



US Army Corps
of Engineers
Jacksonville
District



Site Management and Monitoring Plan for
Arecibo Harbor,
Mayagüez Harbor,
Ponce Harbor,
San Juan Harbor, &
Yabucoa Harbor
Puerto Rico Dredged Material Disposal Sites

FINAL

February 28, 2023

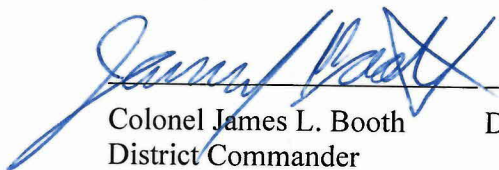
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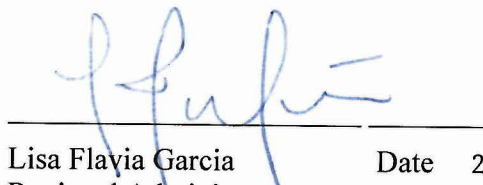
Site Management and Monitoring Plan for Arecibo Harbor, Mayagüez Harbor, Ponce Harbor, San Juan Harbor, & Yabucoa Harbor Puerto Rico Dredged Material Disposal Sites

February 2023

The following Site Management and Monitoring Plan (SMMP) for the Arecibo Harbor, Mayagüez Harbor, Ponce Harbor, San Juan Harbor, & Yabucoa Harbor Puerto Rico Dredged Material Disposal Sites (ODMDSs) has been developed in order to comply with Section 102(c)(3) of the Marine Protection, Research, and Sanctuaries Act (MPRSA) of 1972 (33 U.S.C. Section 1401, et seq.) as amended by Section 506 of the Water Resources Development Act (WRDA) Amendments of 1992 (Public Law 102-580) and has been approved by the following officials of the U.S. Environmental Protection Agency (EPA) Region 2 and the U.S. Army Corps of Engineers (USACE), Jacksonville District. This supersedes all prior Arecibo Harbor, Mayagüez Harbor, Ponce Harbor, San Juan Harbor, & Yabucoa Harbor Puerto Rico Dredged Material Disposal Site SMMPs.



Colonel James L. Booth Date 2/28/2023
District Commander
Jacksonville District
U.S. Army Corps of Engineers
Jacksonville, Florida 32232



Lisa Flavia Garcia Date 2/28/2023
Regional Administrator
U.S. Environmental Protection Agency
Region 2
New York, New York 10007

This plan is effective from the date of signature for a period not to exceed 10 years. The plan shall be reviewed and revised more frequently if site use and conditions at site indicate a need for revision.

NODC – National Ocean Data Center

ODMDS – Ocean Dredged Material Disposal Site

PCBs – Polychlorinated Biphenyls

PH – Ponce Harbor

PS – Ponce Harbor, Puerto Rico Ocean Dredged Material Disposal Site

PSMS – Primary Scow Monitoring System

ROV – Remotely Operated Vehicle

RPM – Reasonable and Prudent Measures

SARBO – South Atlantic Regional Biological Opinion for Dredging and Material Placement Activities in the Southeast United States

SJH – San Juan Harbor

SJS – San Juan Harbor, Puerto Rico Ocean Dredged Material Disposal Site

SMMP – Site Management and Monitoring Plan

SPI – Sediment Profile Imaging

T&C – Terms and Conditions

TBP – Theoretical Bioaccumulation Potential

TDL – Transportation and Discharge Log

TDS – Tons Dry Solid

TOC – Total Organic Carbon

USACE – U.S. Army Corps of Engineers

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

USCG – United States Coast Guard

USFWS – United States Fish & Wildlife Service

W/QAPP – Work/Quality Assurance Project Plan

WRDA – Water Resources and Development Act

XML -Extensible Markup Language

YH – Yabucoa Harbor

YS – Yabucoa Harbor, Puerto Rico Ocean Dredged Material Disposal Site

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 five (5) sites in Puerto Rico, WRDA dictated that SMMPs were to 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)(A) requires that the SMMP for an ODMDS include a baseline assessment of conditions at the site. 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. 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.

EPA Region 2 (EPA-R2) and USACE Jacksonville District (USACE-SAJ) prepared this document (Puerto Rico Combined SMMP) which combines and revises the WRDA-required SMMPs for all five (5) of the final-designated (40 CFR 228.15 (d) (10)-(14)) ODMDSs in Puerto Rico: Arecibo Harbor, Puerto Rico Dredged Material Site (AS); Mayagüez Harbor, Puerto Rico Dredged Material Site (MS); Ponce Harbor, Puerto Rico Dredged Material Site (PS); San Juan Harbor, Puerto Rico Dredged Material Site (SJS); and Yabucoa Harbor, Puerto Rico Dredged Material Site (YS) (afterwards referred to as the Puerto Rico ODMDSs). This SMMP identifies actions, provisions, and practices to manage operational aspects of dredging and disposal activities and to perform site monitoring at the five (5) designated ODMDSs in Puerto Rico.

2. 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 Puerto Rico ODMDSSs;
- 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 Puerto Rico ODMDSSs;
- e. outline a program for monitoring the Puerto Rico ODMDSSs;
- f. describe special management conditions/practices to be implemented at the Puerto Rico ODMDSSs;
- g. estimate the quantity of material to be disposed at the each of the five (5) Puerto Rico ODMDSSs, 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 Puerto Rico ODMDSSs;
- i. provide a schedule for review and revision of this SMMP for Puerto Rico ODMDSSs.

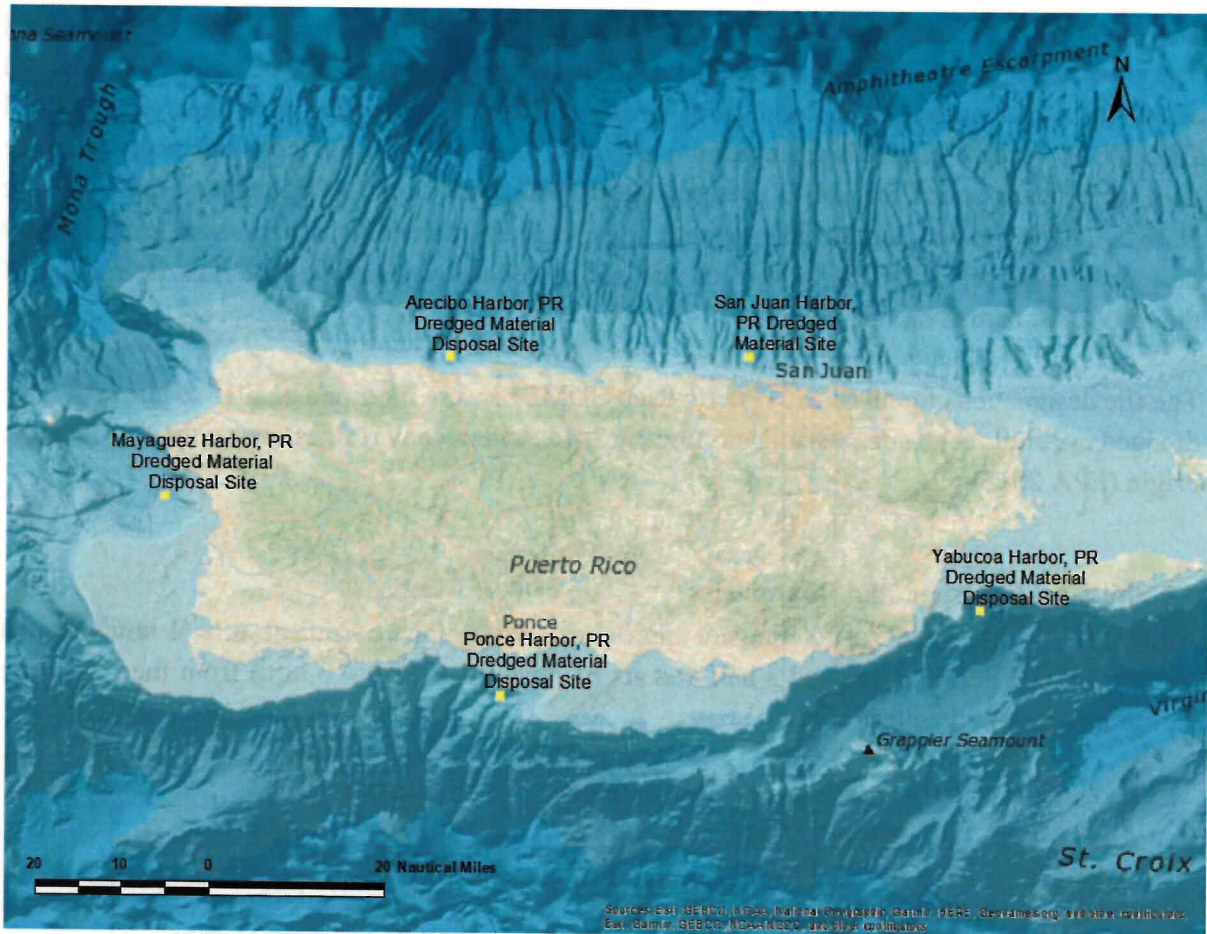


Figure 1. Map showing locations of the five dredged material disposal sites in Puerto Rico.

3. Site Histories and Locations

3.1 Site Histories

Prior to 1974, all dredged material (except for Bar Channel material) taken from San Juan Harbor and its vicinity was placed in upland disposal areas. In 1974, these areas were exhausted, and no new upland site could be obtained for dredged material disposal. Since 1975, all dredged material from San Juan Harbor has been disposed offshore.

The SJS was designated as an Interim ODMDS in 1977 under MPRSA. An interim ODMDS for Mayagüez Harbor was also approved in 1977 via publication in the Federal Register (42 FR 2461 *et seq.*). Interim ODMDSs for Arecibo Harbor, Ponce Harbor, and Yabucoa Harbor were designated in 1986 under MPRSA.

In March 1988, the SJS was designated as a Final ODMDS to receive materials from the San Juan Harbor area. The May 1988 Final Environmental Impact Statement (FEIS) for the Designation of

ODMDSs for Arecibo, Mayagüez, Ponce, and Yabucoa, Puerto Rico examined environmental aspects of the interim sites. The FEIS concluded that the interim site for Arecibo Harbor was well suited for use as a dredged material disposal site and it was subsequently designated as a Final ODMDS to receive materials from areas of Arecibo Harbor. The FEIS concluded that alternate sites were better suited for use as dredged material disposal sites for Mayagüez Harbor, Ponce Harbor, and Yabucoa Harbor. The present sites for these three (3) harbors were subsequently designated as Final ODMDSs, with each site designated to only receive materials from areas of the respective named harbor.

The site designations for all five (5) Puerto Rico ODMDSs were modified in 2015 to allow suitable dredged materials at all sites starting on June 22, 2015, without any restrictions on their geographic origin (EPA 2015).

3.2 Site Size, Location, and Boundaries

All five (5) ODMDSs in Puerto Rico are approximately one square nautical mile (1 nmi²) in area and are located between one and a half and six nautical miles (1.5 – 6 nmi) from the respective harbor entrance as detailed below:

Site	Distance from harbor entrance	Orientation
AS	1.5 nautical miles	N of Arecibo Harbor
MS	6.0 nautical miles	W of Mayagüez harbor
PS	4.5 nautical miles	S of Ponce Harbor
SJS	2.2 nautical miles	NNW of San Juan Harbor
YS	6.0 nautical miles	E of Yabucoa Harbor

The five (5) Puerto Rico ODMDs are positioned in rectangles bounded by the following North American Datum of 1927 (NAD27) coordinates as specified 40 CFR 228.15(d)(10-14):

Site	Degrees, Minutes, Seconds
AS ¹	18° 31' 00" N 66° 43' 47" W
	18° 31' 00" N 66° 42' 45" W
	18° 30' 00" N 66° 42' 45" W
	18° 30' 00" N 66° 43' 47" W
MS	18° 15' 30" N 67° 16' 13" W
	18° 15' 30" N 67° 15' 11" W
	18° 14' 30" N 67° 16' 13" W
	18° 14' 30" N 67° 15' 11" W
PS ²	17° 54' 00" N 66° 37' 43" W
	17° 54' 00" N 66° 36' 41" W
	17° 53' 00" N 66° 36' 41" W
	17° 53' 00" N 66° 37' 43" W
SJS ¹	18° 30' 10" N 66° 09' 31" W
	18° 30' 10" N 66° 08' 29" W
	18° 31' 10" N 66° 08' 29" W
	18° 31' 10" N 66° 09' 31" W
YS ³	18° 03' 42" N 65° 42' 49" W
	18° 03' 42" N 65° 41' 47" W
	18° 02' 42" N 65° 41' 47" W
	18° 02' 42" N 65° 42' 49" W

¹ To minimize the potential for impacts to shelf edge reef resources, disposal activity is restricted to the northern half of the AS and the SJS (see Section 4.4).

² Disposal activity is restricted to the southern half of the PS to minimize potential for impacts to shelf edge reef areas (see Section 4.4).

³ Disposal activity is restricted to the southeastern quadrant of the YS to minimize potential for impacts to shelf edge reef areas (see Section 4.4).

3.3 Enforcement Activities in Puerto Rico

Enforcement actions have been taken relating to dredged material disposal activities at the PS. During the project for deepening and widening of the Ponce Harbor navigational channel and turning basin and berthing areas associated with the Port of Las Americas development project in 2005-2006, surveillance of the loaded scows revealed that several loads of material were discharged outside PS boundaries and that significant losses of material had occurred from loaded scows while underway due to continued use of malfunctioning scows to transport dredged material. As a result of these actions, EPA-R2 issued four (4) MPRSA violations with significant monetary penalties.

Since their designation, no significant violations and/or enforcement actions have been taken (i.e. actions resulting in fines and/or criminal proceedings) at the AS, MS, SJS, or YH ODMDSs. However, both EPA-R2 and the USACE-SAJ have taken corrective actions to bring specific disposal projects into compliance with permit conditions.

3.4 Past and Anticipated Use and Quantity of Material Disposed at ODMDSs

Disposal volumes (cy) at the five (5) Puerto Rico ODMDSs in past ten years along with total volumes and averages since interim designation in 1977 and 1986. Source: USACE Ocean Dredged Material Disposal Site Database and USACE records.

Year	Arecibo Harbor	Mayagüez Harbor	Ponce Harbor	San Juan Harbor	Yabucoa Harbor	Total All Sites
2011				378,352		378,352
2012	185,673			92,538		278,211
2013						0
2014				8,333		8,333
2015						0
2016				986,324		986,324
2017				139,302		139,302
2018						0
2019						0
2020	96,896	94,843		284,444		476,183
2021						
Total 1976-2021	526,839	156,181	1,400,000	14,279,569	0	16,362,589
Average/year 1976-2021	11,453	3,395	30,435	310,425	0	355,708
Total 2011-2021	282,569	94,843	0	1,889,293	0	2,266,705
Average/year 2011-2021	25,688	8,622	0	171,754	0	206,064
Average/dredging year 2011-2020*	141,285	94,843	NA	314,882	NA	377,784
Anticipated total placement 2023-2033	300,000	100,000	30,000	4,000,000	100,000	4,530,000

*Calculated only considering years where there was dredged material disposed of at a particular ODMDS, or any ODMDS for all sites average

The USACE-SAJ anticipates the volumes shown in the table above for dredging and disposal at the AS, MS, and SJS in FY22-FY30. Dredged material resulting from San Juan Harbor maintenance and deepening projects is anticipated as well as dredged material from continued construction and maintenance of the Rio Puerto Nuevo Flood Control Project. Dredged material from these projects will be placed at the SJS. Materials will consist of variable percentages of silt, clay, and sand. Dredged material resulting from the Arecibo Harbor maintenance dredging will be placed at the AS. There are potential dredging projects associated with private facilities in

Guayanilla Harbor and Yabucoa Harbor that would result in dredged material being transported to the PS and the YS. The quantity of material for these projects is not known at this time but is expected to be relatively low. There are no proposed limitations on the quantity of material that may be placed at the sites.

