 1991b). Loggerhead turtles also nest on beaches in North Carolina, South Carolina, Georgia, along the Gulf Coast of Florida, Alabama, and Mississippi. Loggerheads wander widely throughout the marine waters of their range. They commonly inhabit the continental shelves and estuarine environments, occurring most frequently in waters less than 50 meters deep. Hatchlings and juveniles are often found along current fronts, downswells, or eddies associated with drifting mats of sargassum (Ernst *et al*., 1994). Loggerheads are omnivores and feed on a wide variety of benthic invertebrates including crustaceans, mollusks, and sponges (NMFS, 1991b). The olive ridley (*Lepidochelys olivacea*) occurs and nests predominantly in tropical waters, including the Caribbean as far north as Puerto Rico. They usually nest in aggregations called arribadas. Olive ridleys generally inhabit protected, relatively shallow nearshore areas, typically within fifteen kilometers of mainland shores, but occasionally occurs in the open sea. They are predominantly carnivorous, preying on pelagic crabs, jellyfish, and tunicates (Ernst *et al.*, 1994).

Fish

Two listed species of anadromous fish, the shortnose sturgeon and gulf sturgeon may occur in the area under consideration. The endangered shortnose sturgeon (*Acipenser brevirostrum*) occurs in several large coastal river systems along the Atlantic coast. They are known to inhabit their natal rivers, estuaries, and the nearshore marine environment. Most migratory activities occur during winter and spring and, though shortnose sturgeon can travel considerable distances, their movements are apparently confined to estuarine and riverine environments (Gilbert, 1989). Shortnose sturgeon are benthic feeders, usually feeding in shallow muddy backwater areas with abundant vegetation and along river banks by rooting along the bottom with their snouts, indiscriminately "vacuuming" large quantities of mud and debris along with their prey. Juveniles feed mainly on benthic crustaceans and insect larvae; adults feed largely on mollusks supplemented by polychaetes and small benthic fishes in estuarine areas (Gilbert, 1989). Because shortnose sturgeon typically forage within the middle and upper reaches of the estuaries and rivers they inhabit, they are unlikely to occur in the area under consideration.

The threatened Gulf sturgeon (*Acipenser oxyrhynchus desotoi*) occurs predominantly in the northeastern Gulf of Mexico, where it ranges from the Mississippi Delta east to the Suwannee River in Florida and formerly to Tampa Bay. The species is greatly depleted throughout most of its range and now is relatively common only in a few areas. The gulf sturgeon spawns in freshwater riverine habitats from April to June and young descend to sea at about 2 to 3 years of age for winter migrations (Barkuloo, 1988). It is unknown whether they aggregate during their migrations. Data shows, however, that adults tend to enter and leave the freshwater system within very narrow time periods. Marine habitats for the gulf sturgeon are poorly known. Limited analyses of stomach content indicate that sand bottom, hard bottom, and seagrass beds are probably important habitats. In the Big Bend area of the northeastern Gulf of Mexico, these habitats occur in 70 feet of water as far offshore as 20 miles. Like the shortnose sturgeon, the gulf sturgeon is a benthic omnivore and feeds on insects, crustaceans, molluscs, annelids, and occasionally small fish (Lee, *et al*. 1980).

Johnson's Seagrass

Johnson's seagrass (*Halophila johnsonii*) has been proposed for Federal listing. It occurs in shallow lagoons from Sebastian Inlet to Biscayne Bay on the Atlantic coast of Florida. It is a small seagrass that grows only a few centimeters high (Dawes, et al., 1991).

Effects of Oil Spills on Listed Species

Cetaceans

Cetaceans spend considerable time at the surface swimming, breathing, feeding, or resting and so are at risk of exposure to a surface oil slick, water-in-oil emulsion, or tar balls. Although there is evidence that some cetacean species are able to detect oil, they do not always avoid it. The volatile fraction of crude oil contains many toxic

hydrocarbons that evaporate and can create hazardous air concentrations in the vicinity of a spill (Allen and Ferek, 1993). The most serious potential risk to cetaceans appears to be inhalation of these toxic vapors, which can cause inflammation of mucous membranes of the eyes and airways, lung congestion, and possibly pneumonia. At very high exposure levels, volatile hydrocarbons can potentially result in neurological disorders and liver damage. Effects from direct contact or ingestion of oil are generally temporary and of less concern for cetaceans. Oil is unlikely to adhere to the surface of their skin, which is also relatively impermeable to the oil's toxic components. Baleen plates of skim-feeding baleen whales may become fouled by oil on the water surface, temporarily interfering with feeding. For a few days or weeks, hydrocarbons or their metabolites in exposed marine invertebrates could be transferred to cetaceans preying upon them. This exposure would likely be short-term and is not expected to result in serious effects (Geraci, 1990). Benthic invertebrates accumulating residues from contaminated sediments could provide a potential source of longer-term exposure to bottom-feeding cetaceans. Cetaceans might also be indirectly affected if an oil spill resulted in destruction or significant shifts in the distribution of key prey species populations.

Collision with vessels poses a serious threat to some endangered species. Right whales are particularly susceptible to injury or death from ship collisions because they surface skim-feed and often rest at the surface. Response vessel speeds should be restricted any time endangered species are in the area of an oil spill, especially when visibility is limited.

Sea Turtles

Sea turtles can be exposed to spilled oil when feeding, surfacing to breath, or nesting in areas contaminated by stranded oil. Turtles are also susceptible to floating tarballs formed from weathered oil. There is no firm evidence that sea turtles are able to detect and avoid oil (Odell and MacMurray, 1986). Studies indicate oil exposure can have several adverse effects on turtles, including toxic responses to vapor inhalation or ingestion, skin irritation, interference with osmoregulation and ion balance, and reduced hatching success (Van Fleet and Pauly, 1987; Fritts and McGehee, 1982; Lutz and Lutcavage, 1989). Experiments on adult loggerhead turtles conducted by Lutcavage *et al.* (1993) showed that major body systems in marine turtles are adversely affected by even short exposures to weathered South Louisiana crude oil. Effects observed included alteration of blood chemistry, alteration of respiration and diving patterns, interference with salt gland function, and skin lesions. Exposure to fresh oil would likely be considerably more harmful. Though oil exposure may not directly kill adult turtles, the effects may make them more vulnerable to predation or disease.

Oiling of sea turtle nesting habitat poses a potential risk to adult nesting turtles, hatchlings, and to eggs. Turtle embryos are particularly sensitive. The effects of oil on the development and survival of marine turtles appears to be variable, depending on such factors as stage of nesting, oil type, degree of oil weathering, and amount and height of oil deposition on the beach. Studies by Fritts and McGehee (1982) indicate that fresh oil washing ashore to the level where nests with incubating eggs are located may result in extensive embryo mortality. The studies found that mortality may not be significant if eggs are deposited in sand after contamination has occurred and the oil has weathered, although hatchlings may be smaller than normal. Some evidence suggests olfactory cues are imprinted on sea turtles as hatchlings and guide them back to their natal beaches for nesting when they reach maturity. Oil on the beach could interfere with these chemical guides (Lutz *et al.*, 1985). Response activities to clean oil stranded on beaches may pose an addition risk of injury to eggs, hatchlings, and nesting adults .

Shortnose and Gulf Sturgeon

The anadromous shortnose and Gulf sturgeons would be most vulnerable to exposure to oil spills while moving and foraging in estuarine and nearshore marine environments. The Gulf sturgeon would also be at risk during its winter marine migrations. Because the Gulf sturgeon does little or no feeding in fresh water, its growth and reproductive potential depend entirely on the resources accumulated by feeding during winter migrations. Benthic feeders, sturgeon could ingest contaminated sediments, organisms, or vegetation if oil settles to the sea floor. The ability of sturgeon to sense and avoid oil contamination is unknown. Ingestion of contaminated food and sediments could lead to general body deterioration, lower reproductive potential, and lower viability of offspring (Barkuloo, 1988). If Gulf sturgeon do aggregate during their winter migrations, as some data indicates, significant portions of the population could be affected by a major oil release impacting aggregation areas.

Johnson's Seagrass

Oil can penetrate into plants where it travels in the intercellular spaces and possibly also in the vascular system. The oil damages cell membranes and may enter the cells. Oil contamination may reduce transpiration rate, reduce photosynthesis, increase respiration, and inhibit translocation. The severity of these effects depends in part on the constituents in the oil and extent of exposure (Baker, 1970)

Analysis of Biological Effects of Proposed Action

A primary objective of an oil spill response is to quickly remove as much oil as possible from the surface of the water, thereby minimizing direct contact with wildlife and preventing movement of the oil into nearshore and shoreline areas where removal is more difficult and environmental impacts severe. Dispersants, applied under appropriate conditions, may offer the best response option to help achieve this objective. Dispersion of oil at sea, before a slick washes ashore, reduces the overall and particularly the chronic impacts of oil on sensitive inshore habitats including salt marshes, coral reefs, sea grasses, and mangroves. Dispersed oil is less likely than a surface slick to reach shoreline areas. Any dispersed oil that does move inshore is less likely to stick to shorelines and vegetation because dispersants alter the adhering property of oil droplets. Consequently, habitats recover faster if the oil is dispersed before it reaches them (NRC, 1989). By protecting nearshore and shoreline habitats from contamination, dispersant use benefits listed species and other wildlife that rely on them including sea turtles, sturgeons, shorebirds, wading birds, and seagrasses.

Many of the species listed in Region IV rarely occur in the "Green" zone where dispersant use will be pre-authorized by the Dispersant Use Policy and so are unlikely to be adversely affected. Most sea turtles, Gulf and shortnose sturgeons, and Johnson's seagrass occur primarily the shallower, nearshore waters in the "Yellow" zone. Many of the sea turtles and cetaceans that occur more frequently in the open waters of the pre-authorized "Green" zone are present in the area seasonally, reducing the risk they would be affected. Potential effects of dispersant use on listed species that may occur in the area under consideration for pre-authorization under the RRT IV Dispersant Policy are considered below.

Direct Contact and Ingestion

By removing the surface oil slick, dispersants reduce the risk of direct contact with wildlife that dwell at or pass through the water surface to feed or breath such as sea birds, sea turtles, and cetaceans. Juvenile sea turtles, which often are found with drifting sargassum mats in convergence areas further from shore, would particularly benefit from removal reduced surface exposure in the area under consideration. Sea turtles and cetaceans may experience higher exposure in the water column, primarily in the upper few meters, following dispersion. In open waters with continuous mixing and dilution capabilities, however, dispersed oil is rapidly diluted. Considering that concentrations fall to background levels within the first few hours following dispersion, exposure will be short-term and at low concentrations. Most marine mammals do not drink large volumes of sea water and so probably will not ingest significant quantities of oil directly from solution or dispersion in the water column (Neff, 1990). Skim feeding cetaceans such as the right whale would likely be exposed to larger quantities of oil in a persistent, undispersed surface slick than short-term, low concentrations of dispersed oil droplets in the water column. Exposure of sea turtles to tar balls, which they are known to ingest and which also adhere to juveniles, would be reduced because dispersants help prevent tarball formation. Dispersed oil droplets are less sticky and therefore less likely to adhere to baleen plates, skin, feathers, or other body surfaces than undispersed or naturally dispersed oil (Neff, 1990). Dispersed oil also would be less likely to adhere to vegetation such as Johnson's seagrass.

Direct application of dispersants to birds or fur-bearing mammals would likely destroy the water-repellency and insulating capacity of fur or feathers and various components may disrupt the structural integrity of sensitive external membranes and surfaces (NRC, 1989). According to the Dispersant Use Policy, however, dispersants will not be sprayed near listed species or other wildlife. Data indicate that, in the water column, dispersant alone is unlikely to contribute significantly to adverse biological effects. Within the normal range of operating dosages, biological effects are due to the dispersed oil, not the dispersant (NRC, 1989; SEA, 1995).

Prey Contamination

If zooplankton, fish, and other water column or benthic organisms become oiled or accumulate oil in their tissues, they could ultimately expose species that prey upon them. Marine mammals, except the manatee, are carnivores that rely on invertebrates or fish for sustenance. Several sea turtle species that occur in the area under consideration for action also prey on aquatic invertebrates and fish. Prey species that occur in open waters further from shore where dispersant use will be pre-authorized ("Green" zone) are the primary concern. Those that occur in nearshore areas where dispersant use will not be pre-authorized by the Dispersant Use Policy are unlikely to be impacted.

Most aquatic organisms have the ability to metabolize and depurate petroleum hydrocarbons. Existing data demonstrate that complete depuration occurs once the source of the contamination is removed. It is unlikely that significant amounts of petroleum hydrocarbons will be accumulated by pelagic organisms during a dispersant application because of the short duration and low concentration expected in the water column. Under such conditions, any accumulated petroleum hydrocarbons should be rapidly depurated. Marine food chain biomagnification does not occur because vertebrate predators readily metabolize and depurate hydrocarbons from their tissues. Most marine organisms also metabolize and excrete the surfactants in dispersants. Metabolism of surfactants is rapid enough that there is little likelihood of food chain transfer from marine invertebrates and fish to predators, including the listed sea turtles, cetaceans, and sturgeon (Neff, 1990).

Marine finfish, for example, take up petroleum hydrocarbons from water and food. The compounds induce the hepatic Mixed-Function-Oxidase (MFO) system and within a few days following exposure, aromatic hydrocarbons are oxygenated to polar metabolites and excreted. For this reason, most fish do not accumulate and retain high concentrations of petroleum hydrocarbons and so are unlikely to transfer them to predators, such as the listed sea turtles and cetaceans. The fish may be tainted with metabolites bound to tissue macromolecules, but these metabolites are so reactive that it is unlikely that they would be released in a toxic form during digestion by the consumer and so would not pose a serious risk (Neff, 1990).

Zooplankton, which are a particularly important food source for baleen whales, can become contaminated by assimilating hydrocarbons directly from seawater and by ingesting oil droplets and tainted food. Planktonic crustaceans can transform aromatic hydrocarbons to polar metabolites that may be excreted or bound to tissues. For a few days or weeks, unmetabolized or metabolized hydrocarbons in zooplankton could be transferred to predators. Geraci (1990) has estimated a forty-ton whale would have to consume approximately 150 gallons on oil to result in harmful effects. Considering the low concentrations and short duration of exposure to dispersed oil, as described earlier, it is unlikely the listed whales would ingest this volume of oil through consuming contaminated zooplankton.

If sediments become contaminated, benthic carnivores such as the listed shortnose and Gulf sturgeons could suffer chronic exposure through ingestion of oiled sediment and contaminated benthic prey populations. Benthic invertebrates may accumulate petroleum hydrocarbons from contaminated water, sediments, and food. Sediment contamination, however, is highly unlikely considering the depth and distance from shore of the area under consideration for approval of dispersant application under this Dispersant Use Policy. Furthermore, dispersed oil droplets are less likely than undispersed oil to adhere to sediment particles.

Prey Abundance: Toxicity to Zooplankton

Concerns have been expressed that listed marine species, namely baleen whales, could be adversely affected if major populations of key pelagic or benthic prey species were severely impacted. Though some studies do indicate toxic effects to zooplankton from dispersed oil, serious population impacts are unlikely at the short-term exposures that would result following dispersion in the zones pre-authorized under this Dispersant Use Policy.

When dispersants are applied in deep water to turbulent seas, as provided for in the pre-authorized "Green" zone, the resulting oil concentrations in the water column will remain below levels observed to cause adverse biological effects to zooplankton in laboratory tests. Available toxicological data indicate the range of sublethal and lethal threshold concentrations for most aquatic organisms is above 10 ppm over an exposure period of 48 to 96 hours. It is unlikely that dispersed oil would exceed 10 ppm concentration and 2-4 hour duration at depths below the upper 10 meters of the water column (SEA, 1995). Consequently, adverse effects are not expected below the upper 10 meters

of the water column following oil dispersion. Within 10 meters of the surface, potential exposure of water column organisms to concentrations of 10 ppm or higher dispersed oil would be brief, lasting no longer than a few hours. Most of these organisms have the ability to rapidly metabolize and completely depurate petroleum hydrocarbons once exposure ceases. Although such exposures could result in temporary sublethal effects on physiological functions in some planktonic organisms, the existing data indicate that chronic effects are unlikely (NRC, 1989; SEA, Inc., 1995). The range of sublethal and lethal thresholds measured for modern dispersants in the absence of oil as determined by laboratory tests with sensitive species is much greater than concentrations that occur in the water column following dispersant application (NRC, 1989; Rycroft, et. al., 1994). Considering the broad distribution and relatively short life cycle of zooplankton, population level effects from such a short-term, pulsed exposure to low concentrations of dispersed oil are not expected and, therefore, unlikely to adversely impact predators such as baleen whales.

Analysis of Alternatives

Emergency Authorization

The proposed action pre-authorizes the FOSC to use dispersants as a first-stage response technique in specified zones as described above. The alternative is to require the FOSC to seek RRT authorization to use dispersants in these zones on a case-by-case basis at the time of an oil spill emergency. The limited "window of opportunity" for the most optimal and effective use of dispersants following an oil spill occurs very early -- usually within the first few hours. Without pre-authorization to permit rapid response and mobilization of the necessary equipment, the delay for case-by-case RRT approval would realistically eliminate dispersants as a response option. Moreover, in the absence of pre-authorization, spill response organizations are unlikely to invest in the equipment and training necessary to apply dispersants due to the low probability that authorization would be issued in time to employ the technique. Pre-authorization enabling timely use of dispersants under appropriate conditions in the designated zones provides greater protection for listed species and critical habitat than does case-by-case authorization at the time of a spill emergency.

Mechanical Removal

Mechanical containment and removal will remain the preferred response tool for most oil spills, which usually are close to shore in areas where other response options are unlikely to be approved. Experience has shown, though, that mechanical response often cannot adequately deal with very large spills offshore. Performance of mechanical methods can be severely limited by weather and oceanic conditions and by the nature of the oil slick. Booms and skimmers are of limited use even in moderate seas and are usually effective only at slow currents (less than 1 knot) and low wave heights (less than 2 meters). Consequently, mechanical recovery rates are often poor. Even under calm conditions, use of mechanical equipment alone to deal with large spills in which oil rapidly spreads over large areas may not be feasible. For these reasons, dispersant application is an important complementary spill response technique and should be included along with other techniques as on option in developing the appropriate response strategy. Under this regional policy, use of dispersants will be considered when and where physical removal is impossible or insufficient for protecting natural resources, including listed species.

In-Situ Burning

In-situ burning is an oil spill response technique that can quickly remove large volumes of oil from the water surface by igniting oil that is towed away from the main slick in fire-resistant boom. Though in-situ burning is a highly useful and important response option, there are some differences in the range of oil and weather conditions under which in-situ burning and dispersants are effective. For example, in-situ burning is not effective once oil has spread to less than about two millimeters thick. Also, if winds are blowing shoreward toward populated areas or sensitive environments, in-situ burning is unlikely to be employed due to concerns about potential effects of the smoke plume. Under conditions for which in-situ burning would not be effective or creation of a smoke plume is deemed unacceptable, dispersants may be a viable option.

Other Chemical Countermeasures

Other classes of open-water chemical countermeasure products currently available such as solidifiers, visco-elastomizers, herders, and demulsifiers typically satisfy very narrow oil spill response niches. Most are used to enhance mechanical recovery of small releases. It is unlikely they would be effective for large spills or under the same spill conditions dispersants can be employed. Furthermore, application of many products in these classes is still in experimental stages with regard to effectiveness and environmental effects.

No Action

Another alternative is not attempting to remove released oil from the water surface, potentially allowing the oil to wash ashore. The oiled shoreline could be cleaned or allowed to recover naturally. Due to the importance of nearshore and shoreline habitat to a variety of organisms and the difficulty of cleaning oiled shorelines without inflicting further injury, this alternative is considered the least desirable from several perspectives, including protection of listed species and critical habitat. Unrecovered oil poses a high risk of exposure and injury to wildlife, especially sea birds, marine mammals, and intertidal organisms. Cleaning and rehabilitation of oiled wildlife, particularly marine mammals, have had limited success and release of rehabilitated animals creates a risk of introducing disease into the wild population.

Conclusions

The purpose of dispersants, used alone or in conjunction with other open-water spill response techniques, is to quickly remove spilled oil from the water surface, thereby reducing exposure to wildlife and preventing contamination of sensitive nearshore and shoreline habitat. Under appropriate conditions, dispersants can reduce environmental impacts from oil spills, including injury to listed species and critical habitat. Dispersant application is not likely to adversely affect listed species beyond the potential effects of the spilled oil or add to the cumulative environmental stresses currently acting on the species.

The parties to this RRT IV Dispersant Use Policy pre-authorizing dispersants as an oil spill response technique in the designated zones conclude that this action is not likely to adversely affect the listed species present in the subject area and that formal consultation under Section 7 of the Endangered Species Act is not necessary. We request that you concur with these conclusions. Consultation will be re-initiated if additional information not previously considered becomes available indicating adverse effects to listed species or critical habitat from the identified action.

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

Southeast Regional Office
9721 Executive Center Dr. N.
St. Petersburg, FL 33702

March 13, 1996 F/SEO13:DMB

Captain Gerald W. Abrams, USCG
Chief, Marine Safety Division
Seventh Coast Guard District
Brickell Plaza
Federal Building
909 SE First Avenue
Miami, Florida 33131-3050

Dear Captain Abrams:

This responds to your letter, received January 31, 1996, regarding the proposed Region IV Regional Response Team (RRT IV) policies for pre-authorizing use of chemical dispersants as an oil-spill response measure. A Biological Assessment (BA) was submitted pursuant to Section 7 of the Endangered Species Act of 1973 (ESA). We have also reviewed the information contained in a draft dispersant use plan, received August 16, 1995. We concur with the finding of the BA that the proposed policy is unlikely to adversely affect endangered or threatened species under National Marine Fisheries Service (NMFS) purview or their critical habitat. We do, however, wish to make special stipulations related to designated critical habitat and to the conduct of dispersant applications in the vicinity of listed species of sea turtles and whales.

The draft dispersant use plan states that dispersant applications would only occur in pre-authorized areas (or in areas where special authorization is received), during daylight hours with good visibility, following an aerial overflight which would attempt to determine the presence of listed species. NMFS recognizes that little data is available on the effects of oil and dispersed oil on sea turtles and marine mammals, but also agrees that offshore dispersal of oil slicks can reduce adverse impacts of oil spills to these species and their habitats. NMFS is concerned, however, about the possibility of harm to listed species from short-term exposure to very high concentrations of dispersant -- from the toxic properties of the dispersant solvents as well as caustic or toxic properties of the dispersant chemical itself. Dispersant application should therefore not be conducted in close proximity to any individuals of listed species of whale or sea turtle. A horizontal distance of 100 yards for vessel-based dispersant application and 500 yards for aerial dispersant application should be maintained from any sighted individuals.

In addition, we do have special concerns regarding burning in the designated critical habitat for the severely endangered northern right whale along the coast of Georgia and Florida (see enclosed Federal Register notice). This area includes waters designated as Green and Yellow zones in the dispersant use plan. The following measures should be adopted in the right whale critical habitat between December 1 and March 31:

(1) On-Scene Coordinators or their designees should contact the right whale early warning system (EWS) for information on the most recent sightings of right whales. NMFS has previously furnished contact information for the EWS to the Jacksonville and Savannah Marine Safety Offices.

(2) Should whales be present, no attempts to relocate, deter, or "haze" the animals should be made for the purpose of dispersant application. The location of dispersant applications should maintain the minimum separation distances specified above. Personnel from the EWS may attempt to harass whales out of the area, when possible, in order to minimize the potential for injury to the animals either from oil or response operations.

This concludes consultation responsibilities under Section 7 of the ESA. Consultation should be reinitiated, however, if new information reveals impacts of the identified activity that may affect listed species, a new species is listed, new critical habitat is designated, or the activity is subsequently modified. In addition, when an On-Scene Coordinator exercises the authority to apply chemical dispersants, please forward us a copy of the post-incident briefing document prepared by the OSC. We will review the briefing document to determine whether reconsultation is necessary.

If you have any questions, please contact LTJG David Bernhart, Fishery Biologist, at 813/570-5312.

Sincerely yours,

Andrew J. Kemmerer
Regional Director

Enclosure

cc: F/PR2
File: 1514-22-h2-1995.

[Federal Register: June 3, 1994]

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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Part 226

[Docket No. 930363-4145, I.D. 012793B]

Designated Critical Habitat; Northern **Right Whale**

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Final rule.

SUMMARY: NMFS is designating critical habitat for the northern **right whale** (Eubalaena glacialis). The designated habitat includes portions of Cape Cod Bay and Stellwagen Bank, the Great South Channel (each off the coast of Massachusetts), and waters adjacent to the coasts of Georgia and the east coast of Florida. This designation provides notice to Federal agencies and the public that a listed species is dependent on these areas and features for its continued existence and that any Federal action that may affect these areas or features is subject to the consultation requirements of section 7 of the Endangered Species Act (ESA).

EFFECTIVE DATE: July 5, 1994.

ADDRESSES: Requests for copies of this rule should be addressed to the Director, Office of Protected Resources, National Marine Fisheries Service (NMFS), 1335 East-West Highway, Silver Spring, MD 20910.

FOR FURTHER INFORMATION CONTACT: Michael Payne, Protected Species Management Division, NMFS, 301/713-2322; Charles Oravetz, Southeast Regional Office, NMFS, 813/893-3141; or Doug Beach, Northeast Regional Office, NMFS, 508/281-9254.

SUPPLEMENTARY INFORMATION:

Background

Right whales, Eubalaena spp., are the most endangered of the large **whale** species, brought to extremely low levels by commercial whaling. **Right** whales were the earliest targets of whaling and, although they have been protected world-wide from commercial whaling by international agreements since 1935, **right whale** populations still remain extremely depleted. The global population of **right** whales is comprised of two separate species, one each in both the northern and southern

hemisphere, and several stocks or populations within each hemisphere. The majority of **right** whales occur in the southern hemisphere (the southern **right whale**, E. australis) and are considered a separate species from the **right whale** in the northern hemisphere (E. glacialis).

At least two populations of northern **right** whales, an eastern and a western population, occur, or have occurred, in the North Atlantic. The eastern North Atlantic population may be nearly extinct. Between 1935-1985, there were only 21 possible sightings in the eastern North Atlantic, totaling 45 individuals (Brown, 1986). Furthermore, Brown (1986) considered only five of these sightings (seven individual whales) to be confirmed. In the western North Atlantic, the known distribution and abundance of **right** whales indicate a ``best available'' population estimate of 300-350 individuals. Despite the low abundance and known anthropogenic factors affecting total mortality (Kraus, 1990), the western North Atlantic stock is the largest in the Northern Hemisphere. This population stands to benefit most from recovery actions (NMFS, 1991; Kenney, Winn and Macaulay, 1994).

Like other baleen whales, the western North Atlantic population of **right** whales (hereafter referred to as the northern **right whale**) is migratory. The known distribution and migratory pattern has been previously summarized by Kraus (1985); Winn, Price and Sorensen (1986); Gaskin (1987, 1991); and by Kraus et al. (1986). The five primary habitats used by northern **right** whales during their annual migration, as described by Kenney, Winn and Macaulay (1994), include the following three areas off the eastern coast of the United States: (1) A spring/early summer feeding and nursery area for a majority of the population in the Great South Channel (GSC), (2) a late winter/spring feeding and nursery area for a small portion of the population in Cape Cod Bay (CCB), and (3) a winter calving ground and nursery area in the coastal waters of the southeastern United States (SEUS); and the following two areas located in Canadian waters: (4) a summer/fall feeding and nursery area for some animals, including nearly all mother/calf pairs, in the lower Bay of Fundy; and (5) a summer/fall feeding ground, with almost exclusively mature individuals, on the southern Nova Scotian shelf.

The northern **right whale** was listed as endangered on June 2, 1970 (35 FR 8495). Section 9 of the ESA prohibits the taking of endangered species, and section 7 requires Federal agencies to ensure that their actions are not likely to jeopardize either threatened and endangered species. For species listed prior to 1978, when Congress required that critical habitat be designated, concurrently with the listing, critical habitat may be designated although such designation is not required. Section 4(f) of the ESA also requires the responsible agency to develop and implement a recovery plan for listed species, unless such a plan would not promote the conservation and recovery of the species. NMFS determined that a recovery plan would promote the conservation of the northern **right whale**. Accordingly, the Assistant Administrator for Fisheries (AA) appointed a Recovery Team consisting of experts on **right** whales from the private sector, academia and government. A Recovery Plan for the Northern **Right Whale** was approved by NMFS in December, 1991 (NMFS, 1991).

