

# AMENDED BIOLOGICAL ASSESSMENT

## PORT OF THE AMERICAS

PREPARED FOR:

PREPARED BY:



OCTOBER 2003

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# CSA GROUP

**TABLE OF CONTENTS**

1.0 Introduction..... 1  
    1.1 Overview of the Biological Assessment..... 1  
    1.2 Purpose of the Biological Assessment..... 2  
2.0 Description of the Proposed Project ..... 3  
    2.1 Project Purpose and Need ..... 3  
    2.2 Description of Existing Conditions (Environmental Baseline) ..... 4  
        2.2.1 Project Description..... 5  
3.0 Impact Assessment..... 8  
    3.1 Federally Listed Species ..... 12  
        3.1.1 Antillean manatee ..... 12  
        3.1.2 Hawksbill Sea Turtle..... 25  
        3.1.3 Leatherback Sea Turtle ..... 27  
        3.1.4 Loggerhead Sea Turtle ..... 29  
        3.1.5 Green Sea Turtle ..... 30  
        3.1.6 Roseate Tern ..... 32  
        3.1.7 Puerto Rican Nightjar ..... 34  
        3.1.8 Yellow-Shouldered Blackbird ..... 36  
        3.1.9 Brown Pelican..... 38  
        3.1.10 Vahl’s Boxwood ..... 39  
        3.1.11 Palo de Rosa..... 40  
        3.1.12 Bariaco ..... 41  
        3.1.13 Blue Whale..... 42  
        3.1.14 Finback Whale ..... 44  
        3.1.15 Sperm Whale..... 45  
        3.1.16 Sei Whale ..... 47  
        3.1.17 Humpback Whale..... 48  
        3.1.18 Caribbean Monk Seal..... 52  
4.0 Literature Cited ..... 53

**LIST OF FIGURES**

Figure 2-1. Port of the Americas Proposed Site Plan ..... 7  
Figure 3-1. Manatee Sightings in Ponce Bay, 1992-1993 (USFWS, 2001) ..... 15  
Figure 3-2. Manatee Sightings in Ponce Bay, 1994-1995 (USFWS, 2001) ..... 16  
Figure 3-3. Manatee Sightings in Ponce Bay, 1996-1997 (USFWS, 2001) ..... 17  
Figure 3-4. Manatee Sightings in Ponce Bay, 1998-2000 (USFWS, 2001) ..... 18  
Figure 3-5. Location of Manatee Sightings at Ponce Bay (1992-2000) ..... 19  
Figure 3-6. Manatee Behavior at Ponce Bay (1992-2000) ..... 20

**LIST OF TABLES**

Table 1. Federally Listed Threatened and Endangered Species and other Concern  
Species. .... 8  
Table 2. General Overview of Threatened and Endangered Species Evaluated in the  
Biological Assessment. .... 10  
Table 3. Manatee sightings along the Ponce coastline during aerial surveys conducted  
between 1995 and 2000. .... 13  
Table 4. Manatee sightings in Ponce during April 2001 ..... 14  
Table 5. Summarized Records of Mortality and Serious Injury, North Atlantic Humpback  
Whales, January 1994-December 1998. .... 50

## 1.0 INTRODUCTION

Section 7 of the Endangered Species Act of 1973 (ESA) directs all Federal agencies to utilize their existing authorities to conserve threatened and endangered species. It also requires that, in consultation with the US Fish and Wildlife Service (USFWS), Federal agencies ensure that any action, authorized, funded or carried out by the agency, does not jeopardize the continued existence of federally listed endangered or threatened species, or destroy or adversely modify their designated critical habitat. Federal regulations require the preparation of a Biological Assessment (BA) if any listed species or a critical habitat may be present in an area to be impacted by a “major construction activity”. This is defined as a construction project involving a major Federal action significantly affecting the quality of the human environment, as referred to in the National Environmental Policy Act (NEPA).

### 1.1 OVERVIEW OF THE BIOLOGICAL ASSESSMENT

The Port of the Americas Authority (PAA) prepared this Biological Assessment (BA) in response to a request from the Antilles Regulatory Section, Jacksonville District, US Army Corps of Engineers (Corps), and in compliance with Section 7 of the ESA. The BA pertains to the proposed development of the “Port of the Americas” (PTA or the Project), a facility in the southern region of Puerto Rico that includes the development of a deep-draft terminal in the Bay of Ponce within the Municipality of Ponce. The Corps acts as the federal regulatory and lead agency for compliance with the ESA, while the PAA, an agency of the Government of Puerto Rico (GPR), as the Applicant for the required federal permits and endorsements for the development of the PTA.

Initially, the PAA proposed the development of deep-draft terminals at the Guayanilla and Ponce bays, with the main activity concentrated in the Guayanilla Port. The PTA is considered a *major construction activity* and a Draft Environmental Impact Statement (DEIS) was prepared to address the potential impacts to important aquatic and terrestrial species in the vicinity of Ponce Bay, where the elements of the PTA are planned.

On September, 2001, and pursuant to Section 102 of National Environmental Policy Act (NEPA, 42 USC 4371 et seq., 43 CFR Section 1501.7), the Corps issued a Public Notice inviting interested parties to submit written comments as part of the scoping process for the preparation of the DEIS for the development of the PTA.

Subsequently, on October 3, 2001, the Corps convened an inter-agency scoping meeting to discuss project issues and concerns, and to provide an early and open process to determine the scope of the issues to be addressed and analyzed in the EIS. During that meeting, the USFWS expressed concern over the potential impacts to threatened and endangered species and their habitat that may result from the development of the PTA. These concerns were documented in a letter from the USFWS to the Corps and PAA dated October 16, 2001.

During the review of the DEIS, federal agencies expressed concerns about the potential impacts on several endangered and protected species in Ponce Bay as a result of the activities related to the PTA and determined that a Biological Assessment (BA) was needed to assess any potential impacts to these species. The comments, submitted on September 2002, focused on the potential impacts to two endangered species, the Antillean manatee and the brown pelican.

In light of these concerns, PAA modified the Project proposing only a single deep-draft terminal at the Ponce Bay and eliminating the terminal and components at the Guayanilla Bay. The changes to the PTA, referred as the “Applicant’s Preferred Alternative” are described in Section 2.0 of this BA.

In light of the proposed changes to the PTA, the Biological Assessment (BA) was reviewed and revised to comply with the requirements of Section 7 (a) (2) of the ESA. The revised BA evaluates if additional or lesser potential impacts could occur to the indicated (or other) species of importance. The following sections summarize the results of the analyses considering that the focus of the project has shifted from the Guayanilla Bay to the Ponce Bay:

## **1.2 PURPOSE OF THE BIOLOGICAL ASSESSMENT**

Under provisions of Section 7 (a) (2) of the ESA, Federal agencies that permit, license, fund or otherwise authorize activities, must consult with the USFWS to ensure that their actions will not jeopardize the continued existence of listed threatened or endangered species. The same process also applies to the National Marine Fisheries Service (NMFS) and the species under their jurisdiction. A Biological Assessment must be prepared if listed species or their critical habitat may be present in the area to be impacted by a “*major construction activity*”. A major construction activity is defined as any construction project involving a Federal action significantly affecting the quality of the human environment as described in the NEPA. Projects that include a major construction activity under NEPA require the preparation and submittal of a BA.

The Port of the Americas (PTA) would be considered a major construction project, and must comply with the BA requirement. The purpose of this BA is to identify any threatened or endangered species that that could be affected by the proposed development of the PTA; to assess the potential impacts on these species; and to identify appropriate conservation measures for the protection of the species and their habitats.

