

US Army Corps
of Engineers
Jacksonville
District



REGION 2

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 and the U.S. Army Corps of Engineers to prepare a Site Management and Monitoring Plan (SMMP) for all Ocean Disposal Sites. This announces the availability of the EPA Region 2 and USACE-Jacksonville District Draft Site Management and Monitoring Plan (SMMP) for the Ponce Harbor, Puerto Rico Dredged Material Disposal Site (PS).

The Draft PS SMMP meets the WRDA requirements and includes the following:

- a baseline assessment of conditions at the PS
- a program for monitoring the PS
- a description of special management conditions/practices to be implemented at the PS.
- specifies the quantity of material to be disposed at the PS, including the presence, nature, and bioavailability of the contaminants in the dredged material.
- specifies the anticipated use of the PS.
- a schedule for review and revision of the PS SMMP.

The Draft SMMP will be available from the individuals listed below and at the Internet site <http://planning.saj.usace.army.mil/envdocs/PuertoRico/poncepr/index.html>. Comments on the SMMP will be accepted until August 25, 2003 and should be forwarded to either of the following addresses:

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Upon receipt and review of the comments a Final SMMP will be prepared and re-distributed. If you have any questions or require additional information, please contact Mr. Mark Reiss (EPA Region 2) at (212) 637-3799 or Mr. Ivan Acosta (USACE-Jacksonville District) at (904) 232-1693.

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Enclosure



US Army Corps
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Jacksonville
District

Site Management and Monitoring Plan for the Ponce Harbor, Puerto Rico
Dredged Material Disposal Site

Draft

July, 2003

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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. For sites designated prior to January 1, 1995, such as the Ponce Harbor, Puerto Rico Dredged Material Disposal Site (PS), 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.

This document constitutes the WRDA-required SMMP for the final-designated (40 CFR 228.15 (d) (13)) Ponce Harbor, Puerto Rico Dredged Material Site (PS); prepared by USEPA Region 2 (EPA-2) and USACE Jacksonville District (USACE-JD). 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 PS.

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

An interim Ocean Dredged Material Disposal Site for Ponce 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 Ponce site and concluded that the present site was better suited for use as a dredged material disposal site. The present site was subsequently designated as a Final Ocean Dredged Material Disposal Site to receive materials from areas of Ponce Harbor.

1.2. PS Boundaries

The PS is an approximately 1 square nautical mile area located approximately 4.5 nautical miles south of the entrance to Ponce Harbor positioned in a square bounded by the following North Atlantic Datum of 1983 (NAD83) coordinates:

Degrees, Minutes, Seconds	Degrees, Minutes (decimal)	State Plane Coordinates
17° 54' 00" N 66° 37' 43" W	17° 54.00' N 66° 37.717' W	x = 588,277.255, y = 680,411.141
17° 54' 00" N 66° 36' 41" W	17° 54.00' N 66° 36.683' W	x = 594,264.655, y = 680,405.038
17° 53' 00" N 66° 36' 41" W	17° 53.00' N 66° 36.683' W	x = 594,258.771, y = 673,352.973
17° 53' 00" N 66° 37' 43" W	17° 53.00' N 66° 37.717' W	x = 588,270.802, y = 674,359.077

To minimize the potential for impacts to shelf edge reef resources, disposal activity will be restricted to the southern half of the ODMDS (i.e., south of 17° 53' 30" N (17° 53.50' N)).

1.3 Enforcement Activities at the PS

Since the PS 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, Puerto Rico to develop guidelines for disposal of dredged material at the PS 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 PS

Dredged material disposed at the PS may be removed from project areas using hopper, clamshell, or other types of dredges. Although no specific dredging or disposal technique is required for this site, specific disposal instructions or requirements for each dredged material disposal project will be contained in the Department of the Army (DA) permit issued by the USACE-JD or in the contract specifications prepared for federal projects (see Section 10 of this SMMP).

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. Applicants and USACE are required to use EPA-designated disposal sites to the maximum extent practicable for ocean disposing of dredged material.