NMFS was petitioned by the **Right Whale** Recovery Team to designate critical habitat for the northern **right whale** on May 18, 1990. A Federal Register notice was published on July 12, 1990 (55 FR 28670), requesting information and comments on the petition. Of those agencies, organizations, and private groups that commented, most responded favorably to the designation of the three areas in the U.S. as critical habitat for the northern **right whale**. The comments received were

considered and incorporated as appropriate by NMFS in the proposed rule to designate critical habitat for northern **right** whales. The proposed rule was published on May 19, 1993 (58 FR 29186), and provided for a 60-day comment period. NMFS also completed an Environmental Assesment (EA) pursuant to the National Environmental Policy Act (NEPA), to evaluate both the environmental and economic impacts of the proposed critical habitat designation. The EA resulted in a finding of no significant impact for the proposed action.

During the comment period, NMFS received several requests for public hearings on the proposed designation. Public hearings were held in Boston, MA, on August 25, 1993; in Port Canaveral, FL, on August 24, 1993; and in Brunswick, GA, on August 25, 1993 (58 FR 41454, Aug. 4, 1993). The comment period was extended until August 31, 1993, to allow commenters the opportunity to respond to concerns voiced at the public hearings. After consideration of public comments, and based on the best available scientific information, NMFS is designating critical habitat for the northern **right whale** as described in the proposed rule.

Definition of Critical Habitat

``Critical habitat'', as defined in section 3(5)(A) of the ESA, and the term ``conservation'', as defined in section 3(3) of the ESA, were provided in the preamble to the proposed rule (58 FR 29186, May 19, 1993).

Essential Habitat of the Northern **Right Whale**

Biological information for the northern **right whale** can be found in the Recovery Plan (NMFS, 1991), and in recent scientific literature (Winn, Price and Sorensen, 1986; Kenney et al., 1986; Wishner et al., 1988; Mayo and Marx, 1990; Payne et al., 1990; Kraus and Kenney, 1991; Kraus et al., 1993; Kenney, Winn and Macauley, 1994). The physical and biological habitat features of the critical habitat are discussed herein.

Foraging Habitat of the Northern **Right Whale**

Right whales have been characterized principally as ``skim'' feeders (Kawamura, 1974; Nemoto and Kawamura, 1977). They subsist primarily on dense swarms of calanoid copepods, notably Calanus finmarchicus in the North Atlantic (Mitchell, 1975; Watkins and Schevill, 1979; Winn, Price and Sorensen, 1986; Wishner et al., 1988; Mayo and Marx, 1990; Kraus and Kenney, 1991). Northern **right** whales are also known to prey on other similar sized zooplankton. Two other zooplankton species preyed upon by northern **right** whales in CCB include Pseudocalanus minutis and Centropages spp. (Mayo and Marx, 1990). A strong positive correlation between the abundance of **right** whales in the southern Gulf of Maine and densities of C. finmarchicus has been described by Kenney et al. (1986), Wishner et al. (1988), Payne et al. (1990), and Kenney, Winn and Macauley (1994). The two recorded time intervals when **right** whales were most abundant in the CCB/Stellwagen Bank area (April 1970, reported by Watkins and Schevill, 1982; and during 1986, reported by Payne et al., 1990) were during periods of observed peak densities of copepods.

While the size and density of copepod patches are important to the feeding energetics of **right** whales, so are the relative proportions of adult copepods within each patch (Kenney et al., 1986; Wishner et al.,

1988). Although the feeding ecology of **right** whales is likely more complex than previously thought (Mayo and Marx, 1990), dense aggregations of older, caloric-rich copepods seem to be the required characteristics for energetically successful foraging by **right** whales. If copepods in these caloric-rich, adult developmental stages are not available to northern **right** whales in sufficient densities, there may be insufficient prey available in the remaining developmental stages (independent of abundance) to provide **right** whales with the required energy densities (as described by Kenney et al., 1986) to meet the metabolic and reproductive demands of the **right whale** population in the western North Atlantic (Kenney et al., 1986; Payne et al., 1990).

Foraging Habitat: The overall spatial requirements for **right** whales are not well defined; however, the distribution pattern observed for northern **right** whales indicates that four of the five principal habitats occupied by **right** whales in the western North Atlantic are used for foraging, and possibly reproductive activities: The GSC, CCB, the Bay of Fundy, and the Scotian Shelf. Neither feeding nor courtship behavior has been observed along the SEUS. Scientists believe that subadult and adult baleen whales fast, or feed rarely, during the winter calving period.

Based on observed distribution patterns compared to oceanographic conditions, scientists speculate that the topographic and seasonal oceanographic characteristics of foraging areas are conducive to the dense growth of zooplankton. These high-use areas may comprise the minimal space required for normal foraging behavior that will support the northern **right whale** population. The Department of Fisheries and Oceans (Canada) has already designated two foraging areas as **right whale** sanctuaries--one in the Bay of Fundy and another on the Scotian Shelf. The remaining two foraging habitats, the GSC and CCB, are found in the United States and are included as critical habitat for the northern **right whale**.

Great South Channel: The GSC is a large funnel-shaped bathymetric feature at the southern extreme of the Gulf of Maine between Georges Bank and Cape Cod, MA. The GSC is one of the most used cetacean habitats off the northeastern United States (Kenney and Winn, 1986). The channel is bordered on the west by Cape Cod and Nantucket Shoals, and on the east by Georges Bank. The channel is generally deeper to the north and shallower to the south, where it narrows and rises to the continental shelf edge. To the north, the channel opens into several deepwater basins of the Gulf of Maine. The V-shaped 100-m isobath effectively delineates the steep drop-off from Nantucket Shoals and Georges Bank to the deeper basins. The average depth is about 175 m, with a maximum depth of about 200 m to the north.

The GSC becomes thermally stratified during the spring and summer months. Surface waters typically range from 3 to 17 deg.C between winter and summer. Salinity is stable throughout the year at approximately 32-33 parts per thousand (Hopkins and Garfield, 1979). Much of the bottom is comprised of silty, sandy sediments, with finer sediments occurring in the deeper waters.

The late-winter/early spring mixing of warmer shelf waters with the cold Gulf of Maine water funneled through the channel causes a dramatic increase in faunal productivity in the area. The zooplankton fauna found in these waters are typically dominated by copepods, specifically C. finmarchicus, P. minutus, C. typicus, C. hamatus, and Metridia lucens. From the middle of winter to early summer, C. finmarchicus and P. minutus are the dominant species, which together made up between 60 and 90 percent of the samples described by Sherman et al. (1987). In

late spring, C. finmarchicus alone makes up 60 to 70 percent of the copepod community. In the second half of the year, both species of Centropages dominate the waters, accounting for about 75 percent of all copepod species sampled.

The GSC **right whale** distribution was described by Kenney, Winn and Macaulay (1994), and the following, unless otherwise cited, is taken from that manuscript. **Right** whales occur in the GSC on a strictly seasonal basis--in the spring, with a peak in May. Only in 1986 and 1987 were a small number of **right** whales present throughout most or all of the summer. This corresponds to the atypical copepod density maxima in the GSC and southern Gulf of Maine described by Wishner et al. (1988) and Payne et al. (1990). The main area of GSC **right whale** distribution has been in the central basin, generally in waters deeper than 100 m. There is a persistent thermal front, which roughly parallels the V-shaped 100-m isobath typically slightly south of that isobath in 60-70 m of water. The front divides stratified waters with warmer surface temperatures to the north of the front from tidally mixed water with cooler surface temperatures over the shallower area south of the front (Wishner et al., 1988; Brown and Winn, 1989). **Right** whales occur in the stratified waters north of the front, and Brown and Winn (1989) showed that **right whale** sightings were non-randomly distributed relative to the front, but were at a median distance from it of about 11 km. Although there are variations between years, the ``typical'' pattern is for the primary **right whale** aggregation to occur in the central to western portion of the basin. Within any one year, the general area of major aggregation is remarkably stable. A gradual southward shift in the center of distribution occurs as the season progresses.

Single-day abundance estimates for the GSC, uncorrected for animals missed while submerged, ranged up to 179 individuals (Kenney, Winn and Macauley, 1994). The total number of photographically identified northern **right** whales is now 319, eliminating those known to have died, but including some that have not been sighted for several years and that may be dead (Kraus et al., 1993). Therefore, it is likely that a significant proportion of the western North Atlantic **right whale** population uses the GSC as a feeding area each spring, aggregating to exploit exceptionally dense copepod patches. Given that not all of the 300-350 **right** whales are seen in U.S. shelf waters each season, it is very likely that most, if not all, of the northern **right whale** population use the GSC within any given season, and that every 2-3 years, the entire population of 300-350 northern **right** whales in the northwest Atlantic may pass through the GSC.

Cape Cod Bay: The CCB is a large embayment on the U.S. Atlantic Ocean off of the State of Massachusetts that is bounded on three sides by Cape Cod and the Massachusetts coastline from Plymouth, MA, south. To the north, CCB opens to Massachusetts Bay and the Gulf of Maine. CCB has an average depth of about 25 m, and a maximum depth of about 65 m. The deepest area of CCB is in the northern section, bordering Massachusetts Bay.

The general water flow is counter-clockwise, running from the Gulf of Maine south into the western half of CCB, over to eastern CCB, and back into the Gulf of Maine through the channel between the north end of Cape Cod (Race Point) and the southeast end of Stellwagen Bank, a submarine bank that lies just north of Cape Cod. Flow within the bay is driven by density gradients caused by freshwater river run-off from the Gulf of Maine (Franks and Anderson, 1992a, 1992b; Geyer et al., 1992) and by a predominantly westerly wind.

Thermal stratification occurs in the bay during the summer months. Surface water temperatures typically range from 0 to 19 deg.C throughout the year. Salinity is fairly stable at around 31-32 parts per thousand. Much of the bottom is comprised of unconsolidated sediments, with finer sediments occurring in the deeper waters (Davis, 1984). In shallow areas, or where there is sufficient current, sediments tend to be coarser.

Northern **right** whales were ``rediscovered'' in the CCB in the early 1950s. **Right** whales have been seen in Massachusetts waters in most months (Watkins and Schevill, 1982; Schevill, Watkins and Moore, 1986; Winn, Price and Sorensen, 1986; Hamilton and Mayo, 1990). However, most sightings occurred between February and May, with peak abundance in late March (Mayo, 1993). Schevill, Watkins and Moore (1986) reported 764 sightings of **right** whales between 1955 and 1981 in CCB. More than 70 whales were seen in one day in 1970. Hamilton and Mayo (1990) reported 2,643 sightings of 113 individual **right** whales in Massachusetts waters, with a concentration in the eastern part of CCB. A number of **right** whales, including cow-calf pairs, remained in CCB and Massachusetts Bay during the summers of 1986 and 1987. This was attributed to atypically dense concentrations of C. finmarchicus in those years, and low abundances of sandlance, Ammodytes spp., a planktivorous finfish that also preys on copepods and may be competing with **right** whales for copepod prey during recent years (Payne et al., 1990).

The late-winter/early spring zooplankton fauna of CCB consists primarily of copepods, represented predominantly by two species, Arcartia clausi and A. tonsa. Samples taken in the daytime indicated greater densities of copepods at greater depths. The copepod C. finmarchicus is found throughout inshore CCB waters at densities of 100 individuals per cubic meter from April through June (Mayo and Marx, 1990). However, Mayo and Marx (1990) found that the density of surface zooplankton samples collected in the path of feeding **right** whales during mid-winter was significantly higher than for the samples taken where whales were absent (median = 3,904 organisms/m\3\). The threshhold value below which feeding by northern **right** whales is not likely to occur in CCB is approximately 1,000 organisms/m\3\ (Mayo and Marx, 1990). Although year-to-year variation in the composition of zooplankton was found, feeding **right** whales were associated with patches of zooplankton that were dominated by C. finmarchicus, P. minutus, C. spp. and by cirripede (barnacle) larvae. These authors suggested that, after arrival in CCB when prey is at a maximum (or at least at a consistently acceptable level), the whales select the densest patches of copepods (Mayo and Marx, 1990).

Calving and Nursery Habitat of Northern **Right** Whales

Cape Cod Bay: Schevill, Watkins and Moore (1986) reported 21 sightings of small calves in 12 of the 26 years of their CCB study, including two calves that may have been born in CCB. Therefore, the CCB may occasionally serve as a calving area, but it is more recognized for being a nursery habitat for calves that enter into the area after being born most likely in, or near, the SEUS. Mead (1986) identified Massachusetts waters as second only to the SEUS for documented **right whale** calf sightings. Hamilton and Mayo (1990) observed a total of 30 calves between 1979 and 1987, associated with 21 mothers. Schevill, Watkins and Moore (1986) and Hamilton and Mayo (1990) documented observations of mating behavior and nursing in CCB.

Southeast United States (SEUS): The coastal waters off Georgia and northern Florida (the area described as the SEUS) average about 30 m in depth with a maximum depth of about 60 m. The deepest waters occur along the coast of Florida, just south of Cape Canaveral. Seasonal water temperatures and salinity for this area are higher than in northern waters. This is a transition area separating subtropical from the more temperate southeastern marine communities. Large, cyclic changes in abundance and dominance of plankton species occur seasonally and annually. Annual variation may be so great that short-term monitoring studies may not be sensitive enough to assess the temporal variability of the plankton community. The recorded preferred food of the northern **right whale**, C. finmarchicus, does not occur in these waters, and the area is not considered a foraging area for northern **right** whales.

Between 1989-1992, 31 calves were observed within the SEUS, representing 76 percent of the total number of calves (n = 41) reported from the North Atlantic during that period (Kraus et al., 1993). The calving season extends from late November through early March with an observed peak in January. The 30' blocks of latitude within the SEUS having the greatest density of adult and juvenile **right** whales occurred in waters from Brunswick, GA to Jacksonville Beach, FL (Kraus et al., 1993). The presence of females with calves was primarily limited to the coastal waters between 27 deg.30' and 32 deg.00'N latitudes. This is consistent with distributions reported by Kraus and Kenney (1991) using historical sighting data through 1989.

Since 1980, 153 northern **right** whales have been individually identified from surveys conducted in SEUS waters. This represents 48 percent of the known northern **right whale** population of 319 whales. During this period, 125 of the **right** whales observed in the SEUS have also been sexed using criteria described in Kraus et al. (1993). Of the 96 adults observed, 91 were females, one was a male, and the sex of the remaining four was not determined. These 91 females represent 74 percent of all the photo-identified females who have been reproductively active since 1980. The observed frequency of occurrence of females in the SEUS is significantly greater than the expected 1:1 sex ratio characteristic of the overall population. This demonstrates that the population is segregated by sex at this time of the year, and that the SEUS is used predominantly by females, and females with calves, although several juvenile males have also been observed in recent years. Based on the number of calves and females with calves in the SEUS since 1980, Kraus et al. (1993) consider the SEUS as the primary calving area for the population.

Environmental Correlates to **Right Whale** Distribution in the SEUS: Environmental features that have been correlated with the distribution of northern **right** whales throughout the SEUS include water depth, water temperature, and the distribution of **right whale** cow/calf pairs and the distance from shore to the 40-m isobath (Kraus et al., 1993).

The average water depth at sighting was 12.6 m (SD = 7.1). This shallow water preference is consistent with that recorded for southern **right** whales with calves (Payne, 1986). Also, the significant correlation between the distribution of northern **right** whales and the distance from shore of the 40-m isobath (referred to as the inner (0-20-m) and middle (20-40-m) shelf by Atkinson and Menzel, 1985) indicates that **right** whales in the SEUS are using the nearshore edge of the widest part of the broad shallow-water shelf characteristic of the Georgia-Florida Bight. The inner shelf is dominated by tidal currents, river inflow, and interaction with the coastal sounds. The middle

shelf, which is dominated by winds, has less interaction with the coastal environment but is influenced on the outer margins by the Gulf Stream (Atkinson and Menzel, 1985). This use of the inner and nearshore-middle shelf area by **right** whales may provide maximum protection from the wave action that occurs over the outer margins of the shelf. Therefore, the occurrence of cow/calf pairs in coastal waters of the SEUS may be due, at least in part, to the bathymetry that affords protection from large waves and rough water. The strong winds and offshore wave activity in the winter SEUS is minimized nearshore by the relatively shallow, very long underwater shelf (extending almost 105 km offshore) (Kraus et al, 1993).

The average temperature of 30' blocks of latitude where **right** whales have occurred is significantly cooler than those blocks of latitude within the SEUS where **right** whales were not observed (14.5 deg.C vs. 18.5 deg.C) (Kraus et al., 1993). The inner shelf is not affected by the Gulf Stream during the period when **right** whales are present; therefore sea-surface temperature decreases as one moves from the Gulf Stream towards shore. It is difficult to separate the effects of temperature from depth and proximity to shore, but sighting data indicate that northern **right** whales clearly prefer a band of relatively cool water (10-13 deg.C) within the SEUS. This band is affected by the nearshore processes, including cooler freshwater runoff and discharge, as described in several chapters of Atkinson, Menzel and Bush (1985). Although little information is available on **right whale** physiology, it is hypothesized that the metabolic rate of the **whale** is affected by water temperature (Kraus and Kenney, 1991). The cooler, coastal water may provide **right** whales with the optimum thermal balance for calving by cooling the female at a time when offshore, Gulf stream affected warmer waters may be too warm for a female with maximum fatty layers prior to parturition and nursing. At the same time, the coastal waters may be warm enough not to cause problems for a neonate, considering that the insulating layer of a neonate for the first few weeks is minimal, as compared to the adult.

Courtship activities have been observed throughout most of the range of the northern **right whale**, except within the SEUS (Kraus, 1985).

Activities That May Affect Essential Habitat

Northern **right** whales are no longer observed in certain areas where they once were found, such as Delaware Bay, New York Bight and Long Island Sound (NMFS, 1991). The absence of **right whale** sightings in these areas may be due to several factors, including: Increased human activities, habitat degradation, insufficient quantities of prey due to habitat or natural alterations in the physical environment, extinction of an independent breeding group that used these areas or contraction of the species' range as the population has decreased (NMFS, 1991).

There exists a wide range of human activities that may impact the designated critical habitat for northern **right** whales (NMFS, 1991, 1992). Resource uses in the critical habitat areas are currently, and have been historically, dominated by vessel traffic and fisheries. Vessel activities can change **whale** behavior, disrupt feeding practices, disturb courtship rituals, disperse up food sources and injure or kill whales through collisions. Thirty-two percent of the known strandings of northern **right** whales since 1970 have been caused by human activities (Kraus, 1990; NMFS, 1992).

Vessels that operate in the areas being designated as critical

habitat include recreational and commercial fishing vessels, commercial transport vessels, passenger vessels, recreational boats, **whale**-watching boats, research vessels and military vessels (e.g., surface ships and submarines). Helicopters and low-altitude aircraft also fly over the critical habitat. Results of human activities that occur within or near the designated critical habitat for northern **right** whales, and that may disrupt the essential life functions that occur there, include, but are not limited to:

1. Mortality due to collisions with large vessels: Seven percent of northern **right** whales identified have propeller scars from a large vessel (NMFS, 1992);

2. Entanglement and mortality due to commercial fishing activities: More than one-half of all cataloged animals have scars indicative of entanglements with fishing gear, resulting in scars, injuries, and death. Fishing nets and associated ropes may become entangled around a flipper, at the gape of the mouth, or around the tail (Kraus, 1985, 1990). Gill nets are believed to be the primary cause of scars and injuries related to fishing gear, although whales have also become entangled in drift nets and lines from lobster pots, seines and fish weirs (Kraus, 1985). Fishing practices and locations may need to be managed more closely when the fishing season overlaps with the presence of **right** whales.

3. Possible habitat degradation through pollution, sea bed mining, and oil and gas exploration: Exploration and development for oil, gas, phosphates, sand, gravel, and other materials on the outer continental shelf may impact northern **right whale** habitat through the discharge of pollutants (such as oil, drilling muds and suspended solids); noise from seismic testing, drilling and support activity; and disturbance of the environment through vessel traffic and mining rig activity. If these types of activities are proposed, their timing and location may also require special management considerations, including the establishment and maintenance of buffer zones.

4. Pollutants may also affect phytoplankton and zooplankton populations in a way that decreases the density and abundance of specific zooplankton patches on which northern **right** whales feed. In addition, pollution may affect the feeding patterns and habitat use of other components of the marine ecosystem, which in turn could impact food and habitat availability for the northern **right whale**. Pollutants may also have direct toxic effects on the **whale**. Monitoring of known and potential pollution and discharge sources in this essential habitat may be necessary to insure that these sources are not affecting prey species abundance or composition, or the northern **right whale**'s ability to gain maximum benefit from use of the area.

Turbulence associated with vessel traffic may also indirectly affect northern **right** whales by breaking up the dense surface zooplankton patches in certain **whale** feeding areas. Special vessel traffic management or restrictions may be necessary in certain areas when northern **right** whales are present.

5. Possible harassment due to **whale**-watching and other vessel activities; and

6. Possible harassment due to research activities (on permitted sites and during specified times throughout the year).

The effect of any of these activities on individual whales or on their habitat could have consequences that may impede the recovery of the northern **right whale** population. Therefore, special management considerations may be required to protect these areas and promote the recovery of the northern **right whale**. The following are some, but not

necessarily all, of those activities that occur in each of the designated critical habitat areas.

Cape Cod Bay: In CCB, vessel traffic associated with the Cape Cod Canal, the Boston Harbor traffic lanes, dredging and disposal traffic, recreational boating, commercial fishing and **whale**-watching activities comprise the majority of the vessel activity in the immediate area. Of these, recreational boating, commercial fishing and **whale**-watching contribute greatly to the level of activity in the critical habitat.

Recreational boating begins with the onset of warmer months, particularly in June. Commercial fishing vessels and gear are dominated by the lobster industry, which does not typically begin its season until the middle of June. **Whale**-watching boats, ferries and other vessels increase activity in the area with the onset of warmer weather and the tourist season, which typically begins in May or June and ends no later than November.

Discharges from municipal, industrial and non-point sources, dredging activities, dredge spoil disposal and sewage disposal may degrade essential habitat in Massachusetts Bay/northern CCB. The cumulative effects to baleen whales (including **right** whales) by these activities may affect the northern **right whale** in Massachusetts Bay/ northern CCB.

Great South Channel: In the GSC, vessel traffic and fisheries constitute the majority of activities within the critical habitat area. However, in this area, these activities are not contingent on warm weather. Shipping vessel traffic lanes for Boston Harbor are used throughout the year to import and export metal, salt, fuel and a variety of other products. Similarly, the commercially important fishing grounds on Georges Bank involve year-round vessel traffic from the mainland through **right whale** essential habitat to the fishing grounds. The bottom-trawl is the most dominant type of fishing gear used in this area. It is not known whether the bottom-trawl, or any other type of fishing gear, has an impact on the whales' habitat. Mesh sizes used in this area do not pose an immediate threat to the whales' planktonic food supply.

Southeast United States: Vessel traffic and fisheries are the major activities in the SEUS calving grounds. Major commercial shipping and military ports operate throughout the winter/calving area. The majority of commercial fishing vessels that use the inshore waters to harvest shrimp and other commercially important species use these and other neighboring ports as well. Recreational boating traffic is also fairly extensive.

Expected Impacts of Designating Critical Habitat

A critical habitat designation directly affects only those actions authorized, funded, or carried out by Federal agencies. Federal agencies that may be affected by critical habitat designation of these areas include, but are not necessarily limited to, the U.S. Coast Guard, Environmental Protection Agency, U.S. Army Corps of Engineers, NMFS (including the New England Fishery Management Council (NEFMC) and South Atlantic Fishery Management Council), National Ocean Service, Office of Coastal Zone Management, Minerals Management Service and the U.S. Navy. For a discussion of the expected impacts and significance of critical habitat designation, see ``Significance of Designating Critical Habitat'' in the proposed rule (58 FR 29187, May 19, 1993).

Consideration of Economic and Other Factors

NMFS prepared an EA on its proposed designation of critical habitat, based on the best available information, that described the environmental and economic impacts of alternative critical habitat designations. The economic impacts considered in this analysis were only those incremental economic impacts specifically resulting from a critical habitat designation, above the economic and other impacts attributable to the listing of the species, or resulting from authorities other than the ESA. Listing a species under the ESA provides significant protection to the species' habitat through the no-jeopardy standard of section 7 and, to a lesser extent, the prohibition against taking of section 9, both of which requires an analysis of harm to the species that can include impacts to habitat of the species. Therefore, the additional direct economic and other impacts resulting from the critical habitat designation are minimal. In general, the designation of critical habitat reinforces the substantive protection resulting from the listing itself.

Designation of critical habitat in these areas may result in an increase in administrative time and cost to Federal agencies that conduct, authorize or fund projects in the designated areas. However, these agencies are currently required to address habitat alteration issues in section 7 consultations, and as a result, any increase in administrative time or cost is expected to be minimal.

Designated Critical Habitat; Essential Features

NMFS, by this final rule, designates areas essential for the reproduction, rest and refuge, health, continued survival, conservation and recovery of the northern **right whale** population. The following areas are designated as critical habitat:

Great South Channel: The area designated as critical habitat in these waters is bounded by the following coordinates: 41 deg.40'N/ 69 deg.45'W; 41 deg.00'N/69 deg.05'W; 41 deg.38'N/68 deg.13'W; 42 deg.10'N/68 deg.31'W.

Cape Cod Bay: The area designated as critical habitat in these waters is bounded by the following coordinates: 42 deg.04.8'N/ 70 deg.10.0'W; 42 deg.12'N/70 deg.15'W; 42 deg.12'N/70 deg.30'W; 41 deg.46.8'N/70 deg.30'W; and on the south and east, by the interior shoreline of Cape Cod, MA.

Southeastern United States: The area designated as critical habitat in these waters encompasses waters between 31 deg.15'N (approximately located at the mouth of the Altamaha River, GA) and 30 deg.15'N (approximately Jacksonville, FL) from the shoreline out to 15 nautical miles offshore; and the waters between 30 deg.15'N and 28 deg.00'N (approximately Sebastian Inlet, FL) from the shoreline out to 5 nautical miles.

Modifications to this critical habitat designation may be necessary in the future as additional information becomes available.

References

Most references used in this final designation can be found in the Final Recovery Plan for **Right** Whales (NMFS, 1991), and in the EA. Additional references found in the preamble to this rule are available upon request (see ADDRESSES).

Comments and Responses

NMFS solicited information, comments and recommendations from concerned government agencies, the scientific community, industry and the general public (58 FR 29186, May 19, 1993). NMFS considered and incorporated, as appropriate, all comments received during the comment period (ending on August 31, 1993) and all comments received during public hearings on the proposed rule prior to making this final designation.

During the comment period and at the public hearings, NMFS received a total of 35 sets of comments from regional and national environmental organizations; county, state and Federal agencies; and associations representing regional commercial and sport fisheries. NMFS also received more than 50 written and oral presentations (at public hearings) regarding the proposed designation of critical habitat for northern **right** whales.

Comments received by NMFS generally fell into one of the following categories: (1) Those who were in favor of the designation as it was proposed; (2) those who were in favor of the proposed designation, but recommended that additional regulatory actions be taken at the time of designation to protect northern **right** whales; (3) those who were in favor of designating critical habitat for northern **right** whales, but recommended expanding the boundaries of the critical habitat; (4) those who were not in favor of the designation because it was not necessary, given the protective measures for **right** whales that are being implemented through section 7 of the ESA; and (5) those who were not in favor of the critical habitat designation because it may lead to further restrictions on a specified activity.

Most comments received by NMFS from private individuals, environmental organizations, and state agencies supported the critical habitat designation for northern **right** whales. Several commenters suggested that the proposed rule lacked clear conservation measures to ensure the recovery of the northern **right whale**. Many of the recommendations were duplicative of those of other commenters; therefore, individual comments were combined and addressed together below, unless otherwise specified.

Comment 1: One commenter recommended that NMFS designate a Northern **Right Whale** Recovery Plan Implementation Team for the coastal calving grounds off Florida and Georgia. The commenter further suggested representative agencies and organizations that might participate on this team.

Response: On August 26, 1993, NMFS convened a meeting to discuss the monitoring program that needed to be in place to protect northern **right** whales on their winter ground, prior to their winter arrival. During this meeting, the Southeastern U.S. **Right Whale** Recovery Plan Implementation Team was formed. The team consists of representatives from the Georgia Department of Natural Resources (Chairman); Florida Department of Environmental Protection; NMFS/Southeast Fisheries Center and Southeast Regional Office; U.S. Navy, Naval Air Station, Jacksonville, FL; U.S. Navy, Submarine Group, Kings Bay, GA; Georgia Ports Authority; Canaveral Port Authority; Glynn County Commission, Glynn County, GA; University of Georgia; U.S. Army Corps of Engineers (ACOE), South Atlantic Division; U.S. Environmental Protection Agency (EPA); Port of Fernandina, Fernandina, FL; and the U.S. Coast Guard.