## **2.0 DESCRIPTION OF THE PROPOSED PROJECT**

### **2.1 PROJECT PURPOSE AND NEED**

The development of a deep-draft transshipment port in Puerto Rico is necessary for the future socioeconomic welfare of the Island, in addition to reducing the costs of transshipped products from the Island to continental and international ports. The PTA promises to stimulate the economic development of the Island, promote foreign capital investment, and create new direct and indirect jobs from the operation of the port itself, and from the development of commercial and industrial activities in its vicinity (denominated value-added activities). The multiplying effects of the investments in the PTA would increase employment and the per capita income in the Island.

The foremost justification for the development of the PTA in Puerto Rico is the opportunity of capturing a substantial share of the transoceanic traffic of cargo containers that occurs from Asia and Europe to the east coast of South America, the United States (USA), and the Caribbean.

In 1999, the number of cargo containers transported between these destinations was approximately 6.5 million twenty-foot equivalent units (TEU) (Frankel, 2000). A TEU is the standard unit for quantifying the volume of maritime hauling, and it is equivalent to the cargo capacity of a standard container 20 feet long, 8 feet wide and 8 feet tall, as defined by the International Standards Organization (ISO). The greater part of this transoceanic traffic is transported in large-capacity ships (up to 6,000 TEU), commonly known as Post-Panamax, because they cannot cross through the Panama Channel. These ships require deep-draft ports, preferably between 45-55 feet in depth, modern and spacious berthing facilities, and adjacent land for temporary storage of containers. These containers, at a later time, will be transshipped to smaller, Panamax-class ships, capable of navigating through the Panama Canal. It is estimated that by the end of 2001, Post-Panamax ships carried about 70% of all trans-Pacific and trans-Atlantic container traffic, compared to 20% in 1999. This is projected to increase to about 90% by the end of 2003 (Frankel, 2000).

The development of a deep-draft port in Puerto Rico capable of handling Post-Panamax vessels would provide the opportunity to supply transshipment services ships to ports with lesser drafts serviced by Panamax vessels. This is the principal economic incentive for Puerto Rico, with a potential of capturing a volume of approximately 1.5 million TEU of the international traffic in 10 years (Frankel, 2000).

The PTA also will provide berthing facilities for import and export activities that will be another source of income and employment to the Southern Region and the Island. These activities will be located in the “value-added” zones that are part of the Project.

Considering the domestic and international maritime traffic, the PTA has the potential of transshipping as much as 2 million TEU per year in the next 10 years. This volume could be greater, in view of recent studies that show the ports on the eastern coast of South America have the greatest growth potential for container transshipment. Frankel (2000) estimated that at the end of 2001, the traffic to South American ports on the Atlantic Ocean increased to approximately 17 million TEU, or 11.9% above 1999 traffic.

It is extremely important that the development of the PTA be accelerated, to enhance the opportunities of Puerto Rico to compete with other ports in the Caribbean and the Atlantic coast of the US with potential to provide transshipment facilities for Post-Panamax ships. Many ports in the Caribbean, including sites in the Dominican Republic, Cuba, Venezuela, Panama, and Jamaica, and in the eastern seaboard of the USA, the Gulf of Mexico, Central America, and in South America, acknowledge the potential economic benefits offered by the transshipment business. These localities have begun to either plan or develop deep-draft terminals, or improve their facilities to capture a larger segment of the transshipment market. Notwithstanding these efforts, Puerto Rico still offers substantial advantages over other locations, including its strategic location in the Caribbean Basin, political and financial stability, trained staff, economic and tax incentives, and technological know-how.

## **2.2 DESCRIPTION OF EXISTING CONDITIONS (ENVIRONMENTAL BASELINE)**

The environmental baseline is an analysis of the past and present human and natural factors leading to the current status of listed species or their habitats and ecosystems within the proposed *action area*. For the purposes of this BA, the *action area* is defined as the coastal area of the Ponce Bay, including the offshore waters up to two miles seaward, and the land portion two miles inland from the shoreline.

The Ponce Bay and its harbor include the second largest commercial port in Puerto Rico, with current transshipment activities in the Panamax class vessels. The port facilities are owned and operated by the municipality of Ponce, and have been in operation since the beginning of the last century. The port has one 610 feet container berth with a depth of 39 feet, which can accommodate vessels up to 880 feet in length. It also has five general cargo berths with a total length of 2,300 feet; two specialized coal bulk berths and one special purpose rail barge berth. Depths along these berths vary between 34 to 39 feet. Dredging would be required to handle modern Post-Panamax containerships of 4,000-6,000 TEU capacities, which require a minimum depth of 45 feet. There are two ship approach channels, both of which have depths in excess of 40 feet. The port operates one Panamax container gantry and a container stacking area of about 36 acres.

The Port of Ponce operates a container yard of about 29 acres and about 52 acres of other open and covered storage. An additional 300 acres are available adjacent to the port for future expansion in an area between the Ponce Bay and Playa de Ponce. There

are about 60 acres of mangrove wetlands in the port area. The port handles principally commercial cargo in containers. Vessel traffic is composed of ships, tugboats and barges. During Fiscal Year 1998-99, the port completed 329 combined operations. During the following year it had 310 operations. Containerships represent the largest operation, with an average movement of 16 ships per month.

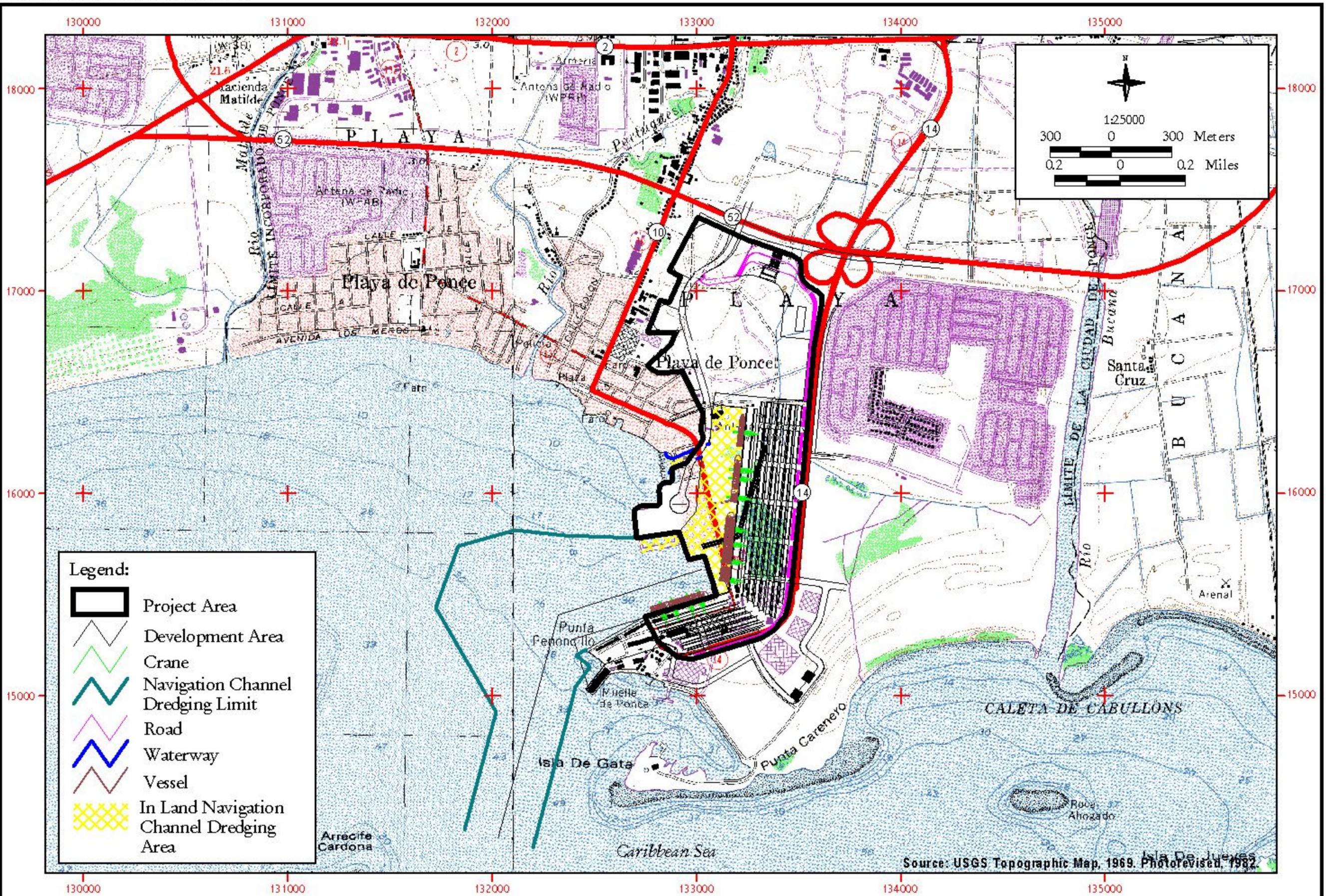
As indicated earlier, the *action area* for the PTA comprises the coastal area associated to Ponce Bay. Within this area there are important coastal marine and terrestrial resources, which deserve to be considered, as they provide habitat and support to a number of endangered species. The La Guancha sector in Ponce contains some wetland areas that were impacted during previous port developments. Well-developed wetlands remain near the Ponce Bay.

