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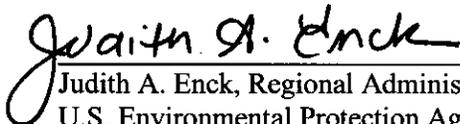
To All Interested Parties:

Section 506 of the Water Resources and Development Act (WRDA) of 1992, which amended the Marine Protection, Research, and Sanctuaries Act of 1972 (MPRSA), requires the U.S. Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (USACE) to prepare a Site Management and Monitoring Plan (SMMP) for all Ocean Disposal Sites.

Section 102 of MPRSA describes requirements for designated dredged material disposal sites, including the requirement of a schedule for review and revision of the SMMP ("which shall not be reviewed and revised less frequently than 10 years after adoption of the plan and every 10 years thereafter"). On August 30, 2011, EPA Region 2 and USACE Jacksonville District issued a public notice for a 30-day public review of the draft SMMP for the Arecibo Harbor, PR Ocean Dredged Material Disposal Site (AS). Comments were received from several Commonwealth of Puerto Rico and Federal agencies.

Based on the comments received on the draft SMMP, EPA Region 2 has revised the SMMP accordingly. The AS SMMP is hereby approved by the Region 2 Administrator, and will be in effect until the next required SMMP revision.

If you have any questions concerning the AS SMMP or require a copy, please contact Mr. Mark Reiss (EPA Region 2) at (212) 637-3799/ Email: [Reiss.Mark@epa.gov](mailto:Reiss.Mark@epa.gov), or Mr. Ivan Acosta (USACE-Jacksonville District) at 904-232-1693/ Email: [Ivan.Acosta@usace.army.mil](mailto:Ivan.Acosta@usace.army.mil)

  
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Enclosures





**US Army Corps  
of Engineers  
Jacksonville  
District**



## **Site Management and Monitoring Plan for the Arecibo Harbor Puerto Rico Dredged Material Disposal Site**

**January 24, 2012**

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## List of Acronyms

AS – Arecibo Harbor, PR Ocean Dredged Material Disposal Site

COTP – Captain of the Port

DA – Department of the Army

DMI – Dredged Material Inspector, in this case approved by USACE-SAJ

EPA- U.S. Environmental Protection Agency

EPA-R2 – U.S. Environmental Protection Agency – Region 2

IA – Interagency Agreement

GPS – Global Positioning System

MP – Monitoring Plan

MPRSA – Marine Protection, Research, & Sanctuaries Act of 1972

NAD – North American Datum

NMFS – National Marine Fisheries Service

NOAA – National Oceanic and Atmospheric Administration

NODC – National Ocean Data Center

PCBs – Polychlorinated biphenyls

ODMDS – Ocean Dredged Material Disposal Site

SJH – San Juan Harbor

SMMP – Site Management and Monitoring Plan

SPI – Sediment Profile Imaging

TOC – Total organic carbon

USACE – U.S. Army Corps of Engineers

USACE-SAJ – U.S. Army Corps of Engineers – South Atlantic Jacksonville

USCG – United States Coast Guard

USFWS – United States Fish & Wildlife Service

W/QAPP – Work/Quality Assurance Project Plan

WRDA – Water Resources and Development Act

## 1. Background

Section 506 of the Water Resources and Development Act (WRDA) of 1992, which amended the Marine Protection, Research, and Sanctuaries Act of 1972 (MPRSA), requires the U.S. Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (USACE) to prepare a Site Management and Monitoring Plan (SMMP) for each ocean dredged material disposal site (ODMDS). For sites designated prior to January 1, 1995, such as the Arecibo Harbor, Puerto Rico Dredged Material Disposal Site (AS), WRDA provides that SMMPs shall be developed by January 1, 1997. Further permitting or authorization of projects for disposal at ocean sites not having SMMPs after that date were prohibited until an SMMP was prepared. MPRSA 102 (c)(3)(F) requires that the SMMP be reviewed and revised no less frequently than 10 years after adoption of the plan, and every 10 years thereafter.

This document constitutes the WRDA-required SMMP for the final-designated (40 CFR 228.15 (d) (11)) Arecibo Harbor, Puerto Rico Dredged Material Site (AS); prepared by USEPA Region 2 (EPA-R2) and USACE Jacksonville District (USACE-SAJ). This SMMP identifies a number of actions, provisions, and practices to manage operational aspects of dredging and disposal activities and to perform site monitoring at the AS.

### 1.1 History of the Arecibo Harbor, Puerto Rico Dredged Material Disposal Site

An interim Ocean Dredged Material Disposal Site for Arecibo Harbor was designated in 1986 under MPRSA. The May 1988 Final Environmental Impact Statement for the Designation of Ocean Dredged Material Disposal Sites for Arecibo, Mayaguez, Ponce, and Yabucoa, Puerto Rico examined environmental aspects of the interim Arecibo site and concluded that the interim site was well suited for use as a dredged material disposal site. The interim site was subsequently designated as a Final Ocean Dredged Material Disposal Site to receive materials from areas of Arecibo Harbor.

### 1.2 AS Boundaries

The AS is an approximately 1 square nautical mile area located approximately 1.5 nautical miles north of the entrance to Arecibo Harbor positioned in a rectangle bounded by the following North American Datum of 1983 (NAD83) coordinates:

Degrees, Minutes, Seconds	Degrees, Minutes (decimal)
18° 31' 00" N 66° 43' 47" W	18° 31.000' N 66° 43.783' W
18° 31' 00" N 66° 42' 45" W	18° 31.000' N 66° 42.750' W
18° 30' 00" N 66° 42' 45" W	18° 30.000' N 66° 42.750' W
18° 30' 00" N 66° 43' 47" W	18° 30.000' N 66° 43.783' W

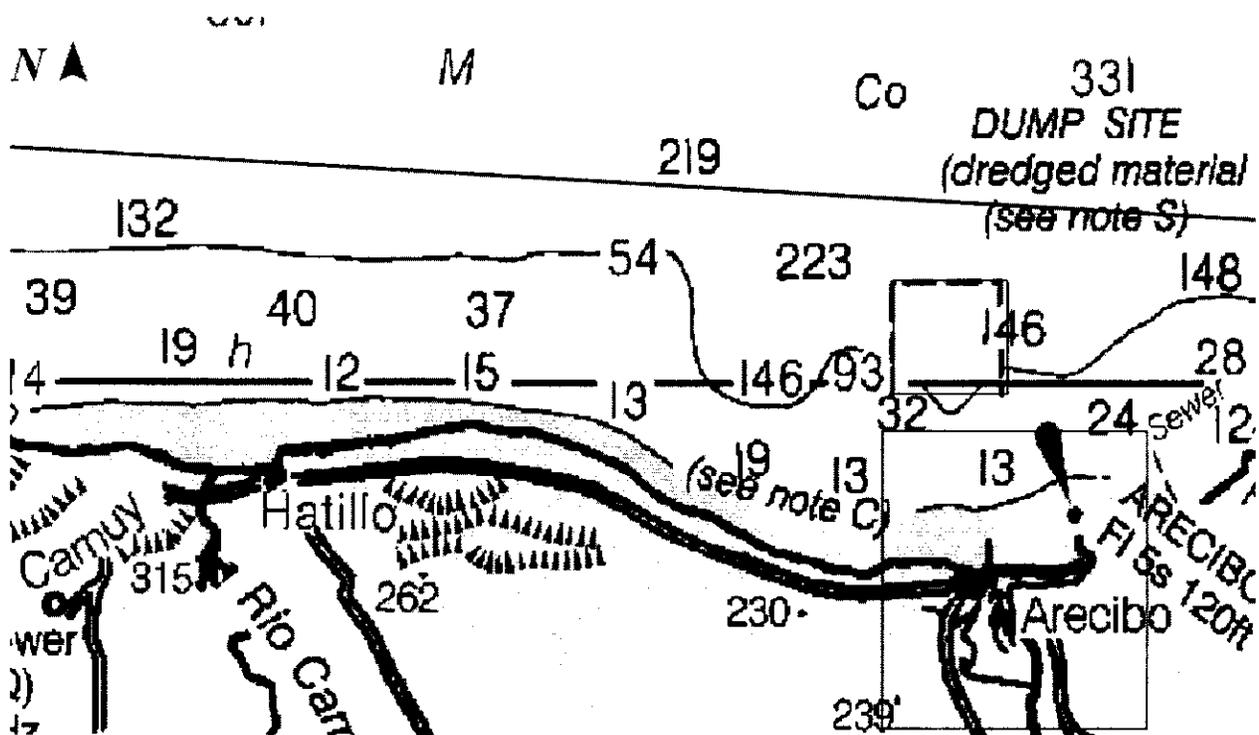


Figure 1. Location of Arecibo Harbor, Puerto Rico Ocean Dredged Material Disposal Site.

1.3 Enforcement Activities at the AS

Since the AS was designated, no significant usage of the site has taken place.

EPA-2 and the USACE-JD have used their experiences with dredged material disposal in San Juan Harbor and Ponce Harbor, Puerto Rico to develop guidelines for disposal of dredged material at the AS and to ensure that any future dredged material disposal takes place in accordance/compliance with applicable permit or contract conditions.

1.4 Transportation and Disposal Methods Used at the AS

Dredged material disposed at the AS may be removed from project areas using hopper, clamshell, or other types of dredges. Dredged material has been placed at other Puerto Rico ODMDS (San Juan and Ponce) primarily utilizing split-hull barges. Specific instructions/requirements are contained in the Department of the Army (DA) Permits issued by the USACE-JD, listed as contract specifications in Federal dredging contracts, and provided to contractors in placement guidelines associated with each dredging project (see Section 10 of this SMMP). All disposals must be conducted using automated GPS/draft monitoring devices.

## **2. Regulatory/Statutory Responsibilities Under MPRSA**

USACE and EPA have been assigned various duties pertaining to ocean disposal site management under MPRSA. EPA and USACE share responsibility for MPRSA permitting and ocean disposal site designation and management, as briefly summarized below.

### 2.1 Section 102 of the MPRSA

Under Section 102, EPA designates recommended times and locations for material disposed at ocean sites (including dredged material) and develops the environmental criteria used in reviewing permit applications.

### 2.2 Section 103 of the MPRSA

Under Section 103, USACE is assigned regulatory responsibility for transportation and disposal of dredged material, subject to EPA review and concurrence that the material meets applicable ocean disposal criteria.

## **3. Dredged Material Testing Requirements**

As part of the permitting process, applicants are required to test/characterize all dredged material proposed for disposal at AS to determine if it meets the ocean disposal criteria (i.e., is suitable for ocean disposal). Dredged material testing procedures/requirements (including quality assurance requirements) are contained in the following documents:

-Ocean Dumping Regulations (40 CFR Part 227, “Criteria for the Evaluation of Permit Applications for Ocean Dumping of Materials”)

-EPA/USACE 1991. “Evaluation of Dredged Material Proposed for Ocean Disposal, Testing Manual” as amended (otherwise known as the ‘Green Book’).