4. Site Characteristics

Baseline conditions measured by IE Corporation in 1980 were summarized in the Environmental Impact Statement (EIS) prepared to support designation of the SJS (EPA, 1982). Additional baseline biological, geological and geochemical data was collected from the SJS and the four (4) other Puerto Rico ODMDSs (AS, MS, PS, and YS) in 1984 by JRB Associates (under contract to EPA). These data were summarized in the EIS prepared to support designation of the Arecibo Harbor, Mayagüez Harbor, Ponce Harbor, and Yabucoa Harbor ODMDSs (EPA 1988). In November - December 1996 EPA-R2 collected side scan sonar, sediment chemistry, and benthic community structure data in and around the Puerto Rico sites to augment the baseline assessments of conditions (Golder Associates, 1997). Sediment samples were taken from the Puerto Rico sites on multiple surveys since then and again most recently in February 2022.

4.1 Physical, Meteorological and Oceanographic Features:

a. *Water Depth:* Water depths at the Puerto Rico ODMDSs range between 60 and 880 meters (m):

Site	Depth Range	Bathymetry Description
AS ¹	101 m – 417 m	101 m along the southern margin to 417 m along the northern border
MS ²	320 m – 400 m	325 m along the eastern border to 400 m along the western border
PS ²	60 m – 540 m	Southern half of the site is deeper, 365-540 m
SJS ³	213 m – 400 m	depths average 292 m: 213 m at the southern boundary to 400 m at the northern boundary
YS ²	600 m – 880 m	shallowest at the northeastern corner, deepest at the southeastern corner

¹EPA 1988 EIS

²Golder 1997

³EPA 1982 EIS

b. *Currents:* Currents at all five (5) Puerto Rico ODMDSs are greatly influenced by the direction and strength of the trade winds. The trade winds blow primarily from the northeast. Subsurface currents at most sites are not well defined, but they appear to be weak. This fact is also evidenced by the relatively undisturbed depositional environment within the sites and surrounding area.

- At the SJS and AS the east-west alignment of the coastline in conjunction with the trade winds, results in a westerly alongshore current. Surface currents show general westward

drift caused by prevailing east trade winds with average velocities of about 10 cm/s (NOAA 2022).

- Surface currents in the Mayagüez area tend to flow northward at flood tide and southward at ebb tide. There are seasonal differences in currents, but flow is generally parallel to the shore with surface currents around 50 cm/s near the entrance to Mayagüez Harbor (NOAA 2022). Subsurface currents appear to be weaker at the MS than elsewhere in the Mona Passage.
- Currents measured at the PS were predominately oriented in an easterly direction. Median current speed at 50 m 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 (PRASA 2003).
- At the YS, surface currents are generally directed south-southwest and typically exhibit speeds between 8 and 10 cm/s. Maximum speeds can be on the order of 30 to 62 cm/s during peak forcing conditions (ANAMAR 2007). West-southwesterly currents as high as 30 cm/s have been reported between 100 to 500 meters (NOAA 2022).

c. Winds: Easterly trade winds predominate throughout the entire year in the region, primarily from the ENE direction. Wind speeds in the area are moderate. The mean annual wind speed is 7.8 knots (14.4 km/hr) but shows considerable daily and monthly variation (National Weather Service 2022). In summer, the trades tend to strengthen during the day, and average windspeeds are highest during this season. Morning averages of 12-13 knots give way to 13-15 knot averages during the afternoon. Infrequent tropical storms and hurricanes are sometimes severe, occur any time from June to November, and generally produce considerable rainfall (NOAA 2022).

d. Water Column Profile: Water column structure is relatively uniform throughout the year and salinity and temperature data reveal the existence of a well-mixed layer of surface water. The depth of this surface layer extends tens of meters and varies seasonally. The average annual temperature and salinity of this surface water range between 26-29°C and 35.5 - 36.2 ppt. Below this surface layer, a permanent density gradient (pycnocline) extends to approximately 240 m with a gradual density gradient below the pycnocline at most sites (EPA 1982, EPA 1988).

e. Dissolved Oxygen, Chlorophyll, and Turbidity: Measurements taken of baseline dissolved oxygen, chlorophyll a and turbidity levels in the water column 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 (EPA 1982, EPA 1988). In contrast to the other sites, at the PS, distribution

of dissolved oxygen was relatively uniform throughout the upper water column (to 150 meters) (PRASA 2003).

4.2 Sediment Composition/Chemistry and Benthos

a. Sedimentary Composition: The physical characteristics of the sediment at the five (5) ODMDSs based on sediment profile images (SPI) taken and samples collected on the 2022 survey are summarized in the table below:

Site	Physiographic Location	Relative Spatial Heterogeneity	Sand (average %)	Silt/Clay (average %)
AS	Northern PR Slope	Homogenous	52%	48%
MS	Western PR Slope	Localized sand and gravel areas	5%	95%
PS	Southern PR Slope	Homogenous	24%	76%
SJS ¹	Northern PR Slope	Localized sand and gravel areas	28%	67%
YS	Southeastern PR Slope	Homogenous	18%	82%

¹The sediment samples collected at the SJS contained an average of 5% gravel.

b. Sediment Chemistry: On multiple occasions sediment samples have been collected from within and outside the boundaries of each Puerto Rico ODMDS and analyzed for percent total organic carbon (% TOC) and concentrations of trace metals, hydrocarbons, and chlorinated organic contaminants (i.e., PCBs and selected pesticides). The table below summarizes the results of analysis of samples collected within the five (5) sites on the latest survey, in 2022.

Site	%TOC (average)	Chlorinated Organic Contaminants	Polycyclic aromatic hydrocarbons (PAH)
AS	0.94%	Total DDT compounds 0.09-1.04 ppb, non-DDT pesticides all <0.25 ppb individually, and total PCBs 0.56-4.73 ppb	Low, <227 ppb
MS	4.84%	Total DDT compounds 0-0.77 ppb, non-DDT pesticides all <0.3 ppb individually, and total PCBs 0.79-15.58 ppb	Low, <118 ppb
PS	1.44%	No pesticides or PCB congeners detected	26-907 ppb
SJS	1.84%	Total DDT compounds 1.36-6.18 ppb, non-DDT pesticides all <1.6 ppb individually, and total PCBs 18.30-66.09 ppb	260-919 ppb ¹
YS	3.25%	No pesticides or PCB congeners detected	Low, <165 ppb

¹In a previous set of sediment sample test results, a higher range of values was found for total PAH concentrations at the SJS, as reported in the last SJS SMMP (EPA-USACE 2011).

The average % TOC of sediments present at MS, PS, SJS, and YS ranged from 1.4% to 4.8%. The sandier sediments present at AS had correspondingly lower average TOC (<1%). No pesticides or PCB congeners were detected in sediment samples from the PS or YS, while low levels of DDT compounds, other pesticides, and individual PCB congeners were detected in sediment samples from the three (3) other sites (AS, MS, and SJS). Polycyclic aromatic hydrocarbon (PAH) levels were also low across all five (5) ODMDSs but slightly elevated at SJS and PS.

Sediment metal concentration ranges (ppm) within ODMDSs					
Bold = above respective reference/background range * = above all reference/background ranges ND = Not detected					
	AS	SJS	MS	PS	YS
Arsenic	9.2 – 38.3*	7.3 – 14.7	4 – 16.8	5.8 – 6.9	7.8 – 9.8
Chromium	36.4 – 107	20.9 – 47.3	25.2 – 68.8	20.8 – 32.4	10.5 – 11.4
Copper	31.8 – 167*	22.8 – 64.2	13.1 – 73.2	19.5 – 44.6	21 – 27.2
Lead	5.8 – 29.2	10.2 – 27.2	4.1 – 19.1	4.9 – 14.3	6 – 6.9
Mercury	ND	ND – 0.3*	ND	ND	ND
Nickel	12 – 51.4	8.7 – 18.5	26.4 – 62.4	11.6 – 22.7	5.7 – 6.4
Silver	ND – 0.06	0.1 – 0.8*	ND – 0.1	ND – 0.05	0.03 – 0.04
Zinc	11.7 - 181	10.6 – 88.1	12.5 – 41.4	32.3 – 76.3	24 – 34.8

Sediment metal concentration ranges (ppm) outside ODMDSs				
	AS/SJS Ref./BG	MS Ref./BG	PS Ref./BG	YS Ref./BG
Arsenic	14 – 35.6	2.75 – 23.7	7 – 10	3.6 – 6.9
Chromium	41.4 – 136	11.4 – 84.7	28.9 – 36	9 – 10.4
Copper	44.8 - 138	3.4 – 25.5	36.2 – 43.4	9.9 – 13.8
Lead	8 – 31.1	2.3 – 16.3	6.5 – 14.2	3.4 – 4.6
Mercury	ND	ND	ND	ND
Nickel	15.6 – 61.9	5.8 – 43.5	16.9 – 22.7	5.1 – 6.6
Silver	ND – 0.1	ND	ND	ND
Zinc	61.4 - 183	4.9 - 134	59.5 – 70.4	11.6 – 15.8

Concentrations of certain metals (arsenic, chromium, copper, lead, nickel, and zinc) were found to be somewhat elevated in samples collected off the northern coast of Puerto Rico in background ocean areas, reference areas close to Arecibo Harbor and San Juan Harbor, and within the AS and SJS compared to samples collected from other ocean areas around Puerto Rico. Most metal concentrations within the AS and SJS were similar to levels found in the background site and reference sites outside of the Puerto Rico ODMDSs except silver concentrations were higher within the SJS (ranging from 0.10 ppm to 0.84 ppm, compared to not detected to 0.13 ppm in background and reference areas) and the only sample where mercury was detected was in the SJS (at 0.31 ppm). Several metals were found at levels similar to the north shore sites in the samples from the MS, the Mayagüez reference site, and Mayagüez background, while samples from the PS, the YS, and their respective reference and background sites had consistently lower metal

concentrations. Ranges of metal concentrations were higher within the YS than in the background/reference samples collected at greater depths further from shore to the southeast of the YS. Cadmium was not detected in any sample. All metal concentrations are within expected ranges for areas receiving some degree of anthropogenic input (Battelle 2022).

c. Benthic Biota: Benthic community surveys have been conducted at the MS, PS, SJS, and YS three times since their designation, most recently in February 2022; a benthic community survey was conducted for the first time at the AS on the most recent 2022 survey. In 2022, benthic community surveys were conducted at all five (5) Puerto Rico ODMDs and samples collected within and outside of each site were analyzed. The table below summarizes analysis of the recent benthic samples collected within the five (5) sites in 2022.

Site	Polychaetes (mean % abundance)	Crustaceans (mean % abundance)	Molluscs (mean % abundance)	Minor taxonomic groups
AS	41%	2%	49%	Sipunculids and echinoderms
MS	37%	4%	52%	Sipunculids and echinoderms
PS	42%	9%	38%	Anthozoans and sipunculids
SJS	46%	3%	29%	Anthozoans and sipunculids
YS	50%	0%	19%	Echinoderms

Benthic communities were dominated by deposit-feeding organisms. At all sites, samples contained low but variable numbers of individuals and taxa. Major taxonomic groups were polychaetes, crustaceans, and molluscs (primarily gastropods (snails) and bivalves). Minor taxonomic groups (sipunculids, echinoderms, and anthozoans) varied across sites. Samples from background areas outside of the Puerto Rico ODMDs were similar in abundance and diversity (Battelle 2022).

4.3 Usage of Puerto Rico Sites by Marine Mammals, Fish, and Endangered Species

USACE recently completed a programmatic, regional Essential Fish Habitat (EFH) and Section 7 Endangered Species Act (ESA) consultation process with the Services which covered dredging and placement activities related to projects under the jurisdiction of its Civil Works and Regulatory Programs (and dredging/sand mining in borrow sites in federal waters under the jurisdiction of the Bureau of Ocean Energy Management (BOEM) Marine Minerals Program) in the Southeast United States, including the islands of Puerto Rico and the U.S. Virgin Islands. At the conclusion of this process, the Services issued the South Atlantic Regional Biological Opinion for Dredging and Material Placement Activities in the Southeast United States (2020 SARBO) which concluded that the covered dredging and placement activities, including placement at the five (5) Puerto Rico ODMDs, are “not likely to jeopardize the continued existence of ESA-listed species or result in adverse effects to designated critical habitats[.]” The SARBO also includes requirements (Reasonable and Prudent Measures (RPMs) and Terms and Conditions (T&Cs)) that minimize the impacts to ESA-listed species and designated critical habitats. In addition to SARBO requirements, this SMMP requires certain conditions for barge transport to the ODMDs and site-specific transit

and use restrictions to further protect ESA-listed and sensitive species as well as EFH, including coral reefs, as detailed in the following sections.

a. Marine mammals: The designated sites do not encompass any known breeding, feeding, or nursery areas of marine mammals. Fin whales (*Balaenoptera physalus*), sperm whales (*Physeter macrocephalus*), sei whales (*Balaenoptera borealis*), and blue whales (*Balaenoptera musculus*) are all ESA-listed endangered large whale species with ranges that include waters of Puerto Rico. However, none of these species are known to breed or be commonly found in large numbers near Puerto Rico. Humpback whales (*Megaptera novaeangliae*) are present in waters off the coast of Puerto Rico during migration in the winter months (January-mid-March). 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 one (1) mile of shore but are also observed further offshore. Presence of humpback whales is possible in proximity to all five (5) Puerto Rico ODMDSs but is most common near the Mayagüez ODMDS. Dolphins are common residents and may be present in waters of the ODMDSs at any time. The ESA-listed West Indian (Antillean) manatee (*Trichechus manatus manatus*) frequent shallow coastal areas of Puerto Rico, including bays, and generally do not occur in deeper offshore waters. Nevertheless, manatees are occasionally sighted offshore, so the possibility exists that manatees could be present in waters of the Puerto Rico ODMDSs. This SMMP requires that all vessels transporting dredged material to any ODMDS adhere to all measures required in Appendix E of this SMMP (i.e., NMFS, Southeast Region Vessel Strike Avoidance Measures and Reporting for Mariners) while underway.

b. Sensitive Species: Five (5) species of sea turtles are also known to inhabit Puerto Rican waters: green (*Chelonia mydas*), hawksbill (*Eretmochelys imbricata*), leatherback (*Dermochelys coriacea*), loggerhead (*Caretta caretta*) and olive ridley (*Lepidochelys olivacea*). The latter two (2) of these species are significantly less frequently observed in Puerto Rican waters. Waters of the ODMDSs are too deep to provide foraging habitat for adults of green, hawksbill or leatherback turtles; however, they can be expected to be transiting through these areas and post-hatchling green and hawksbill turtles may be associated with rafts of *Sargassum*. Leatherback marine turtles approach the south shore of Puerto Rico during their nesting season (March-June) and may be present in offshore waters during this time. Leatherbacks typically spend the rest of their adult lives in the temperate zone. Hawksbill turtles and leatherback turtles are likely to be present in waters around the MS as they transit to and from Puerto Rico west coast and Mona Island beaches during their nesting season (March-June). While underway, dredging contractors must adhere to all measures required in Appendix E of this SMMP (i.e., NMFS, Southeast Region Vessel Strike Avoidance Measures and Reporting for Mariners) and maintain a watch for turtles as well. The endangered Brown pelican is resident to Puerto Rico but is primarily present inshore.