NMFS is also coordinating the development of a **Right Whale** Recovery Plan Implementation Team for the Northeastern United States. Recovery Plan implementation for the northern **right whale** has been ongoing at some level within NMFS, Northeast Region (NER), since December 1990,

and has involved agency staff and scientific experts in the area. The most recent Massachusetts Water Resources Authority outfall Biological Opinion (issued September 8, 1993), and associated conservation recommendations, are part of the recommendations and programs that have been instituted in the NER that address **Right Whale** Recovery Plan tasks. The Northeast Implementation Team will address the possible cumulative impacts to **right** whales from all activities in Massachusetts Bay.

Comment 2: Several organizations recommended that NMFS implement an early warning system, consisting of daily surveys (from December 1 through March 31) of the known wintering grounds. Several organizations also recommended that monitoring be conducted along the migratory route of this species.

Response: ``Early warning systems'' for **right** whales in the southeast United States were first developed through ESA section 7 consultations between NMFS and ACOE, Jacksonville District, as a result of dredging operations at the Navy's submarine channel at Kings Bay, GA; the Port of Fernandina, FL; the Port of Jacksonville, FL; the Naval facilities at Mayport, FL; a navigation channel at St. Augustine, FL; and numerous beach disposal projects using offshore disposal sites throughout this area. Measures to protect **right** whales have included daily aerial surveys at the time that the dredges are in operation during the calving season. If a **right whale** is seen within a 16-kilometer (k) radius of dredge and disposal areas, dredges and support vessels are required to carry an observer during daylight hours and to reduce speeds at night to reduce the likelihood of a collision with a **whale**. However, these precautions were only in place while the dredging operations were being conducted, not throughout the entire winter calving period. Therefore there were gaps in the aerial survey coverage, and thus in protective measures for the whales.

In December 1993, the U.S. Navy and the U.S. Coast Guard provided funding to conduct aerial surveys during the remainder of the time that the whales were in the calving area; the area of concern from the Savannah River south to approximately Jacksonville, FL, was surveyed through March 1994. The ACOE will continue to provide coverage during those periods when hopper dredges are active. Therefore, the **whale** sightings are passed on to appropriate agencies if a survey finds whales in or near a navigational channel, vessels are asked to proceed at minimum safe operational speeds and communicate locations of the **whale** so other vessels can avoid them. This procedure will continually be reviewed and revised through efforts of the Southeast Implementation Team. NMFS intends to continue cooperative efforts with the U.S. Navy, U.S. Coast Guard, the ACOE, and the implementation team to conduct daily aerial surveys throughout the calving season and to operate the early warning system to reduce the likelihood of ship strikes.

It is unlikely that **right** whales can be monitored throughout their range for the purpose of protecting them from ship strikes. NMFS is developing a research program that may include satellite tracking of tagged northern **right** whales to determine those areas (winter and summer) where **right** whales occur, but which are unknown at this time.

Comment 3: The following comments were made by several commenters. They all address additional activities that the commenters felt should be developed to protect **right** whales, or activities that should be prohibited, restricted or modified, primarily in the SEUS, to protect the whales further. These comments are addressed together.

a. Many commenters indicated that restrictions or modifications of shipping lanes and shipping practices need to be made at the time of

designation. The suggested modifications or changes included the seasonal relocation of shipping lanes, a requirement that vessels entering or leaving ports adjacent to the **right whale** winter grounds use direct routes (perpendicular to the shoreline at the port entrance) from December 1 through March 31, restriction of shipping and vessel speeds to allow whales to avoid oncoming ships or allow ships to avoid hitting whales, and a requirement of dedicated onboard observers to maintain watch so that vessel collisions with **right** whales are avoided when ships are transiting through **right whale** wintering habitats during months when the whales occupy these habitats.

b. Several commenters recommended the development of education programs for shipping and public interests. Others suggested that NMFS provide to the shipping companies illustrated instructions (in many languages) on the importance of protecting **right** whales in these waters, and on safe vessel operation in the winter calving areas. They further suggested that these instructions be posted for the crews of all ships operating in U.S. waters, and that these safety measures should be enforced. It was suggested that the U.S. Coast Guard should include **whale** safety in its small boating course, and in required courses for commercial captains and boat operators.

c. Several commenters suggested that NMFS should define **right whale** critical habitat boundaries on NOAA navigational charts, and the notice of the designation and occurrence of whales need to be included seasonally in the Notice to Mariners and other publications, alerting shipping interests to the potential presence of **right** whales in the area at certain times.

d. Several commenters recommended that NMFS ban dredging and seabed mining in the **right whale** calving grounds and feeding grounds, and along the entire migratory route. Many comments supported restrictions on dredging, if necessary, to protect **right** whales; gas and oil exploration and the dumping of contaminated waste within the calving areas described by the critical habitat boundaries; dumping of contaminated dredge spoils and industrial waste; and the construction of submerged or emergent structures within known **right whale** habitats.

e. Several commenters suggested that the discharge of pollutants at the mouths of rivers that empty into the calving grounds should be monitored for possible effects on the habitat.

Response: Regarding comments 3a.-3c., the Southeastern U.S. **Right Whale** Recovery Plan Implementation Team (see Comment 1) formed committees to examine many of the issues discussed in the comments. Committees that were formed cover the following topics: Education/ Awareness; Early Warning Surveys/Communication; Funding of Surveys; Research; and Relocation of Ocean Disposal Sites. A second meeting of the Implementation Team occurred on December 14, 1993; the following updates from each of the committees are summarized from that meeting.

Education/Awareness Committee: The Canaveral Port Authority developed an endangered species pamphlet covering whales, manatees and turtles, which is being distributed regionally. As a group, the Port Authorities developed a series of posters describing the time **right** whales are in their waters, a phone number to contact if a **whale** is seen, and mention of **right whale** habitat. This poster is being distributed by the harbor pilots when they board a vessel for navigation.

A standard brochure on **right** whales in the SEUS has been developed with input from the Georgia DNR, Florida DEP, New England Aquarium and others. The brochure is designed for boaters (commercial and public), but is also to be given to ship masters by harbor pilots. The Port

Authorities, U.S. Coast Guard, U.S. Navy, Georgia DNR and Florida DEP can use this brochure to increase public awareness and education. Financial support for this brochure comes from the participating agencies.

The Georgia DNR and U.S. Coast Guard developed a local Notice to Mariners about **right whale** calving grounds. This notice is broadcast four times daily by the U.S. Coast Guard on VHF. Broadcasts ran from December 6, 1993, through March 31, 1994. A slightly longer version is published in the local Weekly Notice to Mariners. This notice may also be published daily, along with the tides and weather, in regional newspapers. The Annual Notice to Mariners also has information on this subject.

Several press releases were issued beginning when the first **right** whales were sighted on December 4, 1993. A regional press release was also issued describing the implementation team, members, persons to contact if a **whale** is seen and other information on the need for protection of **right** whales in the SEUS.

The University of Georgia is surveying local groups to ensure that there is no duplication in the development of educational materials on **right** whales, and to provide a network to combine and coordinate efforts.

The Savannah Area Chamber of Commerce suggested that treating a sighted **right whale** as though it were another ship (slowing down, changing course and anchoring to avoid collisions with **right** whales) should be formalized for all ports in the southeast (i.e., treating **right** whales as vessels under the nautical rules of the road). They further stated that injury to, and interference with, **right** whales can best be avoided by continuing the education of ship's captains, and through ongoing cooperation between the port, its pilots and the Georgia DNR.

Early Warning and Communication Committee: An early warning network has been developed with aerial surveys at the core of the network (see Comment 2). A communication flow chart has been developed to illustrate how information regarding **whale** sightings should be channeled between the appropriate agencies/groups. This is currently considered the best communication scheme for relaying **right whale** sightings from aircraft to land-based stations, and back to surface vessels. This communication network is essential to the early warning system and alerts mariners to the presence of **right** whales in the SEUS. Information disseminated by this system is updated daily as whales are located during the aerial surveys.

Regarding Comment 3d., many of the suggested activities may be authorized, funded or conducted by Federal agencies. The responsible Federal agency active within the range of the northern **right** whales is required to consult with NMFS regarding its projects and activities under section 7 of the ESA. If the activity is found likely to jeopardize the continued existence of the species, directly or through habitat degradation, reasonable and prudent alternatives would be offered that could include restrictions. Even if the activity is not likely to jeopardize the continued existence of the species, NMFS is required to provide an incidental take statement that identifies the impact of any incidental taking of northern **right** whales by the action agency, and specifies reasonable and prudent measures, and terms and conditions that must be complied with, to minimize such takings. These measures may include restrictions upon the activity. In addition, private entities are prohibited from taking an endangered species pursuant to section 9 of the ESA, which may include harm to the species

caused by habitat degradation. In this regard, such activities are already prohibited as a result of listing.

Regarding Comment 3e., NMFS agrees that discharge of pollutants at the mouths of rivers that empty into the calving grounds should be monitored for possible effects on the habitat. A designation of critical habitat may assist Federal agencies in evaluating the potential environmental impacts of their activities on northern **right** whales and their critical habitat. The designation may also help focus state and private conservation and management efforts in those areas.

Comment 4: Two commenters recommended that a ``distance buffer'' be established around northern **right** whales. One recommended that a minimum approach distance of 100m to 300m should be established for all vessels around **right** whales.

The second commenter recommended that NMFS establish around every northern **right whale**, in any area designated as critical habitat, a 500m radius ``protection zone,'' and prohibit any vessel or person from entering or knowingly remaining within this zone. The commenter further suggested that such a buffer zone is consistent with similar rules already adopted by NMFS and cited as examples the minimum distance rule for humpback whales (Megaptera novaeangliae) in Hawaii (50 CFR 222.31) and the 5.5 k buffer zone established around Steller sea lion (Eumetopias jubatus) rookeries and major haulouts in Alaska (50 CFR 226.12). The commenter continued that such protection zones for the area designated in Cape Cod Bay and Stellwagen Bank would be consistent with existing Massachusetts regulations (322 CMR 12.00 et seq.), which require that no one approach or remain within 500m of a **right whale** in state waters.

Response: In both cases, the purpose of the suggested buffer zones would be to ensure that northern **right** whales are undisturbed as much as possible throughout their range, and to keep vessels far enough away so that there is no danger of a collision between whales and vessels. Critical habitat designations reflect specific determinate geographical areas containing physical or biological features essential to the conservation of the species. While NMFS recognizes that the area around each **whale** is important, it is not appropriately the subject of a critical habitat designation. Rather, such buffer zones should be established through separate rulemaking, similar to the special prohibitions for humpback whales in Hawaii.

Comment 5: One commenter suggested that NMFS implement research and monitoring programs focused on: (1) Behavioral changes (of northern **right** whales) associated with the possible impacts of vessel traffic, noise and whalewatching; or (2) the effects of dredging activities and their associated vessel traffic, siltation and noise in the southeastern United States through continued observation of dredge activity and aerial surveys of **right** whales in and adjacent to buffer zones around dredging operations; (3) the impact of pollution on phytoplankton and zooplankton abundance--specifically the impact of the Boston Harbor effluent outfall; and (4) the effects of whalewatching activities on the northern **right whale**. The commenter recommended that, if necessary, NMFS promulgate regulations to mitigate the effects of these activities.

Response: In addition to the monitoring program implemented by the Southeast Implementation Team, NMFS is developing a 3-5 year research plan that will focus on research needs identified as priorities in the Northern **Right Whale** Recovery Plan. The current research program is the result of several meetings that occurred on April 14-15, 1992, in Silver Spring, MD; June 18, 1993, in Brunswick, GA; and July 16, 1993,

in Silver Spring. These meetings established the following research priorities:

a. To determine the wintering location(s) of most northern **right** whales in the northwest Atlantic through the deployment of satellite tags on selected female **right whale**;

b. to determine daily movements within the wintering/calving area. Tagging with VHF tags in the SEUS could determine the daily movements of these animals. This information could be useful to develop a long-term monitoring program to reduce ship strikes in the SEUS;

c. to determine the unknown location of a third summering area. There are three matrilineal stocks of northern **right** whales recognized. One of the stocks does not visit the Bay of Fundy, but is seen in the GSC and CCB during spring, and in the SEUS in winter. Satellite tracking a tagged female from the third matriline (these have already been determined from mtDNA analyses and photoidentification) in the GSC or CCB in the spring might lead to the location of the other summer location of northern **right** whales in the North Atlantic.

d. to identify ``bottlenecks'' in the rate of recovery. The reasons for the northern **right whale**'s low reproductive rate relative to southern hemisphere **right** whales are unknown. One theory is that there is too much inbreeding as a result of the extremely depleted population. The extent of inbreeding can be determined from genetic/molecular identification through mtDNA biopsy sampling and sexing using molecular techniques; and

e. to determine the best location and methods to monitor recovery of this population.

NMFS is not considering broad-based whalewatching regulations at this time, but may consider minimum approach distances specific to northern **right** whales as part of the recovery planning process (see Response to Comment 3).

Comment 6: One commenter stated that collisions with ships and entanglement in fishing gear may be rare from the perspective of total fishing activity and vessel traffic in the various areas. However, at least two **right** whales were struck and killed in the past 3 years. That means that about 2 percent (a much higher rate for calves) of the **right** whales known to occur in the area since late 1989 have been killed by a collision with a vessel. This percentage may underestimate the actual percentage struck during the period because many whales, including calves, have been seen with propeller scars. In the view of the commenter, this information demonstrates a significant risk from the perspective of **right** whales in this area, especially since the threat is concentrated on the reproductive core of the population and the calves, essential for population recovery.

The commenter recommended that NMFS expand the proposed critical habitat designation to include conservation measures that would reduce the likelihood of **right** whales being struck by vessels or becoming entangled in fishing gear. The commenter continued that the designation of critical habitat will serve as a warning to those who operate ships in these areas that steps must be taken to reduce the risk of collision with **right** whales. While finding the steps already taken by harbor pilots, ports authorities, the U.S. Navy, the U.S. Coast Guard, ACOE and others to be encouraging, the commenter believed that more needs to be done.

Response: NMFS recognizes that the loss of each northern **right whale** has a measurable impact on this population. The first priority of the Southeast Implementation Team was to develop a program to reduce or eliminate ship strikes throughout the whales' wintering area.

Also, the New England Fishery Management Council (NEFMC) has restricted all commercial fishing in Gulf of Maine Groundfish Area I, which roughly covers the GSC, because of the importance of the area for haddock spawning from February 1 to May 31, since 1986. The haddock no longer spawn in that area, but NMFS and the NEFMC have recommended leaving the closure in place for all gillnet gear to protect the northern **right whale**, and other **whale** species that use that area in the spring.

NMFS will continue to focus recovery/management efforts on ways to reduce human-induced mortality as a result of ship strikes and entanglement.

Comment 7: One commenter stated that the continued availability of these areas for use by northern **right** whales is critical to the survival of the species. The commenter further stated that under the authority of the Massachusetts Wetlands Protection Act, Massachusetts has already designated the portion of CCB critical habitat that occurs in Massachusetts waters as ``Estimated Habitat'' for a State-listed wetland wildlife species. Estimated habitat, under the Code of Massachusetts Regulations (CMR), 310 CMR 10.37, is defined as the estimated geographical extent of the habitats of State-listed species for which an occurrence within the last 25 years has been accepted by the Massachusetts Natural Heritage and Endangered Species Program and incorporated into its official database.

The commenter also stated that regulations have already been promulgated by Massachusetts law to prohibit vessels from approaching within 500m of a **right whale** in State waters. Fishery measures that reduce the risk of entanglements of marine mammals with fixed gear such as lobster gear and gillnets have also been adopted in Massachusetts. There are moratoria on gillnet and lobster licenses, a limit on the number of lobster pots per fisherman and limits on the length of lobster pot trawls and gillnets. Further restrictions on gillnets, some to complement what the NEFMC is considering to reduce by-catch of harbor porpoise, Phocoena phocoena, are being considered.

The commenter believed, however, that a designation of critical habitat at the Federal level would extend comprehensive, interjurisdictional protection to the **right whale**, a correct approach to conserving the species. The commenter further stated that since, the proposed rule said ``fishing practices and locations may require special management considerations when the timing of the fishing season and the presence of the northern **right whale** overlap,'' NMFS should work closely with Massachusetts and the NEFMC to assess the need for, and nature of, special management considerations.

Response: NMFS recognizes and appreciates the efforts of the Commonwealth of Massachusetts to protect the northern **right whale**. NMFS is establishing a Northeast Implementation Team for the Recovery Plan (see Response to Comment 5). It is the intent of NMFS to work closely with these teams to determine for, and effectiveness of, special management measures.

Comment 8: One Federal agency supported the proposed critical habitat designation for the northern **right whale**, but was concerned that NMFS would be the Federal agency listed as having management responsibilities within the boundaries of Cape Cod National Seashore.

Response: Designation of critical habitat does not create management responsibilities for NMFS, nor does it give NMFS primary jurisdiction over Federal lands included in the critical habitat designation. While a Federal agency may undertake an activity that may affect either the listed species or critical habitat, and may be

required to consult with NMFS pursuant to section 7, it is the action agency that decides whether to initiate consultation. Likewise, the action agency determines whether and in what manner to proceed with the action in light of its section 7 obligations and NMFS' biological opinion (See 50 CFR 402.15). NMFS' role is advisory in nature.

For example, while NMFS has responsibility over this listed species, the National Park Service (NPS) at Cape Cod National Seashore has major responsibilities for the long-term preservation of Cape Cod's natural resources, including this federally listed endangered species. As such, the NPS at Cape Cod National Seashore has management responsibilities within the proposed area of critical habitat that overlaps with the legislative boundary of the Cape Cod National Seashore. NMFS believes that the NPS and NMFS can work together on issues pertaining to the northern **right whale**.

Comment 9: One commenter suggested that two of the proposed critical habitat areas violate the prohibition on habitat designation outside the jurisdiction of the United States. The proposed critical habitat designation in the GSC and portions of the SEUS exceed the 12 nautical mile territorial sea recognized by the United States.

Response: The regulations state that ``critical habitat shall not be designated within foreign countries or in other areas outside of the United States jurisdiction'' (50 CFR 424.12(h)). The critical habitat designation falls within the 200 mile exclusive economic zone of the United States, and therefore is not outside of U.S. jurisdiction. Furthermore, critical habitat designation may impact the activities of Federal agencies, which are defined as ``all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies in the United States or upon the high seas'' (50 CFR 402.02).

Comment 10: Several commenters suggested that the northern boundary of the critical habitat, as recommended by the Recovery Team and proposed by NMFS (58 FR 29186, May 19, 1993), be extended further northward to 32 deg. N latitude, approximately the mouth of the Savannah River. Based on data examined since the Recovery Team reviewed and recommended the critical habitat boundaries that were proposed in the critical habitat designation, the commenter stated that sightings corrected for effort (i.e., the number of **right** whales counted per survey mile since 1984) indicate that the number of **right** whales per mile of transect off St. Catherines Island, GA, was comparable to the number observed off Melbourne and Daytona Beach, FL, and greater than that off St. Augustine, FL, areas within the proposed critical habitat.

Several other commenters requested that no extension of the critical habitat include the mouth of the Savannah River be incorporated into a final designation until verified information on the presence of the **right whale** is publicly provided and a public hearing is held in Savannah, GA, so that the public can have an opportunity to comment. They further urged that any boundary modification be justified on firm scientific grounds, showing significant benefits to **right whale** recovery.

Response: NMFS believes that the most important winter/calving areas known are within the boundaries identified as critical habitat in the proposed rule. The greatest number and highest densities of **right** whales have been observed in the Cape Canaveral region, with the second highest number occurring at the Georgia-Florida border. It is clear, however, that northern **right** whales occur outside this area, including near the mouth of the Savannah River, during the winter calving period and during their late-winter/spring migration northward.

The monitoring conducted around the mouth of the Savannah River during 1992/1993, and the near-daily monitoring conducted during the winter of 1993/1994 from Savannah south throughout the SEUS to approximately Jacksonville, FL, can be used to examine this issue. In these 2 years of monitoring near the mouth of the Savannah River (total approximately 90 days, 20 in 1992/1993 and approximately 70 thus far in 1993/1994) only four **right** whales have been sighted. The first sighting, on December 12, 1993, was of three whales moving south. These whales were resighted the following day near Brunswick, GA. The second and third sightings were also followed by resightings off Brunswick. In these cases, the time between resightings was only a few days, indicating that the whales were not remaining near the Savannah River but traveling through the area toward the core of the sighting distribution. Based on these data, NMFS sees no need to include the area as critical habitat at this time. NMFS recognizes that the sighting data is based on only 2 years of information, and that distributions between years can vary dramatically. NMFS will continually examine sighting data and may modify critical habitat boundaries in the future if warranted by additional sighting information.

Comment 11: One commenter suggested that there is a lack of data offered by NMFS supporting the presence of a substantial **right whale** population off the Cape Canaveral Florida coast (south of False Cape). The commenter cited information in the Recovery Plan for the Northern **Right Whale**, which indicates that only four sightings within the 5nm proposed habitat have been recorded south of the False Cape area prior to 1989, and questioned whether this is sufficient data on which to base a designation.

Response: The lack of sightings at the southern end of the designated SEUS area is explained, at least in part, by low sampling effort in that area. Sightings corrected for effort indicate that the area around Cape Canaveral may be used by **right** whales to a greater extent than presented by Kraus and Kenney (1991) and discussed in the Recovery Plan. The data do not support removal of the area from consideration.

Given the need to monitor and manage activities that might impact northern **right** whales in the area of Cape Canaveral, NMFS believes that it is appropriate to designate this area as critical habitat. The seasonal use, and extent of use, of any area will be considered during the ESA section 7 process on a case-by-case basis, but at present the area in question represents the southern limit to the only known calving area for this species, and is therefore considered critical.

Comment 12: Another Federal agency supported the proposed designation and submitted comments from the particular perspectives of the Gray's Reef National Marine Sanctuary (GRNMS) and the recently designated Stellwagen Bank National Marine Sanctuary (SBNMS).

The GRNMS lies to the north and east of the proposed critical habitat boundary in coastal Georgia; and the commenter recommended that the boundary of the proposed critical habitat be extended northward and seaward to include GRNMS. The commenter stated that Grays Reef is particularly vital to the critical habitat designation because the waters off Georgia and northern Florida serve as calving grounds for this species. The commenter also stated that personnel at GRNMS could provide additional resources for observing and monitoring these whales as part of the Sanctuary's routine operations, as well as provide substantial support to the education and outreach objectives listed in the Northern **Right Whale** Recovery Plan.

The commenter continued by stating that the recently designated SBNMS overlaps slightly with the proposed critical habitat area (at the northern end of CCB). The commenter felt that the proposed designation, in conjunction with the implementation of the SBNMS, would provide additional opportunities for coordinated efforts to enhance the potential for recovery of this critically endangered marine species. Also, some or all of the ``special management considerations or protections'' identified in the proposed designation as being potentially required to protect and promote the recovery of the northern **right whale** population using the Stellwagen Bank environment (i.e., vessel traffic, fishing, pollution, mining and gas exploration) are also addressed by the SBNMS management plan. With the exception of fishing, these activities are currently either regulated directly, or are listed as subject to sanctuary regulation.

Furthermore, the Marine Protection, Research and Sanctuaries Act (title III), as amended in 1992, established the requirement for consultation between the Secretary of Commerce (NOAA) and any Federal agency proposing to undertake an activity in the vicinity of a National Marine Sanctuary that may result in adverse impacts on sanctuary resources or qualities, including private activities authorized by licenses, leases or permits. Such consultation must occur prior to initiation of the proposed activity. From the perspective of administrative structure, therefore, there are opportunities for both NMFS and NMSP to coordinate their programmatic objectives.

Response: NMFS does not believe that extending the boundary of the SEUS critical habitat seaward to include the GRNMS is necessary (see Response to Comment 10). However, NMFS does agree that the Grays Reef program could provide additional monitoring of these whales, substantial support to the education and outreach objectives listed in the Northern **Right Whale** Recovery Plan and additional opportunities for coordinated efforts to enhance the potential for recovery of this critically endangered marine species.

Comment 13: A commenter recommended that NMFS designate Delaware Bay as critical habitat for the northern **right whale**, stating that Delaware Bay is habitat that is representative of the historic geographical and ecological distribution of the species.

Response: The criteria specified under 50 CFR 424.12 to be considered in designating critical habitat, and described in the preamble to the proposed designation, must consider the requirements of the species, including habitats that are representative of the historic geographical and ecological distributions of the species. Section 3(5)(A)(ii) of the ESA states that areas outside the current geographical range of a species can be designated if the Secretary determines that such areas are essential for the conservation of the species. The regulations to the ESA interpret this provision to mean that the Secretary shall designate as critical habitat areas outside the geographic area presently occupied by a species only when a designation limited to its present range would be inadequate to ensure the conservation of the species (50 CFR 424.12(c)). Even where the area is presently occupied by the species, section 3(5)(c) states that, with certain exceptions determined by the Secretary, ``critical habitat shall not include the entire geographic area which can be occupied by the * * * species.''

Although known to have been used by **right** whales, it is not completely understood to what extent Delaware Bay was used, or whether this area would ever have been considered critical habitat. It is known, however, that the area is now bypassed by northern **right** whales

during their annual movements. NMFS believes that the current high-use areas are identified in this rule, but recognizes that the areas designated represent the minimal space required by **right** whales to ensure population growth. Designating Delaware Bay as critical habitat would not enhance the likelihood of recovery for this species. If evidence to the contrary becomes available, critical habitat boundaries can be modified.

Comment 14: Several commenters did not oppose the designation of the critical habitat designation for the northern **right whale**, but were concerned with the ``general'' language of the proposed designation and felt there was no real need for it. Rather, they felt that a public awareness program for shipping interests is sufficient. They further expressed concern that the language of the preamble to the proposed designation stating that ``habitats will be given special consideration in section 7 consultations'' would become a vehicle to attack offshore dredge disposal and port expansion. The commenters requested that NMFS reconsider the need for the proposed designation as it applies to the southern coastal area, given that there is already an active task force working to prevent collisions between vessels and the northern **right whale** and that the other protections of the ESA still apply.

Finally, one of the commenters wanted the channel, fairways to sea lanes, disposal sites, access routes to disposal sites and nearshore berm areas in the SEUS to be excluded from the critical habitat designation. The commenter noted that these areas can be excluded if the overall benefits of exclusion outweight the benefits of designation, unless the exclusion results in the extinction of the species.

Response: Federal agencies active within the range of the northern **right** whales are already required to consult with NMFS regarding projects and activities that may affect the species pursuant to section 7 of the ESA. Federal agencies are required to evaluate their activities with respect to northern **right** whales and to consult with NMFS prior to engaging in any action that may affect the critical habitat to ensure that their actions are not likely to result in its destruction or adverse modification. Regarding the SEUS critical habitat specifically, these actions are being reviewed by the Southeast Implementation Team, through section 7 consultations and agreements already in place, and through the expanded efforts of the Implementation Team to reach the private and public sectors.

Finally, frequent travel by commercial vessels in these areas represents a considerable threat to northern **right** whales. Therefore, NMFS does not agree that corridors frequently traveled by vessels within the designated critical habitat should be excluded.

Comment 15: One federal agency was concerned that the proposed designation was neither appropriate nor necessary to preserve the species. The commenter felt that the current proposal merely designates areas of highest concentration of the whales and lists their characteristics, rather than considers the physical or biological features that are essential to the conservation of the species. To warrant critical habitat designation, the commenter felt that a better understanding of the species' biological and physical requirements is needed.

Response: NMFS agrees that critical habitat designation must include areas meaningful to the specie's conservation. Consequently, NMFS is not designating the northern **right whale**'s entire range, which was suggested by several commenters, but is focusing attention on particular areas that have essential features and that may be in need

of special management consistent with the ESA and implementing regulations. The section of this preamble entitled ``Essential Habitat of the Northern **Right Whale**'' has been expanded from the proposed rule to address those biological and physical features and to identify those principal constituent elements, such as feeding sites, breeding grounds and calving areas within the designated areas, that are considered essential to the northern **right whale**. The section in the proposed designation entitled ``Need for Special Management Consideration'' summarizes the justification for the designation of these three special areas.

NMFS has concluded, based on the best available scientific evidence and the biological and ecological needs of the species, that the areas in coastal and offshore waters that are being designated as critical habitat for northern **right** whales contain the appropriate environmental and biological characteristics required by the species to recover, and may warrant consideration of special management measures.

NMFS has also concluded that the designation of waters within the SEUS is warranted, given the geographic concentration of northern **right** whales during the winter/calving period, the extreme endangered status of this species, the importance of the area to the reproductive potential (recovery) of the species, the possible impacts of commercial activities on **right** whales that may require monitoring and the fact that this area may be in need of special management measures.