-EPA Region 2/USACE-NYD 1992 (or most recent revision). “Guidance for Performing Tests on Dredged Material proposed for Ocean Disposal” (otherwise known as the Regional Testing Manual).

EPA-R2 and USACE-SAJ will prepare a regional implementation manual that provides guidance specific to ocean disposal of dredged material at the AS and other ocean sites in the Caribbean region. Until this guidance manual is prepared and approved, however, the EPA-R2 /USACE-NYD (1992) manual (or its most recent) revision will be used to evaluate the suitability of dredged material proposed for disposal at the AS.

The suitability of dredged material for ocean disposal must be determined by the USACE-SAJ and concurred with by EPA-R2 in writing prior to each authorization. The determination of suitability will be valid for three years from the time of testing, unless it is determined that conditions at the dredging site may have changed significantly since that time (e.g., chemical spills). EPA-R2 may extend the authorization for an additional period without further testing if: 1) conditions at the dredging site are deemed to not have changed significantly since the time of testing (reduced levels of testing effort may, in fact, be required to confirm this); and 2) no

unacceptable impacts have occurred or are expected at the dredging and disposal sites.

#### **4. Past and Anticipated AS Use and Quantity of Material Disposed**

MPRSA 102 (c)(3)(D and E) requires that the SMMP include consideration of the quantity of material to be disposed of at the site, and the presence, nature, and bioavailability of contaminants in the material, as well as the anticipated use of the site over the long-term.

The Final Environmental Impact Statement anticipated that maintenance dredging of Arecibo Harbor would require ocean disposal of approximately 150,000 cubic yards of dredged material every 3 to 5 years. The following table reports volumes that are anticipated by the USACE-JD for dredging and disposal at the AS in FY11-FY14.

<b>Completion Date</b>	<b>Type of Action</b>	<b>Volume (c.y.)</b>	<b>Composition</b>
FY2011-12	Maintenance	220,000	silty sand, fines
FY2014	Maintenance	150,000	silty sand, fines

The only source of material that is expected to be placed at the site during the projected period is maintenance material from areas of Arecibo Harbor. Materials will consist of variable percentages of silt, clay, and sand. There are no proposed limitations on the quantity of material that may be placed at the site.

#### **5. Inter-Agency Coordination**

##### 5.1 Transfer of Information

EPA-R2 and the USACE-SAJ jointly manage the Arecibo Harbor dredged material disposal program and the AS. EPA-R2 and the USACE-SAJ will continue to coordinate the exchange of information, management and monitoring resources, and the documentation of site management decisions at AS. EPA-R2 and USACE-SAJ will continue to provide each other with all pertinent data and information as it becomes available. Specifically, upon discovery/notification, any information concerning disposal/dredging violations will be shared between EPA-R2 and the USACE-SAJ.

This SMMP constitutes an official agreement between EPA-R2 and USACE-SAJ to continue to cooperatively manage and monitor the AS and to coordinate the collection and transfer of information pertinent to the management and monitoring of the AS as set forth herein.

##### 5.2 Funding of SMMP Tasks and Activities

The costs of site management and monitoring will be shared between EPA-R2 and the USACE-SAJ to the extent allowed by funding levels in any given fiscal year (i.e., cost-sharing will be subject to appropriations).

Consistent with Section 102(c)(3) of the MPRSA, the SMMP developed by EPA-R2 in conjunction with the USACE-SAJ shall include a program for monitoring the site that includes the responsible agency(ies) for each monitoring activity. The SMMP and, as applicable, permit conditions will also specify when site users will be required to undertake monitoring activities associated with their projects in accordance with 40 CFR § 228.9. Each Agency will bear its own costs for activities it undertakes in furtherance of the responsibilities established in the SMMP except as provided for in duly executed Interagency Agreements (IAs) pursuant to the Economy Act or the cooperative authority of Section 203 of the MPRSA.

The USACE-SAJ will support the monitoring and management of Caribbean Ocean Dredged Material Disposal Sites. IAs between EPA-R2 and the USACE-SAJ are encouraged in order to pool resources to implement SMMP activities. When appropriate, the USACE-SAJ may provide funds to EPA-R2 via an IA for studies of prevailing current conditions, transport pathways, mapping of coral reef resources and assessments of baseline sediment conditions at or near Caribbean Ocean Dredge Material Disposal Sites, aboard the OSV BOLD (EPA's ocean monitoring vessel) or through contractual mechanisms. EPA-R2 has the highly specialized expertise and resources to conduct advanced technical work at the Caribbean Ocean Dredged Material Disposal Sites and to complement USACE-SAJ capabilities by providing support in specific areas of expertise in oceanography, marine ecology, and marine instrumentation that are required for work at the Caribbean Ocean Dredged Material Disposal Sites.

These IAs allow the Government to conduct work in the most reasonable and cost effective manner and to realize significant cost savings by using the OSV BOLD (EPA's ocean monitoring vessel) to support the lengthy surveys required for mapping resources and conducting sampling. EPA-R2 can also provide such specialized support as side scan SONAR and underwater videography via remote operating vehicle at no additional cost. EPA-R2 staff is uniquely capable to oversee the technical merits or limitations of any work products arising from any contractor providing individual site monitoring and management information services through contractual mechanisms.

### 5.3 Project specific coordination

Prior to issue of new permits for private dredging projects, Antilles Regulatory Section and EPA-R2 will discuss special conditions of the permit. As monitoring requirements and placement conditions change, the special conditions may also be changed to help ensure permit holders conduct dredged material disposal operations at the AS as safely and efficiently as possible. Likewise, prior to Federal dredging projects, contract specifications are reviewed and updated as necessary to reflect changes in monitoring requirements and placement conditions.

## **6. Objectives of the SMMP**

The objectives of this SMMP are to collect sufficient information to:

- a. provide that no unacceptable environmental impacts occur from the disposal of dredged material at the AS;
- b. recognize and correct any potential unacceptable conditions before they cause any unacceptable impacts to the marine environment or present a navigational hazard to commercial waterborne vessel traffic;
- c. determine/enforce compliance with MPRSA permit conditions;
- d. provide a baseline assessment of conditions at the AS;
- e. outline a program for monitoring the AS;
- f. describe special management conditions/practices to be implemented at the AS;
- g. estimate the quantity of material to be disposed at the AS, considering the presence, nature, and bioavailability of the contaminants in the dredged material;
- h. specify the intended use and possible closure date, if necessary, of the AS;
- i. provide a schedule for review and revision of the AS SMMP.

## **7. Site Description/Assessment of Baseline Conditions at AS**

MPRSA 102 (c)(3)(A) requires that the SMMP include a baseline assessment of conditions at the site. Baseline conditions measured by EPA-R2 in 1984 were summarized in the Environmental Impact Statement prepared to support designation of the AS (EPA, 1988). Sediment samples were taken at AS in November, 2007. Physical and chemical parameters were measured in the collected AS sediment samples (Battelle, 2008).

### 7.1 Physical, Meteorological and Oceanographic Features of the AS:

- a. Water depths at the AS range between 101 m along the southern margin to approximately 417 m along the northern border.
- b. Easterly trade winds predominate at the AS throughout the entire year, primarily from the ENE direction. Wind speeds in the area are moderate. The mean annual wind speed is 14.2 km/hr, but shows considerable daily and monthly variation. Maximum wind speeds occur in July (mean monthly velocity = 16.1 km/hr) and minimum wind speeds generally occur in October (11.3 km/hr). Infrequent tropical storms and hurricanes are sometimes severe, occur any time from August to October, and generally produce considerable rainfall (EPA, 1982).

c. Currents at the AS are greatly influenced by the direction and strength of the trade winds. The trades blow primarily from the northeast, which in conjunction with the east-west alignment of the coastline results in a westerly, alongshore current. Surface currents show general westward drift (mean speed 0.6 knots) with a significant tidal component. Subsurface currents are not well defined, but appear to be weak. This fact is also evidenced by the relatively undisturbed depositional environment within the AS and surrounding area.

d. Water column structure at the AS is more or less uniform throughout the year. Salinity and temperature data reveal the existence of a well-mixed layer of surface water. The depth of this surface layer varies with season from less than 30 m (April - December) to deeper than 100 m (varies from 100 to 330 ft). The average annual temperature and salinity of this surface water range between 26-28 °C and 35.5 - 36.2 ppt. Below this surface layer, a permanent density gradient (pycnocline) extends to approximately 240 m.

e. Measurements of baseline dissolved oxygen, chlorophyll 'a' and turbidity levels in the water column at the AS were generally within ranges typically associated with unpolluted tropical conditions. Maximum chlorophyll 'a' concentrations co-occurred with the top of the pycnocline. Distributions of dissolved oxygen and turbidity were vertically complex; potentially reflecting discontinuities in respiration/production rates in the water column. Suspended solids and turbidity tend to be high in surface waters due to phytoplankton production, increase to a localized maximum near the pycnocline and decrease significantly at depth.

## 7.2 Sediment Composition/Chemistry and Benthos at the AS

*a. Sedimentary Composition:* The AS is located over the northern Puerto Rican slope. Bottom sediments at the AS are relatively homogeneous: sediments are predominantly fine-grained (i.e. silts and clays) throughout the site. Samples of bottom sediments taken from the AS average 31 % sand and 69 % silt/clay (Battelle Laboratories, 2008).

*b. Sediment Chemistry:* The total organic carbon content (TOC) of AS sediments were low across the site, averaging 0.86 %. Sediment samples collected in 2007 from within the boundaries of the AS were analyzed for concentrations of trace metals, hydrocarbons and chlorinated organic contaminants (i.e., PCBs and selected pesticides). With the exception of extremely low levels of DDT compounds (<0.2 ppb except one sample at 0.89) and individual PCB congeners ( $\leq 0.8$  ppb) in most samples, sediments at the AS were essentially free of chlorinated organic contaminants. Polycyclic aromatic hydrocarbon levels were low across the site (< 99 ppb) All sediment samples were analyzed for trace metal levels; the results are reported in Table 1. Concentrations of certain metals (chromium, copper, lead, nickel, and zinc) were found to be somewhat elevated within the AS with respect to other ocean areas and within expected ranges for areas receiving some degree of anthropogenic input. Metals levels were similar at stations taken outside of AS boundaries at candidate reference locations closer to shore.