### 2.2.1 PROJECT DESCRIPTION

The applicant's Preferred Alternative for the development of the PTA, as proposed by the PAA, includes the following elements (Figure 2-1):

- The development of a deep-draft port in the Port of Ponce with the capacity to receive Post-Panamax ships. The Port of Ponce would include;
  - Construction of an inland docking channel of approximately a maximum 4,000 feet long and 800 ft wide. The channel entrance will be placed approximately where piers 7 and a portion of Pier 8 are currently located. The length of the channel will be aligned parallel to road PR-14 and will reach the limits of what is known today as the PERCON property. Channel construction will entail the removal of approximately 3.4 MM cubic meters of soil.
  - The discharge of fill material in approximately 59 acres of wetlands adjacent to the Port of Ponce, for the storage of containers and cargo;
  - The deepening of the navigation channel in the Ponce Harbor and berthing areas adjacent to existing piers to a minimum depth of 50 feet to allow entry to the port of Post-Panamax ships. The proposed dredging would require disposal approximately 5.5 million cubic meters of dredged material; and
  - A portion of the material excavated to construct the inland channel would be reutilized for the proposed fill adjacent to the pier, while the remaining volume would be discharged at a designated upland.
- Improvements to the Port of Ponce as follows:
    - Expansion of the Port facilities by an additional 135 acres of uplands.

- Initial acquisition and installation of four (4) Post-Panamax cranes to unload and load containers on ships. At its peak, the operation is expected to employ a total of 12 cranes, which will be acquired as the port activities expand;
- Development of approximately 132 acres of upland area adjoining the Port of Ponce, for construction of the main access to the Project, container storage, and value-added activities such as industries, commerce, offices and warehouses, shops and other infrastructure needed for the efficient operation of the Port of Ponce;
- Improvements to the existing infrastructure of the area, including, roads, water, power, communications and security in the new PTA installations at Ponce.



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Coordinates in State Plane NAD 27



Figure 2-1. Port of the Americas Proposed Site Plan

Port of the Americas



### 3.0 IMPACT ASSESSMENT

Potential adverse impacts on threatened or endangered species are considered significant if, the disturbance of the physical habitat due to human activity associated with the construction and/or operation of a project, results in one or more of the following: (1) direct mortality of an individual of a listed species; (2) permanent or long-term loss of existing or proposed critical habitat; and (3) temporary alteration or loss of habitat important for one or more listed species that could result in increased mortality or lowered reproductive success. In addition to the evaluation of the potential direct effects of the Project on endangered species and their habitats, this BA also considers the indirect and cumulative effects of the proposed action on such species, together with the impacts of other activities that are interrelated or interdependent with the proposed action.

As a result of the scoping meeting for the PTA conducted by the Corps on October 3, 2001, the USFWS and NMFS provided the Corps a list of the threatened and endangered species listed under their respective federal programs, which may be present in the Project area and would be included in the Biological Assessment (Table 1). The list includes seven (7) marine mammals, four (4) reptiles, four (4) birds, and three (3) plants. A general overview of these species is shown in Table 2.

TABLE 1. FEDERALLY LISTED THREATENED AND ENDANGERED SPECIES AND OTHER CONCERN SPECIES.		
Scientific Name	Common Name	Status/Jurisdiction
<b>Marine Mammals</b>		
<i>Trichechus manatus manatus</i>	Antillean manatee	Endangered/FWS
<i>Balaenoptera musculus</i>	Blue whale	Endangered/NMFS
<i>Balaenoptera physalus</i>	Finback whale	Endangered/NMFS
<i>Megaptera novaeangliae</i>	Humpback whale	Endangered/NMFS
<i>Balaenoptera borealis</i>	Sei whale	Endangered/NMFS
<i>Physeter macrocephalus</i>	Sperm whale	Endangered/NMFS
<i>Monachus tropicalis</i>	Caribbean monk seal	Extinct/NMFS

TABLE 1. FEDERALLY LISTED THREATENED AND ENDANGERED SPECIES AND OTHER CONCERN SPECIES.

Scientific Name	Common Name	Status/Jurisdiction
<b>Reptiles</b>		
<i>Eretmochelys imbricata</i>	Hawksbill Sea Turtle	Endangered/FWS
<i>Chelonia mydas</i>	Green sea turtle	Threatened/FWS
<i>Dermochelys coriacea</i>	Leatherback sea turtle	Endangered/FWS
<i>Caretta caretta</i>	Loggerhead sea turtle	Threatened/FWS
<b>Birds</b>		
<i>Pelecanus occidentalis</i>	Brown pelican	Endangered/FWS
<i>Caprimulgus noctitherus</i>	Puerto Rican nightjar	Endangered/FWS
<i>Agelaius xanthomus</i>	Yellow-shouldered blackbird	Endangered/FWS
<i>Sterna dougallii</i>	Roseate tern	Threatened/FWS
<b>Plants</b>		
<i>Buxus vahlii</i>	Vahl's boxwood	Endangered/FWS
<i>Ottoschulzia rhodoxylon</i>	Palo de Rosa	Endangered/FWS
<i>Trichilia triacantha</i>	Bariaco	Endangered/FWS

TABLE 2. GENERAL OVERVIEW OF THREATENED AND ENDANGERED SPECIES EVALUATED IN THE BIOLOGICAL ASSESSMENT.