c. *Fish*: There are four (4) ESA-listed species of fish, sharks, and rays (Nassau grouper, giant manta ray, oceanic whitetip shark, and scalloped hammerhead shark) present in Puerto Rican waters; all are highly mobile species that will choose foraging habitat with favorable characteristics. There are six (6) designated EFH in Puerto Rico for reef fish, pelagic fish, rays, spiny lobster, queen conch, and corals. Juvenile and adult reef fish utilize waters up to 600 feet in depth for foraging but are primarily found in vicinity of coral reef habitat. Open waters of Puerto Rico sites 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 designated sites are not critical areas in this regard. Deep waters of the sites 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 southern 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 southern 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 where effort is generally directed at billfish, dorado, tuna, and other pelagic species.

d. *Endangered and threatened corals*: There are seven (7) species of corals in Puerto Rican waters listed by NOAA-NMFS under ESA as threatened: staghorn coral (*Acropora cervicornis*); elkhorn coral (*Acropora palmata*); lobed star coral (*Orbicella annularis*); mountainous star coral (*Orbicella faveolata*); boulder star coral (*Orbicella franksi*); pillar coral (*Dendrogyra cylindrus*); and rough cactus coral (*Mycetophyllia ferox*). These corals (except *M. ferox*) are important reef building corals, typically occurring in high energy, shallow water areas. Critical habitat for these corals is located at the shelf edge or in coastal areas (the deepest occurring of these corals are *M. ferox*, *O. faveolata* and *O. franksi*, which have depth distribution maximums of 90 m). 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. In a proposed rule published in November 2020, NOAA identified critical habitat for the five (5) non-*Acropora* threatened species: *O. annularis*, *O. faveolata*, *O. franksi*, *D. cylindrus*, and *M. ferox*. The proposed critical habitat areas for these five (5) species in Puerto Rico are bounded by water depths as listed following table:

Species	Water depth range
<i>Orbicella annularis</i>	0.5-20 m (1.6-65.6 ft)
<i>Orbicella faveolata</i>	0.5-90 m (1.6-295 ft)
<i>Orbicella franksi</i>	0.5-90 m (1.6-295 ft)
<i>Dendrogyra cylindrus</i>	1-25 m (3.3-82 ft)
<i>Mycetophyllia ferox</i>	5-90 m (16.4-295 ft)

O. faveolata and *O. franksi* both have the widest water depth range covering the same area within which lie the proposed critical habitat areas for all other threatened coral species. Maps of this range using the NOAA GIS layer for *O. franksi* proposed critical habitat show the proximity of critical coral habitat to each ODMDS (Figures 3-7). All five (5) Puerto Rico ODMDSs are in water deeper than 90 m, making their locations outside of critical habitat areas. Critical habitat for threatened corals as designated by depth ranges occurs along the transport routes typically used by barges to travel to and from the Puerto Rico ODMDSs. The presence of several of these species was documented in shallow waters outside the channel routes to the MS and SJS in video taken from a remotely operated vehicle (ROV). 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. Deep water stony coral (*Madracis* spp.) was documented in very sparse distribution in video taken using a ROV at deep water hardbottom areas outside the Mayagüez Harbor entrance in 2011.

4.4 Shelf Edge Reef Resources

Reef resources on the Puerto Rican shelf and along the shelf edge have been identified by the NOAA as EFH. In previous consultations, NOAA has indicated that these areas are generally restricted to areas shallower than 200 feet (61 m). Side scan SONAR and ROV surveys have been conducted to locate shelf edge resources around Puerto Rico, including on the most recent survey in 2022 where a ROV was used to collect images along channel edges and transit routes to the PS and YS. This SMMP implements multiple protective measures to minimize the potential for impacts to shelf edge resources as detailed in the following site-specific sections.

a. *Arecibo Harbor, PR ODMDS*: In November 2011, a side scan SONAR survey was made of the area between the mouth of Arecibo 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 Arecibo Harbor and AS (Figure 2). Video documentation of the quality of these habitats was obtained on a survey in 2013 and confirmed the presence of corals in some of the areas that were identified as hardbottom by the side scan SONAR on the shelf south of the AS. **To minimize the potential for impacts to ESA corals and shelf edge EFH, disposal activities are restricted to the northern half of the Arecibo Harbor, PR ODMDS. Scows will be required to maintain a line of transit that passes east of 18° 29.700 N and 66° 42.800 W as well as west of 18° 29.700 N and 66° 42.550 W to minimize the potential for losses of dredged material onto these potentially sensitive areas.**

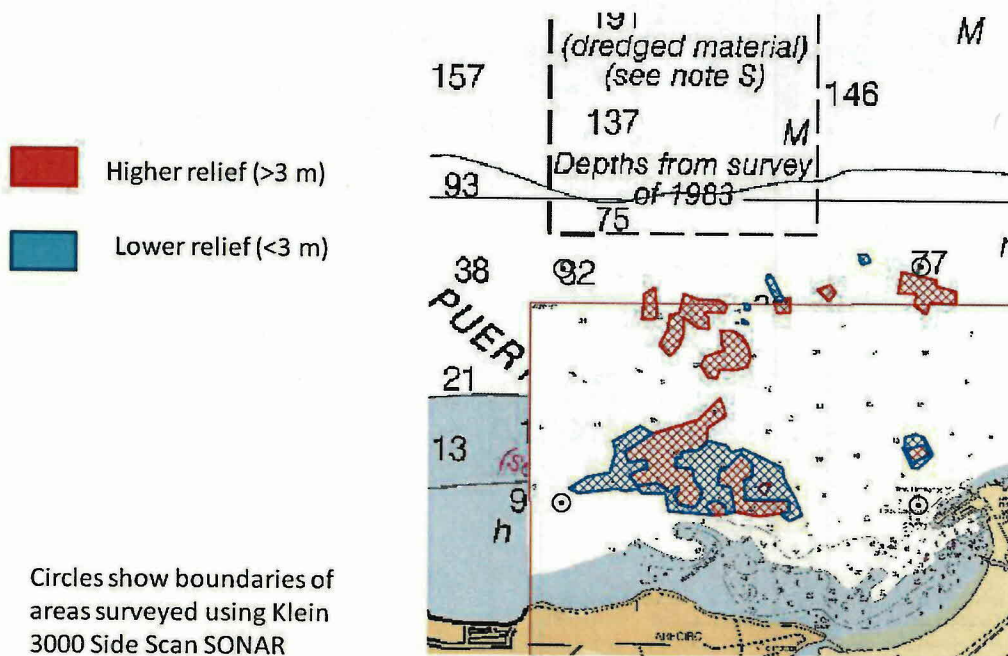


Figure 2. Hard bottom features having significant vertical relief outside Arecibo Harbor. Based on EPA Region 2 side scan SONAR survey (conducted in November 2011).

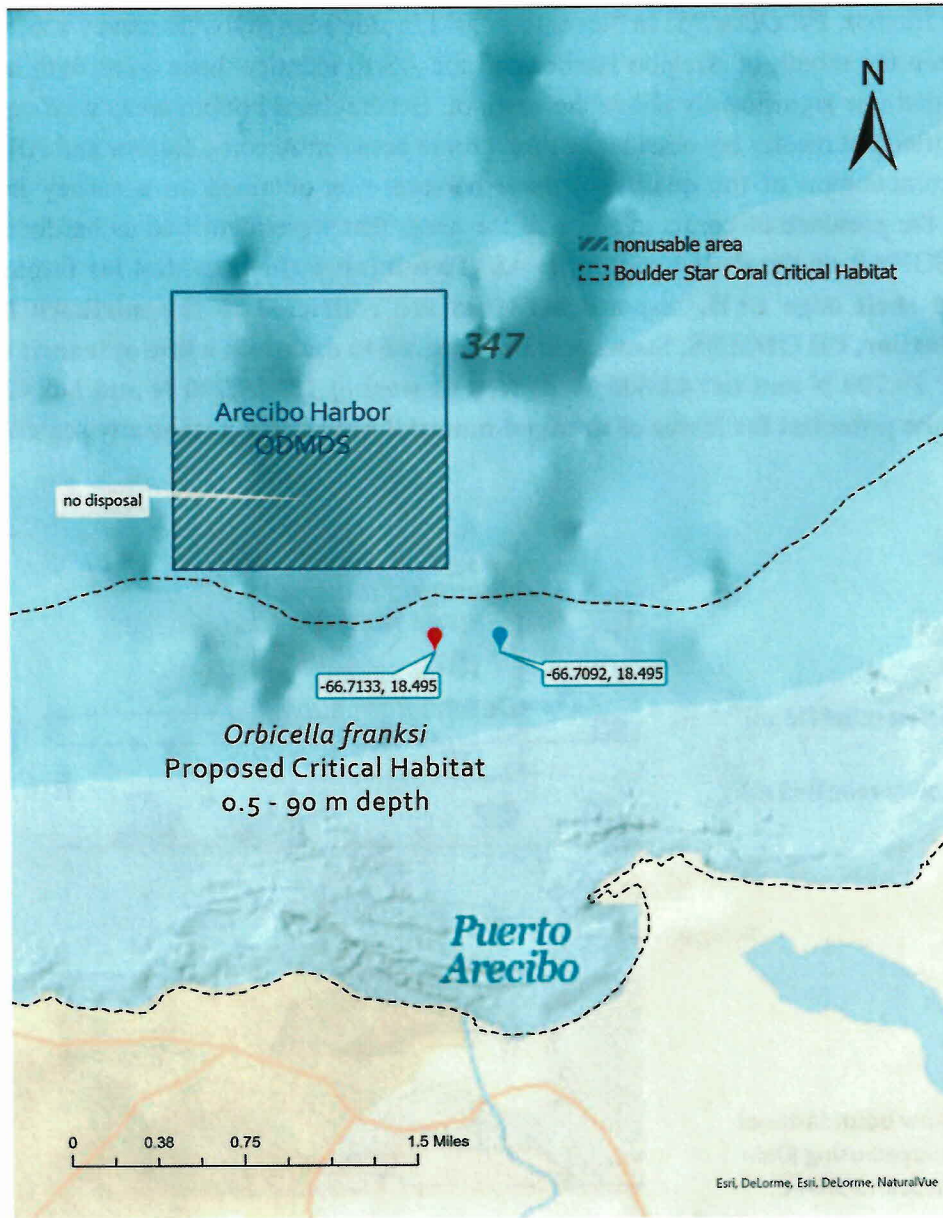


Figure 3. Location of Arcibo Harbor, Puerto Rico Dredged Material Disposal Site (AS) and proposed critical habitat boundaries for *Orbicella franksi* as dashed line (0.5-90 m depth). Transit restriction point shown; barges must maintain a line of transit east of 18° 29.700 N / 66° 42.800 W (red marker) and west of 18° 29.700 N / 66° 42.550 W (blue marker).

b. *Mayagüez Harbor, PR ODMDS*: As shown in Figure 4, the MS is located far west of any potential shelf edge habitat. The results of the previous video ROV survey support the presence of both ESA-listed species and EFH outside the navigation channel, and that these high value habitats do not occur elsewhere along the direct route to the MS. **Because of navigational safety concerns, scows must use the channel and therefore EPA cannot alter the scow paths landward of the entrance channel markers. Upon leaving the entrance channel, scows will quickly be over deep water that does not support shelf edge reef habitats or ESA-listed corals. Therefore, no designated scow path will be imposed upon dredged material transporters to the MS.**

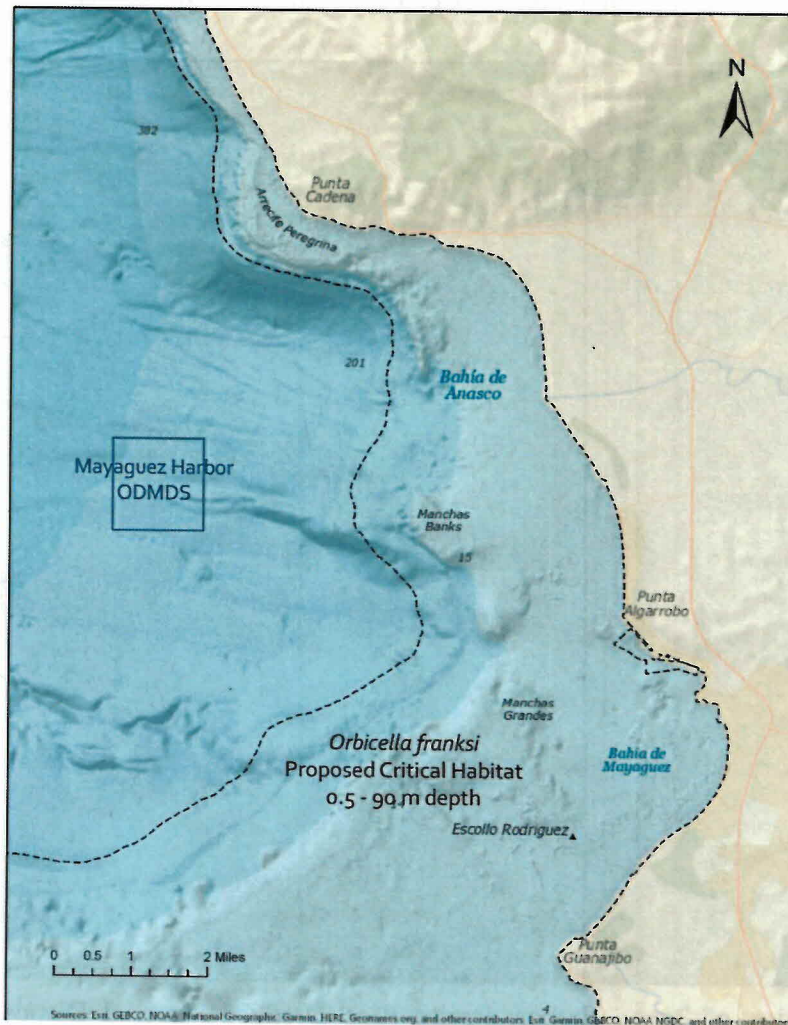


Figure 4. Location of Mayagüez Harbor, Puerto Rico Dredged Material Disposal Site (MS) and proposed critical habitat boundaries for *Orbicella franksi* as dashed line (0.5-90 m depth).

c. *Ponce Harbor, PR ODMDS*: The northeast corner of the PS is adjacent to a shoal area that may contain shelf edge resources (Figure 5). The potential for impacts to this shelf edge reef area will be minimized by restricting disposal activities to the southern half of the PS. This restriction serves to maximize the distance of any disposal activities from shelf edge EFH and ensures the direct transit route from the Ponce Harbor entrance channel avoids the shelf edge areas and stays over deep water. As it is anticipated that dredged material will be transported to the PS from Guayanilla Harbor, barges transiting from Guayanilla will be required to maintain a line of transit south of $17^{\circ} 57.66$ N and $66^{\circ} 45.54$ W and $17^{\circ} 56.4$ N and $66^{\circ} 43.2$ W to ensure barges stay over deeper water and away from shelf edge areas including coral reef along the coast between Guayanilla and the PS.