The potential for special management considerations does not necessarily mandate restriction or elimination of activities. Close monitoring of activities and additional research also constitute special management considerations. The existing information, discussed in the preamble to this final designation, supports this designation of critical habitat.

Comment 16: Another Federal agency commenter, citing the EA prepared by NMFS, stated that the direct impact of the designation affects Federal agencies and only duplicates that protection provided under the section 7 jeopardy provision. According to the commenter, the primary benefit cited for the proposed designation is increased awareness. The commenter believed that previous consultations with Federal agencies and meetings with the public have heightened awareness, and therefore, that more regulations are unnecessary. In summary, the commenter opposed the designation. However, the commenter wanted to facilitate more progressive conservation of the species and to cooperate in the development of interagency management plans to reduce impacts to the whales in high density areas. The commenter believed such measures will allow NMFS and other Federal agencies more flexibility in advancing recovery of the northern **right whale**.

Response: NMFS restates that, while designating critical habitat helps focus the attention of Federal agencies on the importance of a designated area for an endangered species, state and private agencies may also give special consideration toward conservation and management actions in these areas. A designation of critical habitat provides some incremental protection to northern **right** whales in those cases where the action may not result in a direct impact to individuals of a listed species (e.g., an action occurring within the critical area when a migratory species is not present, or when an activity is conducted outside the designated area), but may affect the critical habitat.

Finally, NMFS agrees with the commenter that a more progressive conservation program to protect this species is necessary, and that the development of interagency management plans to reduce impacts to the whales in high density areas is the best approach. Therefore, NMFS will

continue to work through the Southeast Implementation Team and through ongoing section 7 consultations to advance recovery efforts for northern **right** whales in these waters. NMFS appreciates the efforts that have already been made toward protecting these animals, and believes continued research and management discussions will result in a cost-effective, flexible program that will enhance the recovery of the northern **right whale**.

Comment 17: One commenter supported reasonable activities to protect the **right whale** at an acceptable cost and understood that the designation will not, in itself, impose additional regulations affecting activities within the habitat area. The commenter shared the concerns of other port operators that designation of critical habitat may lead to adoption of rules regulating the speed and routes of commercial vessels which may cause vessels to leave these ports at great economic cost to the port.

The commenter was concerned that all proposed special management measures that could impose increased costs should be adequately evaluated to assure that resulting benefits justify those costs, and that measures are implemented in the most cost-effective manner. The commenter suggested that effective alternative protection methods with significantly less cost may exist, although it did not provide specific recommendations.

This commenter has joined together with others to institute an education and information dissemination plan designed to protect the **right whale**. The commenter believed that this cooperative effort is the method most likely to be effective in protecting the **right whale** at reasonable cost in northern Florida and southern Georgia coastal waters.

Response: NMFS does not expect any additional restrictions on use of the areas as a result of this designation. Therefore, direct economic impacts associated with this designation are expected to be minimal.

NMFS agrees that there may be alternative protection methods. The possibility of such alternatives, however, does not eliminate the need to designate critical habitat. These should be brought to the attention of the Southeast Implementation Team, which can review and evaluate them.

Comment 18: One commenter was concerned about the potential effects of this designation on beach nourishment projects done in conjunction with the ACOE. Currently the commenter and the ACOE are studying the feasibility of beach nourishment at several eroding areas of the Atlantic shoreline. The commenter continued that the potential window for beach nourishment projects has already been limited by the presence of essential nesting habitat for endangered and threatened species of sea turtle. The nesting seasons runs from May 1 through October 1 of each year, limiting the timeframe for nourishment projects to the winter months.

Another Federal agency stated that any hopper dredge restrictions implemented to avoid the December through March time period of **right whale** calving and presence in the area would be burdensome. The commenter encouraged working out a timeframe that would allow use of a hopper dredge and take into account the winter **right whale** calving season and the summer period of high abundance for Kemp's ridley turtle (Lepidochelys kempii) and manatee (Trichechus manatus) in the Kings Bay area.

Response: NMFS realizes that the present dredging period was scheduled to accommodate the presence of several species of sea turtles

in these waters, and also recognizes the seasonal limits for beach nourishment projects. The present seasonal restriction on dredging is an essential management measure, given the increased densities of sea turtles in coastal waters during the warmer months.

The designation of critical habitat for **right** whales will not affect the scheduling of this activity. NMFS does not intend to alter the present schedule through this designation, but rather will continue to require the present level of monitoring of dredging activities during winter months to reduce impacts to northern **right** whales. Over the years, there have been several very near misses of **right** whales with dredges that were avoided due, at least in part, to observer coverage on the dredges.

Comment 19: Several organizations and individuals had comments regarding commercial fishing restrictions. One commenter recommended seasonal restrictions on set-gillnet fisheries and multiple trap American lobster, Homarus americanus, fisheries within known **right whale** habitat, and felt that fines and enforcement procedures for individuals violating this and other restrictions should be mandated.

Another commenter recommended that NMFS expand the rule to include conservation measures to reduce the likelihood of **right** whales being struck by boats or becoming entangled in fishing gear. Specifically, the commenter recommended that NMFS prohibit the use of unattended drift and sink gillnets in all three areas being designated as critical habitat during the seasons that **right** whales are likely to occur in the area.

Another commenter suggested that unattended use of gillnets should be prohibited from December 1 through March 31 (the time that northern **right** whales are in the area), but that commercial fishing need not be restricted on the winter grounds.

NMFS also received several comments from individuals and organizations recommending against designating critical habitat because they believed it would lead to further restrictions of fishing activities. One such commenter asserted that the desigation may eventually result in the halting of recreational fishing outside Sebastian Inlet, FL, and for that reason was opposed to designating critical habitat. Another commenter felt that the designation of critical habitat would increase regulation of commercial fishing and for that reason opposed the designation.

Another commenter stated that commercial fishermen throughout the SEUS support efforts to protect the northern **right whale** through participating in **whale** sighting programs, and by radioing positions of whales to other vessels to avoid collisions. Thus, the commenter felt declaring this area as critical habitat was not necessary to avoid collisions, and may unnecessarily affect fishermen as well as other commercial activities.

Response: As stated in the proposed critical habitat designation, the only direct impact of a critical habitat designation is through the provisions of section 7 of the ESA, which applies only to those actions authorized, funded or carried out by Federal agencies. This final critical habitat designation contains no land use or fishing regulations, and will not directly affect private activities. Even where there is Federal involvement, NMFS anticipates that this final critical habitat designation, by itself, will not restrict private activities in a manner or to an extent that these activities are not already affected as a result of the listing of this species as endangered. If, in the future, NMFS determines that restrictions on human activities are necessary to protect northern **right** whales or

their habitat, such action would be preceded by an opportunity for public review and comment.

Comment 20: One commenter stated that pollutant discharges in CCB may represent a continuous source of degradation to essential habitats. Sewage discharges, dredging activities, dredge spoil disposal and non-point sources all contribute contaminants into this relatively shallow and extraordinarily productive environment. The commenter further stated that the Massachusetts Water Resources Authority (MWRA) is in the process of combining, upgrading and relocating its outfalls approximately 15km out into Massachusetts Bay, or roughly 40km to the north of the critical habitat boundary. The commenter felt that research should be continued and broadened to address all aspects of the species' biology, behavior and habitat requirements, as well as the specific sources of pollution that threaten to diminish the quality of the habitat for northern **right** whales.

The commenter stated that in CCB there is a need to establish a water quality monitoring program that focuses on endangered species and incorporates sampling of critical parameters at the appropriate spatial and temporal scales.

Response: As previously stated, NMFS is coordinating the development of a **Right Whale** Recovery Plan Implementation Team that will address the possible impacts to **right** and humpback whales from activities in Massachusetts Bay that may affect CCB (see Comment 5).

Comment 21: One Federal agency outlined those protective measures that have been developed over the years through ESA section 7 consultations with NMFS and commended the efforts of NMFS, Southeast Regional Office, in initiating discussions with EPA, Region IV, to propose moving the Kings Bay ocean dredged material disposal site closer to the navigation channel. A closer disposal site would reduce the distance traveled by hopper dredges, thereby reducing the potential for collisions with **right** whales.

The commenter did not anticipate additional restrictions on these activities because of the critical habitat designation.

Response: NMFS will continue to work with all Federal agencies through the section 7 consultation process on all protected species issues to ensure the continued recovery and protection of endangered and threatened species.

Classification

It has been determined that this rule is not significant for purposes of E.O. 12866.

NOAA Administrative Order 216-6 states that critical habitat designations under the ESA generally are categorically excluded from the requirements to prepare on EA or Environmental Impact Statement. However, in order to more clearly evaluate the minimal environmental and economic impacts of critical habitat designation versus the alternative of a no-critical habitat designation, NMFS has prepared an EA. Copies of the EA are available on request (see ADDRESSES).

List of Subjects in 50 CFR Part 226

Endangered and threatened species.

Dated: May 27, 1994.

Charles Karnella,

Acting Program Management Officer, National Marine Fisheries Service.

For the reasons set forth in the preamble, 50 CFR part 226 is amended as follows:

PART 226--DESIGNATED CRITICAL HABITAT

1. The authority citation for part 226 continues to read as follows:

Authority: 16 U.S.C. 1533.

2. New Sec. 226.13 is added to subpart B to read as follows:

Sec. 226.13 North Atlantic Ocean.

Northern **Right Whale** (Eubalaena glacialis)

(a) Great South Channel. The area bounded by 41 deg.40' N/ 69 deg.45' W; 41 deg.00' N/69 deg.05' W; 41 deg.38' N/68 deg.13' W; and 42 deg.10' N/68 deg.31' W (Figure 6 to part 226).

(b) Cape Cod Bay, Massachusetts. The area bounded by 42 deg.04.8' N/70 deg.10' W; 42 deg.12' N/70 deg.15' W; 42 deg.12' N/70 deg.30' W; 41 deg.46.8' N/70 deg.30' W and on the south and east by the interior shore line of Cape Cod, Massachusetts (Figure 7 to part 226).

(c) Southeastern United States. The coastal waters between 31 deg.15' N and 30 deg.15' N from the coast out 15 nautical miles; and the coastal waters between 30 deg.15' N and 28 deg.00' N from the coast out 5 nautical miles (Figure 8 to part 226).

3. Figures 6 through 8 are added to part 226 to read as follows:

BILLING CODE 3510-22-P

<GRAPHIC><TIFF>TR03JN94.038

<GRAPHIC><TIF1>TR03JN94.039

<GRAPHIC><TIF2>TR03JN94.040

[FR Doc. 94-13500 Filed 6-2-94; 8:45 am]
BILLING CODE 3510-22-C

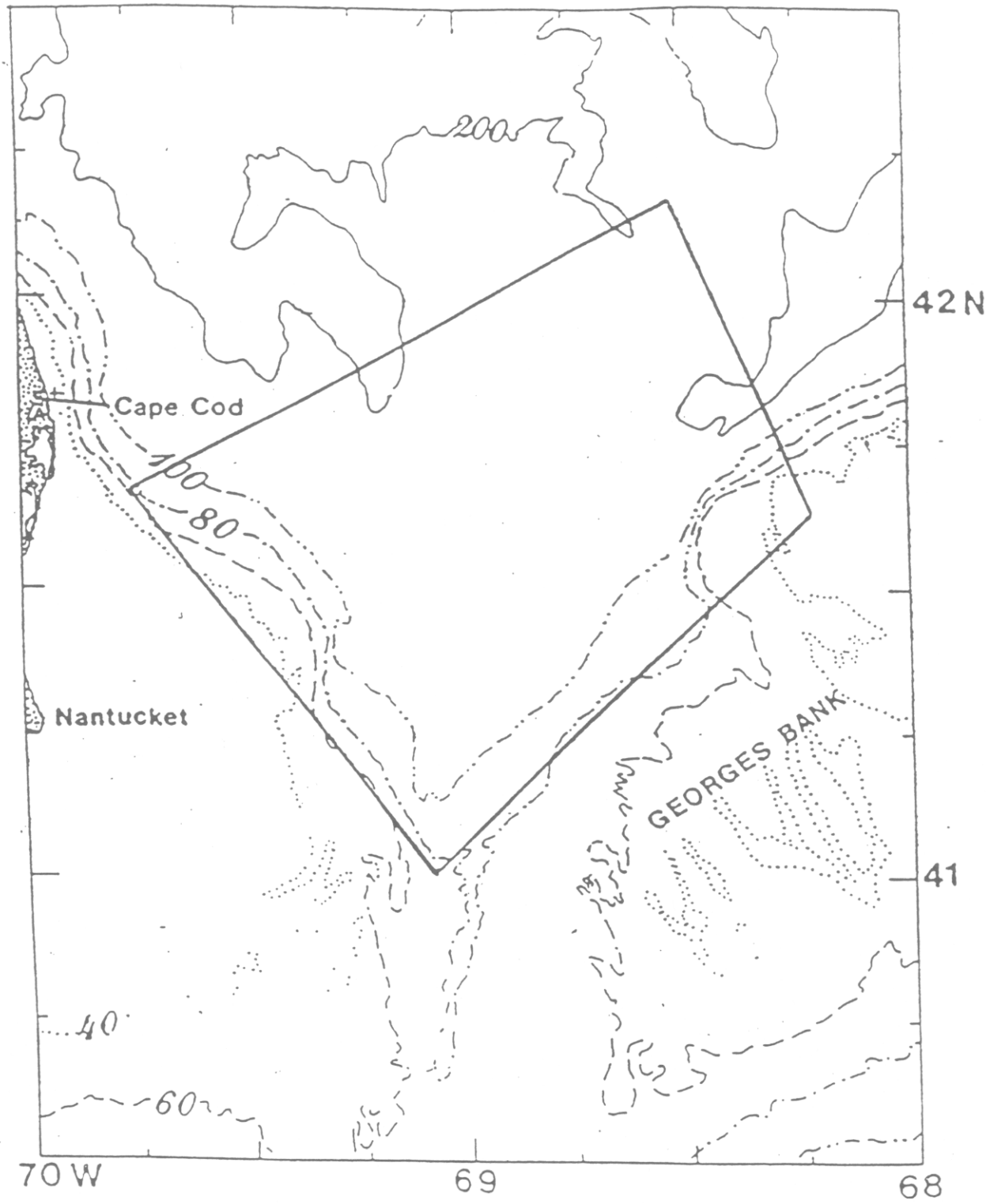

Figure 6. The area designated as critical habitat in the Great South Channel includes the area bounded by 41°40'N/69°45'W; 41°00'N/69°05'W; 41°38'N/68°13'W; and 42°10'N/68°31'W.

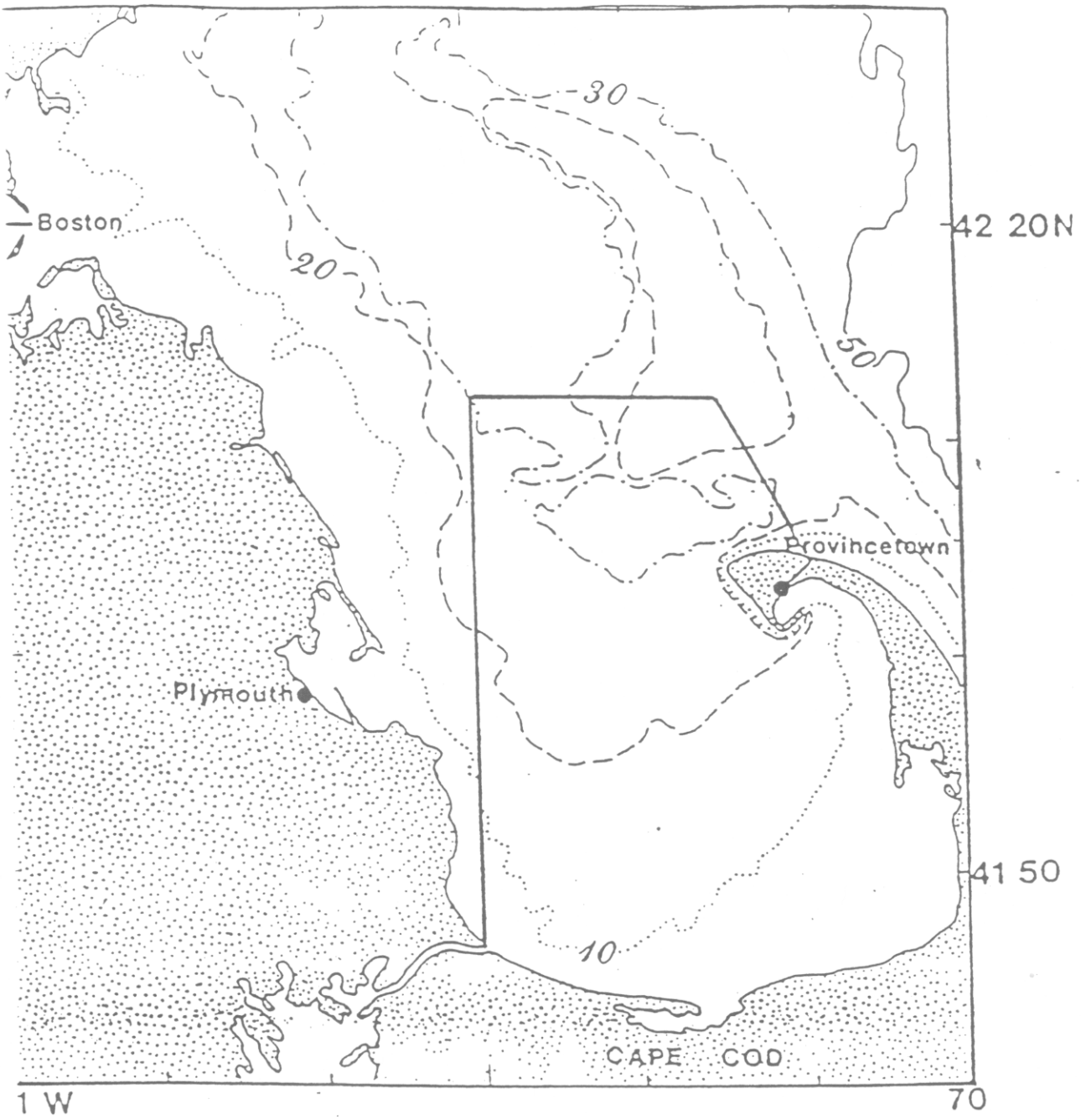

Figure 7. The area designated as critical habitat in Cape Cod Bay/Massachusetts Bay includes the area bounded by 42°04.8'N/70°10'W; 42°12'N/70°15'W; 42°12'N/70°30'W; 41°46.8'N/70°30'W; and on the south and east by the interior shore line of Cape Cod, MA.

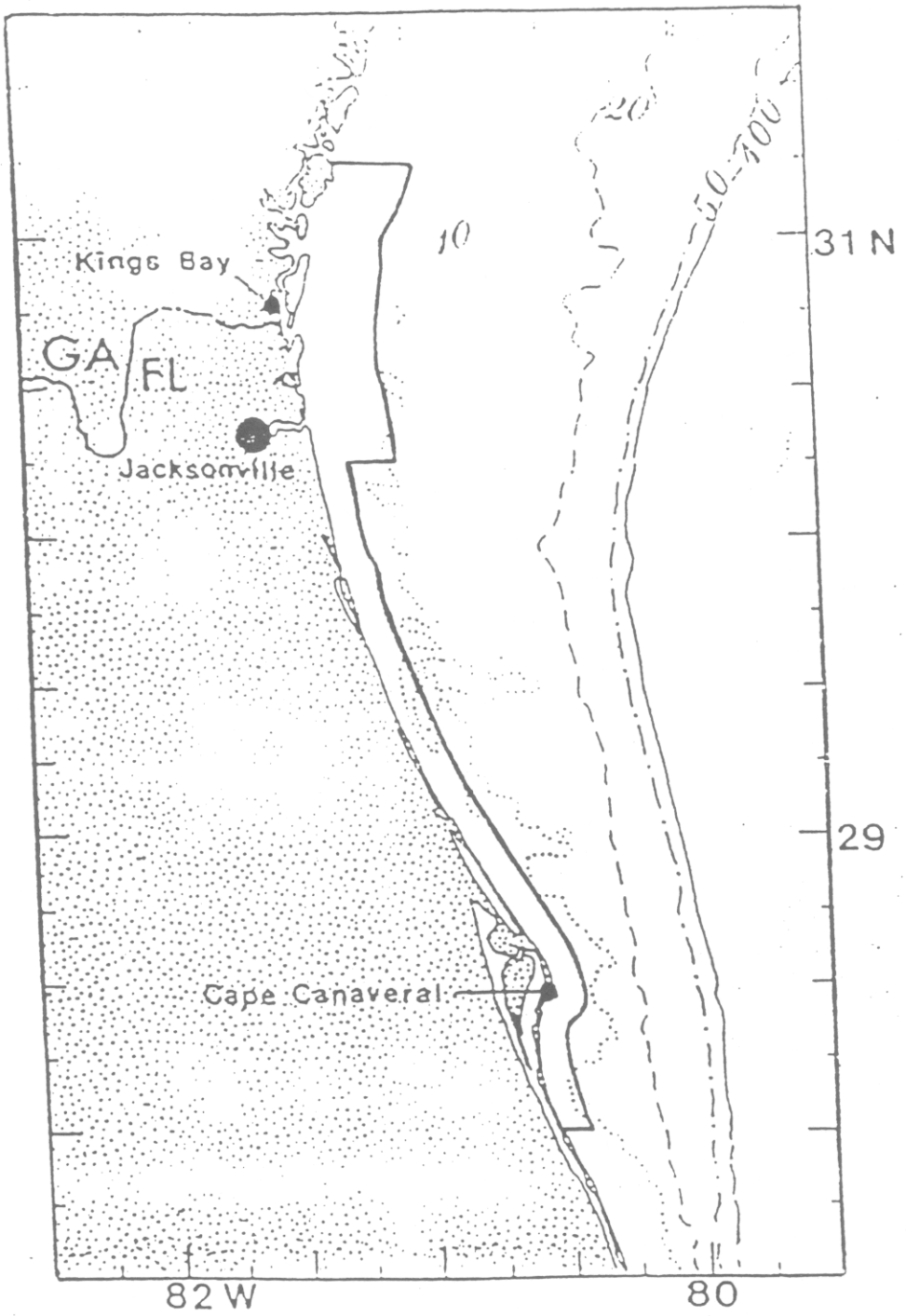

Figure 8. The area designated as critical habitat in the Southeastern United States includes waters between 31°15'N (approximately located at the mouth of the Altamaha River, GA) and 30°15'N (approximately Jacksonville, FL) from the shoreline out to 15 nautical miles offshore, and the waters between 30°15'N and 28°00'N (approximately Sebastian Inlet, FL) from the shoreline out to 5 nautical miles.

[FR Doc. 94-13500 Filed 6-2-94; 8:45 am]
BILLING CODE 3510-22-C

Fax Transmission

National Marine Fisheries Service • Southeast Regional Office • 9721 Executive Center Drive N., St. Petersburg, FL 33702

Protected Species Management Branch
Phone: 813-570-5312
Fax: 813-570-5517

To:	LCDR Brad Benggio	**Date:**	October 2, 1995
Fax #:	305-530-7932	**Pages:**	3, including this cover sheet.
From:	David Bernhart DB		
Subject:	EWS and Species List		

COMMENTS:
Species lists for the Atlantic and Gulf coasts of Florida are attached. These lists apply throughout EPA Region IV.

Regarding the Right Whale Early Warning System (EWS) contact number: The EWS observation team is selected and contracted each year. (In the past, the New England Aquarium has been the contractor.) Consequently, the observation team's number changes yearly. Each year, then, area response plans will have to be updated with the new contact phone numbers for the EWS. To obtain the EWS contact number, you should call Georgia Department of Natural Resources, Non-game Wildlife Program, at 1-800-272-8363. Please note that this is not a 24-hour number, and should be contacted at or prior to the beginning of the right whale calving season in December, rather than in the event of an actual response situation.

If you have any questions regarding the species list or contact procedures, please give me a call.

Biological Assessment of Effects on Listed Species of Region IV Regional Response Team Oil Spill Dispersant Use Policy

Description of Proposed Action

The proposed action is adoption of a Region IV Regional Response Team (RRT IV) policy for dispersant use in ocean and coastal waters in response to offshore oil spills. This RRT IV Dispersant Use Policy preauthorizes limited use of dispersants by the pre-designated United States Coast Guard(USCG) On-Scene Coordinator (OSC) on oil discharges impacting Federal waters and other specifically designated areas as outlined in individual Letters of Agreement (LOA) with states within Federal Region IV jurisdiction. In general, pre-authorization is granted three miles seaward of land providing waters are at least ten meters deep. Some special management areas are excluded from pre-authorization. The Dispersant Use Policy implements Subpart J of the National Oil and Hazardous Substances Contingency Plan (NCP) and is signed by the USCG, U.S. Environmental Protection Agency (USEPA), U.S. Department of Interior (USDOI), the U.S. Department of Commerce (USDOC), and the coastal states of RRT IV (North Carolina, South Carolina, Georgia, Florida, Alabama, and Mississippi).

The Dispersant Use Policy recognizes that, under certain circumstances, timely and complete physical containment, collection, and removal of oil discharges may not be possible. In such cases, the use of dispersants may reduce risk to the environment and human health. By breaking a cohesive surface slick into small droplets that disperse into the water column, dispersants can prevent an offshore oil slick from contaminating wildlife and critical habitat in nearshore and shoreline areas as well as minimize exposure of wildlife at the water surface.

Because effective use of dispersants has a limited and normally small window of opportunity, RRT IV strongly recommends that dispersant application begin as soon as possible following an oil spill. Accordingly, employment of dispersants usually requires that authorization for use be given prior to a spill incident. Within areas pre-authorized for dispersant use by the Policy, further consultation by the United States Coast Guard On-Scene Coordinator is not required, provided the appropriate RRT agencies are immediately notified and the applicable protocols are followed. The Dispersant Use Policy is not intended to exclude or replace the use of mechanical, in-situ burning, or other open-water cleanup methods but to enable and encourage the use of all appropriate techniques in the strategy to remove oil from the water surface and, thereby, minimize environmental impacts of a spill.

Prior to beginning a dispersant application, an on-site survey will be conducted to determine if any threatened or endangered species are present in the area or otherwise at risk from dispersant operations. Appropriate natural resource specialists familiar with local resource concerns and representing the resource trustee will be consulted prior to conducting dispersant operations to determine if any threatened or endangered species are at risk from dispersant operations. Measures will be taken to prevent risk of injury to any wildlife, especially listed species. Examples of potential protection measures include temporary employment of deterrent techniques and physical removal of individuals of listed species under the approval of the trustee agency. If the risk to listed species cannot be eliminated or reduced sufficiently, dispersants will not be applied unless they are necessary to prevent a serious threat to human safety.

If a decision to use dispersants is made, the Federal OSC will immediately notify the USEPA, USDOC, USDOI, and appropriate state(s) through RRT representatives. Dispersant application will be discontinued if so requested by an RRT representative. A post-incident briefing will be held within 45 days following a dispersant application to exchange information on its effectiveness and effects and to determine whether changes to the Dispersant Use Policy are necessary.

Description of Pre-authorization Area

Three zones have been established to delineate locations and conditions under which dispersant application operations may take place in waters of Federal Region IV as follows:

1) Green Zone: Pre-authorization for Dispersant Application

Green Zone is defined as any offshore water within Federal Region IV in which ALL of the following conditions apply:

a) the waters are not classified within a "Yellow" or "Red" zone;

b) the waters are at least three miles form any shoreline, and falling outside of any state's jurisdiction; and

c) the water is at least ten meters deep.

Within the Green zone, the USCG, USEPA, DOC, DOI, and affected state(s) agree that the decision to apply dispersants rests solely with the pre-designated USCG OSC, and that no further approval, concurrence, or consultation on the part of the USCG OSC with EPA, DOC, DOI or the state(s) is required.

All dispersant operations within the Green zone will be conducted in accordance with the Protocols outlined in the Dispersant Use Policy.

2) Yellow Zone: Waters Requiring Case-by-Case Approval

The Yellow zone is defined as any waters within Federal Region IV which have not been designated as a "Red" zone, and in which ANY of the following conditions apply:

a) the waters fall under State or Federal special management jurisdiction. This includes any waters designated as marine reserves, National Marine Sanctuaries, national or state wildlife refuges, units of the National Park Service, or proposed or designated critical habitats;

b) the waters are within three miles of a shoreline, and/or fall under state jurisdiction;

c) the waters are less than ten meters deep;

d) the waters are in mangrove or coastal wetland ecosystems, or directly over coral reefs which are in less than 10 meters of water. Coastal wetlands include submerged algal and seagrass beds.