Item	Species	Distribution	Status	Comments
1	Loggerhead sea turtle ( <i>Caretta caretta</i> )	Worldwide in tropical and temperate seas and oceans.	Threatened throughout its entire range.	Not known to nest in Puerto Rico. Nests in Culebra. Not present in the action area.
2	Green sea turtle ( <i>Chelonia mydas</i> )	Worldwide in tropical and temperate seas and oceans. Generally found on shallow water.	Threatened throughout its entire range, except in Florida and Pacific coast of Mexico, where is endangered.	Nests in Mona, Vieques, Caja de Muertos and Culebra. Have been reported for Guayanilla and Tallaboa bays.
3	Hawksbill sea turtle ( <i>Eretmochelys imbricata</i> )	Tropical seas.	Endangered through its entire range.	Nests in Mona, Humacao, Culebra, Mayagüez-Añasco, Caja de Muertos and Tamarindo beach.
4	Leatherback sea turtle ( <i>Dermochelys coriacea</i> )	Tropical, temperate and sub polar oceans.	Endangered throughout its entire range.	Nests in Culebra, Mona, Guánica, El Tuque Ballena Bay, Luquillo-Fajardo, Maunabo, Mayaguez-Añasco, Arecibo and Humacao.
5	Sei whale ( <i>Balaenoptera borealis</i> )	Worldwide in deep waters. Occurs around islands but in open waters.	Endangered throughout its entire range.	Observed in Puerto Rico in deep waters.
6	Finback whale ( <i>Balaenoptera physalus</i> )	Worldwide in temperate waters and in southern hemisphere. Least common in the tropics.	Endangered through its entire range.	Observed in deep waters around Puerto Rico.
7	Humpback whale ( <i>Megaptera novaeangliae</i> )	Widely distributed in all oceans. Inquisitive and shows little fear of boats. Mates and breeds in the Caribbean.	Endangered throughout its entire range.	Seen near Guayanilla and Tallaboa bays.
8	Sperm whale ( <i>Physeter macrocephalus</i> )	Wide oceanic distribution in offshore waters. May occur near continental shelves.	Endangered throughout its entire range.	Reported in the southeastern Caribbean.
9	Blue whale ( <i>Balaenoptera musculus</i> )	Worldwide distribution, primarily in cold waters and open seas. Found at edge of continental shelf and near polar ice caps	Endangered throughout its entire range	Rare in Caribbean waters.
10	Caribbean monk seal ( <i>Monachus tropicalis</i> )	Extinct		
11	Brown pelican ( <i>Pelecanus occidentalis</i> )	Bahamas, Greater and Lesser Antilles down to Monserrat. South coast of N. America, Central America and north part of S. America.	Endangered throughout its entire range, except the US Atlantic coast, Florida and Alabama.	Feeds in Guayanilla. Roosts on Cayos María Langa y Palomas near the Project. Primary nesting areas in Cayo Conejo, Vieques' Montalva Bay and the USVI. Present in action area.
12	Roseate tern ( <i>Sterna dougallii</i> )	Tropical and temperate coasts of the Atlantic and East Africa.	Threatened locally.	Observed near project area. Nests in Puerto Rico, around La Parguera. Not present in the action area.
13	Puerto Rican nightjar ( <i>Caprimulgus noctitherus</i> )	Endemic to Puerto Rico.	Endangered throughout its entire range.	Found around Guánica and Susúa forests, Sierra Bermeja, Guayanilla, Yauco, Peñuelas and Ponce. Known from the hills north of Guayanilla, Peñuelas and Ponce. Not present in the action area.

Item	Species	Distribution	Status	Comments
14	Yellow-shouldered blackbird ( <i>Agelaius xanthomus</i> )	Southwestern Puerto Rico and Mona and Monito Islands.	Endangered throughout its entire range.	Not present in the project site.
15	Antillean manatee ( <i>Trichechus manatus manatus</i> )	Southeast coast of US, Caribbean Sea and South America.	Endangered throughout its entire range.	Inhabits Guayanilla Bay. Known from Ponce Bay, La Parguera, Jobos Bay, Roosevelt Roads and Vieques, among other sites around Puerto Rico.
16	Vahl's boxwood ( <i>Buxus vahlii</i> )	Central karst zones of Puerto Rico, northwest and south central mountains in Guayanilla and Peñuelas.	Endangered throughout its entire range.	Found in the hills north of Guayanilla. Not present in the action area.
17	Palo de Rosa ( <i>Ottoschulzia rhodoxylon</i> )	Puerto Rico and Dominican Republic	Endangered throughout its entire range.	Reported for Susúa, Maricao, and Río Abajo Forests. May occur in the hills north of Guayanilla. Not found in the action area.
18	Bariaco ( <i>Trichilia triacantha</i> )	Southwest Puerto Rico	Endangered throughout its entire range	Found in the hills north of Guayanilla. Not present in the action area.

Source: CSA Group, Inc. (2001)

### 3.1 FEDERALLY LISTED SPECIES

#### 3.1.1 ANTILLEAN MANATEE

##### 3.1.1.5 General Species Biology

The manatee is an aquatic, herbivorous mammal typically found in the equatorial waters of the southeastern United States, the Caribbean, South America and equatorial West Africa. The West Indian species is divided into two subspecies, the Antillean manatee (*Trichechus manatus manatus*) and the Florida manatee (*Trichechus manatus latirostris*). The Antillean subspecies is found in eastern Mexico, Central America, and northern and eastern South America and in the Greater Antilles. The species was listed as endangered on June 2, 1970. In Puerto Rico, the Antillean manatee is more abundant along the south and east coasts, particularly around Roosevelt Roads Naval Station in Ceiba, Jobos Bay in Salinas, and Guayanilla Bay in Peñuelas. Although manatees are usually found close to shore near river mouths and protected embayments, they can also be found several miles offshore, particularly when traveling between areas. The exact number of manatees known to occur in Puerto Rico is not known, but it is estimated that the existing population ranges between 60 to 100 individuals (USFWS, 1986). As many as 101 manatees have been observed during a single aerial survey of the entire coast of Puerto Rico (USFWS, personal communication, 2001).

Manatees live both in fresh and salt water, and can be found in canals, slow-moving streams, estuaries, coastal bays and near-shore marine habitats at depths between 5 and 20 feet. Manatees are herbivores, feeding on a large variety of submerged, emergent and floating plants. Seagrass beds are important feeding sites for manatees. Turtle grass (*Thalassia testudinum*), shoal grass (*Halodule wrightii*) and manatee grass (*Syringodium filiforme*) are important components of their diet. Adult manatees can grow to 13 feet in length and weigh as much as 3,500 pounds. They can eat about 10-15% of their body weight in vegetation daily.

Manatees do not form social groups, pair bonds, or herds. They are usually solitary animals and only occasionally they occur in small groups. During breeding, a single female is followed by a group of males, forming a mating herd. Manatees usually bear one calf; twins are rare. Intervals between births range from two to five years. Calves reach sexual maturity at 4 to 6 years of age.

##### 3.1.1.6 Distribution and Abundance

The distribution of manatees in Puerto Rico is uneven, with most sightings occurring along protected areas of the southern and northeastern coasts. Aerial surveys were conducted in August 1976 and almost monthly between June 1978 and March 1979

(Belitsky, 1979), and between March 1984 and March 1994 (USFWS, 1994). About one third of the sightings occurred in the vicinity of Roosevelt Roads in Ceiba, with second sighting frequencies at Jobos Bay in Salinas. Areas such as Guayanilla, Bahía Montalva, Joyuda, Cabo Rojo, Guanajibo, Toa Baja, Ocean Park, Loíza and Rio Grande are of tertiary importance.