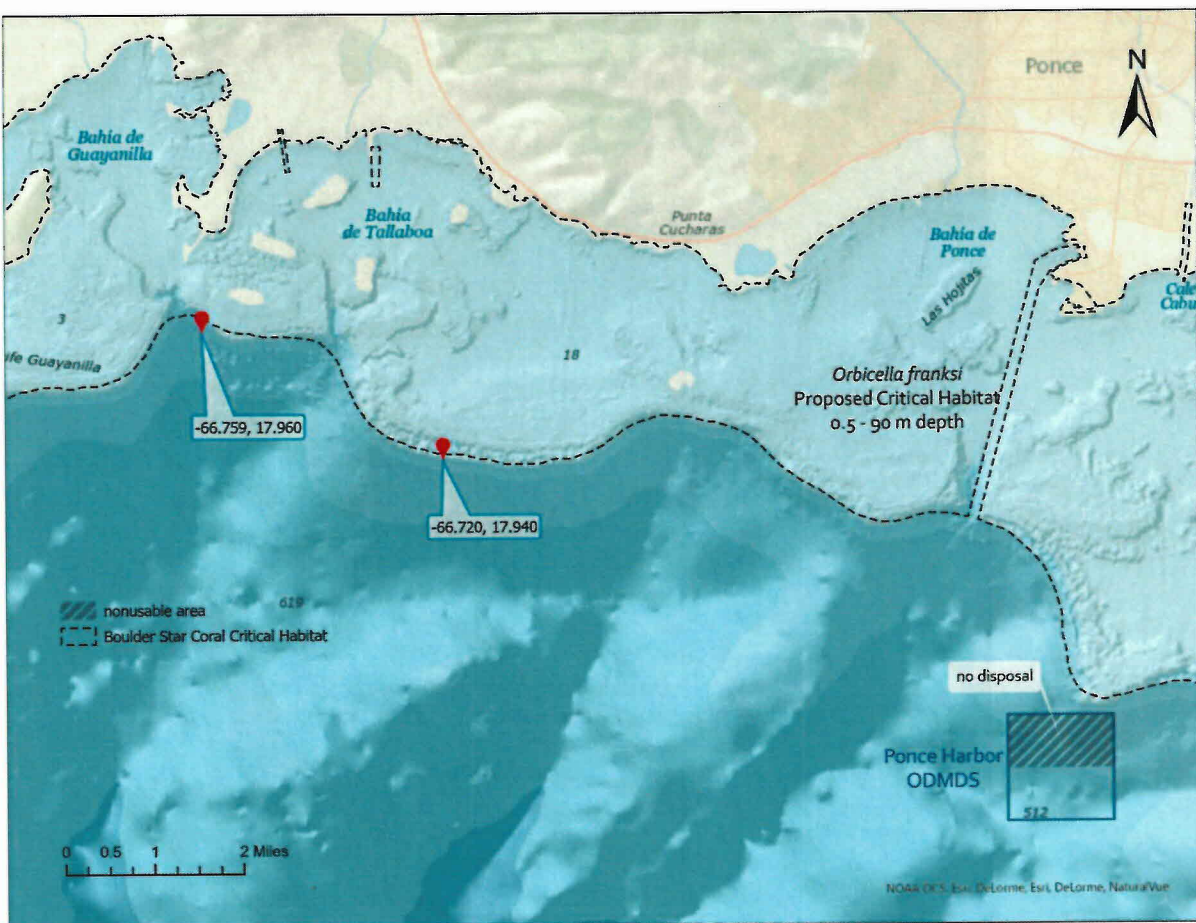


Figure 5. Location of Ponce Harbor, Puerto Rico Dredged Material Disposal Site (PS) and proposed critical habitat boundaries for *Orbicella franksi* as dashed line (0.5-90 m depth). Potential shelf edge resources may be located in the shoals just northeast of the site boundary. Points marked show transit route restriction requiring barges to maintain line of transit south of $17^{\circ} 57.66$ N and $66^{\circ} 45.54$ W as well as $17^{\circ} 56.4$ N and $66^{\circ} 43.2$ W.

d. *San Juan Harbor, PR ODMDS*: The SJS is located north of areas that may contain shelf edge resources (Figure 6). Side scan SONAR in 2011 and 2013 multibeam and ROV survey of benthic habitats along the transit route to SJS showed that hardbottom areas between the San Juan Harbor entrance and SJS do not have any coral growth. Coral growth is limited to coastlines within shelf edge reef depth range and well outside the most direct transit route.

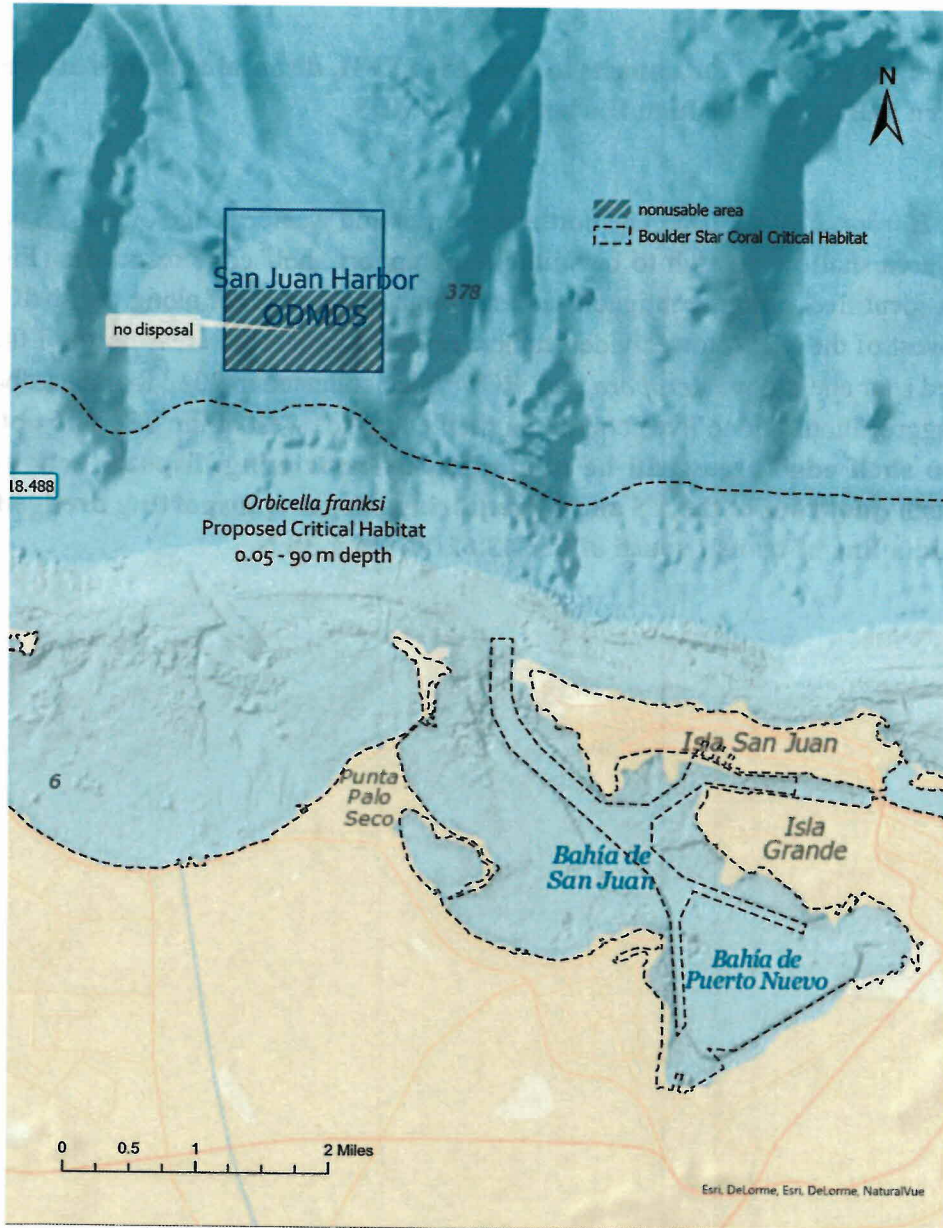


Figure 6. Location of San Juan Harbor, Puerto Rico Dredged Material Disposal Site (SJS) and proposed critical habitat boundaries for *Orbicella franksi* as dashed line (0.5-90 m depth).

Because of navigational safety concerns, scows must use the channel and therefore EPA cannot alter the scow paths landward of the entrance channel markers. Upon leaving the entrance channel, scows will immediately be over areas with no significant hard bottom habitat that do not support shelf edge reef habitats or ESA-listed corals. Therefore, no designated scow path will be imposed upon dredged material transporters to the San Juan Harbor, PR ODMDS as the most direct route has least potential impacts to coral reefs.

To minimize the potential for impacts to shelf edge EFH, disposal activities are restricted to the northern half of the San Juan Harbor, PR ODMDS.

e. Yabucoa Harbor, PR ODMDS: The northeast corner and western edge of the YS are adjacent to a shoal area shallow enough to be suitable to support shelf edge resources (Figure 7). In 2006, EPA identified various contiguous areas of high and low relief along the shelf edge areas north and west of the YS. A towed video camera revealed high relief areas north of the YS to be well defined spur and groove *Acropora* reef. ROV video collected in 2022 found hardbottom with large fish aggregations but no live coral in the shelf edge area west of the YS. **The potential for impacts to shelf edge areas will be minimized by restricting disposal activities to the southeastern quadrant of the YS and by requiring barges transporting dredged material to maintain a line of transit south of 65° 43.62 W 18° 1.38 N.**

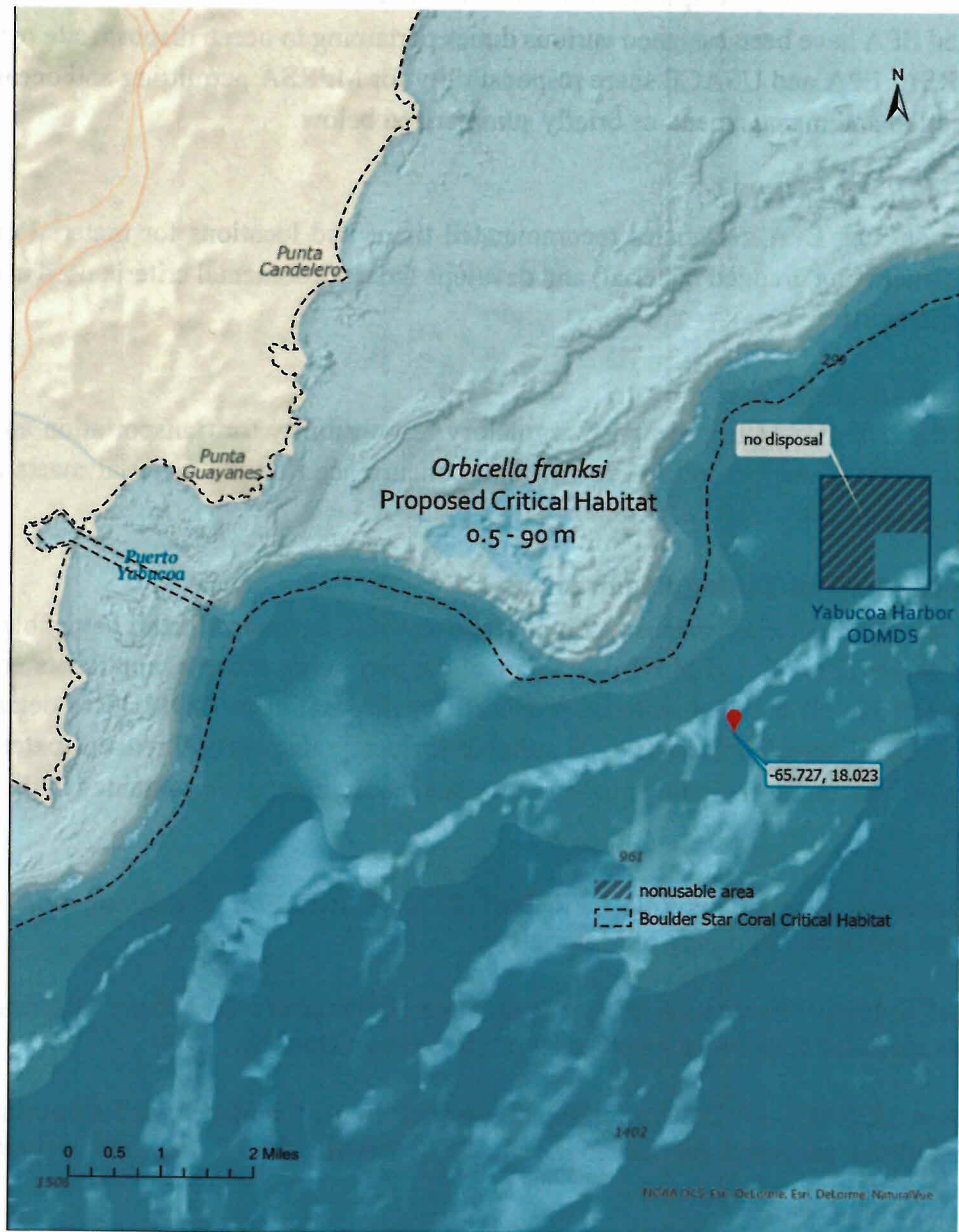


Figure 7. Location of Yabucoa Harbor, Puerto Rico Dredged Material Disposal Site (YS) and proposed critical habitat boundaries for *Orbicella franksi* as dashed line (0.5-90 m depth). Point marked shows transit route restriction. Barges must maintain line of transit south of $65^{\circ} 43.62' W$ $18^{\circ} 1.38' N$.

5. Management of Puerto Rico Ocean Dredged Material Disposal Sites

5.1. 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.

a. 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.

b. 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.

5.2. Dredged Material Testing Requirements

The term “dredged material” means any material excavated or dredged from navigable waters of the United States (33 C.F.R. 324.2(b)). As part of the permitting process, applicants are required to test/characterize all dredged material proposed for disposal at an ODMDS 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 ‘1991 Green Book’).

-EPA Region 2/USACE-NYD 2016 (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 Puerto Rico ODMDSs. Until this guidance manual is prepared and approved, however, the EPA-R2 /USACE-NAN (2016) manual (or its most recent) revision will be used to evaluate the suitability of dredged material proposed for disposal at designated sites in Puerto Rico.

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 (3) 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.

5.3. Transportation and Disposal Methods

Dredged material disposed of at all Puerto Rico ODMDs may be removed from project areas using hopper, clamshell, or other types of dredges. Dredged material has been placed at Puerto Rico ODMDs primarily utilizing split-hull barges. Specific instructions/requirements, including the transit and site use restrictions detailed below, are contained in the Department of the Army (DA) permits issued by the USACE-SAJ, listed as contract specifications in Federal dredging contracts, and provided to contractors in placement guidelines associated with each dredging project (see the following Section 5.4 of this SMMP).

Site	Scow Transit Restrictions	Dumping Restrictions
AS	Required to pass east of 18° 29.700 N/ 66° 42.800 W and west of 18° 29.700 N/ 66° 42.550 W	Disposal activity is restricted to the northern half of the AS
MS	Future restrictions will be documented in permit	Future restrictions will be documented in permit
PS	For transit from Guayanilla: required to maintain a line of transit south of 17° 57.66 N and 66° 45.54 W and 17° 56.4 N and 66° 43.2 W	Disposal activity is restricted to the southern half of the PS
SJS	Future restrictions will be documented in permit	Disposal activity is restricted to the northern half of the SJS
YS	Required to maintain a line of transit south of 65° 43.62 W and 18° 1.38 N	Disposal activity is restricted to the southeastern quadrant of the YS

5.4. 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.

EPA-R2 and the USACE-SAJ have used their experiences with dredged material disposal at the SJS and PS to develop guidelines for disposal of dredged material at all ODMDs in Puerto Rico and to ensure that any future dredged material disposal takes place in accordance/compliance with applicable permit or contract conditions.

At least ten (10) days prior to the start of dredging of ODMDS-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 ODMDS-material dredging.

a. Regulatory Framework: Permit Conditions

DA permits will be issued for Puerto Rico ODMDS disposal activities involving non-Corps projects, and typically are valid for a period of three (3) 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 any Puerto Rico ODMDS without a permit (or MPRSA Section 103 (e) equivalent, e.g. Federal projects authorized by Congress).

