



DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
701 SAN MARCO BOULEVARD
JACKSONVILLE, FLORIDA 32207-0019

REPLY TO
ATTENTION OF

Planning and Policy Division
Environmental Branch

JUL 14 2017

Mr. David Bernhart
Assistant Regional Administrator
Protected Resources
National Marine Fisheries Service
263 13th Avenue South
St. Petersburg, Florida 33701-5505

Dear Mr. Bernhart:

In accordance with provisions of Section 7 of the Endangered Species Act, as amended, the U.S. Army Corps of Engineers (Corps), Jacksonville District is hereby initiating formal consultation with National Marine Fisheries Service on the proposed deepening and widening of the Federal San Juan Harbor navigation project in Puerto Rico (Figure 1). The Corps has conducted a National Environmental Policy Act assessment to evaluate potential effects on the human environment associated with this proposed action. Currently, the tentatively selected plan (TSP) consists of widening and deepening to 44 feet (plus 1-foot required and 1-foot allowable overdepth) with placement of approximately 2.0 million cubic yards of dredged material in the existing Ocean Dredged Material Disposal Site (refer to enclosure for details). The widening (50 feet on either side) would occur along the Army Terminal channel. Completion of the dredging project may employ hydraulic hopper and/or cutterhead dredges and/or mechanical clamshell/excavator dredges.

Enclosed please find the Corps biological assessment of potential effects of the proposed project on listed species under your purview in the action area. In addition to our request for formal consultation for sea turtles, we also request written concurrence with our may effect, not likely to adversely affect determinations for whales, fish, and corals.

Pursuant to the Endangered Species Act, as amended, please indicate within 30 days of the date of this letter your determination of completeness of the biological assessment. In addition, the Corps requests a copy of the draft biological opinion for review as allowed under 50 CFR 402.14(g)(5) within 90 days of determination of completeness and delivery of the final biological opinion 45 days later.

If you have any questions, please contact Mr. Paul DeMarco at 904-232-1897 or by email at Paul.M.DeMarco@usace.army.mil.

Sincerely,

A handwritten signature in black ink, appearing to read 'Gina Paduano Ralph', written in a cursive style.

Gina Paduano Ralph, Ph.D.
Chief, Environmental Branch

Enclosure

TENTATIVELY SELECTED PLAN

WIDENING

- Widen Army Terminal Channel from 350' to 450' maximum

DEEPENING (counterclockwise)

- Cut 6 to 46'
- Anegado Channel to 44'
- Army Terminal Channel to 44'
- Army Terminal Turning Basin to 44'
- San Antonio Channel to 36'
- Cruise Ship Basin East to 36'

COAST GUARD ANCHORAGE AREA F EXPANSION - - -

- A Future Without-Project Condition that will be maintained by USACE once constructed

CONSTRUCTION

- Mechanical clamshell dredge with bottom-dump barge transport to offshore Ocean Dredged Material Disposal Site (ODMDS)
- ~ 2.1M cubic yards of material



BIOLOGICAL ASSESSMENT - SAN JUAN HARBOR IMPROVEMENT STUDY

Prepared for:

U.S. Army Corps of Engineers

Jacksonville District

701 San Marco Blvd

Jacksonville, FL 32207

Prepared by:

Terri Jordan-Sellers;

Senior Biologist

July 13, 2017

Background/History

This Biological Assessment (BA) evaluates the potential effects to federally listed threatened and endangered species from the proposed Navigation Improvement Study for San Juan Harbor, Puerto Rico (SJH); as required by Section 7(a)(2) of the Endangered Species Act (ESA) of 1973, as amended. The U.S. Army Corps of Engineers, Jacksonville District (Corps) proposes to expand and deepen the channels and turning basins of SJH. The Corps has prepared a Draft Integrated Feasibility Report and Environmental Assessment for the project (<http://www.saj.usace.army.mil/Missions/Civil-Works/Navigation/Navigation-Projects/San-Juan-Harbor/>).

SJH has been in use since the discovery of the Island by the Christopher Columbus in November 1493. Recent Federal improvements began in 1917 with the authorization of inner harbor and San Antonio channel dredging. Federal navigation improvements have continued into the 2000's when the last authorized modifications included deepening the bar channel (Cuts 1-3) to project depths of 56-51 feet¹, the Entrance Channel (Cuts 4-6) to 48-42 feet, Anegado Channel to 40 feet, Army Terminal and Turning Basin to 40 feet, Puerto Nuevo Channel to 39 feet, Graving Dock Channel to 36 feet, Graving Dock Turning Basin to 30 feet, Anchorage Area E to 36 feet, Anchorage Area F to 30 feet, San Antonio Channels to 35 feet, Cruise Ship Basins to 36 and 30 feet, and the San Antonio Extension to 30 feet. Table 1 provides a history of the gradual deepening of SJH. Federal interest started with the inner harbor area and establishing the San Antonio Channel with a 30-foot depth in 1917. Additional modifications deepened the Entrance Channel and extended the Federal system of channels to provide access to the Army Terminal, Puerto Nuevo, and Graving Dock landside facilities as shown in Figure 1.

¹ All navigation channel water depths cited throughout this assessment are Mean Low Low Water (MLLW).

Table 1: Federal Authorizations for Work in San Juan Harbor

Acts	Work Authorized	Documents
8 Aug 1917	Anchorage (inner harbor) area of 206 acres and San Antonio Channel to 30-foot.	House Document 865/63/2
22 Sep 1922	Substitution of a 68-acre area 30 feet deep, along south-easterly side of anchorage area, for one 25 acres in extent and of same depth extending easterly from eastern end of the San Antonio project channel.	Specified in Act
3 Jul 1930	Modified conditions of local cooperation.	House Document 45/71/2
30 Aug 1935	Entrance channel across outer bar 38 feet deep and 800 feet wide, and thence across bay to Harbors anchorage area (Anegado Reach Channel) 30 feet deep and 700 feet wide and increasing anchorage area to 239 acres to a 30-foot depth.	Rivers & Harbors Comm. Doc. 38/74/1
26 Aug 1937	Widening Anegado Reach Channel and increasing anchorage area to 329 acres.	Rivers & Harbors Comm. Doc. 42/75/1
17 Oct 1940	Removal to 8-foot depth of Anegado, Largo, and Capitanejo Shoals, and dredging to a 30-foot depth the entrance channel and turning basin to the Graving Dock.	House Document 364/76/1
2 Mar 1945	Maintenance of the 30-foot depth entrance channel and turning basin to the Army Terminal.	Specified in Act
3 Jul 1958	Deepening portions of the entrance, the approach channels, and basins to Army Terminal and San Antonio Pier area to 35-45 feet; new 32-foot depth Puerto Nuevo Channel; and new 36-foot depth anchorage.	House Document 38/85/1
17 Nov 1986	Centerline shifted 350 feet west and Bar Channel deepened to 48 feet over maximum width of 800 feet; deepened Anegado Channel to 46, 43, and 40 feet from the Bar Channel over a bottom width of 800 feet; deepen Army Terminal and Puerto Nuevo Channels to 40 feet and widen to 450 feet; Deepen Graving Dock Channel to 36 feet and widen to 450 feet; extend San Antonio Channel 1500 feet and deepen to 36 feet over minimum width of 500 feet; deepen Cruise Ship Basin to 36 feet; provide Sabana Approach Channel with depth of 32 feet over width of 250 feet; deepen Anchorage Area E to 38 feet and provide six mooring dolphins; provide 22 acres of shallow bay bottom for mitigation.	Public Law 99-662



Transportation inefficiencies occur when existing channels and maneuvering areas cannot efficiently accommodate the existing vessels using the harbor. The existing fleet is constrained by channel depths, under-sized turning areas and strong wind and wave conditions at the harbor entrance. This requires many of the ships to light load, preventing them from using the full capacity of the vessel and thus increasing the number of vessel calls into the harbor. Navigation concerns include three main types of problems: difficult wind and wave conditions, limited channel and turning basin widths, and insufficient Federal channel depths.

SJH is known to have many groundings, allisions and collisions. Some of these groundings have occurred at the mouth of the entrance channel where there is the potential for hardbottom resources to be present (Figure 2 and Figure 3). The entrance channel also presents significant navigational challenges including bar channel winds and waves causing ships to roll and heel and winds, waves and currents in the entrance channel cause ships to alter their speed resulting in squat and sinkage. Changes in the entrance channel proposed by this project will help to improve these conditions for vessels transiting the entrance channel.



Figure 2 - M/V Sergo Zakariadze Grounding – November 1999 (U.S. Coast Guard)

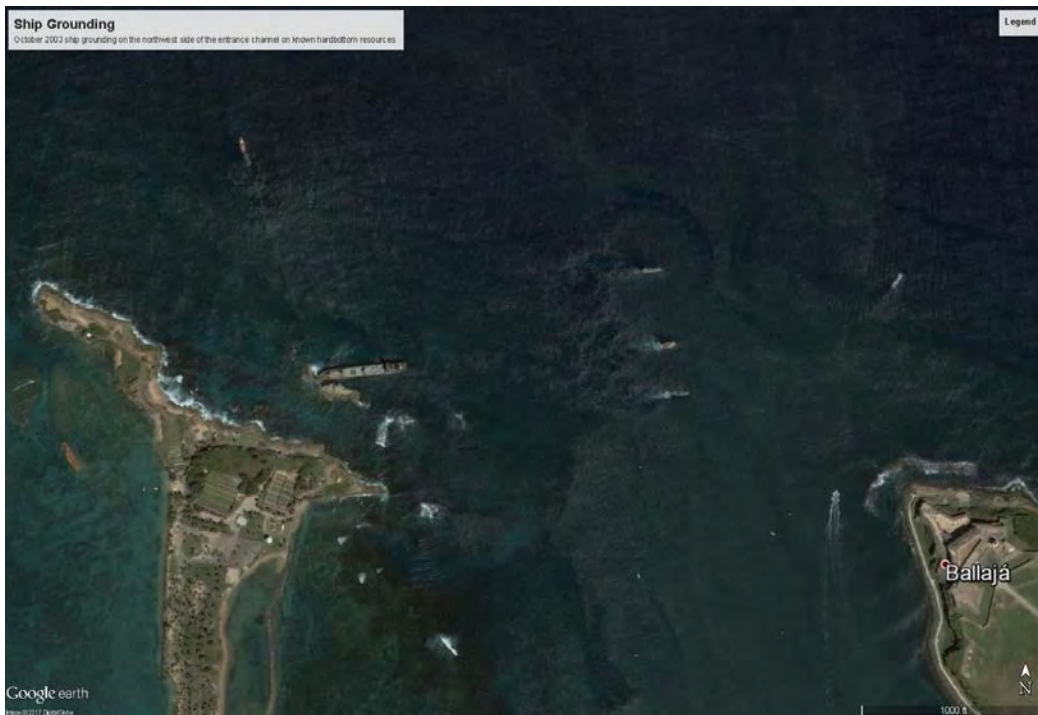


Figure 3 - Unknown Ship Grounding Northwest side of Entrance Channel October 2003

Project Location

SJH is located on the northeast coast of the Commonwealth of Puerto Rico (Figure 4). The Commonwealth's cruise ships, containerized cargo, dry bulk grains, general cargo including automobiles, and petroleum products pass through SJH. The entrance channel accesses the Atlantic Ocean to the north between Isla de Cabras and Old San Juan.

The study area includes the entrance channel, Ocean Dredged Material Disposal Site (ODMDS), the Federal inner harbor channels, and any extension of these water bodies and shorelines that would be affected by channel enlargement alternatives or any potential associated landside infrastructure changes.

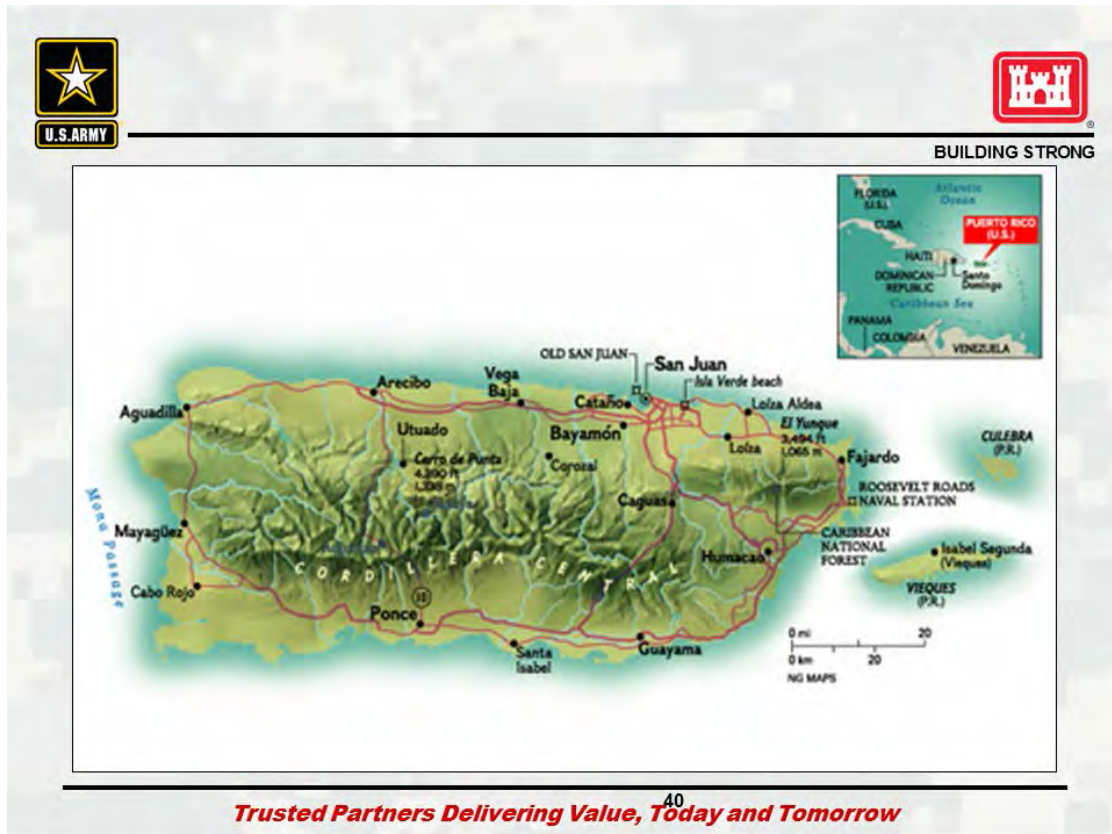


Figure 4 - Location of San Juan Harbor

Description of the Proposed Action

The Corps analyzed several alternatives within the Draft Integrated Feasibility Report and Environmental Assessment and identified a Tentatively Selected Plan (TSP). The Project will require the removal of approximately 2.1 million cubic yards of dredged material. Features of the current TSP (Figure 5), include:

- Deepen Cut-6 to 46 feet.
- Deepen Anegado Channel to 44 feet.
- Deepen Army Terminal Channel to 44 feet and widen by 100 feet.
- Deepen Army Terminal Turning Basin to 44 feet.
- Deepen San Antonio Channel and Cruise Ship Basin East to 36 feet.
- Placement of dredged material in the San Juan Harbor ODMDS or the Condado Lagoon Section 204 beneficial use of dredged material/seagrass restoration project.

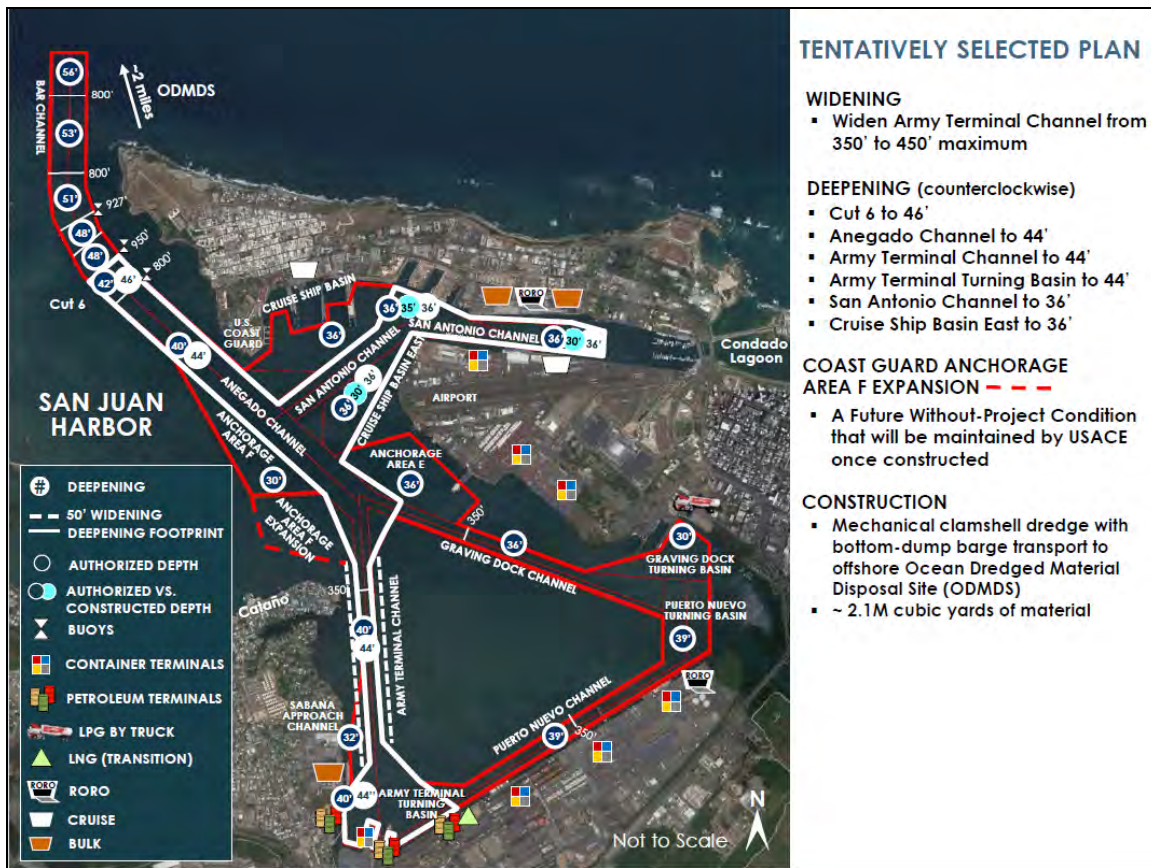


Figure 5 - Tentatively Selected Plan

The Corps expects the construction to be performed using a variety of dredging methods including a cutterhead, clamshell, hopper or backhoe. Disposal of dredged material will be in the San Juan Harbor ODMDS or within the Condado Lagoon beneficial use of dredged material/seagrass restoration project footprint. The San Juan Harbor ODMDS is an approximately 1 square mile site, located 2.2 nautical miles north-northwest of the entrance to SJH, in an average water depth of 965 feet (292 meters), which was designated by the U.S. Environmental Protection Agency (EPA) on April 22, 1988. Detailed information concerning this site is located on EPA's Ocean Dumping homepage located at <https://www.epa.gov/ocean-dumping/site-management-and-monitoring-plan-smmp-san-juan-harbor-ocean-dredged-material>.

Overview of Dredging Methods

Geotechnical evaluations indicate minimal rock that will not require blasting. Five separate dredging methodologies may be utilized in the deepening and expansion of the port's channels and basins. Each one will be evaluated separately since they rely on differing equipment, and thus different effects may occur. Construction methodology of the project will be determined by the contractor selected by the Corps during the bid process. However, certain assumptions can be made regarding various techniques that may be needed to complete construction; those assumptions are the basis for this consultation. If an alternative construction methodology, not included in this

consultation is proposed by the selected contractor that result in effects to the species under National Marine Fisheries Service (NMFS) jurisdiction that are different than those analyzed here, then the Corps will reinitiate consultation.

Dredging equipment is classified as either hydraulic or mechanical based upon the means of transporting the dredged material from the channel bottom. Hydraulic dredges use water to pump the dredged material as slurry to the surface and mechanical dredges use some form of bucket to excavate and raise the material from the channel bottom. The most common hydraulic dredges include cutter-suction and hopper dredges and the most common mechanical dredges include clamshells and backhoes (also referred to as marine excavator or dipper dredges). In addition to clamshell and backhoe dredges, mechanical dredges also include bucket ladder dredges, however, U.S. law requires that dredges working on federally funded projects have U.S. built hulls and no large scale bucket ladder dredges capable of conducting rock dredging are currently available for U.S. work. Various project elements influence the selection of the dredge type and size. These factors include the type of material (rock, clay, sand, silt, or combination); the water depth; the dredge cut thickness, length, and width; the sea or wave conditions, vessel traffic conditions, environmental restrictions, other operating restrictions; and the required completion time. All of these factors effect dredge production and as a result costs. Multiple dredges of the same or different types may be used on projects where conditions vary between dredging locations or to expedite the work.

The following discussion of dredges and their associated effects will be limited to potential dredging equipment suitable for the SJH deepening project. The key project elements for this deepening project include:

- Based on geotechnical investigation, the material to be dredged is primarily silts and clay historically and currently transported from upland areas by rivers and streams and deposited into SJH. More specifically the material is soft clay and stiff plastic clay. Sand and gravel mixes with some limestone and sandstone were also encountered.
- Significant environmental resources including reefs are located adjacent to project as documented by National Oceanic and Atmospheric Administration (NOAA) staff during the November 2015 project planning charrette.
- Project includes open water dredging in a channelized environment.

Dredging may occur with any type of dredge and disposal of all dredged material would be in the ODMDS and/or the Condado Lagoon beneficial use of dredged material/seagrass restoration site. Potential equipment must be able to excavate up to 60 feet in depth (to include overdepth), depending upon wave and tide conditions as well as excavate large material volume.

Hydraulic Dredges

Hydraulic dredges are characterized by their use of a pump to dredge sediment and transport slurry of dredged material and water to identified discharge areas. The ratio of water to sediment within the slurry mixture is controlled to maximize efficiency. The main types of hydraulic dredges are pipeline and hopper dredges.

Pipeline Dredges - Cutterhead Suction Dredge

Pipeline dredges are designed to handle a wide range of materials including clay, hardpan, silts, sands, gravel, and some types of rock formations without blasting. They are used for new work and maintenance in projects where suitable placement/disposal areas are available and operate in an almost continuous dredging cycle resulting in maximum production, economy, and efficiency. Limitations of pipeline dredges include relative lack of mobility, long mobilization and demobilization, inability to work in high wave action and currents, and are impractical in high traffic areas.

Pipeline dredges are rarely self-propelled and; therefore, must be transported to and from the dredge site. Pipeline dredge size is based on the inside diameter of the discharge pipe which commonly ranges from 6" to 48." They require an extensive array of support equipment including pipeline (floating, shore, and submerged), boats (crew, work, survey), barges, and pipe handling equipment. Most pipeline dredges have a cutterhead on the suction end. A cutterhead is a mechanical device that has rotating teeth to break up or loosen the bottom material so that it can be sucked through a pipe to the dredge (Figure 6).

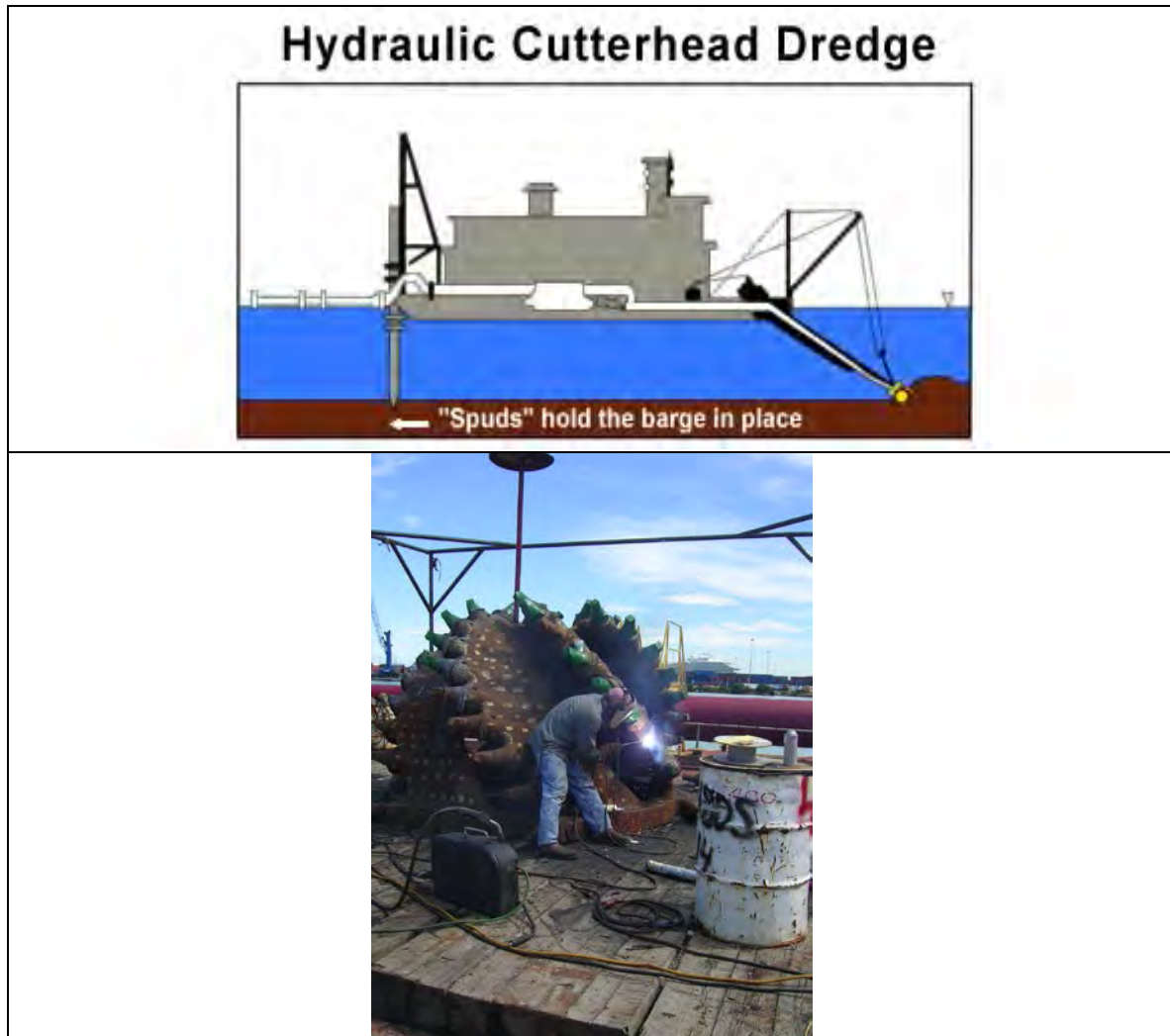


Figure 6 - Cutterhead pipeline dredge schematic and representative close-up photographs. (Video of cutterhead dredge: <http://el.erdc.usace.army.mil/dots/doer/anima/cutterside.avi>)

Large cutter-suction dredges, or cutterhead dredges, are mounted on barges. The key parts of a cutter-suction dredge include:

- The cutter-suction head that resembles an egg beater with teeth that break up the dredged material as it rotates. The broken material is hydraulically moved into the suction pipe for transport.
- The cutter suction head is located at the end of a ladder structure that raises and lowers it to and from the bottom surface.
- The discharge pipeline connects the cutter suction dredge to the disposal location. The dredged material is hydraulically pumped from the bottom, through the dredge, and through the discharge pipeline to the disposal location.
- Dredge pumps are located on the barge with additional pump(s) often located on the ladder, especially for deep water dredging projects such as SJH. Booster pumps can also be added along the discharge pipeline to move the material greater distances.

Depending upon their design, cutterhead dredges can be used to remove consolidated rock and unconsolidated material. During the dredging operation a cutterhead suction dredge is held in position by two spuds at the stern of the dredge, only one of which can be on the bottom while the dredge swings. There are two swing anchors some distance from either side of the dredge, which are connected by wire rope to the swing winches. The dredge swings to port and starboard alternately, passing the cutter through the bottom material until the proper depth is achieved. The dredge advances by “walking” itself forward on the spuds. This is accomplished by swinging the dredge to the port, using the port spud and appropriate distance, then the starboard spud is dropped and the port spud is raised. The dredge is then swung an equal distance to the starboard and the port spud is dropped and the starboard spud is raised.

A large cutterhead dredge could be used for the entire SJH project. Disposal options include transport by barges to the ODMDS or placement of dredged in previously dredged holes as part of the Condado Lagoon beneficial use of dredged material/seagrass restoration project. When the material will be taken to the ODMDS, the material may be loaded into scows using a barge known as a spider barge. This barge allows for one scow to be loaded and a second to begin loading immediately after the first is complete, ensuring more efficient dredging due to lessened down time waiting for scows to return from the ODMDS (Figure 7).



Figure 7 - A spider barge loading material into two scows from the cutterhead dredge, Texas, during Miami Harbor Phase II 2005-2006.

Hopper Dredge.

The hopper dredge, or trailing suction dredge, is a self-propelled ocean-going vessel with a section of the hull compartmented into one or more sediment containment chambers called hoppers. Fitted with powerful pumps, the dredges suck sediment from the channel bottom through long intake pipes, called drag arms, and store it in the hopper(s). Normal hopper dredge configuration has two dragarms, one on each side of the vessel. A dragarm is a pipe suspended over the side of the vessel with a suction

opening called a draghead for contact with the bottom (Figure 8). Depending on the hopper dredge, a slurry of water and sediment is generated from the plowing of the draghead “teeth,” the use of high pressure water jets, and the suction velocity of the pumps. The dredged slurry is distributed within the vessels hopper allowing for solids to settle out and the water portion of the slurry to be discharged from the vessel during operations through its overflow system. When the hopper attains a full load, dredging stops, the dragarms are lifted off the bottom and the ship travels to an in-water disposal site, where the dredged material is discharged through the bottom of the ship by splitting the hull, or opening doors located in the bottom of each hopper.