3. Dredged Material Testing Requirements

As part of the permitting process, applicants are required to test/characterize all dredged material proposed for disposal at PS 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 4/USACE-JD 1992 (or most recent revision). “Guidance for Performing Tests on Dredged Material proposed for Ocean Disposal” (otherwise known as the Regional Testing Manual).

EPA Region 2 and USACE-JD will prepare a regional implementation manual that provides guidance specific to ocean disposal of dredged material at the PS and other ocean sites in the Caribbean region. Until this guidance manual is prepared and approved, however, the EPA Region 4/USACE-JD (1992) will be used to evaluate the suitability of dredged material proposed for disposal at the PS.

The suitability of dredged material for ocean disposal must be determined by the USACE-JD and concurred with by EPA Region 2 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 Region 2 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. Anticipated PS Use and Quantity of Material to be 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 following table reports volumes that are anticipated by the USACE-JD for dredging and disposal at the PS in FY04-FY05.

Completion Date	Type of Action	Volume (c.y.)	Composition
FY2004	Maintenance/Deepening	4,000,000	silty sand, fines
FY2005	Maintenance/Deepening	1,200,000	silty sand, fines

The only source of material that is expected to be placed at the site during the projected period is maintenance/deepening material from areas of Ponce 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 Region 2 and the USACE-JD jointly manage the Ponce Harbor dredged material disposal program and the PS. EPA Region 2 and the USACE-JD will continue to coordinate the exchange of information, PS management and monitoring resources, and the documentation of site management decisions. EPA Region 2 and USACE-JD will continue to provide each other with all pertinent data and information as it becomes available. Any information concerning disposal or dredging violations will be shared between the two agencies upon discovery and/or notification of the violations.

This SMMP constitutes an official agreement between EPA Region 2 and USACE-JD to continue to cooperatively manage and monitor the PS and to coordinate the collection and transfer of information pertinent to the management and monitoring of the PS as set forth herein.

5.2. Funding of SMMP Tasks and Activities

The costs of site management and monitoring will be shared between EPA Region 2 and the USACE-JD to the extent allowed by funding levels in any given fiscal year (i.e., cost-sharing will be subject to appropriations and shall require valid Economy Act orders to be entered).

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 PS;
- 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 and enforce compliance with ocean disposal permit conditions;
- d. provide a baseline assessment of conditions at the PS;
- e. outline a program for monitoring the PS;
- f. describe special management conditions/practices to be implemented at the PS;
- g. estimate the quantity of material to be disposed at the PS, 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 PS;
- i. provide a schedule for review and revision of the PS SMMP.

7. Site Description/Assessment of Baseline Conditions at PS

MPRSA 102 (c)(3)(A) requires that the SMMP include a baseline assessment of conditions at the site. Baseline conditions measured by EPA Region II in 1984 were summarized in the Environmental Impact Statement prepared to support designation of the PS (EPA, 1988). Detailed bathymetry at PS was obtained in November/December 1996. Current and water column profiles in the vicinity of PS were monitored quarterly in 2001 and 2002. Sediment samples were taken at and around PS in March, 2003. Physical and chemical parameters were measured in the collected PS sediment samples.