1. *General Conditions:* General permit restrictions reflect 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.
2. *Special/Specific Conditions:* Special and/or specific permit restrictions will be listed in the text of the permit and will include, but not be limited to:
 - a. *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 disposal at Puerto Rico ODMDSs. 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.
 - b. *Requirements for the submission of transportation and discharge logs.* USACE-SAJ approved Dredged Material Inspectors (DMIs) are required to document each placement trip on the **Scow Certification Checklist/Transportation and Placement Log Form** (Appendix A) and provide a copy of the completed form to the USACE-SAJ. The permittee shall hire a DMI independent of the dredge contractor.
 - c. *Reporting requirements for un-anticipated events and discrepancies.*

- d. The inspector shall provide a summary of any discrepancies or inaccuracies on the Checklist in the site user's report to EPA and USACE. USACE-SAJ approved Dredged Material Inspectors (DMIs) are required to document each placement trip on the **Scow Certification Checklist/Transportation and Placement Log Form** (Appendix A) and notify the USACE-SAJ of any discrepancies or inaccuracies on the Checklist in the site user's report to EPA and USACE.
- e. *Typical permit language pertaining to aspects of the disposal activity; including boundary coordinates, release/discharge procedures, and requirements to discharge within specific areas.* The typical special conditions to be included in the permit are provided in Appendix B of this document.

b. Federal Authorization

In cases where permits are not issued, as is the case with Federal Navigation Projects, the special 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, provided in Appendix C of this document, specify requirements 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.

c. Violation/Enforcement Cases

1. Disposal at a Puerto Rico ODMDS 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.
2. A USACE-SAJ approved DMI shall accompany all trips for placement of dredged material at a Puerto Rico ODMDS and be present during all dredged material discharge events in order to certify compliance with the USACE-SAJ permit conditions. The DMI shall report independently to the permittee (not to the dredging contractor). The DMI is required to complete, sign, submit and maintain within the official record a Scow Certification Checklist/Transportation and Placement Log Form specific to the ODMDS for each event, see example provided in Appendix A. The DMI shall certify in writing that the disposal vessel is not overloaded and otherwise meets the conditions and requirements of a Scow Certification Checklist that contains all of the substantive elements found in the example provided in this SMMP. If the DMI elects to use an alternate version of the Scow Certification Checklist, it must be approved by the EPA and USACE prior to the commencement of ocean disposal operations. As indicated in USACE dredging specifications, no ocean disposal trip may be initiated until both the towing vessel captain and the DMI have signed all relevant entries on the Scow Certification Checklist. The inspector shall provide a summary of any discrepancies or inaccuracies on the Checklist in the site user's report to EPA and USACE.

3. 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, as soon as practicable after the non-conforming event, the USACE shall notify and consult with EPA-R2, and appropriate action will be determined by consultation between EPA-R2 and the USACE-SAJ.

The USACE will forward to EPA-R2:

1. a report of the misplaced material event,
2. an assessment and explanation for the event,
3. the corrective actions completed, and
4. The corrective action results.

d. Site Inspection/Surveillance

1. To ensure compliance with the DA permit conditions and Federal authorization, routine observations of dredging activities in Puerto Rico are performed by the USACE-SAJ.
2. 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:
 - a. the dredging project site (including the dredge plant, towing vessel and scow) at any time during the project;
 - b. any equipment used for towing, surveying, monitoring or navigation;
 - c. any and all records pertaining to specific (Federal or non-Federal) dredging and disposal projects including logs, reports, memoranda, notes, etc.
3. 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 (third party) contractor 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.

5.5. Disposal Reporting Requirements and Data Management

a. USCG Reporting Requirements:

The dredging/towing contractor must notify the Captain of the Port (COTP) of Harbor/USCG for a reference number before each vessel departs the dredging site for an ODMDS. 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.

b. Record Keeping/Documentation/Data Reporting:

1. 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 Differential Global Positioning Systems (D-GPS) for navigation purposes.
2. A Transportation and Discharge Log (TDL) form must be completed by the DMI to provide a record of each voyage involving an actual disposal event at any of the Puerto Rico ODMDSs. An example of the log form is included in Appendix A. The log forms must be emailed to USACE-SAJ and EPA-R2 within two (2) hours of any discharge at any ODMDS. 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 Puerto Rico.
3. The DMI must also complete, sign and submit an **Inspector Checklist** of requirements associated with each placement trip (Appendix D). 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 (3) sections of the Inspector Checklist are completed by the DMI during three (3) 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 all five (5) Puerto Rico ODMDSs. 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.
4. 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 any of the Puerto Rico ODMDSs. Surveillance data is to be submitted to EPA-R2 and the USACE-SAJ 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 any ODMDS and the discharge location at an ODMDS. This information must be superimposed on a figure that includes the dredging area, adjacent shorelines, and ODMDS boundaries. In addition, a graphical depiction of draft versus time must be provided with the above information.
5. Discharge locations must be made available for EPA and USACE inspection via a website within twelve (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 ODMDS boundaries.

6. Records must be kept of all sea turtle and marine mammal sightings that include date and number of individuals by species. A report including these records covering all vessel trips to and from an ODMDS for a project must be submitted to the resource agencies (NOAA, USFWS, PR DNER) 30 days after the close of the project.

c. Federal Puerto Rico ODMDS 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 (nonfederal) and federal navigation projects disposed at each Puerto Rico ODMDS, noted separately and collectively

5.6. Inter-Agency Coordination

a. Transfer of Information

EPA-R2 and the USACE-SAJ jointly manage the Puerto Rico dredged material disposal program and the AS, MS, PS, SJS, and YS. 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 the Puerto Rico ODMDSs. 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, MS, PS, SJS, and YS and to coordinate the collection and transfer of information pertinent to the management and monitoring of the Puerto Rico ODMDSs as set forth herein.

b. Funding of SMMP Tasks and Activities

The costs of all Puerto Rico ODMDS 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(a)(2) of the MPRSA.

The USACE-SAJ will support the monitoring and management of Puerto Rico ODMDSs. 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 Puerto Rico ODMDSs through contractual mechanisms. EPA-R2 has the highly specialized expertise and resources to conduct advanced technical work at the Puerto Rico ODMDSs 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 Puerto Rico ODMDSs.

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.

c. Project specific coordination

Prior to issue of new permits for private dredging projects, USACE-SAJ 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 any of the five (5) Puerto Rico ODMDSs 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. Puerto Rico Combined ODMDS 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. In this combined SMMP, the program described applies to all five (5) sites in Puerto Rico: the AS, MS, PS, SJS, and YS. Site-specific provisions are included and indicated as necessary.

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 the five (5) sites in Puerto Rico. EPA-R2/USACE-SAJ's Ocean Disposal Site Puerto Rico Combined Monitoring Program (MP) addresses both regulatory and technical issues associated with the disposal of dredged material at the Puerto Rico ODMDSs. 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 at each designated site under the Puerto Rico Combined ODMDS 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 at that site proportionate to volume of disposal, as necessary. Specific monitoring activities may also be required for individual projects.

6.1. Goals of the Puerto Rico Combined ODMDS MP

The Puerto Rico Combined ODMDS MP will focus on the overall impacts of dredged material on entire extent of all designated ODMDS locations and surrounding areas. In addition to addressing the Null Hypotheses (H_0) (see Section 6.2), the overall goals of the Puerto Rico Combined ODMDS MP are to:

- a. Verify that dredged material disposed at the Puerto Rico ODMDSs does not cause any unacceptable impacts.
- b. Assess and monitor conditions (trends) at the Puerto Rico ODMDSs as defined in 40 CFR Section 228.10 and compare them to baseline data.

6.2. Questions/Null Hypotheses (H₀) to be addressed by the Puerto Rico ODMDS MP:

The Puerto Rico Combined ODMDS MP will focus specifically on verifying the following four (4) null hypotheses (H₀) for individual projects and/or disposal locations:

H₀1: Dredged material disposal operations are consistent with the requirements of the ocean dumping permits.

Actions:

- Use the USACE-approved DMI reports and information submitted by permittees to determine compliance.
- Require GPS-based automated disposal surveillance systems on all disposal scows at all five Puerto Rico ODMDSs.
- Conduct independent surveillance of disposal operations

H₀2: Dredged material disposal operations are not causing unacceptable impacts (physical, chemical, and biological) at the Puerto Rico ODMDSs and surrounding areas.

Actions:

- Conduct sediment profile imagery surveys (Tier 2) at the Puerto Rico ODMDSs and surrounding areas.
- Conduct benthic community structure, sediment chemistry and body burden analyses within the Puerto Rico ODMDSs 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-approved DMI 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 Arecibo, Mayagüez, Ponce, San Juan, and Yabucoa vicinities.

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

Actions:

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

6.3. Monitoring Activities/Techniques

a. Work/Quality Assurance Project Plan

The Puerto Rico Combined ODMDS MP consists of a three-tiered approach to monitor the physical, chemical and biological effects of dredged material disposed at Puerto Rico ODMDSs, the components of these tiers are outlined below in Sections 6.3 *b.* to 6.3 *d.* 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 all designated sites in Puerto Rico. 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 one or more of the Puerto Rico ODMDSs, the surroundings and a reference area geographically removed from the effect of dredged material disposal at the Puerto Rico ODMDSs. W/QAPPs must reflect the design selected by USACE-SAJ and EPA-R2 for the monitoring tasks.

b. Physical Monitoring

Physical monitoring is designed to determine the physical nature and distribution of dredged material during and after disposal at each Puerto Rico ODMDS and environs. Measurements of the physical nature of the material proposed for disposal at each ODMDS allow first order tracking of physical impacts at the site and support modeling of initial mixing and seafloor deposition following disposal. SPI will be used to confirm the fate of disposed material. 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 Puerto Rico ODMDSs.

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 any of the Puerto Rico ODMDSs. 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 ocean disposal of dredged material.

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 any of the Puerto Rico ODMDSs. Results will be used to determine disposal locations at each Puerto Rico ODMDS.

GPS-based automated disposal surveillance technology will be used to ascertain that loading and disposal of dredged material is occurring at authorized locations within the Puerto Rico ODMDSs, 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 DMIs will accompany all scows and hopper dredges disposing at all Puerto Rico ODMDSs.

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 Puerto Rico ODMDSs

Tier 2: Sediment profile imagery (SPI)

SPI cameras will be deployed at an array of stations extending outward from the center of the Puerto Rico ODMDSs to define the footprint of dredged material within and around the sites. Sampling locations will be determined jointly by EPA-R2 and USACE-SAJ prior to the surveys. 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 five (5) years when a 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

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 collect sediment samples from within the Puerto Rico ODMDSs and vicinity for analysis. Sediment samples will be collected from areas of interest inside and/or outside the Puerto Rico ODMDSs. 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

Special Studies (Physical)

If 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 Puerto Rico ODMDSs 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 deep-water dredged material ocean disposal site off San Francisco, CA) it is envisioned that bathymetric surveys of the designated sites in Puerto Rico will not be conducted on a regular basis.

If areas that warrant additional concern are identified in the vicinity of any Puerto Rico ODMDS, arrays of sediment traps may be deployed along the margins of the sites and in the direction of dredged material transport. Sediment traps can determine if significant quantities of dredged material are being transported off a site in the direction of the resource of concern. The traps would have to be deployed for approximately six (6) 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 any of the Puerto Rico ODMDSs 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

c. Biological Monitoring

The review of 96-hour exposures of sensitive marine organisms to the suspended and liquid phases, and 10-day exposures to the solid phase of dredged material, prior to approval for disposal at any Puerto Rico ODMDS, provides assurances that no acute toxicity is expected to result from disposal of dredged materials at any of the Puerto Rico ODMDSs. 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 Puerto Rico ODMDSs may be required.

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 Puerto Rico ODMDSs. 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 any Puerto Rico ODMDS. By prohibiting materials that show acute toxicity in 10-day tests from disposal at the Puerto Rico ODMDSs, 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 using on-board observers; disposal will not be allowed to occur in the presence of identified sensitive species. Fisheries issues are re-evaluated for the Puerto Rico ODMDSs during each permit/authorization process. (Impacts to fisheries due to disposal operations are not anticipated, however if 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 Puerto Rico ODMDSs.)

Frequency: Testing and Essential Fish Habitat consultations will be conducted prior to each initial project 103 concurrence. DMIs will accompany each load of material transported for disposal at a Puerto Rico ODMDS.

Tier 2: Sediment profile imagery (SPI)

SPI cameras will be used to identify and describe colonization and succession status of communities inside and outside the Puerto Rico ODMDSs (SPI also serves as Tier 2 physical monitoring). If, based on comparisons with a reference site, areas outside a 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 five (5) years when a Puerto Rico ODMDS 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.

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 one or more Puerto Rico ODMDS, the surroundings, and a reference area geographically removed from the effect of dredged material disposal.

Frequency: Impacts within a Puerto Rico ODMDS are expected due to the disturbances caused by disposal events. Impacts outside a site, or an absence of progress in the succession or in colonization of a 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

Special Studies (Biological)

If 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

d. 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 any of the Puerto Rico ODMDSs. Periodic collection and analysis of sediment and/or resident organism tissue samples from each active ODMDS 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 each Puerto Rico ODMDS.

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 an ODMDS prior to commencement of any disposal of the material at a 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 a site. Visual inspectors (DMIs) will also be deployed.

Frequency: Conducted with every project.

Tier 2: Bulk sediment chemical analysis

Bulk sediment chemistry will be conducted on surface samples collected from each active Puerto Rico ODMDS 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 (TBP) of non-polar organic contaminants may 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 of a Puerto Rico ODMDS or if SPI imagery suggests that colonization/succession is not occurring within a site at rates comparable to reference sites. It is anticipated that these analyses will be conducted on the order of every ten (10) years.

Tier 3: Analysis of body burdens of contaminants in benthic organisms

Conduct tissue chemical analysis of organisms from benthic 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

e. Frequency of Monitoring/Need for Higher Tier Investigations

Monitoring at Tier 1 will be conducted prior to Puerto Rico ODMDS disposal for 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.

f. Monitoring Data Management: Processing, Evaluation and Interpretation

1. Data collected from 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.

2. 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 this SMMP and to previous Puerto Rico ODMDS 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 this 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 1: Monitoring Activities and Frequencies for Puerto Rico ODMDSs

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-SAJ/EPA-R2, or permittee
Biological- SPI photography	5 Yrs	Usage	USACE-SAJ/EPA-R2
Chemical- Sediment Analyses	10 Yrs	Tier 2 Physical and Biological	USACE-SAJ/EPA-R2

Tier 3 - Monitoring Activity	Anticipated Frequency ^a	Triggered by...	Responsible Entity
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

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 numbers of 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. Schedules and frequencies for monitoring activities may vary between individual Puerto Rico ODMDSs based on differential use and survey histories.

7. Puerto Rico ODMDS 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 ten (10) years after adoption of the plan, and every ten (10) years thereafter.

A need for modification of the use of the AS, MS, PS, SJS, or YS 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 any Puerto Rico ODMDS will lead to unacceptable impacts; the Puerto Rico ODMDS SMMP will incorporate further restrictions/revisions to alleviate the impacts. This SMMP will be reviewed annually, in conjunction with monitoring data, to identify necessary revisions for management of the Puerto Rico ODMDSs.

EPA-R2 and the USACE-SAJ will convene a Scientific Review Panel, consisting predominantly of professionals from the fields of engineering, oceanography, and representatives of governmental resource agencies, as necessary, to review this 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.