Figure 8 - Hopper dredge and dragarm being lowered into the water (Video of hopper dredge - <http://el.erdc.usace.army.mil/dots/doer/anima/turtle.avi>)

Hopper dredges are well suited to dredging heavy sands and unconfined material. They can maintain operations safely, effectively, and economically in relatively rough seas and because they are mobile, they can be used in high-traffic areas. They are often used at ocean entrances and offshore, but cannot be used in confined or shallow areas. Hopper dredges also have several limitations. Considering their normal operating conditions, hopper dredges cannot dredge continuously. The precision of hopper dredging is less than other types of dredges; therefore, they have difficulty dredging steep side banks and cannot effectively dredge around structures or in corners.

The Corps will incorporate the Terms and Conditions in NMFS' 1997 South Atlantic Regional Biological Opinion (SARBO) on Hopper Dredging along the South Atlantic Coast into the project specifications, or any subsequent SARBO issued for hopper dredging.

Although the SARBO does not include new harbor deepening projects in the project description, the Corps expects that that protective measures of the SARBO are sufficient to protect sea turtles in SJH.

The Corps has confirmed that two hopper dredges were used simultaneously in the SJH deepening project in 1999-2000 and included the standard hopper dredge protective conditions that were in place in the 1995 and 1997 SARBOs. There are no reports of sea turtle take available for review associated with that deepening project. Discussions with the project engineer (S. Conger pers comm July 2017), confirmed no recollection of any sea turtle take being reported during construction. However, based on other tropical harbors (Miami, Fort Lauderdale, Key West), sea turtle take is not expected since water temperatures are warm and sea turtles are not expected to ruminate in the bottom of the channel, the location where entrainment by draghead is most likely to occur. Operations and maintenance (O&M) dredging utilizing a hopper dredge has not been conducted in SJH since 1995 (when the 1995 SARBO was put in place). Projects in Puerto Rico and the U.S. Virgin Islands (USVI) were not included in the 1995 SARBO ESA consultation. The 2008 and 2017 South Atlantic Regional Biological Assessment include both of these locations for maintenance dredging with a hopper dredge). The 1997 SARBO incorporates (by reference) NMFS' 1995 Biological Opinion on hopper dredging of channels and beach nourishment activities in the southeastern U.S. from North Carolina through Florida East Coast. As previously stated, the Corps' specifications will require their contractor(s) to follow the Terms and Conditions in the 1997 and 1995 Biological Opinions mentioned above (or any subsequent SARBO, when issued), with the exception of the conditions related to the southeast United States' North Atlantic Right Whale calving area, because the proposed project is not located in or near the calving area. The Corps will also incorporate the protective measures of NMFS' March 23, 2006, Sea Turtle and Smalltooth Sawfish Construction Conditions into the project plans and specifications. Additionally any take associated with the use of a hopper dredge shall be reported via the Operations and Dredging Endangered Species System (ODESS), a publically accessible and searchable database for reporting take of ESA listed species in Corps' construction projects (<http://dqm.usace.army.mil/odess/#/home>).

In addition to hopper dredges, relocation trawling may occur inside SJH, since the northernmost cut of the proposed project is Cut 6, located to the south of the harbor entrance and the jetties (Figure 1). This means that all trawling will occur within the confines of San Juan Bay.

Mechanical Dredges

Mechanical dredges are characterized by the use of some form of bucket to excavate and raise the bottom material (Figure 9). They remove material by scooping it from the bottom and then placing it onto a waiting barge/scow or directly into a placement/disposal area. Mechanical dredges work best in consolidated, or hard-packed, materials and can be used to clear rocks and debris. Dredging buckets have difficulty retaining loose, fine materials, which can be washed from the bucket as it is raised. Special buckets have been designed for controlling the flow of water and material from buckets and are used when dredging contaminated sediments. Mechanical dredges are rugged and can work in tightly confined areas. They are mounted on a large barge and are towed to the dredging site and secured in place by anchors or spuds. They are often used in harbors, around docks and piers, and in relatively protected channels, but are not suited for areas of high traffic or rough seas.

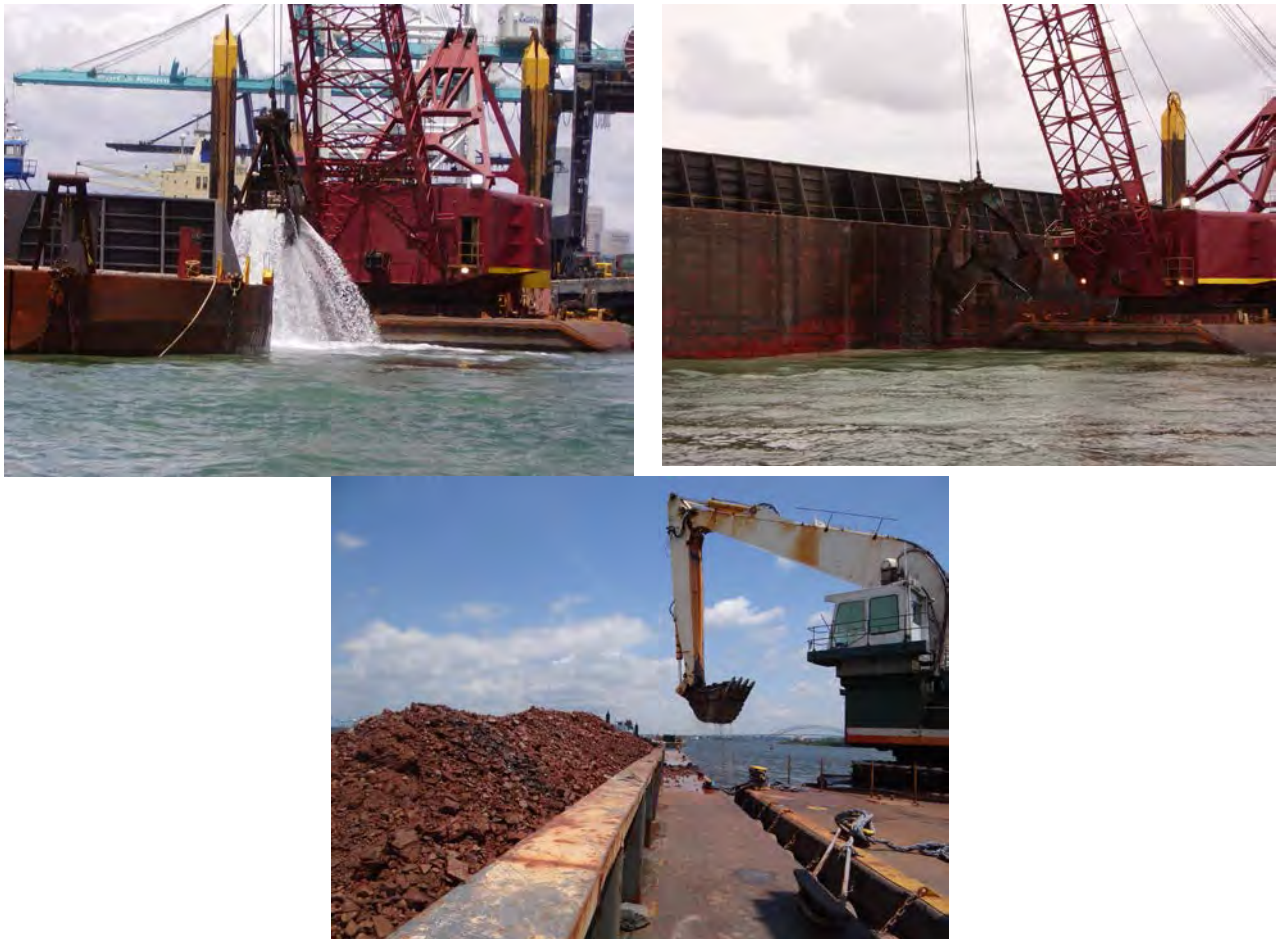


Figure 9 - Mechanical dredges (clamshell bucket/back-hoe dredge and barge). (Video of clamshell dredge - <http://el.erdc.usace.army.mil/dots/doer/anim/clamshel.avi>.)

Backhoe dredges and clamshell dredges, named for the scooping buckets they employ, are the two most common types. For clamshell dredges, a bucket dredge begins the digging operation by dropping the bucket in an open position from a point above the

sediment. The bucket falls through the water and penetrates into the bottom material. The sides of the bucket are then closed and material is sheared from the bottom and contained in the bucket compartment. The bucket is raised above the water surface, swung to a point over the barge, and then released into the barge by opening the sides of the bucket. Usually two or more disposal barges, called dump scows, are used in conjunction with the mechanical dredge. While one barge is being filled, another is being towed to the disposal site by a tug and emptied. If an upland disposal area is used, the material must be unloaded using mechanical or hydraulic equipment. Using numerous barges, work can proceed continuously, only interrupted by changing scows or moving the dredge. This makes mechanical dredges particularly well suited for dredging projects where the disposal site is many miles away.

The backhoe dredge is essentially a power shovel mounted on a barge. The backhoe digs toward the machine with the bucket penetrating from the top of the cut face. The operation cycle is similar to the clamshell dredge, as are the factors affecting production. Backhoe marine excavators have accurate positioning ability and are able to excavate firm or consolidated materials. However, they are susceptible to swells and have low to moderate production. Backhoe marine excavators could be used to excavate unconsolidated overburden, fractured rock, and possibly some unfractured rock.

Bed Leveling

A “bed-leveler” is considered to be any type of dragged device used to smooth sediment bottom irregularities left by a dredge (Figure 10). It is also referred to as a “mechanical leveling device or drag bar”. In various parts of the U.S. this process is known as “barring” or “knockdown” (Hales et al. 2003). In certain cases, bed-levelers are used to redistribute sediments to maintain navigable depths rather than removing them by dredging with conventional methods. Dredge types using bed-levelers include clamshell (excavator), bucket, hydraulic cutterhead, and hopper dredges. Bed levelers do not use suction and redistribute sediments, rather than removing them. Plows, I-beams or other seabed leveling mechanical dredging devices are often used to lower high spots left in channel bottoms and dredged material deposition areas by hopper dredges or other types of dredges.



Figure 10 - Example bed levelers and associated operating conditions (photographs courtesy Bean Dredging Company and Weeks Marine Incorporated)

Dredged Material Disposal

As previously described, the first disposal option is placement of dredged material in the EPA designated ODMDS. NMFS has previously consulted on disposal operations at the ODMDS under the Environmental Impact Statement (EIS) for designation of the ODMDS with EPA in 1988, and in subsequent Site Management and Monitoring Plans for the project in 2000 and 2010 (Appendix A). In 2010, NMFS determined:

NMFS believes that the proposed action may affect but is not likely to adversely affect listed whales and sea turtles. Listed whales and sea turtles in the water could be affected by vessel transit to and from the ODMDS. However, EPA and COE have included NMFS Southeast Region Vessel Strike Avoidance Measures and Reporting for Mariners as a requirement for barges transiting to and from the ODMDS. EPA and COE have also included a requirement that, upon arrival at the ODMDS, the dredging inspector maintain a watch for listed marine mammals and sea turtles to ensure that no disposal activities take place while animals are present. Further, based on information from a consultation with the U.S. Coast Guard for their Marine Events Program in the U.S. Caribbean, and information from the U.S. Fish and Wildlife Service, the only reported collisions with marine mammals in this area occurred inside the San Juan Bay in the Puerto Nuevo area when a vessel collided with five manatees. We have no records of collisions with marine mammals or sea turtles associated with the operation of the ODMDS site. Therefore, NMFS believes that impacts to listed whales and sea turtles due to collisions with vessels during transit to and from the ODMDS will be discountable.

The Corps agrees with this determination and incorporates it by reference (Appendix A). Evaluation of the effects of transport to the ODMDS on newly listed corals, Nassau Grouper and proposed giant manta ray is evaluated later in this document.

The second option is to use the dredged material to fill previously dredged holes in Condado lagoon for beneficial use of dredged material/seagrass restoration (Appendix A).

NMFS has previously consulted on this action, making a determination that the restoration “may affect, but is not likely to adversely affect” listed species under NMFS jurisdiction in the project area (NMFS 2014c). The Corps incorporates this determination into this consultation and no additional analysis regarding this aspect of the project will be included with this Biological Assessment.

Transportation Methodology – Hopper Dredges, Tugs/Scows, and Barges

Depending on the dredging and disposal site conditions, as a component of hydraulic and mechanical dredging operations, accompanying equipment such as tugs and barges (hopper, scow, spider barge, etc.) may be used in association with dredging activity in order to transport the dredged material to the pre-determined disposal sites. Methods of transporting dredged material to disposal sites include self-propelled transport via hopper dredges or towing/pushing of loaded barges to disposal sites via tugboats. Tugboats are a component of all dredging operations and may be used to move immobile equipment into place as well as towing loaded barges to the disposal sites. Hopper dredges or bucket and barge operations are often used when disposal areas are beyond the pumping distance of pipeline dredges considering that hopper dredges and barges can transport material over long distances to the placement/disposal sites. Depending on a myriad of factors such as the type of dredged material, cubic yardage to be dredged, barge capacity, overflow capability, distance of the placement/disposal site, weather, etc., there may be types of dredges that consistently rotate from the dredge site to the placement/disposal site to achieve maximum efficiency and productivity. The number of hopper loads or barges towed, the transport interval, and the speed to the placement/disposal site will vary depending on these factors.

Hopper/scow locations are monitored at all times via the Dredging Quality Management (DQM) system and the contractor can be penalized for violating the specifications. The ullage (loaded draft) of each scow is recorded approximately every 30-seconds to determine if there is any loss of material from the scow during transit. This data is reviewed after each load by the contractor and the Corps/EPA and if a barge has a net loss of more than one foot in draft between the dredge site and disposal site(s) (averaged between the bow and stern monitoring locations), this serves as a “red flag” to conduct an investigation as to why the draft loss occurred. If the draft loss can be determined due to high seas and sloshing of material, no other action is required. However, if the loss is not as a result of high seas and sloshing, the barge is temporarily removed from the rotation and has the seals tested and repaired (if necessary). If a particular barge demonstrates a trend of material loss that does not resolve itself after seal testing and repair, the barge is removed from the dredging operation. One-foot of loss has been determined by Corps and EPA to be a good threshold for notification, because all barges have some amount of draft loss through leakage or water sloshing out of the barge due to sea conditions and weather, although the amount is typically minimal.

Hopper dredge and scows will be loaded with dredged material and taken to the ODMDS or approved Condado Lagoon beneficial use of dredged material/seagrass restoration site at the end of the San Antonio Channel and then pumped into the Lagoon via pipeline. As part of the Corps' standard environmental protection specifications (cited below), the vessels are required to remain in the marked channel until passing the outer buoy to prevent any accidental release of material from the scow/hopper that might settle on adjacent reef habitats.

"Due to the presence of hardbottom reefs adjacent to the channel, the Contractor shall stay within the marked entrance channel while in transit from the dredging area to the ODMDS, and on the return trip, until past the last channel marker."

Hopper dredge and disposal tug/scow transit tracks will be recorded by the Contractor and reviewed within 24-hours of the transit to the disposal site to ensure the vessel remained in the marked channel or approved corridor to the Condado Lagoon beneficial use of dredged material/seagrass restoration site. If the dredge/tug and scow leaves the channel or approved corridor, the location will be marked and recorded in a Geographic Information System database, water depths of the location will be determined by reviewing existing surveys and, draft of the vessel will be determined by the DQM system. If it is determined that the potential exists for an effect to have occurred as a result of the vessel leaving the channel or approved corridor, a survey team will be deployed to assess any effect that may have occurred and conduct immediate remediation. Remediation work will be conducted immediately after the survey by the survey crew. Remediation activities may follow the guidelines developed by the state of Florida "Rapid Response and Restoration for Coral Reef Injuries in Southeast Florida, Guidelines and Recommendations" dated June 2007, if applicable.

Split Hull Barge

A split hull barge (Figure 11) has two hulls connected with hinges at the front and back. The two-door hinged configuration, allows the hulls to swing apart, opening at the bottom to allow dredged material to fall from the barge. This provides a rapid disposal of dredged material, which, as a result, is placed within a small area. The rapid descent of material through the water column reduces the potential for resuspension of sediments into the water column during disposal. Such a barge may be used for ODMDS disposal. A rubber seal (similar to a gasket or weather-stripping on a door), is pinched between the two doors, limiting the leakage from the barge of water and dredged material. This seal does not prevent 100% of water and dredged material from leaking; however it minimizes it to the maximum extent practicable.



Figure 11 - Split-hull barge

Bottom Dump Barge

A bottom dump barge has doors on the bottom of the hopper, which opens at the disposal site to allow the dredged material to fall to the bottom. This type of barge has slower disposal than split hull dump barges and material spreads over a larger area. This barge may be used for ODMDS disposal. As with split hull barge, the bottom dump barge has seals around each of the doors to minimize leakage of material and water from the barge. The barge is monitored in the same method as the split hull barge and the same response is taken if the barge loses more than a net foot of draft. This type of barge may be used either for ODMDS disposal or construction of artificial reef sites.

Flat Top Barge

A flat top barge transports dredged material stacked on a barge deck and must be unloaded mechanically at the disposal site. As a result disposal time is slow but it is possible to drain dredged material with filters prior to disposal.

All three barge types are typically pushed or pulled to the disposal site by a tug (Figure 12) and for split hull and bottom dump barge, the disposal action is triggered remotely from the tug to the barge. The exact time the signal is given to the barge, and when the doors open and close are recorded in a tracking system for further data analysis and compliance tracking.



Figure 12 - Split Hull Barge Being Pushed by Tug

Protected Species and Designated Critical Habitat Under NMFS Jurisdiction Included in the Project Area

The following endangered (E) and threatened (T) species under the jurisdiction of NMFS have the potential to occur in or near the action area:

Table 1 - Listed Species and Critical Habitat under NMFS Jurisdiction in the Project Area

Common Name	Scientific Name	Status
Marine Mammals		
Blue whale	<i>Balaenoptera musculus</i>	E
Fin whale	<i>Balaenoptera physalus</i>	E
Sei whale	<i>Balaenoptera borealis</i>	E
Sperm whale – Puerto Rico and Virgin Islands stock	<i>Physeter macrocephalus</i>	E
Sea Turtles		
Loggerhead sea turtle	<i>Caretta caretta</i>	T
Hawksbill sea turtle	<i>Eretmochelys imbricata</i>	E
Leatherback sea turtle	<i>Dermochelys coriacea</i>	E
Green sea turtle (south Atlantic Distinct Population Segment (DPS))	<i>Chelonia mydas</i>	T
Fish		
Nassau Grouper	<i>Epinephelus striatus</i>	T
Scalloped Hammerhead (central and southwest Atlantic DPS)	<i>Sphyrna lewini</i>	T
Giant Manta Ray	<i>Manta birostris/ M. alfredi</i>	T (proposed)
Invertebrates		
Elkhorn coral	<i>Acropora palmata</i>	T
Staghorn coral	<i>Acropora cervicornis</i>	T
Pillar coral	<i>Dendrogyra cylindrus</i>	T
Lobed star coral	<i>Orbicella annularis</i>	T
Mountainous star coral	<i>Orbicella faveolata</i>	T
Boulder star coral	<i>Orbicella franksi</i>	T
Rough cactus coral	<i>Mycetophyllia ferox</i>	T

Critical Habitat

ESA-designated critical habitat (DCH) for elkhorn and staghorn coral occurs within the action area.

The Corps has reviewed the biological, status, threats and distribution information presented in this assessment and believes that the following species will be in or near the action area and thus may be affected by the proposed project: three sea turtle species; the Nassau grouper and the seven listed coral species.

Species Not Affected by the Project

Species unlikely to be affected by the project are the four whale species. As previously stated, NMFS previously consulted on the disposal of dredged material in the San Juan ODMDS (NMFS 2010) and determined that the placement of dredged material in this site will not affect the four whale species in the project area. Additionally, NMFS has previously reviewed the placement of dredged material in other ODMDS' in the southeast U.S. off the continental shelf of southeast Florida, and in all cases, NMFS determined that placement of dredged materials in deepwater ODMDS are not likely to adversely affect whale species (NMFS 2004, NMFS 2003b, NMFS 1994). The Corps agrees with that determination and incorporates it by reference. NMFS has also determined that dredging is unlikely to adversely affect leatherback sea turtles (NMFS, 1995; NMFS 2003a), and the Corps agrees with that determination and incorporates it by reference.

Additionally, it is highly unlikely that the leatherback sea turtle, giant manta ray, scalloped hammerhead shark or Nassau grouper would be taken by a hopper dredge or a relocation trawler, due to their offshore location and/or their mobility; and the project limitations within the confines of San Juan Bay. None of these species have been reported within the Bay and they are typically considered offshore species. It is also unlikely that they will be affected by placement of dredged material either in the ODMDS or within the beneficial use of dredged material/seagrass restoration project in Condado Lagoon. Both of these effects are so unlikely to occur as to be discountable. Therefore, the species discussed within this section will not be discussed further in this assessment.

Sea Turtles

Loggerhead Sea Turtle - *Caretta caretta*

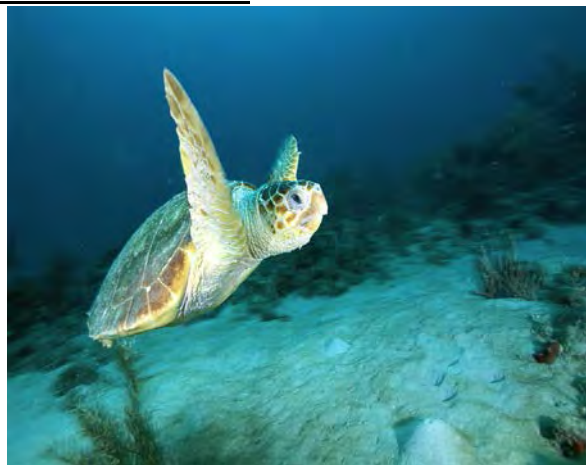


Figure 13 - Loggerhead sea turtle (<http://kids.nationalgeographic.com/animals/loggerhead-sea-turtle/#loggerhead-sea-turtle-swimming-underwater.jpg>; accessed 7/13/2017)

The loggerhead sea turtle was listed as a threatened species throughout its global range

on July 28, 1978. It was listed because of direct take, incidental capture in various fisheries, and the alteration and destruction of its habitat. Loggerhead sea turtles inhabit the continental shelves and estuarine environments along the margins of the Atlantic, Pacific, and Indian Oceans. In the Atlantic, developmental habitat for small juveniles is the pelagic waters of the North Atlantic and the Mediterranean Sea (NMFS and USFWS, 1991a). Within the continental U.S., loggerhead sea turtles nest from Texas to New Jersey. Major nesting areas include coastal islands of Georgia, South Carolina, and North Carolina, and the Atlantic and Gulf of Mexico coasts of Florida, with the bulk of the nesting occurring on the Atlantic coast of Florida.

On November 16, 2007, the NMFS received a petition from Ocean and the Center for Biological Diversity requesting that loggerhead turtles in the western North Atlantic Ocean be reclassified as a Distinct Population Segment (DPS) with endangered status and that critical habitat be designated. On March 08, 2008, the NMFS position finding was published in the Federal Register indicating that a re-classification of the loggerhead in the western North Atlantic Ocean as a DPS and listing of the DPS as endangered may be warranted (73 FR 11849).

NMFS and U.S. Fish and Wildlife Service (USFWS; Services) completed a joint review of the species status, resulting in an updated Status Review in November 2009 (Conant et al. 2009). The status review included a discussion of the species physical appearance, taxonomy, distribution and habitat. It also included an assessment of the population status of the species, determined that there are nine separate DPSs of loggerhead turtles globally. They assessed the risk of extinction of each DPS and determined that based on the threats to the DPS, its likelihood that each DPS would reach critical risk threshold for extinction within 100 years. Six critical assessment elements were considered and quantified in this assessment: (1) abundance; (2) population growth rate or productivity; (3) spatial structure; (4) diversity / resilience; (5) threats; and (6) conservation efforts. The results of this analysis are incorporated by reference and not repeated in this document.

A proposed rule to divide loggerhead turtles into nine DPS was published in 2010 (75 FR 12598). A September 2011 Final Rule, uplisted five DPS of loggerhead from threatened to endangered. The western North Atlantic DPS was not uplisted, and remains as threatened under the ESA (76 FR 58868).

The Recovery Plan for the Northwest Atlantic Population of the Loggerhead Sea Turtle (NMFS and FWS 2008) recognized five recovery units (subpopulations) of loggerhead turtles within the Northwest Atlantic:

1. Northern Recovery Unit (southern VA through FL/GA border)
2. Peninsular Florida Recovery Unit (FL/GA border through Pinellas County, FL)
3. Dry Tortugas Recovery Unit (islands located west of Key West, FL)
4. Northern Gulf of Mexico Recovery Unit (Franklin County, FL, through TX)

5. Greater Caribbean Recovery Unit (Mexico through French Guiana, The Bahamas, Lesser Antilles, and Greater Antilles) (GCRU) which includes Puerto Rico.

In the 2008 recovery plan for loggerhead sea turtles, NMFS and USFWS state:

The Greater Caribbean Recovery Unit is composed of all other nesting assemblages of loggerheads within the Greater Caribbean. Statistically valid analyses of long-term nesting trends for the entire GCRU are not available because there are few long-term standardized nesting surveys representative of the region. Additionally, changing survey effort at monitored beaches and scattered and low-level nesting by loggerheads at many locations currently precludes comprehensive analyses. The most complete data are from Quintana Roo, Yucatán, Mexico, where an increasing trend was reported over a 15-year period from 1987-2001. However, nesting since 2001 has declined and the previously reported increasing trend appears not to have been sustained (Julio Zurita, personal communication, 2006). Other smaller nesting populations have experienced declines over the past few decades (e.g., Amorochio 2003).

The GCRU is part of the Northwest Atlantic Ocean DPS, however, as part of the 2009 status review, the Services did not provide a specific population status for this recovery unit. The entire DPS was maintained as a threatened species, with the greatest threats resulting from fishery bycatch in neritic and oceanic habitats (Conant et al. 2009).

Critical Habitat

Critical habitat has not been designated by the NMFS for loggerhead sea turtles in the project area.

Hawksbill Sea Turtle - *Eretmochelys imbricata*



Figure 14 – Hawksbill sea turtle (<https://haydensanimalfacts.com/2016/06/27/5-interesting-facts-about-hawksbill-turtles/>; accessed 7/13/2017)

The hawksbill turtle was listed as endangered under the precursor of the ESA on June 2, 1970 and remains endangered under the current Act. The hawksbill is a medium-sized sea turtle, with adults in the Caribbean ranging in size from approximately 62.5 to 94.0 cm straight carapace length. The species occurs in all ocean basins, although it is

relatively rare in the Eastern Atlantic and Eastern Pacific, and absent from the Mediterranean Sea. Hawksbills are the most tropical of the marine turtles, ranging from approximately 30°N to 30°S latitude. They are closely associated with coral reefs and other hard-bottom habitats, but they are also found in other habitats including inlets, bays and coastal lagoons (NMFS and USFWS, 1993). There are five regional nesting populations with more than 1,000 females nesting annually. These populations are in the Seychelles, Mexico, Indonesia, and two in Australia (Meylan and Donnelly, 1999). There has been a global population decline of over 80 percent during the last three generations (105 years) (Meylan and Donnelly, 1999). Hawksbill turtles are known to forage throughout the coastal areas surrounding Puerto Rico. Juvenile sea turtles live in coral reef and seagrass habitats and remain there until they reach sexual maturity (Limpus, 1990; Frazer et al., 1994; USGS, 1998).

The Services completed a joint review of the species status in June 2013, (NMFS and USFWS 2013). The status review included a discussion of the species biology, physical appearance, taxonomy, distribution and habitat. The results of this analysis are incorporated by reference and not repeated in this document.

Population Dynamics and Status

Estimates of the annual number of nests at hawksbill sea turtle nesting sites are of the order of hundreds to a few thousand. Nesting within the southeastern United States and U.S. Caribbean is restricted to Puerto Rico (>650 nests/year), the USVI (~400 nests/year), and, rarely, Florida (0-4 nests/year) (Meylan, 1999; Florida Fish and Wildlife Conservation Commission; Florida Marine Research Institute's Statewide Nesting Beach Survey data 2002). At the two principal nesting beaches in the U.S. Caribbean where long-term monitoring has been carried out, populations appear to be increasing (Mona Island, Puerto Rico) or stable (Buck Island Reef National Monument, St. Croix, USVI) (Meylan, 1999).

Threats

The main threats to hawksbill turtles include habitat loss, habitat degradation, fishery interactions, and poaching in some parts of their range. There continues to be a black market for hawksbill shell products ("tortoiseshell"), which likely contributes to the harvest of this species.

Critical Habitat

On 2 September 1998, NMFS published the final rule for critical habitat designation for the hawksbill sea turtle (63 FR 46693). The geographic limits of critical habitat, designated by NMFS as habitat necessary for the continued survival and recovery of Hawksbill turtles in the region, includes waters extending seaward 3 nautical miles (5.6 km) from the mean high water line of Mona and Monito Islands, Puerto Rico. Mona Island lies approximately 39 nautical miles (72 km) west of the southwest coast of mainland Puerto Rico and is not in the project area.

Green Sea Turtle - *Chelonia mydas*



Figure 15 - Green sea turtle

(http://www.nmfs.noaa.gov/pr/images/turtles/green_bruckner_hires_noaa.jpg; accessed 7/13/2017)

The green turtle was listed under the ESA on July 28, 1978. Breeding populations of the green turtle in Florida and along the Pacific Coast of Mexico were listed as endangered; all other populations were listed as threatened. The nesting range of the green sea turtles in the southeastern U.S. includes sandy beaches of mainland shores, barrier islands, coral islands, and volcanic islands between Texas and North Carolina, the USVI and Puerto Rico (NMFS and USFWS, 1991b). Principal U.S. nesting areas for green sea turtles are in eastern Florida, predominantly Brevard through Broward counties (Ehrhart and Witherington, 1992). Green sea turtle nesting also occurs regularly on St. Croix, USVI, and on Vieques, Culebra, Mona, and the main island of Puerto Rico (Mackay and Rebholz, 1996).