Where a Letter of Agreement is in effect between the USCG, EPA, DOI, DOC, and the affected state(s), the policy for pre-authorization established under the provisions of said LOA shall preempt the Policy herein established for areas otherwise designated as falling within the Yellow zone. When an LOA is not in effect for an area falling within the Yellow zone, the USCG will request authorization for dispersant use according to the following procedures:

If the USCG OSC believes dispersants should be applied within the Yellow zone, a request for authorization must be submitted to the RRT IV representatives of the EPA, DOI, DOC, and the affected state(s) according to the procedures in Appendix I of the Dispersant Use Policy for requesting approval in areas not pre-authorized. The OSC is granted authority to conduct dispersant operation in the Yellow zone only when concurrence has been given by EPA and the affected state(s), and consultation with DOC and DOI has been completed.

As with all dispersant use under the LOA, application of dispersants within the Yellow zone, if approval is granted, will be conducted in accordance with the appropriate and relevant Protocols outlined in the Dispersant Use Policy. Additionally, the USCG OSC will make every reasonable effort to continuously evaluate the application of dispersants within the Yellow zone, and will allow RRT IV agencies and the affected State(s) the opportunity to comment.

3) Red Zone: Exclusion zones:

The Red zone includes areas designated by the Region IV Response Team in which dispersant use is prohibited. No dispersant application operations will be conducted at any time in the Red zone unless:

a) dispersant application is necessary to prevent or mitigate a risk to human health and safety, and/or

b) an emergency modification of this LOA is made on an incident-specific basis.

The Region IV Response Team has not designated any areas as Red zones but retains the right to include areas in the future if deemed appropriate. States may, through the establishment of Letters of Agreement, designate Red zones in areas falling under state jurisdiction.

Description of Oil Dispersants

Chemical dispersants are products applied to oil on the water surface to enhance formation of fine oil droplets, which enter the water column and are dispersed by currents. Some physical dispersion occurs naturally following oil spills due to agitation created by wave action and ocean turbulence. Chemical dispersants enhance and speed-up this natural process, accomplishing in minutes to hours what otherwise requires days to weeks. The advantages of rapid dispersion early in a spill include minimizing direct contact of wildlife with a surface slick and reducing the amount of oil impacting sensitive nearshore and shoreline areas. Whereas untreated oil floating on the water surface can be beached by wind, dispersed oil droplets are unlikely to strand ashore because they are not subject to wind action. Movement of dispersed oil droplets is determined by currents that do not penetrate the beach face.

Dispersants, which are typically applied from vessel or aircraft mounted spray systems, offer several operational advantages. Dispersant application enables treatment of large areas of spilled oil much more quickly than can be accomplished with mechanical methods and prior to significant expansion of the slick with time. Dispersants can be applied in rough weather and sea conditions under which use of booms, skimmers, and other mechanical equipment may be impractical. To be effective, however, dispersants generally must be applied within the first few hours following an oil spill. This is a result of the fact that when oil is released to the marine environment it is immediately subject to a wide variety of weathering processes. Weathering quickly increases the viscosity of the oil, making dispersion by the addition of chemical dispersants difficult if not impossible over time. Depending on the type of oil spilled and the environmental conditions, the window of opportunity for successful use of dispersants can be as short as hours.

The key components of chemical dispersants are one or more surface-active agents, or surfactants. Surfactants contain molecules with both water-compatible (hydrophilic) and oil-compatible (lipophilic or hydrophobic) groups. The surfactant molecules reduce the oil/water interfacial surface tension, enabling the oil layer to be broken into fine droplets with minimal mixing energy, thereby enhancing natural dispersion. Surfactants also tend to prevent coalescence of oil droplets and reduce adherence to solid particles and surfaces, such as sediments and feathers. In addition to surfactants, most dispersant formulations also contain a solvent carrier to reduce viscosity of the surfactant so that the dispersant can be sprayed uniformly. The solvent may also enhance mixing and penetration of the surfactant into more viscous oils. Though early dispersants contained agents highly toxic to marine life, manufacturers have refined formulations of more recent generations of dispersants to dramatically reduce toxicity. Modern dispersants contain solvents composed of nonaromatic hydrocarbons or water-miscible concentrates (alcohols or glycols) as well as less toxic surfactants. The exact dispersant-to-oil application ratio, usually planned at 1:10, is determined by the nature of the oil and sea conditions.

By dispersing oil into the water column, the spreading or dilution becomes three-dimensional. The subsurface oil concentration initially increases, but diminishes rapidly with distance and time due to physical transport processes. This is in contrast to untreated oil concentrated at the water surface, which can coalesce in surface convergence zones even after it has spread out to very low concentrations. The highest concentration of chemically dispersed oil typically occurs in the top meter of water during the first hour following treatment (Rycroft et. al., 1994). Available data suggest that concentrations of more than ten parts per million (ppm) of dispersed oil are unlikely beyond ten meters (depth) of the slick and that, even within one meter depth of the slick, concentrations rarely exceed 100 ppm. The continuous mixing and dilution capabilities of open water lead to uniformity and are sufficient to rapidly reduce these concentrations. Field studies show that water column concentrations decline to undetectable or background levels within several hours following application of a dispersant (SEA, 1995). Under untreated slicks, oil concentrations typically range from a few parts per million to less than 0.1 ppm, diminishing with depth and time.

The dispersed oil droplets, ranging in size from microns to a few millimeters, break down by natural processes, such as biodegradation. Microbial biodegradation of oil appears to be enhanced by dispersal because of the larger surface area available as compared to a surface slick. Dispersants also prevent formation of tarballs and oil-in-water emulsions (mousse), which tend to be resistant to biodegradation due to their low surface area. The chemical dispersants applied, like the oil droplets, are diluted by diffusion and convective mixing. Much of the solvent fraction evaporates immediately after the dispersant is applied. The surfactants are readily biodegraded.

Description of Listed Species Present

Sea Turtles

Six listed sea turtle species occur in the area under consideration. Kemp's (Atlantic) ridley, leatherback, and hawksbill sea turtles are endangered. Kemp's ridley (*Lepidochelys kempii*), the most endangered of these species, occurs mainly in coastal areas of the Gulf of Mexico and the northwestern Atlantic Ocean. Adults are most frequently sighted off southwestern Florida. This species is a shallow-water benthic feeder, preying largely on crabs (USFWS and NMFS, 1992). Young Kemp's ridleys use sargassum mats and seagrass beds for refuge and foraging (Ernst *et al.*, 1994). Leatherback turtles (*Dermochelys coriacea*) occur throughout the area and have been reported to nest on beaches in Florida and, to a lesser extent, Georgia and North Carolina. Leatherback nesting in the U.S. Caribbean is reported in the Virgin Islands (St. Croix, St. Thomas, St. John) and Puerto Rico, including Islas Culebra, Vieques, and Mona (Boulon *et al.*, 1992). Leatherbacks are considered to be a highly pelagic species but occasionally enter the shallow coastal waters of bays and estuaries. They may concentrate near and follow drifting schools of jellyfish, their primary prey (NMFS, 1992). Hawksbill sea turtles (*Eretmochelys imbricata*) are predominantly tropical. Adult hawksbills characteristically inhabit shallow rocky areas and coral reefs but also occur in mangrove-bordered bays, estuaries, and lagoons and occasionally in deep waters. Juveniles occupy the deeper water pelagic environment, often associated with floating patches of sargassum mats. Hawksbill turtles are omnivorous opportunists and seem to prefer invertebrates, particularly sponges (Ernst *et al.*, 1994).

Green, loggerhead, and olive (Pacific) ridley sea turtles are listed as threatened. Atlantic green sea turtles *(Chelonia mydas*) occur in U.S. Atlantic waters around the U.S. Virgin Islands, Puerto Rico, and along the continental U.S. from Texas to Massachusetts. They are endangered in Florida and threatened elsewhere. They nest along the east coast of Florida and in smaller numbers in the U.S. Virgin Islands, Puerto Rico and along the Florida panhandle. Important nesting areas in Florida include Brevard, Indian River, St. Lucie, Martin, Palm Beach, and Broward Counties. Their preferred habitat appears to be lagoons and shoals with an abundance of marine grasses. Adult green sea turtles are primarily herbivorous, foraging on algae and seagrasses; juveniles may eat a variety of invertebrates as well. Areas that are known as important feeding areas for green turtles in Florida include Indian River Lagoon, Florida Keys, Florida Bay, Homosassa, Crystal River and Cedar Key (NMFS, 1991a). Loggerhead turtles (*Caretta caretta*) occur throughout the area under consideration. In the western Atlantic the great bulk of loggerhead nesting occurs along the southeastern coast of the U.S., with approximately 80 percent occurring in Brevard, Indian River, St. Lucie, Martin, Palm Beach and Broward Counties in Florida (NMFS, 1991b). Loggerhead turtles also nest on beaches in North Carolina, South Carolina, Georgia, along the Gulf Coast of Florida, Alabama, and Mississippi. Loggerheads wander widely throughout the marine waters of their range. They commonly inhabit the continental shelves and estuarine environments, occurring most frequently in waters less than 50 meters deep. Hatchlings and juveniles are often found along current fronts, downswells, or eddies associated with drifting mats of sargassum (Ernst *et al*., 1994). Loggerheads are omnivorous and feed on a wide variety of benthic invertebrates including crustaceans, mollusks, and sponges (NMFS, 1991b). The olive ridley (*Lepidochelys olivacea*) occurs and nests predominantly in tropical waters, including the Caribbean as far north as Puerto Rico. They usually nest in aggregations called arribadas. Olive ridleys generally inhabit protected, relatively shallow nearshore areas, typically within fifteen kilometers of mainland shores, but occasionally occurs in the open sea. They are predominantly carnivorous, preying on pelagic crabs, jellyfish, and tunicates (Ernst *et al.*, 1994).

West Indian Manatee

Two endangered subspecies of the West Indian manatee, a sirenian, occur in the area: the Florida manatee (*Trichechus manatus latirostris*) and Antillean manatee (*Trichechus manatus manatus*). Manatees most frequently

dwell in protected, low-salinity waters where vegetation is abundant. They are commonly found in the waters of large, slow-moving rivers and river mouths and in shallow, low energy coastal areas such as estuaries or bays. Manatees prefer shallower estuarine and freshwater habitats, rarely venturing into offshore, open oceanic waters except to move from one favorable feeding area to another. Such movements are generally confined to inshore waters less than five meters deep (St. Aubin and Lounsbury, 1990). Seasonal movements result from the manatee's intolerance to cold. Populations tend to shift south in winter and make shorter movements to and from natural and artificial warm-water refuges such as artesian springs and power-plant discharges during cold fronts. During the summer, movements are less predictable and the population is more dispersed along the coast as manatees explore alternative feeding areas.

Like other sirenians, manatees are aquatic herbivores and feed on a wide variety of submerged, emergent, floating, and shoreline vegetation. In saltwater, they feed primarily on several species of seagrass, including turtle grass (*Thalassia testudinum*), manatee grass (*Syringodium filiforme*), and shoal grass (*Haladule wrightii*). Manatees also may eat some species of algae, mangrove leaves, and red mangrove seedlings. They have been known to haul themselves partially out of the water to consume bank vegetation. In freshwater, manatees feed on a variety of plants, including *Hydrilla verticillata*, algae, and water hyacinth (*Eichhornia crassipes*). Movements and aggregations of manatees, which spend several hours each day feeding, can be correlated with the distribution of seagrasses and vascular freshwater aquatic vegetation (Reynolds and Odell, 1991).

The Florida manatee occurs along the Atlantic and Gulf Coasts of Florida, inhabiting bays, estuaries, rivers, and coastal areas where seagrasses and other vegetation are abundant. The primary range along the Atlantic Coast of Florida extends from the St. Johns River in northeastern Florida southward to the Miami area. Few manatees occur in the Florida Keys or in Florida Bay. Along the Gulf Coast of Florida, manatees are abundant in the waters of the Everglades National Park and their range extends northward to the Suwannee River in summer and sporadically westward. During warm summer months, manatees have been known to travel as far north as Chesapeake Bay and as far west as Mississippi and Louisiana. Especially during cold weather, manatees tend to congregate near natural warm springs at Crystal River on the Gulf Coast and Blue Spring State Park on the St. Johns River on the Atlantic Coast of Florida. They also are drawn to warm water discharged from power plants including those at Cape Canaveral, Fort Lauderdale, Port Everglades, Riviera, Fort Myers, and Tampa Bay. Manatees also congregate near freshwater sources such as river mouths. The Indian River Lagoon is an important feeding area. Though manatees rarely venture into deeper, ocean waters, they have been reported in locations as far offshore Florida as the Dry Tortugas Islands. At an estimated population of around 1000 in Florida waters, the Florida manatee is at very serious risk of extinction (USFWS, 1989).

The Antillean manatee occurs in Puerto Rico and very rarely in the Virgin Islands. Manatees routinely cross between the islands of Puerto Rico in the area under consideration. As in other areas in the Caribbean basin, the distribution of Antillean manatees in Puerto Rico is not uniform and is most likely related to the distribution of freshwater resources, seagrass beds, and sheltered areas. In some areas, seasonal shifts in local abundance appear to correlate with the rainy season in that manatees tend to move downstream when water levels drop in the dry season. Surveys indicate most manatees are seen along the eastern and southcentral coasts of Puerto Rico and tend to congregate near the Roosevelt Roads Naval Station on the eastern end of the island (Rathbun and Possardt, 1986).

Brown Pelican

Two listed subspecies of brown pelican, the eastern brown pelican (*Pelecanus occidentalis carolinensis*) and the Caribbean brown pelican (*Pelecanus occidentalis occidentalis*) occur in the proposed area. The brown pelican is listed as endangered in Mississippi, Puerto Rico, and the Virgin Islands. Coastal diving birds, brown pelicans feed almost entirely on fish captured by plunge diving in coastal waters. They feed in both inshore and nearshore waters, though preferred feeding areas occur around root systems of fringe and overwash mangroves, waters protected by coral reef barriers, bays, estuaries, and lagoons. Habitat that brown pelicans use for roosting and loafing includes fringe mangroves, rocky shores surrounding offshore cays, sandy beaches, and littoral woodlands. They also rest on the water surface. Brown pelicans nest colonially, predominantly on small coastal islands. Nests are built in bushes or low trees, and occasionally on the ground. Brown pelicans rarely occur away from saltwater and usually do not venture more than 20 miles out to sea except to take advantage of especially good fishing conditions (Collazo and Klaas, 1986, Fritts *et al*., 1983).

Significant U.S. breeding populations of the eastern brown pelican occur primarily in Florida and South Carolina. Eastern brown pelicans usually nest in early spring and summer and many spend the winter close to their nesting areas (USFWS, 1980). No nesting of brown pelicans has been documented in Mississippi, though large numbers of birds are known to occur there. They occur most commonly nearshore (Zone B area) but also frequent areas farther from shore (Zone A) in large numbers during the summer when food is plentiful, such as around fishing vessels (Goldman, 1995).

The range of the Caribbean brown pelican includes the Puerto Rico-U.S. Virgin Islands area. In this region, breeding colonies of the Caribbean brown pelican occur at several well-established sites along the coasts of the islands and are highly variable in onset and duration of nesting season. Colonies on the southwestern and western coasts of Puerto Rico (Guanica, Montvala, and Anasco Bays) are usually active on a well-defined seasonal basis. Breeding activities begin between May and August and last through February. Other colonies (Congo Cay, Cayo Conejo, Whistling Key, Dutch Cap Cay, Buck Island, and Green Cay National Wildlife Refuge) are active during most or all of the year. Nesting peaks September through November. Important feeding areas in Puerto Rico include San Juan Bay, Dorado Lagoon and Humacoa Lagoon. In the Virgin Islands, specific feeding areas are selected opportunistically, near fish schools (Collazo and Klaas, 1986).

Roseate Tern

The roseate tern (*Sterna dougallii dougallii*) is an endangered coastal diving bird that breeds in two discrete areas in the Western Hemisphere. One population breeds on islands along the northeastern coast of the United States; the other breeds on islands around the Caribbean Sea from the Florida Keys to the Lesser Antilles (USFWS, 1989a). Roseate terns are exclusively marine breeding usually on small islands, but occasionally on sand dunes at the end of barrier beaches. Their nests are usually built under or adjacent to clumps of beach vegetation, rocks, driftwood, or other objects that provide cover and shelter. In the Caribbean, roseate terns nest between May and July. Chicks spend most of their time in tunnels under vegetation or rocks until they fledge (USFWS, 1989a).

The roseate tern is a specialist feeder on small schooling marine fish it catches by plunging vertically into the water and seizing in its bill. They usually feed over open water, often in tidal channels, tide rips, or over sandbanks where currents bring fish into relatively shallow water. Roseate terns return to shore to rest and roost after feeding offshore, rarely resting on the water.

Piping Plover

The piping plover (*Charadrius melodus*) is a shorebird that breeds only in North America in three geographic regions. The Atlantic population, listed as threatened, breeds along the Atlantic Coast from Newfoundland south to South Carolina. This population winters from North Carolina to Key West, Florida and has been reported to occur in the Caribbean Islands. Major Atlantic Coast wintering areas include the southern North Carolina coast, particularly near Morehead City, the southern coast of Georgia, and the Lower Florida Keys. In the Florida Keys the stretch from 7-mile Bridge to Bahia Honda seems to be particularly favored (USFWS, 1988) Other populations of piping plovers, apparently winter in greater abundance along the Gulf Coast than the Atlantic Coast (Nicholls, 1989). In a 1987 to 1989 survey conducted from Virginia to Louisiana, 87 percent of piping plovers observed were along the Gulf Coast from Florida to Texas. This represented an estimated 35 percent of the total breeding population and 56 percent of the Great Lakes/Great Plains population (Nicholls, 1989).

Piping plovers along the coast nest on sandy beaches above the high-tide line, sand flats at the ends of sandspits and barrier islands, gently sloping foredunes, blowout areas behind primary dunes, and washover cut into or between dunes. Nest sites are relatively flat and occur most commonly at sites with little or no vegetation, but may be found in moderately dense stands of beachgrass (*Ammophila breviligulata*). Piping plovers feed on the intertidal ocean beach, washover areas along the shorelines of isolated dune ponds, tidal flats on the lagoon side of barrier beaches, and tidal mudflats in saltmarshes. They usually feed during low or falling tides on marine worms, fly larvae, beetles, crustaceans, molluscs, and other invertebrates, sometimes obtained from intertidal wrack debris or beachgrass (USFWS, 1988).

Eskimo Curlew

The Eskimo curlew (*Numenius borealis*) is an almost extinct shorebird. It nests on the Arctic tundra and winters in South America. Eskimo curlews may occur in the area during migration in spring and fall. Its diet includes insects, crustaceans, mollusks, and worms.

Wood Stork

The wood stork (*Mycteria americana*) is an endangered wading bird that occurs along the southern Atlantic and Gulf Coasts from South Carolina in coastal shallows including cypress swamps (nesting colonies), marshes, ponds, and lagoons. Currently, U.S. breeding populations are restricted primarily to Florida, with a few rookeries also occurring in Georgia and South Carolina. The species is highly gregarious in both its nesting and feeding behavior. Wood storks usually nest in mangrove or cypress swamps, constructing their nests in the trees. Wood stork's grope feed in freshwater or brackish wetlands on small fish, crustaceans, frogs, lizards, and rodents. They will travel greater than 100 kilometers to feeding areas (USFWS, 1986).

Bald Eagle

The bald eagle (*Haliaeetus leucocephalus*) occurs and is endangered in all of the Region IV states. A raptor, the bald eagle uses a large area for hunting its prey and is sensitive to chemical contaminants in the food chain. In the Southeast, fish comprise the bulk of the bald eagle's diet, though they are opportunistic feeders and supplement this with a variety of other vertebrate species, including waterfowl, sea birds, and carrion.

Bald eagles typically nest at the edge of forested areas located near open water. In the Southeast, nests are most often built high up in pine and cypress trees with a clear view of open water, though in some areas eagles nest in low mangroves. The nesting period in the Southeast usually runs from October 1 to May 15. Eagles are most vulnerable to disturbance early in the nesting period (approximately the first 12 weeks), when it may lead to nest abandonment, decreased hatching success, or decreased survival of unfledged young. Due to the relatively low reproductive rate of bald eagles, this can result in significant population impacts (USFWS, 1989b).

Peregrine Falcon

Both the endangered American peregrine falcon (*Falco peregrinus anatum*) and the recently delisted (as of October 5, 1994) Arctic peregrine falcon (*Falco peregrinus tundrius)* can occur in the area under consideration. Though no longer considered biologically threatened, the Arctic peregrine falcon remains classified as "endangered due to similarity of appearance" to protect the nearly identical endangered American peregrine falcon. In the eastern part of its range, the peregrine falcon typically uses closed or semi-enclosed deciduous habitat, usually overlooking aquatic areas. Peregrines prefer cliff ledges for nesting and for night roosting of young after they have fledged. Cut banks, hollows in trees, and building ledges are also used occasionally. They breed and nest in the spring.

The peregrine falcon is a raptor, preying chiefly on birds. In inland areas, peregrines prey primarily on medium size passerine bird species such as bluejays, flickers, meadowlarks, and pigeons. On the seacoast and islands, during migration, and at wintering grounds peregrines feed almost exclusively on smaller shorebirds and waterfowl. Peregrine falcons prefer to capture their prey in flight, diving from above at great speed (USFWS, 1980a).

Cape Sable Seaside Sparrow

The Cape Sable seaside sparrow (*Ammodramus maritimus mirabilis*) is an endangered passerine species that inhabits coastal prairies near Cape Sable, Florida. The species inhabits freshwater marshes dominated by muhly grass (Muhlenbergia sp.) and forages on the ground for insects.

Black-Capped Petrel

The black-capped petrel (*Pterodroma hasitata*), currently a candidate (C2) under consideration for Federal listing, is a surface-feeding pelagic seabird that occurs seasonally, from spring to late fall, in the offshore waters of North Carolina (Lee and Socci, 1989). They spend most of their time on the open ocean except when they come ashore to breed on Caribbean Islands.

Shortnose and Gulf Sturgeon

Two listed species of anadromous fish, the shortnose sturgeon and gulf sturgeon may occur in the area under consideration. The endangered shortnose sturgeon (*Acipenser brevirostrum*) occurs in several large coastal river systems along the Atlantic Coast. They are known to inhabit their natal rivers, estuaries, and the nearshore marine environment. Most migratory activities occur during winter and spring and, though shortnose sturgeon can travel considerable distances, their movements are apparently confined to estuarine and riverine environments (Gilbert, 1989). Shortnose sturgeon are benthic feeders, usually feeding in shallow muddy backwater areas with abundant vegetation and along river banks by rooting along the bottom with their snouts, indiscriminately "vacuuming" large quantities of mud and debris along with their prey. Juveniles feed mainly on benthic crustaceans and insect larvae; adults feed largely on mollusks supplemented by polychaetes and small benthic fishes in estuarine areas (Gilbert, 1989). Because shortnose sturgeon typically forage within the middle and upper reaches of the estuaries and rivers they inhabit, they are unlikely to occur in the area under consideration.

The threatened gulf sturgeon (*Acipenser oxyrhynchus desotoi*) occurs predominantly in the northeastern Gulf of Mexico, where it ranges from the Mississippi Delta east to the Suwannee River in Florida and formerly to Tampa Bay. The species is greatly depleted throughout most of its range and now is relatively common only in a few areas. The gulf sturgeon spawns in freshwater riverine habitats from April to June and young descend to sea at about 2 to 3 years of age for winter migrations. It is unknown whether they aggregate during their migrations. Data shows, however, that adults tend to enter and leave the freshwater system within very narrow time periods. Marine habitats for the gulf sturgeon are poorly known. Limited analyses of stomach content indicate that sand bottom, hard bottom, and seagrass beds are probably important habitats (Barkuloo, 1988). In the Big Bend area of the northeastern Gulf of Mexico, these habitats occur in 70 feet of water as far offshore as 20 miles. Like the shortnose sturgeon, the gulf sturgeon is a benthic omnivore and feeds on insects, crustaceans, molluscs, annelids, and occasionally small fish (Lee, *et al*. 1980).

Crocodilians

Two listed crocodilian species occur in the area. The threatened American alligator (*Alligator mississippiensis*) occurs in lakes, swamps, marshes, and rivers in the Southeastern United States. Like all alligator species, it is confined to freshwater habitats. The endangered American crocodile (*Crocodylus acutus*) occurs in nearshore marine habitats, primarily in coastal estuaries and swamps and the tidal portions of rivers. Both species are aquatic predators that hunt a wide variety of prey including small fish, invertebrates, birds, and mammals. Alligators and a few species of crocodiles build mound-nests of vegetation and soil. Most crocodiles dig their nests in friable soils (Zug, 1993).

St. Croix Ground Lizard

The endangered St. Croix ground lizard (*Ameiva polops*) occurs in the Caribbean on Green, Protestant, and Ruth Cays. This species is predominantly terrestrial, using beach and upland forest habitats most heavily (Zug, 1993). Largely insectivorous, along the beach the St. Croix ground lizard is reported to forage among the tidal wrack, preying on amphipods and hermit crabs (USFWS, 1984).

Atlantic Salt Marsh Snake

The Atlantic salt marsh snake (*Nerodia clarkii taeniata*) is listed as threatened. It is restricted to the salt marshes of Volusia, Brevard, and possibly Indian River Counties on the Atlantic coast of Florida (USFWS, 1993). This species is restricted to brackish, tidal marshes and is most often found in association with saltwort (*Salicornia* spp.) flats and salt grass (*Distichlis spicata*)-bordered tidal creeks. The Atlantic salt marsh snake feeds primarily on small fish, but readily takes frogs when available.

Red Wolf

The endangered red wolf (*Canis rufus*) typically is found in brushy and forested areas and near river bottoms. They feed primarily on small mammals and birds, although, along the Gulf coast red wolves also feed on crabs.

Beach Mice

Five listed subspecies of beach mice occur in the area under consideration along the southern Atlantic and northwest Gulf Coasts: the Choctawhatchee beach mouse (*Peromyscus polionotus allophrys*), Perdido Key beach mouse (*Peromyscus polionotus trissyllepsis*), Alabama beach mouse (*Peromyscus polionotus ammobates*), Southeastern beach mouse (*Peromyscus polionotus niveientris*), and Anastasia beach mouse (*Peromyscus polionotus phasma).* The St. Andrew beach mouse (*Peromyscus polionotus peninsularis*) is a candidate species for listing. Southeastern and Anastasia beach mice occur along the Atlantic Coast of Florida. Alabama, Perdido Key, Choctawhatchee, and St. Andrew beach mice occur on the Gulf coast dunes of Alabama and Florida (USFWS, 1987).

Beach mouse habitat is restricted to the primary and secondary sand dunes and scrub dunes along the ocean front. Beach mice dig burrows mainly on the lee side of the primary dunes and in other secondary and interior dunes where the vegetation provides suitable cover. It is thought that beach mice feed primarily on the seeds of beach grasses, *Panicum amarum* and *Panicum repens,* and on sea oats, *Uniola paniculata*; however, recent food habits studies indicate that insects are also an important component of their diet (Holler 1990, 1991a, 1991b; USFWS, 1987, 1989c; Moyers, 1995).

Key Deer

The Key deer (*Odocoileus virginianus clavium*),occurs primarily in the Florida Keys from Big Pine to Sugarloaf. Big Pine Key and No Name Key support the largest populations. Only islands with permanent fresh water are used consistently by the deer. The main food source of Key deer is Red Mangrove (*Rhizophora mangle*) but they also browse on other plant species (Lazell, 1989).

Other Terrestrial Mammals

Endangered terrestrial mammals endemic to the Florida Keys include the Key deer, silver rice rat, Lower Keys rabbit, and the Key Largo cotton mouse. The lower keys rabbit (*Sylvilagus palustris hefneri*) and silver rice rat (*Oryzomys palustris natator)* also occur in the Lower Keys. The Key Largo cotton mouse (*Peromyscus gossypinus allapaticola*) occurs predominantly in the hardwood hammocks of North Key Largo. Also occurring in Florida is the Florida salt marsh vole (*Microtus pennsyvanicus dukecampelli*). These species all may feed in transition zone areas that lie seaward of high land.