**Table 1. Ranges of concentrations of selected contaminants in sediment samples taken from 14 stations (15 observations) at the AS (Battelle, 2006).**

Parameter	Unit	Concentration, dry wt.
Total PAHs	ng/g (ppb)	22.9 – 98.1
Silver	ug/g (ppm)	0.06 - 0.10
Arsenic	ug/g (ppm)	14.5 – 24.6
Cadmium	ug/g (ppm)	0.09 – 0.17
Chromium	ug/g (ppm)	50.9 – 64.8
Copper	ug/g (ppm)	71 - 142
Mercury	ug/g (ppm)	0.06 - 0.09
Nickel	ug/g (ppm)	23.4 – 37.3
Lead	ug/g (ppm)	14.2 – 24.5
Zinc	ug/g (ppm)	82.7 – 125

*c. Benthic Biota:* Benthic samples have not been taken from the vicinity of the AS. Benthic community analyses at other Puerto Rico ODMDS yield relatively high but variable numbers of taxa and individuals. The benthic community is characteristic of fine-grained bottoms, i.e. the community is dominated by deposit-feeding organisms. Numerically dominant taxa include polychaetes, crustaceans and molluscs (primarily gastropods (snails) and pelecypods (bivalves)). Sipunculids and echinoderms are minor taxa (JRB, 1984).

### 7.3 Usage of AS by Fish, Marine Mammals and Endangered Species

*a. Marine mammals and sensitive species:* The AS does not encompass any known breeding, feeding, or nursery areas of marine mammals, sea turtles or birds. Waters off Arecibo are regularly visited during the winter months (January-mid-March) by migrating Humpback whales (*Megaptera novaeangliae*). Humpbacks do not feed while in tropical waters, but are often seen spy hopping and engaging in other social display behaviors. Newborn calves may accompany female whales, since both Silver Bank (off N. coast of Hispaniola) and Mona Island (W. of Puerto Rico) are known calving grounds for this species. Whales can pass within less than 1 mile of shore, but are also observed further offshore. Dolphins are common residents and may be present in waters of the AS at any time. West Indian manatees have been sighted in shallower coastal waters of Puerto Rico. This SMMP requires that all vessels transporting dredged material to the ODMDS adhere to all measures required in Appendix D of this SMMP (i.e., NMFS,

Southeast Region Vessel Strike Avoidance Measures and Reporting for Mariners) while underway.

*b.* Four species of sea turtles are also known to inhabit Puerto Rican waters. Juvenile green and hawksbill turtles may be found off the northern shore of Puerto Rico, associated with rafts of *Sargassum*. Waters of the AS are too deep to provide foraging habitat for adults of green, hawksbill or loggerhead turtles. Leatherback marine turtles approach the north shore of Puerto Rico during their nesting season (March-June) and may be present in offshore waters during this time, but basically spend the rest of their adult lives in the temperate zone. The endangered brown pelican is resident to Puerto Rico, but is primarily present inshore. While underway, dredging contractor must adhere to all measures required in Appendix D of this SMMP (i.e., NMFS, Southeast Region Vessel Strike Avoidance Measures and Reporting for Mariners) and maintain a watch for turtles as well.

*b. Fish:* Open waters of AS may be feeding grounds for pelagic fish (e.g. tuna, jacks, mackerel) and deeper site waters may be feeding areas for various snappers and other species, but the AS is not a critical area in this regard. Deep waters of the site may be inhabited by various species having wide depth ranges (e.g. elasmobranchs, conger eels, batfishes) as well as slope species (e.g. grenadiers).

A modest, but significant, commercial pot fishery operates off northern Puerto Rico. This fishery, however, is restricted to shallower, inshore shelf waters. Mackerel, sardine, snook and snappers constitute the bulk of landings in this fishery. A hand line fishery targeting snappers also operates off northern Puerto Rico; this fishery operates primarily in shallower water but extends to depths of approximately 600 ft. In addition, there are numerous private recreational and deep sea charter fishing operations centered at San Juan. Effort is generally directed at billfish, tuna, and other pelagics in this fishery.

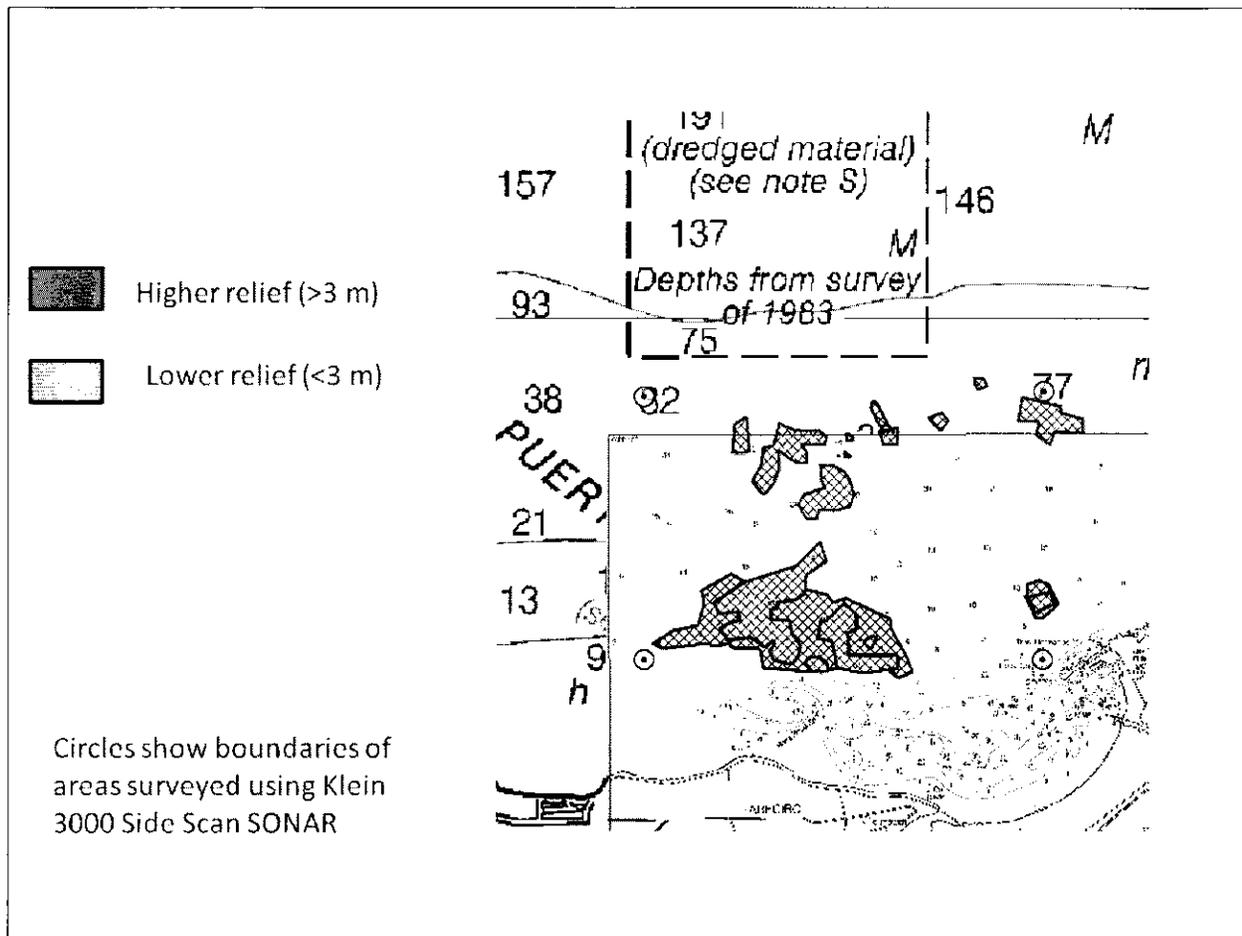
*c. Endangered and threatened corals:* There are two species of corals in Puerto Rican waters listed by NOAA-NMFS under the Endangered Species Act (ESA) as threatened (*Acropora palmata* and *A. cervicornis*). *Acropora* spp. are important reef building corals, typically occurring in high energy, shallow water areas. NOAA identified critical habitat for *Acropora* spp. as areas having consolidated hardbottom substrates devoid of macroalgae and sediment cover in depths between the Mean High Water line and 30 meters. The AS is located in waters substantially deeper and far removed from areas meeting this depth criterion. Critical habitat areas may however be located along the transport routes typically used by barges to travel to and from the AS.

NOAA also identifies a species of deep water coral (*Oculina* spp.) as a species of concern in Puerto Rico. The presence of this species however has not been confirmed on the northern coast of Puerto Rico in the vicinity of the AS. In addition, NOAA-NMFS is proposing to list additional species of coral as threatened under the ESA. Many of these species occur as part of

coastal or shelf edge reef habitats (i.e., depths <61 m). The AS is located in waters substantially deeper and far removed from areas meeting this depth criterion. (see Shelf Edge Reef Resources (section 7.4))

#### *7.4. Shelf Edge Reef Resources*

Reef resources on the Puerto Rican shelf and along the shelf edge have been identified by the National Oceanic and Atmospheric Administration (NOAA) as essential fish habitat. NOAA has indicated that these areas are generally restricted to areas shallower than 200 feet (61 m). Side scan SONAR and remotely operated video mapping conducted along the coastline east of San Juan Harbor showed that coral growth is limited within this depth range. In November 2011, a side scan SONAR survey was made of the area between the mouth of Arcibo Harbor and the AS to identify those areas with hard bottom substrates that rise significantly above the seafloor. Several hard bottom areas with vertical relief were identified but mostly lay outside the direct route between Arcibo Harbor and AS (see Figure 2). Nevertheless, scows will be required to maintain a line of transit that passes west of 18 29.700 °N and 66 42.800 °W to minimize the potential for losses of dredged material onto these potentially sensitive areas. Video documentation of the quality of these habitats will be obtained as early monitoring efforts in implementation of this SMMP before requiring any further monitoring or management requirements site for protecting shelf edge reef resources.



**Figure 2. Hard bottom features having significant vertical relief outside Arcibo Harbor. Based on EPA Region 2 side scan SONAR survey (conducted November 2011)**

### 8. AS Monitoring Program

MPRSA 102 (c)(3)(B) requires that the SMMP for a given dredged material ocean disposal site include a program for monitoring the site.

EPA-R2/USACE-SAJ have developed a tiered monitoring approach to investigate the physical, biological, and chemical impacts of ocean disposal of dredged material at sites in the Caribbean. EPA-R2/USACE-SAJ's Ocean Disposal Site Monitoring Program (MP) addresses both regulatory and technical issues associated with the disposal of dredged material at the AS. The tiered approach described herein is comprised of levels of increasing investigative intensity designed to generate the technical information necessary to properly manage the disposal site in an environmentally sound and cost-effective manner.

Monitoring effort under the AS MP is dependent upon volume and frequency of disposal. In general, if no disposal occurs, then no monitoring will be required. Inversely, in a period during which there is disposal activity, monitoring would be conducted proportionate to volume of

disposal, as necessary. Specific monitoring activities may also be required for individual projects.

### 8.1 Goals of the AS MP

The AS MP will focus on the overall impacts of dredged material on the entire AS and surrounding area. In addition to addressing the Null Hypotheses ( $H_0$ ) (see Section 8.2), the overall goals of the AS SMMP are to:

- a. verify that dredged material disposed at the AS does not cause any unacceptable impacts.
- b. assess and monitor (trends) conditions at the AS as defined in 40 CFR Section 228.10, and compare them to baseline data.