NMFS completed a status review of the green sea turtle under the ESA in March 2015 (Seminoff et al. 2015). The status review included a discussion of the species physical appearance, taxonomy, distribution and habitat. The review included an assessment of the population status of the species, determined that there are 11 separate DPS of green turtles globally. They assessed the risk of extinction of each DPS and determined that based on the threats to the DPS, its likelihood that each DPS would reach critical risk threshold for extinction within 100 years. Six critical assessment elements were considered and quantified in this assessment: (1) abundance; (2) population growth rate or productivity; (3) spatial structure; (4) diversity / resilience; (5) threats; and (6) conservation efforts.

In March 2015, the Services proposed to list 11 DPSs of green sea turtles as either endangered or threatened under the ESA (80 FR 15271). In April 2016, they finalized the listing of the 11 DPSs, eight as threatened and three as endangered (81 FR 20058). The green sea turtles found in the project area are part of the North Atlantic DPS and are classified as threatened under the ESA. The analysis conducted by Seminoff et al. (2015) for the North Atlantic DPS is incorporated by reference and will not be repeated here.

Green turtles are known to forage throughout the coastal areas surrounding Puerto Rico. Juvenile sea turtles live in coral reef and seagrass habitats and remain there until they reach sexual maturity (Limpus, 1990; Frazer et al., 1994).

Critical Habitat

On 2 September 1998, NMFS published the final rule for critical habitat designation for the green sea turtle (63 FR 46693). The geographic limits of critical habitat, designated by the NMFS as habitat necessary for the continued survival and recovery of green turtles in the region, includes the waters surrounding Culebra, Mona, and Monito Islands, Puerto Rico extending seaward 3 nm (5.6 km) from the mean high water line of Culebra Island, Puerto Rico. The designation includes Culebra's outlying Keys (Cayo Norte, Cayo Ballena, Cayos Geniquí, Isla Culebrita, Arrecife Culebrita, Cayo de Luis Peña, Las Hermanas, El Mono, Cayo Lobo, Cayo Lobito, Cayo Botijuela, Alcarraza, Los Gemelos, and Piedra Steven). Culebra Island lies approximately 16 nm (29.7 km) east of the northeast coast of mainland Puerto Rico and is not in the project area.

Corals

The ESA defines a species as "any subspecies of fish or wildlife or plants, and any distinct population segment of any species or vertebrate fish or wildlife which interbreeds when mature." The Act specifically limits a species to a population of a vertebrate fish or wildlife. A DPS is the smallest division of a taxonomic species permitted to be protected under the ESA. Three elements are considered in a decision regarding the status of a possible DPS as endangered or threatened under the Act. These are applied similarly for addition to the lists of endangered and threatened wildlife and plants, reclassification, and removal from the lists:

1. *Discreteness* of the population segment in relation to the remainder of the species to which it belongs;
2. The *significance* of the population segment to the species to which it belongs; and
3. The population segment's conservation *status* in relation to the Act's standards for listing (i.e., is the population segment, when treated as if it were a species, endangered or threatened?).

In their final Rulemaking for DPS' [61 FR 4722, Feb 7, 1996], NMFS and USFWS address the following comment, "*The authority to address DPS' should be extended to plant and invertebrate species.*" And the response offered states, "*The Services recognize the inconsistency of allowing only vertebrate species to be addressed at the level of DPS, and the findings of the NRC committee also noted that such recognition would be appropriate for other species. Nevertheless, the Act is perfectly clear and unambiguous in limiting this authority. This policy acknowledges the specific limitations imposed by the Act on the definition of "species."*

All of the corals discussed in this consultation are invertebrates and their status must be assessed throughout the entirety of their range. In addition, this information must be the basis on which a jeopardy determination is made.

All seven of the listed corals are found in the Caribbean and have the potential to be found on the hardbottom habitats near and surrounding the entrance to San Juan Harbor, as all seven have been documented on the island. A significant review of the life history for all seven species is included in the 2012 NMFS status review for the proposed species and is cited as “Brainard, *et al* 2011” and is incorporated by reference.

Staghorn and Elkhorn Corals

Staghorn (*Acropora cervicornis*) and Elkhorn (*Acropora palmata*) corals were listed as threatened under the ESA on May 9, 2006, (71 FR 26852) based on a status review completed by NMFS in March 2005 (70 FR13151). NMFS published a “4D” rule for these *Acropora* species on October 29, 2008 (73 FR 64264) providing a list of activities that would result in “take” as defined by the ESA. NMFS completed a recovery plan for the species in March 2015.

Staghorn coral - *Acropora cervicornis*



Figure 16 - Final Report for the 30-Day Post-Relocation Monitoring Survey for *Acropora cervicornis* Associated with the Miami Harbor Construction Dredging (Phase 3) Project; Figure 4

A review of the range-wide status of *Acropora cervicornis* is included in the “Atlantic Acropora Status Review (ABRT 2005) and is incorporated here by reference.

In the proposed rule for the new corals, NMFS also proposed to uplist *A. cervicornis* from threatened to endangered (NMFS 2012). However, in the final rule (NMFS 2014a), NMFS found that based on the species “*spatial and demographic traits to moderate or exacerbate its vulnerability to extinction...*” Additionally:

*Although localized mortality events have continued to occur, percent benthic cover and proportion of reefs where *A. cervicornis* is dominant have remained stable over its range since the mid-1980s.*

Its absolute population abundance has been estimated as at least tens of millions of colonies in the Florida Keys and Dry Tortugas combined and is higher than the estimate from these two locations due to the occurrence of the species in many other areas throughout its range... Its abundance and life history characteristics, combined with spatial variability in ocean warming and acidification across the species' range, moderate vulnerability to extinction because the threats are non-uniform, and there will likely be a large number of colonies that are either not exposed or do not negatively respond to a threat at any given point in time.

Acropora cervicornis is distributed throughout the Caribbean, in the southwestern Gulf of Mexico, and in the western Atlantic.

There is no evidence of range constriction, though loss of Acropora cervicornis at the reef level has occurred (Acropora Biological Review Team, 2005).

Veron (2014) confirms the presence of Acropora cervicornis in seven out of a potential 11 ecoregions in the western Atlantic and greater Caribbean that are known to contain corals. The four ecoregions in which it is not found are the Flower Garden Banks and off the coasts of Bermuda, Brazil, and the southeast U.S. north of south Florida.

Acropora cervicornis was observed in 21 out of 301 stations between 2011 and 2013 in stratified random surveys designed to detect Acropora colonies along the south, southeast, southwest, and west coasts of Puerto Rico, and it was observed at an additional 16 sites outside of the surveyed area (García Sais et al., 2013). The largest colony was 60 cm, and density ranged from 1 to 10 colonies per 15 m² (García Sais et al., 2013).

Across the Caribbean, percent cover appears to have remained relatively stable since the population crash in the 1980s.

Supplemental information we found on Acropora cervicornis abundance and population trends includes the following. Acropora cervicornis was observed in 21 out of 301 stations between 2011 and 2013 in stratified random surveys designed to detect Acropora colonies along the south, southeast, southwest, and west coasts of Puerto Rico, and it was observed at an additional 16 sites outside of the surveyed area (García Sais et al., 2013).

New information we found on population trends includes the following. A report on the status and trends of Caribbean corals over the last century indicates that cover of Acropora cervicornis has remained relatively stable (though much reduced) throughout the region since the large mortality events of the 1970s and 1980s. The frequency of reefs at which Acropora cervicornis was described as the dominant coral has remained stable.

Based on all of this information, NMFS chose not to uplist the species to endangered.

Site specific coral surveys have not been completed. Much of the area is inhospitable to divers due to strong currents and high wave conditions. This is particularly true at the eastern and western sides of the outer entrance channel. The Corps was unable to locate coral survey documents for the general project area.

Elkhorn coral - *Acropora Palmata*



Figure 17 - *Acropora Palmata* at Isla Verde Marine Reserve. 2016 Annual Report

A review of the rangewide status of *Acropora palmata* is included in the “Atlantic Acropora Status Review (ABRT 2005)” and is incorporated here by reference.

In the proposed rule for the new corals, NMFS also proposed to uplist *A. palmata* from threatened to endangered (NMFS 2012). However, in the final rule (NMFS 2014a), NMFS found that based on the species “*spatial and demographic traits to moderate or exacerbate its vulnerability to extinction...*” Additionally:

Acropora palmata is distributed throughout the western Atlantic, Caribbean, and Gulf of Mexico. The northern extent of the range in the Atlantic is Broward County, Florida where it is relatively rare (only a few known colonies), but fossil *A. palmata* reef framework extends into Palm Beach County, Florida. There are two known colonies of *A. palmata*, which were discovered only recently in 2003 and 2005, at the Flower Garden Banks, located 161 km off the coast of Texas in the Gulf of Mexico (Zimmer et al., 2006).

There is no evidence of overall range constriction from the mass mortalities, but local extirpations are likely (Jackson et al., 2014), resulting in a reduction of absolute range size.

*Veron (2014) confirms the occurrence of *A. palmata* in eight of a potential 11 ecoregions in the western Atlantic and wider-Caribbean that are known to*

contain corals. The three ecoregions in which A. palmata is not found are off the coasts of Bermuda, Brazil, and the southeast U.S. north of south Florida.

Puerto Rico contains the greatest known extent of A. palmata in the U.S. Caribbean. Between 2006 and 2007, a survey of 431 random points in habitat suitable for A. palmata in six marine protected areas in Puerto Rico revealed a variable density of zero to 52 A. palmata colonies per 100 m² (0.52 colonies per m²), with average density of 3.3 colonies per 100 m² (0.03 colonies per m²). Total loss of A. palmata was evidenced in 13.6 percent of the random survey areas where only dead standing colonies were present (Schärer et al., 2009).

In stratified random surveys along the south, southeast, southwest, and west coasts of Puerto Rico designed to locate Acropora colonies, A. palmata was observed at five out of 301 stations with sightings outside of the survey area at an additional two stations (García Sais et al., 2013). Acropora palmata colonies were absent from survey sites along the southeast coast. Maximum density was 18 colonies per 15 m² (1.2 colonies per m²), and maximum colony size was 2.3 in diameter (García Sais et al., 2013).

Several studies describe A. palmata populations that are showing some signs of recovery or are in good condition including in the Turks and Caicos Islands (Schelten et al., 2006), U.S. Virgin Islands (Grober-Dunsmore et al., 2006; Mayor et al., 2006; Rogers and Muller, 2012), Venezuela (Zubillaga et al., 2008), and Belize (Macintyre and Toscano, 2007).

Extrapolated population estimates of A. palmata from stratified random samples across habitat types in the Florida Keys were 0.6 ± 0.5 million (SE) colonies in 2005, 1.0 ± 0.3 million (SE) colonies in 2007, and 0.5 ± 0.3 million colonies in 2012. Because these population estimates are based on random sampling, differences between years may be a function of sampling effort rather than an indication of population trends.

Based on all of this information, NMFS chose not to uplist the species to endangered. It is known that *Acropora palmata* is located as close as one mile to the east of the entrance channel at the Isla Verde Marine Reserve. There are no known records of the species on the reef habitat to the west, which is high energy reef environment.

Critical Habitat

On November 26, 2008, NMFS published a final rule in the Federal Register (73 FR 72210) to designate critical habitat for elkhorn and staghorn corals. Four specific areas were designated, including: the Florida unit (approximately 1,329 square miles of marine habitat); the Puerto Rico unit (approximately 1,383 square miles of marine habitat) (Figure 18); the St. John/St. Thomas unit (approximately 121 square miles of marine habitat); and the St. Croix unit (approximately 126 square miles of marine habitat).

Puerto Rico Area: All areas surrounding the islands of the Commonwealth of Puerto Rico, 98 ft (30 m) in depth and shallower, seaward of the COLREGS line (see 33 CFR 80.738).

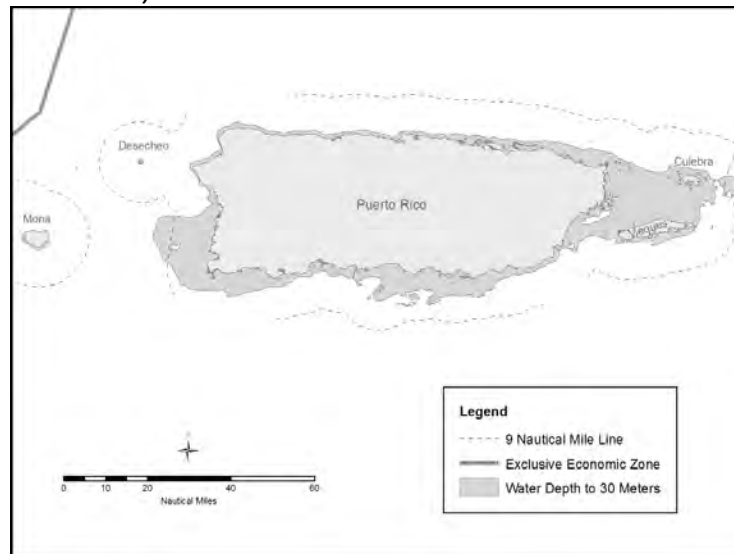


Figure 18 - Puerto Rico Area of Designated Critical Habitat for *Acropora* sp.

33 CFR 80.738 states:

(a) Except inside lines specifically described in this section, the 72 COLREGS shall apply on all other bays, harbors and lagoons of Puerto Rico and the U.S. Virgin Islands.

(b) A line drawn from Puerto San Juan Light to position 18°28.5' N., 066°08.4' W, at the northwest extent of Isla de Cabras across the entrance of San Juan Harbor.

This means that the portion of the harbor that is inside San Juan Bay is not DCH for *Acropora* species. Additionally, NMFS has excluded “federally authorized and constructed channels and harbors” from designation as critical habitat. SJH is included in this exclusion.

NMFS has defined *Acropora* sp. critical habitat to be “*substrate of suitable quality and availability*” equivalent to consolidated hardbottom or dead coral skeleton that is free from fleshy macroalgae cover and sediment cover. (NMFS 2008b). Based on the status

review and final critical habitat designation, NMFS has determined that any hardground habitat located in the Puerto Rico in waters less than 30 meters deep, beyond the COLREGS line (outside of the harbor entrance) have the potential to support either of the *Acropora* species (NMFS 2005). The final critical habitat determination identifies that the primary constituent elements (PCEs) for the continued survival of Acroporid species (NMFS 2008b). The closest hardbottom/reef habitat that may have the necessary PCEs is 1,700 feet to the west of the channel, denoted by the orange arrow (Figure 19).



Figure 19 - Mapped hardbottom and reef habitat in the vicinity of the San Juan Harbor- the yellow line is the COLREGS line. Habitats inside the line within the bay are not considered critical habitat for *Acropora* spp.

NOAA 2001 Benthic Habitat Classification System shows an area of colonized pavement on the western side of the channel (the light green); and linear reef/reef crest in the dark grey (Figure 20). The target on the light green is a sample site # 19 from Zimmerman et al. (1980) (Figure 21 and Figure 22), which lists that habitat as sand and rubble. Sand and rubble are not characteristic of colonize pavement. The NOAA dataset is based on remotely sensed imagery that is then classified into different habitats by visual inspection of the imagery, followed by ground validation of some areas utilizing underwater video, free diving, snorkeling and surface observations. The final product went through peer review prior to finalization (NOAA 2012). It is unknown if NOAA did

field verification of the habitats near Isla de Cabras. There are some areas of Isla de Cabras may accessible by divers, but internet searches has not led to any photos or video of dives conducted on those habitats. Historic aerial photographs from 1994 to 2017, available on Google Earth, show that this area is a high energy area with significant wave action, which may limit the ability for divers to survey.

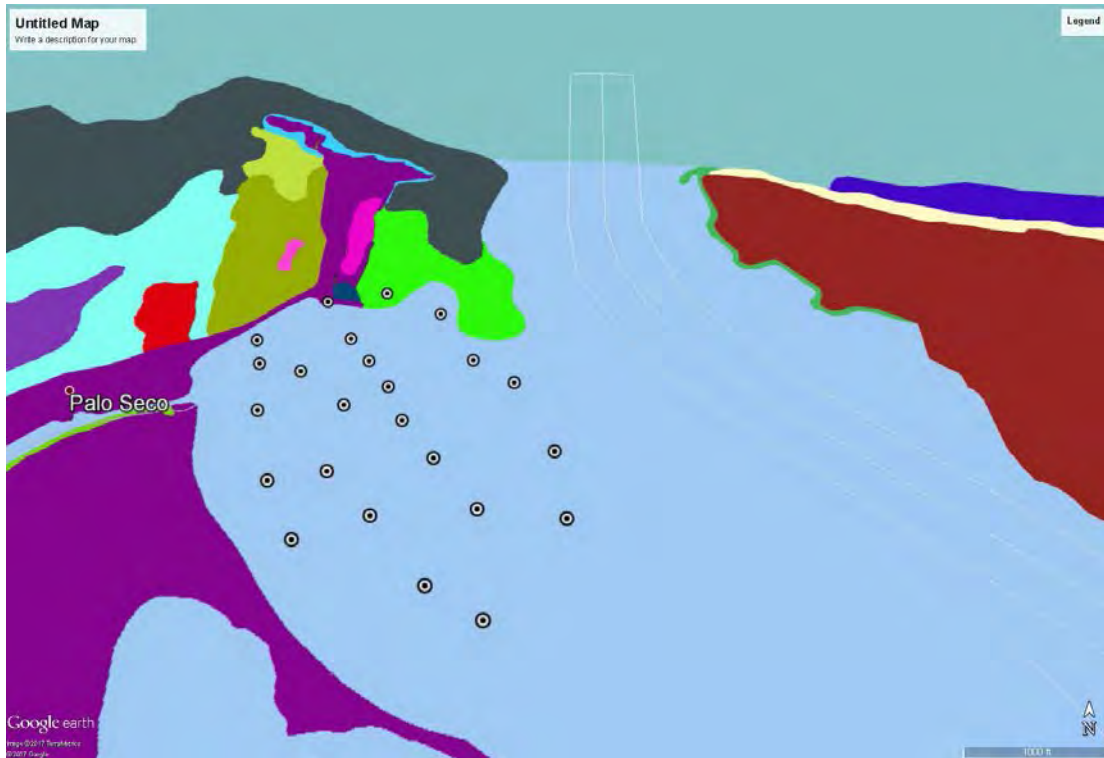


Figure 20 - NOAA 2001 Habitat Classification Layer of San Juan Harbor Entrance Channel

Additional review of existing benthic surveys conducted by Zimmerman et al. (1980) demonstrate that a significant area east of the channel is sand, shell and rubble with very limited exposed rock for corals to colonize (Figure 21 and Figure 22). The Corps is unaware of any additional benthic surveys in the project area.

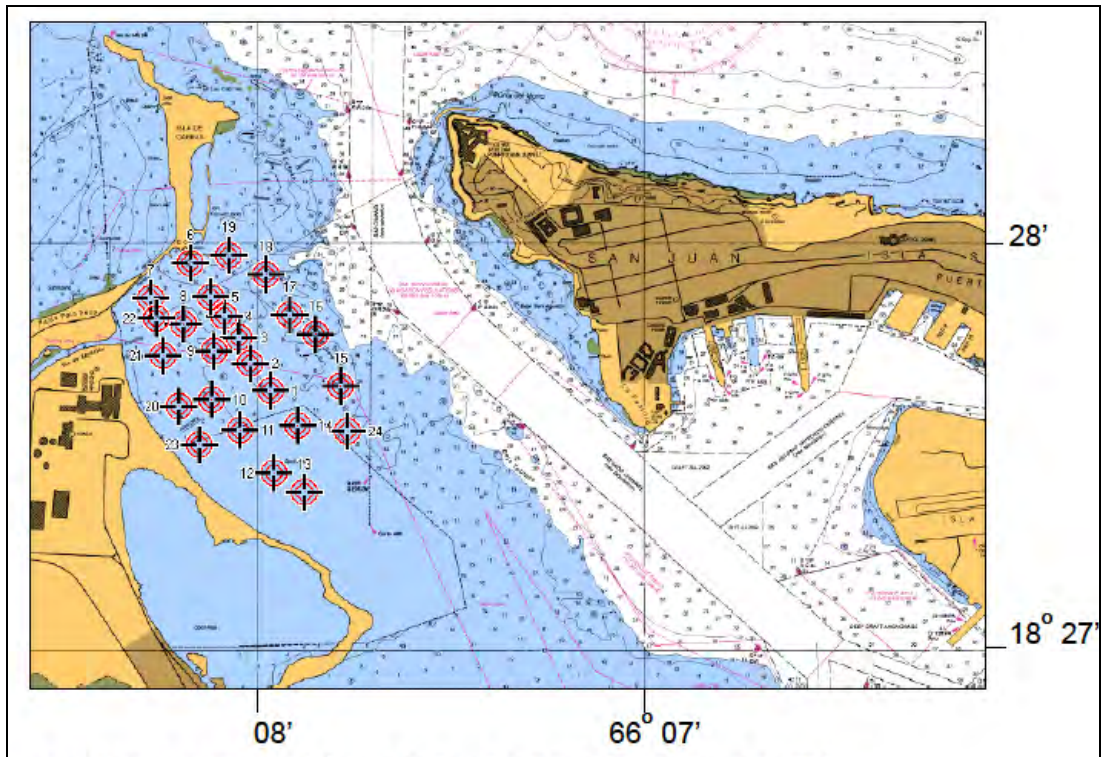


Figure 21 - Substrate type station locations for Western San Juan Bay from Zimmerman *et al.* 1980

Appendix I. Zimmerman, *et al.*, 1980 substrate data.

Benthic substrate in Western San Juan Bay compiled from Fig. 12 in Zimmerman, *et al.*, 1980. Geographic position in degrees and decimal degrees.

Station	Latitude N	Longitude W	Bottom substrate
1	18.460628	66.132743	Sand
2	18.461763	66.133646	Sand/Rubble
3	18.462841	66.13413	Sand/Shell
4	18.463709	66.134756	Rubble
5	18.464494	66.135359	Shell/Sand
6	18.46588	66.136226	Sand
7	18.464448	66.13793	Sand
8	18.463359	66.136526	Sand/Shell
9	18.462248	66.135205	Sand/Shell
10	18.460249	66.135308	Rock
11	18.459033	66.134089	Sand
12	18.457278	66.132628	Sand
13	18.456479	66.131293	Mud/Rock
14	18.459203	66.131582	Sand/Shell
15	18.460823	66.129756	Sand
16	18.462977	66.130828	Rubble
17	18.463736	66.131954	Rubble
18	18.465411	66.132973	Rubble
19	18.466208	66.13458	Sand/Rubble
20	18.459986	66.136703	Sand/Shell
21	18.462081	66.137397	Sand/Rock
22	18.463618	66.137682	Sand/Shell
23	18.458413	66.135811	Sand/Shell
24	18.458953	66.129464	Rubble

Figure 22 - Substrate Data - Zimmerman *et al.*, 1980; From NMFS 2016

Newly Listed Corals

“Biology and Ecology of Puerto Rican Coral Reefs” (Ballantine et al. 2008) provides a list of 69 shallow-water scleractinian corals that are known to be in Puerto Rican waters, including all five of the newly listed corals. In general, the northern coast reefs are:

...dominated by macroalgae, with low abundances of scleractinian corals (1-5% cover) such as Porities asteroides, Dichocoenia stokesii, Diploria strigosa, D. clivosa, Meandrina meandrites, Oculina diffusa and Cladocora arbuscula. Large oceanic swells are undoubtedly a major causal factor.... In addition, Kaye (1959) attributes the absence of coral reefs to the lack of platforms raised above the bottom indicating that smothering of sessile fauna by wave-related sediment transport (bedload) is a contributing factor.... The high levels of sediment are demonstrated in aerial photographs of the harbor and surrounding area.

Examples of this large sediment load are seen during rain events where large amounts of terrigenous sediments enter San Juan bay and surrounding waters (Figure 23) from the large flood control project located in the embayment to the west of the harbor, and from the Rio de Bayamon on the west side of the harbor, south of Isla de Cabras.



Figure 23 - October 2004 Aerial Photo of Sediment Input to Marine Environment from Upland Sources (Google Earth).

Although the newly listed species are not included in the list provided by Ballantine et al. (2008) for northern coral species, this does not limit the species of stony coral found on the northern shore of Puerto Rico, and may include the five newly listed species.

Pillar coral - *Dendrogyra cylindrus*



Figure 24 - Brainard et al. 2011. Figure 6.3.2

Based on available data sources documenting corals, *Dendrogyra* is assumed to be in Puerto Rico and thus may be in the project area.

As stated in Brainard et al. (2011)

Dendrogyra cylindrus “is restricted to the west Atlantic where it is present throughout the greater Caribbean but is one of the Caribbean genera absent from the southwest Gulf of Mexico (Tunnell, 1988). A single known colony in Bermuda is reported to be in poor condition (T. Murdoch, Bermuda Zoological Society, Flatts, pers. comm, May 2010).... U.S. Distribution *Dendrogyra cylindrus* has been reported in the waters of south Florida and the U.S. Caribbean but appears to be absent from the Flower Garden Banks. Within federally protected U.S. waters, the species has been recorded from the following areas:

- Florida Keys National Marine Sanctuary
- Navassa National Wildlife Refuge
- Dry Tortugas National Park
- Virgin Islands National Park/Monument
- Biscayne National Park NPS
- Buck Island National Monument

Dendrogyra cylindrus is reported to be uncommon but conspicuous (Veron 2000) with isolated colonies scattered across a range of habitat types. Colonies are often known as landmarks by local divers. Overall colony density throughout south Florida was estimated to be ~ 0.6 colonies per 10 m² (Wagner et al. 2010)....”

Mountainous star coral - *Orbicella faveolata* (formerly *Montastraea*)



Figure 25 - Brainard et al. 2011. Figure 6.5.1

Based on available data sources documenting corals, *Orbicella faveolata* is assumed to be in Puerto Rico and thus may be in the project area.

As stated in Brainard et al (2011):

Montastraea faveolata "occurs throughout the Caribbean, including Bahamas, Flower Garden Banks and the entire Caribbean coastline, but there are no records from Bermuda. S. dePutron (Bermuda Institute of Ocean Sciences, St. George's. pers. comm., May 2010) confirmed the presence of *Montastraea faveolata* in Bermuda and categorized its abundance as common. T. Murdoch (Bermuda Zoological Society, Flatts. pers. comm., May 2010) also confirmed its occurrence but listed it as rare and added that it has probably suffered a substantial loss from the 1995 yellow-band outbreak...."

Montastraea faveolata is common throughout the U.S. waters of the west Atlantic and greater Caribbean region and is present within federally protected waters, including:

- Flower Garden Banks National Marine Sanctuary
- Florida Keys National Marine Sanctuary
- Dry Tortugas National Park
- Virgin Island National Park/Monument
- Biscayne National Park
- Navassa Island National Wildlife Refuge
- Buck Island Reef National Monument

Abundance for this species (as well as *franksi* and *annularis*) are lumped together as the three species were previously thought to be one species (*Montastrea annularis*) and were reported as such (pg 123-124). Locations for all three species include: Florida; USVI; Curacao; Belize; Columbia; Puerto Rico "The *Montastraea*

annularis complex has historically been a dominant species on Caribbean coral reefs, characterizing the so-called “buttress zone” and “*annularis* zone” in the classical descriptions of Caribbean reefs (Goreau, 1959)."

Lobed star coral - *Orbicella annularis* (formerly *Montastraea*)



Figure 26 - Brainard et al 2011. Figure 6.5.7

Based on available data sources documenting corals, *Orbicella annularis* is assumed to be in Puerto Rico and thus may be in the project area.

As stated in Brainard et al (2011):

Montastrea annularis (now *Orbicella*) "has a range restricted to the west Atlantic. It can be found throughout the Caribbean, Bahamas, and Flower Garden Banks (Veron, 2000, IUCN), but may be absent from Bermuda (Weil and Knowton, 1994). S. dePutron (Bermuda Institute of Ocean Sciences, St. George's. pers. comm., May 2010) confirmed the presence of *Montastraea annularis* in Bermuda and categorized its abundance as rare; T. Murdoch (Bermuda Zoological Society, Flatts, pers. comm., May 2010) had not seen this species in Bermuda.

U.S. Distribution

Montastraea annularis is common throughout U.S. waters of the west Atlantic and greater Caribbean, including Florida and the Gulf of Mexico, within its range including federally protected waters in the following areas:

- Flower Garden Bank Sanctuary
- Dry Tortugas National Park
- Virgin Island National Park/Monument
- Biscayne National Park
- Florida Keys National Marine Sanctuary
- Navassa National Wildlife Refuge
- Buck Island Reef National Monument

Boulder star coral - *Orbicella franksi* (formerly *Montastraea*)



Figure 27 - Brainard et al 2011. Figure 6.5.4

Based on available data sources documenting corals, *Orbicella franksi* is assumed to be in Puerto Rico and thus may be in the project area.

As stated in Brainard et al (2011):

Montastraea franksi “has been reported as common (Veron, 2000).

Also, see previous discussion for *M. faveolata*.

Rough cactus coral - *Mycetophyllia ferox*



Figure 28 - Brainard et al 2011. Figure 6.2.1

Based on available data sources documenting corals, *Mycetophyllia ferox* is assumed to be in Puerto Rico and thus may be in the project area.

As stated in Brainard et al (2011):

Mycetophyllia ferox "has been reported to occur throughout most of the Caribbean, including the Bahamas, but it is not present in the Flower Garden Banks or around the waters of Bermuda....The U.S. distribution according to both the IUCN Species Account and the CITES species database, *Mycetophyllia ferox* occurs throughout the U.S. waters of the western Atlantic but has not been reported from Flower Garden Banks (Hickerson et al., 2008). Within federally protected waters, *Mycetophyllia ferox* has been recorded from the following areas:

- Dry Tortugas National Park
- Virgin Island National Park/Monument
- Florida Keys National Marine Sanctuary
- Navassa Island National Wildlife Refuge
- Biscayne National Park
- Buck Island Reef National Monument"

This species is found throughout the Caribbean, usually about 1% of all the coral species found in the papers cited in the document."