Seabeach Amaranth

The seabeach amaranth (*Amaranthus pumilus*) is a threatened annual herbaceous plant in the family Amaranthaceae that grows on beaches and low active dunes along the Atlantic Coast of the United States. Though historically it occurred from Massachusetts to South Carolina, it is currently found only in New York, North Carolina and South Carolina. Essential habitat for the amaranth are sand flats above the reach of high tide but frequently disturbed by natural forces to allow only sparse vegetative cover. Its primary habitat consists of overwash flats at the accreting ends of barrier islands and lower foredunes and upper strands of non-eroding beaches. Seed production, which begins in July or August and peaks in September, yields relatively few, large seeds that are wind and water dispersed (USFWS, 1995). Seabeach amaranth moves around in the landscape as a fugitive species and occupies suitable habitat as it becomes available. Consequently, this species can experience significant spatial distribution shifts from season to season and year to year. Seabeach amaranth is extremely susceptible to habitat fragmentation and the isolation of small populations can often lead to local extirpation. The current reduction of seabeach amaranth to a portion of its former range makes it more vulnerable to population level impacts from catastrophic disturbances such as hurricanes and oil spills.

Effects of Oil Spills on Listed Species

General Effects

General physiologic effects of oil on listed species can include altered blood chemistry, immunological dysfunction, altered osmoregulation, pulmonary and neurological damage, reproductive impairment, liver and kidney damage, and dermal lesions. Functions such as thermoregulation and locomotion, including buoyancy, may also be affected. Additional effects due to increased stress may manifest themselves as anemia (wasting syndrome) and increased susceptibility to predation.

Sea Turtles

Sea turtles can be exposed to spilled oil when feeding, surfacing to breath, or nesting in areas contaminated by stranded oil. Turtles are also susceptible to floating tarballs formed from weathered oil. There is no firm evidence that sea turtles are able to detect and avoid oil (Odell and MacMurray, 1986). Studies indicate oil exposure can have several adverse effects on turtles, including toxic responses to vapor inhalation or ingestion, skin irritation, interference with osmoregulation and ion balance, and reduced hatching success (Van Fleet and Pauly, 1987; Fritts and McGehee, 1982; Lutz and Lutcavage, 1989). Experiments on adult loggerhead turtles conducted by Lutcavage *et al.* (1993) showed that major body systems in marine turtles are adversely affected by even short exposures to weathered South Louisiana crude oil. Effects observed included alteration of blood chemistry, alteration of respiration and diving patterns, interference with salt gland function, and skin lesions. Exposure to fresh oil would likely be considerably more harmful. Though oil exposure may not directly kill adult turtles, the effects may make them more vulnerable to predation or disease.

Oiling of sea turtle nesting habitat poses a potential risk to adult nesting turtles, hatchlings, and to eggs. Turtle embryos are particularly sensitive. The effects of oil on the development and survival of marine turtles appears to be variable, depending on such factors as stage of nesting, oil type, degree of weathering, and amount and height of oil deposition on the beach. Studies by Fritts and McGehee (1982) indicate that fresh oil washing ashore to the level where nests with incubating eggs are located may result in extensive embryo mortality. The studies found that mortality may not be significant if eggs are deposited in sand after contamination has occurred and the oil has weathered, although hatchlings may be smaller than normal. Some evidence suggests olfactory cues are imprinted on sea turtles as hatchlings and guide them back to their natal beaches for nesting when they reach maturity. Oil on the beach could interfere with these chemical guides (Lutz *et al.*, 1985). Response activities to clean oil stranded on beaches may pose an additional risk of injury to eggs, hatchlings, and nesting adults.

Manatees

Little information is available regarding the effects of oil on manatees. In that manatees surface to breath and tend to rest at or just below the surface of the water, they are at risk of direct exposure to oil on the water surface. Toxic vapors and contact could cause irritation of the mucous membranes of the eyes and airways, possibly leading to lung congestion or even pneumonia (St. Aubin and Lounsbury, 1990). The volatile fraction of crude oil (approximately one-third by volume) contains many toxic hydrocarbons which evaporate and can create hazardous air concentrations near the spill (Allen and Ferek, 1993). Ingestion of tar balls or plant material contaminated with fresh oil could result in absorption of toxic hydrocarbon fractions during the long retention time in the gut of this herbivore. Because their skin is thick and underlain by a thick layer of blubber, direct exposure to oil would probably not cause significant effects on thermoregulation (St. Aubin and Lounsbury, 1990). The aggregation of manatees into small, restricted habitats, particularly during winter, makes them susceptible to catastrophic losses. This scenario is more likely to be associated with coastal accidents than with offshore transportation of oil.

Birds

Birds exposed to oil can suffer serious adverse physical and chemical effects. Feathers absorb oil, interfering with critical functions such as insulation, water-repellency, buoyancy, and flight. Death can result from combinations of hypothermia, starvation, and drowning. Birds may also suffer toxic effects from inhalation of petroleum vapors or

ingestion of oil while preening or from eating contaminated food. Ingested oil can cause anemia, pneumonia, intestinal irritation, kidney damage, altered blood chemistry and osmoregulation, decreased growth, and decreased production and viability of eggs (Fritts *et al*., 1983). Oil contamination on egg shells, even in very small quantities, is extremely toxic to avian embryos.

Bird species differ in their vulnerability to oil spill impacts depending on their behavior, distribution, and reproduction. Marine species adapted to life on the open ocean are particularly susceptible to direct exposure. Diving coastal seabirds, including the roseate tern, are at high risk of oil exposure because they regularly enter the water for feeding. Shorebirds, wading birds, raptors and passerines are less susceptible to exposure to free-floating oil because they rarely immerse themselves in water and do not raft or rest on the water surface. They are, however, at risk of contamination from oil that washes ashore. Shoreline oiling can severely impact shorebirds, wading birds, and other species that use beach habitat for nesting or foraging, as do piping plovers. Especially vulnerable are seabird species that assemble regularly or seasonally such as roseate terns, which form large nesting and staging aggregations. Some species can be impacted indirectly if their primary food sources are affected. For example, raptors such as the American peregrine falcon and the bald eagle are at risk of exposure from contaminated seabirds and other prey. In-situ burning could reduce the risk of these impacts by reducing the amount of oil washing ashore and remaining afloat at sea with potential to contaminate seabirds.

Sturgeons

The anadromous shortnose and Gulf sturgeons would be most vulnerable to exposure to oil spills while moving and foraging in estuarine and nearshore marine environments. The Gulf sturgeon would also be at risk during its winter marine migrations. Because the Gulf sturgeon does little or no feeding in fresh water, its growth and reproductive potential depend entirely on the resources accumulated by feeding during winter migrations. Benthic feeders, sturgeon could ingest contaminated sediments, organisms, or vegetation if oil settles to the sea floor. The ability of sturgeon to sense and avoid oil contamination is unknown. Ingestion of contaminated food and sediments could lead to general body deterioration, lower reproductive potential, and lower viability of offspring (Barkuloo, 1988). If Gulf sturgeon do aggregate during their winter migrations, as some data indicates, significant portions of the population could be affected by a major oil release impacting aggregation areas.

Other Listed Species

Contamination of shoreline habitat or affects on key prey species populations are the major risks of impact associated with oil spills to listed species that spend most of their time on land, in freshwater, or in highly sheltered areas. This includes the listed terrestrial mammals, reptiles and the seabeach amaranth.

Along Gulf Coast areas with relatively narrow beaches, an oil spill occurring during an episode of high winds and seas (a relatively common occurrence) could result in contamination of dune habitats and severe mortality of the plant and animal species associated with them. Oil stranded on the beach face also can be remobilized later by strong surf action and winds and redeposited into the primary dunes. Consequently, an oil spill reaching the shoreline could seriously impact species such as beach mice, even though the primary habitat of these subspecies is on the lee side of the dunes and their food sources are located above the high tide line. For example, the National Park Service has described the following occurrence during a small oil spill on Horn Island, Mississippi, in September 1989:

"Several days after landfall of the Horn Island spill, strong surf action and winds combined to remobilize and distribute significant amounts of oil from the beach face up into the adjacent primary dunes. The spray generated by the wind and surf action was sufficiently oily to completely coat most of the dune vegetation, and resulted in leaf browning which persisted until the next growing season" (Zimmerman, 1990).

Dispersants can help minimize such shoreline contamination and associated ecological impacts by preventing oil from washing ashore.

Analysis of Biological Effects of Proposed Action

A primary objective of an oil spill response is to quickly remove as much oil as possible from the surface of the water, thereby minimizing direct contact with wildlife and preventing movement of the oil into nearshore and shoreline areas where removal is more difficult and environmental impacts severe. Dispersants, applied under appropriate conditions, may offer the best response option to help achieve this objective. Dispersion of oil at sea, before a slick washes ashore, reduces the overall and particularly the chronic impacts of oil on sensitive inshore habitats including salt marshes, coral reefs, sea grasses, and mangroves. Dispersed oil is less likely than a surface slick to reach shoreline areas. Any dispersed oil that does move inshore is less likely to stick to shorelines and vegetation because dispersants alter the adhering property of oil droplets. Consequently, habitats recover faster if the oil is dispersed before it reaches them (NRC, 1989). By protecting nearshore and shoreline habitats from contamination, dispersant use benefits listed species and other wildlife that rely on them including manatees, shorebirds, wading birds, and sea turtles.

Most of the listed species do not occur in the "Green" zone where dispersant use will be pre-authorized by the Dispersant Use Policy and so are unlikely to be adversely affected. Manatees very rarely venture into the deeper offshore waters in the pre-authorization zone, except in Puerto Rico where they routinely cross between islands. Gulf and shortnose sturgeons and most sea turtle species occur primarily in shallower, nearshore waters in the "Yellow" zone. Black-capped petrels, roseate terns and brown pelicans are known to feed further offshore in the "Green" zone, but wading birds (wood stork), shorebirds (piping plover and Eskimo curlew), raptors (bald eagle and peregrine falcon), and passerines (Cape Sable seaside sparrow) are not likely to occur in the pre-authorization zone. The listed reptiles (American alligator, American crocodile, St. Croix ground lizard, and Atlantic salt marsh snake) occur primarily in terrestrial, freshwater or tidal areas. The listed terrestrial mammals (beach mice, red wolf, Key deer, silver rice rat, lower Keys rabbit, Key Largo cotton mouse, and Florida salt marsh vole) and terrestrial plant (seabeach amaranth) do not occur in the pre-authorized "Green" zone, and so are not subject to direct effects of dispersant use. Dispersant application would benefit the listed species by preventing contamination of shoreline and nearshore habitat and, concomitantly, the impacts associated with shoreline cleanup activity. For example, species such as piping plovers, peregrine falcons, and brown pelicans are known to be highly sensitive to human disturbance, especially when nesting. The primary human-related cause of mortality to manatees is collision with watercraft. Such potential nearshore impacts from cleanup activities would be minimized by preventing oil from stranding ashore.

Potential effects of dispersant use on listed species that may occur more frequently in the open waters of the "Green" zone, pre-authorized for dispersant use, are considered below. In some cases, the species are present in the area under consideration seasonally, reducing the risk they would be affected.

Direct Contact and Ingestion

By removing the surface oil slick, dispersants reduce the risk of direct contact with wildlife that dwell at or pass through the water surface to feed or breath such as sea birds, sea turtles, and cetaceans. Diving sea birds such as the brown pelican and roseate tern are particularly vulnerable to surface slicks. Dispersed oil droplets are less sticky and therefore less likely to adhere to feathers, skin, or other body surfaces than undispersed or naturally dispersed oil (Neff, 1990). Juvenile sea turtles, which often are found with drifting sargassum mats in convergence areas further from shore, would particularly benefit from reduced surface exposure in the area under consideration. Exposure of sea turtles to tar balls, which they are known to ingest and which also may adhere to juveniles, would be reduced because dispersants help prevent tarball formation. Sea turtles may experience higher exposure in the water column, primarily in the upper few meters, following dispersion. In open waters with continuous mixing and dilution capabilities, however, dispersed oil is rapidly diluted. Considering that concentrations fall to background levels within the first few hours following dispersion, exposure will be short-term and concentrations low.

Direct application of dispersants to birds or fur-bearing mammals would likely destroy the water-repellency and insulating capacity of fur or feathers and various components may disrupt the structural integrity of sensitive external membranes and surfaces (NRC, 1989). According to the Dispersant Use Policy, however, dispersants will not be sprayed near listed species or other wildlife. It should be noted that some hazing and removal activities can

adversely affect listed species. Such activities associated with dispersant application, if deemed appropriate, would be conducted only with full coordination with natural resource trustees and by authorized or permitted personnel.

Prey Contamination

If zooplankton, fish, and other water column or benthic organisms become oiled or accumulate oil in their tissues, they could ultimately expose species that prey upon them. Diving seabirds and several sea turtle species that occur in the area under consideration for action prey on fish and aquatic invertebrates. Prey species that occur in open waters further from shore (in the "Green" zone) where dispersant use will be pre-authorized are the primary concern. Prey species that occur in nearshore areas where dispersant use will not be pre-authorized by the Dispersant Use Policy are unlikely to be impacted.

Most aquatic organisms have the ability to metabolize and depurate petroleum hydrocarbons. Existing data demonstrate that complete depuration occurs once the source of the contamination is removed. It is unlikely that significant amounts of petroleum hydrocarbons will be accumulated by pelagic organisms during a dispersant application because of the short duration and low concentration expected in the water column. Under such conditions, any accumulated petroleum hydrocarbons should be rapidly depurated. Marine food chain biomagnification does not occur because vertebrate predators, including sea turtles and sea birds, readily metabolize and depurate hydrocarbons from their tissues. Most marine organisms also metabolize and excrete the surfactants in dispersants. Metabolism of surfactants is rapid enough that there is little likelihood of food chain transfer from marine invertebrates and fish to predators (Neff, 1990).

Marine finfish, for example, take up petroleum hydrocarbons from water and food. The compounds induce the hepatic Mixed-Function-Oxidase (MFO) system and within a few days following exposure, aromatic hydrocarbons are oxygenated to polar metabolites and excreted. For this reason, most fish do not accumulate and retain high concentrations of petroleum hydrocarbons and so are unlikely to transfer them to predators. The fish may be tainted with metabolites bound to tissue macromolecules, but these metabolites are so reactive that it is unlikely that they would be released in a toxic form during digestion by the consumer and so would not pose a serious risk (Neff, 1990).

Pelagic invertebrates become contaminated by assimilating hydrocarbons directly from seawater and by ingesting oil droplets and tainted food. Crustaceans can transform aromatic hydrocarbons to polar metabolites that may be excreted or bound to tissues. For a few days or weeks, unmetabolized or metabolized hydrocarbons in crustaceans and other invertebrates could be transferred to predators. Considering the low concentrations and short duration of exposure to dispersed oil, as described earlier, it is unlikely predators would ingest enough oil through consumption of contaminated aquatic invertebrates to result in adverse affects.

If sediments become contaminated, benthic carnivores such as the listed shortnose and Gulf sturgeons could suffer chronic exposure through ingestion of oiled sediment and contaminated benthic prey populations. Benthic invertebrates may accumulate petroleum hydrocarbons from contaminated water, sediments, and food. Sediment contamination, however, is highly unlikely considering the depth and distance from shore of the area under consideration for approval of dispersant application under this Dispersant Use Policy. Furthermore, dispersed oil droplets are less likely than undispersed oil to adhere to sediment particles.

Analysis of Alternatives

Emergency Authorization

The proposed action preauthorizes the FOSC to use dispersants as a first-stage response technique in specified zones as described above. The alternative is to require the FOSC to seek RRT authorization to use dispersants in these zones on a case-by-case basis at the time of an oil spill emergency. The limited "window of opportunity" for the most optimal and effective use of dispersants following an oil spill occurs very early -- usually within the first few hours. Without pre-authorization to permit rapid response and mobilization of the necessary equipment, the delay for case-by-case RRT approval would realistically eliminate dispersants as a response option. Moreover, in the

absence of pre-authorization, spill response organizations are unlikely to invest in the equipment and training necessary to apply dispersants due to the low probability that authorization would be issued in time to employ the technique. Pre-authorization enabling timely use of dispersants under appropriate conditions in the designated zones provides greater protection for listed species and critical habitat than does case-by-case authorization at the time of a spill emergency.

Mechanical Removal

Mechanical containment and removal will remain the preferred response tool for most oil spills, which usually are close to shore in areas where other response options are unlikely to be approved. Experience has shown, though, that mechanical response often cannot adequately deal with very large spills offshore. Performance of mechanical methods can be severely limited by weather and oceanic conditions and by the nature of the oil slick. Booms and skimmers are of limited use even in moderate seas and are usually effective only at slow current (less than 1 knot) and low wave heights (less than 2 meters). Consequently, mechanical recovery rates are often poor. Even under calm conditions, use of mechanical equipment alone to deal with large spills in which oil rapidly spreads over large areas may not be feasible. For these reasons, dispersant application is an important complementary spill response technique and should be included along with other techniques as on option in developing the appropriate response strategy. Under this regional policy, use of dispersants will be considered when and where physical removal is impossible or insufficient for protecting natural resources, including listed species.

In-Situ Burning

In-situ burning is an oil spill response technique that can quickly remove large volumes of oil from the water surface by igniting oil that is towed away from the main slick in fire-resistant boom. Though in-situ burning is a highly useful and important response option, there are some differences in the range of oil and weather conditions under which in-situ burning and dispersants are effective. For example, in-situ burning is not effective once oil has spread to less than about two millimeters thick. Also, if winds are blowing shoreward toward populated areas or sensitive environments, in-situ burning is unlikely to be employed due to concerns about potential effects of the smoke plume. Under conditions for which in-situ burning would not be effective or creation of a smoke plume is deemed unacceptable, dispersants may be a viable option.

Other Chemical Countermeasures

Other classes of open-water chemical countermeasure products currently available such as solidifiers, visco-elastomizers, herders, and demulsifiers typically satisfy very narrow oil spill response niches. Most are used to enhance mechanical recovery of small releases. It is unlikely they would be effective for large spills or under the same spill conditions dispersants can be employed. Furthermore, application of many products in these classes is still in experimental stages with regard to effectiveness and environmental effects.

No Action

Another alternative is not attempting to remove released oil from the water surface, potentially allowing the oil to wash ashore. The oiled shoreline could be cleaned or allowed to recover naturally. Due to the importance of nearshore and shoreline habitat to a variety of organisms and the difficulty of cleaning oiled shorelines without inflicting further injury, this alternative is considered the least desirable from several perspectives, including protection of listed species and critical habitat. Unrecovered oil poses a high risk of exposure and injury to wildlife, especially sea birds, marine mammals, and intertidal organisms. Cleaning and rehabilitation of oiled wildlife, particularly marine mammals, have had limited success and release of rehabilitated animals creates a risk of introducing disease into the wild population.

Conclusions

The purpose of dispersants, used alone or in conjunction with other open-water spill response techniques, is to quickly remove spilled oil from the water surface, thereby reducing exposure to wildlife and preventing contamination of sensitive nearshore and shoreline habitat. Under appropriate conditions, dispersants can reduce

environmental impacts from oil spills, including injury to listed species and critical habitat. Dispersant application is not likely to adversely affect listed species beyond the potential effects of the spilled oil or add to the cumulative environmental stresses currently acting on the species.

The parties to this RRT IV Dispersant Use Policy preauthorizing dispersants as an oil spill response technique in the designated zones conclude that this action is not likely to adversely affect the listed species present in the subject area and that formal consultation under Section 7 of the Endangered Species Act is not necessary. We request that you concur with these conclusions. Consultation will be re-initiated if additional information not previously considered becomes available indicating adverse effects to listed species or critical habitat from the identified action.

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
1875 Century Boulevard
Atlanta, Georgia 30345

IN REPLY REFER TO:

APR 0 4 1996

Captain Gerald W. Abrams
U.S. Coast Guard
Marine Safety Division
909 SE. First Avenue
Miami, Florida 33131-3050

Re: FWS Log No. 4-P-95-159
Pre-approved Dispersant Use
Gulf of Mexico - MS, AL, FL
Atlantic Ocean - FL, GA, SC, NC

Dear Captain Abrams:

Thank you for your letter of January 31, 1996, transmitting a biological assessment for pre-authorization to use dispersants to treat oil spills offshore of Mississippi, Alabama, Florida, Georgia, South Carolina, and North Carolina. Pre-approval would be authorized for the Federal On-Scene Coordinator's (FOSC) limited use of dispersants to treat floating oil, when appropriate, according to an established decision table. Your letter requests the Service's review and concurrence with your determination that the proposed action would not likely adversely affect (NLAA) listed species under the responsibility of the Service. This response is provided in accordance with Section 7 of the Endangered Species Act, as amended (Act) (16 U.S.C. 1531 et seq.).

The Coast Guard's determination was based on the premise that use of dispersants within off-shore designated zones would provide a strong potential net environmental benefit during an oil spill by allowing for increased protection of nearshore, shoreline, and down-current habitat and biological resources. The use of appropriately applied dispersants is likely to result in the following: (1) a reduction of the overall, particularly chronic, impacts of oil on sensitive habitats, (2) dispersed oil being less likely than a surface slick to reach shoreline areas, (3) any dispersed oil that does move inshore being less likely to stick to shorelines and vegetation because dispersants alter the adhering property, (4) recovery of habitat is faster if the oil is dispersed before it reaches them, (5) protecting nearshore and shoreline habitats from contamination thereby protecting the species that they support, and 6) adherence to policy and procedures prepared by the Regional Response Teams (RRT) for Region IV. In general, listed species under the jurisdiction of the Service that could be affected by the proposed action inhabit coastal wetlands, aquatic, estuarine, and marine habitats. This would include listed nesting sea turtles, manatees, Gulf sturgeon, brown pelicans, shorebirds, beach mice, and the plant "seabeach amaranth."

The Coast Guard proposes to provide the FOSC with pre-authorization in accordance with Region IV RRT policy to use dispersants in response to offshore oil spills. The proposed action area encompasses the areas offshore of the States of Mississippi, Alabama, Florida, Georgia, South Carolina, and North Carolina. Three zones - zones green, yellow, and red, have been designated within the action area. The green zone is defined as any offshore area of water, within the Federal Region IV, in which the water is not classified as yellow or red; is at least 3 miles from any shoreline; falls outside of any state's jurisdiction; and the depth of which is at least 10 meters. The green zone would be considered pre-approved for dispersant use.

The yellow zone is defined as waters within the Federal Region IV that are not designated as a red or green zone; and either are within State or special management jurisdiction; are within 3 miles of a shoreline, and/or fall under State jurisdiction; and are less than 10 meters deep. The yellow zone would be considered on a case-by-case basis for dispersant use. Specific yellow zones would be pre-authorized by individual letters of agreement (LOA) between the States and the RRT IV. Specific areas that may be included in the yellow zone are identified below.

- Marine reserves,
  National Marine Sanctuaries,
- National or State wildlife refuges,
- Units of National Park Service,
- proposed or designated critical habitats, and
- waters less than 10 meters deep containing coral reefs, submerged algal beds, and coastal wetlands including mangroves areas, saltwater marshes, salt ponds and freshwater marshes.

The red zone is defined as any area designated by the Region IV RRT that prohibits dispersant use. No dispersant application operations will be conducted at any time in this zone unless dispersant application is necessary to prevent or mitigate a risk to human health and safety; or an emergency modification of an LOA is made on an incident-specific basis. Currently, there are no red zones designated in the proposed action area.

The RRT IV pre-authorization protocol for all zones requires specific actions addressing the presence of listed species in the oil spill area before dispersants can be applied. Prior to beginning dispersant use, an on-site survey will be conducted, in consultation with natural resource specialists, to determine if any listed species are present in the application area or at risk from other application operations. Measures will be taken to prevent risk of injury to any wildlife, especially endangered or threatened species. Examples of potential protective measures include: temporary employment of deterrent techniques, and physical removal of listed animals by appropriate and permitted agencies or entities. If risk to listed species cannot be eliminated or reduced sufficiently, dispersants will not be applied unless it is necessary to prevent a serious threat to human safety.

If a decision to use dispersants is made, the FOSC will immediately notify the Environmental Protection Agency, the Department of Commerce, the Department of the Interior, and the appropriate State(s) through the RRT representatives. Dispersant application will be discontinued if so requested by an RRT representative. A post-incident briefing will be held within 45 days after dispersant use to exchange information on the efficacy and effects of the operation, and to determine whether any changes to the policy are needed.

The biological assessment (BA) describes dispersants, the biology of the listed species, potential impacts of spilled oil on the listed species of concern, the potential effects of the proposed action and an analysis of alternatives to the proposed action. The descriptions of dispersants, species' biology, potential effects of an oil spill and analysis of the effects of the proposed action were adequate and thorough. The analysis of alternatives discussed the no action alternative and other oil spill cleaning methods including mechanical removal, in-situ burning, and other chemical countermeasures.

The primary objective of oil spill response is to rapidly remove as much oil as possible from the water column and to quickly remove spilled oil from the water surface, thereby reducing exposure to wildlife and preventing contamination of sensitive nearshore and shoreline habitat. Under appropriate conditions, dispersants can reduce adverse environmental impacts associated with oil spills, including harm to listed species and critical habitats. The actions or materials employed to remove the spilled oil, however, must not cause or increase environmental impacts when compared to damages from spilled oil. The BA fully addresses this issue and provides assurance within the dispersant use policy to protect listed species.

The Coast Guard determined that the proposed action would not have an adverse effect on listed species under the responsibility of the Service. This determination was based on the adherence to the RRTs' Dispersant Use Policy and the designated green, yellow, and red zones. The Service finds the BA sufficient to support a determination of "not likely to adversely affect" for the implementation of dispersant application response procedures in the Federal Region IV area. We, therefore, concur with the Coast Guard's determination.

Although this does not represent a Biological Opinion as described in Section 7 of the Act, it does fulfill the requirements of the Act relative to listed and proposed species under the responsibility of the Service. If the proposed action is modified, additional information becomes available on the potential impacts of the proposed action on listed species, or take of a species occurs as a result of an in-situ burn action, reinitiation of this consultation may be required.

Section 7(a)(1) of the Act directs federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. The following actions are recom-

mended for implementation by the Coast Guard to assist in determining actual effects of oil spills and/or dispersants on listed species.

1. Revise the Pre-approval Dispersant Zone maps to include the "green, red, and yellow" zone designations by color. This would enable quick reference of the zones by pre-approval action and physical characteristics.

2. Fund a contingency study that would allow researchers to be on site immediately following a spill event where dispersants were applied. Mortally-stranded or dead species could be collected to determine if the cause of death was related to contact with the spilled oil or less obvious causes such as ingestion of contaminated prey species.

3. Undertake or fund studies on the concentration and persistence of dispersed oil in sediments. The benefits of using dispersants to protect epibenthic biota and shoreline habitats are well understood; however, their protection may come as a trade-off to long-term contamination of sediments from dispersed oil.

We appreciate your efforts in coordinating the proposed activity with us. Please contact Mr. David P. Flemming, Chief, Division of Endangered Species, at (404) 679-7096, or Ms. Lorna Patrick of the Service's Panama City, Florida Field Office at (904) 769-0552, extension 229, for additional information or coordination.

Sincerely yours,

for Sam D. Hamilton
Assistant Regional Director

Appendix IV

Dispersant Use Monitoring Program within Region IV

This appendix addresses the recommended process of RRT IV for monitoring dispersant effectiveness during operational application. Given the problems associated with estimating dispersant effectiveness, and the myriad of factors affecting the effectiveness of a dispersant in the filed, RRT IV has identified this monitoring program as a recommended method of monitoring dispersant use results. RRT IV endorses the monitoring procedures currently being supported by the U.S. Coast Guard National Strike Force and believes that at this time, they offer the best available methods for estimating dispersant effectiveness in the field. RRT IV therefore recommends that all efforts be made to implement their monitoring procedures. RRT IV does not, however, believe that these protocols can consistently and accurately provide definitive "Go/No-Go", "Continue/Discontinue" data to the OSC, and therefore does not require that the results of the monitoring protocol necessarily dictate whether or not dispersant operations will continue. An inability to perform monitoring protocols will not necessarily be grounds for cessation of dispersant operations. It should be noted that these monitoring recommendations are not intended to serve as a means of monitoring for natural resource impacts or damages to the environment.

Dispersant Use Monitoring Program within Region IV

The Region IV Regional Response Team (RRT IV) has adapted the current U.S. Coast Guard (USCG) National Strike Force monitoring program for dispersant application operations. The program is designed to allow timely use of this response tool and provide monitoring results to the Federal On-Scene Coordinator (OSC) and the Federal and State Trustees involved in the response. This program is designed for the assets and logistical capabilities that are provided in this region by the U.S. Coast Guard (USCG) Gulf Strike Team (GST) and the National Oceanic and Atmospheric Administration (NOAA) Scientific Support Coordinator's (SSC) scientific support team.

The GST has been chosen because of their proven ability to quickly respond to the OSC's technical needs during an oil spill incident with properly trained and equipped personnel and logistical support. Having a government agency accomplish this task is partially dictated by the operational need for such monitoring data sets to remain in the public domain to ensure availability and objective presentation of the data to the OSC.