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Appendix A: Scow Certification Checklist / Transportation and Discharge Log

		4/17/2015, MODIFIED BY EPA-R2 10/25/2022	
SCOW CERTIFICATION CHECKLIST / TRANSPORTATION AND DISCHARGE LOG		USACE PERMIT NUMBER or CONTRACT NUMBER:	
[PROJECT NAME]		DATE:	
		DREDGING CONTRACTOR:	
ODMDS (circle one): Arecibo Mayagüez Ponce San Juan Yabucoa			
CHECKLIST ITEM		RECORD DATA	
		INITIALS	
		TO BE FILLED OUT AND SIGNED WITHIN 1 HOUR PRIOR TO DEPARTURE TIME IN NO. 3	
		Contractor	
		Permittee or Authorized Representative	
1. OCEAN DISPOSAL TRIP NUMBER			
2. DEPARTURE DATE TO ODMDS			
3. DEPARTURE TIME TO ODMDS			
4. DEPARTURE LOCATION (dredge, berth, etc.)			
5. SCOW NAME			
6. SCOW CAPACITY (CY)			
7. TUG NAME			
8. DREDGE NAME			
9. TUG CAPTAIN'S NAME			
10. SCOWPERSON			
11. <u>DREDGED MATERIAL INSPECTOR (DMI) NAME</u>			
12. DREDGED MATERIAL SOURCE (area, reach, berth, etc.)			
13. APPROXIMATE LOAD VOLUME (CY)			
14. DESCRIPTION (E.G., COLOR, WATER CONTENT, TYPE)			
15. SCOW FORE DRAFT / AFT DRAFT / AVG AND TIME			
16. SCOW FORE DRAFT / AFT DRAFT / AVG AND TIME (must be at least one hour prior to time in No. 16)			
17. DRAFT CHANGE (No 17 - No. 16)			
18. FREEBOARD OF MATERIAL AND/OR WATER SURFACE			
19. NWS COASTAL MARINE FORECAST (out to 20 nm)		DATE / TIME OF REPORT	
[area]		WAVE HT (FT)	
WRITE-IN APPROPRIATE FORECAST PERIODS (i.e. TODAY, TONIGHT, TOMORROW)		WIND SPEED (KTS)	
		PERIOD (SEC)	
		COMMENTS:	
20. SCOW TRACKING SYSTEM FUNCTIONING?		<input type="checkbox"/> YES	<input type="checkbox"/> NO
21. HELMSMAN DISPLAY FUNCTIONING ON TUG?		<input type="checkbox"/> YES	<input type="checkbox"/> NO
22. GPS FUNCTIONING ON TUG?		<input type="checkbox"/> YES	<input type="checkbox"/> NO
23. COMMENTS			
24. CONTRACTOR'S SIGNATURE		PRINT NAME:	TIME / DATE:
25. PERMITTEE/REPRESENTATIVE'S SIGNATURE		PRINT NAME:	TIME / DATE:
THE DECISION TO PROCEED TO THE OCEAN DISPOSAL SITE, BASED UPON ALL AVAILABLE DATA INCLUDING THE RECORDING AND CALCULATIONS ON THIS FORM, IS ALSO SUBJECT TO THE PROFESSIONAL JUDGEMENT OF THE TUG CAPTAIN AS TO THE SAFETY OF THE CREW AND VESSEL.			
TUG CAPTAIN'S SIGNATURE:		PRINT NAME:	TIME / DATE:

DATE/TIME START OF DUMP (DOORS OPEN): _____

BARGE X OR LONGITUDE: _____

BARGE Y OR LATITUDE: _____

TUG X OR LONGITUDE: _____

TUG Y OR LATITUDE: _____

DATE/TIME OF DISPOSAL VESSEL CLOSURE (DOORS CLOSE): _____

BARGE X OR LONGITUDE: _____

BARGE Y OR LATITUDE: _____

TUG X OR LONGITUDE: _____

TUG Y OR LATITUDE: _____

MARINE MAMMALS SIGHTED: (YES / NO) TYPE OF MARINE MAMMAL: _____

SEA TURTLES SIGHTED: (YES / NO)

ADDITIONAL COMMENTS, PROBLEM DESCRIPTIONS, ETC.

APPENDIX B - GENERIC SPECIAL CONDITIONS FOR MPRSA SECTION 103 PERMITS

1. DISPOSAL OPERATIONS

- A. For this permit, the term dredged material shall mean: any material excavated or dredged from navigable waters of the United States. The term disposal operations shall mean: navigation of any vessel used in disposal operations, transportation of dredged material from the dredging site to the Ocean Dredged Material Disposal Site (ODMDS) specifically the Arecibo Harbor ODMDS (AS), Mayagüez Harbor ODMDS (MS), Ponce Harbor ODMDS (PS), San Juan Harbor ODMDS (SJS), or Yabucoa Harbor ODMDS (YS) (collectively referred to as 'the Puerto Rico ODMDSs') proper disposal of dredged material at the disposal area within any of the Puerto Rico ODMDSs, and transportation of the hopper dredge or disposal barge or scow back to the dredging site. All dredged material shall be transported to and deposited in the disposal area(s) designated in the permit. When dredged material is disposed, no portion of the hopper dredge or disposal barge or scow shall be outside of the boundaries of the [INSERT SPECIFIC Puerto Rico ODMDS] and following site use restrictions as defined in Paragraph C below.
- B. The permittee or the contractor shall notify the local Coast Guard Captain of the Port at least seven (7) business days prior to the first ocean disposal. The notification will be by certified mail with a copy to the Corps of Engineers' Regulatory Project Manager. The following information shall be included in the notification:
- i. Project designation; Corps of Engineers' Project Manager's name and permit number; and, if applicable, the Contractor's name, address, and telephone number.
 - ii. Port of departure.
 - iii. Location of ocean disposal area (and disposal zone(s)).
 - iv. Schedule for ocean disposal, giving date and time proposed for first ocean disposal.
- C. The Puerto Rico ODMDSs are rectangles with corner coordinates included in the table below (NAD27):

Site	Degrees, Minutes, Seconds	Dumping Restrictions
AS	18° 31' 00" N 66° 43' 47" W	Disposal activity is restricted to the northern half of the AS
	18° 31' 00" N 66° 42' 45" W	
	18° 30' 00" N 66° 42' 45" W	
	18° 30' 00" N 66° 43' 47" W	
MS	18° 15' 30" N 67° 16' 13" W	None
	18° 15' 30" N 67° 15' 11" W	
	18° 14' 30" N 67° 16' 13" W	
	18° 14' 30" N 67° 15' 11" W	
PS	17° 54' 00" N 66° 37' 43" W	Disposal activity is restricted to the southern half of the PS
	17° 54' 00" N 66° 36' 41" W	
	17° 53' 00" N 66° 37' 43" W	
SJS	18° 30' 10" N 66° 09' 31" W	Disposal activity is restricted to the northern half of the SJS
	18° 30' 10" N 66° 08' 29" W	
	18° 31' 10" N 66° 08' 29" W	
	18° 31' 10" N 66° 09' 31" W	
YS	18° 03' 42" N 65° 42' 49" W	Disposal activity is restricted to the southeastern quadrant of the YS
	18° 03' 42" N 65° 41' 47" W	
	18° 02' 42" N 65° 41' 47" W	
	18° 02' 42" N 65° 42' 49" W	

- D. Due to the site use restrictions in the table in Special Condition C Dumping Restrictions, the usable areas in the Puerto Rico ODMDs are rectangles with corner coordinates included in the table below:

Usable Areas in Puerto Rico ODMDs		
Site	Corner	Degrees, Minutes, Seconds (NAD27)
AS	NW	18° 31' 00" N 66° 43' 47" W
	NE	18° 31' 00" N 66° 42' 45" W
	SW	18° 30' 30" N 66° 43' 47" W
	SE	18° 30' 30" N 66° 42' 45" W
MS	NW	18° 15' 30" N 67° 16' 13" W
	NE	18° 15' 30" N 67° 15' 11" W
	SW	18° 14' 30" N 67° 16' 13" W
	SE	18° 14' 30" N 67° 15' 11" W
PS	NW	17° 53' 30" N 66° 37' 43" W
	NE	17° 53' 30" N 66° 36' 41" W
	SW	17° 53' 00" N 66° 37' 43" W
	SE	17° 53' 00" N 66° 36' 41" W
SJS	NW	18° 31' 10" N 66° 09' 31" W
	NE	18° 31' 10" N 66° 08' 29" W
	SW	18° 30' 40" N 66° 09' 31" W
	SE	18° 30' 40" N 66° 08' 29" W
YS	NW	18° 03' 12" N 65° 42' 18" W
	NE	18° 03' 12" N 65° 41' 47" W
	SW	18° 02' 42" N 65° 42' 18" W
	SE	18° 02' 42" N 65° 41' 47" W

- E. During transit to and from a Puerto Rico ODMDs, disposal scows or barges must follow the transit route restrictions in the table below:

Site	Scow Transit Restrictions
AS	Required to pass east of 18° 29.700 N/ 66° 42.800 W and west of 18° 29.700 N/ 66° 42.550 W
MS	None
PS	For transit from Guayanilla: required to maintain a line of transit south of 17° 57.66 N and 66° 45.54 W and 17° 56.4 N and 66° 43.2 W
SJS	None
YS	Required to maintain a line of transit south of 65° 43.62 W and 18° 01.38 N

- F. Vessel speeds must not exceed 3 knots during discharge, weather and sea conditions permitting.
- G. The permittee shall use an electronic positioning system to navigate to and from a Puerto Rico ODMDS. For this section of the permit, the electronic positioning system is defined as: a differential global positioning system (DGPS) or a microwave line of site system. If the electronic positioning system fails or navigation problems are detected, all disposal operations shall cease until the failure or navigation problems are corrected.
- H. The permittee shall certify the accuracy of the electronic positioning system proposed for use during disposal operations at a Puerto Rico ODMDS. The certification shall be accomplished by direct comparison of the electronic positioning system's accuracy with a known fixed point.
- I. Disposal vessels must be observed for potential leaking of dredged material, as indicated by visible turbidity plumes (muddier water) behind the vessel, or significant change (of greater to or equal than 1.5 feet) in the vessel draft and/or bin level. Excessive leakage/spillage or other loss of material means an apparent loss of dredged material greater than limits established in the most current Section 103 Concurrence, Section 103 permit, and/or described within USACE contract specifications (in any event loss of dredged material is not to exceed 1.5 feet). Disposal vessels exhibiting gradual changes (of at least one (1) foot) in draft and/or bin level changes may be leaking, and this must be noted on the Transportation and Discharge Log (TDL), and also must be reported to USACE immediately and forwarded to EPA.
- i. The Contractor has notified USACE who will forward to EPA a report of the event.
 - ii. An assessment and explanation of the event has been provided to USACE and forwarded to EPA.
 - iii. The scow has been inspected and the results of that inspection have been provided to USACE and a copy forwarded to EPA.
 - iv. Necessary repairs or other corrective actions completed, and the results provided to USACE and forwarded to EPA.
 - v. A draft stabilization (scow leak prevention) protocol has been instituted. The purpose of the protocol is to document that excessive leakage is not occurring prior to departing the dredging area for the ODMDS.

Transportation of dredged material to the ODMDS may not begin or continue when weather and sea state conditions interfere with safe transportation and create risk of spillage, leaks, or other loss of dredged material during transit. Disposal vessels cannot be loaded beyond a level at which dredged material would be expected to be spilled in transit under anticipated sea state conditions.

If gradual draft and/or bin level changes appear to occur regularly, or if a significant change in vessel draft and/or bin level occurs during any trip, the contractor must examine the disposal vessel as soon as possible to determine if a leak is present. If a situation arises that requires emergency dumping of dredged material, all reasonable efforts to dump outside of navigation channels must be made by the contractor. The disposal vessel draft and bin level values, as recorded by the vessel sensors, must be documented in the TDL by the Dredged Material Inspectors (DMIs) and reported within five (5) minutes of departing from the dredge site, while in transit, and at the designated placement location, just prior to container vessel door opening.

For problematic scows, a draft stabilization protocol shall be instituted prior to the next transit utilizing the scow and implementation of the protocol will be required for all future transits for that scow. The protocol will need to ensure that measurement of the draft of the scow over a sufficient

period to document that leakage is not occurring. During this time, draft measurements shall be provided in the Daily Quality Control Report. No disposal vessel trips may transit to the site with a problematic scow until the protocol's draft change thresholds have been instituted by the Contractor and documented in the Daily Quality Control Report.

- J. When dredged material is disposed, no portion of the hopper dredge or disposal barge or scow shall be outside of the boundaries of a Puerto Rico ODMDS and during transit and disposal must follow site use area and transit restrictions as defined in Special Conditions D and E.
- K. The permittee shall use an electronic tracking system (ETS) that will continuously track the horizontal location and draft condition of the disposal vessel (hopper dredge or disposal barge or scow) to and from a Puerto Rico ODMDS for each trip. Data shall be collected at least every 500 feet during travel to and from the ODMDS and every minute or every 200 feet of travel, whichever is smaller, while approaching within 1,000 feet and within the ODMDS. The permittee shall use Puerto Rico State Plane or latitude and longitude coordinates (North American Datum 1983). State Plane coordinates shall be reported to the nearest foot and latitude and longitude coordinates shall be reported as decimal degrees out to 6 decimals. Westerly longitudes are to be reported as negative. Draft readings shall be recorded in feet out to 2 decimals. The permittee or contractor shall immediately notify USACE in the event of an ETS failure and dredging options for the vessel shall CEASE until the ETS is fully operational.

----- [USE LANGUAGE BELOW FOR NON DQM PROJECTS]

ETS Standards

The Contractor shall provide automated (computer) system and components to perform in accordance with USACE Engineering Manual (EM) 1110-1-2909. A copy of the EM can be downloaded from the following web site:

https://www.publications.usace.army.mil/Portals/76/Publications/EngineerManuals/EM_1110-1-2909.pdf

Horizontal location shall have an accuracy equal to or better than a standard DGPS system, equal to or better than plus/minus 10 feet (horizontal repeatability). Vertical (draft) data shall have an accuracy of plus/minus 0.5 foot. Horizontal location and vertical data shall be collected in sets and each data set shall be referenced in real-time to date and local time (to nearest minute), and shall be referenced to the same state plane coordinate system used for the survey(s) shown in the contract plans. The ETS shall be calibrated, as required, at the work location before disposal operations have started, and at 30-day intervals while work is in progress. The Contractor shall provide the USACE Regulatory Project Manager and the Chief of the Dredging, Sediments and Oceans Section (DSOS) and/or their designee in EPA Region 2 access to the ETS in real time in order to observe its operation. Disposal operations will not commence until the ETS to be used by the Contractor is certified by the Regulatory Project Manager to be operational and within acceptable accuracy. It is the Contractor's responsibility to select a system that will operate properly at the work location. The complete system shall be subject to the Regulatory Project Manager 's approval.

ETS Data Requirements and Submissions

1. A dredging and disposal cycle constitutes the time from commencement of dredging to complete discharge of the material at the ODMDS. The ETS for each disposal vessel shall be in operation for all dredging and disposal activities and shall record the full

round trip for each dredging and disposal cycle. The USACE Regulatory Project Manager shall be notified immediately in the event of ETS failure and all dredging and disposal operations for the vessel shall cease until the ETS is fully operational.

2. Data shall be collected, during the dredging and disposal cycle, every 500 feet (at least) during travel to the disposal area, and every minute or every 200 feet, whichever is smaller, while approaching within 1,000 feet of and within the disposal area.
3. Plot Reporting (2 types):
 - i. Tracking Plot - For each disposal event, data collected while the disposal vessel is in the vicinity of the disposal area shall be plotted in chart form, in 200-foot intervals, to show the track and draft of the disposal vessel approaching and traversing the disposal area. The plot shall identify the exact position at which the dump commenced.
 - ii. Scatter Plot - Following completion of all disposal events, a single and separate plot will be prepared to show the exact disposal locations of all dumps. Every plotted location shall coincide with the beginning of the respective dump. Each dump shall be labeled with the corresponding Trip Number and shall be at a small but readable scale. If all data is provided in Extensible Markup Language (XML) format, scatter plots and summary tables will not be necessary.
4. Summary Table – A spreadsheet which contains all of the information in the log(s) above shall be prepared and shall correspond to the exact dump locations represented on the Scatter Plot. If all data is provided in XML format, scatter plots and summary tables will not be necessary.
5. All digital ETS data shall be furnished to the USACE Regulatory Project Manager within 24 hours of collection. The digital plot files should be in an easily readable format such as Adobe Acrobat PDF file, Microstation DGN file, JPEG, BMP, TIFF, or similar. The hard copy of the ETS data and tracking plots shall be both maintained onboard the vessel and submitted to the USACE Regulatory Project Manager on a weekly basis.