4D Rulemaking

The final listing of the five coral species took effect on October 10, 2014 (NMFS 2014a) and does not include any take prohibitions. Until such time as NMFS promulgates a "4d" rule, taking of these five species of corals is not a prohibited action under the Act. As a result of the wide ranging distribution of the five newly listed species found in the project area, as well as NMFS' recent determination that although the five new species did require protection under the ESA, they did not require immediate prohibition of take (79 FR 53853). Specifically, NMFS states:

The ESA take prohibitions only apply to endangered species immediately upon listing. No species in this final rule are being listed as endangered; therefore, we do not define activities that may result in take in this final rule, because take is not automatically prohibited for threatened species. Should we deem it necessary and advisable that extending any of the ESA section 9 prohibitions, including take prohibitions, is necessary for the conservation of any of the newly-list threatened coral, we will do so in a subsequent rule-making.

As previously stated, there is a 4D rule for the *Acropora* species.

Critical Habitat

NMFS has not proposed DCH for any of the newly listed coral species.

Effects of the Action

Sea Turtles

Green and hawksbill sea turtles have been reported in San Juan Bay, and loggerhead sea turtles from the GCRU are known to be around Puerto Rico, the potential exists for all three species to be in the action area during project construction activities.

Entrainment in Dredging Equipment

Entrainment of bottom dwelling animals is a possibility for hopper dredges performing dredging in support of the SJH Navigation Improvement Study. The effects of sea turtle entrainment by hopper dredges have been well documented by the Corps over the last few decades. The effects of hopper dredging resulting from entrainment have been thoroughly described in past consultation documents including the 2008 South Atlantic Regional Biological Assessment provided to NMFS for the reinitiation of consultation for the 1997 SARBO (Appendix A1, Section 4.02.1.1 – pages 122-129). That analysis is incorporated by reference. As stated previously, there have not been any documented takes associated with hopper dredges in San Juan Harbor in the 1999-2000 deepening project.

The Corps will include all terms and conditions for the use of hopper dredges in the 1995 and 1997 SARBOs (or any subsequent SARBO) to minimize the potential for incidental take of sea turtles by hopper dredges within the construction specifications. The conditions include the use of a rigid-draghead designed to deflect sea turtles; year-round, 100 percent observer coverage on the hopper dredges by NMFS-approved Endangered Species Observers; one-hundred percent inflow screening (with 100 percent overflow screening is recommended). If conditions prevent one hundred percent inflow screening, inflow screening can be reduced, but 100 percent outflow screening is required, and an explanation must be included in the preliminary dredging report. Preliminary dredging reports which summarize the results of the dredging and any sea turtle take must be submitted within 30 working days of completion of any given dredging project. Logs of any sea turtle injuries or deaths due to hopper dredging activities will be maintained, with immediate notification by the contractor to Corps-Jacksonville District, and NMFS. Utilization of the ODESS system to report any take associated with hopper dredging operations.

NMFS has previously determined (NMFS 1991, 1995, 1997 and 2003a as amended) that pipeline and clamshell dredges are not likely to take sea turtles:

Clamshell dredges are the least likely to adversely affect sea turtles because they are stationary and impact very small areas at a given time. Any sea turtle injured or killed by a clamshell dredge would have to be directly beneath the bucket. The chances of such an occurrence are extremely low, although a take of a live turtle by a clamshell dredge has been documented at Canaveral. On the basis of the best available information, NMFS has determined that dredging with a clamshell dredge is unlikely to result in the take of sea turtles.

...pipeline dredges are relatively stationary and only influence small areas at any given time. For a turtle to be taken with a pipeline dredge, it would have approach the cutterhead and be caught in the suction. This type of behavior would appear unlikely, but may be possible. Presently, NMFS has determined that pipeline dredges are unlikely to adversely affect sea turtles.

As part of the standard plans and specifications for the project, the Corps has agreed to implement the NMFS “Sea Turtle and Smalltooth Sawfish Construction Conditions,” (although smalltooth sawfish are not found in Puerto Rico, this is a NMFS guidance document and shall be applied where applicable).

Dredge Lighting

The Corps will also include all terms and conditions from the 1997 SARBO (or any subsequent update) regarding vessel lighting and sea turtles within the construction specifications, including the following:

From May 1 through October 31, sea turtles nesting and emergence season, all lighting aboard hopper dredges and hopper dredge pumpout barges operating within 3 nm of sea turtle nesting beaches shall be limited to the minimal lighting necessary to comply with U.S. Coast Guard and/or OSHA requirements. All non-essential lighting on the dredge and pumpout barge shall be minimized through reduction, shielding, lowering, and appropriate placement of lights to minimize illumination of the water to reduce potential disorientation effects on female sea turtles approaching the nesting beaches and sea turtle hatchlings making their way seaward from their natal beaches.

As part of this effort, the Corps conducts lighting surveys of the contractor’s dredges when they arrive on site, and require the contractor to meet all U.S. Coast Guard and/or the Occupational Health and Safety Administration requirements. This process will be adhered to for the SJH project. SJH is an active facility, offshore lighting is not an unusual feature of the area, and should not appreciably change the ambient conditions for free-swimming turtles in the vicinity of the project. In addition, all construction/dredging vessels are required to adhere to best management practices, such as preventing lights from exposure to shore through use of shields. Therefore, no adverse indirect effects to free swimming sea turtles due to lighting associated with dredging operations are anticipated for the proposed project.

Bed Leveling

Although NMFS has, on two previous occasions, made the determination that bed leveling is a cause of injurious or lethal take to sea turtles (NMFS 2003a), a detailed review, performed by the Corps, of the data from the use of bed leveling devices at Port Everglades, Port Canaveral, Miami Harbor, and Palm Beach Harbor did not support this determination (USACE 2006a, 2006b, 2006c, 2006d). After reviewing numbers and

locations of stranded turtles within a 4-mile radius of the ports' entrance channels, the dates that the strandings were recorded, and the types of injuries exhibited on the carcasses, the Corps did not find a link between bed-leveling and crushing/impact injuries on stranded sea turtles, nor did significant differences exist in stranding numbers and locations between dredging event time periods and non-dredging event time periods. Based on the detailed review of all of the information provided in these Biological Assessments, the Corps determined that the proposed use of bed-leveling devices in Port Everglades, Port Canaveral, Miami Harbor, and Palm Beach Harbor may affect, but is not likely to adversely affect listed marine turtle species within the action area. The Corps believes this analysis would also apply in SJH where turtles do not exhibit the behavior of burrowing into the bottom of navigation channels due to cold water events which makes them more susceptible to take by bed leveler or hopper dredge. NMFS has stated that use of a bed-leveler is preferred to the use of a hopper dredge for clean-up operations. Specifically, in the 2003 Gulf Regional Biological Opinion (amended in 2005 and 2007), NMFS states:

Use of bed-levelers for cleanup operations, however, is probably preferable to use of hopper dredges since turtles which are foraging/resting/brumating on irregular bottoms are probably more likely to be entrained by suction dragheads because sea turtle deflector dragheads are less effective on uneven bottoms, hopper dredges move considerably faster than bed-leveler "dredges," and bed-levelers do not use suction.

In addition, the Corps includes language in dredging contract specifications to help clarify specifications and to document bed-leveler use. This information will be crucial in fully assessing whether bed-leveling activities adversely affect sea turtle populations.

Relocation Capture Trawling

Modified shrimp trawling equipment and techniques are used to capture and relocate threatened and endangered sea turtles from hopper dredging sites. This method of sea turtle protection was originally initiated in the early 1980s at Canaveral Harbor, Florida. In 1992, relocation trawling was implemented as a potential mitigation tool for incidental take (injury or mortality) of sea turtles for additional coastal hopper dredging projects in the southeastern U.S. NMFS now recommends and authorizes take for relocation trawling during many hopper projects throughout the southeastern U.S. Relocation trawling is also a potentially hazardous undertaking for trawler crews and the species intended for protection. Other protected and non-protected organisms are also captured as by-catch and may be killed during the relocation trawling efforts; however, an assessment of trawling effects relative to by-catch has not been completed at this point in time. In light of the potential positive and negative effects of relocation trawling during hopper dredging projects, an evaluation of the effectiveness of this technique as a mitigation option was developed. Dickerson *et al.* (2007), analyzed incidental take records from endangered species observer reports, relocation trawling

reports, and hopper dredging project reports from 1995 through 2006 to evaluate the effectiveness of relocation trawling for reducing incidental take of sea turtles.

With respect to trawling and sea turtle interactions, the effects of trawling during capture and handling can result in raised levels of stressor hormones. Based on past observations obtained during similar research-trawling for turtles, these effects are expected to dissipate within a day (Stabenau and Vietti, 1999). Though turtle recaptures during trawling and relocation activities do occur, recapture rates are not frequent enough to suggest significant cumulative adverse effects. Rarely, even properly conducted relocation trawling can result in accidental sea turtle deaths. Henwood (pers. comm. to E. Hawk, NMFS-SERO, December 6, 2002) noted that trawl-captured loggerhead sea turtles died on several occasions during handling on deck during winter trawling in Canaveral Channel in the early 1980s, after short (approximately 30-minute) tow times. However, Henwood also noted that a significant number of the loggerheads captured at Canaveral during winter months appeared to be physically stressed and in "bad shape" compared to loggerheads captured in the summer months from the same site, which appeared much healthier and robust. Stressed turtles or unhealthy turtles or turtles exposed to repeated forced submergences are more likely to be injured or killed during relocation trawling than healthy turtles. In November 2002, during relocation trawling conducted in York Spit, Virginia, a Kemp's ridley sea turtle was likely struck by one of the heavy trawl doors or it may have been struck and killed by another vessel shortly before trawl net capture. The hopper dredge was not working in the area at the time (pers. comms. and e-mails, P. Bargo to E. Hawk, December 6 and 9, 2002).

According to Dickerson *et al.* (2007), based on the available data collected on relocation trawling since its conception in the 1980's, a total of 1,239 sea turtles have been relocated within the Gulf of Mexico (Total 844; Cc: 595, Lk: 172, Cm: 70, Dc: 5, Ei: 2) and Atlantic (Total 395; Cc: 312, Lk: 37, Cm: 45, Dc: 1, Ei: 0) regions combined. Furthermore, a total of 4 confirmed turtles (Cc: 2 (Navarre Beach, FL), Cm: 1 (Canaveral Harbor, FL), and Dc: 1 (Walton County / City of Destin, FL beach nourishment)) have been lethally taken by trawlers while being utilized as a mitigation option to avoid lethal hopper dredge takes, approximately one percent of relocated turtles.

Ship Strike in the Harbor

The project allows for a light loaded vessels to fully loaded vessels, and in some cases would also allow for larger ships to call. The current economic analysis does not consider this shift, and maintains the same fleet that currently calls at San Juan Harbor. By allowing the same fleet of vessels to fully load, the number of vessels calling to San Juan Harbor would be decreased by up to two calls per year and as a result, would reduce the potential for vessel strike of sea turtles to be decreased. If the fleet shifts to larger ships than those currently calling, then additional reductions in vessel calls should be expected and would also reduce the potential for ship strike. This would also reduce the potential for ship strike of listed whales outside of the harbor as well, however, as

the Corps does not have jurisdiction over commercial vessel traffic, these benefits are not claimed by the project (Figure 29).

Additionally, the deepening and widening of the channels within the harbor is expected to improve safety and navigability, reducing the potential for ship groundings and subsequent oil spills, both of which would result in adverse effects to all species under NMFS jurisdiction in the action area.

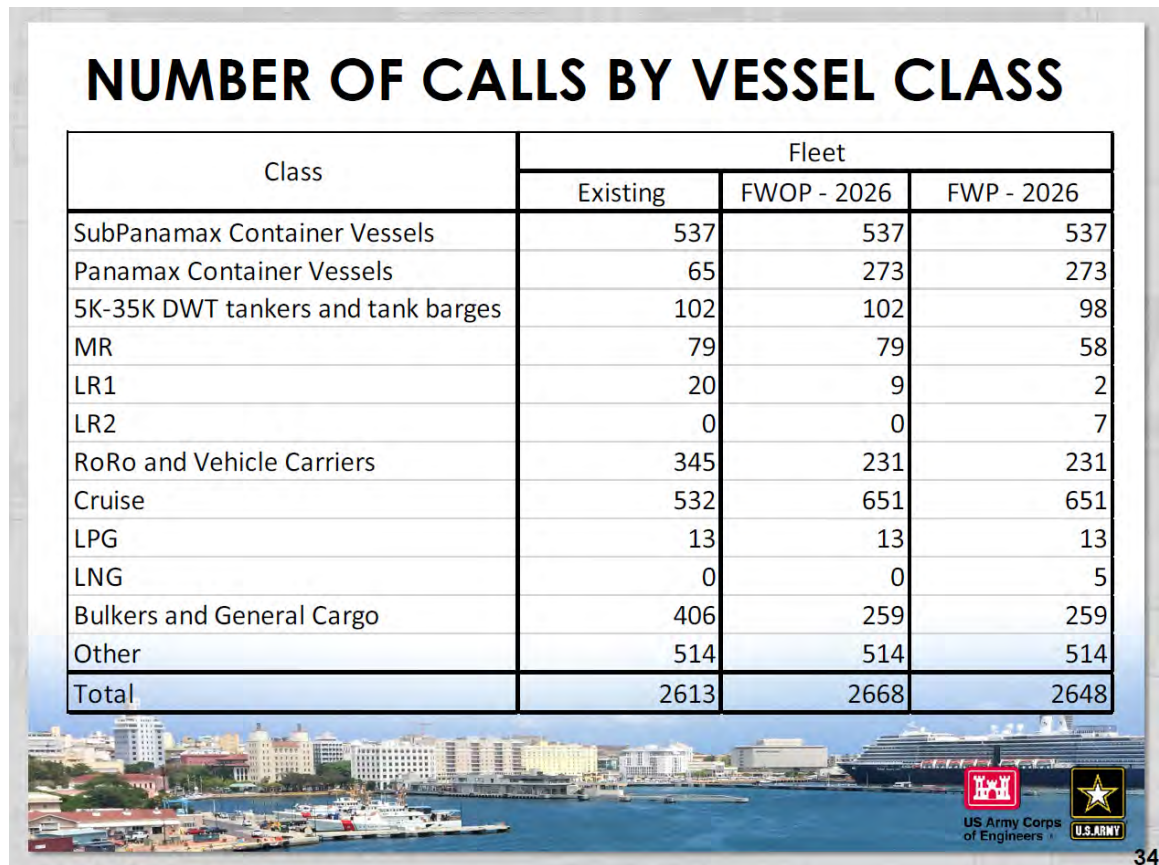


Figure 29 - Number of Vessel Calls. Existing Fleet vs Future without Project and Future with Project in 2026.

Noise

SJH has functioned as an international harbor since pre-colonial times. Over the last 300 years, SJH has evolved to accommodate the growing shipping industry as larger vessels continued to arrive. At the same time, recreational and other commercial boat traffic and industrial noise has continued to increase. Several sources of ambient noise are present in SJH. The ambient noise level of an area includes sounds from both natural (wind waves, fish, tidal currents, mammals) and artificial (commercial and recreational vessels, dredging, pile driving, etc.) sources. Tidal currents produce hydrodynamic sounds, which are most significant at very low frequencies (< 100 Hertz; Hz). Vessel traffic, including vessels passing the immediate study area, generate sounds that can travel considerable distances, in frequencies ranging from 10 to 1000Hz. Sea state (surface condition of the water characterized by wave height, period, and power) also

produces ambient sounds above 500 Hz. As a commercial and industrial area, SJH experiences a wide range of noise from a variety of industrial activities. Biological sounds associated with mammals, fishes, and invertebrates can also generate broadband noise in the frequency of 1 to 10 kilo Hz with intensities as high as 60 to 90 decibels (dB).

SJH has the typical noise characteristics of a busy harbor. Sources include recreational and commercial vessel traffic, and dock side facilities. Noise sources for vessels include cranes, whistles and various motors for propulsion. Dockside noise sources include cranes, trucks, cars, and loading and unloading equipment. In addition to the noise in the water/marine environment, noise can affect the human environment. Background noise exposures change during the course of the day in a gradual manner, which reflects the addition and subtraction of distant noise sources. Ambient noise represents the combination of all sound within a given environment at a specified time. Humans hear sound from 0-140 dB. Sound above this level is associated with pain.

As summarized in Table 2, underwater sound data were collected for several large cargo vessels and one high-speed ferry operating in Newark Bay, New Jersey and New York Harbor (Reine et al. 2014). The source level (SL) for the high speed ferry was 181 dB re 1 μ Pa-1m (which is the acoustic pressure at one meter from a point source). For four cargo ships transiting the harbor, SLs ranged from 179 to nearly 183 dB re 1 μ Pa-1m. One fully loaded cargo ship being pulled from its mooring by two large tugs produced an SL of 188.9 dB re 1 μ Pa-1m.

Table 2 - Reported Noise for Vessels in New York Harbor (Reine et al 2014)

Ship name/Type	Reported Noise Levels (re 1 μ Pa-1m)
Staten Island Ferry	180.2
<i>NYK Constellation (dry cargo container)</i>	181.3 dB
<i>Maersk Idaho (bulk carrier)</i>	188.9 dB
<i>CSAV Licanten (cargo vessel)</i>	133.76 dB
<i>Zim Savannah (container ship)</i>	179.3 dB.

Acoustic impact criteria and thresholds for sea turtles were developed in cooperation with NMFS for sea turtle exposures to various sound sources. NMFS prepared an analysis for pile driving activities in the Florida Keys (NMFS 2014b) developing threshold values for onset of injury to sea turtles due to impact pile driving is 206 dB re 1 μ Pa sound pressure level root mean square (RMS) or 187 dB for a single pile driver pulse, whichever is larger. Noise levels that result in changes in behavior is 160 dB (RMS). This criteria was developed in cooperation with NMFS and is not based on experimental evidence of injuries caused to sea turtles by pile driving sound. In the absence of reliable in-water density data for sea turtles, this criterion is useful for qualitatively assessing activities that impart sound to water.

Previous studies have documented dredge noise for clamshell, cutterhead and hopper dredges (Table 3). Sounds associated with dredging are broken up into different segments associated with the dredge operation. These steps can include surface splash, the bucket hitting or penetrating the bottom sediments, the winches moving the dredge up and down in the water column and emptying the bucket into the scow (where applicable). Some of these noises will vary depending on how dredge material hardness.

Table 3 - Sound Levels of Dredges

Dredge Type	Reported Noise level range;	Source
Clamshell/Bucket	150 to 162 dB	Dickerson et al 2001
Hopper	120 to 140 dB; Avg 142dB	Clarke et al 2002; Reine et al 2014
Cutterhead	100 to 100 dB; 175 dB at source (<150dB 100 m from source)	Clarke et al 2002; Reine et al 2012.

None of the dredges that may be used to construct the SJH Navigation improvement study would meet or exceed NMFS assessed injurious threshold of 187 dB, however normal operations of large vessels in SJH would meet this threshold, and would be considered baseline conditions for this deepening project. By completing harbor improvements that decrease the number of vessels calling to SJH, this also improves the soundscape for sea turtles that live in the bay and are exposed to activities in the harbor.

Sea turtles in SJH may be affected by related noise from this action but it will be intermittent and will not occur in any one area for any appreciable period of time. Due to the mobility of these species and because these projects generally occur in open water environments, they would likely move away from the source of noise. Turtle species may be affected by being temporarily unable to use the sites for foraging or shelter due to avoidance of construction activities and related noise. These effects will be insignificant and discountable because they are located in open water and will not consume the entire width of a channel at any time. Because of this, construction will not restrict movement of species in the area, and there is ample, alternate similar habitat adjacent to the project sites.

Conservation Measures for Sea Turtles

- a) Incorporation of the NMFS “Sea Turtle and Smalltooth Sawfish Construction Conditions” into the project plans and specifications:
- b) Incorporation of the Terms and Conditions of the 1995/97 SARBO or a subsequent SARBO into the construction specifications.
- c) Relocation trawling can be used within the channel and surrounding harbor habitats to minimize the potential for lethal take of sea turtles, if a hopper dredge is used to construct the project, or portions of the project.

Effects Determination

The proposed navigation improvements for SJH may adversely affect listed sea turtles by entrainment in a hopper dredge. All other project activities may affect, but are not likely to adversely affect listed sea turtles. As there is not DCH in the project area, the project is not likely to adversely modify DCH for any sea turtle species.

Corals

Project specific coral surveys have not been conducted as of yet, and this assessment relies on the best available data that the Corps was able to access. Any project specific coral surveys that can be conducted by divers (diver safety being the first concern) or by remote methods (ROV) will be conducted during the Pre-Engineering and Design Phase of the project, after Congressional authorization. If listed corals are found during the PED surveys, the Corps will reinitiate consultation as necessary.

All seven ESA listed threatened coral species have been documented on the discontinuous linear or fringing reef consisting of corals covering fossil sand dunes (i.e., eolianites) trending in an east-west direction and extending, in some sites, up to 0.9 miles off shore, along the north coast of the San Juan metropolitan area, east of SJH (Figure 30).

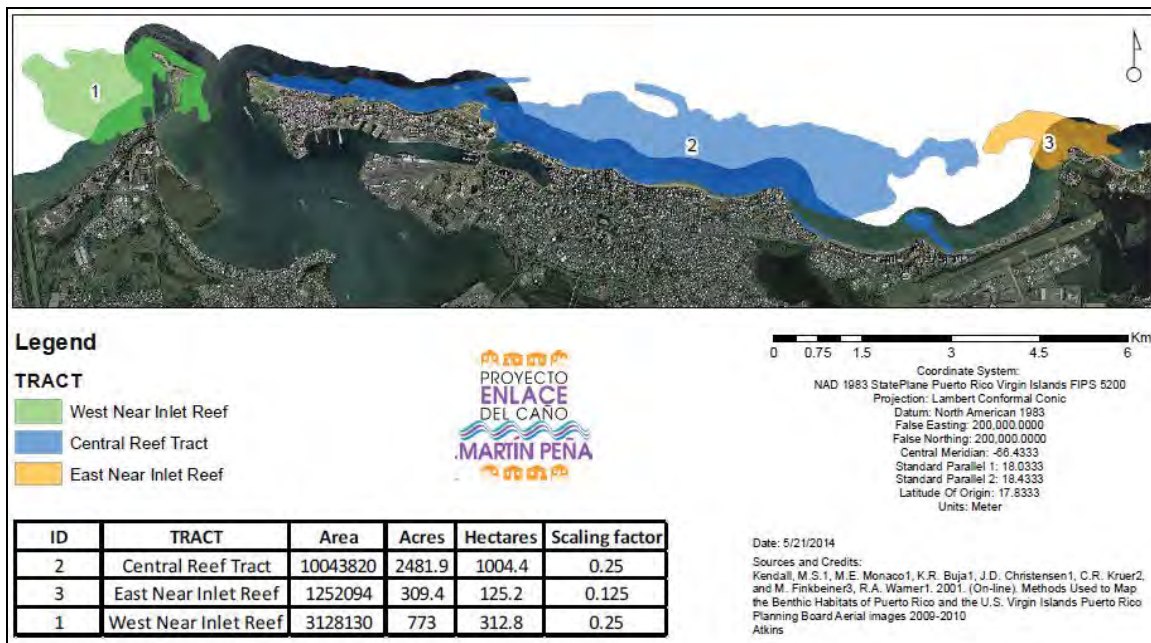


Figure 30 - Reef habitat north of the SJBE, within the Study Area (Cano Martin Pena EIS).

Mapped hardbottom and coral habitats have been documented via dual frequency side scan sonar (conducted by the Corps) and towed videos (NMFS-HCD Jan 2016; USACE between May 2016-May 2017). NMFS Habitat Conservation (NMFS HCD) and Protected Resources Division staff assisted with video review and analysis (pers comm Paul DeMarco, July 11, 2017), including species identification as a cooperating agency under the National Environmental Policy Act. NMFS HCD staff prepared a report based on their towed video survey (NMFS 2016). The project areas most likely to have listed corals are on the west side of the outer entrance channel at (or further west of) numbers 209, 210 and 212 (Figure 31 - Figure 34) and the areas further to the east adjacent to El Morro National Monument. No corals were documented growing in the

channel or any direct effect area. As a result no direct effects to corals or critical habitat are expected with implementation of the SJH Navigation Improvement Study.

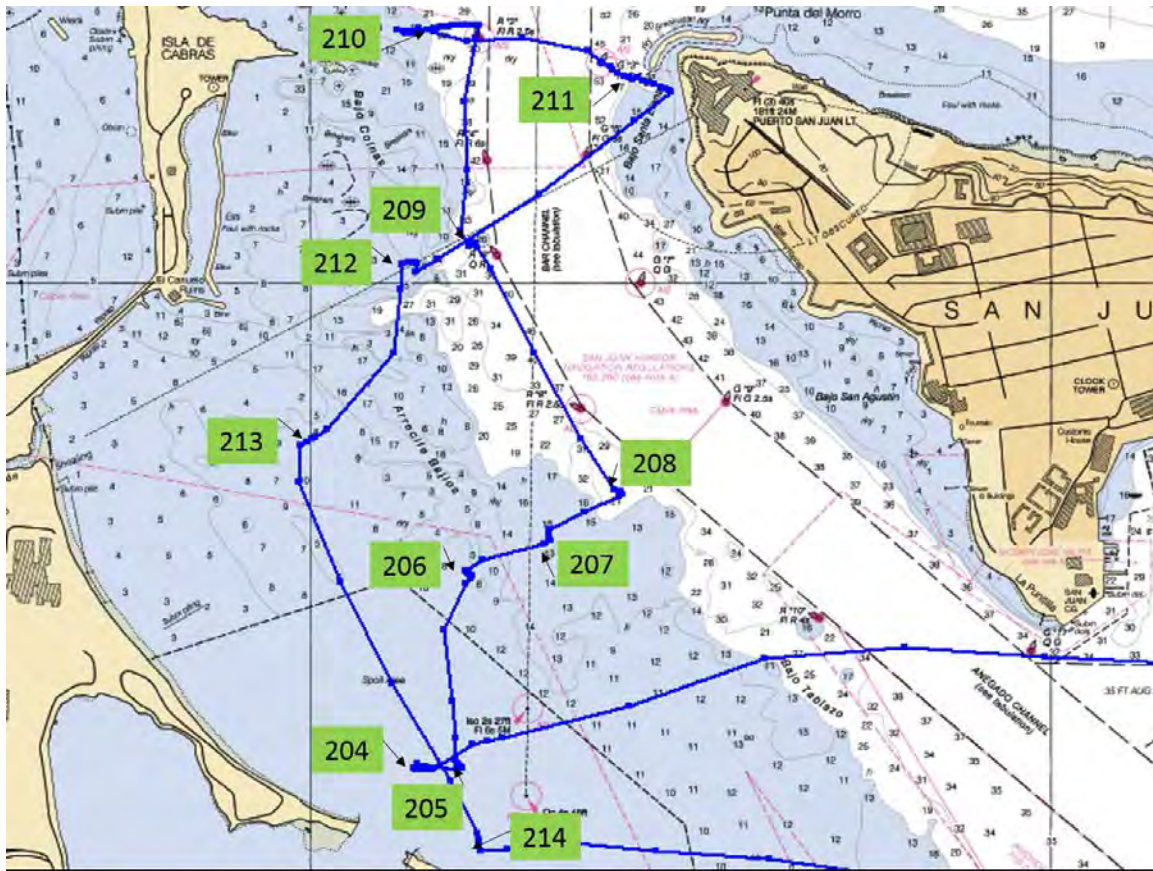


Figure 31 - San Juan Bay video station location and vessel track (blue). NOAA Chart 25670_1, 1:10,000 scale.

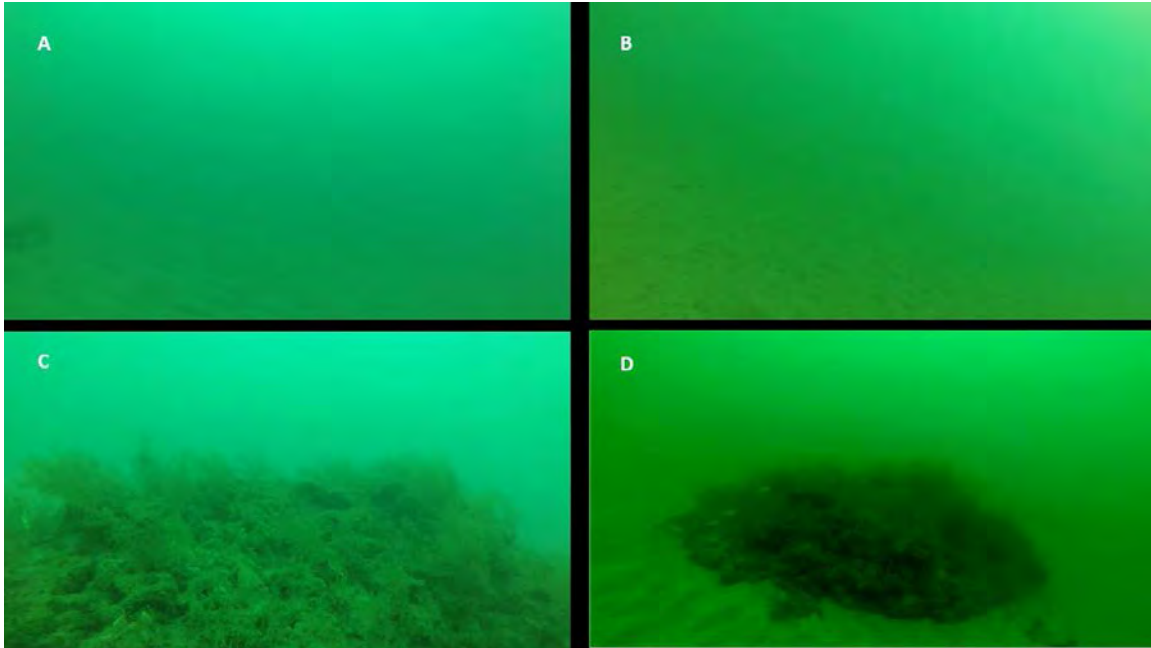


Figure 32 - Photos from video transect 209 on January 30, 2016. A and B. Sand. C and D. Algae patch on limestone rock surrounded by sand. Four fish likely to be *Lutjanus synagris* (Lane snapper).