The GST will perform the actual on-site monitoring to collect the raw data with the guidance of the SSC's scientific support team. The SSC scientific support team will assist in monitoring, analysis of the data, and forwarding of the results to the OSC as soon as is practicable.

The monitoring program is designed to enhance the OSC's decision making process during the use of dispersants in fulfillment of his/her responsibility to insure appropriate and timely response to mitigate the effects of oil spills, as established by the Clean Water Act and defined by the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR Part 300. This monitoring program is intended to provide the OSC with logical "Continue/Discontinue" input and documentation data during operations involving dispersant application.

Since the monitoring protocols are constantly undergoing revision and change due to improvements and enhancements made to the available technology and monitoring practices, the actual monitoring procedures and process are held under separate cover. The current monitoring protocol is available within other planning documents available to the OSC and RRT IV.

APPENDIX V

Equipment/Dispersant Lists

This is an up to date list of vendors who can apply dispersants and vendors who stockpile various dispersants with any applicable information pertaining to estimated response time and availability.

COAST GUARD DISTRICT SEVEN
DISPERSANT AND EQUIPMENT PROVIDER LIST (02 FEB 96)

VENDER	DISPERSANT		EQUIPMENT	
	TYPE	QTY GALS	TYPE	QTY
CLEAN CARIBBEAN COOPERATIVE 2381 STIRLING ROAD FORT LAUDERDALE, FLORIDA 33312 TEL: (954) 983-9880 FAX: (954) 987-3001 POC: PAUL A. SCHULER, PRESIDENT SKIP PRZELOMSKI, OPERATIONS	COREXIT 9500/EC9500 COREXIT 9527	11,000 19,500	ADDS (C-130) (DELIVERY) BUCKET (HELO)	1 1
LOOP GALLIANO & PORT FOUCHON, LA TEL: (504) 363-9299 POC: CINDY LEBLANC	COREXIT 9527	45,300		
EXXON USA BAYTOWN, TX TEL: (713) 656-2525 POC: WAYNE ICHEE	COREXIT 9527	41,470		
AIRBORNE SUPPORT INC. BOURGE, LA TEL: (504) 851-6391 POC: HOWARD BARKER			DC-3 DC-4	2 1
910 AIRLIFT WING (ASAFR) VIENNA, OHIO TEL: (216) 392-1111 POC: LTC TERRY BIERY			C-130H (MASS SYS)	1

APPENDIX VI

Technical Product Bulletins

All available technical product bulletins for dispersants on the current EPA product schedule (September 2000) are contained herein. Inclusion of these bulletins in this Region IV Dispersant Policy does not constitute endorsement of these products.

TECHNICAL PRODUCT BULLETIN #D-1
USEPA, OIL PROGRAM CENTER
ORIGINAL LISTING DATE: MARCH 10, 1978
REVISED LISTING DATE: DECEMBER 18, 1995

"COREXIT 9527"

I. NAME, BRAND, OR TRADEMARK

COREXIT 9527

Type of Product: Dispersant (Concentrate)

II. NAME, ADDRESS AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT

Nalco/Exxon Energy Chemicals, LP
P.O. Box 87
Sugarland, TX 77487-0087
Phone: (281) 263-7879 (Mr. Marty Utterback)
Phone: (281) 263-7265 (Ms. Marge Walsh)
24-hour Emergency Number: ABASCO at (800) B4 A SPIL
or Nalco/Exxon at (281) 263-7200
Fax Number: (281) 263-7955

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS

ABASCO
363 W. Canino Rd.
Houston, TX 77238-8573
Phone: (281) 931-4400

Nalco/Exxon Energy
Chemicals, L.P.
P.O. Box 87
Sugar Land, TX 77487-0087
Phone: (800) 333-3714

Nalco/Exxon Energy
Chemicals L.P.
P.O. Box 220
Long Beach, CA 90801
Phone: (310) 639-1553

Nalco/Exxon Energy
Chemical, L.P.
701 E. Tudor St, # 290
Anchorage, AK 99503
Phone: (907) 563-9866

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION

1. Flammability:

   COREXIT 9527 is not classified as flammable by either DOT or IMO regulations.

2. Ventilation:

Avoid prolonged breathing of vapors. Use with ventilation equal to unobstructed outdoors in moderate breeze.
3.Skin and eye contact; protective clothing; treatment in case of contact:

Avoid eye contact. In case of eye contact, immediately flush eyes with large amounts of water for at least 15 minutes. Get prompt medical attention. Avoid contact with skin and clothing. In case of skin contact, immediately flush with large amounts of water, and soap if available. Remove contaminated clothing, including shoes, after flushing has begun. If irritation persists, seek medical attention. For open systems where contact is likely, wear long sleeve shirt, chemical resistant gloves, and chemical protective goggles.

4.a.Maximum storage temperature: 170 F

4.b.Minimum storage temperature: -30 F

4.c.Optimum storage temperature range: 40 F to 100 F

4.d.Temperatures of phase separations and chemical changes:

COREXIT 9527 is not adversely affected by changes in storage temperature unless evaporation is allowed to occur.

V. SHELF LIFE

The shelf life of unopened drums of COREXIT 9527 is unlimited. Containers should always be capped when not in use to prevent contamination and evaporation of solvents.

VI. RECOMMENDED APPLICATION PROCEDURE

1. Application Method:

COREXIT 9527 is most effectively applied by aircraft, however, application with boat spray booms, boat fire monitors, and by hand held sprayers and back packs has been successfully done on a number of spills and trials. Aerial Spraying - Aircraft provide the most rapid method of applying dispersants to an oil spill and a variety of aircraft can be used for spraying. For aerial spraying, COREXIT 9527 is applied undiluted. Typical application altitudes of 30 to 50 feet have been used, although higher altitudes may be effective under certain conditions. Actual effective altitudes will depend on the application equipment, weather and aircraft. Careful selection of spray nozzles is critical to achieve desired dose levels, since droplet size must be controlled. Many nozzles used for agricultural spraying are of low capacity and produce too fine a spray. A quarter-inch open pipe may be all that is necessary if the aircraft travels at 120 mph (104 knots) or more, since the air shear at these speeds will be sufficient to break the dispersant into the proper sized droplets. Boat Spraying - COREXIT 9527 may be applied by workboats equipped with spray booms mounted ahead of the bow wake or as far forward as possible. The preferred and most effective method of application from a workboat is to use a low-volume, low-pressure pump so the chemical can be applied undiluted. Spray equipment designed to provide a five to ten percent diluted dispersant solution to the spray booms can also be used. COREXIT 9527 should be applied as droplets, not fogged or atomized. Natural wave or boat wake action usually provides adequate mixing energy to disperse the oil. Recent tests have indicated that a fire monitor modified with a screen cap for droplet size may also be useful for applying COREXIT 9527. Due to the increased volume output and the greater reach of the fire monitor, significantly more area can be covered in a shorter period of time.

System Calibration - Spray systems should be calibrated at temperatures anticipated to insure successful application and dosage control. Refer to Nalco/Exxon Energy Chemicals TECHNIFAX® TX-116 charts for calibrating application systems.

2. Concentration/Application Rate:

A treatment rate of about 2 to 10 U.S. gallons per acre, or a dispersant to oil ratio of 1:50 to 1: 10 is recommended. This rate varies depending on the type of oil, degree of weathering, temperature, and thickness of the slick.

3. Conditions for Use:

As with all dispersants, timely application ensures the highest degree of success. Early treatment with Corexit 9527, even at reduced treat rates, can reduce the "mousse" forming tendencies of the spilled oil. COREXIT 9527 is useful on oil spills in salt water.

VII. TOXICITY AND EFFECTIVENESS

1. Toxicity:

Material Tested	SPECIES	LC50 (ppm)
COREXIT 9527	Menidia beryllina	14.57 96-hr
	Mysidopsis bahia	24.14 48-hr
No. 2 Fuel Oil	Menidia beryllina	10.72 96-hr
	Mysidopsis bahia	16.12 48-hr
COREXIT 9527 & No. 2 Fuel Oil (1:10)	Menidia beryllina	4.49 96-hr
	Mysidopsis bahia	6.60 48-hr
Reference Toxicant (DSS)	Menidia beryllina	7.07 96-hr
	Mysidopsis bahia	9.82 48-hr

NOTE: This toxicity data was derived using the concentrated product. See Section VI of this bulletin for information regarding the manufacturer's recommendations for concentrations and application rates for field use.

2. Effectiveness

SWIRLING FLASK DISPERSANT EFFECTIVENESS TEST WITH SOUTH LOUISIANA (S/L) AND PRUDHOE BAY (P/B) CRUDE OIL
VENDOR LAB REPORT

Oil	Effectiveness, %
Prudhoe Bay Crude	37.4%
South Louisiana Crude	63.4%
Average of Prudhoe Bay and South Louisiana Crudes	50.4 %

U.S. EPA OFFICE OF RESEARCH AND DEVELOPMENT REPORT

Oil	Effectiveness, %
Prudhoe Bay Crude	51%
South Louisiana Crude	31%
Average of Prudhoe Bay and South Louisiana Crudes	41%

EPA is reporting these numbers as an additional reference for On-Scene Coordinators (OSCs). EPA recognizes that large discrepancies may exist between lab results. EPA is currently working on revising the Swirling Flask Dispersant Effectiveness Test to facilitate more consistent results between labs and operators.

VIII. MICROBIOLOGICAL ANALYSIS

Not Applicable

IX. PHYSICAL PROPERTIES

1. Flash Point: 162 F

2. Pour Point: Less than -45 F

3. Viscosity:

   60 cst at 60 F
   22 cst at 100 F
   9 cst at 150 F

4. Specific Gravity:

   0.995 at 60 F
   0.975 at 100 F

5. pH: 8.2 (10% in deionized water)

6. Surface Active Agents: CONFIDENTIAL

7. Solvents: Water, Ethylene glycol monobutyl ether

8. Additives: Borate ester

9. Solubility: Not Applicable

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

COMPOUND	CONCENTRATION (ppm)
Aresenic	< 0.005
Cadmium	< 0.01
Chromium	< 1.0
Copper	< 0.2
Lead	< 0.1
Mercury	< 0.003
Nickel	< 0.1
Zinc	0.1
Cyanide	< 0.01
Chlorinated Hydrocarbons	< 0.01

TECHNICAL PRODUCT BULLETIN #D-4
USEPA, OIL PROGRAM CENTER
ORIGINAL LISTING DATE: APRIL 13, 1994
REVISED LISTING DATE: DECEMBER 18, 1995

"COREXIT 9500"

I. NAME, BRAND, OR TRADEMARK

COREXIT 9500 (EC9500A)

Type of Product: Dispersant

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT

Nalco/Exxon Energy Chemicals, LP
P.O. Box 87
Sugar Land, TX 77487-0087
Phone: (281) 263-7879 (Mr. Marty Utterback)
Phone: (281) 263-7265 (Ms. Marge Walsh)
24-hour Emergency Number: ABASCO at (800) B4 A SPIL
or Nalco Exxon at (281) 263-7200
Fax: (281) 263-7955

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS

ABASCO
363 W. Camino Road
Houston, TX 77238-8573
Phone: (281) 931-4400

Nalco/Exxon Energy Chemicals, L.P.
P.O. Box 87
Sugar Land, TX 77487-0087
Phone: (800) 333-3714

Nalco/Exxon Energy
Chemicals, L.P.
P.O. Box 220
Long Beach, CA 90801
Phone: (310) 639-1553

Nalco/Exxon Energy
Chemical, L.P.
701 E. Tudor St., #290
Anchorage, AK 99503
Phone: (907) 563-9866

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION

1. Flammability:

IMO - Non-flammable; DOT - Non-hazardous.

2. Ventilation:

Use with ventilation equal to unobstructed outdoors in moderate breeze.
3.Skin and eye contact; protective clothing; treatment in case of contact:

Avoid eye contact. In case of eye contact, immediately flush eyes with large amounts of water for at least 15 minutes. Get prompt medical attention. Avoid contact with skin and clothing. In case of skin contact, immediately flush with large amounts of water, and soap if available. Remove contaminated clothing, including shoes, after flushing has begun. If irritation persists, seek medical attention. For open systems where contact is likely, wear long sleeve shirt, chemical resistant gloves, and chemical protective goggles.

4.a.Maximum storage temperature: 170F

4.b.Minimum storage temperature: -30F

4.c.Optimum storage temperature range: 40F to 100F

4.d.Temperatures of phase separations and chemical changes: None

V. SHELF LIFE

The shelf life of unopened drums of COREXIT 9500 is unlimited. Containers should always be capped when not in use to prevent contamination and evaporation of solvents.

VI. RECOMMENDED APPLICATION PROCEDURE

1.Application Method:

COREXIT 9500 is a high performance, biodegradable oil spill dispersant concentrate that is effective on a wide range of oils. COREXIT 9500 contains the same surfactants present in COREXIT 9527 and a new improved oleophilic solvent delivery system.

Aerial Spraying - Aircraft provide the most rapid method of applying dispersants to an oil spill and a variety of aircraft can be used for spraying. For aerial spraying, COREXIT 9500 is applied undiluted. Typical application altitudes of 30 to 50 feet have been used, although higher altitudes may be effective under certain conditions. Actual effective altitudes will depend on the application equipment, weather and aircraft. Careful selection of spray nozzles is critical to achieve desired dose levels, since droplet size must be controlled. Many nozzles used for agricultural spraying are of low capacity and produce too fine a spray. A quarter-inch open pipe may be all that is necessary if the aircraft travels at 120 mph (104 knots) or more, since the air shear at these speeds will be sufficient to break the dispersant into the proper sized droplets. Boat Spraying - COREXIT 9500 may also be applied by workboats equipped with spray booms mounted ahead of the bow wake or as far forward as possible. The preferred and most effective method of application from a workboat is to use a low-volume, low-pressure pump so the chemical can be applied undiluted. Spray equipment designed to provide a five to ten percent diluted dispersant solution to the spray booms can also be used. COREXIT 9500 should be applied as droplets, not fogged or atomized. Natural wave or boat wake action usually provides adequate mixing energy to disperse the oil. Recent tests have indicated that a fire monitor modified with a screen cap for droplet size control may also be useful for applying COREXIT 9500. Due to the increased volume output and the greater reach of the fire monitor, significantly more area can be covered in a shorter period of time.

System Calibration - Spray systems should be calibrated at temperatures anticipated to insure successful application and dosage control. Application at sub-freezing temperatures may require larger nozzle, supply lines and orifices due to higher product viscosity. Refer to Nalco/Exxon Energy Chemical's TECHNIFAX® TX-116 charts for calibration information. 2.Concentration/Application Rate:

A treatment rate of about 2 to 10 U.S. gallons per acre, or a dispersant to oil ratio of 1:50 to 1:10 is recommended. This rate varies depending on the type of oil, degree of weathering, temperature, and thickness of the slick.

3. Conditions for Use:

As with all dispersants, timely application ensures the highest degree of success. Early treatment with COREXIT 9500, even at reduced treat rates, can also counter the "mousse" forming tendencies of the spilled oil. Thus, with the enhanced penetration capability and emulsion fighting properties, the "window of opportunity" to successfully treat the spill is increased with COREXIT 9500. COREXIT 9500 is useful on oil spills in salt water.

VII.

1. Toxicity

Material Tested	SPECIES	LC50 (ppm)
COREXIT 9500	Menidia beryllina	25.20 96-hr
	Mysidopsis bahia	32.23 48-hr
No. 2 Fuel Oil	Menidia beryllina	10.72 96-hr
	Mysidopsis bahia	16.12 48-hr
COREXIT 9500 & No. 2 Fuel Oil (1:10)	Menidia beryllina	2.61 96-hr
	Mysidopsis bahia	3.4 48-hr
Reference Toxicant (SDS)	Menidia beryllina	7.07 96-hr
	Mysidopsis bahia	9.82 48-hr

NOTE: This toxicity data was derived using the concentrated product. See Section VI of this bulletin for information regarding the manufacturer's recommendations for concentrations and application rates for field use.

2. Effectiveness*

SWIRLING FLASK DISPERSANT EFFECTIVENESS TEST WITH SOUTH LOUISIANA (S/L) AND PRUDHOE BAY (P/B) CRUDE OILS
VENDOR LAB REPORT

Oil	Effectiveness, %
Prudhoe Bay Crude	45.3%
South Louisiana Crude	54.7%
Average of Prudhoe Bay and South Louisiana Crudes	50.0 %

U.S. EPA OFFICE OF RESEARCH AND DEVELOPMENT REPORT

Oil	Effectiveness, %
Prudhoe Bay Crude	49.4%
South Louisiana Crude	45.4%
Average of Prudhoe Bay and South Louisiana Crudes	47.4%

EPA is reporting these numbers as an additional reference for On-Scene Coordinators (OSCs). EPA recognizes that large discrepancies may exist between lab results. EPA is currently working on revising the Swirling Flask Dispersant Effectiveness Test to facilitate more consistent results between labs and operators.

VIII. PHYSICAL PROPERTIES

1. Flash Point: 176F (SETA closed cup; ASTM D3278)

2. Pour Point: -70F (ASTM D97)

3. Viscosity: 55 cSt (at 68F)

4. Specific Gravity: 0.949 (at 60F, ASTM D1963)
5. pH: 6.4
6. Chemical Name and Percentage by Weight of the Total Formulation: CONFIDENTIAL
7. Surface Active Agents: CONFIDENTIAL
8. Solvents: CONFIDENTIAL
9. Additives: None
10. Solubility: Soluble in fresh water, but dispersable in sea water

IX. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

COMPOUND	CONCENTRATION (ppm)
Aresenic	0.16
Cadmium	N/D
Chromium	0.03
Copper	0.10
Lead	N/D
Mercury	N/D
Nickel	N/D
Zinc	N/D
Cyanide	N/D
Chlorinated Hydrocarbons	N/D

N/D = Not detected

TECHNICAL PRODUCT BULLETIN #D-5
USEPA, OIL PROGRAM CENTER
ORIGINAL LISTING DATE: APRIL 22, 1999
REVISED LISTING DATE:

"DISPERSIT SPC 1000™"

I. NAME, BRAND, OR TRADEMARK

DISPERSIT SPC 1000™

Type of Product: Dispersant (Water Based)

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT

U.S. Polychemical Corp.
584 Chestnut Ridge Road
Chestnut Ridge, NY 10977
Phone: (914) 356-5530 (Mr. Robert E. Bergman, Jr. CFO)
Fax Number: (914) 356-6656

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS

Maritime Solutions, Inc.
17 Battery Pl. Suite 913
New York, NY 10004
Phone: (212) 747-9044 (Mr. Chris Constantine / Mr. Richard Fredricks)
Fax Number: (212) 747-9240

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION

1. Flammability:

IMO: Non-flammable
DOT: Non-hazardous

2. Ventilation:

None normally required. Adequate to maintain fume levels below the TLV.

3. Skin and eye contact:

Avoid prolonged contact with skin and eyes. Flush eyes with plenty of water for at least 15 minutes. Get medical attention. Wear long sleeve shirt, chemical resistant gloves, and chemical protective goggles in case of exposure to mist.

4.a. Maximum storage temperature: 180F

4.b. Minimum storage temperature: -25F

4.c. Optimum storage temperature range: 40F to 140F

4.d. Temperatures of phase separations and chemical changes: None

V. SHELF LIFE

The shelf life of Dispersit SPC 1000™ is unlimited in unopened containers. Containers must be kept closed when not in use to prevent contamination.

VI. RECOMMENDED APPLICATION PROCEDURE

1. Application Method:

The dispersant may be applied by any conventional methods such as 1) aerial spraying and 2) boat spraying to accommodate weather conditions.

2. Concentration/Application Rate:

A dispersant to oil ratio ranging from 1 part dispersant to 50 parts oil to 1 part dispersant to 10 parts oil; or an application rate of about 2-10 gallons (7.6 liters- 37.9 liters) per acre (4840 square meters) is suggested. These rates will be dependent on the type of oil, degree of weathering, temperature and extent of oil slick.

3. Conditions for Use:

Timely application ensures the highest degree of successful dispersion of the oil spill.

VII. TOXICITY AND EFFECTIVENESS

1. Toxicity

Material Tested	SPECIES	LC50 (ppm)
DISPERSIT SPC 1000™	Menidia beryllina	3.5 96-hr
	Mysidopsis bahia	16.6 48-hr
No. 2 Fuel Oil	Menidia beryllina	11.6 96-hr
	Mysidopsis bahia	11.7 48-hr
DISPERSIT SPC 1000™ & No. 2 Fuel Oil (1:10)	Menidia beryllina	7.9 96-hr
	Mysidopsis bahia	8.2 48-hr
Reference Toxicant (SDS)	Menidia beryllina	6.3 96-hr
	Mysidopsis bahia	11.7 48-hr

2. Effectiveness:

SWIRLING FLASK DISPERSANT EFFECTIVENESS TEST WITH SOUTH LOUISIANA (S/L) AND PRUDHOE BAY (P/B) CRUDE OIL
VENDOR LAB REPORT

Oil	Effectiveness, %
Prudhoe Bay Crude	40%
South Louisiana Crude	105%
Average of Prudhoe Bay and South Louisiana Crudes	73%

U.S. EPA OFFICE OF RESEARCH AND DEVELOPMENT REPORT

Oil	Effectiveness, %
Prudhoe Bay Crude	52%

South Louisiana Crude 49.7%

Average of Prudhoe Bay and South Louisiana Crudes 51%

EPA is reporting these numbers as an additional reference for On-scene Coordinators (OSCs). EPA recognizes that large discrepancies may exist between lab results. EPA is currently working on revising the Swirling Flask Dispersant Effectiveness Test to facilitate more consistent results between labs and operators.

VIII. MIROBIOLOGICAL ANALYSIS

Not applicable

IX. PHYSICAL PROPERTIES

1. Flash Point, ASTM D-56-87: 208F
2. Pour Point, ASTM D-97-87: < -20C
3. Viscosity, ASTM D-445-88: 144CPS, @ 68F
4. Specific Gravity, ASTM D-1298-85(90): 0.995, @ 68F
5. pH, ASTM D-1293-84(90): 10.0
6. Surface Active Agents: Anionic and non-ionic, proprietary, surfactants
7. Solvents: Proprietary, non-petroleum based
8. Additives: None
9. Solubility in Water: Complete

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

COMPOUND	CONCENTRATION (ppm)
Aresenic	< 1.00
Cadmium	< 2.00
Chromium	< 2.00
Copper	< 2.00
Lead	< 1.00
Mercury	< 0.04
Nickel	< 10.00
Zinc	< 2.00
Cyanide	N/D
Chlorinated Hydrocarbons	N/D

TECHNICAL PRODUCT BULLETIN #D-3
USEPA, OIL PROGRAM CENTER
ORIGINAL LISTING DATE: FEBRUARY 23, 1988
REVISED LISTING DATE: JANUARY 26, 1996

"MARE CLEAN 200"
(formerly Mare Clean 505)

I. NAME, BRAND, OR TRADEMARK

Mare Clean 200

Type of Product: Dispersant (Solvent-Based)

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT

Taiho Industries Co. Ltd.
21-44, 2-chome, Takanawa
Minatoku, Tokyo, Japan
Phone: (81) 33-445-8111
Fax: (81) 33-443-6333
(Mr. Y. Abe)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS

Klinview Corporation
8001 Irvine Center Drive, Suite 450
Irvine, CA 92718
Phone: (714) 753-0821
Fax: (714) 753-0812
(Mr. T. Tanaka)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION

1. Flammability:

   The flash point is 212 ± 20 F

2. Ventilation:

   Is required. Use in closed room is not recommended.

3. Skin and eye contact; protective clothing; treatment in case of contact:

   Use protective goggles to avoid eye contact. In case of eye contact, wash immediately with plenty of water and consult with physician.

4.a. Maximum storage temperature: 122 F

4.b. Minimum storage temperature: 21 F

4.c. Optimum storage temperature range: 32 F to 86 F

4.d. Temperatures of phase separations and chemical changes:

   Phase separation does not relate to temperatures. Chemical changes may occur at temperatures above 194

F.

V. SHELF LIFE

The shelf life of MARE CLEAN 200 is 10 years when stored indoors. (Container will deteriorate before contents.)

VI. RECOMMENDED APPLICATION PROCEDURE

1. Application Method:

Sprinkle the dispersant on the oil spill, then 5-10 minutes later stir the surface intensively. For convenience, MARE CLEAN 200 may be diluted with water if desired.

2. Concentration/Application Rate:

Use 53-66 gallons of MARE CLEAN 200 per ton of oil

3. Conditions for Use:

The performance of MARE CLEAN 200 is not affected by water salinity. At temperatures below 40 F or in case of heavy crude oil spill, MARE CLEAN 200 should be used without dilution. MARE CLEAN 200 is an effective dispersant for any liquid hydrocarbon.

VII. TOXICITY AND EFFECTIVENESS

1. TOXICITY:

Material Tested	SPECIES	LC50 (ppm)
MARE CLEAN 200	Menidia beryllina	1996 96-hr
	Mysidopsis bahia	938 48-hr
No. 2 Fuel Oil	Menidia beryllina	10.72 96-hr
	Mysidopsis bahia	16.12 48-hr
MARE CLEAN 200 & No. 2 Fuel Oil (1:10)	Menidia beryllina	42 96-hr
	Mysidopsis bahia	9.84 48-hr
Reference Toxicant (SDS)	Menidia beryllina	7.07 96-hr
	Mysidopsis bahia	9.82 48-hr

NOTE: This toxicity data was derived using the concentrated product. See Section VI of this bulletin for information regarding the manufacturer's recommendations for concentrations and application rates for field use.

b.EFFECTIVENESS*

SWIRLING FLASK DISPERSANT EFFECTIVENESS TEST WITH SOUTH LOUISIANA AND PRUDHOE BAY CRUDE OILS

Oil	Effectiveness, %
Prudhoe Bay Crude	63.97%
South Louisiana Crude	84.14%
Average of Prudhoe Bay and South Louisiana Crudes	74.06%

VIII. MICROBIOLOGICAL ANALYSIS

Not Applicable

IX. PHYSICAL PROPERTIES

1. Flash Point: 212 ± 20 F
2. Pour Point: 14 ± 10 F
3. Viscosity: 2.4 ± 5 cst at 104 F
4. Specific Gravity: 0.95 ± 0.03 at 77 F
5. pH: 7.7 ± 1.0 (10% solution)
6. Surface Active Agents:

   A mixture of sorbitan fatty acid esters, polysorbates, and polyoxyethylene fatty acid esters.
7. Solvents: Paraffinic hydrocarbons (CAS 74664-93-0)
8. Additives: None
9. Solubility: Not applicable

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

COMPOUND	CONCENTRATION (ppm)
Aresenic	< 0.50
Cadmium	< 0.100
Chromium	< 0.500
Copper	< 0.250
Lead	< 2.50
Mercury	< 0.0200
Nickel	< 0.250
Zinc	0.611
Cyanide	< 0.01

TECHNICAL PRODUCT BULLETIN #D-2
USEPA, OIL PROGRAM CENTER
ORIGINAL LISTING DATE: APRIL 22, 1985
REVISED LISTING DATE: JANUARY 26, 1996

"NEOS AB3000"

I. NAME, BRAND, OR TRADEMARK

NEOS AB3000

Type of Product: Dispersant (Hydrocarbon Based)

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT

NEOS Company Limited
Daisan Kendai Building
1-2, 3-chome Isobedori
Chuo-ku, Kobe, 651-0084 Japan
Phone: Kobe 078-331-9384
Telex: 5622293 JKNEOS J
Fax: Kobe 078-272-4649
(Mr. T. Ishii, Manager)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS

NEOS Company Limited
Daisan Kendai Building
1-2, 3-chome Isobedori
Chuo-ku, Kobe, Japan
Phone: Kobe 078-331-9381
Telex: 5622293 JKNEOS J
Fax: Kobe 078-272-4649

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION

1. Flammability:

NEOS AB3000 is flammable; keep away from open flame.

2. Ventilation:

Special ventilation is not required; however, natural ventilation is recommended.

3. Skin and eye contact; protective clothing; treatment in case of contact:

Contact may cause skin and eye irritation. Goggles and rubber clothing are recommended during application. In case of contact with skin or eye, flush with copious amounts of fresh water. If severe, consult a doctor.

4.a. Maximum storage temperature: 158 F

4.b. Minimum storage temperature: 32 F

4.c. Optimum storage temperature range: 50 to 140 F

4.d. Temperatures of phase separations and chemical changes:

Phase separation and chemical changes do not appear between the temperature range of 32 to 158 F.

V. SHELF LIFE

The shelf life is five (5) years.