### 8.2 Questions/Null Hypotheses ( $H_0$ ) to be addressed by the AS MP:

The AS MP will focus specifically on verifying the following four null hypotheses ( $H_0$ ) for individual projects and/or disposal locations:

$H_{01}$ : Dredged material disposal operations are consistent with the requirements of the ocean dumping permits.

#### Actions:

- Use the USACE-approved disposal inspector (ship rider) reports and information submitted by permittees to determine compliance.
- Require GPS-based automated disposal surveillance systems on all disposal scows at the AS.
- Conduct independent surveillance of disposal operations

$H_{02}$ : Dredged material disposal operations are not causing unacceptable impacts (physical, chemical, and biological) at the AS and surrounding area.

#### Actions:

- Conduct sediment profile imagery surveys (Tier 2) at the AS and surrounding area.
- Conduct benthic community structure, sediment chemistry and body burden analyses within the AS when deemed necessary based on results of Tier 2 physical and biological efforts

$H_{03}$ : Dredged material disposal has no significant impact on endangered species.

#### Actions:

- Review USACE-approved disposal inspector (ship rider) reports to ensure that no dredged material disposal occurs in the presence of any marine mammals/endangered turtles.
- Require idle speeds for equipment and tugs while operating inside Arecibo Harbor
- Adhere to Vessel Strike Avoidance Measures outlined in Appendix D
- Monitor marine mammals/sea turtle sightings, landings (bycatch), and strandings in the Arecibo vicinity.

H<sub>0</sub>4: Dredged material disposal does not significantly alter the benthic community structure of the area of the AS.

Actions:

- Use sediment profile imaging (SPI) photography to assess sediment and benthos distribution.
- Conduct Tier 3 benthic community structure monitoring in and around the site

## **9. Monitoring Activities/Techniques**

### *9.1 Work/Quality Assurance Project Plan*

The AS MP consists of a three-tiered approach to monitor the physical, chemical and biological effects of dredged material disposed at the AS, the components of these tiers are outlined below in Sections 9.2 to 9.4. Information from these monitoring activities will be extremely important for determining the potential for unacceptable impacts to occur due to disposal of dredged material at the AS. For this reason, the data obtained in these surveys must be of high quality. All monitoring work conducted in accordance with this SMMP must conform to a work/quality assurance project plan (W/QAPP) that has been reviewed and approved by USACE-SAJ and EPA-R2.

Monitoring and sampling will occur using a design that allows quantitative analysis of results; the sampling area may include all or part of the AS, the surroundings and a reference area geographically removed from the effect of dredged material disposal at the AS. W/QAPPs must reflect the design selected by the Agencies for the monitoring tasks.

### *9.2 Physical Monitoring*

Physical monitoring is designed to determine the physical nature and distribution of dredged material during and after disposal at the AS and environs. Measurements of the physical nature of the material proposed for disposal at the AS will allow first order tracking of physical impacts at the site and support modeling of initial mixing and seafloor deposition following disposal. Sediment profile imaging (SPI) will be used to confirm the fate of the material following disposal. SPI technology consists of a frame-mounted apparatus that enables a camera to take a picture of the sediment-water interface. Useful information can be obtained from the pictures to produce fine scale description of the spread of material on the bottom and its effect on the environment. Under certain circumstances, the collection and analysis of sediment samples may be required to fully assess the final disposition of dredged material discharged at the AS.

#### *a. Tier 1: Dredged Material Testing/Modeling of Disposal Events/Disposal Inspection*

Grain size distribution, percent moisture, Atterberg limits, and total organic content of proposed materials will be measured for all dredged materials proposed for disposal at the site. This data is acquired in support of the evaluation of dredged material proposed for ocean disposal, as required by the 1991 Green Book and the regional implementation manual governing disposal at the AS.

Disposals will be modeled using available computer models (e.g., STFATE) to estimate the footprint and plume anticipated from a proposed project prior to commencement of disposal at the site. Results will be used to determine disposal locations at the AS.

GPS-based automated disposal surveillance technology will be used to ascertain that loading and disposal of dredged material is occurring at authorized locations, that material is not being lost en route to the site, and that material has been discharged within the site boundaries. This technology simultaneously records the draft and position of the vessel to which it is attached. USACE-approved disposal inspectors (ship riders) will accompany all scows and hopper dredges disposing at the AS.

Frequency: Testing and modeling conducted prior to each initial MPRSA concurrence. GPS-based automated disposal surveillance to be conducted with each load of material transported for disposal at AS.

*b. Tier 2: Sediment profile imagery (SPI)*

Sediment profile imagery (SPI) cameras will be deployed at an array of stations extending radially outward from the center of the AS to define the footprint of dredged material within and around the site. Sampling locations will be determined jointly by EPA-R2 and USACE-SAJ prior to the surveys. Because SPI has not yet been conducted at the site, the optimal length and spacing of radial transects will be determined from the first survey. From these images, grain size, sediment color and roughness can be determined and used to identify and map dredged material on the bottom. (Images obtained using SPI will also be used in Tier 2 biological evaluation of the site.)

Frequency: SPI records will be collected approximately every 5 years when the site has been active. USACE-SAJ and EPA-R2 will generally conduct these investigations, however the agencies may require surveys to be conducted by permittees (or by the USACE-SAJ), following disposal of large volume projects.

\*\*\*Note: The results of SPI will be used to adjust the Tier 1 model and/or disposal operations, as necessary\*\*\*

*c. Tier 3: Sediment sampling and analysis*

In cases where additional information is required to refine the final disposition of discharged dredged materials, it may be required to actually collect sediment samples from within the AS and its vicinity for analysis. Sediment samples will be collected from areas of interest inside and/or outside the site. Grain size distribution, percent moisture and total organic content of sediment samples will be analyzed. Tier 3 physical monitoring may be conducted alone or in conjunction with Tier 2/3 chemical (bulk sediment chemistry/body burden analyses) or Tier 3 biological efforts (benthic community analyses). Samples of the sediment will be collected using appropriate methods to allow for Tier 2 chemical analysis (bulk sediment chemistry). Organisms

screened from the sediment will be preserved and archived in a manner that allows Tier 3 biological (benthic community analysis) and/or chemical analyses (body burden analysis).

Frequency: The need for and the areal extent of Tier 3 physical monitoring efforts will be determined by Tier 2 physical and biological evaluations (i.e., SPI). In addition, Tier 2 monitoring may require confirmation/validation using sediment samples.

\*\*\*Note: Sediment samples can also be used to assist in the interpretation of SPI imagery through examination of features present in the sample\*\*\*

#### *d. Special Studies (Physical)*

In the event that high resolution of site bathymetry is required, a survey using mid-water multibeam sounding equipment would be conducted at the site. This type of technology is required for obtaining bathymetry at the AS because of the great depth of the water. However, owing to the high cost of this type of surveying and the expectation that accretion of deposited sediments will not result in seafloor features (this expectation is based on the results of monitoring of a deepwater dredged material ocean disposal site off San Francisco, CA) it is envisioned that bathymetric surveys of the AS will not be conducted on a regular basis.

In the event that areas that warrant additional concern are identified in the vicinity of the site, arrays of sediment traps may be deployed along the margins of the site and in the direction of dredged material transport. Sediment traps can determine if significant quantities of dredged material are being transported off the site in the direction of the resource of concern. (The traps would have to be deployed for approximately six months of active disposal and would be compared to sedimentation rates at a reference site, i.e. an area that is within the area of influence of hydrographic regimes affecting the AS but that is unaffected by dredged material disposal). It is not envisioned that sediment traps will need to be deployed on a regular basis.

Additional studies and technologies may be used as required to address specific data needs but are not intended for application on a routine basis. Examples include sub-bottom profiling and side-scan sonar technologies.

Frequency: As needed

#### 9.3 Biological Monitoring

The review of 96-h exposures of sensitive marine organisms to the suspended and liquid phases, and 10-d exposures to the solid phase of dredged material, prior to approval for disposal at AS, provides assurances that no acute toxicity is expected to result from disposal of dredged materials at the AS. Determination of long term trends in the benthic community, however will require SPI photography or collection and analysis of benthic samples. SPI photography provides useful information on the abundances, taxa, and successional stage of communities present at a given location without the expense of sampling. Under certain circumstances, actual sampling and

analysis of benthic communities in and around the AS may be required.

*Tier 1: Review of Testing Results/Monitoring for Sensitive and Fisheries Species Impacts*

a. Toxicity of all project material proposed for ocean disposal will be assessed using sensitive marine organisms and the procedures outlined in the 1991 Green Book and the regional implementation manual governing disposal at the AS. The results of toxicity tests will be used in conjunction with the STFATE mixing model to ensure that disposal of the project material does not result in violations of the initial mixing requirements following disposal at the AS. By prohibiting materials that show acute toxicity in 10-d tests from disposal at the AS, the first level of assurance that adverse impacts to the benthos or to other marine organisms are not occurring due to the disposal of dredged material is gained. The results of bulk sediment and bioaccumulation tests will be used by USACE-SAJ and EPA-R2 to identify and track impacted zones and direct biological sampling efforts at the higher monitoring tiers. Impacts to sensitive species (e.g. marine mammals, sea turtles, brown pelicans) will be avoided or minimized through the use of on board observers; disposal will not be allowed to occur in the presence of identified sensitive species. Fisheries issues are re-evaluated for the AS during each permit/authorization process. (Impacts to fisheries due to disposal operations are not anticipated, however in the event that issues regarding fisheries are raised to the USACE-SAJ and/or EPA-R2, the agencies will consult with resource authorities at NMFS, USFWS and the Commonwealth of Puerto Rico to review the issues in the context of dredged material disposal at the AS.)

Frequency: Testing and Essential Fish Habitat consultations will be conducted prior to each initial project 103 concurrence. On board disposal inspectors will accompany each load of material transported for disposal at AS.

*b. Tier 2: Sediment profile imagery (SPI)*

SPI cameras will be used to identify and describe colonization and succession status of communities inside and outside site (SPI also serves as Tier 2 physical monitoring). If, based on comparisons with a reference site, areas outside the site appear to be biologically impacted by disposal activities then the areal extent of impact will be considered in the decision to pursue higher tier testing involving sediment sampling (Tier 2 Chemical, Tier 3 Physical/ Chemical/ Biological) and may result in conditions placed on permits or contract specifications.

Frequency: SPI records will be collected approximately every 5 years when the site has been active or if modeling predicts exceedance of site boundary. USACE-SAJ and EPA-R2 will generally conduct these investigations, however the agencies may require surveys to be conducted by permittees (or by the USACE-SAJ), following disposal of large volume projects.