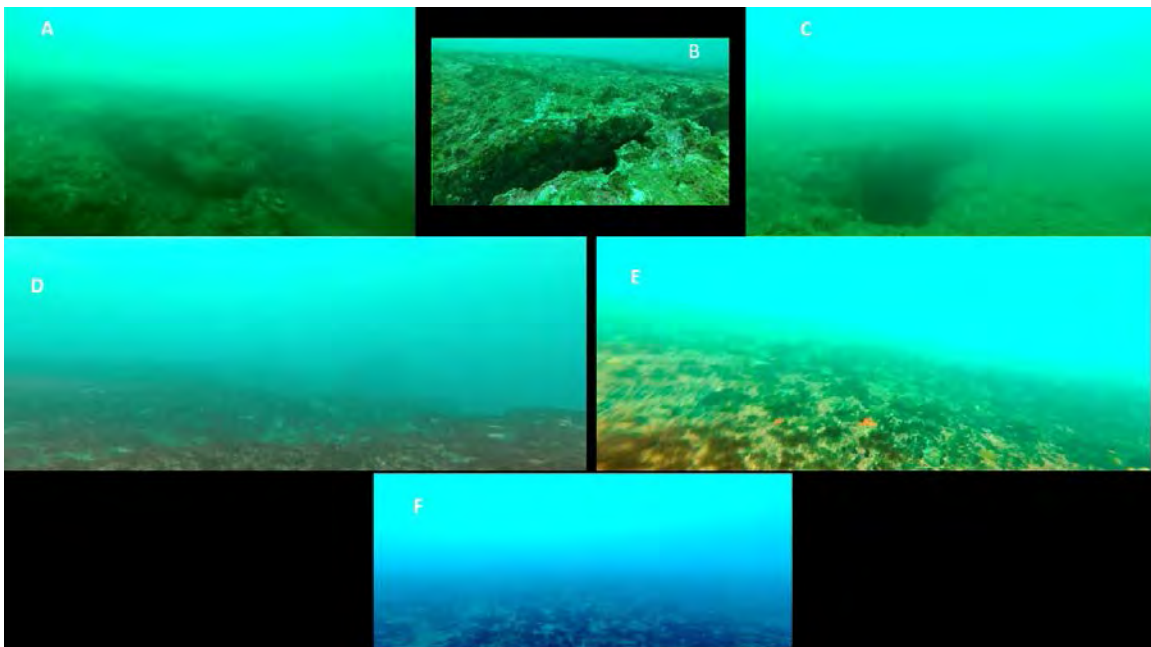


Figure 33 - Photos from video transect 210 on Jan. 30, 2016. A, B and C. Limestone ledges and crevices at approximately 17 to 30 ft. depth. These crevices and ledges are inhabited by *Diadema antillarum*, *Thalassoma bifasciatum*, algae and sponges.



Figure 34 - Photo from video transect 212 on Jan. 30, 2016. Depth is 7 ft. Brown algae over limestone.

Indirect effects

Currents at the SJH entrance channel are greatly influenced by the direction and strength of the trade winds. The trades blow primarily from the northeast, which in conjunction with the east-west alignment of the coastline results in a westerly, alongshore current. Surface currents show general westward drift (mean speed 0.6 knots) with a significant tidal component (EPA 2011).

Sedimentation: The effects of dredging, in concert with the constant movement of sediments in and around the entrance channel, may affect light penetration into the water column as a result of turbidity, and may also result in burial from sedimentation, which can destabilize the benthic community. Whether and to what extent there will be effects to corals located adjacent to dredging projects depends on several factors, including the type of dredge utilized, the type of sediments and the size of the area being dredged, the hydrodynamic conditions of the dredging site, and the duration of active dredging. Each of these factors influences the size, settlement time, and ultimate settling site of the sediment plume. Ertfemeijer et al. (2012) provides a comprehensive overview on the environmental effects of dredging and other sediment disturbances on corals. Specifically,

The major problems arising from turbidity and sedimentation derived from coastal construction and dredging are related to the shading caused by decreases in ambient light and sediment cover on the coral's surface, as well as problems for the feeding apparatus under a sediment blanket and energetic costs associated with mucus production, sediment clearance and impaired feeding. Suspended sediments, especially when fine-grained, decrease the quality and

quantity of incident light levels, resulting in a decline in photosynthetic productivity of zooxanthellae (Falkowski et al., 1990; Richmond, 1993)."

Additionally, if the reduction in photosynthesis is long term, it can result in starvation of the coral polyp. High turbidity and sedimentation rates may depress coral growth and survival due to depressed photosynthesis and redirection of energy expenditure for clearance of settling sediments. As a result, the potential effects of sedimentation not only include direct mortality, but also involve sublethal effects including *"reduced growth, lower calcification rates and reduced productivity, bleaching, increased susceptibility to diseases, physical damage to coral tissue and reef structures (breaking, abrasion), and reduced regeneration from tissue damage."* All of these effects would be more likely to happen in boulder or flat/round shaped corals.

Although these effects from sedimentation can occur naturally due to increase runoff from rain or sedimentation associated with tropical storms (Blair et al. 1994), they are also likely to occur in close physical proximity to dredging. The intensity of effect is dependent upon the intensity and duration of the stressor (Figure 35).

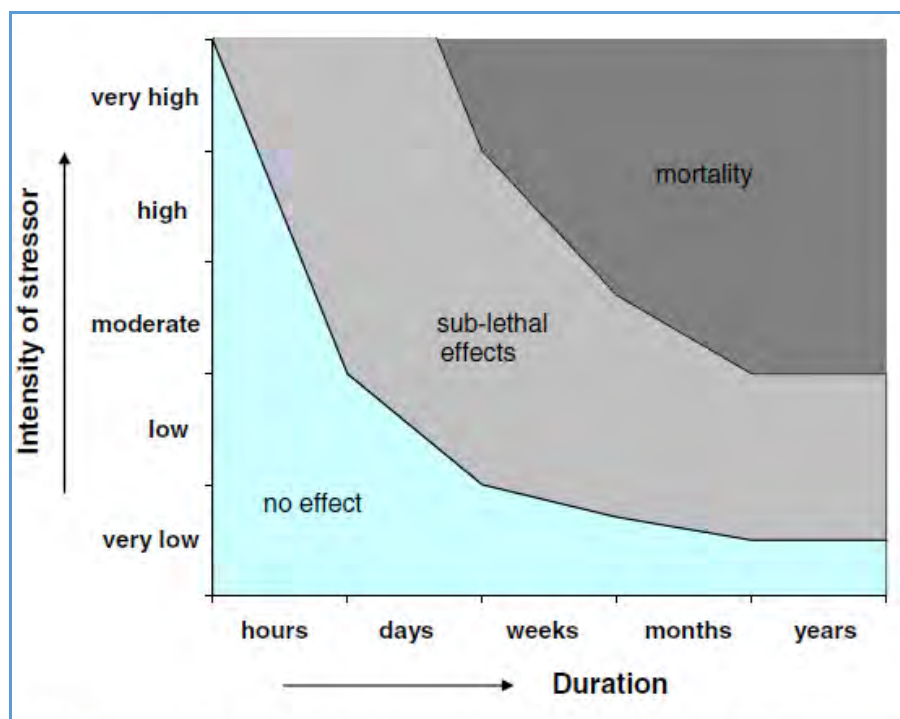


Figure 35 - Figure 2 from Erftmeijer et al 2012. Intensity of Stressor vs Duration

Recently completed monitoring associated with the Miami Harbor expansion project reviewed the long term health and survival of corals (including some listed corals) and other reef organisms (soft corals, sponges, etc.) in a pre-, during and post-construction project monitoring within 30 meters of the Miami Harbor channel. The effects with Miami Harbor were associated with very fine clay and silt materials. Long-term effects associated with sedimentation have not been fully assessed, however there was no

change in the percent coverage in any reef functional group when compared to reference sites. The sedimentation effects were most noticed closest to the channel where the largest grainsized material fell out of solution and sedimentation levels returned to background levels in 6-18 months (USACE 2015 and 2017).

Corals with a flatter morphology or corals which are located in a depression in the reef structure where material can accumulate, tended to have more difficulty shedding accumulated sediment, often ending up part of the colony unable to be unburied, and the long term exposure of that portion of the colony to the sediment resulting in partial mortality (Figure 36). While this may not lead to total mortality of the colony, it would result in stress to the colony as a whole. Taller corals were able to shed the excess sediment and did not exhibit the partial mortality signature seen in the flatter corals (Figure 37).

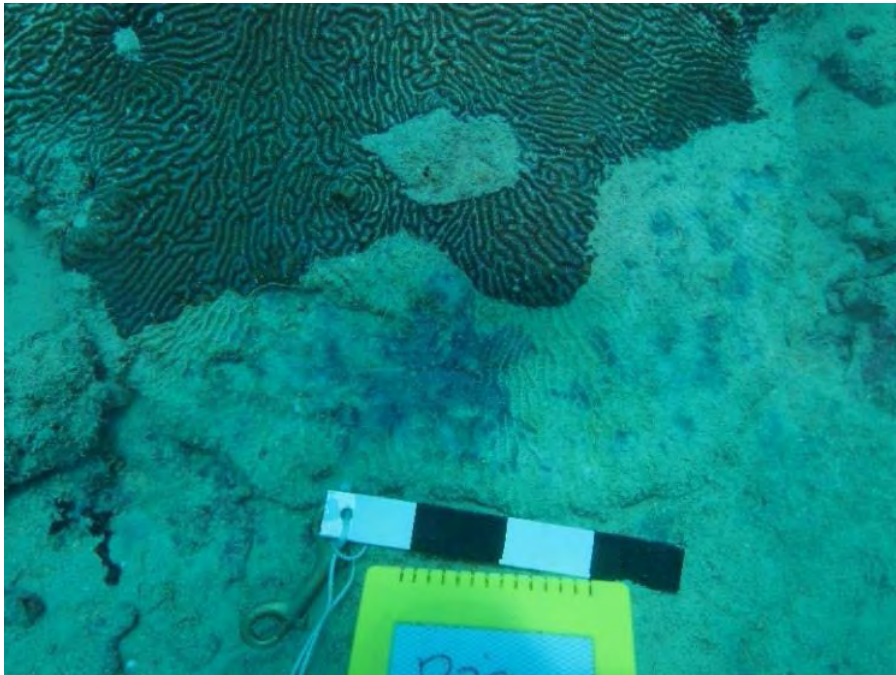


Figure 36 - Partial mortality of Diploria clivosa at R2S1-200, consistent with partial mortality documented at channel-side sites, Miami Harbor.



Figure 37 - S. bournoni colony at R2S-400, Miami Harbor. Photo was taken on May 21, 2015

Even if sedimentation causes an indirect effect to listed corals from the dredging operation, coral reefs and hardbottom habitat are dynamic systems and sediments are often removed from the substrate by currents, tides, or storm events, especially those on exposed coasts like those adjacent to the SJH entrance channel. The residence time of sediments is dependent on several factors including grain size and the hydrodynamics of the system (i.e., higher energy is needed to mobilize large grained materials). Previous monitoring from dredge events at Key West and Port Everglades show no permanent effects from sedimentation, but some scientists believe some permanent effects may occur due to sedimentation. The recently completed project at Miami Harbor resulted in temporary effects to corals associated with dredging, however those corals were located immediately adjacent to the channel (within 30 meters), unlike SJH where dredging activities will not be directly adjacent to the hardbottom areas that are located no less than 182 meters (600 feet) to the west of the channel. To protect hardgrounds in project area, the Corps requires turbidity monitoring with all of its construction projects and if turbidity exceeds the approved level set by the Commonwealth dredging operations in the area cease until levels return to the approved level.

As Kleypas (1996) noted the tolerance of corals to elevated suspended sediment varies from reef to reef, and depends on background turbidity conditions and hydrodynamic setting. As previously discussed, in the case of the reefs adjacent to SJH, they are regularly subjected to variable and often high levels of turbidity and sedimentation, including storms, which results in significant runoff of land-based sediments, as demonstrated in Figure 38 and Figure 39. Additionally, DCH is located at least 1,700 feet to the west of the entrance channel and approximately 3,000 feet (915 meters)

northwest of Cut 6, the closest area to be dredged by the project (Figure 1). This means that while the potential exists for sedimentation from the project to be carried out of SJH on an outgoing tide and deposited on the DCH, it will likely be a very low volume of material, as only the smallest of grain sizes will remain in the water column for that distance, and as a result, will result in low sedimentation rates above the background rates already documented in this assessment.

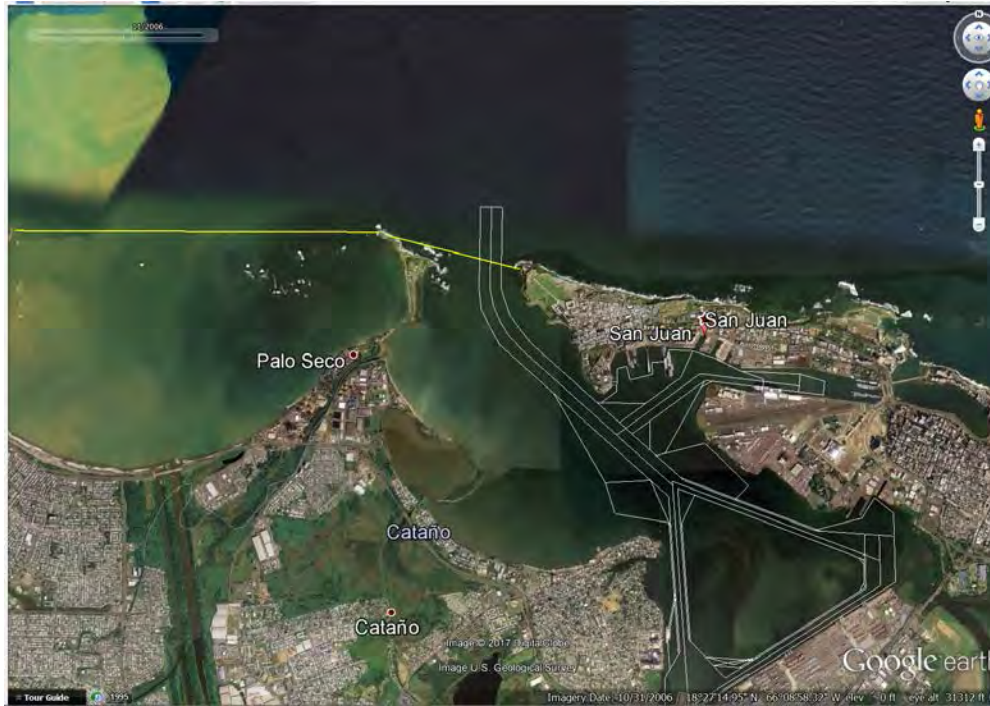


Figure 38 - Aerial Photograph November 2006

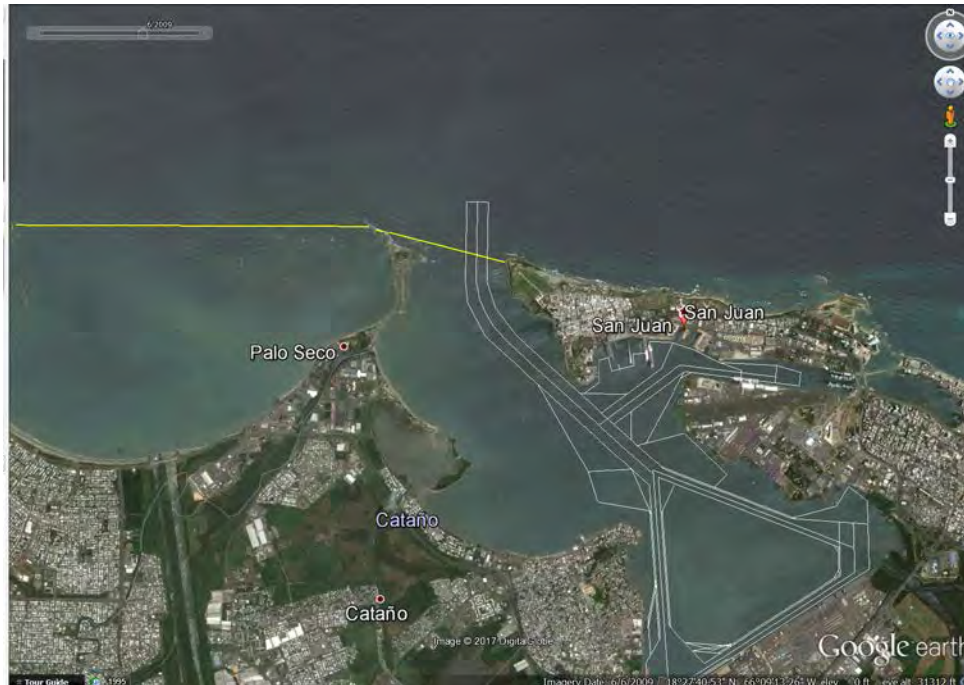


Figure 39 - Aerial Photograph October 2009

Conservation Measures for Listed Corals

Monitoring of the SJH expansion project will take place on numerous levels including physical monitoring of scow and dredge location relative to reefs and other mapped resources during dredging and transit operations, as well as turbidity monitoring during construction.

Effects Determination

The proposed SJH Navigation Improvement Study may affect, but is not likely to adversely affect listed corals in the project area. The corals that may have recruited to the rock areas to the east and west of the entrance channel are exposed to very high levels of background sedimentation, as well as poor water quality, including high levels of nutrients from the water entering the bay (Zimmerman et al. 1980). So these corals are more tolerant to these conditions than those located in clearer, less turbid waters.

Indirect Effects of each Construction Method on *Acropora* Critical Habitat

The closest previously mapped hardbottom habitat (colonized pavement) is 1,500 feet from the closest dredge area (Cut-6) and Acroporid coral Critical Habitat is approximately 2,500 feet north of Cut-6. Based upon these locations, effects to listed corals from dredging and dredged material transport related turbidity are not anticipated. It should be noted the fringing reefs east of the SJH bar channel in the Isla Verde area have been significantly stressed or affected from sedimentation and organic pollution coming from the San Juan Bay Estuary. This is evident by a remarkably high frequency of hard coral colonies effected by Black Band Disease, which suggests poor water quality (Coll Environmental, 2005).

Although there is published literature concerning the effects of sedimentation and turbidity on coral reefs throughout the world, there are several published papers specific to Caribbean coral reefs (Rogers 1983; Rogers 1990; Dodge and Vaisnys 1977, Bak 1978).

From a turbidity and/or sedimentation standpoint, a hopper dredge has the highest likelihood of adverse effect due to the overflow of water being returned from the hopper to the surrounding environment. With this overflow, “fines” (usually clays or silts which are light enough not to have settled out in the hopper) are returned to the water during dredging operations. The clamshell or bucket dredge ranks second since the material may or may not be enclosed in a bucket, and if it is not enclosed, material may escape that bucket into the surrounding environment as the bucket moves up through the water column. The dredging method with the lowest level of associated sedimentation or turbidity is the cutterhead dredge. This dredge has suction that removes the sediment, transports it to the surface where it is either pumped into the receiving disposal site, or placed in a scow for transport to a disposal site. The Key West O&M projects in 2004-2006 and 2007 utilized both a clamshell dredge and a hopper dredge. The Broward County Shore Protection Project utilized a hopper dredge and the Port Everglades expansion project in 1980 utilized a cutterhead dredge. Understanding which types of equipment were utilized at previous projects allows for a comparison across projects of results regarding turbidity and/or sedimentation monitoring.

The examples of the adverse effects of turbidity or sedimentation on coral species often cited by resource managers are commonly projects in third world countries without the strict water quality protections that are in place in the U.S. (Bak 1978); or are studies where the material used to simulate dredged material is not the same sediment size or mineral composition of the material proposed to be dredged (Telesniki and Goldberg 1995) and thus are not a good substitute for the effects of projects bound by the water quality restrictions required by the State of Florida under the Clean Water Act. These restrictions are protective of water quality by limiting turbidity; they are also protective of coral species, including *Acropora sp.* and it's DCH, located near dredging operations where material is being removed from the bottom by a dredge. Dredging projects take place in a spatially and temporally finite area and thus effects associated with them, if present, should be detectable within this same finite footprint. A review of these four projects (Port Everglades, Key West 2004-06 and 2007, Broward County SPP), three of them in the very recent past, demonstrates that no adverse effects of dredging were detectable (or in the case of Broward County were detectable as monitoring continues) (Gilliam *et al.* 2006; Fisher *et al.* 2008; Jordan *et al.* 2010; CSA 2007; CSA 2007a; CSA 1981).

To protect hardbottom habitats in the project area, including those that may support Acroporid corals, the Corps requires turbidity monitoring with all of its projects. It is a standard practice for the Corps to monitor sedimentation associated with dredging projects where corals and coral habitats are adjacent to the project area, when the area

can be safely monitored by divers. This has been standard practice for more than 30 years (CSA 1981; CSA 2007; CSA 2007a). As previously stated, the areas adjacent to the outer entrance channel are very high energy surf zones that are not safe for human divers.

In the 2009 biological opinion for dredging associated with sand mining dated October 21, 2009 (Consultation # F/SER/2009/00879), NMFS reviewed effects of sedimentation associated with *A. cervicornis*. NMFS states:

Additionally, Rogers (1983) tested sedimentation rates on A. cervicornis, among other coral species, and determined that daily doses of sediment at a rate of 200 mg/cm²/day had no effect (Rogers 1990).

Dredged Material Disposal Effects. Potential barge environmental effects could occur as the barge is loaded if material is allowed to spill over the sides and during transport if the barge leaks material. Operational controls eliminate spilling material during loading by monitoring the dredge operator to make sure that the dredge bucket swings completely over the barge prior to opening the bucket. Requiring barges in good repair with new seals minimizes leaking during transport. Hauling rock is often damaging to transport barges, so intermediate inspection and repairs may be required during the project to maintain the barges in good working condition. Seals may require replacement. Proper use of the ODMDS minimizes the environmental effects during disposal. The barges will be required to use positioning equipment to place dredged material within the designated ODMDS and inspectors may be required to monitor disposal activity. The Corps' required monitoring of vessels in ullage and location ensure that the dredged material is being disposed of in the approved location. Disposal of dredged material will have no effect on listed corals or DCH for *Acropora* corals. The ODMDS is not within the boundaries of DCH as the site is located offshore of San Juan, beyond the edge of the continental shelf in greater than 900 feet of water.

Effects on Designated Critical Habitat

Although there is a potential for minimal sedimentation on *Acropora* DCH to the east and west of the outer entrance channel, the project is not likely to adversely modify DCH for either *Acropora* species. The area located outside of San Juan Bay, beyond the COLREGS line is a very high energy zone where sediment would not settle out of the water column onto the exposed rock, which would preclude accumulation.

SUMMARY OF EFFECT DETERMINATIONS

Project effect determination summary for sea turtle *spp.*, listed corals, large whales, Nassau grouper, scalloped hammerhead; Giant Manta Ray (No Effect (NE – green); May Affect Not Likely to Adversely Affect (MANLAA – orange), May Affect Likely to Adversely Affect (MALAA – yellow), and Not Likely to Adversely Modify (NLAM – orange)

Proposed Activity/ Route to Effect	Effects Determination																	
	Sea Turtles				Whales				Stony Corals						Fishes			
	Leatherback	Green (North Atlantic DPS)	Hawksbill	Loggerhead (western north Atlantic)	Sperm	Sei	Blue	Fin	Elkhorn	Staghorn	Pillar	Rough cactus	Mountainous Star	Lobed Star	Boulder Star	Giant Manta Ray	Scalloped Hammerhead shark	Nassau Grouper
Hydraulic Hopper Dredge	NE	MALAA	MALAA	MALAA	NE	NE	NE	NE	MANLAA	MANLAA	MANLAA	MANLAA	MANLAA	MANLAA	MANLAA	NE	NE	NE
Hydraulic Cutterhead Dredge	NE	MANLAA	MANLAA	MANLAA	NE	NE	NE	NE	MANLAA	MANLAA	MANLAA	MANLAA	MANLAA	MANLAA	MANLAA	NE	NE	NE
Mechanical Dredge	NE	MANLAA	MANLAA	MANLAA	NE	NE	NE	NE	MANLAA	MANLAA	MANLAA	MANLAA	MANLAA	MANLAA	MANLAA	NE	NE	NE
Bed Leveling	NE	MANLAA	MANLAA	MANLAA	NE	NE	NE	NE	MANLAA	MANLAA	MANLAA	MANLAA	MANLAA	MANLAA	MANLAA	NE	NE	NE
Turbidity and Sedimentation	NE	NE	NE	NE	NE	NE	NE	NE	MANLAA	MANLAA	MANLAA	MANLAA	MANLAA	MANLAA	MANLAA	NE	NE	NE
Transportation - hopper; tug/scow/barge	NE	NE	NE	NE	MANLAA - discounta ble	MANLAA - discounta ble	MANLAA - discounta ble	MANLAA - discounta ble	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Material placement (ODMDS or Restoration Site)	NE	NE	NE	NE	MANLAA - discounta ble	MANLAA - discounta ble	MANLAA - discounta ble	MANLAA - discounta ble	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Trawling	MANLAA - discounta ble	MANLAA	MANLAA	MANLAA	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	MANLAA - discounta ble	MANLAA - discounta ble	MANLAA - discounta ble
Dredge Lighting	MANLAA	MANLAA	MANLAA	MANLAA	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Critical Habitat	-	NE	NE	-	-	-	-	-	NLAM	NLAM	-	-	-	-	-	-	-	-

Literature Cited

- Acropora* Biological Review Team (ABRT). 2005. Atlantic *Acropora* Status Review Document. Report to National Marine Fisheries Service, Southeast Regional Office. March 3, 2005. 152 p + App.
- Bak, R. P. 1978. "Lethal and Sublethal Effects of Dredging on a Coral Reef." Marine Pollution Bulletin 9(1): 14-16.
- Ballantine, D.L.; R.S. Appeldoorn; P. Yoshioka; E. Weil; R. Armstrong; J.R. Garcia; E. Otero; F. Pagan; C. Sherman; E.A. Hernandez-Delgado; A. Bruckner and C. Lilyestrom. 2008. Biology and Ecology of Puerto Rican Coral Reefs. *In* Coral Reefs of the USA pp 375-406. Part of the Coral Reefs of the World book series (CORW, volume 1). Eds. B.M. Riegl and R.E. Dodge. DOI: 10.1007/978-1-4020-6847-8_9.
- Blair, S.M; T.L. McIntosh and B.J. Mostkoff. 1994. Impacts of Hurricane Andrew on the Offshore Reef Systems of Central and Northern Dade County, Florida. *Bulletin of Marine Science*. 54(3): 961-973.
- Brainard, R.E.; C. Birkeland; C.M. Eakin; P. McElhany; M.W. Miller; M. Patterson, and G.A. Piniak. 2011. Status review report of 82 candidate coral species petitioned under the U.S. Endangered Species Act. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-PIFSC-27, 530 p. + 1 Appendix.
- Clarke, D.G. and D.H. Wilbur. 2008. Compliance Monitoring of Dredging-Induced Turbidity: Defective Designs and Potential Solutions. Western Dredging Association St. Louis, Mo.
- Clarke, D.G., C. Dickerson and K. Reine. 2002. Characterization of Underwater Sounds Produced by Dredges. *In* *Dredging 2002, American Society of Civil Engineers, Orlando, Florida, USA*, 64-81.
- Coll Rivera Environmental. 2005. Biological Monitoring Report – Installation of the SMPR-1 Submarine Fiber Optic Cable, Isla Verde, Puerto Rico. Prepared for: Sint Marteen International Telecommunications Services, Inc. 30 pp.
- Conant, T.A., P.H. Dutton, T. Eguchi, S.P. Epperly, C.C. Fahy, M.H. Godfrey, S.L. MacPherson, E.E. Possardt, B.A. Schroeder, J.A. Seminoff, M.L. Snover, C.M. Upite, and B.E. Witherington. 2009. Loggerhead sea turtle (*Caretta caretta*) 2009 status review under the U.S. Endangered Species Act. Report of the Loggerhead Biological Review Team to the National Marine Fisheries Service, August 2009. 222 pages.
- CSA International, Inc. 2007. During Dredging Resource Health and Sedimentation Surveys Report for May through August 2007 Hopper Dredging Activities for the Key West Harbor Dredging Project. November 2007. Prepared for Department of the Navy, Southern Division Naval Facilities Engineering Command.

- CSA International, Inc. 2007a. Post-Dredging Resource Impact Assessment Monitoring Survey Final Report for the Key West Harbor Dredging Project (2004-2006) 7 May 2007. Prepared for Department of the Navy, Southern Division Naval Facilities Engineering Command.
- CSA International, Inc. 1981. Environmental Monitoring Associated with the Port Everglades Harbor Deepening Project of 1980. Final Report Volumes I and II. June 16, 1981.
- Davis-Colley, R.J. and D.G. Smith. 2001. Turbidity, Suspended Sediment and Water Clarity: A Review. *Journal of the American Water Resources Association*. Vol. 37. No. 5. October 2001.
- Dickerson, C., Reine, K. J., and Clarke, D. G. 2001. "Characterization of underwater sounds produced by bucket dredging operations," *DOER Technical Notes Collection* (ERDC TN-DOER-E14), U.S. Army Engineer Research and Development Center, Vicksburg, MS. www.wes.army.mil/el/dots/doer.
- Dickerson, D., C. Theriot, M. Wolters, C. Slay, T. Bargo, W. Parks. 2007. "Effectiveness of relocation trawling during hopper dredging for reducing incidental take of sea turtles," In: *Proceedings of the World Dredging Congress XVIII, USACE ERDC Research Initiatives*. Central Dredging Association, 27 May-1 June 2007, Lake Buena Vista, Florida. <http://el.erd.usace.army.mil/seaturtles/docs/07-DickersonWODCON.pdf>
- Diez, C. E. and R.P. van Dam. 2006. Hawksbill turtle nesting beach habitat restoration on Mona Island, Puerto Rico: Research report for 2005.
- Dodge, R.E. and J.R. Vaisnys. 1977. Coral populations and growth patterns: responses to sedimentation and turbidity associated with dredging - J. mar. Res, 1977.
- Ehrhart, L.M. and B.E. Witherington. 1992. Green turtle. In Moler, P.E. (ed.). *Rare and Endangered Biota of Florida*, Volume III. Amphibians and Reptiles. University Presses of Florida, pp 90-94.
- EPA 2011. Site Management and Monitoring Plan for the San Juan Harbor Puerto Rico Dredged Material Disposal Site. January 6, 2011.
- Ertfemeijer, P.A., B. Reigl, B.W. Hoeksema and P.A. Todd. 2012. Environmental Impacts of Dredging and Other Sediment Disturbances on Corals, A Review. *Marine Pollution Bulletin*. 64 1737-1765.
- Fisher L, K. Banks, D. Gilliam, R.E. Dodge, D. Stout, B. Vargass-Angel and B. Walker. 2008. Real-time coral stress observations before, during and after beach nourishment dredging offshore of southeast Florida, USA. *Proceedings of the 11th International Coral Reef Symposium*, Ft. Lauderdale, FL.