7.1. Physical, Meteorological and Oceanographic Features of the PS:

- a. Water depths at the PS range between 100 to 540 m. Bottom depths at the northeastern corner are approximately 100 m. Depths increase rapidly southward to approximately 400 m at the center of the site, and then slope more gradually to approximately 540 m at the southeastern corner (Battelle, 1997).
- b. Easterly trade winds predominate at the PS 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. The direction and strength of the trade winds influence surface currents at the PS. The trades blow primarily from the northeast. Subsurface currents measured near the PS were shown to be weak. Median current speed at 50m ranged between 3.7 to 7.1 cm/s, and at 90 m ranged between 3.4 to 4.5 cm/s. 90th percentile speeds ranged between 7.2 to 13.8 cm/s, and 6.9 to 9.0 cm/s at the two depths, respectively. Currents were predominately oriented in an easterly direction. Water column structure at the PS is expected to be 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 around 40 m (Spring) to approximately 90 m (Winter). The average annual temperature and salinity of this surface water range between 26.5 - 29.5°C and 34.8 - 36.2 ppt. A gradual density gradient extends below the pycnocline. (PRASA, 2003).
- d. Measurements of baseline dissolved oxygen, chlorophyll 'a' and turbidity levels in the water column near the PS were generally within ranges typically associated with unpolluted tropical conditions (EPA 1988). Distribution of dissolved oxygen was relatively uniform throughout the upper water column (to 150 m) (PRASA, 2003).

7.2 Sediment Composition/Chemistry and Benthos at the PS

- a. *Sedimentary Composition:* The PS is located over the southern Puerto Rican slope. Bottom sediments at the PS are relatively homogeneous: sediments are predominantly (>90%) fine-grained (i.e. silts and clays). Samples of bottom sediments taken from the site the PS average

30 % sand and 69% silt/clay (Battelle, 2003).

- b. *Sediment Chemistry*: The total organic carbon contents (TOC) of PS sediments were low across the site, ranging from 0.6% to 1.2%. Sediment samples collected in 2003 from within and outside the boundaries of the PS were analyzed for concentrations of trace metals, hydrocarbons, butyltins and chlorinated organic contaminants (i.e., PCBs and selected pesticides). With the exception of extremely low levels of DDT compounds (<0.4 ppb) and individual PCB congeners (≤ 0.15 ppb), sediments at the PS were essentially free of chlorinated organic contaminants and butyltins. Polycyclic aromatic hydrocarbon levels were very low across the site (<90 ppb) All sediment samples were analyzed for trace metal levels; the results are reported in Table 1. Silver occurred at only one station within the PS. Metals levels did not differ significantly between stations taken inside and outside of PS boundaries.

Table 1. Ranges of concentrations of selected contaminants in sediment samples taken from 18 stations (28 observations) at the PS and its vicinity (Battelle, 2003).

Parameter (# of stations, observations)	Unit	Concentration, dry wt.
Total PAHs	ng/g (ppb)	20.0 – 79.8
Silver	ug/g (ppm)	ND (0.03)
Arsenic	ug/g (ppm)	3.45 – 6.89
Cadmium	ug/g (ppm)	0.03 – 0.11
Chromium	ug/g (ppm)	26.9 – 43.8
Copper	ug/g (ppm)	17.4 – 35.4
Mercury	ug/g (ppm)	0.02 – 0.05
Nickel	ug/g (ppm)	15.5 – 22.1
Lead	ug/g (ppm)	5.27 – 13.9
Selenium	ug/g (ppm)	0.26 – 0.56
Zinc	ug/g (ppm)	24.6 – 54.5

- c. *Benthic Biota*: Benthic samples taken from the vicinity of the PS yield low but variable numbers of taxa and individuals. The benthic community is characteristic of fine-grained bottoms, i.e. the community was dominated by deposit-feeding organisms. Numerically dominant taxa in the study area include polychaetes and other burrowing worms (60 – 80% of taxa), with crustaceans and mollusks (primarily gastropods (snails) and pelecypods (bivalves)) each representing between 10 – 15% of taxa. Echinoderms occasionally occurred in samples. Significant differences in community composition between areas within and outside the PS were not apparent and the diversity and abundance of organisms were positively correlated with increasing heterogeneity of the bottom sediment (JRB, 1984).

7.3. Usage of PS by Fish, Marine Mammals and Endangered Species:

a. *Marine mammals and sensitive species:* The PS does not encompass any known breeding, feeding, or nursery areas of marine mammals, sea turtles or birds. Waters off Ponce may be 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 the north shore of Puerto Rico, but are primarily observed further offshore. Dolphins are common residents and may be present in waters of the PS at any time. West Indian manatees have been sighted in shallower coastal waters of Puerto Rico.