Rathburn et al. (1985) reported 37 sightings of manatees along the coastal segment between Ponce and Guánica Bay, or 7 percent of a total of 523 sightings. Aerial surveys conducted by the USFWS in 1993 and 1994 resulted in 10 and 5 sightings of manatees, respectively, for the same coastal segment. According to the USFWS (1994), of all the sightings reported for this segment of the coast between 1984 and 1994, half were recorded from Tallaboa and Guayanilla bays.

The results of aerial surveys of manatees conducted by the USFWS in Ponce, between 1995 and 2000, are summarized in Table 3. Of a total of 73 manatee sightings reported for the five-year period, 19 were in the Ponce area. These data are consistent with previous surveys conducted by the USFWS between 1983 and 1994.

TABLE 3. MANATEE SIGHTINGS ALONG THE PONCE COASTLINE DURING AERIAL SURVEYS CONDUCTED BETWEEN 1995 AND 2000.			
Location	Date	Number	Behavior
Ponce	October 28, 1995	2	Traveling
	October 28, 1995	1	Traveling
	October 29, 1995	1	Traveling
	August 25, 1996	1	Traveling
	Nov. 8, 1997	1	Traveling
	May 4, 1998	1	Feeding
	May 4, 1998	1	Resting
	October 12, 1998	2	Feeding
	October 12, 1998	2	Feeding
	October 12, 1998	1	Traveling
	March 5, 1999	1	Traveling
	March 3, 2000	1	Resting
	March 3, 2000	1	Traveling
	May 4, 2000	1	Resting
	May 4, 2000	1	Traveling
<b>Total</b>		<b>73</b>	

Recent manatee aerial surveys conducted in April 2001 near Ponce resulted in a total of 4 sightings (Table 4). Of these, there were two sightings recorded near Isla del Frío in Ponce during the April over flight.

TABLE 4. MANATEE SIGHTINGS IN PONCE DURING APRIL 2001			
Date	Location	Number	Behavior
4 April 2001	Isla del Frío, Ponce	2	Cow/calf
	Isla del Frío, Ponce	2	Feeding

The results of manatee aerial surveys over the Ponce area between 1992 and 2000 are shown in Figure 3-2 through Figure 3-4. Most of the manatee sightings in Ponce Bay occurred in shallow waters near the mouth of Río Matilde, where they appear to concentrate to feed (Figure 3-5). Other sightings were reported in the Punta Carenero and Caleta Cabullones areas. During the eight-year survey period (1992-2000), only one manatee was observed in the general project area where the proposed dredging would take place. Manatee behavior at Ponce Bay is presented in Figure 3-6.

FIGURE 3-1. MANATEE SIGHTINGS IN PONCE BAY, 1992-10993 (USFWS, 2001)

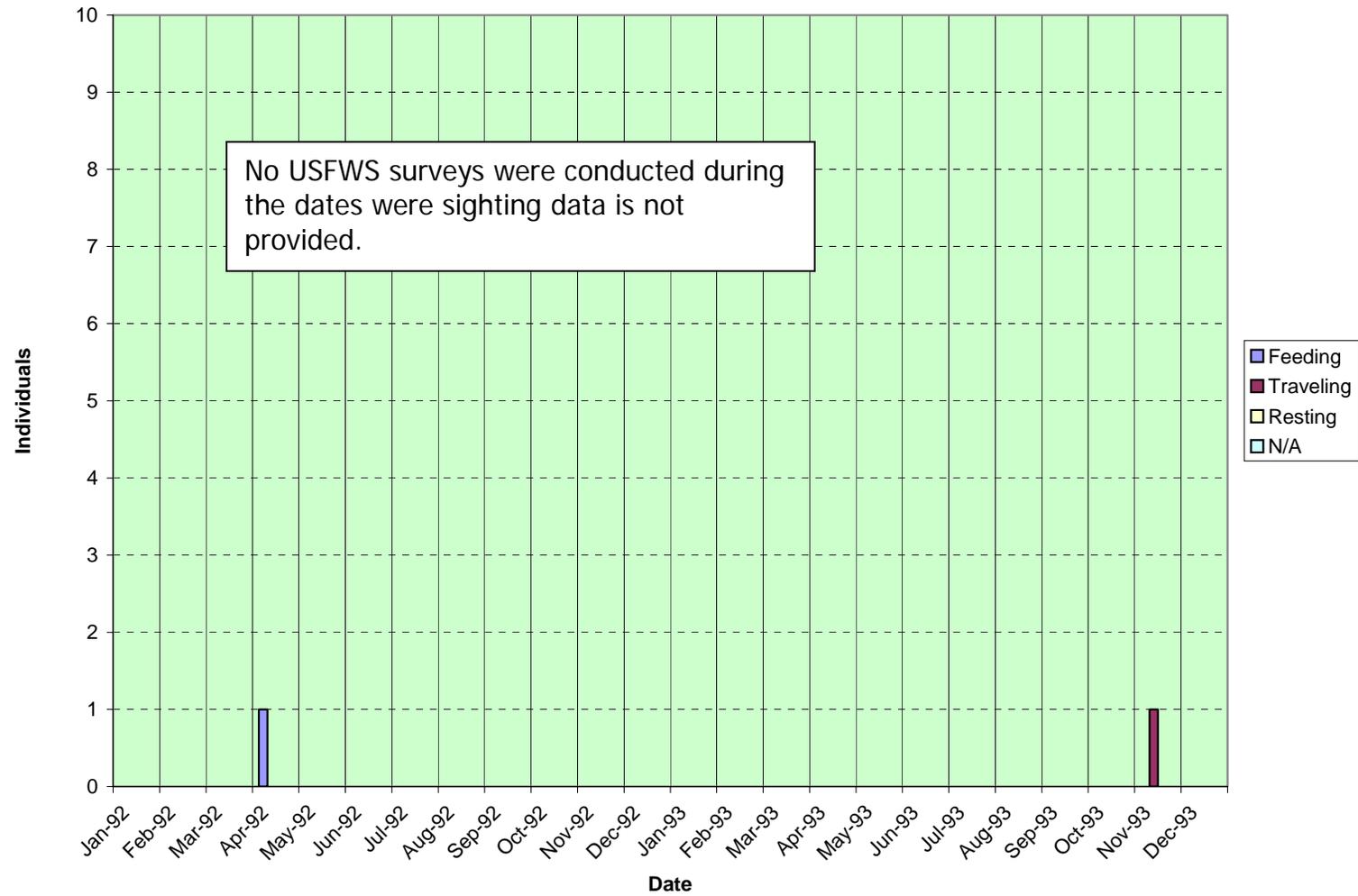


FIGURE 3-2. MANATEE SIGHTINGS IN PONCE BAY, 1994-1995 (USFWS, 2001)