- Florida Department of Environmental Protection. 2007. Rapid Response and Restoration for Coral Reef Injuries in Southeast Florida. Guidelines and Recommendations. June 2007.
- Florida Fish and Wildlife Conservation Commission; Florida Marine Research Institute's Statewide Nesting Beach Survey data. <http://myfwc.com/research/wildlife/sea-turtles/nesting/statewide/>. Accessed July 2017.
- Frazer, N.B., C.J. Limpus and J.L. Greene. 1994. Growth and age at maturity of Queensland loggerheads. U.S. Dept of Commer. NOAA Technical Memorandum NMFS-SEFSC-351.
- Gilliam, D.S. 2009. South Florida Coral Reef Evaluation and Monitoring Project. 2008 Year 6 Final Report. August 15, 2009. National Coral Reef Institute.
- Hales, L.Z. 2003. Bed-Leveling Following Dredging Operations. ERDC Dredging Operations Technical Support (DOTS) Program South Atlantic Division Request for Technical Assistance. 25 August 2003.
- Jordan, L.K.B., Banks, K.W., Fisher, L.E., Walker, K.B. and Gilliam, D.S. 2010. Elevated Sedimentation on Coral Reefs Adjacent to a Beach Renourishment Project. Marine Pollution Bulletin. 60: 261-271.
- Kleypas, J.A. 1996. Coral Reef Development Under Naturally Turbid Conditions: Fringing Reefs Near Broad Sound, Australia. Coral Reefs. 15:153-167.
- Limpus, C.J. 1990. Puberty and first breeding in *Caretta caretta*, in Proceedings of the Tenth Annual Workshop on Sea Turtle Biology and Conservation. T.H.C. Richardson, J.I.C Richardson and M.C. Donnelly (eds). NOAA Technical Memorandum NMFS-SEFSC-278. 81.
- Mackay, A.L., and J.L. Rebholz. 1996. Sea Turtle Activity Survey on St. Croix, U.S. Virgin Islands (1992-1994). In Keinath, J.A., D.E. Barnard, J.A. Musick, and B.A. Bell (compilers). Proceedings of the Fifteenth Annual Symposium on Sea Turtle Biology and Conservation. NOAA Tech. Memo. NMFS-SEFSC-387: 178-181.
- Meylan, A.B. 1999. Status of the Hawksbill Turtle (*Eretmochelys imbricata*) in the Caribbean Region. Chelonian Conservation and Biology 3(2): 177-184.
- Meylan, A.B. and M. Donnelly. 1999. Status justification for listing the hawksbill turtle (*Eretmochelys imbricata*) as critically endangered on the 1996 IUCN Red List of Threatened Animals. Chelonian Conservation and Biology 3(2):200-204.
- Moyer, RP; B Riegl; K Banks; RE Dodge. 2003. Spatial patterns and ecology of benthic communities on a high-latitude South Florida (Broward County, USA) reef system. Coral Reefs (2003) 22: 447-464.
- NMFS. 1991. Biological Opinion – Dredge of channels in the southeastern United States from North Carolina through Cape Canaveral, Florida. Signed November 25, 1991.

- NMFS. 1994. Endangered Species Act - Section 7 Consultation. Concurrence with USEPA determination for Designation of the Miami Harbor ODMDS. F/SEO13:JEB. October 14, 1994.
- NMFS. 1995. Endangered Species Act Section 7 Consultation with the U.S. Army Corps of Engineers, South Atlantic Division on Hopper Dredging of Channels and Borrow Areas in the Southeastern U.S. from North Carolina through Florida East Coast. Signed August 25, 1995.
- NMFS. 1997. Endangered Species Act Section 7 Consultation with the U.S. Army Corps of Engineers, South Atlantic Division on the Continued Hopper dredging channels and borrow areas in the southeastern United States. Signed September 25, 1997.
- NMFS. 2003a. Endangered Species Act Section 7 Consultation with the U.S. Army Corps of Engineers for Dredging of Gulf of Mexico Navigation channels and San Mining "borrow" areas using hopper dredges by COE Galveston, New Orleans, Mobile and Jacksonville Districts. Consultation Number F/SER/2000/01287. Signed November 19, 2003 and revised 2005 and 2007.
- NMFS. 2003b. Endangered Species Act - Section 7 Consultation. Concurrence with USACE determination for placement of dredged material in the one-time use ODMDS associated with O&M dredging of Key West Harbor. March 28, 2003.
- NMFS. 2004. Endangered Species Act - Section 7 Consultation. Concurrence with USEPA determination for Designation of the Port Everglades and Palm Beach ODMDS. May 24, 2004.
- NMFS. 2005. Endangered and Threatened Species; Proposed Threatened Status for Elkhorn Coral and Staghorn Coral. 70 FR 24359. May 9, 2005.
- NMFS. 2006. Endangered and Threatened Species; Threatened Status for Elkhorn Coral and Staghorn Coral. 71 FR 26852. May 9, 2006.
- NMFS. 2008a. 50 CFR Part 223. Docket No. 070801431-81370-02. Endangered and Threatened Species; Conservation of Threatened Elkhorn and Staghorn Corals. "4D rule". 73 FR 64264.
- NMFS. 2008b. 50 CFR Parts 223 and 226. Docket No. 070801431-81370-02 Endangered and Threatened Species; Critical Habitat for Threatened Elkhorn and Staghorn Corals. 73 FR 72210.
- NMFS. 2009. Endangered Species Act - Section 7 Consultation Biological Opinion. Dade County Beach Erosion Control Project, Contract "E," located in Dade County, Florida (Consultation Number F/SER/2009/00879). October 24, 2009.
- NMFS. 2010. Endangered Species Act - Section 7 Consultation. Concurrence with USEPA determination for the Site Monitoring and Management Plan (SMMP) for the San Juan Harbor Ocean Dredged Material Disposal Site (ODMDS). December 6, 2010.

- NMFS. 2012. 50 CFR 223. Docket No 0911231415-2625-02. Endangered and Threatened Species. Proposed rule for 88 corals. April 17, 2012.
- NMFS. 2014a. 50 CFR 223. Endangered and Threatened Wildlife and Plants: Final Listing Determinations on Proposal to List 66 Reef-Building Coral Species and To Reclassify Elkhorn and Staghorn Corals. 79 FR 53852. September 10, 2014.
- NMFS. 2014b. Endangered Species Act - Section 7 Consultation. Biological Opinion for Regional General Permit SAJ-82 (SAJ-2007-1590), Florida Keys, Monroe County, Florida. June 10, 2014. Consultation #SER-2008-2958.
- NMFS. 2014c. Endangered Species Act - Section 7 Consultation. Concurrence with USACE determination for ecosystem restoration of Condado Lagoon. October 31, 2014. Consultation #SER-2013-10961.
- NMFS. 2016. San Juan Harbor Project, Puerto Rico. Quick Look Video Survey Report of the Benthic Communities of San Juan Bay Adjacent to Navigation Channels. Jose Rivera. NOAA, National Marine Fisheries Service. San Juan, Puerto Rico.
- NMFS and USFWS. 1991a. Recovery plan for U.S. populations of loggerhead turtle. National Marine Fisheries Service, Washington, D.C. 64 pp.
- NMFS and USFWS. 1991b. Recovery Plan for U.S. Population of Atlantic Green Turtle. National Marine Fisheries Service, Washington, DC.
- NMFS and USFWS. 1993. Recovery Plan for Hawksbill Turtles in the U.S. Caribbean Sea, Atlantic Ocean, and Gulf of Mexico. National Marine Fisheries Service. St. Petersburg, Florida. 58 p
- NMFS and USFWS. 2013. Hawksbill sea turtle (*Eretmochelys imbricata*) 5-year review: summary and evaluation. June 2013.
- NOAA, 2012. National Summary of NOAA's Shallow-water Benthic Habitat Mapping of U.S. Coral Reef Ecosystems. NOAA Technical Memorandum NOS-NCCOS-122. August 2012.
https://coastalscience.noaa.gov/research/docs/MappingReport_December_6_2012.pdf
- Pennekamp, J.G.S., R.J.C. Epskamp, W.F. Rosenbrand, A. Mullié, G.L. Wessel, T. Arts, and I.K. Deibel. 1996. Turbidity Caused by Dredging; Viewed in Perspective. Terra et Aqua – Number 64. September 1996.
- Reine, K.J., D. Clarke, C. Dickerson and G. Wikel. 2014. Characterization of Underwater Sounds Produced by Trailing Suction Hopper Dredged During Sand Mining and Pump-out Operations. ERDC Technical Report. ERDC/EL TR-14-3. March 2014.
- Reine, K. J., D. G. Clarke, and C. Dickerson. 2012. *Characterization of underwater sounds produced by a hydraulic cutterhead dredge fracturing limestone rock*. DOER Technical Notes Collection. ERDC TN-DOER-E34. Vicksburg, MS: U.S. Army Engineer Research and Development Center. www.wes.army.mil/el/dots/doer.

- Rogers, C.S. 1983. Sublethal and lethal effects of sediments applied to common Caribbean reef corals in the field. *Marine Pollution Bulletin*. 14:378-382.
- Rogers, C.S. 1990. Responses of coral reefs and reef organisms to sedimentation. *Marine Ecology Progress Series*. 62:185-202.
- Seminoff, J.A., C.D. Allen, G.H. Balazs, P.H. Dutton, T. Eguchi, H.L. Haas, S.A. Hargrove, M.P. Jensen, D.L. Klemm, A.M. Lauritsen, S.L. MacPherson, P. Opay, E.E. Possardt, S.L. Pultz, E.E. Seney, K.S. Van Houtan, R.S. Waples. 2015. Status Review of the Green Turtle (*Chelonia mydas*) Under the U.S. Endangered Species Act. NOAA Technical Memorandum, NOAA NMFS-SWFSC-539. 571pp.
- Stabenau, E.K. and K.R. Vietti. 1999. Physiological effects of short-term submergence of loggerhead sea turtles, *Caretta caretta*, in TED-equipped commercial fishing nets. Final Report to National Marine Fisheries Service, Pascagoula Laboratory, Pascagoula, Mississippi.
- Telesnicki, G. J. and W. M. Goldberg. 1995. "Effects of Turbidity on the Photosynthesis and Respiration of Two South Florida Reef Coral Species." Bulletin of Marine Science 57(2): 527-539.
- USACE. 2017. Miami Harbor Phase III, Federal Channel Expansion Project, Permit No 0305721-001-BI. One-year Post-Construction Impact Assessment for Hardbottom Middle and Outer Reef Benthic Communities at Permanent Sites. April 2017.
- USACE. 2015. Miami Harbor Phase III, Federal Channel Expansion Project, Permit No 0305721-001-BI. Quantitative Post-Construction Analysis for Middle and Outer Reef Benthic Communities. November 19, 2015.
- USACE. 2006a. Biological Assessment for Research and Compilation of Baseline Data for the use of Bed-leveling Devices at Port Canaveral, Brevard County, Florida. March 21, 2006.
- USACE. 2006b. Biological Assessment for Research and Compilation of Baseline Data for the use of Bed-leveling Devices at Port Everglades, Broward County, Florida. March 21, 2006.
- USACE. 2006c. Biological Assessment for Research and Compilation of Baseline Data for the use of Bed-leveling Devices at Port of Miami, Miami-Dade County, Florida. March 21, 2006.
- USACE. 2006d. Biological Assessment for Research and Compilation of Baseline Data for the use of Bed-leveling Devices at Port of Palm Beach, Palm Beach County, Florida. March 21, 2006.
- USFWS and NMFS. 1996. Endangered Species Act Final Rulemaking. For Distinct Population Segments. 61 FR 4722. February 7, 1996.
- Zimmerman, R., P. M. Yoshioka, V. P. Vicente, J. G. Gonzalez and J. M. López. 1980. Eutrophic Production of Benthic Algae and Power Plant Cooling-Water Intake

Clogging in Boca Vieja Bay. Report to the Puerto Rico Electric Power Authority.
Center for Energy and Environment Research, Marine Ecology Division,
University of Puerto Rico at Mayaguez. 113 pp.

Appendix A – Previous Puerto Rico ESA consultations

Condado Lagoon Consultation

EPA ODMDs SMMP Consultation 2000 and 2010



UNITED STATES DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

NATIONAL MARINE FISHERIES SERVICE

Southeast Regional Office

263 13th Avenue South

St. Petersburg, Florida 33701-5505

<http://sero.nmfs.noaa.gov>

F/SER31:LC

SER-2013-10961

OCT 31 2014

Chief, Environmental Branch
Jacksonville District Corps of Engineers
Department of the Army
P.O. Box 4970
Jacksonville, Florida 32232-0019

Ref.: U.S. Army Corps of Engineers, San Juan Harbor Submerged Aquatic Vegetation
Mitigation Project, San Juan, Puerto Rico

Dear Sir or Madam:

This letter responds to the April 22, 2014, letter requesting National Marine Fisheries Service (NMFS) concurrence with the U.S. Army Corps of Engineers' (USACE) project-effect determinations submitted pursuant to Section 7 of the Endangered Species Act (ESA) and supplemental information provided via emails dated July 14, August 6, and August 21, 2014, for the San Juan Harbor mitigation project. You determined that the project activities may affect, but are not likely to adversely affect, green sea turtles and elkhorn and staghorn corals. You also determined that there would be no destruction or adverse modification of coral critical habitat and no effect to any other ESA-listed species under NMFS's purview. NMFS's findings on the project's potential effects are based on the project description in this response. Any changes to the proposed actions may negate the findings of this consultation and may require reinitiation of consultation with NMFS.

The San Juan Harbor project impacted seagrass in the area of the Puerto Nuevo Channel when the federal channel was dredged. The original mitigation plan for the federal navigation project contemplated the expansion of an existing seagrass-colonized shoal in the same area (Figure 1). This plan has now been changed to backfill 4 acres of previously-dredged holes in Condado Lagoon, San Juan, Puerto Rico, to provide habitat for seagrass (approximate position 18.4301°N, 66.1104°W, North American Datum of 1983 [NAD83], Figure 2). The fill material will be taken from the Esperanza Ecosystem Restoration area in the San Juan Bay, Cataño, Puerto Rico (approximate position 18.4301°N, 66.1104°W, NAD83, Figure 3). These borrow sites are entrances to La Esperanza Ecosystem Restoration Project that have recently shoaled and fall largely within the impact footprint of that project. Opening of the shoals is needed to restore flow and circulation in the area. The material is sand in the area of the shoals. Note that the alternative borrow site in the San Antonio Channel (approximate position 18.4301°N, 66.1104°W, NAD83, Figure 3) is no longer a proposed source of fill material because testing indicated that the material is largely silt and would not be suitable for the intended use.

The USACE selected the placement of fill in 4 acres of Condado Lagoon as the preferred alternative to the previously-proposed mitigation due to USACE's engineering concerns related



to the ability to hold sediment in place to raise the elevation of the original mitigation site adjacent to Puerto Nuevo Channel to a level sufficient to provide habitat for seagrass. In addition, the cost of the previously proposed mitigation exceeds the funds the USACE has been able to obtain for the project. Despite the completion of the federal navigation project, the mitigation has been delayed for over 10 years. As a result, the USACE selected the Condado Lagoon site as the preferred alternative because the plan to fill the dredged pits in the lagoon is part of the *Comprehensive Conservation and Management Plan for the San Juan Bay Estuary* (see <http://www.estuario.org/index.php/ccmp-english>).

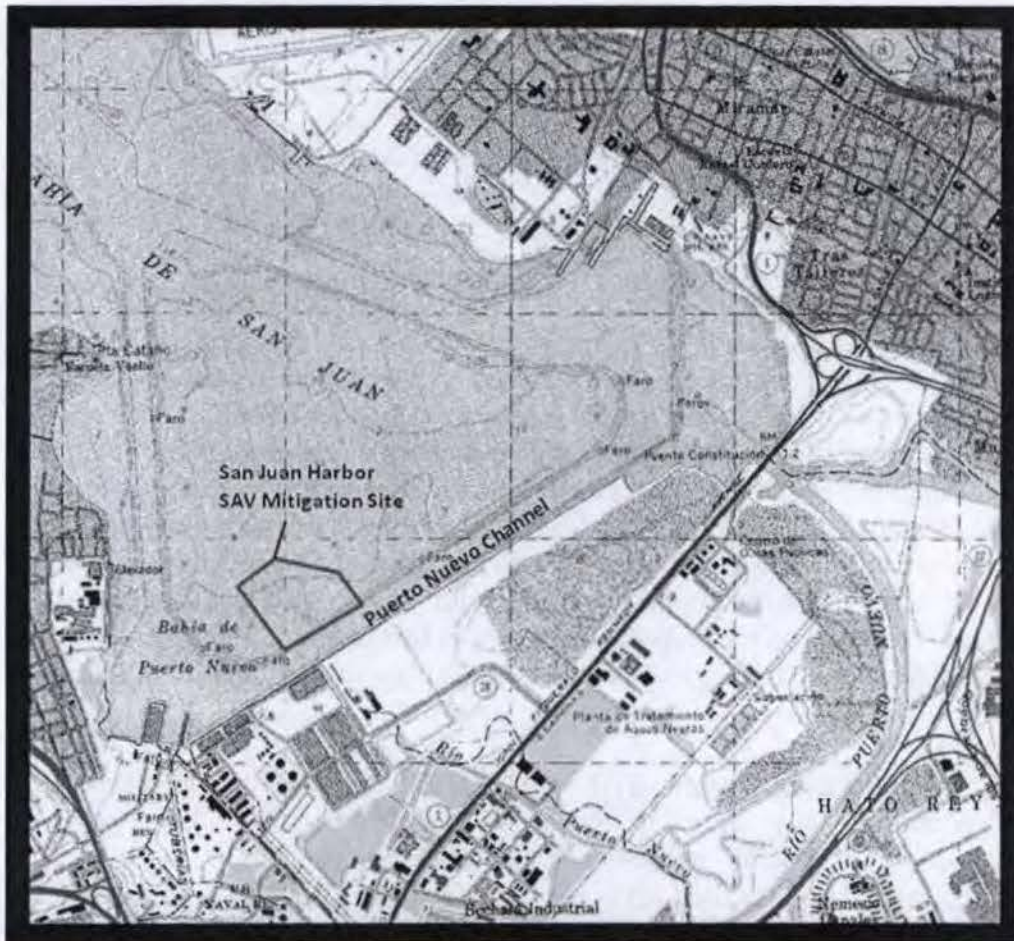


Figure 1. Figure from Draft Environmental Assessment (DEA) prepared for the project showing the originally proposed seagrass mitigation site along the Puerto Nuevo Channel (USACE 2014)

The project will require the dredging and transport of approximately 50,000 cubic yards (yd^3) of material from the borrow site or sites to the lagoon. The USACE is proposing the use of a barge-mounted mechanical dredge, such as a clamshell dredge, or a hydraulic dredge. The barge would then transport the material to the easternmost portion of the San Antonio Channel where it would be pumped through a 12-inch-diameter pipeline to the dredged pit in the lagoon. The pipeline will be submerged due to recreational activity in the area and related safety concerns. This could result in impacts to the seagrass beds at the easternmost end of the San Antonio Channel and in the Condado Lagoon, but the USACE anticipates that these impacts would be temporary and that seagrass would recover naturally due to the small size of the pipeline and the short time line for project completion. The USACE anticipates that 500-5,000 yd^3 of material will be dredged each

day. This will translate to between 30-120 days of dredging and fill placement in Condado Lagoon unless there are weather or equipment failure delays that would increase the time needed to complete the work.

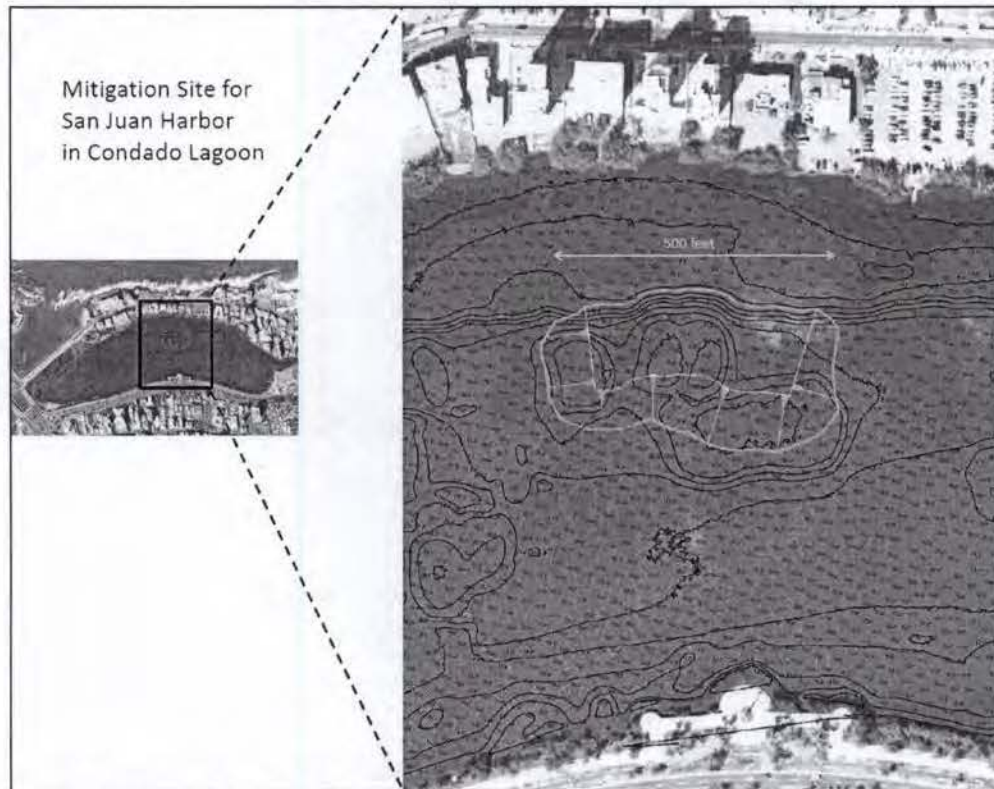


Figure 2. Figure from DEA showing the proposed location of the dredged pit that will be filled under the new mitigation plan (USACE 2014)

The USACE will include the following requirements for protection of ESA-listed species as special conditions of the contract for completion of the work:

1. Compliance with the National Marine Fisheries Service's (NMFS) *Sea Turtle and Smalltooth Sawfish Construction Conditions* (dated March 23, 2006, enclosed).
2. Compliance with NMFS's *Vessel Strike Avoidance Measures and Reporting for Mariners* (revised February 2008, enclosed).
3. Compliance with Section 401 requirements of the Clean Water Act related to turbidity controls, including required monitoring of turbidity in the lagoon where dredged material will be deposited.



Figure 3. Figure from DEA showing the locations of the borrow sites (the alternative borrow source in San Antonio Channel is no longer proposed) and fill area in the lagoon (USACE 2014)

ESA-listed species under our purview that may occur in the area include green (*Chelonia mydas*) and hawksbill (*Eretmochelys imbricata*) sea turtles. Hawksbill and green sea turtles are reported in various portions of San Juan Bay by the Puerto Rico Department of Natural and Environmental Resources, based on information provided as part of previous ESA Section 7 consultations for the project area. In addition, hawksbill sea turtles are known to nest on the beach to the northeast of the proposed fill location, in the area adjacent to the Condado Plaza Hotel in Condado Lagoon. The USACE project-effects analysis did not consider the potential impacts to hawksbill sea turtles from the proposed action, but we consider them in this response because they are present in the action area.

Dredging and Sedimentation Effects on Corals and Critical Habitat

The project is located within ESA-designated *Acropora* coral critical habitat and areas containing the essential features of coral critical habitat¹ are present at the mouth of Condado Lagoon. ESA-listed elkhorn (*Acropora palmata*) and staghorn (*Acropora cervicornis*) coral colonies have not been reported inside the lagoon, but are present on nearshore hard bottom areas outside the mouth of the lagoon and along portions of the north coast in this area, based on information in our files. On September 10, 2014, we issued a final rule listing 5 Atlantic coral species as

¹The essential feature of critical habitat for listed corals is substrate of suitable quality and availability, in water depths from the mean high water line to 30 m, to support successful larval settlement, recruitment, and reattachment of fragments. Substrate of suitable quality and availability means consolidated hard bottom or dead coral skeletons free from fleshy macroalgae and sediment cover.

threatened: lobed star (*Orbicella* [formerly *Montastraea*] *annularis*), mountainous star (*Orbicella faveolata*), boulder star (*Orbicella franksi*), pillar (*Dendrogyra cylindris*), and rough cactus corals (*Mycetophyllia ferox*). These 5 recently listed coral species have not been reported inside the lagoon, based on a review of our project files. The USACE did not provide any information regarding the presence of ESA-listed corals or their critical habitat in the area of the borrow sites or fill site because they have not conducted benthic surveys for this project. However, a review of our project files, including benthic surveys from other projects, indicates that the dredged pits where fill will be placed are uncolonized though there are some areas with mangroves and seagrass in shallow waters outside the pits. Fill placement will take place further into the lagoon where circulation is poor, according to information provided by the USACE. The fill material will be mainly sand, which is heavier (than silt) and settles quickly to the bottom versus drifting long distances in the water column. The USACE will require water quality monitoring and compliance with turbidity standards during fill placement to ensure that areas outside the dredged pit are not affected by the re-suspension of material as fill material is deposited in the pit. Therefore, we do not anticipate impacts to areas at the mouth of the lagoon containing coral critical habitat or to ESA-listed corals from the proposed placement of fill in the dredged pit.

Information in our project files indicates that hard corals may be present on the bridge piles between the San Antonio Channel and the Condado Lagoon, but we do not have reports of ESA-listed coral colonies being present in these areas. Based on information in our project files, the area does not contain the essential feature for staghorn and elkhorn coral critical habitat as the marine bottom is sand with seagrass. The pipeline used to pump dredged sediments to the fill site will pass through this area, but it will be anchored on the sea bottom so that it does not shift during the course of the project. We do not have any information indicating that ESA-listed corals or their critical habitat are present in the area of La Esperanza where the borrow sites are located. Although many of these areas were altered as part of the ecosystem restoration project, the USACE reported no coral impacts. In addition, the peninsula was created using dredge spoil material consisting of sand and shells from dredging of the San Juan Harbor several decades ago. This indicates that corals and the essential feature of elkhorn and staghorn coral critical habitat are not present in the area where dredging will take place. Based on prior experience during the original La Esperanza restoration project, the USACE also expressed 2 expectations for the current project: (1) as the dredged material is sand with low silt content, dredging activities will not result in increases in background turbidity; (2) although naturally high due to the high-energy environment, they do not expect suspended sediment levels to increase. For the reasons stated above, we do not anticipate impacts to coral critical habitat or ESA-listed corals from the proposed dredging of the borrow areas. The USACE will require a benthic survey for the route prior to any installation of the pipeline. The survey results will be shared with NMFS in the event hard corals are found in order to cooperatively select the best route to avoid coral impacts.

Risk of Vessel Strikes and Dredging Impacts to Sea Turtles

Hawksbill and green sea turtles have been reported in waters of San Juan Bay. Hawksbill and green sea turtles may also be present in Condado Lagoon and hawksbills are known to nest on the beach near the lagoon mouth. There is refuge and foraging habitat in Condado Lagoon, particularly in the area between the Dos Hermanos Bridge and the Condado Hilton where dense seagrass beds occur. There is also colonized hard bottom in this area, toward the sea portion of the lagoon. In the San Juan Bay, there is no nesting habitat, but there are areas containing

estuarine habitat; particularly mangroves and some seagrass beds in the eastern portion of the San Antonio Channel. There may be a risk of sea turtles being struck by work vessels transiting to and from the borrow sites, particularly in the area of La Esperanza and the point in the San Antonio Channel where the dredging pipeline will be located. Dredging will be done using a barge-mounted dredge such as a clamshell or hydraulic dredge from the San Juan Bay side of the peninsula (see Figure 3). Dredging will take place only in one or both of the shoaled areas at the openings of La Esperanza peninsula into the San Juan Bay. No sea turtles have been reported inside the peninsula, likely because the area is characterized by shallow waters and soft, uncolonized bottom. Also, it is presumed that if a sea turtle were in the action area, undetected, when dredging commenced, it would leave the area of its own volition, as there are no physical impediments to prevent it from leaving. No barriers are proposed around the area to be dredged that would interfere with the movement of sea turtles away from the dredge. The use of a clamshell or hydraulic dredge enables sea turtles to move away from the area being dredged because of the slow movement of these types of dredges². The USACE will require that NMFS's *Vessel Strike Avoidance Measures and Reporting for Mariners* be implemented during all vessel transit associated with the project, including that of the dredge barge. Thus we believe that the risk of vessel strikes from work vessel transits will be discountable. We also believe the risk of dredging equipment impacts to sea turtles will be discountable. Required compliance with NMFS's *Sea Turtle and Smalltooth Sawfish Construction Conditions* will provide additional protection by requiring work to stop if a sea turtle is seen within 50 ft of operating machinery.