*c. Tier 3: Benthic sampling and analysis*

Tier 3 biological monitoring entails counting and identifying benthic organisms collected with box cores to define the status and health of the benthic community (e.g. species identification, diversity, biomass, trophic status, successional stage). Identification of organisms will be to lowest practicable taxonomic unit. Sampling of benthos will occur in a stratified, random design to allow quantitative analysis of results; the sampling area may include all or part of the AS the

surroundings and a reference area geographically removed from the effect of dredged material disposal at AS.

Frequency: Impacts within the site are expected due to the disturbances caused by disposal events. Impacts outside the site, or an absence of progress in the succession or in colonization of the site for extended periods of time after cessation of disposal, may be cause for concern and therefore prompt more definitive study in higher tiers of investigation (i.e. Tier 3 biological, Tiers 2/3 chemical). These indications would be detected using SPI in Tier 2.

\*\*\*Note: Tier 3 biological monitoring results will also be used to assist in the future interpretation of features present in SPI imagery\*\*\*

*d. Special Studies (Biological)*

In the event that concerns regarding local populations of fish or other species (e.g. crustacean macrofauna or sensitive species) are identified, standardized quantitative surveys and/or body burden surveys may be required. These surveys would use appropriate gear for capturing the target species (e.g. benthic sleds or trawls) and again use a reference area for comparisons.

Frequency: As needed

9.4 Chemical Monitoring

Chemical analyses of sediments and tissues of organisms exposed to the material proposed for ocean disposal enables USACE-SAJ and EPA-R2 to assess the presence, nature and bioavailability of contaminants in dredged material prior to authorizing disposal at the AS. Periodic collection and analysis of sediment and resident organism tissue samples from the AS and its environs will provide USACE-SAJ and EPA-R2 with information necessary to confirm that no unacceptable effects are occurring and to identify long term trends in and around the AS.

*a. Tier 1: Review of ocean disposal testing results*

Bulk sediment chemistry (and a measure of its bioavailability through biological tests) of proposed dredged material will be determined using the procedures outlined in the 1991 Green Book and the regional implementation manual governing disposal at the AS prior to commencement of any disposal of the material at the site.

GPS-based technology will be used to ascertain that loading and disposal of dredged material is occurring at the authorized locations and that material is not being lost en route to the site. Visual inspectors will also be deployed.

Frequency: Conducted with every project.

*b. Tier 2: Bulk sediment chemical analysis*

Bulk sediment chemistry will be conducted on surface samples collected from the AS and its environs. This data will be used to help determine the areal extent and distribution of dredged material and specific contaminants. Depending on site management data needs, the list of

contaminants for a given effort may include all contaminants of concern or a few contaminants selected for their usefulness as tracers of dredged material or for their ecological significance. All sediment samples collected for bulk chemistry analysis will also be analyzed for grain size and total organic carbon content (Tier 3 Physical Monitoring). Modeling of the theoretical bioaccumulation potential of non-polar organic contaminants will be used to estimate bioavailability and to determine whether there is a potential for bioaccumulation of these contaminants to unacceptable levels and need for body burden analyses.

Frequency: The need for Tier 2 chemical monitoring will be determined from the results of SPI conducted under Tier 2 biological and physical monitoring. Possible triggers include observations that dredged material appears to have spread significantly outside the site or if SPI imagery suggests that colonization/succession is not occurring at rates comparable to reference sites. It is anticipated that these analyses will be conducted on the order of every 10 years.

*c. Tier 3: Analysis of body burdens of contaminants in benthic organisms*

Conduct tissue chemical analysis of organisms from samples collected during Tier 3 Physical/Biological Monitoring. The species selected for body burden analyses will reflect their abundances in collected samples. The substrate in which collected organisms were residing will also be sampled and analyzed [Tier 2 chemical analyses (bulk sediment chemistry) and Tier 3 physical analyses (grain size/TOC/percent moisture)] and tissue lipid levels will be analyzed, to the maximum extent practicable. Ideally, Tier 3 chemical monitoring will also be conducted synoptically with an evaluation of the health of the benthic community (Tier 3, biological monitoring).

Frequency: Tier 3 chemical evaluation will be conducted if TBP modeling using Tier 2 (bulk sediment) chemistry results suggests that there is the potential for unacceptable bioaccumulation of contaminants from the dredged material or if sediment levels exceed reference concentrations by an order of magnitude.

\*\*\*Note: The results of Tier 3 analysis will be used (in conjunction with Tier 2 chemical (bulk sediment chemistry) and Tier 3 physical results (TOC)) to refine the inputs used in future TBP modeling\*\*\*

9.5 Frequency of Monitoring/Need for Higher Tier Investigations

Monitoring at Tier 1 will be conducted prior to disposal of each authorized project. An anticipated schedule for monitoring is listed in Table 2, however if results indicate the need for further investigations, any required monitoring (Tiers 2 and 3) would be initiated. Specific circumstances that “trigger” advancing to higher tiers of monitoring will be decided by EPA-R2 and the USACE-SAJ, in consultation with the Commonwealth of Puerto Rico and other stakeholders. Existing monitoring data, anticipated or proposed disposals (including the type and quantity of anticipated material), and other relevant factors will be considered to determine appropriate monitoring and management preferences. The actual frequencies and schedules for all jointly funded monitoring will be by mutual agreement of USACE-SAJ and EPA-R2.

9.6 Monitoring Data Management: Processing, Evaluation and Interpretation

a. Data collected from AS surveys are to be processed and analyzed by (or as specified by) the USACE-SAJ and EPA-R2 (or their respective contractors). These data are used to make management decisions regarding dredged material disposal operations and permit decisions and must therefore be of reliable quality and in a consistent format.

b. EPA-R2 requires data to be in the National Ocean Data Center (NODC) format, where appropriate. Survey data will be summarized in a report generated by the action agency. The report will indicate how the survey related to the SMMP and to previous AS surveys. Reports should be provided within 90 days after completion. Exception to the time limit will be possible if outside contracts stipulate a longer period of time. The report will provide data interpretations, conclusions, and recommendations relative to needs and goals of the SMMP.

Data collected will be made available to Federal and Commonwealth agencies and other stakeholders, as appropriate. Reports summarizing data will also be made available.

**Table 2: AS Monitoring Activities and Frequencies**

<b>Tier 1</b> monitoring activities will be conducted with each authorized project, as noted in text			
<b>Tier 2 - Monitoring Activity</b>	Anticipated Frequency <sup>a</sup>	Triggered by...	Responsible Entity
Physical- SPI photography	5 Yrs	Usage	USACE-SAJ/EPA-R2, or permittee
Biological- SPI photography	5 Yrs	Usage	USACE-SAJ/EPA-R2
Chemical- AS Sediments	10 Yrs	Tier 2 Physical and Biological	USACE-SAJ/EPA-R2
<b>Tier 3 - Monitoring Activity</b>			
Physical-Sediment Analyses	10 Yrs	Volume, Usage	USACE-SAJ/EPA-R2
Chemical- Benthic Tissue	as needed	Tier 2 Chemical and Biological	USACE-SAJ/EPA-R2
Biological- Community Analysis	as needed	Tier 2 Chemical and Biological	USACE-SAJ/EPA-R2
<b>Special Studies</b> will be performed when deemed necessary to confirm that unacceptable effects are not occurring or to address any identified deficiencies in comprehension of baseline.			

<sup>a</sup> Listed years are presented as targets for the anticipated frequency of conducting this monitoring tier. Targets are not intended to be binding and are dependent on site use history.

## 10. AS Disposal Permit Conditions/Enforcement

MPRSA 102 (c)(3)(C) requires that the SMMP include special management conditions or practices to be implemented at the site that are necessary for the protection of the environment.

Within approximately ten days prior to the start of dredging of AS-suitable material, a pre-construction meeting is held with dredging contractor representatives, permittees, and, members of the USACE-SAJ Regulatory Branch personnel for projects, or with USACE dredging contractor and Construction/Operations Division personnel for Federal construction and/or maintenance dredging projects. Permit requirements and placement conditions are discussed to ensure that everyone is familiar with SMMP requirements prior to the start of AS-material dredging.

### 10.1 Regulatory Framework: Permit Conditions

Department of the Army (DA) permits will be issued for AS disposal activities involving non-Corps projects, and typically are valid for a period of three years. Copies of the issued permits or the letters modifying these permits are maintained and made available upon request by the USACE-SAJ, which issues the documents. Placement of dredged material cannot occur at the AS without a permit (or MPRSA Section 103 (e) equivalent, e.g. Federal projects authorized by Congress).

a) *General Conditions:* General permit restrictions reflecting standard maritime industry and U.S. Coast Guard requirements so that a waterborne/sea-going activity can be carried out within the minimum or basic guidelines set, primarily for safety reasons, by the regulating authority. In most, if not all, cases the U.S. Coast Guard is that authority.

b) *Special/Specific Conditions:* Special and/or specific permit restrictions will be listed in the text of the permit and will include, but not necessarily be limited to:

1. *Seasonal restrictions or special conditions regarding dredging and disposal (assigned on a case by case basis).* At present, no disposal restrictions related to seasonal variations in ocean current or biotic activity have been determined to be necessary for AS disposal. Should any such restrictions appear necessary as monitoring results are compiled, they will be incorporated into future ocean disposal authorizations. However, while underway, dredging contractor must adhere to all measures required in Appendix D of this SMMP (i.e., NMFS, Southeast Region Vessel Strike Avoidance Measures and Reporting for Mariners). Additionally, if new information indicates that endangered, or threatened, species are being adversely impacted, restrictions will be implemented.

2. *Requirements for the submission of transportation and placement logs.* USACE-SAJ approved Dredged Material Inspectors (DMIs) are required to document each placement trip on a **Transportation and Placement Log Form** (Log form for scow disposals is provided as Appendix A) and notify the USACE-SAJ. The permittee

shall hire a DMI that reports directly to the permittee or the USACE contract officer (not to the dredge contractor).

3. *Reporting requirements for un-anticipated events and discrepancies.*

4. *Guidance pertaining to aspects of the disposal activity; including boundary coordinates, release/discharge procedures, and requirements to discharge within specific areas.* The guidance within the permit is also supplemented by the Guidelines provided for discharge using scows in Appendix B of this document

### 10.2 Federal Authorization

In cases where permits are not issued, as is the case with Federal Navigation Projects, the above permit conditions will be incorporated into dredging contract specifications (see MPRSA Section 103 (e)). When USACE vessels, or their contractors, conduct the dredging, they will comply with the same requirements, monitoring, and safeguards that are included in permits issued to third party contractors. Permit-like instructions specifying all requirements are to be contained within the work specifications/orders for the project. These conditions are equivalent to permit conditions and will be enforceable on the contractor under applicable law.