Four species of sea turtles are also known to inhabit Puerto Rican waters. Juvenile green and hawksbill turtles may be found off the south shore of Puerto Rico, associated with rafts of *Sargassum*. Waters of the PS, however, are too deep to provide foraging habitat for adults of green, hawksbill or loggerhead turtles. Leatherback marine turtles approach the east 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.

b. *Fish:* Open waters of PS 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 PS 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).

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 restricted to areas shallower than 200 feet (61 m). The northeast corner of the PS is adjacent to a shoal area that may contain shelf edge resources. (Figure 1). The potential for impacts to shelf edge reef areas will be minimized by restricting disposal activities to the southern half of the PS. Side scan SONAR and remotely operated video mapping will be implemented as early monitoring efforts in implementation of this SMMP, before determining any further monitoring or management requirements at the site for protecting shelf edge reef resources.

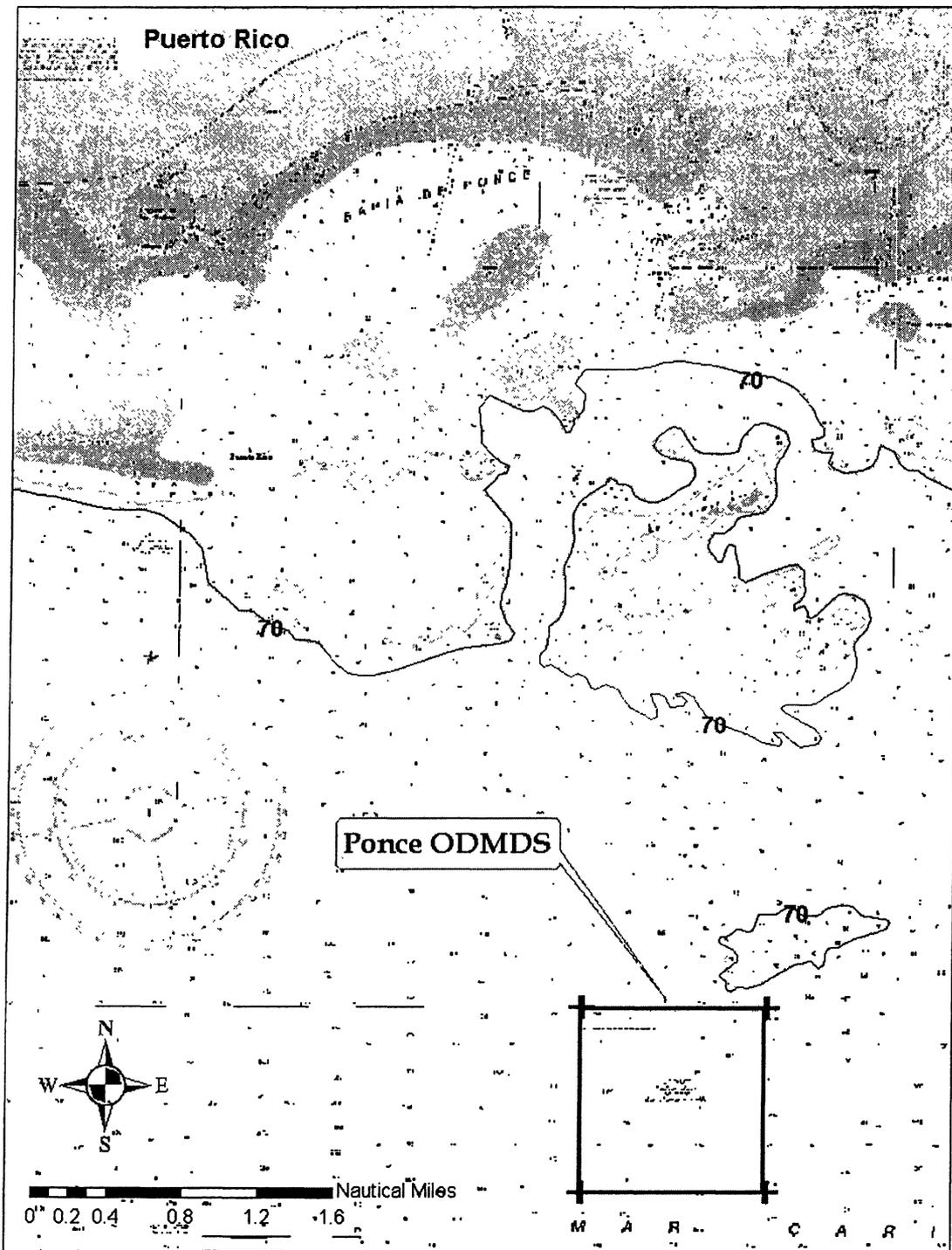


Figure 1. Location of Ponce Harbor, Puerto Rico Ocean Dredged Material Disposal Site relative to potential shelf edge reef resources (denoted by 70 m isobath). Potential shelf edge resources may be located in the shoals just northeast of the site boundary.

8. PS 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 Region 2/USACE-JD 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 Region 2/USACE-JD's Ocean Disposal Site Monitoring Program (MP) addresses both regulatory and technical issues associated with the disposal of dredged material at the PS. 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 PS 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 PS MP

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

- a. verify that dredged material disposed at the PS does not cause any unacceptable impacts.
- b. assess and monitor (trends) conditions at the PS 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 PS MP:

The PS 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:

- Utilize the certified 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 PS.
-

H₀2: Dredged material disposal operations are not causing unacceptable impacts (physical, chemical, and biological) at the PS and surrounding area (including Essential Fish Habitat).

Actions:

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

H₀3: Dredged material disposal has no significant impact on endangered species.

Actions:

- Review USACE-certified disposal inspector reports to ensure that no dredged material disposal occurs in the presence of any marine mammals/endangered turtles.
 - Monitor marine mammals/sea turtle sightings, landings (bycatch), and strandings in the PS and Ponce Harbor vicinity.
-

H₀4: Dredged material disposal does not significantly alter the benthic community structure of the area of the PS.