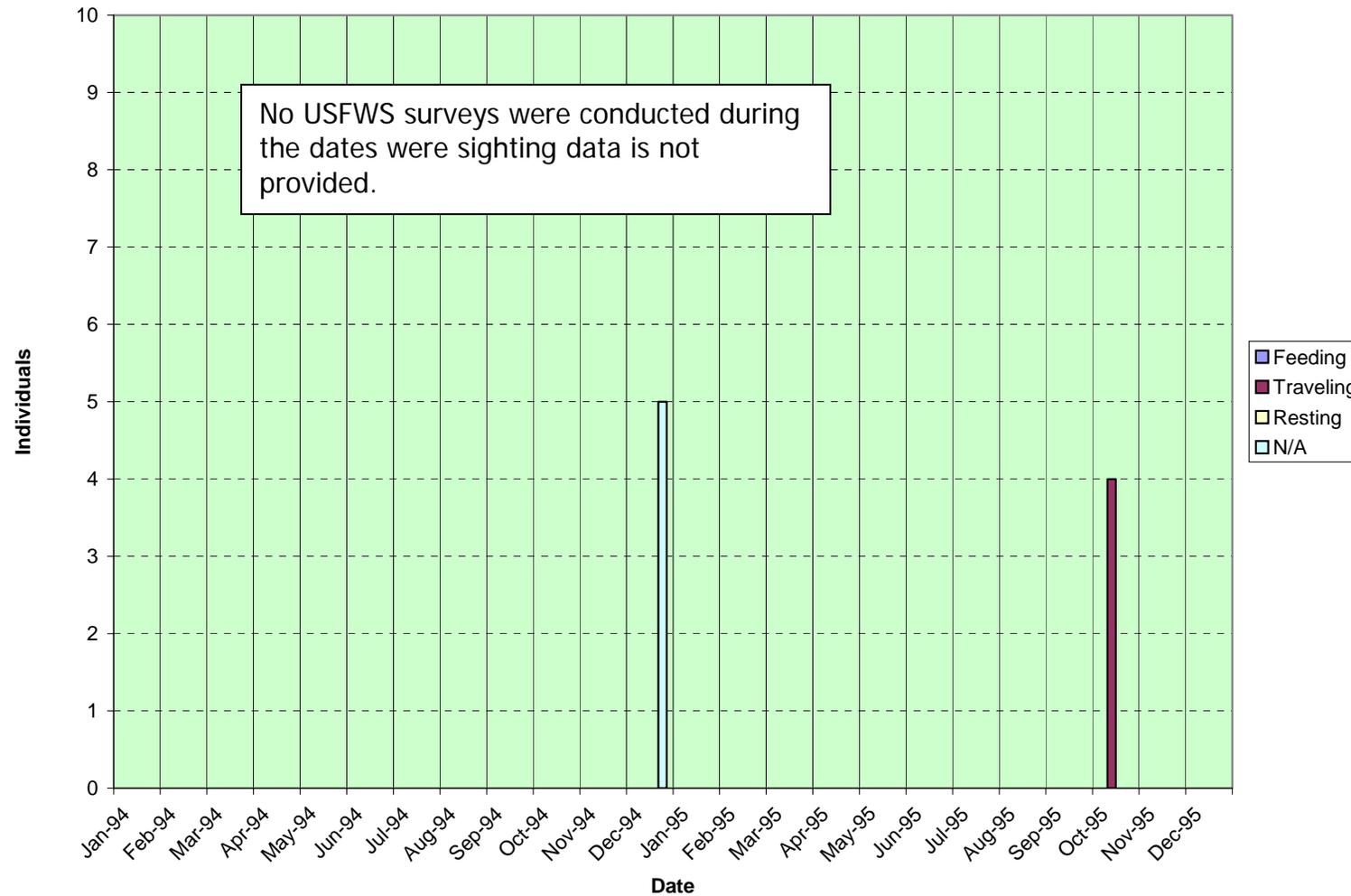


FIGURE 3-3. MANATEE SIGHTINGS IN PONCE BAY, 1996-1997 (USFWS, 2001)

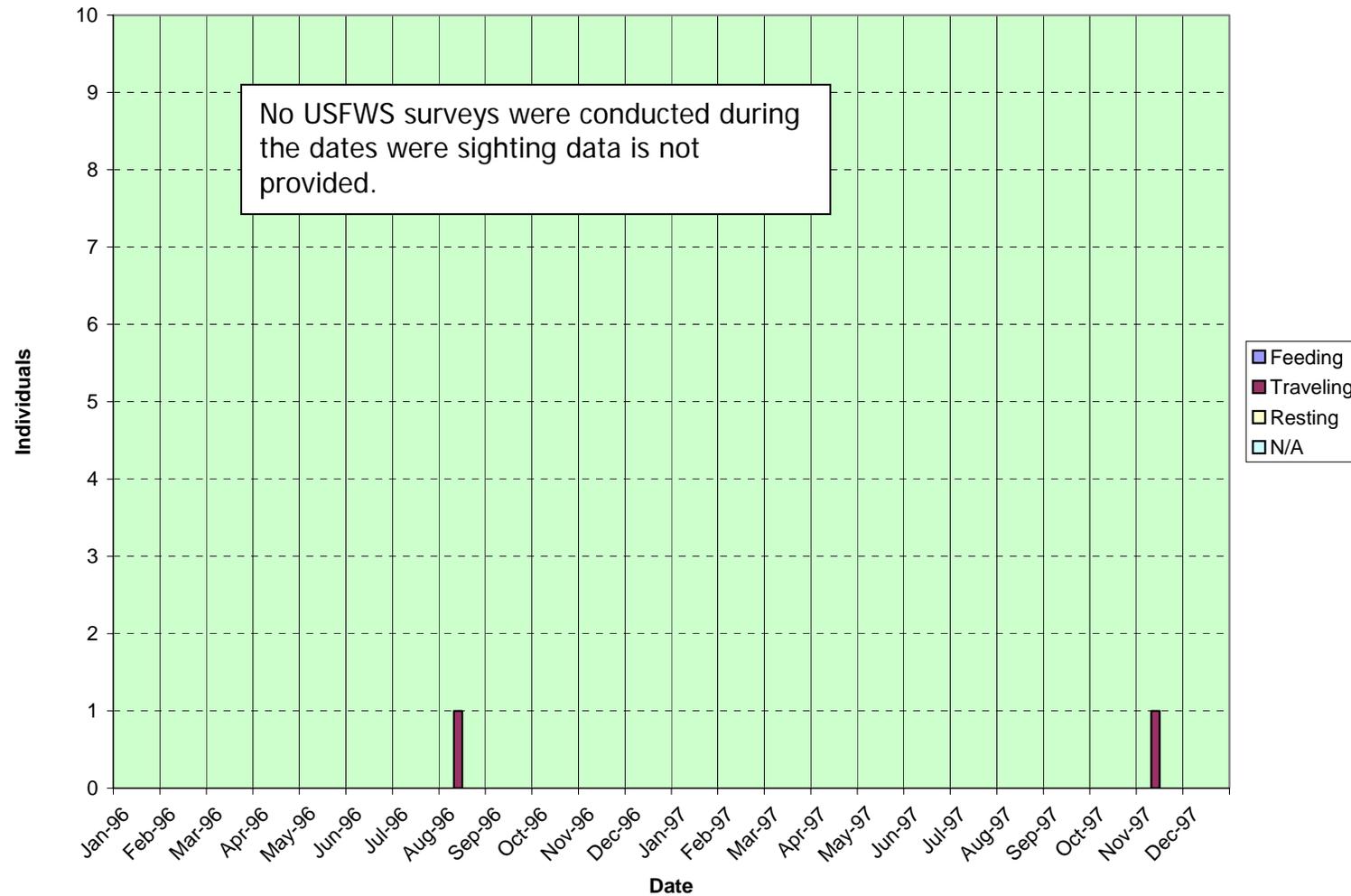
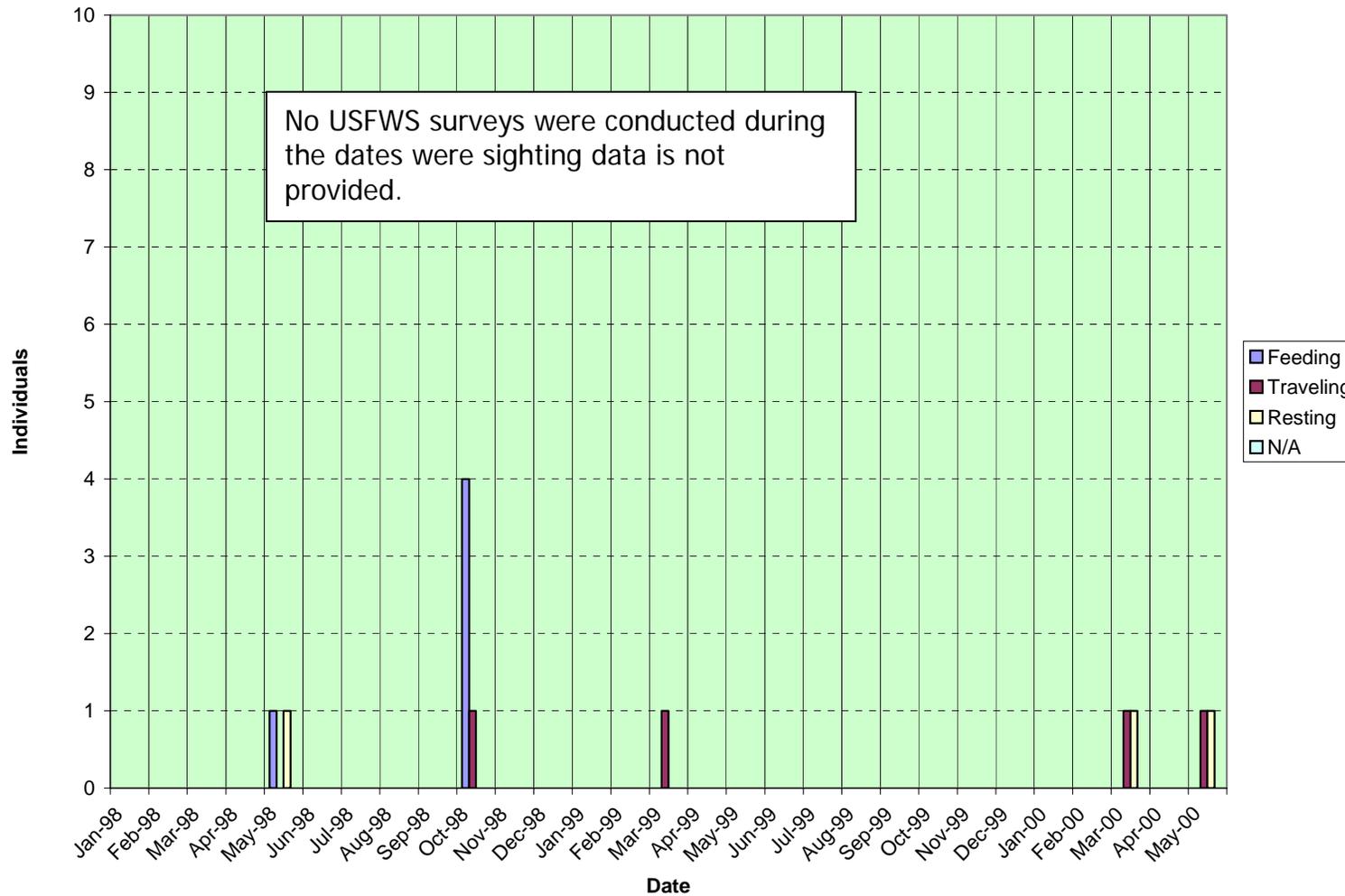