### 10.3 Violation/Enforcement Cases

a. Disposal at the AS is to occur only with prior USACE-SAJ approval and EPA-R2 concurrence. Projects not in compliance with the DA permit will be subject to enforcement action.

b. A USACE-SAJ approved Dredged Material Inspector (DMI) must accompany all trips for placement of dredged material at the AS and be present during all dredged material discharge events in order to certify compliance with the USACE-SAJ permit conditions. The DMI must report independently to the permittee or the USACE contracting officer (not to the dredging contractor). The DMI is required to complete, sign, submit and maintain within the official record a Transportation and Placement Log Form (e.g., Appendix A) for each event.

c. The DMI must also complete, sign and submit an Inspector Checklist of requirements associated with each placement trip (checklist for scow discharges is provided as Appendix C). The three sections of the Inspector Checklist are completed by the DMI during three phases of transportation and discharge. Many checklist items relate to the dredging site. Ensuring that all required equipment and procedures are followed prior to departure from the dredging site helps ensure safe and accurate discharge of dredged material at the AS. Any item on the checklist that receives a "NO" answer, meaning that a required procedure has not been followed, or required equipment is not present or operable, requires an immediate telephone call to USACE-SAJ for follow-up action.

d. If any action takes place which does not conform to authorized activities described in any permit (Contract Specification and/or Work Order for Federal Projects), reauthorization, response letter, or other communicated requirements/restrictions, the USACE-SAJ should be

notified immediately by the DMI. In cases where activities beyond the scope of those authorized occur, appropriate action will be determined by consultation between EPA-R2 and the USACE-SAJ.

#### 10.4 Site Inspection/Surveillance

a. To ensure compliance with the DA permit conditions and Federal authorization, routine observations of dredging activities in the Arecibo Harbor area are performed by the USACE-SAJ.

b. USACE-SAJ and EPA-R2 (and/or their designated representatives), reserve all rights under applicable law to free and unlimited access to and/or inspection of:

-the dredging project site (including the dredge plant, or towing vessel and scow) at any time during the project;

-any equipment used for towing, surveying, monitoring or navigation;

-any and all records pertaining to specific (Federal or non-Federal) dredging and disposal projects including logs, reports, memoranda, notes, etc.

c. For all disposal activities, the dredging contractor will be required to prepare and operate under an approved electronic verification plan for all disposal operations. As part of this plan, the contractor will provide an automated system that is operated by an independent (3<sup>rd</sup> party) contractor for permittee projects or employ USACE's National Dredge Quality Management System for federal projects to continuously track the horizontal location and draft condition (vertical) of the disposal vessel from the point of dredging to the disposal area, and return to the point of dredging.

## **11. Disposal Reporting Requirements and Data Management**

### 11.1. USCG Reporting Requirements:

Permittees' dredging/towing contractor must notify the Captain of the Port (COTP) of San Juan/USCG for a reference number before each vessel departs the dredging site for the AS. Every trip made under a permit authorization is required to be recorded and endorsed by the master of the tow or the person acting in such a capacity.

### 11.2 Record Keeping/Documentation/Data Reporting:

a. Navigation logs will be maintained for each vessel (tugboat/barge) used for ocean disposal of dredged material. These logs should include accuracy, calibration methods, and any problems and actions taken associated with navigation. EPA-R2 and the USACE-SAJ require that each tugboat/barge used for the ocean disposal of dredged material use D-GPS for navigation purposes.

b. An electronic Transportation and Discharge Log form must be completed by the DMI to provide a record of each voyage involving an actual disposal event at the AS. An example of the log form for discharges using scows is included as Appendix A. The log forms must be emailed to USACE-SAJ and EPA-R2 within 2 hours of any discharge at the AS. An electronic copy of each log form is to be saved with a filename that includes trip number and retained within a dedicated project folder to allow for auditing of information. These notification systems ensure that the USACE-SAJ and EPA-R2 are completely informed of daily dredging and disposal activities undertaken within the Port of Arecibo.

c. The DMI must also complete, sign and submit an **Inspector Checklist** of requirements associated with each placement trip (e.g., Appendix C). An electronic copy of the checklist for each trip must be retained with the corresponding TDL form in the dedicated project folder to allow for auditing of information. The three sections of the Inspector Checklist are completed by the DMI during three phases of transportation and discharge. Many checklist items relate to the dredging site. Ensuring that all required equipment and procedures are followed prior to departure from the dredging site helps ensure safe and accurate discharge of dredged material at the AS.

d. GPS-based automated disposal surveillance (i.e., vessel draft and position) data must be maintained for each vessel used to transport and dispose of dredged material at the AS. Surveillance data is to be submitted to the Agencies on a weekly basis in electronic format. Reports should include views of loaded and unloaded paths taken by vessels used for transportation and disposal of dredged material at AS and the discharge location at AS. This information must be superimposed on a figure that includes the dredging area, adjacent shorelines, and AS boundaries). In addition, a graphical depiction of draft versus time must be provided with the above information.

Discharge locations must be made available for EPA and USACE inspection via a website within 12 hours of discharge. The website must allow several view sizes to observe the location of discharge. Vessel draft readings must be clearly discernible; superimposed on a figure that includes the dredging area, adjacent shorelines, and AS boundaries.

### 11.3 Federal AS Data Management and Reporting

A spreadsheet file containing contractor-reported scow volumes information is maintained by the USACE-SAJ. All disposal records and submitted monthly disposal volumes for each project are proofread, verified and any discrepancies are corrected before entry of data into this spreadsheet. On a yearly basis, USACE-SAJ will compile all dredging, disposal and testing data and submit them to USACE Headquarters.

All dredged material disposal data submitted to USACE-SAJ will be compiled, analyzed and evaluated in a final end-of-the-year report that will be provided to EPA-R2 during the first quarter of each calendar year and/or upon request. An annual report will not be necessary if there has been no disposal activity during the previous calendar year.

The data file maintained by USACE-SAJ contains information pertaining to the following:

- Permit/Federal Project number
- Permittee or Federal Project name
- Waterway/Reach/Channel
- Was the project maintenance or improvement?
- Disposal area/buoy at which the material was released/discharged
- Coordinates at which the material was released/discharged
- Disposal activity commencement and completion dates
- Volume of material disposed
- The year-to-date volumes of private (non-federal) and federal navigation projects disposed at the AS, noted separately and collectively

## **12. AS SMMP Review and Revision**

MPRSA 102 (c)(3)(F) requires that the SMMP include a schedule for review and revision of the SMMP which shall not be reviewed and revised less frequently than 10 years after adoption of the plan, and every 10 years thereafter.

A need for modification of the use of the AS because of unacceptable impacts is not anticipated due to the management and monitoring outlined in this SMMP. However, should the results of monitoring surveys indicate that continuing use of the AS will lead to unacceptable impacts; the AS SMMP will incorporate further restrictions/revisions to alleviate the impacts. The SMMP will be reviewed annually, in conjunction with monitoring data, by the interagency SMMP team to identify necessary revisions for management of the AS.

EPA-R2 and the USACE-SAJ will convene a Scientific Review Panel, consisting predominantly of professionals from the fields of engineering, oceanography, and governmental resource agencies, as necessary, to review the AS SMMP and relevant monitoring data. Membership will include qualified representatives from academia, federal agencies, state agencies, public interest groups, port representatives, and consultants. Attendance at meetings will be by invitation only.

### **13. References**

Battelle (Battelle Ocean Sciences). 2008. Final Data Report Arecibo Harbor. Prepared for USEPA Region 2 Contract Number W912DS-07-D-0009 Delivery Order 07. October 2008.

EPA. 1982. Environmental Impact Statement (EIS) for the San Juan Harbor, Puerto Rico Dredged Material Disposal Site Designation. Prepared by EPA, HQ. December 1982.

EPA. 1988. Final Environmental Impact Statement (FEIS) for the Designation of Ocean Dredged Material Disposal Sites for Arecibo, Mayaguez, Ponce, and Yabucoa, Puerto Rico. Prepared by EPA, HQ. May 1988.

JRB Associates. 1984. Studies and Sample Analyses For San Juan, Puerto Rico Dredged Material Disposal Site. Report prepared under contract to U.S. Environmental Protection Agency, HQ. Contract No. 68-0106388, Work Assignment #63. September 1984.

**APPENDIX A- SCOW TRANSPORTATION AND DISCHARGE LOG**

Date: \_\_\_\_\_ Dredging Contractor: \_\_\_\_\_

**Project Information**

Name and Reach: \_\_\_\_\_  
Permit No. (If applicable): \_\_\_\_\_  
Trip Number: \_\_\_\_\_

**Tug Scow and Dredge Information**

Tug Name: \_\_\_\_\_  
Scow \_\_\_\_\_ Dredge \_\_\_\_\_  
Tug Capt. \_\_\_\_\_ Scowman \_\_\_\_\_  
Inspector Name: \_\_\_\_\_

**Loading/Pre-Transit Information**

Time of Loading Completion (hh:mm:ss): \_\_\_\_\_  
Volume (cubic yards): \_\_\_\_\_ Percent Rock: \_\_\_\_\_  
Descript.: (e.g., color, water content, type): \_\_\_\_\_  
Scow Draft: Fore (ft): \_\_\_\_\_ Aft (ft): \_\_\_\_\_  
Scow Condition: \_\_\_\_\_

**Discharge Site Conditions**

Wind: Direction \_\_\_\_\_ Speed \_\_\_\_\_  
Sea State: \_\_\_\_\_ Wave Height: \_\_\_\_\_  
Visibility \_\_\_\_\_

**Transit/Placement Information**

Time of Departure: \_\_\_\_\_  
Marine Mammals/Sea Turtles Sighted (Yes / No)

**START** - Time (DOORS OPEN): \_\_\_\_\_  
Speed (kts) \_\_\_\_\_ Bearing \_\_\_\_\_ Draft (ft., immed. before opening) \_\_\_\_\_  
Latitude (dec. deg.) \_\_\_\_\_ Longitude (dec. deg.) \_\_\_\_\_

**END** -- Time (DOORS CLOSED): \_\_\_\_\_  
Speed (kts) \_\_\_\_\_ Bearing \_\_\_\_\_ Draft (immed. after closing) \_\_\_\_\_  
Latitude (dec. deg.) \_\_\_\_\_ Longitude (dec. deg.) \_\_\_\_\_

**NOTES:** Periodic Draft/Time/Position observations to be recorded here; conclusion as to whether there is evidence of potential leakage recorded here, statement as to which, if any items on Inspector Checklist required reporting/follow up; other observations as necessary