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 Plan

The PS MP consists of a three-tiered approach to monitor the physical, chemical and biological effects of dredged material disposed at the PS, 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 PS. 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-JD and EPA Region 2.

Monitoring and sampling will occur in a stratified, random design to allow quantitative analysis of results; the sampling area may include all or part of the PS, the surroundings and a reference area geographically removed from the effect of dredged material disposal at the PS. 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 PS and environs. Measurements of the physical nature of the material proposed for disposal at the PS 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 PS.

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 PS.

Disposals will be modeled using available computer models (e.g., MDFATE and/or 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 PS.

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 and restricted to the southern half of the site. This technology simultaneously records the draft and position of the vessel to which it is attached. Certified disposal inspectors (ship riders) will accompany all scows and hopper dredges disposing at the PS.

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

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 PS to define the footprint of dredged material within and around the site. Sampling locations will be determined jointly by EPA Region 2 and USACE-JD 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 or if modeling predicts exceedance of site boundary. USACE-JD and EPA Region 2 will generally conduct these investigations, however the agencies may require surveys to be conducted by permittees (or by the USACE-JD), 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 PS and its vicinity for analysis. Box core 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 box core 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 PS because of the great depth of the water

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 PS 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 PS, provides assurances that no acute toxicity is expected to result from disposal of dredged materials at the PS. Determination of long term trends in the benthic community 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 PS may be required.

- a. *Tier 1: Review of Testing Results/Monitoring for Sensitive and Fisheries Species Impacts:* 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 PS. 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 PS. By prohibiting materials that show acute toxicity in 10-d tests from disposal at the PS, the first level of assurance that unacceptable impacts to the benthos or to other marine organisms are not occurring due to the disposal of dredged material is gained.