Construction Turbidity Effects on Sea Turtle Foraging Habitat

During the dredging of borrow areas to provide fill material, sediments could be re-suspended and transported to the few areas within the San Juan Bay containing seagrass beds and estuarine habitat potentially used by sea turtles, resulting in indirect adverse effects to the species. A report prepared for the USACE as part of the mitigation planning for the past federal navigation project in San Juan Bay indicates that there are few areas in the bay where seagrasses occur, likely due to the highly turbid nature of deeper water areas within the bay associated with port activities.³ It is likely that any sediment re-suspension and transport resulting from the proposed dredging would not be distinguishable from turbidity and suspended sediments already in the water column due to port activities. In the Condado Lagoon, the USACE anticipates that the material placed in the dredged pit will remain there because the lagoon is not a high-energy environment. If any fine sediments are re-suspended during periods of high winds, the USACE anticipates that they will be contained within the larger dredged pit as the area is composed of a series of depressions created by the dredging activities in the 1950s. In addition, the USACE is proposing the use of sandy material rather than any material with large amounts of organics or fine-grain particles. The USACE believes that the small volume of sandy material, 500-5,000 yd³ (compared to the total area of the dredged pits in this portion of the lagoon), deposited daily for up to 120 days in the fill site within the lagoon is unlikely to cause dispersion of sediment or displacement of anoxic water into shallower areas. The USACE will comply with the Puerto

² U.S. Army Engineer Waterways Experiment Station. 1990. Environmental Effects of Dredging. Technical Note EEDP-09-6. 14 pp.

³ Dial Cordy and Associates, Inc. 2003. San Juan Harbor Mitigation Baseline Survey and Conceptual Design. Prepared for the U.S. Army Corps of Engineers Jacksonville District. Dial Cordy and Associates, Inc., Jacksonville Beach, FL. 14 pp.

Rico Water Quality Standards related to turbidity monitoring as required by the Clean Water Act. The finished elevations of the fill area will also be surveyed to ensure that depth specifications were met. Therefore, we believe that construction turbidity effects to potential sea turtle foraging habitat are discountable.

Because the overall goal of the project is to provide sufficient elevation to enable seagrass to naturally recolonize the filled area, thus beginning the re-establishment of seagrass in the areas of the lagoon that were impacted by historic dredging activities. Given this objective, we recommend that the USACE require periodic monitoring of the filled area to determine whether seagrass colonization occurs. If monitoring indicates that no colonization has occurred after 6 months, then the USACE should propose an alternate mitigation to compensate for the loss of 1.2 acres of seagrass that may serve as foraging habitat for green sea turtles due to the federal navigation project completed in the area of the Puerto Nuevo Channel.

Finally, we concur with USACE's determination that the proposed action may affect, but is not likely to adversely affect, green sea turtles. We have also determined that the project may affect, but is not likely to adversely affect, hawksbill sea turtles. The action will have no effect on ESA-listed corals. We also conclude the action will have no effect on coral critical habitat. This concludes your consultation responsibilities under the ESA for species under NMFS's purview. Be advised that a new consultation must be initiated if a take occurs or new information reveals effects of the action not previously considered, or the identified action is subsequently modified in a manner that causes an effect to listed species or critical habitat in a manner or to an extent not previously considered, or if a new species is listed or critical habitat designated that may be affected by the identified action.

We have enclosed additional relevant information for your review. We look forward to further cooperation with you on other projects to ensure the conservation of our threatened and endangered marine species and designated critical habitat. If you have any questions regarding this consultation, please contact Dr. Lisamarie Carrubba, Consultation Biologist, at (787) 851-3700, or by email at Lisamarie.Carrubba@noaa.gov.

Sincerely,



for Roy E. Crabtree, Ph.D.
Regional Administrator

- Enc.: 1. *Sea Turtle and Small Tooth Sawfish Construction Conditions*
(Revised March 23, 2006)
2. *Vessel Strike Avoidance Measures and Reporting for Mariners*
(Revised February 2008)
3. *PCTS Access and Additional Considerations for ESA Section 7 Consultations*
(Revised June 11, 2013)

cc: USACE – Kenneth Dugger
F/SER4 – José Rivera, Pace Wilber

File: 1514.22.F.9

SEA TURTLE AND SMALLTOOTH SAWFISH CONSTRUCTION CONDITIONS

The permittee shall comply with the following protected species construction conditions:

- a. The permittee shall instruct all personnel associated with the project of the potential presence of these species and the need to avoid collisions with sea turtles and smalltooth sawfish. All construction personnel are responsible for observing water-related activities for the presence of these species.
- b. The permittee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing sea turtles or smalltooth sawfish, which are protected under the Endangered Species Act of 1973.
- c. Siltation barriers shall be made of material in which a sea turtle or smalltooth sawfish cannot become entangled, be properly secured, and be regularly monitored to avoid protected species entrapment. Barriers may not block sea turtle or smalltooth sawfish entry to or exit from designated critical habitat without prior agreement from the National Marine Fisheries Service's Protected Resources Division, St. Petersburg, Florida.
- d. All vessels associated with the construction project shall operate at "no wake/idle" speeds at all times while in the construction area and while in water depths where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels will preferentially follow deep-water routes (e.g., marked channels) whenever possible.
- e. If a sea turtle or smalltooth sawfish is seen within 100 yards of the active daily construction/dredging operation or vessel movement, all appropriate precautions shall be implemented to ensure its protection. These precautions shall include cessation of operation of any moving equipment closer than 50 feet of a sea turtle or smalltooth sawfish. Operation of any mechanical construction equipment shall cease immediately if a sea turtle or smalltooth sawfish is seen within a 50-ft radius of the equipment. Activities may not resume until the protected species has departed the project area of its own volition.
- f. Any collision with and/or injury to a sea turtle or smalltooth sawfish shall be reported immediately to the National Marine Fisheries Service's Protected Resources Division (727-824-5312) and the local authorized sea turtle stranding/rescue organization.
- g. Any special construction conditions, required of your specific project, outside these general conditions, if applicable, will be addressed in the primary consultation.

Revised: March 23, 2006



Vessel Strike Avoidance Measures and Reporting for Mariners NOAA Fisheries Service, Southeast Region

Background

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

Protected Species Identification Training

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

Vessel Strike Avoidance

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

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

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

Additional Requirements for the North Atlantic Right Whale

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

Injured or Dead Protected Species Reporting

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

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

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

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

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

NOAA Fisheries Service
Southeast Regional Office

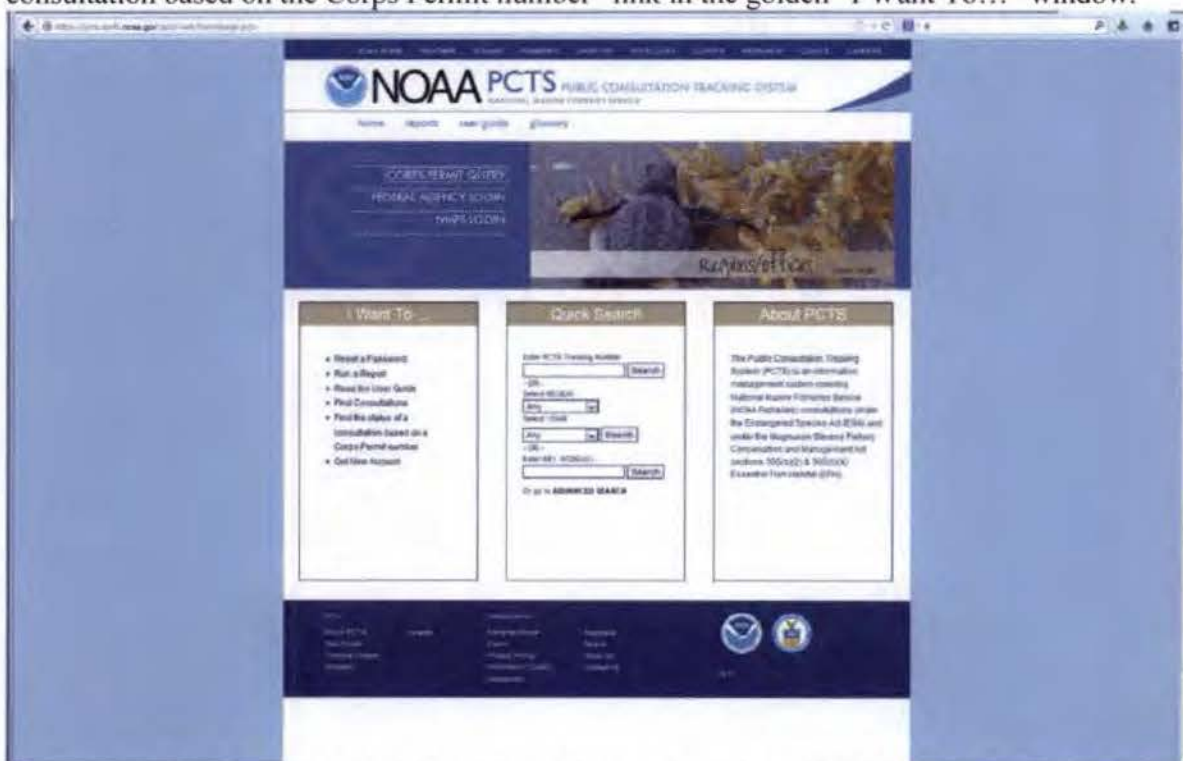
263 13th Avenue South
St. Petersburg, FL 33701
Tel: (727) 824-5312

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

PCTS Access and Additional Considerations for ESA Section 7 Consultations (Revised 6-11-2013)

Public Consultation Tracking System (PCTS) Guidance: PCTS is a Web-based query system at <https://pcts.nmfs.noaa.gov/> that allows all federal agencies (e.g., U.S. Army Corps of Engineers - USACE), project managers, permit applicants, consultants, and the general public to find the current status of NMFS's Endangered Species Act (ESA) and Essential Fish Habitat (EFH) consultations which are being conducted (or have been completed) pursuant to ESA Section 7 and the Magnuson-Stevens Fishery Conservation and Management Act's (MSA) Sections 305(b)2 and 305(b)(4). Basic information including access to documents is available to all.

The PCTS Home Page is shown below. For USACE-permitted projects, the easiest and quickest way to look up a project's status, or review completed ESA/EFH consultations, is to click on either the "Corps Permit Query" link (top left); or, below it, click the "Find the status of a consultation based on the Corps Permit number" link in the golden "I Want To..." window.



Then, from the "Corps District Office" list pick the appropriate USACE district. In the "Corps Permit #" box, type in the 9-digit USACE permit number identifier, with no hyphens or letters. Simply enter the year and the permit number, joined together, using preceding zeros if necessary after the year to obtain the necessary 9-digit (no more, no less) number. For example, the USACE Jacksonville District's issued permit number SAJ-2013-0235 (LP-CMW) must be typed in as 201300235 for PCTS to run a proper search and provide complete and accurate results. For querying permit applications submitted for ESA/EFH consultation by other USACE districts, the procedure is the same. For example, an inquiry on Mobile District's permit MVN201301412 is entered as 201301412 after selecting the Mobile District from the "Corps District Office" list. PCTS questions should be directed to Eric Hawk at Eric.Hawk@noaa.gov or (727) 551-5773.

EFH Recommendations: In addition to its protected species/critical habitat consultation requirements with NMFS' Protected Resources Division pursuant to Section 7 of the ESA, prior to proceeding with the proposed action the action agency must also consult with NMFS' Habitat Conservation Division (HCD) pursuant to the MSA requirements for EFH consultation (16 U.S.C. 1855 (b)(2) and 50 CFR 600.905-.930, subpart K). The action agency should also ensure that the applicant understands the ESA and EFH processes; that ESA and EFH consultations are separate, distinct, and guided by different statutes, goals, and time lines for responding to the action agency; and that the action agency will (and the applicant may) receive separate consultation correspondence on NMFS letterhead from HCD regarding their concerns and/or finalizing EFH consultation.

Marine Mammal Protection Act (MMPA) Recommendations: The ESA Section 7 process does not authorize incidental takes of listed or non-listed marine mammals. If such takes may occur an incidental take authorization under MMPA Section 101 (a)(5) is necessary. Please contact NMFS' Permits, Conservation, and Education Division at (301) 713-2322 for more information regarding MMPA permitting procedures.



DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
P.O. BOX 4970
JACKSONVILLE, FLORIDA 32232-0019

REPLY TO
ATTENTION OF

Planning Division
Environmental Branch

JUN 09 2010

Mr. Miles Croom
Assistant Regional Administrator
U.S. National Marine Fisheries Service
Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701

Dear Mr. Croom:

The U.S. Army Corps of Engineers (Corps), Jacksonville District and the Environmental Protection Agency Region 2 (EPA-R2) have prepared the 2010 Final Draft-Site Management and Monitoring Plan (SMMP) for the San Juan Harbor Puerto Rico Dredged Material Disposal Site (SJS) in accordance with Section 102 and Section 103 of the Marine Protection, Research, and Sanctuary Act of 1972 (MPRSA).

The purpose of this SMMP is to assure that each dredged material site is monitored and managed to minimize adverse effects on all aspects of the natural and human environment, including commercially and recreationally important fish species, threatened and endangered species, water quality and other environmental parameters of concern to local and Federal agencies. The specific sampling and monitoring measures outlined in the Plan aim to substantiate that the use of the SJS does not result in environmental degradation at the site or in the surrounding environment. Only contaminant-free, marine dredged material is eligible for disposal at an offshore site, according to the provisions of joint EPA/Corps regulations, and in accordance with the MPRSA.

The Corps is required to determine any impacts that might be caused by the work on any Federally listed endangered or threatened species and their critical habitat. Under the requirements of the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA), the Corps has determined the work as currently envisioned will not adversely affect marine resources or their critical habitats identified by the National Marine Fisheries Service (NMFS) (see parts 7.3 and 7.4 of the SMMP). By means of this letter, the Corps requests your concurrence with this determination.

If you have any questions or need additional information, please contact Ivan Acosta, Chief of the Special Projects Section by telephone at (904) 232-1693 or by e-mail at Ivan.Acosta@usace.army.mil or contact Javier Cortes, Environmental Engineer by telephone at (904) 232-1896 or by e-mail at Javier.Cortes@usace.army.mil.

Sincerely,



for Eric P. Summa
Chief, Environmental Branch

Enclosure

Copies Furnished:

Mark Reiss, EPA
David Hobbie, CESAJ-DP
Ivan Acosta, CESAJ-PD-EP
Javier Cortes, CESAJ-PD-EP



DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
P.O. BOX 4970
JACKSONVILLE, FLORIDA 32232-0019

REPLY TO
ATTENTION OF

Planning Division
Environmental Branch

JUN 09 2010

Dr. Lisamarie Carrubba
U.S. National Marine Fisheries Service
Habitat Conservation Division
P.O. Box 1310
Boquerón, Puerto Rico 00622

Dear Dr. Carrubba:

The U.S. Army Corps of Engineers (Corps), Jacksonville District and the Environmental Protection Agency Region 2 (EPA-R2) have prepared the 2010 Final Draft Site Management and Monitoring Plan (SMMP) for the San Juan Harbor Puerto Rico Dredged Material Disposal Site (SJS) in accordance with Section 102 and Section 103 of the Marine Protection, Research, and Sanctuary Act of 1972 (MPRSA).

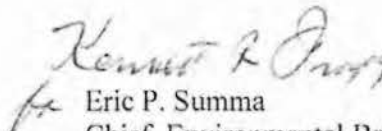
The purpose of this SMMP is to assure that each dredged material site is monitored and managed to minimize adverse effects on all aspects of the natural and human environment, including commercially and recreationally important fish species, threatened and endangered species, water quality and other environmental parameters of concern to local and Federal agencies. The specific sampling and monitoring measures outlined in the Plan aim to substantiate that the use of the SJS does not result in environmental degradation at the site or in the surrounding environment. Only contaminant-free, marine dredged material is eligible for disposal at an offshore site, according to the provisions of joint EPA/Corps regulations, and in accordance with the MPRSA.

The Corps is required to determine any impacts that might be caused by the work on any Federally listed endangered or threatened species as required under Section 7 of the Endangered Species Act (ESA), and to take action to avoid such adverse effects. Although some marine mammals and sensitive species have been identified within and around the perspective disposal area, these only appear to range the SJS while in transit to other areas.

Under the requirements of the Section 7 ESA and the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA), the Corps has determined the work as currently envisioned will not adversely affect any Federally or locally listed endangered or threatened species, or their critical habitats or any significant essential fish habitat (see parts 7.3 and 7.4 of the SMMP). By means of this letter, the Corps requests your concurrence with this determination.

If you have any questions or need additional information, please contact Ivan Acosta, Chief of the Special Projects Section by telephone at (904) 232-1693 or by e-mail at Ivan.Acosta@usace.army.mil or contact Javier Cortes, Environmental Engineer by telephone at (904) 232-1896 or by e-mail at Javier.Cortes@usace.army.mil.

Sincerely,


for Eric P. Summa
Chief, Environmental Branch

Enclosure

Copies Furnished:

Mark Reiss, EPA
David Hobbie, CESAJ-DP
Ivan Acosta, CESAJ-PD-EP
Javier Cortes, CESAJ-PD-EP



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Boqueron Field Office
Carr. 301, KM 5.1, Bo. Corozo
P.O. Box 491
Boqueron, PR 00622

JUL 07 2010



Givela ✓
FYI/A
7/9

Mr. Sindulfo Castillo
Chief Antilles Regulatory Section
U.S. Army Corps of Engineers
400 Fernández Juncos Avenue
San Juan, Puerto Rico 00901-3299

Re: San Juan Harbor, Puerto Rico
Dredged Material Disposal Site

Dear Mr. Castillo:

Thank you for your letter dated June 9, 2010 requesting comments regarding the above referenced project. Our comments are provided as technical assistance under the Endangered Species Act (87 Stat. 884, as amended; 16 United States Code 1531 et seq.) and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.). Please refer to project identification number **FWS-72127-011** in any further correspondence.

The US Army Corps of Engineers (Corps) and the US Environmental Protection Agency (EPA) have submitted the final draft of the *Site Management and Monitoring Plan (SMMP) for the San Juan Harbor Puerto Rico Dredged Material Disposal Site (SJS)*. In March 1988, the SJS was designated as a Final Ocean Dredged Material Disposal Site to receive materials from the San Juan Harbor area and the final SMMP was adopted on January 5, 2000. The Marine Protection, Research, and Sanctuaries Act of 1972 (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.

The SJS has an area of approximately 1 square nautical mile located approximately 2.2 nautical miles north-northwest of the entrance to San Juan Harbor. The only source of material that is expected to be placed at the site during the projected period is dredged material resulting from maintenance of navigable depths in San Juan Harbor and dredged material resulting from construction and maintenance of the Río Puerto Nuevo Flood Control Project. There are no proposed limitations on the quantity of material that may be placed at the site.

We do not agree with Section 7.3 of the SMMP which specifies that the SJS does not encompass any known breeding, feeding, or nursery areas of marine mammal, sea turtles or birds. The San Juan Bay harbors suitable habitat for the endangered Antillean manatee (*Trichechus manatus manatus*). Please be aware that from August 16 to August 18, 2006, four males and one female adult Antillean manatees were found dead in the San

Juan Bay area. The cause of death for these animals was determined to be human related due to a large boat impact. Dead manatees showed signs of blunt trauma and large boat propeller scars. When a single female is associated to a group of males, they are forming a mating herd and the manatees are extremely active and thus visible. This event, although unfortunate, serves as evidence that manatees do use the San Juan Bay area for breeding behaviors. This accident may have been prevented by following idle speed zones within the San Juan Bay and/or by having an observer on board while transiting in that area.

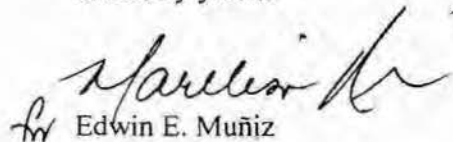
We concur with Section 9.3 of the SMMP which specifies that impacts to sensitive species (e.g. marine mammals, sea turtles, brown pelicans) will be avoided or minimized through the use of on board observers and that disposal would not be allowed to occur in the presence of such species. Dredging should also not be allowed to occur in the presence of sensitive species. Please review attached manatee conservation measures for in-water projects. The attached conservation measures should be implemented during the operation of the project to minimize possible adverse effects to manatees, sea turtles and the brown pelican.

If any marine mammal, sea turtle, brown pelican or other wildlife are injured or found dead at any time, please contact the nearest Department of Natural and Environmental Resources Law Enforcement Office (787-724-5700) or the Marine Mammal Rescue Program at 787-833-2025, 787-538-4684 or 787-645-5593.

Based on the above, we concur with the determination that the proposed activities are not likely to affect the Antillean manatee. Should additional information on listed or proposed species become available, this determination may be reconsidered.

Thank you for the opportunity to comment on this project. If you have any questions or require additional information, please contact Jan Zagarra at 787-851-7297 extension 220. You may also visit our website <http://www.fws.gov/caribbeann/ES> for additional information on threatened and endangered species under jurisdiction.

Sincerely yours,


Edwin E. Muñiz
Field Supervisor
Caribbean Field Office

jpz

cc
EPA, San Juan
EQB, San Juan

Technical Assistance to Evaluate Effects on Manatees

The Service considers shallow coastal areas, bays, estuaries and mangrove lagoon ecosystems as important for the conservation of the Antillean manatee because these areas contain all the natural elements preferred by manatees: abundant sea grass relatively calm waters, sheltered spots, and freshwater sources, as well as a relatively low number of boats within the bay. Actions proposed for these areas should be carefully examined, to ensure that elements required by this species are not compromised.

To evaluate the potential effect of proposed action on manatees, we need the applicants to address the following issues:

1. Type and amount of watercraft associated to the project
2. Amount of boat facilities (e.g. ramps, piers, dry-stacks, buoys, among others)
3. Amount of habitat to be affected (e.g. acres of sea grasses)
4. Provisions / restrictions to be taken to prevent collisions with manatees (e.g. delineation of an entrance channel, marking buoys, navigation aids, among others).
5. Outreach efforts to be implemented concerning boat operation. One of the main components of a successful operation of facilities that implement mechanisms to safeguard threatened and endangered species is a comprehensive outreach program that clearly indicates to the public 1) the actions that the facility is undertaking to protect such species (including assurances on the implementation of protection measures), and 2) the activities that the public should take to minimize or prevent impacts to sensitive species and their habitats. Guidelines for safe operation of watercrafts should be included as part of the outreach/education component of the proposed project (example attached below).
6. Any other site-specific conservation measure applicable for the project.

Example of Conservation Measures for In-Water Projects (including dredging activities)

The following manatee conservation measures are recommended:

1. The contractor instructs all personnel associated with construction of the facility of the presence of manatees and the need to avoid collisions with manatees.
2. All construction personnel will be advised that there are civil and criminal penalties for harming, harassing, or killing manatees, which are protected under the Endangered Species Act of 1973 and the Marine Mammal Protection Act of 1972. The permittee and/or contractor will be held responsible for any manatee harmed, harassed, or killed as a result of construction of the project.

3. Siltation barriers will be made of material in which manatee cannot become entangled, are properly secured, and are regularly monitored to avoid manatee entrapment. Barriers must not block manatee entry to or exit from essential habitat.
4. All vessels associated with the project construction will operate at "no-wake/idle" speed at all times while in water where the draft of the vessel provides less than a 4-foot clearance from the bottom and that vessel will follow routes of deep water whenever possible.
5. If manatees are seen within 100 yards of the dredging area, all appropriate precautions shall be implemented to ensure protection of the manatees. These precautions shall include operating all equipment in such a manner that moving equipment does not come any closer than 50 meters of any manatee. Operation of any equipment closer than 50 meters to a manatee shall necessitate immediate shutdown of that equipment.
6. Any collision with and/or injury to a manatee shall be reported immediately to the Department of Natural and Environmental Resources law enforcement (787-724-5700) and the U.S. Fish and Wildlife Service, Caribbean Field Office (787-851-7297).
7. Temporary manatee awareness construction signs/buoys labeled "Manatee Habitat – Idle Speed In Construction Area" shall be installed and maintained in prominent locations within the construction area prior to initiation of construction. Temporary signs will be removed by the permitted upon completion of construction.
8. The contractor shall keep a log detailing sightings, collisions, or injury to manatees, which have occurred during the contract period. Following project completion, a report summarizing the above incidents and sightings will be submitted to the U.S. Fish and Wildlife Service, Caribbean Field Office, P.O. Box 491, Boquerón, Puerto Rico 00622.
9. Permanent bilingual manatee awareness signs (6) shall be installed and maintained at docking and launching facilities within 1 year of issuance of the permit. The location of the "Caution Manatee Area" sign and "Information Display" sign will be noted on the attached permit drawings. The permanent "Caution Manatee Area" sign will be three feet by four feet, 125 gauge 61TS aluminum, covered with white, engineer grade, reflective sheeting; black painted lettering; black screened design; and orange, engineer grade, reflective grade border. Sign installation specifications and permanent awareness sign criteria are attached to this permit.
10. A notarized verification letter stating that permanent signs have been installed at designated locations shall be forwarded to the Corps of Engineers, Antilles Regulatory Section, as soon as they are installed. Signs and pilings remain the responsibility of the owner(s) and are to be maintained for the life of the life of the docking and launching facility in a manner acceptable to the Corps of Engineers.
11. A permanent bilingual "Information Display" (consisting of two signs, "Manatee Basic for Boaters" and Antillean Manatee Fact Sheet") will be installed prior to mooring occupancy at a prominent location to increase the awareness of boaters using the facility of boats to these animals. The numbers of information Displays required will depend on the docking facility design. One Information Display is required at each boat ramp or travel lift (if applicable). Information Display locations will be as shown on the attached drawings. Information Displays remain the responsibility of the owner(s) and are to be

3. PERMANENT INFORMATION SIGNS These should indicate the following:

GUÍA PARA LA PROTECCIÓN Y CONSERVACIÓN DEL MANATÍ
(MANATEE PROTECTION AND CONSERVATION GUIDELINES)

1. Utilice gafas polarizadas mientras navega. Estas ayudan a detectar mejor al manatí, las áreas llanas y cualquier obstáculo en el mar. *(Use polarized sunglasses while navigating. These help to detect any manatee, shallow waters and any other obstacle in the water.)*
2. Si usted ve un manatí en la trayectoria de su embarcación, reduzca la velocidad a 5 mph y conduzca la embarcación fuera del paso del manatí o espere a que el manatí salga del área poniendo su embarcación en neutro. *(If you see a manatee within the path of your vessel, reduce the velocity to 5 mph and turn your vessel away from the manatee's path or wait until the manatee has moved from the area by putting your vessel in neutral.)*
3. Luego de asegurarse de que el manatí este fuera de la trayectoria de su embarcación, continúe navegando despacio (no más de 5 mph) hasta que su embarcación se encuentre a no menos de 50 pies (15 metros) del manatí. *(After you are certain that the manatee is well outside of the path of your vessel, resume navigation slowly (not more than 5 mph) until your vessel is not less than 50 feet (15 meters) away from the manatee.)*
4. Obedezca las zonas con límites de velocidad y reduzca la velocidad en aguas llanas menores a 10 pies de profundidad en particular cerca de la costa, en las desembocaduras de ríos, en praderas de hierbas marinas y manglares. *(Obey regulatory speed zones and reduce velocity in shallow waters less than 10 feet, particularly close to the coast, in river mouths, in sea grass beds and mangroves.)*
5. Si observa un manatí mientras usted esta en el agua, obsérvelo pasivamente, no lo persiga, acose o lo toque. *(If you observe a manatee while in the water, passively observe it, do not follow it, nor harass or touch.)*
6. No tire basura al agua. El manatí puede ingerirla o enredarse en ella, lo cual podría causarle heridas o la muerte. *(Do not throw trash in the water. Manatees may ingest or entangle on trash, which may injure or kill it.)*
7. Nunca alimente o le ofrezca agua a un manatí. Es ilegal y los malacostumbra a acercarse a lugares donde pueden ser lastimados. *(Never feed or give water to a manatee. It is illegal and will wrongly habituate them to approach areas where they can be injured.)*

Informe accidentes con un manatí inmediatamente. Si encuentra un bebé manatí solo, en peligro, herido o muerto, llame al Cuerpo de Vigilantes del Departamento de Recursos Naturales y ambientales al 787-724-5700 o al Programa de Rescate de Mamíferos Marinos al

787-833-2025, 787-538-4684 o 787-645-5593. *(Inform any accident with a manatee immediately. If you find a baby manatee alone, in danger, injured or dead, call the Department*

of Natural and Environmental Resources Law Enforcement at 787-724-5700 or the Marine Mammal Rescue Program at 787-833-2025, 787-538-4684 or 787-645-5593.)

Herir a matar un manatí puede conllevar multas de más de \$50,000 y/o no menos de dos años de cárcel. ¡EVITESE
ESTE RIESGO!

*(Harming or killing a manatee could carry fines of more than \$50,000 and/or not less than two years
in prison. AVOID THIS RISK!)*

¡GRACIAS POR AYUDAR A SALVAR LOS MANATÍES! THANKS FOR HELPING SAVE THE MANATEES

maintained for the life of the docking facility in a manner acceptable to the Corps of Engineers.

Example of Manatee Conservation Measures for Coastal Projects (not dredging activities)

The following manatee conservation measures are recommended:

1. All personnel associated with the project shall be instructed about the possible presence of manatees and the need to avoid collisions.
2. All on site personnel are responsible for observing water related activities for the presence of manatees. All in water operations including vessels must shut down if a manatee comes within 50 meters of the operation. Activities can resume once the manatee moves out of the 50 meters zone or after 30 minutes have passed without sighting a manatee. Manatees must not be herded or harassed into leaving the area.
3. All personnel will be advised that there are civil and criminal penalties for harming, harassing, or killing manatees, which are protected under the Endangered Species Act of 1973 and the Marine Mammal Protection Act of 1972. The permit tee and/or contractor will be held responsible for any manatee harmed, harassed, or killed as a result of construction of the project.
4. Siltation or turbidity barriers shall be made of material in which manatee cannot become entangled. The barrier shall be properly secured, and regularly monitored to avoid manatee entrapment. Barriers must not impede manatee movement.
5. Any collision with and/or injury to a manatee shall be reported immediately to the Department of Natural and Environmental Resources law enforcement (787-724-5700) and the U.S. Fish and Wildlife Service, Caribbean Field Office (787-851-7297).
6. The contractor shall keep a log detailing sightings, collisions, or injury to manatees, which have occurred during the contract period. Following project completion, a report summarizing the above incidents and sightings will be submitted to the U.S. Fish and Wildlife Service, Caribbean Field Office, P.O. Box 491, Boquerón, Puerto Rico 00622.
7. Temporary manatee awareness construction signs labeled "Manatee Habitat – Idle Speed in Project Area" shall be installed and maintained in prominent locations within the site prior to initiation of the project. Temporary signs will be removed by the permitted upon completion of construction.