----- [FOR DQM PROJECTS]

See: <https://www.sam.usace.army.mil/Missions/Spatial-Data-Branch/Dredging-Quality-Management/Specifications/Dredge-Specifications/>

For scows, the monitoring profile, Tons Dry Solid (TDS) profile, or Ullage profile shall be used.

- L. To help ensure proper discharge within the ODMDS, and reduce the need for loaded scows to return to the dredging site, the following discharge protocol **must** be followed:

1. 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.
2. If a situation arises that requires emergency dumping of dredged material outside of the ODMDS, all reasonable efforts to dump outside of navigation channels and into areas deeper than 200 feet **must** be made.
3. 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 scowperson while riding aboard the scow. Scow opening **must** only occur when a direct, voice command has been given to the scowperson, or radio communication with radio-controlled scows is maintained. If the radio control system cannot be fixed, the scow **must** be towed to the designated discharge location and manually discharged. If the scow's engine cannot 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.
 - a) Voice contact, through radio or direct communication, **must** be maintained with the scowperson (if used) for the duration of trips. Scow opening **must** only occur when a direct, voice command has been given to the scowperson, 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 scowperson regarding scow opening/closing. Radio checks with the scowperson **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.
 - b) 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 conditions and, if applicable, contract specifications, as related to scow loading, transport, and dredged material discharge;
 - 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
 - Primary Scow Monitoring System (PSMS) and Backup Scow Monitoring System (BSMS), including bin level sensor on scow

- Differential Global Positioning System (DGPS) navigation system aboard tug
 - Radio-control system for scow operation (if scowperson is not used)
 - Radio and backup radio system aboard scow (if scowperson is used)
 - Fathometer aboard tug
 - a fully operational fax machine or internet connection must be onboard the towing vessel for use by the DMI within 2 hours of each discharge event at the ODMDS
 - 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
4. Scow monitoring equipment, discharge guidelines, and other aspects of dredged material discharge at the ODMDS may be changed. Notice of any changes will be provided to the dredging contractor for implementation as soon as practicable.
 5. Transportation and discharge log (TDL) forms will be completed electronically or by hand within 30 minutes of discharge at the ODMDS. An electronic copy of the TDL form is to be emailed to EPA-R2 and USACE-SAJ within two (2) hours of scow's return from ODMDS. 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.
 6. DMIs who have been approved by USACE-SAJ 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 (2) 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.
 7. Possible changes in the discharge guidelines may be provided after dredging begins.
 8. To help ensure that dredged material is transported and placed at the ODMDS in accordance with the guidelines described above, the attached checklist has been prepared (Appendix D). Items in the checklist **must** be reviewed by the DMI at the dredging site, while underway, and at the ODMDS. 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 [INSERT 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 [INSERT 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, mailed, or emailed to: U.S. Army Corps of Engineers (Corps), Regulatory Division, Enforcement Section, P.O. Box 4970, Jacksonville, Florida 32232-0019, or to SAJ-RD@usace.army.mil. Original copies of TDL forms for each trip to the ODMDS, signed and dated

by the DMI on duty during each trip, **must** be submitted to [INSERT NAME OF CONTACT] at the above address at the completion of the project.

9. Switching of tugs once an ocean discharge trip has begun **must not** occur. 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.
10. While underway, dredging contractor must adhere to all measures required in Appendix E of this SMMP (i.e., NMFS, Southeast Region Vessel Strike Avoidance Measures and Reporting for Mariners)
11. Upon arrival at the ODMDS, a qualified dedicated observer 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 present at the site; 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.
12. Failure to adhere to the specifications discussed in these discharge guidelines may result in revocation of the dredging permit and/or a monetary fine.
13. Materials deposited outside of the usable site area specified in Section C will be classified as misplaced material and will result in a suspension of dredging operations. Redredging of such materials will be required, where applicable, as a prerequisite to the resumption of dredging unless the USACE determines that redredging of such material is not practical. Misplaced loads may be subject to penalty under the Marine, Protection, Research and Sanctuaries Act. In addition, the Contractor must notify USACE and the EPA-R2 within 24 hours of a misplaced dump or any other violation of the SMMP. Corrective actions must be coordinated with USACE and EPA-R2 and implemented prior to the next dump and the USACE and EPA-R2 must be informed of actions taken.
14. If there are any questions pertaining to the guidance given in this document, or additional clarification of procedures is needed, please contact either Julia Perzley of the EPA at (212) 637-3798 or Mark Reiss of the EPA at (212) 637-3799.

2. REPORTING REQUIREMENTS

- A. All reports, documentation and correspondence required by the conditions of this permit shall be submitted to the following addresses: U.S. Army Corps of Engineers (Corps), Regulatory Division, Enforcement Section, P.O. Box 4970, Jacksonville, Florida 32232-0019.
- B. The Permittee shall reference this permit number, [INSERT PERMIT NUMBER], on all submittals.
- C. At least 15 days before initiating any dredging operations authorized by this permit, the Permittee shall provide to the Corps a written notification of the date of commencement of work authorized by this permit.
- D. The permittee shall send one (1) copy of the disposal summary report to the Jacksonville District's Regulatory Branch documenting compliance with all general and special conditions defined in this permit. The disposal summary report shall be sent within 90 days after completion of the disposal operations authorized by this permit. The disposal summary report shall include the following information:

1. The report shall indicate whether all general and special permit conditions were met. Any violations of the permit shall be explained in detail.
2. The disposal summary report shall include the following information: dredging project title; dates of disposal; permit number and expiration date; name of contractor(s) conducting the work, name and type of vessel(s) disposing material in the ODMDS; disposal timeframes for each vessel; volume disposed at the ODMDS (as paid *in situ* volume, total paid and un paid *in situ* volume, and gross volume reported by dredging contractor), number of loads to ODMDS, type of material disposed at the ODMDS; identification of any misplaced material (outside disposal release zone or the ODMDS boundaries); and a narrative discussing any violation(s) of the MPRSA § 103 permit.

APPENDIX C – TYPICAL USACE CONTRACT LANGUAGE FOR IMPLEMENTING OCEAN DREDGED MATERIAL DISPOSAL SITE MANAGEMENT AND MONITORING PLAN REQUIREMENTS

A. DISPOSAL OF DREDGED MATERIAL

1. GENERAL

For these special conditions, the term dredged material shall mean: any material excavated or dredged from navigable waters of the United States and the term disposal operations shall mean: navigation of any vessel used in disposal of operations, transportation of dredged material from the dredging site to the Ocean Dredged Material Disposal Site (ODMDS), specifically the Arecibo Harbor ODMDS (AS), Mayagüez Harbor ODMDS (MS), Ponce Harbor ODMDS (PS), San Juan Harbor ODMDS (SJS), or Yabucoa Harbor ODMDS (YS) (collectively referred to as ‘the Puerto Rico ODMDSs’), proper disposal of dredged material at the disposal area within any of the Puerto Rico ODMDSs, and transportation of the hopper dredge or disposal barge or scow back to the dredging site.

All material dredged shall be transported to and deposited in the disposal area(s) designated on the drawings. The approximate maximum and average distance to which the material will have to be transported are as follows:

Disposal Area	Maximum Distance Miles	Statute	Average Distance Statute Miles
[ODMDS SPECIFIC TO PROJECT]	[XX miles]		[XX miles]

B. Ocean Disposal Notification

The Corps or the contractor shall notify the local Coast Guard Captain of the Port at least 5 calendar days prior to the first ocean disposal. The notification will be by certified mail with a copy to the USACE Contracting Officer (Contracting Officer). The following information shall be included in the notification:

- i. Project designation; Contracting Officer’s name and contract number; and, the Contractor’s name, address, and telephone number.
- ii. Port of departure.
- iii. Location of ocean disposal area (and disposal zone(s)).
- iv. Schedule for ocean disposal, giving date and time proposed for first ocean disposal.

C. Ocean Dredged Material Disposal Sites (ODMDS)

1. The material excavated shall be transported to and deposited in the [INSERT SPECIFIC Puerto Rico ODMDS] as shown on the drawings. When dredged material is disposed, no portion of the hopper dredge or disposal barge or scow shall be outside of the boundaries of the [INSERT SPECIFIC Puerto Rico ODMDS] and following site use restrictions as defined in Section C.2. below.

The Puerto Rico ODMDs are rectangles with corner coordinates included in the table below (NAD27):

Site	Degrees, Minutes, Seconds	Dumping Restrictions
AS	18° 31' 00" N 66° 43' 47" W	Disposal activity is restricted to the northern half of the AS
	18° 31' 00" N 66° 42' 45" W	
	18° 30' 00" N 66° 42' 45" W	
	18° 30' 00" N 66° 43' 47" W	
MS	18° 15' 30" N 67° 16' 13" W	None
	18° 15' 30" N 67° 15' 11" W	
	18° 14' 30" N 67° 16' 13" W	
	18° 14' 30" N 67° 15' 11" W	
PS	17° 54' 00" N 66° 37' 43" W	Disposal activity is restricted to the southern half of the PS
	17° 54' 00" N 66° 36' 41" W	
	17° 53' 00" N 66° 36' 41" W	
	17° 53' 00" N 66° 37' 43" W	
SJS	18° 30' 10" N 66° 09' 31" W	Disposal activity is restricted to the northern half of the SJS
	18° 30' 10" N 66° 08' 29" W	
	18° 31' 10" N 66° 08' 29" W	
	18° 31' 10" N 66° 09' 31" W	
YS	18° 03' 42" N 65° 42' 49" W	Disposal activity is restricted to the southeastern quadrant of the YS
	18° 03' 42" N 65° 41' 47" W	
	18° 02' 42" N 65° 41' 47" W	
	18° 02' 42" N 65° 42' 49" W	

2. Due to the site use restrictions in Special Condition C.1, the usable areas in the Puerto Rico ODMDs are rectangles with corner coordinates included in the table below:

Usable Areas in Puerto Rico ODMDs		
Site	Corner	Degrees, Minutes, Seconds (NAD27)
AS	NW	18° 31' 00" N 66° 43' 47" W
	NE	18° 31' 00" N 66° 42' 45" W
	SW	18° 30' 30" N 66° 43' 47" W
	SE	18° 30' 30" N 66° 42' 45" W
MS	NW	18° 15' 30" N 67° 16' 13" W
	NE	18° 15' 30" N 67° 15' 11" W
	SW	18° 14' 30" N 67° 16' 13" W
	SE	18° 14' 30" N 67° 15' 11" W
PS	NW	17° 53' 30" N 66° 37' 43" W
	NE	17° 53' 30" N 66° 36' 41" W
	SW	17° 53' 00" N 66° 37' 43" W
	SE	17° 53' 00" N 66° 36' 41" W
SJS	NW	18° 31' 10" N 66° 09' 31" W
	NE	18° 31' 10" N 66° 08' 29" W
	SW	18° 30' 40" N 66° 09' 31" W
	SE	18° 30' 40" N 66° 08' 29" W
YS	NW	18° 03' 12" N 65° 42' 18" W
	NE	18° 03' 12" N 65° 41' 47" W
	SW	18° 02' 42" N 65° 42' 18" W
	SE	18° 02' 42" N 65° 41' 47" W

3. During transit to and from a Puerto Rico ODMDS, **disposal scows or barges must follow the transit route restrictions in the table below:**

Site	Scow Transit Restrictions
AS	Required to pass east of 18° 29.700 N/ 66° 42.800 W and west of 18° 29.700 N/ 66° 42.550 W
MS	None
PS	For transit from Guayanilla: required to maintain a line of transit south of 17° 57.66 N and 66° 45.54 W and 17° 56.4 N and 66° 43.2 W
SJS	None
YS	Required to maintain a line of transit south of 65° 43.62 W and 18° 01.38 N

4. To help ensure proper discharge within the ODMDS, 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.
 - b) Vessel speeds must not exceed 3 knots during discharge, weather and sea conditions permitting.
 - c) If a situation arises that requires emergency dumping of dredged material outside of the ODMDS, all reasonable efforts to dump outside of navigation channels and into areas deeper than 200 feet **must** be made.
 - d) 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 scowperson while riding aboard the scow. Scow opening **must** only occur when a direct, voice command has been given to the scowperson, or radio communication with radio-controlled scows is maintained. If the radio control system cannot 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 cannot 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.
 - e) Voice contact, through radio or direct communication, **must** be maintained with the scowperson (if used) for the duration of trips. Scow opening **must** only occur when a direct, voice command

has been given to the scowperson, 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 scowperson regarding scow opening/closing. Radio checks with the scowperson **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. Dredged Material Inspectors (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.

- f) 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 contract specifications, as related to scow loading, transport, and dredged material discharge;
 - 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
 - Primary Scow Monitoring System (PSMS) and Backup Scow Monitoring System (BSMS), including bin level sensor on scow
 - Differential Global Positioning System (DGPS) navigation system aboard tug
 - Radio-control system for scow operation (if scowperson is not used)
 - Radio and backup radio system aboard scow (if scowperson is used)
 - Fathometer aboard tug
 - a fully operational fax machine or internet connection must be onboard the towing vessel for use by the SAJ Inspector within 2 hours of each discharge event at the ODMDS
 - 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.
- g) Scow monitoring equipment, discharge guidelines, and other aspects of dredged material discharge at the ODMDS may be changed. Notice of any changes will be provided to the dredging contractor for implementation as soon as practicable.
- h) Transportation and discharge log (TDL) forms will be completed electronically or by hand within 30 minutes of discharge at the ODMDS. 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 ODMDS. 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.
- i) DMIs who have been approved by USACE-SAJ 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 (2)

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.

- j) Possible changes in the discharge guidelines may be provided after dredging begins.
- k) To help ensure that dredged material is transported and placed at the ODMDS in accordance with the guidelines described above, the attached checklist has been prepared (Appendix D). Items in the checklist **must** be reviewed by the DMI at the dredging site, while underway, and at the ODMDS. 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 [INSERT 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 [INSERT 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: [INSERT USACE ADDRESS]. Original copies of TDL forms for each trip to the ODMDS, signed and dated by the DMI on duty during each trip, **must** be submitted to [INSERT NAME OF CONTACT] at the above address at the completion of the project.
- l) Switching of tugs once an ocean discharge trip has begun **must not** occur. 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.
- m) While underway, dredging contractor must adhere to all measures required in Appendix E of this SMMP (i.e., NMFS, Southeast Region Vessel Strike Avoidance Measures and Reporting for Mariners).
- n) Upon arrival at the ODMDS, a qualified dedicated observer 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 present at the site; 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.
- o) Failure to adhere to the specifications discussed in these discharge guidelines may be cause for remedial action by the Contracting Officer.
- p) If there are any questions pertaining to the guidance given in this document, or additional clarification of procedures is needed, please contact either Julia Perzley of the EPA at (212) 637-3798 or Mark Reiss of the EPA at (212) 637-3799.

E. Overflow, Spills, and Leaks

Disposal vessels must be observed for potential leaking of dredged material, as indicated by visible turbidity plumes (muddier water) behind the container vessel, or significant change (of greater to or equal than 1.5 feet) in the disposal vessel draft and/or bin level. Excessive leakage/spillage or other loss of material means an apparent loss of dredged material greater than limits established in the most current Section 103 Concurrence and/or described within USACE contract specifications (in any event loss of dredged material is not to exceed 1.5 feet). Disposal vessels exhibiting gradual changes (of at least one (1)

foot) in draft and/or bin level changes may be leaking, and this must be noted on the TDL, and also must be reported to USACE immediately and forwarded to EPA.