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. Impacts to sensitive areas (i.e. shelf edge reef resources) will be avoided or minimized by restricting disposal activities to the southern half of the site. Fisheries issues are re-evaluated for the PS during each permit/authorization process. (Impacts to fisheries due to disposal operations are not anticipated. In the event that issues regarding fisheries are raised to the USACE-JD and/or EPA Region 2, 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 PS.)

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

- 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 box core 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-JD and EPA Region 2 will generally conduct these investigations, however the agencies may require surveys to be conducted by permittees (or by the USACE-JD), 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.

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-JD and EPA Region 2 to assess the presence, nature and bioavailability of contaminants in dredged material prior to authorizing disposal at the PS. Periodic collection and analysis of sediment and resident organism tissue samples from the PS and its environs will provide USACE-JD and EPA Region 2 with information necessary to confirm that no unacceptable effects are occurring and to identify long term trends in and around the PS.

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 PS 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 PS 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 box core 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 Region 2 and the USACE-JD, with the assistance of an interagency SMMP team consisting of representatives of EPA Region 2, USACE-JD, the Commonwealth of Puerto Rico and other stakeholders. The SMMP team will evaluate existing monitoring data, anticipated or proposed disposals (including consideration of the type and quantity of anticipated material), and other relevant factors to determine appropriate monitoring and management preferences. The actual frequencies and schedules for all jointly funded monitoring will be by mutual agreement of USACE-JD and EPA Region 2.

9.6. Monitoring Data Management: Processing, Evaluation and Interpretation

- a. Data collected from PS surveys are to be processed and analyzed by (or as specified by) the USACE-JD, EPA Region 2 (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 Region 2 requires data to be in the National Ocean Data Center (NODC) format, where appropriate. Survey data will be provided to members of the SMMP team in a report generated by the action agency. The report will indicate how the survey related to the SMMP and to previous PS 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, and will identify needs and projected goals of the next phase of the SMMP.

- c. 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: PS Monitoring Activities and Frequencies

Tier 1 monitoring activities will be conducted with each authorized project, as noted in text

Tier 2 - Monitoring Activity	Anticipated Frequency^a	Triggered by...	Responsible Entity
Physical- SPI photography	5 Yrs	Usage	USACE-JD/EPA Region 2, or permittee
Biological- SPI photography	5 Yrs	Usage	USACE-JD/EPA Region 2
Chemical- PS Sediments	10 Yrs	Tier 2 Physical and Biological	USACE-JD/EPA Region 2

Tier 3 - Monitoring Activity	Anticipated Frequency^a	Triggered by...	Responsible Entity
Physical-Sediment Analyses	10 Yrs	Volume, Usage	USACE-JD/EPA Region 2,
Chemical- Benthic Tissue	as needed	Tier 2 Chemical and Biological	USACE-JD/EPA Region 2
Biological- Community Analysis	as needed	Tier 2 Chemical and Biological	USACE-JD/EPA Region 2

Special Studies will be performed when deemed necessary to confirm that unacceptable effects are not occurring or to address any identified deficiencies in comprehension of baseline.

^a 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. PS 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.

Use of the site for disposal activity will be restricted to the southern half of the Ponce ODMDS to minimize the potential for impacts to shelf edge reef resources. At present, no disposal

restrictions related to seasonal variations in ocean current or biotic activity have been determined to be necessary for PS disposal. Should any such restrictions appear necessary as monitoring results are compiled, they will be incorporated into future ocean disposal authorizations. Additionally, if new information indicates that endangered, or threatened, species are being adversely impacted, restrictions will be implemented.

10.1. Regulatory Framework: Permit Conditions

Disposal of dredged material at ocean disposal sites cannot occur without a Department of the Army (DA) permit (or without the MPRSA Section 103 (e) equivalent for Federal projects). DA permits for disposal of dredged material at the PS are issued by USACE-JD and are valid for a period of three years. Copies of the issued permits and any letters modifying these permits may be obtained from the USACE-JD.