VI. RECOMMENDED APPLICATION PROCEDURE

1. Application Method:

Spray neat concentrate on the oil slick in atomized form by means of a manual pump, or spray with a pump system incorporating an ejector system for drawing concentrate from the drum or stock tank. For aerial application, use a spray boom with pressure nozzles or rotating atomizers mounted on helicopters or airplanes.

2. Concentration/Application Rate:

The application rate is 65 gallons of dispersant per ton of oil. Five (5) to fifteen (15) parts of dispersant to suctioned water is recommended for ejector systems. For aerial application, 75 to 125 gallons per ton of oil is recommended.

3. Conditions for Use:

NEOS AB3000 can be used for both fresh and sea water. It is effective with crude and residual heavy oil. The dispersant is also effective at controlling volatile emissions from the oil.

VII. TOXICITY AND EFFECTIVENESS

a. Toxicity:

Material Tested	SPECIES	LC50 (ppm)
NEOS AB3000	Menidia beryllina	91.1 96-hr
	Mysidopsis bahia	33. 48-hr
No. 2 Fuel Oil	Menidia beryllina	201.8 96-hr
	Mysidopsis bahia	11.5 48-hr
NEOS AB3000 & No. 2 Fuel Oil (1:10)	Menidia beryllina	57. 96-hr
	Mysidopsis bahia	25. 48-hr
Reference Toxicant (DSS)	Menidia beryllina	1.5 96-hr
	Mysidopsis bahia	9.3 48-hr

NOTE: This toxicity data was derived using the concentrated product. See Section VI of this bulletin for information regarding the manufacturer's recommendations for concentrations and application rates for field use.

b.EFFECTIVENESS*

SWIRLING FLASK DISPERSANT EFFECTIVENESS TEST WITH SOUTH LOUISIANA (S/L) AND PRUDHOE BAY (P/B) CRUDE OIL

Oil	Effectiveness, %
Prudhoe Bay Crude	19.7 %
South Louisiana Crude	89.8 %

Average of Prudhoe Bay and South Louisiana Crudes 54.8 %

VIII. MICROBIOLOGICAL ANALYSIS

Not Applicable

IX. PHYSICAL PROPERTIES

1. Flash Point: No flash point to 212 F
2. Pour Point: Less than 32 F
3. Viscosity: 30.7 cSt at 104 F
4. Specific Gravity: 0.924 at 59 F
5. pH: 8.0 (5wt % aq., at 77 F)
6. Surface Active Agents: Nonionic and Cationic surfactants
7. Solvents: Paraffins
8. Additives: None
9. Solubility: Not Applicable

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

COMPOUND	CONCENTRATION (ppm)
Aresenic	< 0.1
Cadmium	< 0.1
Chromium	0.26
Copper	< 0.05
Lead	0.21
Mercury	< 0.001
Nickel	0.076
Zinc	1.1
Cyanide	< 0.05
Chlorinated Hydrocarbons	< 0.10

APPENDIX VII

Dispersant Use Decision Elements and Documentation/Application Forms

Forms to document important response information during a dispersant application are contained in this appendix. Also procedures for requesting dispersant application in non pre-authorized areas are provided. Procedures for requesting approval must be followed, as outlined in this Appendix, for the EPA, DOI, DOC, and the affected State(s). Only the OSC can authorize the use of dispersants, therefore, once approval is obtained, it is the OSC's responsibility -- not the potential Responsible Party's -- to make the request and provide the trustees with all required documentation information.

The Documentation/Application Form is provided as a summary of important information to be considered by the OSC along with the Dispesant Use Decision Elements contained in this appendix. This information must be considered when reviewing any request to conduct dispersant operations in response to offshore oil spills within RRT Region IV. The information on the Documentation/Application Form shall be provided prior to approval of dispersant application in all zones that are not pre-authorized. The information must be recorded for documentation purposes for any offshore use of dispersants.

The Dispersant Use Decision Elements in this appendix list the basic components of a dispersant use decision; and are phrased in the form of questions to be considered and answered by the OSC. In some cases, the questions will be easy to answer, and the OSC can use the "Elements" list to rapidly, confirm that each component of a dispersant use decision has been evaluated. In many cases, spill-specific considerations will require a more in-depth approach.

No one document could contain all of the information which may be pertinent to an OSC during the decision-making process. Therefore, RRT IV highly recommends that the OSC draw on the expertise of state and local officials, the NOAA Scientific Support Coordinator, and any other relevant sources of information when making a dispersant-use decision.

DISPERSANT USE DECISION ELEMENTS

1. Is The Product Dispersible?

Obviously, this question will be much easier to answer if responders know specifically what product was spilled.

Dispersability will be affected by several factors. Firstly, the API Gravity, (or density) of the oil must be considered. Generally, if API Gravity is 17 or above then the oil may be dispersible. Oil or products with an API Gravity above 45 are dispersible; however, because they evaporate rapidly they are generally not dispersed. One must be aware, however, that if, for example, 20,000 bbls of an oil with an API of 45 is spilled, 66% may evaporate, but there is still about 7,000 bbls that could affect sensitive environments.
Viscosity of the oil will also impact its dispersability. Generally, an oil must have a viscosity of less than 5,000-10,000 centistokes to be effectively dispersed.

Weathering of the oil will also significantly affect its dispersability. Finally, emulsification (or incorporation of water into the oil) will also affect dispersibility. Predictions on the weathering and emulsification of an oil can be made with the NOAA "ADIOS" model. Caution in interpreting the results needs to be exercised however since the ability of the ADIOS model to predict viscosity is very unreliable for the great majority of oils in the ADIOS database because of the lack of data on emulsification. In summary, an oil generally will be dispersible if:

- API Gravity is more than 17.
- Pour point is less than 10 F (5.5 C) below ambient temperature
- Viscosity is less than 10,000 centistokes
- The following Tables may also prove helpful in determining an oil's dispersability: Tables 1 and 2.

2. Are The Environmental Benefits Of Dispersing The Oil Likely To Outweigh Those Of Not Dispersing The Oil?

This is perhaps the most difficult question to be answered in the dispersant-use decision-making process. Further information on weighing the environmental advantages versus disadvantages of using oil spill dispersants is available in Appendix V: "Biological Assessment of Dispersant Toxicity".

3. Is The Chosen Dispersant Likely To Be Effective?

The following factors may all affect the effectiveness of any given dispersant:

- effectiveness of dispersant application to the oil;
- dispersant-to-oil application ratio;
- oil slick thickness;
- distribution of oil slick on the water;
- droplet size distribution in aerial spray;
- oil viscosity;
- energy input;
- suspended particles in water (sedimentation);
- weathering of oil;
- emulsification (formation of mousse);
- oil composition;
- dispersant composition;
- water salinity;
- temperature.

TABLE #1 SPECIFIC FRESH OIL DISPERSABILITY

CRUDE	SEA TEMPERATURE, DEG. F 45-55	55-65	65-75	> 75	CRUDE	SEA TEMPERATURE, DEG. F 45-55	55-65	65-75	> 75
ALASKAN	YES	YES	YES	YES	GULF OF SUEZ	YES	YES	YES	YES
ALGERIAN BLEND	YES	YES	YES	YES	HANDIL	NO	NO	NO	NO
ALGERIAN CONDENSATE	YES	YES	YES	YES	IRANIAN LIGHT	YES	YES	YES	YES
ARABIAN LIGHT	YES	YES	YES	YES	IRANIAN HEAVY	YES	YES	YES	YES
ARABIAN MEDIUM	YES	YES	YES	YES	ISTHMUS	YES	YES	YES	YES
ARABIAN HEAVY	YES	YES	YES	YES	ISTHMUS/MAYA BLEND	YES	YES	YES	YES
ARDJUNA	NO	NO	NO	YES	JOBO	NO	NO	NO	NO
ARUN CONDENSATE	YES	YES	YES	YES	KHAFJI	YES	YES	YES	YES
ATTAKA/BEDAK	YES	YES	YES	YES	KIRKUK	YES	YES	YES	YES
BASRAH	YES	YES	YES	YES	KOLE	YES	YES	YES	YES
BASS STRAIT/OTHER	NO	NO	YES	YES	KUWAIT	YES	YES	YES	YES
BCF13	NO	NO	NO	NO	LAGUNA	NO	NO	NO	NO
BCF17	NO	NO	YES	YES	LAGUNILLAS	NO	NO	NO	YES
BCF22	YES	YES	YES	YES	LALANG	YES	YES	YES	YES
BEATRICE	NO	YES	YES	YES	LORETO	YES	YES	YES	YES
BEKAPAI	YES	YES	YES	YES	LSWR	NO	NO	NO	NO
BERRI	YES	YES	YES	YES	LUCINA	NO	YES	YES	YES
BOMBAY HIGH	NO	NO	NO	NO	MANDJI	YES	YES	YES	YES
BONNY LIGHT	NO	NO	YES	YES	MARGHAM	YES	YES	YES	YES
BONNY MEDIUM	YES	YES	YES	YES	MAYA	YES	YES	YES	YES
BOSCAN	NO	NO	NO	NO	MENEMOTA	YES	YES	YES	YES
BRASS RIVER	YES	YES	YES	YES	MEREY	NO	NO	YES	YES
BRENT	YES	YES	YES	YES	MINAS	NO	NO	NO	NO
CABINDA	NO	NO	YES	YES	MORICHAL	NO	NO	NO	YES
CAMAR	NO	NO	NO	NO	MURBAN	YES	YES	YES	YES
CEUTA	YES	YES	YES	YES	NIGERIAN MEDIUM	YES	YES	YES	YES
COBAN BLEND	NO	YES	YES	YES	NINIAN	YES	YES	YES	YES
DJENO BLEND	YES	YES	YES	YES	OMAN	YES	YES	YES	YES
DUBAI	YES	YES	YES	YES	OQUENDJO	YES	YES	YES	YES
EKOFISK	YES	YES	YES	YES	ORIENTE	YES	YES	YES	YES[2]
ERAWAN CONDENSATE	YES	YES	YES	YES	PALANCA	NO	YES	YES	YES
ESCRAVOS	YES	YES	YES	YES	PENNINGTON	NO	YES	YES	YES
ESPOIR	YES	YES	YES	YES	PILON	NO	NO	NO	NO
FLOTTA	YES	YES	YES	YES	PLATFORM B, TRINIDAD	NO	YES	YES	YES
FORCADOS	YES	YES	YES	YES	QUA IBO	NO	YES	YES	YES
FORTIES	YES	YES	YES	YES	SAHARAN BLEND	YES	YES	YES	YES
GALEOTA MIX	YES	YES	YES	YES	SANTA CRUZ	NO	NO	NO	NO
GAMBA	NO	NO	NO	YES	SANTA ROSA CONDENSATE	YES	YES	YES	YES

CRUDE	SEA TEMPERATURE, DEG. F 45-55	55-65	65-75	> 75	CRUDE	SEA TEMPERATURE, DEG. F 45-55	55-65	65-75	> 75
SEPINGGAN	YES	YES	YES	YES	TAKULA	YES	YES	YES	YES
SERIA LIGHT	YES	YES	YES	YES	TAPIS	YES	YES	YES	YES
SHARJAH	YES	YES	YES	YES	TIA JUANA MEDIUM	YES	YES	YES	YES
SHARJAH CONDENSATE	YES	YES	YES	YES	TRINIDAD	NO	YES	YES	YES
SHENGLI	NO	NO	NO	YES	UMM SHAIF	YES	YES	YES	YES
SOYO BLEND	NO	NO	YES	YES	VENEZUELA MIX	YES	YES	YES	YES
STATFJORD, NORWAY	YES	YES	YES	YES	ZAIRE	NO	NO	NO	NO
STATFJORD, U.K.	YES	YES	YES	YES	ZAKUM	YES	YES	YES	YES
SUEZ MIX	YES	YES	YES	YES	ZARZAITINE	YES	YES	YES	YES
TACHING	NO	NO	NO	NO					

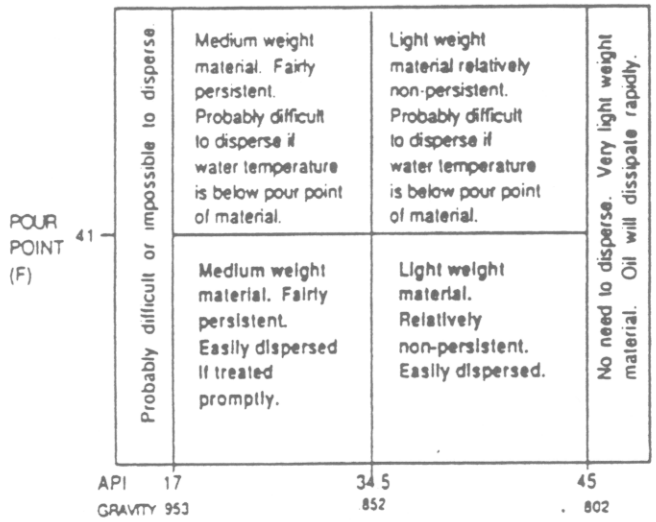
GULF OF MEXICO CRUDE	45-55	55-65	65-75	> 75	GULF OF MEXICO CRUDE	45-55	55-65	65-75	> 75
BAY MARCHAND	YES	YES	YES	YES	SOUTH MARSH ISLAND	NO	YES	YES	YES
EAST CAMERON	YES	YES	YES	YES	SOUTH MARCH ISL. BLK 107	YES	YES	YES	YES
EASE COTE BLANCHE BAY	NO	NO	YES	YES	SOUTH PECAN LAKE	YES	YES	YES	YES
EAST EMPIRE	NO	YES	YES	YES	SOUTH PASS	YES	YES	YES	YES
EUGENE ISLAND	YES	YES	YES	YES	SOUTH TIMBALIER	YES	YES	YES	YES
HACKBERRY	YES	YES	YES	YES	SOUTHWEST PASS	YES	YES	YES	YES
LOCKHART TUSCALOOSA	YES	YES	YES	YES	TURTLE BAYOU	YES	YES	YES	YES
LOCKHART WILCOX	YES	YES	YES	YES	VERMILLION	YES	YES	YES	YES
MAIN PASS	YES	YES	YES	YES	VERMILLION BLK 56/57	NO	YES	YES	YES
MISSISSIPPI CANYON	YES	YES	YES	YES	WEST CAMERON BLK 118	NO	YES	YES	YES
PORT HUDSON	YES	YES	YES	YES	WEST CAMERON BLK 265	NO	NO	YES	YES
REDFISH POINT	YES	YES	YES	YES	WEST DELTA	YES	YES	YES	YES
SHIP SHOAL	YES	YES	YES	YES	WEST EMPIRE	NO	YES	YES	YES

REFINED PRODUCTS	45-55	55-65	65-75	> 75	REFINED PRODUCTS	45-55	55-65	65-75	> 75
ASPHALT	NO	NO	NO	NO	NAPHTHA	YES	YES	YES	YES
DIESEL	YES	YES	YES	YES	NO. 2 FUEL OIL	YES	YES	YES	YES
DISTILLATE	YES	YES	YES	YES	PARAFFINS/WAXES	NO	NO	NO	NO
GASOLINE	YES	YES	YES	YES	RESIDUAL FUELS/BUNKERS	NO	NO	NO	NO
JET FUEL	YES	YES	YES	YES	SOLVENT	YES	YES	YES	YES
LUBE OIL	NO	NO	NO	NO	UNFINISHED OIL	NO	NO	YES	YES

TABLE #1 is from the Region VI, Regional Contingency Plan, Subpart H, "Authorization for the Use of Dispersants in Non-life Threatening Situations", approved February 10, 1988 by RRT 6

GENERAL DISPERSABILITY RELATIVE TO API AND POUR POINT

TABLE #2 - DISPERSABILITY



Derived from information published by the International Tanker Owners Pollution Federation, Ltd., London (API 1986)

Laboratory Testing:One way to measure a dispersant's effectiveness, relative to other dispersants, is through laboratory testing. The National Contingency Plan (NCP) calls for manufacturers to perform a Swirling Flask effectiveness test (SWT) prior to listing their dispersant on the Product Schedule. In this test, seawater and oil are swirled in a flask for twenty minutes. Then, after a 10 minute settling period, a sample of water is collected from the bottom of the flask and analyzed for oil content by spectrophotometry. The final "effectiveness" figure quoted in the NCP is derived by averaging the percent of oil dispersed with a given dispersant and tests with Prudhoe Bay crude and South Louisiana crude oils.

In the NCP, EPA adopted a minimum effectiveness result of 45 percent with the SWT for listing a product as a dispersant on the Product Schedule. This ruling significantly aids the ability of RRTs to evaluate dispersants. For example, on previous Product Schedule lists of "dispersants", more than half did not even attain a 10 percent effectiveness rating. By only listing products that have a 45% or better effectiveness rating, OSCs can muster a greater degree of confidence in a product's expected effectiveness.

It should be emphasized that the results of the Swirling Flask test, or any other laboratory test, do not necessarily indicate the effectiveness of a dispersant in the field. In fact, the National Research Council concluded that, "Unfortunately, there is no strong correlation between laboratory and field tests." There are simply too many variables that affect the effectiveness of a dispersant in the field -- i.e. application rate, type of oil, weather conditions, etc.

Visual Monitoring: Another way to assess a dispersant's effectiveness is through visual monitoring of a slick following dispersant application. Several Regions have adopted procedures for accomplishing this, most notably the federal Region VI Response Team. Using their method, observers, during an overflight of the application operations, visually observe and record the operations and their impacts on the slick. Their conclusions of the dispersant's effectiveness are then relayed to the OSC to support further dispersant-use decision-making.

Some caution must also be applied when interpreting visual monitoring results. A recent Workshop, convened by major private and public agencies involved in oil spill operations, concluded that visual monitoring may not always be a precise indication of a dispersant's effectiveness. For example, some studies on dispersants show that dispersants may not become effective until several hours after application. One expert in oil spill dispersants writes, "One should certainly not expect a slick to disappear as soon as it is sprayed with dispersant...." Other reports from the field indicate that, while a dispersant may not appear to be working, it may in fact be inhibiting emulsification, thereby making the oil more dispersible.

Another problem with using visual monitoring as a means of estimating dispersant effectiveness is that subjective interpretations of what constitutes dispersal can drastically influence results. Although training observers in standardized methods may help alleviate this problem, some level of subjectivity will always be present with this method. In fact, the National Research Council wrote, [concerning visual monitoring at spills of opportunity] "In [some] tests, different observers at the same site reached different conclusions about how much of the slick had been dispersed."

Water Sampling: A final way of estimating a dispersant's effectiveness is through water sampling in the field of a slick that has been sprayed with a dispersant product. Real-time measurements can be taken with a fluorometer which is towed by a sampling boat located in the dispersed plume area. Additionally, water samples may be taken of the subsurface dispersed slick and brought to a laboratory for testing of concentration of dispersed oil. There are, unfortunately, also problems with these methods, given that the subsurface plume of dispersed oil will be exceedingly difficult to model and/or effectively sample. Additionally, since the volume of dilution is so high, the low concentrations of dispersed oil expected will be easily confounded by background concentration of oil in the water and oil resulting from the sampling boat's wastewater itself.

A final word on dispersant effectiveness: Even in the case of a highly effective dispersant, some oil will remain on the water surface, and probably foul shoreline resources. Dispersants should not, therefore, be seen as a "cure-all" answer to the problems that oil spills present, but rather as one of several mechanisms available to an OSC for reducing the environmental impacts of spilled oil.

4. Can The Dispersant Application Be 1)Safely And 2) Effectively Implemented Given Environmental Conditions?

Several important environmental parameters will affect the ability to safely and effectively implement a dispersant application operation. They are:

- **Wind Speed**: Winds should be less than or equal to 25 knots.
- **Visibility**: Visibility should be greater than or equal to 3 miles.
- **Ceiling**: There should be a ceiling greater than or equal to 1000 feet.

**** Dispersant operations should take place during daylight hours only**.

5. Are Sufficient Equipment And Personnel Available To Conduct Aerial Dispersant Application Operations Within The Window Of Opportunity?

Oil fate and weathering information such as the Automated Data Inquiry for Oil Spills (ADIOS) model available from NOAA should have been consulted to help determine the window of opportunity for effective use of dispersant on the oil. Equipment and personnel must be available on scene quickly enough to effect a successful application of dispersant onto the oil within the window of opportunity.

6. Has A Site Safety Plan For Dispersant Operations Been Completed?

In accordance with the National Contingency Plan, responsibility for assuring site safety rests both with the OSC and the company or agency actually performing the operations.

7. Is The Product To Be Dispersed Within A Pre-Approved Zone?

Appendix I contains maps indicating the areas of pre-approval for dispersant use. These areas include waters that are:

- Outside of state jurisdiction; and
- at least three miles from any shoreline; and
- at least 10 meters in depth.

Additionally, dispersant use is not pre-approved if:

- The waters fall under State, or special federal management jurisdiction. This includes any waters designated as marine reserves, National Marine Sanctuaries, National or State Wildlife Refuges, units of the National Park Service, or proposed or designated Critical Habitats, and/or;
- The waters are in mangrove or coastal wetland ecosystems, or directly over coral reefs, which are in less than 10 m of water. Coastal wetlands include submerged algal beds and submerged seagrass beds.

Dispersant use in non pre-approved areas must be requested by the OSC and approved by EPA, and the affected state(s) after consultation with DOC and DOI.

Further information on the description of pre-approved areas can be found in the RRT IV Dispersant Use Policy and LOAs promulgated for use of dispersants within State waters.

8. Are The Necessary Equipment And Trained Personnel Available To Conduct The Recommended Monitoring Operations?

In accordance with the monitoring program, which has been recommended for use by the Region IV RRT, the U.S. Coast Guard's Gulf Strike Team and/or the Atlantic Strike Team. Given the problems of associated with estimating dispersant effectiveness, and the myriad of factors affecting the effectiveness of a dispersant in the field, RRT IV has structured it's monitoring program in the form of recommendations. RRT IV endorses the Coast Guard Strike Force monitoring protocols and believes they offer the best available methods for estimating dispersant efficiency -- and therefore recommends that all efforts be made to implement these monitoring procedures. RRT IV does not, however, believe that these protocols can consistently and accurately provide definitive "Go/No-Go", "Continue/Discontinue" data to the OSC, and therefore does not require that the results of monitoring necessarily dictate whether or not dispersant operations will continue. An inability to perform monitoring protocols will not necessarily be grounds for cessation of dispersant operations.

9. Has The Overflight To Assure That Endangered Species Are Not In The Application Area Been Conducted?

In accordance with Protocols in the RRT IV Dispersant Use Policy and with the provisions of the Section 7 Consultation conducted for this policy, an overflight of the application area must be conducted prior to commencing dispersant application operations. A visual observer of the area should attempt to assure that no endangered species appear to be threatened by the proposed operations. In the event of continued operations, periodic overflights to ensure that endangered species are not present are advisable. Consultations with resource specialist knowledgeable with the area should be conducted to evaluate what risks dispersant application may pose to endangered or threatened species or other resources of concern that may be currently present or nearby.

DISPERSANT / APPLICATION FORM FOR DISPERSANT USE

Name of the Spill Incident: _____

Responsible Party (if known): _____

Date and Time of the Spill Incident: _____

I. OIL TYPE:

1. **Spilled oil/substance name (if known):** _____
2. **Viscosity:** _____
3. **API Gravity:** _____
4. **Pour Point:** _____
5. **Percent Evaporation in: 24 Hours -** _____
   48 Hours - _____
6. **Did oil emulsify within the operational period?** _____

**** Any information from visual overflights of the slick, including estimations of slick thickness, should be included here. All additional available information pertaining to physical characterizaton of spilled oil should be included here.**

II. ENVIRONMENTAL CONDITIONS:

1. **Wind Speed:** _____
2. **Wind Direction:** _____
3. **Visibility:** _____
4. **Ceiling:** _____
5.

III. DESCRIPTION OF SPILL INCIDENT AND SPILL SITE:

Note all relevant details concerning the spill incident and spill site here. Be sure to note whether the spill was a one-time or continuous release, the amount of cargo remaining aboard the vessel, the stability of the vessel, and sensitive environmental conditions in the vicinity of the vessel. An estimated amount of oil on the water should be made, if possible, by using available information on the area of the slick and the estimated slick thickness (as indicated by the color of the slick). Also included should be a description of the location of the spill site, including the nearest major port.

_____

_____
_____
_____
_____

IV. DESCRIPTION OF AREA OVER WHICH DISPERSANTS WERE APPLIED:

1. **Distance from Shoreline:** _____
2. **Depth of Water:** _____
3. **Jurisdiction (i.e. federal or state):** _____
4. **Special Management Zone Area (as defined in LOAs):** _____
5. **Safety Zone Established in Operational Area:** _____

V. AVAILABILITY OF PERSONNEL AND EQUIPMENT:

1. **Availability of Application and Spotter Aircraft/Vessel:** _____

   Source: _____

   Point of Contact: _____

   Type: _____

   Travel Time to Spill: _____
2. **Type of Aircraft/Vessel Used:** _____
3. **Aircraft/Vessel's Dispersant Load Capability:** _____
4. **Availability of Qualified Personnel:** _____

   Source: _____

   Point of Contact: _____

   Travel Time to Spill: _____
5. **Time Required for Delivery to the Aircraft Staging Area:** _____

VI INFORMATION ON DISPERSANT PRODUCT:

1. **Name of Dispersant:** _____
2. **Manufacturer:** _____
3. **Amount Available:** _____

4. Source: _____

**** A Material Safety Data Sheet of the Product Should Be Attached Here.**

VII. IMPLEMENTATION OF RECOMMENDED MONITORING PROTOCOLS:

1. Was the Gulf Strike Team's monitoring protocol deployed? _____

**** A full report documenting the activities and results of any monitoring activities should be attached here.**

APPENDIX VIII

Dispersant Use Operational Planning and Implementation Guidance

Purpose. This guidance was developed to assist the On Scene Coordinator (OSC) and the Unified Command in their effort to assess the potential use of dispersants, and if warranted, their use on applicable oil spills occurring within Region IV. This plan supports the decision making, logistical, and mobilization concerns associated with the proper use, deployment, and monitoring of dispersant technology. Essentially this document provides a guide to develop and execute a dispersant use operations plan.

Background. The priority in using dispersants is gaining the approval to do so and mobilizing the equipment and people to accomplish the task. It is critical that OSCs, Area Committees, and Unified Commands plan for the use of dispersants and other complex countermeasures. Time is critical for the use of this type of technology and deployment windows are narrow. The characteristics and weathering of most oils and other operational priorities lead to dispersant operations being more effective within the first 24 hours of the response. Also specialized equipment and trained personnel are not abundantly available, especially in some remote areas. These resources must be pre-identified and all necessary agreements needed to access them should be in place as much as practicable. This guidance, developed in checklist form, should assist OSCs and Unified Commanders in implementing proper dispersant use as an effective countermeasure for an oil spill. This guidance is arranged to assist in:

- Decision making on proper dispersant use and strategy;
- Development of an Operations Plan;
- Gaining RRT approval (if necessary);
- Developing functional positions within the Unified Command to support dispersant operations;
- Site safety preparation; and
- Enhancing planning efforts.

Appendix Format.

The format of this guidance is a bit different in that it is not intended to stand by itself. It is a collection of flowcharts, matrices, checklists, templates, and job aids that your planners can incorporate into their existing planning efforts and eventually use in training and qualification programs. We wanted to avoid another publication to add to the myriad of pubs you already have. Having said this, we also feel that if your Unified Command staff follows the guidance within this effort, you should be able to address and support all the issues that comprise a successful dispersant deployment.

To allow a one-stop-shop, there is some overlap with the approval portions of this agreement found in Appendix VII. However, the primary goal of this effort is to address the operational aspects, planning, and logistics of dispersant deployment and not the approval of the same. There is a link but the two issues are very different. The appropriate place for you to use this information is in planning and preparedness discussions with your Area Committees and its eventual incorporation of applicable sections into the ACP.

Implementation.

Safety. Safety of personnel is paramount to the success of the operation. To assist the Unified Command in developing a Dispersant Use Safety Plan, a safety plan checklist is included in this appendix. Planners are encouraged to develop safety plan templates before the need to deploy dispersants occurs.

Flexibility. Like other functions within a particular response management system, the Incident Commander is free to decrease or expand his/her functional structure based on the response need. Dispersant operations are no different. For instance, in a less complex response, the monitor role can be combined with the spotter role, thus alleviating the need for additional aircraft. For more complex operations, you may decide to add additional spray platforms under one spotter or multiple spotters depending on the acceptable span-of-control. Observers may be assigned to any platform if acceptable to save resource expenses. Any combination is possible.

Organization. An ICS organization chart is included to show the potential relationships within the Unified Command between the Dispersant Operation Group, the Technical Specialists, and Logistics.

Procedure. On Scene Coordinators (OSCs) are encouraged to use this guidance to standardize the planning and implementation of dispersant use.