FIGURE 3-4. MANATEE SIGHTINGS IN PONCE BAY, 1998-2000 (USFWS, 2001)







### 3.1.1.7 Summary of Impacts

#### 3.1.1.7.1 Impacts During Construction

In Ponce Bay, the main impacts during construction to the manatee would be those associated with the increase in noise levels and presence of construction machinery, especially within the proposed inland channel. Manatees are known to feed in Ponce Bay but most sightings have occurred near the Río Matilde estuary, west of the proposed action (Figure 3-5 and Figure 3-6). The inland channel would be opened only after construction of the pier would have concluded, reducing the effects of sedimentation.

Construction activities, related noise, and the presence of construction equipment would cause most manatees to temporarily avoid the immediate project area and any shallow foraging sites nearby at both sites. Construction activities may also disrupt essential behavioral patterns such as feeding and socializing and may lead to the separation of mothers and calves. These actions constitute a form of “*unintentional harassment*” (as described in the federal regulations) and have the potential, albeit slight, to disturb manatees to such an extent as to disrupt their normal behavioral patterns.

Construction of piers and boating activities associated with these operations commonly result in bottom scraping, propeller scouring and anchor dragging. These activities may increase turbidity, which might temporarily reduce light penetration and decrease submerged plant productivity.

The PAA conducted a quantitative inventory of the benthic areas that may be impacted by the proposed pier in Ponce Bay (García, 2003). This survey resulted in the taxonomic characterization, mapping and ecological description of the marine benthic communities at the *action area* and, adjacent bottoms. A copy of this report will be included in the DEIS for the PLA, and was previously submitted to the USFWS and NMFS.

Pier construction would not require any barricades that would restrict the movement of manatees in the construction area. Potential impacts to manatees would also be reduced because all ships would maintain a minimum clearance between the vessels and the pier or dolphin pilings to avoid crushing.

#### 3.1.1.7.2 Impacts During Operation

Work vessels and the additional shipping traffic resulting from the Project could also affect manatees. These increases in marine traffic would interfere with the free movement of manatees in both bays, as well as increase the probability of collisions with ships.

A principal threat is the risk of manatee mortality, injury or harassment caused by ships and construction equipment. According to the USFWS (1989), large slow-moving vessels, such as tug boats and cargo ships are known to kill manatees. Manatees are often injured by propellers or are pulled into the propellers by the sheer power-generated

water currents, while others may be pinned down between the hull and the ocean bottom. When moored, large vessels may pin manatees between their hulls and the adjacent wharves.

Development of elements of the PTA in the Ponce Bay would result in an increase in large vessel traffic of the order of 600 to 1,200 ships per year. This increase in marine traffic in the Bay raises the question about the probability of collisions of manatees with ships. Manatee aerial surveys conducted by USFWS show that as many as three (3) manatees may be present in Ponce Bay area at any given time.

It is important to note that the Port of Ponce has been in operation since the 19<sup>th</sup> century. There are no reported incidents of large ships colliding with manatees, in part because of the safety measures required by the Coast Guard to navigate in these harbors. Current operations are more sensitive to the manatees, and protection measures through surveillance will be in effect when all ships enter Ponce Bay, similar to the measures currently implemented at nearby Guayanilla Bay.

#### 3.1.1.8 Indirect, Interdependent, Interrelated and Cumulative Effects

As indicated earlier, it is anticipated the PTA would result in an increase in maritime traffic in Ponce Bay. Since manatees are frequent residents in Ponce Bay, the resulting increment in ship traffic could have an indirect and cumulative effect on local manatee population, particularly due to an increase in the probability of potential collisions with ships.

Increased boat traffic during operations at the terminals may bring about the re-suspension of bottom sediments. The re-suspension of sediments could result in three potential indirect harmful effects to manatees or their habitat. First, re-suspended sediments may increase turbidity and encourage nutrient overloading, reducing light penetration through the water column, and thus decreasing seagrass productivity. Second, high loads of suspended sediments may physically smother seagrasses, resulting in habitat destruction. Third, re-suspended sediments could cause contaminants to re-enter the water column, since suspended particles provide attachment places for some pollutants.