In cases where permits are not issued, as is the case with Federal navigation projects, requirements similar to permit conditions will be incorporated into the 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 all projects. These conditions are equivalent to permit conditions and will be enforceable on the contractor under applicable law.

a) *General Conditions*: General permit restrictions consist generally of standard maritime industry and U.S. Coast Guard requirements.

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:

- Seasonal restrictions or special conditions regarding dredging and disposal (assigned on a case by case basis);

- Requirements for submission and format requirements of monthly transportation and disposal logs and volume summary sheets.

10.2. Violation/Enforcement Cases

a. Dredging or disposal at the PS is to occur only with prior USACE-JD approval and EPA Region 2 concurrence. Projects not in compliance with the DA permit will be subject to enforcement action.

b. If any action takes place which does not conform to authorized dredging and disposal activities described in the permit (contract specification/work order for Federal projects), reauthorization, response letter, or other communicated requirements/restrictions, the Antilles Regulatory Section of the USACE-JD must be notified immediately. In cases where activities beyond the scope of those authorized occur, appropriate action will be determined by the Antilles Regulatory Section,

in coordination with EPA Region 2.

c. If dredged material regulated by a specific DA permit issued by the USACE-JD or Federal authorization is discharged due to an emergency situation in order to safeguard life or property at sea in locations or in a manner not in accordance with the terms or conditions of the permit or authorization, the master/operator of the towing vessel and/or the USACE-certified disposal inspector shall immediately notify the USACE-JD by marine VHF or cellular telephone, as required by permit. The USACE-JD shall copy EPA Region 2 on such notification the next business day. In addition, both the towing contractor and the USACE-certified disposal inspector shall make a full report of the incident to the USACE-JD and EPA Region 2 within ten (10) days. The report should contain factual statements detailing the events of the emergency and an explanation of the actions that were ultimately taken.

10.3. Site Inspection/Surveillance

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

b. USACE-JD and EPA Region 2 (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, 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 will 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:

The dredging/towing contractor must notify the Captain of the Port (COTP) of Ponce/USCG for a reference number before each vessel departs the dredging site for the PS. Every trip made under the 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) utilized for ocean disposal of dredged material. These logs should include the method of positioning (e.g. RADAR, LORAN-C, GPS, D-GPS, Dead Reckoning, other), accuracy, calibration methods, any problems and actions taken. EPA Region 2 and the USACE-JD recommend that each tugboat/barge utilized for the ocean disposal of dredged material utilize D-GPS for navigation purposes.

b. Disposal logs must be maintained for each vessel that includes all information listed below. The user of the PS will be required to prepare and submit to the USACE-JD daily reports of operations and a monthly report of operations for each month or partial month's work.

Daily reports must include the following data:

(i) Date/Time;

(ii) Vessel name;

(iii) Dump number;

(iv) Map number on which dump is plotted;

(v) Beginning and ending coordinates of the dredging area for each load, and the beginning and ending coordinates and the compass heading at the beginning of each dump;

(vi) shoal number from which dredged material came; and

(vii) volume and brief description of material disposed.

(viii) sightings of endangered species and management action taken by plant operator

c. 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 PS. Surveillance data is to be submitted to the Agencies on a weekly basis in both electronic and hard copy formats. Vessel draft readings must be clearly depicted; superimposed on a figure that includes the dredging area, adjacent shorelines, and PS boundaries.

11.3 Federal PS Data Management and Reporting:

A spreadsheet file containing contractor-reported scow volumes information is maintained by the USACE-JD. 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-JD will compile all dredging, disposal and testing data and submit them to USACE Headquarters.

All dredged material disposal data submitted to USACE-JD will be compiled, analyzed and evaluated in a final end-of-the-year report that will be provided to EPA Region 2 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-JD contains information pertaining to the following:

- Permit/Federal Project number
- Permittee or Federal Project name
- Waterway/Reach/Channel
- Was the project maintenance or improvement?
- 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 PS, noted separately and collectively

12. PS 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 PS 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 PS will lead to unacceptable impacts, then the PS 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 PS.

13. References

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