- i. The Contractor has notified USACE who will forward to EPA a report of the event.
- ii. An assessment and explanation of the event has been provided to USACE and forwarded to EPA.
- iii. The scow has been inspected and the results of that inspection have been provided to USACE and a copy forwarded to EPA.
- iv. Necessary repairs or other corrective actions completed, and the results provided to USACE and forwarded to EPA.
- v. A draft stabilization (scow leak prevention) protocol has been instituted. The purpose of the protocol is to document that excessive leakage is not occurring prior to departing the dredging area for the ODMDS.

Transportation of dredged material to the ODMDS may not begin or continue when weather and sea state conditions interfere with safe transportation and create risk of spillage, leaks, or other loss of dredged material during transit. Disposal vessels cannot be loaded beyond a level at which dredged material would be expected to be spilled in transit under anticipated sea state conditions.

If gradual draft and/or bin level changes appear to occur regularly, or if a significant change in container vessel draft and/or bin level occurs during any trip, the contractor must examine the container vessel as soon as possible to determine if a leak is present. If a situation arises that requires emergency dumping of dredged material, all reasonable efforts to dump outside of navigation channels must be made by the contractor. The container vessel draft and bin level values, as recorded by the container vessel sensors, must be documented in the TDL by the DMIs reported within five (5) minutes of departing from the dredge site, while in transit, and at the designated placement location, just prior to container vessel door opening.

For problematic scows, a draft stabilization protocol shall be instituted prior to the next transit utilizing the scow and implementation of the protocol will be required for all future transits for that scow. The protocol will need to ensure that measurement of the draft of the scow over a sufficient period to document that leakage is not occurring. During this time, draft measurements shall be provided in the Daily Quality Control Report. No disposal vessel trips may transit to the site with a problematic scow until the protocol's draft change thresholds have been instituted by the Contractor and documented in the Daily Quality Control Report.

F. Electronic Tracking System (ETS) for Ocean Disposal Vessels

The Contractor shall furnish an ETS for surveillance of the movement and disposition of dredged material during dredging and ocean disposal. This ETS shall be established, operated and maintained by the Contractor to continuously track in real-time the horizontal location and draft condition of the disposal vessel (hopper dredge or disposal barge or scow) for the entire dredging cycle, including dredging area and disposal area. The ETS shall be capable of displaying and recording, in real-time, the disposal vessel's draft, speed, and location.

The Contractor shall use an electronic positioning system to navigate to and from a Puerto Rico ODMDS. For this section of the permit, the electronic positioning system is defined as: a differential global positioning system (DGPS) or a microwave line of site system. If the electronic positioning system fails or navigation problems are detected, all disposal operations shall cease until the failure or navigation problems are corrected.

The Contractor shall certify the accuracy of the electronic positioning system proposed for use during disposal operations at a Puerto Rico ODMDS. The certification shall be accomplished by direct comparison of the electronic positioning system's accuracy with a known fixed point.

----- [USE LANGUAGE BELOW FOR NON DQM PROJECTS]

ETS Standards

The Contractor shall provide automated (computer) system and components to perform in accordance with USACE Engineering Manual (EM) 1110-1-2909. A copy of the EM can be downloaded from the following web site:

https://www.publications.usace.army.mil/Portals/76/Publications/EngineerManuals/EM_1110-1-2909.pdf

Horizontal location shall have an accuracy equal to or better than a standard DGPS system, equal to or better than plus/minus 10 feet (horizontal repeatability). Vertical (draft) data shall have an accuracy of plus/minus 0.5 foot. Horizontal location and vertical data shall be collected in sets and each data set shall be referenced in real-time to date and local time (to nearest minute), and shall be referenced to the same state plane coordinate system used for the survey(s) shown in the contract plans. The ETS shall be calibrated, as required, at the work location before disposal operations have started, and at 30-day intervals while work is in progress. The USACE Contracting Officer and the EPA Region 2 DSOS Section Chief and/or their designee shall have access to the ETS in real time in order to observe its operation. Disposal operations will not commence until the ETS to be used by the Contractor is certified by the Contracting Officer to be operational and within acceptable accuracy. It is the Contractor's responsibility to select a system that will operate properly at the work location. The complete system shall be subject to the Contracting Officer's approval.

ETS Data Requirements and Submissions

4. The ETS for each disposal vessel shall be in operation for all dredging and disposal activities and shall record the full round trip for each loading and disposal cycle. (NOTE: A dredging and disposal cycle constitutes the time from commencement of dredging to complete discharge of the material.) The Contracting Officer shall be notified immediately in the event of ETS failure and all dredging operations for the vessel shall cease until the ETS is fully operational. Any delays resulting from ETS failure shall be at the Contractor's expense.
5. Data shall be collected, during the dredging and disposal cycle, every 500 feet (at least) during travel to the disposal area, and every minute or every 200 feet, whichever is smaller, while approaching within 1,000 feet and within the disposal area.
6. Plot Reporting (2 types):
 - i. Tracking Plot - For each disposal event, data collected while the disposal vessel is in the vicinity of the disposal area shall be plotted in chart form, in 200-foot intervals, to show the track and draft of the disposal vessel approaching and traversing the disposal area. The plot shall identify the exact position at which the dump commenced.

- ii. Scatter Plot - Following completion of all disposal events, a single and separate plot will be prepared to show the exact disposal locations of all dumps. Every plotted location shall coincide with the beginning of the respective dump. Each dump shall be labeled with the corresponding Trip Number and shall be at a small but readable scale. If all data is provided in XML format, scatter plots and summary tables will not be necessary.
5. Summary Table – A spreadsheet which contains all of the information in the log(s) above shall be prepared and shall correspond to the exact dump locations represented on the Scatter Plot. If all data is provided in XML format, scatter plots and summary tables will not be necessary.
6. All digital ETS data shall be furnished to the Contracting Officer within 24 hours of collection. The digital plot files should be in an easily readable format such as Adobe Acrobat PDF file, Microstation DGN file, JPEG, BMP, TIFF, or similar. The hard copy of the ETS data and tracking plots shall be both maintained onboard the vessel and submitted to the Contracting Officer on a weekly basis.

----- [FOR DQM PROJECTS] -----

See: <https://www.sam.usace.army.mil/Missions/Spatial-Data-Branch/Dredging-Quality-Management/Specifications/Dredge-Specifications/>

For scows, the monitoring profile, Tons Dry Solid (TDS) profile or Ullage profile shall be used.

G. Misplaced Materials

- i. Materials deposited outside of the usable site area specified in Section C.2. will be classified as misplaced material and will result in a suspension of dredging operations. Redredging of such materials will be required, where applicable, as a prerequisite to the resumption of dredging unless the Contracting Officer, at his discretion, determines that redredging of such material is not practical. If redredging of such material is not required, then the quantity of such misplaced material may be deducted from the Contractor's pay quantity. If the quantity for each misplaced load to be deducted cannot initially be agreed to by both the Contractor and Contracting Officer, then an average hopper/scow load quantity for the entire contract will be used in the determination. Misplaced loads may be subject to penalty under the Marine, Protection, Research and Sanctuaries Act. In addition, the Contractor must notify USACE Contracting Officer and the USACE will notify EPA-R2 within 24 hours of a misplaced dump or any other violation of the Site Management and Monitoring Plan for the Puerto Rico ODMDs. The Contractor shall coordinate corrective actions with USACE and implement USACE approved corrective actions by the next dump.

Appendix D - Dredged Material Inspector (DMI) Checklist

Ocean Dredged Material Disposal Site (ODMDS) (circle one): Arcibo Mayagüez Ponce
San Juan Yabucoa

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 Scow Certification Checklist/Transportation and Discharge Log (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 Dredged Material Inspector (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___ 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.

A8___ 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.

A9__ The scow monitoring systems, primary and backup (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.

A10__ The scow draft pressure value, as displayed by the PSMS system, has been recorded on the TDL form.

A11__ A fathometer is fully operational, functioning, and installed on the transporting vessel.

A12__ A radio onboard the transporting vessel is operable and can receive NOAA marine weather forecasts and ocean conditions.

A13__ 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.

A14__ Differential Global Positioning System (DGPS) navigation system is fully operational, functioning, and installed aboard the transporting vessel.

A15__ A radar system is fully operational, functioning, and installed aboard the transporting vessel.

A16__ Radio-control system for scow operation (if scowperson is not used) is fully operational and functioning.

A17__ Radio and backup radio system, for communication between scows and towing vessels, are aboard scow (if scowperson is used), are fully operational and functioning.

A18__ A fully operable cell phone that can send and receive calls is in the possession of the DMI onboard the towing vessel.

A19__ A protractor is available for use by the DMI aboard the towing vessel.

A22__ A compass, for map/chart distance scaling, is available for use by the DMI aboard the towing vessel.

A23__ An up-to-date nautical chart that includes the discharge area is available for use by the DMI.

A24__ DMI is provided full access to fathometer, radar, vessel DGPS, and any other equipment/information necessary to conduct DMI duties.

A25__ Radio and backup radio checks with the scowperson's radios have been performed with no problems detected, if a scowperson is used.

A26__ Full compliance with any other contract or regulatory requirements related to dredged material discharge has been met.

A27__ Time of departure from dredging site has been recorded on the TDL form.

A28__ 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 scowperson is used.

B2__ Scow draft is being monitored with PSMS.

B3__ If the DMI is also a National Marine Fisheries Service (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 [Arecibo Mayagüez Ponce San Juan Yabucoa (circle one)] ODMDS:

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 two (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 E -VESSEL STRIKE AVOIDANCE MEASURES, NOAA FISHERIES
SOUTHEAST REGIONAL OFFICE
Revised: May 2021

Background

Vessel strikes can injure or kill species protected under the Endangered Species Act (ESA) and the Marine Mammal Protection Act (MMPA). NOAA Fisheries Southeast Regional Office (SERO) Protected Resources Division (PRD) recommends implementing the following identification and avoidance measures to reduce the risk of vessel strikes and disturbance from vessels to protected species under our jurisdiction.¹

Protected Species Sightings

All vessel operators and crews should be informed about the potential presence of species protected under the ESA and the MMPA and any critical habitat in a vessel transit area. All vessels should have personnel onboard responsible for observing for the presence of protected species. All personnel should be advised that there are civil and criminal penalties for harming, harassing, or killing listed species and all marine mammals. To determine which protected species and critical habitat may be found in the transit area, please review the relevant [marine mammal](#) and [ESA-listed species](#) at Find A Species (<https://www.fisheries.noaa.gov/find-species>) and any ESA Section 7 consultation documents if applicable.

Vessel Strike Avoidance

The following measures should be taken when they are consistent with safe navigation to avoid causing injury or death of a protected species:

1. Operate at the minimum safe speed when transiting and maintain a vigilant watch for protected species to avoid striking them. Even with a vigilant watch, most marine protected species are extremely difficult to see from a boat or ship, and you cannot rely on detecting them visually and then taking evasive action. The most effective way to avoid vessel strikes is to travel at a slow, safe speed. Whenever possible, assign a designated individual to observe for protected species and limit vessel operation to only daylight hours.
2. Follow deep-water routes (e.g., marked channels) whenever possible.
3. Operate at “Idle/No Wake” speeds in the following circumstances:
 - a. while in any project construction areas
 - b. while in water depths where the draft of the vessel provides less than four (4) feet of clearance from the bottom, or
 - c. in all depths after a protected species has been observed in and has recently departed the area.

¹ Manatees are managed under the jurisdiction of the U.S. Fish and Wildlife Service.

4. When a protected species is sighted, attempt to maintain a distance of 150 feet or greater between the animal and the vessel. Reduce speed and avoid abrupt changes in direction until the animal(s) has left the area.
5. When dolphins are bow- or wake-riding, maintain course and speed as long as it is safe to do so or until the animal(s) leave the vicinity of the vessel.
6. If a whale is sighted in the vessel's path or within 300 feet from the vessel, reduce speed and shift the engine to neutral. Do not engage the engines until the animals are clear of the area. *Please see below for additional requirements for North Atlantic right whales.*
7. If a whale is sighted farther than 300 feet from the vessel, maintain a distance of 300 feet or greater between the whale and the vessel and reduce speed to 10 knots or less. *Please see below for additional requirements for North Atlantic right whales.*

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. Please see [How to Report a Stranded or Injured Marine Animal \(https://www.fisheries.noaa.gov/report\)](https://www.fisheries.noaa.gov/report) for the most up to date information for reporting injured or dead protected species.

If the injury or death is caused by your vessel, also report the interaction to NOAA Fisheries Southeast Regional Office Protected Resources Division (SERO PRD) at takereport.nmfsser@noaa.gov. Please include the species involved, the circumstances of the interaction, the fate and disposition of the animal involved, photos (if available), and contact information for the person who can provide additional details if requested. Please include the project's Environmental Consultation Organizer (ECO) number and project title in the subject line of email reports if a consultation has been completed.

Report marine mammals to the Southeast U.S. Stranding Hotline: 877-942-5343

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

Report all species to the Caribbean Stranding Network: 787-399-1900

Reporting Violations

To report any suspected ESA or MMPA violation, call the NOAA Fisheries Enforcement Hotline. This hotline is available 24 hours a day, 7 days week for anyone in the United States.

NOAA Fisheries Enforcement Hotline: (800) 853-1964

Additional Transit and Reporting Requirements for North Atlantic Right Whales

1. Federal regulation prohibits approaching or remaining within 500 yards of a North Atlantic right whale (50 CFR 224.103 (c)). All whales sighted within North Atlantic right whale critical habitat should be assumed to be right whales. Please be aware and follow restrictions for all Seasonal Management Areas along the U.S. east coast. These areas have vessel speed restrictions to reduce vessel strikes risks to migrating or feeding

whales. More information can be found at Reducing Vessel Strikes to North Atlantic Right Whales (<https://www.fisheries.noaa.gov/national/endangered-species-conservation/reducing-vessel-strikes-north-atlantic-right-whales>).

2. Ships greater than 300 gross tons entering the WHALESOUTH reporting area are required to report to a shore-based station. For more information on reporting procedures consult 33 CFR Part 169, the Coast Pilot, or at Reducing Vessel Strikes to North Atlantic Right Whales (<https://www.fisheries.noaa.gov/national/endangered-species-conservation/reducing-vessel-strikes-north-atlantic-right-whales>).
3. From November through April, vessels approaching/departing Florida ports of Jacksonville and Fernandina Beach as well as Brunswick Harbor, Georgia are **STRONGLY RECOMMENDED** to use Two-Way Routes displayed on nautical charts. More information on Compliance with the Right Whale Ship Strike Reduction Rule can be found at (https://media.fisheries.noaa.gov/2021-06/compliance_guide_for_right_whale_ship_strike_reduction.pdf)
4. Mariners shall check with various communication media for general information regarding avoiding vessel strikes and specific information regarding North Atlantic right whale sighting locations. These include NOAA weather radio, U.S. Coast Guard Broadcast to Mariners, Local Notice to Mariners, and NAVTEX. 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 NOAA Fisheries SERO, Protected Resources Division for more information regarding the CD).
5. Injured, dead, or entangled right whales should be immediately reported to the U.S. Coast Guard via VHF Channel 16 and the NOAA Fisheries Southeast Marine Mammal Stranding Hotline at (877) WHALE HELP (877-942-5343).

For additional information, please contact NOAA Fisheries SERO PRD at:

NOAA Fisheries Service Southeast Regional Office 263 13th Avenue South
St. Petersburg, Florida 33701

Visit us on the web at Protected Marine Life in the Southeast

(<https://www.fisheries.noaa.gov/region/southeast#protected-marine-life>)

(<https://www.fisheries.noaa.gov/region/southeast#protected-marine-life>)

Additional Resources:

Puerto Rico Department of Natural and Environmental Resources (PRDNER):
787-724-5700, 787-230-5550, 787-771-1124

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