Example of guidelines for safe operation of watercraft within manatee areas

1. TEMPORARY AWARENESS SIGNS

These should indicate the following:

CAUTION!
MANATEES IN THE AREA
Maintain idle speed (5 mph) within construction site

¡PRECAUCIÓN!
MANATÍES EN EL ÁREA
Mantenga velocidad baja (5 mph) dentro del área de construcción

2. PERMANENT AWARENESS SIGNS

These should indicate the following:

CAUTION!
MANATEES IN THE AREA
Maintain idle speed (5 mph) within the area

¡PRECAUCIÓN!
MANATÍES EN EL ÁREA
Mantenga velocidad baja (5 mph) dentro del área



FW: Official Mail: Coordination for the San Juan Harbor SMMP
Acosta, Ivan SAJ to: Mark Reiss

07/26/2010 03:07 PM

History: This message has been replied to.

1 attachment



vesselstrikeguideandform.pdf

Mark, here is what we got from NMFS in PR.

Ivan Acosta-Vincenty, REM, REPA, RHCMM
Chief Special Projects Section, Envr. Branch
Tel # 904-232-1693, Cell # 904-629-0158 and
Fax # 904-232-3442

-----Original Message-----

From: lisamarie carrubba [mailto:Lisamarie.Carrubba@noaa.gov]
Sent: Monday, July 26, 2010 12:46 PM
To: Cortes, Javier SAJ
Cc: Reiss.Mark@epamail.epa.gov; Acosta, Ivan SAJ
Subject: Re: Official Mail: Coordination for the San Juan Harbor SMMP

I have received the letter and apologize for the delay, but I have been out of the office and am the only person who handles consultations for the U.S. Caribbean. Based on a review of our records, consultation has not been completed previously for this action.

Please note that the SMMP does not address listed corals and their designated critical habitat (see page 14). Therefore, in order for us to complete consultation, this needs to be addressed in the document.

In addition, in terms of potential impacts to listed sea turtles and marine mammals, there is no information regarding whether conditions for the protection of these species, other than the conditions related to ensuring there are no leaks of dredged material, are required as part of the authorization of disposal operations. I am attaching a copy of the guidelines to which I am referring to this message. Once these issues have been addressed, we can complete consultation quickly.

In addition, please be aware that NMFS is conducting a status review for seven species of corals. Because some of the species are known to occur in deeper waters and because the Endangered Species Act (ESA) requires reinitiation of consultation if new species are listed, please be aware that consultation may need to be reopened should additional species of coral be listed under the ESA, which may also require benthic surveys to determine whether and to what extent the species occur in the area of the OMDS.

In terms of essential fish habitat (EFH), please contact Mr. Miles Croom, Assistant Regional Administrator, Habitat Conservation Division (miles.croom@noaa.gov, or 727-824-5317) to determine whether there are any concerns related to EFH.

Thank you,
Lee

Dr. Lisamarie Carrubba

NOAA Fisheries
Caribbean Field Office
P.O. Box 1310
Boquerón, PR 00622
787-851-3700
787-851-5588 (fax)

Cortes, Javier SAJ wrote:

> Dear Dr. Carrubba,
>
> The US Army Corps of Engineers, Jacksonville District, and
> Environmental Protection Agency, Region 2, completed the 30-day period
> for providing comments in the "Site Management and Monitoring Plan for
> the San Juan Harbor, Puerto Rico Dredged Material Disposal Site. We
> are in the process of finalizing this document, and we did not
> received any documentation from your agency. Please let us know that you
received the attached letter.
>
> Thank you,
>
> Javier Cortes
> Environmental Engineer
> US Army Corps of Engineers
> 904-232-1896
> 904-613-8247 Blackberry
>
> <<SJS SMMP NOAA-Carrubba.pdf>>



Vessel Strike Avoidance Measures and Reporting for Mariners NOAA Fisheries Service, Southeast Region

Background

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

Protected Species Identification Training

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

Vessel Strike Avoidance

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

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

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

Additional Requirements for the North Atlantic Right Whale

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

Injured or Dead Protected Species Reporting

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

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

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

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

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

NOAA Fisheries Service
Southeast Regional Office

263 13th Avenue South
St. Petersburg, FL 33701
Tel: (727) 824-5312

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



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

Dr. Lisamarie Carrubba
NOAA Fisheries
Caribbean Field Office
P.O. Box 1310
Boquerón, PR 00622

SEP 30 2010

Dear Dr Carrubba:

This letter is to reply to your email to Mr. Ivan Acosta of the U.S. Army Corps of Engineers communicating your concerns regarding implementation of the Site Monitoring and Management Plan for the San Juan Harbor, PR Ocean Dredged Material Disposal Site. Specifically, this letter serves to address NMFS concerns regarding threatened and endangered species in their trust and constitutes the coordination required under the Endangered Species Act.

In your email you reference page 14 of the draft SMMP and note that it is deficient in that it does not specifically address listed corals and their designated critical habitat. To address this concern, the following language will be added to this section:

c. Endangered and threatened corals

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

NOAA also identifies a species of deep water coral (*Oculina* spp) as a species of concern in Puerto Rico. The presence of this species however has not been confirmed on the northern coast of Puerto Rico in the vicinity of the SJS. In addition, NOAA-NMFS is proposing to list additional species of coral as threatened under the ESA. Many of these species occur as part of coastal or shelf edge reef habitats (i.e., depths <61 m). The SJS is located in waters substantially deeper and far removed from areas meeting this depth criterion. (see Shelf Edge Reef Resources (section 7.4)

While the language of the SMMP is not emphatic about protection of the listed corals and shelf edge reef habitat, the SMMP mandates stringent provisions that allow EPA and

USACE to rapidly detect any changes in barge draft that might suggest leakage or loss of material due to equipment malfunctions or operational problems (e.g., overloading). These provisions will allow the agencies to quickly halt or modify operational procedures to avoid detrimental impacts to coralline resources and habitats.

In addition to provisions related to ensuring there are no leaks of dredged material, the draft SMMP also includes requirements to post an observer on board each scow to ensure that no disposal occurs when a marine mammal or turtle is present at the site. To strengthen this provision and to provide further protection to sensitive species, the following conditions have been added to the Discharge Guidelines listed in Appendix B of the SMMP:

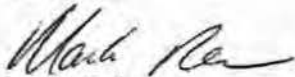
14. While underway, dredging contractor must adhere to all measures required in Appendix D of this SMMP (i.e., NMFS, Southeast Region Vessel Strike Avoidance Measures and Reporting for Mariners)
15. Upon arrival at the ODMDS, the DMI (dredging inspector) must maintain a watch at all times for marine mammals and sea turtles. Discharge of dredged material may not occur when there is a turtle or mammal 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.

We are aware that NMFS is conducting a status review for additional species of corals, including deepwater species. We will reinitiate consultation if NMFS chooses to list any additional species. We anticipate that this will be particularly important if indeed deeper water species are listed. In the interim, EPA will conduct a side scan SONAR survey to identify any hard bottom features present along anticipated routes used by dredging scows to transit between San Juan Harbor and the San Juan ODMDS. This work is scheduled to be conducted in November of this year.

We trust that the modifications made to the document adequately address NMFS concerns regarding ESA species. Please confirm your agreement that the above satisfies the consultation requirements of the ESA.

If you have any further questions please do not hesitate to contact me at 212-637-3799 or via email at reiss.mark@epa.gov.

Sincerely,



Mark Reiss

EPA Region 2, Division of Environmental Planning and Protection

Re: URGENT: ESA CONSULTATION SAN JUAN
lisamarie carrubba
to:
Mark Reiss
09/29/2010 05:39 PM
Show Details

History: This message has been replied to.
Mark:

The response adequately addresses the concerns in my e-mail of July 21, 2010, to the Corps of Engineers regarding the San Juan Harbor SMMP. The only correction would be to eliminate the note about *A. prolifera* being listed as NMFS determined that listing of the hybrid was not appropriate at this time.

Here is the page with information on the seven coral species undergoing a status review that occur in the Atlantic (and information on Pacific corals as well):
<http://sero.nmfs.noaa.gov/pr/esa/82CoralSpecies.htm>

Thanks,
Lee

Reiss.Mark@epamail.epa.gov wrote:

Hi Lee -

Hope all is well with you...attached is letter detailing the changes to the SMMP that we made to satisfy NMFS concerns RE endangered corals, mammals and turtles...

could you please do me the personal favor of turning this around as quickly as possible as I dropped the ball on getting this done and USACE is really under the gun for me to finalize the SMMP...thanks. All I need is an email from you.

Obviously if you have any other concerns I will look to address them...just let me know.

Thanks

Mark

In November, we will be in PR on the BOLD working from San Juan to the East (to Culebra, Vieques). As mentioned in the letter we will be performing sidescan off San Juan Harbor (out toward the ODMDS)...you want to tag along?

Re: [Fwd: Official Mail: Coordination for the San Juan Harbor SMMP]
Pace Wilber
to:
Javier.Cortes
07/26/2010 08:16 AM
Cc:
"Acosta, Ivan SAJ", Mark Reiss
Show Details

Hello Javier. We acknowledge receipt of your letter requesting comments on the Site Management and Monitoring Plan for the San Juan Harbor, Puerto Rico Dredged Material Disposal Site. Due to a shortage of staff, we are unable to review the plan from the perspectives of the Magnuson-Stevens Act or the Fish and Wildlife Coordination Act. If the Corps believes the project may affect species protected by the Endangered Species Act or their critical habitat, please consult with our office in St. Petersburg, FL.

We hope to have an person on board soon to focus on projects in Puerto Rico and the US Virgin Islands. If you have any questions, please call me at 843-953-7200 or Pace.Wilber@noaa.gov.

Pace

----- Original Message -----

Subject: Official Mail: Coordination for the San Juan Harbor SMMP

Date: Wed, 21 Jul 2010 13:25:17 -0400

From: Cortes, Javier SAJ <Javier.Cortes@usace.army.mil>

To: Miles.Croom@noaa.gov

CC: Reiss.Mark@epamail.epa.gov, "Acosta, Ivan SAJ" <Ivan.Acosta@usace.army.mil>

Dear Mr. Croom,

The US Army Corps of Engineers, Jacksonville District, and Environmental Protection Agency, Region 2, completed the 30-day period for providing comments in the "Site Management and Monitoring Plan for the San Juan Harbor, Puerto Rico Dredged Material Disposal Site. We are in the process of finalizing this document, and we did not received any documentation from your agency. Please let us know that you received the attached letter.

Thank you,

Javier Cortes
Environmental Engineer
US Army Corps of Engineers
904-232-1896
904-613-8247 Blackberry

--

Pace Wilber, Ph.D.
Atlantic Branch Chief, Charleston (F/SER47)

Southeast Regional Office, NOAA Fisheries
PO Box 12559
Charleston, SC 29422-2559

Street address:
219 Ft Johnson Road
Charleston, SC 29412

843-953-7200
FAX 843-953-7205
pace.wilber@noaa.gov

<http://sero.nmfs.noaa.gov/hcd/hcd.htm>



**UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration**

NATIONAL MARINE FISHERIES SERVICE

Southeast Regional Office

263 13th Avenue South

St. Petersburg, FL 33701-5505

(727) 824-5312, FAX (727) 824-5309

<http://sero.nmfs.noaa.gov>

F/SER31:LC

DEC 06 2010

Mr. Mark Reiss
Division of Environmental Planning and Protection
U.S. Environmental Protection Agency
Region 2
290 Broadway
New York, NY 10007-1866

Mr. Eric P. Summa
Chief, Environmental Branch
Planning Division
Jacksonville District Corps of Engineers
P.O. Box 4970
Jacksonville, FL 32232-0019

RE: Site Monitoring and Management Plan (SMMP) for the San Juan Harbor Ocean Dredged Material Disposal Site (ODMDS)

Dear Messrs. Reiss and Summa:

This responds to your September 30, 2010, letter indicating that the referenced SMMP language has been modified to address our concerns related to potential impacts to listed whales, sea turtles, and corals that may occur along transit routes to the ODMDS. The U.S. Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (COE) are responsible for the regulation and management of the ocean disposal of dredged materials. The EPA submitted details of the modifications to the language in the SMMP for the San Juan Harbor, Puerto Rico, ODMDS in response to concerns of the National Marine Fisheries Service (NMFS) pursuant to section 7 of the Endangered Species Act (ESA).

NMFS received a letter dated June 9, 2010, from the COE requesting our concurrence with the COE's determination that the implementation of the SMMP, including the management and monitoring of dredged material disposal activities between the San Juan Harbor and the ODMDS, may affect, but is not likely to adversely affect, listed whales, sea turtles, corals, and ESA-designated coral critical habitat. By e-mail dated July 26, 2010, NMFS requested that the SMMP include conditions to protect listed species of marine mammals and sea turtles from the impacts of vessel transit between dredging sites in the San Juan Harbor and the ODMDS. During a call on September 29, 2010, EPA clarified the changes to the language in the SMMP regarding protection of listed whales and sea turtles, as well as the measures related to monitoring of barges that enable the rapid detection of leakage or loss of material in order to correct the situation and ensure that material is not deposited in areas containing listed corals or



their ESA-designated critical habitat. EPA also noted that the transit routes to the site are being mapped in order to determine whether areas of colonized hardbottoms exist between the harbor and the ODMDS. If colonized hardbottom areas are found, the SMMP will be modified to reflect the transit routes to be followed between the San Juan Harbor and the ODMDS in order to minimize the potential that equipment malfunctions or operational problems that result in the loss of dredged material from barges in transit result in damage to listed corals or their habitat. Based on the information provided by the EPA, including the information in your September 30, 2010, letter; the modifications to the language of the SMMP; and the stringent provisions in the SMMP regarding the reporting and detection of barge draft which enables a determination of whether and where vessels have lost material, the SMMP and the implementation of the plan include measures to avoid and minimize potential impacts to listed species. Thus, the EPA and the COE have determined that the proposed dock construction may affect, but is not likely to adversely affect, listed species under NMFS' jurisdiction. You are reminded that any changes to the proposed action may negate the findings of the present consultation and may require reinitiation of consultation with NMFS.

The ODMDS for the San Juan harbor is an approximately one square nautical mile (nm) area located approximately 2.2 nm north-northwest of the entrance to the San Juan Harbor, San Juan, Puerto Rico (approximate bounding coordinates 18.50278°N, 66.15861°W; 18.50278°N, 66.14139°W; 18.5194°N, 66.14139°W; 18.5194°N, 66.15861°W). The site was designated for disposal of dredged material from San Juan Bay, including the area of Puerto Nuevo. The COE and the EPA are responsible for the preparation of a SMMP for each ODMDS pursuant to the requirements of Section 506 of the Water Resources and Development Act. COE and EPA have drafted a SMMP for the San Juan Harbor ODMDS. According to the information included in your letter, the language of the SMMP has been modified to include measures to address NMFS' concerns related to potential adverse effects to listed species (detailed below) due to the operation of the ODMDS.

Listed species under the purview of NMFS that occur in the area include humpback (*Megaptera novaeangliae*), blue (*Balaenoptera musculus*), finback (*Balaenoptera physalus*), sei (*Balaenoptera borealis*), and sperm whales (*Physeter macrocephalus*); hawksbill (*Eretmochelys imbricata*), leatherback (*Dermochelys coriacea*), loggerhead (*Caretta caretta*), and green sea turtles (*Chelonia mydas*); elkhorn (*Acropora palmata*) and staghorn (*A. cervicornis*) corals; and ESA-designated critical habitat for listed corals. Listed whales transit through the project area during their winter migrations and listed sea turtles transit through the project area, as nesting beaches occur to the east and west of the San Juan Harbor along the coasts of Isla Verde and Toa Baja. Listed coral colonies are reported along the coast east of the harbor entrance from in front of El Morro fort toward Condado Lagoon. Areas meeting the designated coral critical habitat definition are located along portions of the north coast in the project area as well, but no areas meeting the coral critical habitat definition are within the footprint of the ODMDS. The essential feature of critical habitat for listed corals is substrate of suitable quality and availability, in water depths from the mean high water line to 30 m, to support successful larval settlement, recruitment, and reattachment of fragments. Substrate of suitable quality and availability means consolidated hardbottom or dead coral skeletons free from fleshy macroalgae and sediment cover.

NMFS has analyzed the routes of potential effects to listed whales, sea turtles, and listed corals and ESA-designated coral critical habitat from the proposed action. Based on our analysis and project review, we have determined that these potential effects include the following: impacts to listed whales and sea turtles due to collisions with vessels transiting from dredge sites in the San Juan Harbor to the ODMDS; impacts to listed whales and sea turtles resulting from exposure to contaminated material during disposal of dredge spoil in the ODMDS; impacts to sea turtle refuge and foraging habitat, listed corals, and designated coral critical habitat associated with spills of dredged materials from barges in transit to the ODMDS; and impacts to sea turtle refuge and foraging habitat, listed corals, and designated coral critical habitat associated with the accidental grounding of barges in transit to and from the ODMDS.

NMFS believes that the proposed action may affect but is not likely to adversely affect listed whales and sea turtles. Listed whales and sea turtles in the water could be affected by vessel transit to and from the ODMDS. However, EPA and COE have included NMFS Southeast Region Vessel Strike Avoidance Measures and Reporting for Mariners as a requirement for barges transiting to and from the ODMDS. EPA and COE have also included a requirement that, upon arrival at the ODMDS, the dredging inspector maintain a watch for listed marine mammals and sea turtles to ensure that no disposal activities take place while animals are present. Further, based on information from a consultation with the U.S. Coast Guard for their Marine Events Program in the U.S. Caribbean, and information from the U.S. Fish and Wildlife Service, the only reported collisions with marine mammals in this area occurred inside the San Juan Bay in the Puerto Nuevo area when a vessel collided with five manatees. We have no records of collisions with marine mammals or sea turtles associated with the operation of the ODMDS site. Therefore, NMFS believes that impacts to listed whales and sea turtles due to collisions with vessels during transit to and from the ODMDS will be discountable.

NMFS believes that the proposed action may affect but is not likely to adversely affect listed whales and sea turtles. Listed whales and sea turtles could be affected during the deposition of dredge spoil in the ODMDS if they are swimming through the area or due to the release of contaminated material in the water column. However, EPA evaluates materials to be dredged to determine whether the concentrations of contaminants in the material would pose a risk to the environment and, if so, requires that materials be disposed of in a landfill or other approved terrestrial disposal site rather than in the ODMDS. The SMMP also contains requirements for monitoring of benthic organisms to ensure that the disposal of materials does not result in a shift in the benthic community to pollutant-tolerant organisms. The EPA and COE will also require that vessels follow NMFS' vessel strike guidelines as noted above, so deposition of material would not be allowed while whales or sea turtles are transiting through the area. Monitoring data indicate that levels of cadmium, chromium, mercury, nickel, and lead from samples taken in the ODMDS do not exceed the maximum concentrations for acute toxicity to aquatic organisms, but that the high end of the range of concentrations for arsenic, copper, and zinc do sometimes exceed these concentrations. However, arsenic occurs naturally in the volcanic soils of Puerto Rico and copper was used as an anti-fouling agent for vessels for many years and the dredge materials are from an active port. Further, 10,875,574 cubic yards of material has been disposed of in the ODMDS to date and no monitoring undertaken as part of the SMMP or reports from

completed disposal activities indicate that the benthic habitat or water or sediment quality have been significantly altered in the area of the ODMDS, or that sea turtles or whales were present during disposal activities. Therefore, NMFS believes that impacts to listed whales and sea turtles related to exposure to contaminants in the dredge spoil during disposal in the ODMDS will be discountable.

Listed sea turtles could be affected by the loss of refuge and foraging habitat as a result of the leakage or loss of dredged materials from barges transiting to the ODMDS. Likewise, listed corals and their designated critical habitat could be impacted by the leakage or loss of dredged materials from barges transiting to the ODMDS. However, as noted in your letter, the ODMDS is located in waters that are an average of 965 feet deep. EPA found loose sediments covering the bottom in the area of the entrance to the San Juan Harbor and the navigation channel, which is used by barges exiting the harbor in transit to the ODMDS, during past surveys using side-scan sonar and a remotely operated vehicle with a camera in the area of the navigation channel. In addition, EPA requires that vessels follow a strict discharge protocol that includes a monitoring system and reporting to EPA to ensure that no material leaks from vessels while in transit and that materials are deposited only in the ODMDS. EPA is also planning more detailed mapping of potential transit routes between the San Juan Harbor and the ODMDS in November 2010. Should any hardbottom features be identified along transit routes that may provide habitat for listed corals or contain the essential features for coral designated critical habitat, EPA will modify the SMMP to include required transit routes that avoid these areas to the maximum extent practicable so that, should leakage occur, materials will settle on uncolonized bottom rather than hard bottom areas. Therefore, NMFS believes that impacts to sea turtle refuge and foraging habitat, listed corals, and ESA-designated coral critical habitat from leakage of dredged materials from vessels in transit to the ODMDS will be discountable.

Listed sea turtles could be affected by the loss of refuge and foraging habitat as a result of the accidental grounding of vessels transiting to and from the ODMDS. Likewise, listed corals and their designated critical habitat could be impacted by the accidental grounding of vessels transiting to and from the ODMDS. However, the ODMDS is located in waters that are an average of 965 feet deep and there is a well-marked navigation channel at the entrance to the San Juan Harbor. EPA is planning more detailed mapping of potential transit routes between the San Juan Harbor and the ODMDS in November 2010 and will modify the SMMP to contain required transit routes should any hardbottom features be identified that may provide habitat for listed corals or contain the essential features for coral designated critical habitat. In addition, the ODMDS is located 2.2 nm offshore where there are no shallow-water features containing sea turtle or listed coral habitat. While there have been accidental groundings at the entrance to the San Juan Harbor, none of these groundings were barges associated with harbor dredging operations in transit to the ODMDS. Therefore, NMFS believes that impacts to sea turtle refuge and foraging habitat, listed corals, and ESA-designated coral critical habitat from the accidental grounding of vessels in transit to and from the ODMDS will be discountable.

This concludes the COE and EPA's consultation responsibilities under section 7 of the ESA for the San Juan Harbor ODMDS SMMP. Be advised that a new consultation must be initiated if a take occurs or new information reveals effects of the action not previously considered, or the



Response to Comments on the 5/12/2010 Draft Site Management and Monitoring Plan
for the San Juan Harbor, PR Ocean Dredged Material Disposal Site

January 5, 2011

U.S. Environmental Protection Agency, Region 2
290 Broadway
New York, New York 10007

2.0 Letters of Support/No Comment

Letters were submitted on July 9, 2010 by the Puerto Rico State Historic Preservation Office and the U.S. Department of Agriculture Natural Resources Conservation Service indicating that the two agencies had no reservations regarding the proposed SJS SMMP.

3.0 Technical Comments from Department of Natural and Environmental Resources (letter from Jose Basora-Fagundo, dated July 14, 2010)

Comment DNER-1: The Office of Specialized Services and Coastal Zone Management Program indicated that monitoring study results must be made available to local agencies.

Response: Section 12 of the SMMP envisions the establishment of a Scientific Review Panel comprised of local agency representatives, academia, and other stakeholders. Monitoring data will be freely shared with this group and will also be made publically available through the USACE website or upon request. No changes to the SMMP are required.

Comment DNER-2: The Office of Specialized Services suggested that “dredging projects must include contamination and sediment control components for incoming bay waters...”

Response: The comment is not relevant to the management and monitoring of the ocean disposal site but rather reflects the office’s recommendations regarding management actions in the watersheds of areas where dredging is to take place. As such, it is outside the scope of the draft document and no changes to the SMMP are required.

Comment DNER-3: The Water Resources and Minerals Area indicated that the plan is adequate but must address any impacts associated with the additional 4 million cubic yards anticipated to be disposed at SJS during the ten year window life of this revised SMMP.

Response: To date there have been no impacts associated with disposal of approximately 10 million cubic yards of materials dredged from San Juan Harbor navigation and flood control projects and there are no capacity issues at the site. Therefore, no impacts are anticipated to result from any additional volume anticipated to be placed during the life of the SMMP. All material approved for disposal at the SJS will have been evaluated to confirm that any contaminants present at greater than trace amounts as per the Regulations implementing MPRSA (40 CFR 227) and the SMMP includes various actions to ensure that any leaks or losses of material are avoided or detected and remedied immediately. No changes to the SMMP are required.

Comment DNER-4: Citing MPRSA, the Coastal Zone Management Program indicated that “only material free of contaminants can be deposited”.

Response: As stated in response to Comment DNER-3, all material approved for disposal at the SJS will have been evaluated for the presence of contaminants at greater than trace amounts as per the Regulations implementing MPRSA (40 CFR 227). No dredged material containing contaminants at greater than trace levels will be approved for disposal at the SJS.

Comment DNER-5: The Fish and Wildlife Bureau indicated that monitoring activities should be conducted on a two year frequency to confirm that the modeling used to make disposal decisions is correct or to allow for corrective actions.

Response: The SMMP suggests a monitoring frequency of approximately 5 years for conducting Tier 2 physical and biological monitoring (i.e., use of a sediment profile camera). EPA and USACE believe that due to research vessel availability, the expense of conducting offshore surveys of this sort, and the limited ecological concerns present at the site it is impractical to require a specific or shorter frequency for this monitoring. In addition the data produced by this monitoring cannot be used to directly assess the performance of models employed in the decision process. The frequency of monitoring operations and interpretation of the results will be a subject for discussion by the Scientific Review Panel.

4.0 Technical Comments from National Marine Fisheries Service (email from Lisamarie Carrubba, dated July 26, 2010; A letter communicating the responses listed below was sent to NMFS on Sep 30, 2010 and NMFS indicated their acceptance of the modifications to the SMMP in a letter dated December 6, 2010)

Comment NMFS-1: SMMP does not address listed corals and their designated critical habitat.

Response: Page 14 of the SMMP was revised to specifically address listed corals and their designated critical habitat. To address this concern, the following language was added to this section:

“c. Endangered and threatened corals

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

NOAA also identifies a species of deep water coral (*Oculina* spp) as a species of concern in Puerto Rico. The presence of this species however has not been confirmed on the northern coast of Puerto Rico in the vicinity of the SJS. In addition, NOAA-NMFS is proposing to list additional species of coral as threatened under the ESA. Many of these species occur as part of coastal or shelf edge reef habitats (i.e., depths <61 m). The SJS is located in waters substantially deeper and far removed from areas meeting this depth criterion. (see Shelf Edge Reef Resources (section 7.4))

While the language of the SMMP is not emphatic about protection of the listed corals and shelf edge reef habitat, the SMMP mandates stringent provisions that allow EPA and USACE to rapidly detect any changes in barge draft that might suggest leakage or loss of material due to equipment malfunctions or operational problems (e.g., overloading). These provisions will allow the agencies to quickly halt or modify operational procedures to avoid detrimental impacts to coralline resources and habitats.

Comment NMFS-2: The SMMP does not contain information regarding conditions required as part of the authorization of disposal operations to protect sea turtles and marine mammals.

Response: In addition to provisions related to ensuring there are no leaks of dredged material, the draft SMMP also includes requirements to post an observer on board each scow to ensure that no disposal occurs when a marine mammal or turtle is present at the site. To strengthen this provision and to provide further protection to sensitive species, the following conditions have been added to the Discharge Guidelines listed in Appendix B of the SMMP:

14. While underway, dredging contractor must adhere to all measures required in Appendix D of this SMMP (i.e., NMFS, Southeast Region Vessel Strike Avoidance Measures and Reporting for Mariners)
15. Upon arrival at the ODMDS, the DMI (dredging inspector) must maintain a watch at all times for marine mammals and sea turtles. Discharge of dredged material may not occur when there is a turtle or mammal 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.

Comment NMFS-3: NMFS is conducting a status review for seven species of corals, including several species that occur in deeper waters. Reinitiating the Endangered Species Act consultation will be required if new species are listed and benthic surveys may be required to establish to determine whether they are present in the area of the SJS.

Response: We are aware that NMFS is conducting a status review for additional species of corals, including deepwater species. We will reinitiate consultation if NMFS chooses to list any additional species. We anticipate that this will be particularly important if deeper water species are listed. In November 2010, EPA conducted a side scan SONAR survey to identify any hard bottom features present along anticipated routes used by dredging scows to transit between San

Juan Harbor and the San Juan ODMDS. The data from this survey will be provided to NMFS when it is processed later this year to identify areas that might be appropriate targets of any future benthic surveys. No changes to the SMMP are required at this time.

5.0 Comments from National Marine Fisheries Service regarding Essential Fish Habitat Impacts (email from Miles Croom, dated July 26, 2010)

Comment NMFS-4: NMFS indicated that due to resource limitations, they were unable to review plan and that if U.S. Army Corps of Engineers and EPA felt that implementation of the SMMP would adversely impact essential fish or endangered species habitat that further consultation should be sought.

Response: USACE and EPA believe that implementation of the SMMP would not adversely impact essential fish or endangered species habitat. See response to Comment NMFS-1 regarding protection of corals and shelf edge reef habitat.

6.0 Technical Comments from United States Fish and Wildlife Service (letter from Edwin E. Muniz, dated July 7, 2010 – This letter concurred with our determination that impacts were unlikely)

Comment FWS-1: “We do not agree with Section 7.3 of the SMMP which specifies that the SJS does not encompass any known breeding, feeding, or nursery areas of marine mammal...San Juan Bay harbors suitable habitat for the endangered Antillean manatee...” Citing a recent incident where several manatees within the bay were struck by a vessel, the Service recommended idle speeds and/or the posting of an observer during transit while in the San Juan Bay

Response: Marine mammal observers are required as part of every dredging authorization. A watch must be maintained during dredging operations and while the scow is underway. Operations will be halted until mammals have left the vicinity; no harassment of the mammals is allowed to make them leave the area.

Comment FWS-2: Dredging should not be allowed in the presence of sensitive species

Response: This recommendation does not pertain to the SMMP which governs the transport and discharge of dredged materials at the SJS. These comments should be made to the Corps during the consultation performed prior to each individual dredging project.