## APPENDIX B - DISCHARGE GUIDELINES FOR AN AS DISPOSAL PROJECT

1. Vessel speeds **must** not exceed 3 knots during discharge, weather and sea conditions permitting.
2. To help ensure proper discharge within the AS, and reduce the need for loaded scows to return to the dredging site, the following discharge protocol **must** be followed:
  - a) Prior to leaving the dredging site, scows **must** be inspected to ensure correct operation of mechanical features. Scows **must** also be inspected for the presence of any conditions that may cause navigation problems. The scow radio-control system (if used on the project) and scow monitoring systems **must** be inspected for correct operation. If any problems with the scow, radio-control system, or scow monitoring systems are encountered, corrections **must** be made before offshore transport of the scow may proceed. However, when the primary scow monitoring systems (PSMS) are malfunctioning, dredged material may be transported from the dredging site if scow monitoring contractor personnel are onboard, or are communicating with the USACE-SAJ approved DMI to fix/service the equipment. Alternatively, the backup scow monitoring system (BSMS) may be used while problems with the PSMS are being corrected. However, the BSMS is considered to be emergency backup equipment and may only be used on two consecutive trips offshore. The BSMS is not to be used as a long-term backup to the PSMS.
  - b) Scows **must** be monitored for possible leaks. After leaving the dredging site, the DMI should check the PSMS scow draft count values on a periodic basis and record the draft/time/position observations in the notes section of the transportation and discharge log form (in the notes section) along with a conclusion as to whether there is any evidence of possible leakage. If the counts begin to significantly change during transport, either leakage of dredge material from the scow may be occurring (counts decreasing), or the scow's hull may be taking on water (counts increasing). However, depending on the specific location of a leak, the opposite trend may occur, according to the direction of a list caused by a leak. Scows suspected of leaking **must** be inspected before using the scow again. If any leaks are found, they **must** be repaired prior to using the scow again.
  - c) Scows **must** be brought to the AS using the DGPS (Differential Global Positioning System) navigation systems of the tugboat and scow. Scow position will be monitored by the PSMS onboard the tugboat. Discharge in AS boundaries will be documented by the DMI using the PSMS while the scow position and draft information are monitored automatically by the PSMS.
  - d) If the PSMS does not show reliable DGPS coordinates in the vicinity of the AS, the tugboat DGPS and BSMS **must** be used to estimate the scow position during discharge. Length of towlines **must** be estimated and the bearing to the scow

from the towing vessel course **must** also be noted at the time of discharge. Tow lengths **must** be less than 200 feet unless ocean/weather conditions require longer lines for safe navigation. The DMI **must** record the following information if this option is used:

1. coordinates of the tug at the start and end of discharge
2. estimate of lateral displacement of scow based on length and bearing of tow line (distance from tug stern to scow bow)

e) Discharge **must** only occur at the AS when reliable GPS coordinates are displayed by navigation systems onboard the towing vessels or scows being used at the AS.

f) If the PSMS fails after leaving the dredging site, the scow **must** not be used again until a fully operational PSMS is installed. If scow monitoring contractor personnel are onboard, or communicating by telephone with the DMI, to correct problems, or the BSMS is functional, offshore transport may occur. However, the BSMS is considered to be emergency backup to the PSMS, is not to be routinely used for offshore discharge, and may only be used on two consecutive offshore discharge trips.

g) If the PSMS is not functioning properly, discharge **must** occur within the AS only if the scow and towing vessel are both within the AS at the time scow doors are opened.

h) If a situation arises that requires emergency dumping of dredged material outside of the AS, all reasonable efforts to dump outside of navigation channels and into areas deeper than 200 feet **must** be made.

i) If radio communication with the scow is lost, preventing operation of radio-controlled scows, a person **must** board the scow to either fix the problem or operate the scow. Persons must only ride aboard scows certified for passengers by the U.S. Coast Guard. Extreme care must be taken when boarding a scow at sea. Anyone on a scow **must** have at least two working radios. Voice contact, through radio or direct communication, **must** be maintained with the scowman while riding aboard the scow. Scow opening **must** only occur when a direct, voice command has been given to the scowman, or radio communication with radio-controlled scows is maintained. If the radio control system can not be fixed, the scow **must** be towed to the designated discharge location and manually discharged following steps (d) through (f). If the scow's engine can not be operated by the radio-control system, and the scow is boarded to attempt to fix the engine, the scow **must** be located at the designated discharge position if the scow's engine is started. Past use of radio-controlled scows revealed that manually starting a scow's engine after a failed radio-controlled engine start could cause the "scow open" command to be completed, causing the scow to dump at

the location of engine startup. Any problems with a radio control system **must** be fixed prior to subsequent use of the scow.

3. Voice contact, through radio or direct communication, **must** be maintained with the scowman (if used) for the duration of trips. Scow opening **must** only occur when a direct, voice command has been given to the scowman, or, in the case of radio-controlled scows, direct radio communication with the scow is maintained. A backup radio **must** be onboard all manned scows. Hand signals **must never** be used to direct the scowman regarding scow opening/closing. Radio checks with the scowman **must** be performed prior to departing the dredge site and enroute in the vicinity of the harbor mouth. Manned scows **must not** be transported to the discharge location without at least two working modes of radio communication. Radios **must** have adequate power sources and extra sets of batteries **must** be kept with any battery operated radios. DMIs will note in their logs the status of radio checks made prior to site departure and enroute to the discharge location, in the comments section of the log form.

4. Scows containing dredged material **must not** be towed from the dredging site for ocean discharge unless all of the following items are present and fully operational aboard the towing vessel:

- Legible copy of the permit or contract specifications, as related to scow loading, transport, and dredged material discharge;
- A legible copy of the Discharge Guidelines and AS boundary coordinates received at the pre-construction meeting, or any additional instructions or guidelines as related to scow loading, transport, and dredged material discharge
- PSMS and BSMS\*, including bin level sensor on scow
- DGPS navigation system aboard tug
- Radio-control system for scow operation (if scowman is not used)
- Radio and backup radio system aboard scow (if scowman is used)
- Fathometer aboard tug
- a fully operational fax machine must be onboard the towing vessel for use by the SAJ Inspector within 2 hours of each discharge event at the AS
- an 8" – 12" wide protractor with degrees printed or embossed on the curved surface
- 4" – 8" long dividers for scaling distances off of maps and charts
- scow loading tables for each scow used to transport dredged material
- access to the towing vessel DGPS, fathometer, and radar
- fully operable personal cellphones in possession of each DMI at all times with active phone numbers unique to each phone available for placing and receiving calls at all times
- suitable location for completing paperwork associated with DMI duties

- Full compliance with any other contract or regulatory requirements related to dredged material discharge

\* If the PSMS is not functioning properly at the time a scow is ready to be transported from dredging site, the BSMS may be used while the PSMS problems are being corrected.

5. Scows containing dredged material **must not** be towed from the dredging site for ocean discharge unless ocean/weather conditions are forecast to allow safe and accurate discharge of dredged material within the AS.
6. Dredged material **must** never be discharged anywhere outside of the AS boundary except in cases of emergency. Any discharges at outside the boundaries will be investigated for potential enforcement actions.
7. Scow monitoring equipment, discharge guidelines, and other aspects of dredged material discharge at the AS may be changed. Notice of any changes will be provided to the dredging contractor for implementation as soon as practicable.
8. Transportation and discharge log (TDL) forms will be completed electronically or by hand within 30 minutes of discharge at the AS. An electronic copy of the TDL form is to be emailed to EPA-R2 and USACE-SAJ within two hours of scow's return from AS. Printed copies of TDL forms **must** be signed by the DMI after completion of each trip and placed in a file/folder for submission to USACE-SAJ after project completion or when the DMI permanently or temporarily discontinues working on the project.
9. Disposal Inspectors who have been approved by USACE-SAJ (DMIs), but have not previously worked on a New York District or USACE-SAJ (i.e., EPA-R2) dredging project, must be accompanied by scow monitoring contractor personnel, or by a DMI who has been working on the project, during the first two trips the DMI works on the project. DMIs who have previously worked on at least one New York District or USACE-SAJ (i.e., EPA-R2) dredging project, but who have not worked on this project, must be accompanied by scow monitoring contractor personnel during their first trip serving as a DMI on this project.
10. Possible changes in the discharge guidelines may be provided after dredging begins.
11. To help ensure that dredged material is transported and placed at the AS in accordance with the guidelines described above, the attached checklist has been prepared. Items in the checklist **must** be reviewed by the DMI at the dredging site, while underway, and at the AS. Each item that is pertinent to the trip **must** be answered with a "YES" or "NO" answer, along with other information specific to a checklist item. Any item on the checklist that receives a "NO" answer **must** be reported immediately to the USACE-SAJ at NAME OF CONTACT, and a dredging contractor representative not onboard the towing vessel. If the "NO" answer is related to the

scow monitoring systems, the scow monitoring contractor **must** also be notified immediately at NAME OF CONTACT. Each discharge trip **must** use a checklist, to be completed by the DMI working aboard the towing vessel. Checklists **must** be signed and dated by the DMI and placed in a file. All original, signed checklists associated with this project **must** be submitted to the USACE-SAJ on a weekly basis for the duration of the project. Checklists **must** be hand delivered or mailed to:  
USACE ADDRESS HERE

12. Original copies of TDL forms for each trip to the AS, signed and dated by the DMI on duty during each trip, **must** be submitted to NAME OF CONTACT at the above address at the completion of the project.

13. Switching of tugs once an ocean discharge trip has begun **must not** occur except in case of emergency. Towing of any scow loaded with dredged material must be monitored by the scow monitoring equipment/software and documented by a DMI riding aboard the towing vessel.

14. While underway, dredging contractor must adhere to all measures required in Appendix D of this SMMP (i.e., NMFS, Southeast Region Vessel Strike Avoidance Measures and Reporting for Mariners)

15. Upon arrival at the ODMDS, the DMI (dredging inspector) must maintain a watch at all times for marine mammals and sea turtles. Discharge of dredged material may not occur when there is a turtle or mammal visible in the vicinity of the disposal vessel; discharge must not occur until the sighted animal has left the disposal area. Animals may not be harassed in any manner to make them leave the area.

16. Failure to adhere to the specifications discussed in these discharge guidelines may result in revocation of the dredging permit and/or a monetary fine.

17. If there are any questions pertaining to the guidance given in this document, or additional clarification of procedures is needed, please contact Mr. Mark Reiss of the EPA at (212) 637-3799.

**Appendix C - Inspector Checklist**

DREDGING PROJECT/REACH: \_\_\_\_\_  
TUG NAME: \_\_\_\_\_ SCOW \_\_\_\_\_  
TRIP NUMBER: \_\_\_\_\_ DATE \_\_\_\_\_  
INSPECTOR NAME: \_\_\_\_\_  
INSPECTOR SIGNATURE: \_\_\_\_\_

Answer YES or NO to the following questions. Circle other choices and/or fill in blanks as appropriate. Any item on the checklist that receives a “NO” answer **must** be reported immediately to USACE-SAJ at: POINT OF CONTACT and a dredging contractor representative not onboard the towing vessel. If the “NO” answer is related to the scow monitoring systems, the scow monitoring contractor **must** also be notified immediately at POINT OF CONTACT. Items receiving “NO” answers **must** be indicated on the TDL form using the letter-number code next to each item description and described on the TDL form comments section. A supplemental report **must** be prepared and emailed to USACE-SAJ at POINT OF CONTACT to explain any discrepancies/deviations from the Inspector checklist.

***PART A. DREDGING SITE***

- A1 \_\_\_ A legible copy of the contract specifications, as related to scow loading, transport, and dredged material discharge, is in possession of the DMI.
- A2 \_\_\_ A legible copy of the Discharge Guidelines and ODMDS boundary coordinates received at the pre-construction meeting, or any additional instructions or guidelines as related to scow loading, transport, and dredged material discharge, is in possession of the DMI.
- A3 \_\_\_ The scow being used to transport the dredged material is mechanically sound, does not leak, and has no visible damage that may cause leaking.
- A4 \_\_\_ A regularly used scow was used, no backup scow was used.
- A5 \_\_\_ A scow loading table for the scow being towed is aboard the towing vessel and available for the DMI to use.
- A6 \_\_\_ The material being dredged has been observed by the DMI for general characteristics (grain size, color, consistency). Majority of material is dry/thick/watery, color: \_\_\_\_\_, mud/sand/gravel/rock.
- A7 \_\_\_ For scows loaded with any rock (rock is defined as any stones greater than 2.5 inches in diameter), the estimated rock percent has been recorded on the TDL form.

A8\_\_ An estimate of the volume of material in the scow has been calculated by the DMI using the scow loading table and recorded on the TDL form.

A9\_\_ Scow contains less volume of dredged material than the maximum volume allowed for discharge during a single trip.

If a scow contains a volume of dredged material greater than the maximum volume allowed for discharge during a single trip, the volume **must** be decreased below the maximum volume before the dredged material can be transported away from the dredge site.

A10\_\_ The scow monitoring systems (PSMS and BSMS) are fully operational and are functioning. Any scow monitoring system malfunctions **must** be reported **immediately** to the scow monitoring contractor POINT OF CONTACT. Transportation vessels are not allowed to leave the dredging site with any dredged material if a PSMS is not fully operational. However, if scow monitoring system contractor personnel are onboard the transporting vessel to service the equipment, or in communication with the DMI via cellphone or radio, the vessel may depart from the dredging site while malfunctions are being repaired/corrected. Alternatively, if the BSMS is functional, the scow may be transported from the dredging site. If the PSMS is not functional, the BSMS may only be used on two consecutive offshore discharge trips.

A11\_\_ The scow draft pressure value, as displayed by the PSMS system, has been recorded on the TDL form.

A12\_\_ A fathometer is fully operational, functioning, and installed on the transporting vessel.

A13\_\_ A radio onboard the transporting vessel is operable and can receive NOAA marine weather forecasts and ocean conditions.

A14\_\_ Current and forecasted marine weather and ocean conditions at the designated discharge location have been monitored on the radio and will allow safe and accurate discharge of dredged material. Winds at a reporting station closest to the discharge location are presently blowing \_\_\_\_\_ from the \_\_\_\_, with \_\_\_\_\_ ft seas. Winds forecast for the discharge location are \_\_\_\_\_ from the \_\_\_\_, with \_\_\_\_\_ seas.

A15\_\_ DGPS navigation system is fully operational, functioning, and installed aboard the transporting vessel.

A16\_\_ A radar system is fully operational, functioning, and installed aboard the transporting vessel.

A17\_\_ Radio-control system for scow operation (if scowman is not used) is fully operational and

functioning.

- A18\_\_ Radio and backup radio system, for communication between scows and towing vessels, are aboard scow (if scowman is used), are fully operational and functioning.
- A19\_\_ A fully operable cell phone that can send and receive calls is in the possession of the DMI onboard the towing vessel.
- A20\_\_ A protractor is available for use by the DMI aboard the towing vessel.
- A21\_\_ A compass, for map/chart distance scaling, is available for use by the DMI aboard the towing vessel.
- A22\_\_ An up-to-date nautical chart that includes the discharge area is available for use by the DMI.
- A23\_\_ DMI is provided full access to fathometer, radar, vessel DGPS, and any other equipment/information necessary to conduct DMI duties.
- A24\_\_ Radio and backup radio checks with the scowman's radios have been performed with no problems detected, if a scowman is used.
- A25\_\_ Full compliance with any other contract or regulatory requirements related to dredged material discharge has been met.
- A26\_\_ Time of departure from dredging site has been recorded on the TDL form.
- A27\_\_ All other information relative to the dredging site has been entered into the TDL form.

#### **PART B . ENROUTE TO THE DISCHARGE LOCATION**

- B1\_\_ In the vicinity of the Harbor mouth, radio and backup radios aboard the scow have been checked to ensure they are both functioning, if a scowman is used.
- B2\_\_ Scow draft is being monitored with PSMS.
- B3\_\_ If the DMI is also a NMFS-approved marine mammal/endangered species observer, observation and appropriate reporting is conducted.
- B4\_\_ Scow draft pressure varies less than 20 points, or 1.5 feet of draft, from the value at the dredge site.
- B5\_\_ A gradual increase or decrease in scow draft pressure values (or actual scow draft) is not

observed.

- B6 \_\_\_ If visible, scow does not appear to be listing.
- B7 \_\_\_ Water behind scow has been observed, if possible, to ensure that no turbid water plumes are present.
- B8 \_\_\_ Towing vessel DGPS and scow DGPS positions agree using a fixed reference position (channel marker, buoy, etc.)
- B9 \_\_\_ Marine weather and sea conditions present and forecast to be present at the discharge location are periodically monitored. An updated marine forecast does not predict conditions that require returning to the dredging site to await safer conditions.

#### **PART C. IN THE VICINITY OF THE DESIGNATED DISCHARGE LOCATION**

For discharge at the AS:

- C1 \_\_\_ Scow radio control equipment operates without any problems.
- C2 \_\_\_ Discharge occurred in ODMDS boundaries and was coordinated with towing vessel crew.
- C3 \_\_\_ Scow draft information immediately prior to scow door opening has been recorded on the TDL form.
- C4 \_\_\_ TDL form was completed using the scow monitoring system, or by hand if the scow monitoring system malfunctions, within 30 minutes of scow door opening.
- C5 \_\_\_ Scow monitoring equipment, transportation vessel navigation equipment, and all other equipment related to discharge of dredged material worked without any problems.
- C6 \_\_\_ All activities associated with discharge of dredged materials appeared to be conducted in a safe manner.
- C7 \_\_\_ Nothing occurred that may have resulted in incorrect discharge of dredged material.
- C8 \_\_\_ TDL form and any supplemental reports e-mailed to POINT OF CONTACT within 2 hours of scow door, or hopper bin, opening.

C9\_\_\_ A copy of the TDL form has been electronically signed by the DMI and saved to a file/folder to become part of the permanent record of the trip. A disc containing all the folder and all TDL forms, checklists and supplemental reports and information **must** be submitted to USACE-SAJ when offshore transport of dredged material associated with the project ends, or when the DMI finishes working on the project.

## **APPENDIX D -Vessel Strike Avoidance Measures and Reporting for Mariners NOAA Fisheries Service, Southeast Region (Revised September 2008)**

### **Background**

The National Marine Fisheries Service (NMFS) has determined that collisions with vessels can injure or kill protected species (e.g., endangered and threatened species, and marine mammals). The following standard measures should be implemented to reduce the risk associated with vessel strikes or disturbance of these protected species to discountable levels. NMFS should be contacted to identify any additional conservation and recovery issues of concern, and to assist in the development of measures that may be necessary.

### **Protected Species Identification Training**

Vessel crews should use an Atlantic and Gulf of Mexico reference guide that helps identify protected species that might be encountered in U.S. waters of the Atlantic Ocean, including the Caribbean Sea, and Gulf of Mexico. Additional training should be provided regarding information and resources available regarding federal laws and regulations for protected species, ship strike information, critical habitat, migratory routes and seasonal abundance, and recent sightings of protected species.

### **Vessel Strike Avoidance**

In order to avoid causing injury or death to marine mammals and sea turtles the following measures should be taken when consistent with safe navigation:

1. Vessel operators and crews should maintain a vigilant watch for marine mammals and sea turtles to avoid striking sighted protected species.
2. When whales are sighted, maintain a distance of 100 yards or greater between the whale and the vessel.
3. When sea turtles or small cetaceans are sighted, attempt to maintain a distance of 50 yards or greater between the animal and the vessel whenever possible.
4. When small cetaceans are sighted while a vessel is underway (e.g., bow-riding), attempt to remain parallel to the animal's course. Avoid excessive speed or abrupt changes in direction until the cetacean has left the area.
5. Reduce vessel speed to 10 knots or less when mother/calf pairs, groups, or large assemblages of cetaceans are observed near an underway vessel, when safety permits. A single cetacean at the surface may indicate the presence of submerged animals in the vicinity; therefore, prudent precautionary measures should always be exercised. The vessel should attempt to route around the animals, maintaining a minimum distance of 100 yards whenever possible.

6. Whales may surface in unpredictable locations or approach slowly moving vessels. When an animal is sighted in the vessel's path or in close proximity to a moving vessel and when safety permits, reduce speed and shift the engine to neutral. Do not engage the engines until the animals are clear of the area.

#### **Additional Requirements for the North Atlantic Right Whale**

1. If a sighted whale is believed to be a North Atlantic right whale, federal regulation requires a minimum distance of 500 yards be maintained from the animal (50 CFR 224.103 (c)).
2. Vessels entering North Atlantic right whale critical habitat are required to report into the Mandatory Ship Reporting System.
3. Mariners should check with various communication media for general information regarding avoiding ship strikes and specific information regarding North Atlantic right whale sighting locations. These include NOAA weather radio, U.S. Coast Guard NAVTEX broadcasts, and Notices to Mariners. Commercial mariners calling on United States ports should view the most recent version of the NOAA/USCG produced training CD entitled "A Prudent Mariner's Guide to Right Whale Protection" (contact the NMFS Southeast Region, Protected Resources Division for more information regarding the CD).
4. Injured, dead, or entangled right whales should be immediately reported to the U.S. Coast Guard via VHF Channel 16.

#### **Injured or Dead Protected Species Reporting**

Vessel crews should report sightings of any injured or dead protected species immediately, regardless of whether the injury or death is caused by your vessel.

Report marine mammals to the Southeast U.S. Stranding Hotline: 877-433-8299

Report sea turtles to the NMFS Southeast Regional Office: 727-824-5312

If the injury or death of a marine mammal was caused by a collision with your vessel, responsible parties should remain available to assist the respective salvage and stranding network as needed. NMFS' Southeast Regional Office should be immediately notified of the strike by email ([takereport.nmfs@noaa.gov](mailto:takereport.nmfs@noaa.gov)) using the attached vessel strike reporting form.

#### **For additional information, please contact the Protected Resources Division at:**

NOAA Fisheries Service

Southeast Regional Office

263 13<sup>th</sup> Avenue South

St. Petersburg, FL 33701

Tel: (727) 824-5312

Visit us on the web at <http://sero.nmfs.noaa.gov>