To assess these scenarios, PAA and its consultants conducted two field tests to evaluate the condition of sediment re-suspension in Guayanilla Bay during the actual passage and docking of large vessels (García, 2002). Although a similar study was not conducted for the Ponce Bay, navigation conditions in both harbors are somehow similar. The results of these tests show that re-suspension of sediments occurs during the passage and docking of large vessels in Guayanilla Bay. However, this re-suspension is mainly attributed to the tugboats assisting the vessels, rather than to the vessels themselves. The same conditions are expected to occur in the Ponce Bay.

- The first test was conducted during the passage and docking operation of the LNG tanker *Mathew*, as it approached EcoEléctrica's LNG terminal. On this

occasion, water samples were taken and turbidity measured. The results of this test showed low turbidity values, between 0.15 and 2.95 NTU (nephelometric turbidity units). Samples taken at the entrance path of the ship did not show higher turbidity values than background samples, probably due to the fact that the ship never entered into Guayanilla Bay at any moment, since the LNG terminal lies just at the entrance to the Bay.

- The second test was conducted during the passage and docking operation of the ship *Keystone Texas*, as it maneuvered towards the CORCO dock. On this occasion, Total Suspended Solids (TSS) was measured instead of turbidity. TSS concentrations and turbidity both indicate the amount of solids suspended in the water, whether mineral or organic. However, the TSS test measures an actual weight of material per volume of water, while turbidity measures the amount of light scattered from a sample. This difference is important when trying to calculate the total quantities on material within a water body. Such calculations are possible with TSS values but not with turbidity readings.
- Results of the second test showed an average background concentration of TSS of 32.5 mg/l within Guayanilla Bay, prior to the entrance of the *Keystone Texas*, increasing to 36.5 mg/l just after the ship's passage. The highest concentration of TSS, 51.6 mg/l, was recorded at the ship's dock. The highest increase in the average concentration of TSS, 41.4 mg/l, was recorded two hours after the ship's passage. A general reduction trend in the concentration of TSS was observed four hours after the passage of the ship.
- As a basis for comparison (using USGS data for Río Guayanilla at Central Rufina during the 1999 water year), records indicate turbidity values in that river ranging from as low as 0.42 NTU to as high as 130 NTU. This indicates that Guayanilla Bay is exposed to water discharges from the river at least as much as 43 times more turbid than the turbidity observed during the passage of the EcoEléctrica ship, at least during some parts of the year. Very turbid waters are of the order 400 to 450 NTUs. Similarly, TSS values in Río Guayanilla ranged from less than 1 to 347 (Garcia, 2002). Hence, the load of suspended sediments from the river into Guayanilla Bay after a heavy rainfall could be as much as seven (7) times the load of re-suspended sediments produced by a passing ship. Total Suspended Solids of the order of 50 mg/l or less are considered very low.

Considering the above data, it is unlikely that the re-suspended sediments resulting from the anticipated ship traffic associated with the PTA in the Ponce Harbor would reduce water transparency to the point of significantly reducing seagrass primary productivity in Guayanilla Bay. Hence, it is not expected that manatee foraging areas would be indirectly affected by the re-suspension of sediments, especially in view that these sediments tend to resettle after a few hours. Similarly, the load of re-suspended sediments resulting from ship traffic does not seem to be large enough to have a smothering effect on seagrass habitats. In terms of the potential for contaminants

entering the water column as a result of sediment re-suspension, there are no concrete studies to formulate a responsible opinion.

Most actions associated with the PTA would take place on land, but the inland docking channel proposed at the Port of Ponce may affect the behavioral patterns of the manatees in the area. Therefore interdependent or interrelated effects on the manatee are anticipated.

#### 3.1.1.9 Conservation Measures and Recommendations

The effects of the temporary siltation and turbidity resulting from construction activities would be mitigated by the use erosion control measures, such as silt curtains or other silt retention barriers.

The following conservation measures would be implemented:

- In cooperation with the Puerto Rico Planning Board and the Department of Natural and Environmental Resources, work towards the zoning and designation of manatee-protected zones in Ponce Bay.
- Design and maintain a Habitat Conservation Program aimed at protecting and improving existing habitats and reducing impacts associated with boat anchoring, boat propeller damage or any other potential activity detrimental to seagrasses other marine habitats within Ponce Bay.

Traffic related to the PTA would be routed through the deeper waters of Ponce Bay, far from where manatees feed and congregate. Although there is a low probability of incidents, every effort would be instituted to protect this important endangered species, including avoiding as much as possible collisions with ships. A potential approach to minimize the potential for these collisions is the designation of a spotter for manatees and sea turtles while the vessels are in transit.

Additional protection measures could include a request to the operators of the PTA to maintain a detailed log containing sightings, collisions or injuries to manatees and sea turtles, and to accelerate the reporting of such events to the USFWS, NMFS and the DNER.

Other conservation measures that would be considered for implementation by PAA, pending the opinion of the concerned regulatory agencies, to protect the manatee include:

- Installation of permanent signs near the pier area to identify marine zones designated for the protection of manatees.

- Coordination with the Ports Authority and the Coast Guard to enforce speed limit regulations in the port, with the DNER to control the use of recreational vehicles in Ponce Bay including water bikes and jet skis, where applicable.
- Development of a training program to educate employees about the presence of federally protected species in the port area and the importance of protecting them.
- Design of the piers in accordance with USACE and USFWS recommendations to include a “bumper” that would provide a minimum of five (5) feet of protection to manatees from docking vessels. The USACE permit application for the construction of the piers will include these features.

#### 3.1.1.10 Conclusion

Provided the impact analysis outlined above, it is determined that the proposed PTA would affect, not likely to adversely affect the Antillean manatees at Ponce Bay. Construction at Ponce Bay could disrupt current manatee behavioral patterns and result in partial habitat modification. There is also a possibility of manatees being physically injured during the operation of the PTA, but PAA would negotiate and coordinate with the regulatory agencies the implementation of conservation measures and recommendations such as the ones expressed in section 3.1.1.9.

### 3.1.2 **HAWKSBILL SEA TURTLE**

#### 3.1.2.1 General Species Biology

The hawksbill sea turtle (*Eretmochelys imbricata*) is a medium-sized sea turtle that occurs in tropical and subtropical seas of the Atlantic, Pacific and Indian Oceans. A typical hawksbill sea turtle weights about 175 pounds, with a record weight of 279 pounds. The species is widely distributed in the Caribbean Sea and western Atlantic Ocean. Within the United States, hawksbill sea turtles are most common in Puerto Rico and its neighboring islands, and the US Virgin Islands.

Nesting within the southeastern US occurs primarily in Puerto Rico and the US Virgin Islands. Mona Island and Buck Island are the most important nesting sites. Nesting also occurs on selected beaches in St. Croix, Culebra Island, Vieques Island and mainland Puerto Rico. Hawksbill sea turtles are solitary nesters and utilize both low and high-energy nesting beaches. They will nest on small pocket beaches and are tolerant to various nesting substrate types. Nests are typically placed under vegetation. Hatchlings average about 44 mm straight carapace length and range in weight from 13.5 to 19.5 grams.

Hawksbill sea turtles utilize different habitats at different stages of their life cycle. Post-hatchling turtles are pelagic and take shelter in weed lines that form in the ocean.

They reenter shallow coastal areas when they reach about 20-25 cm carapace length. Although omnivorous, hawksbill sea turtles feed primarily on sponges. Coral reefs provide foraging habitat for juveniles and adults. The ledges and crevices of the reefs also provide shelter for resting both during the day and night. are also known to inhabit mangrove-fringed bays and estuaries.

### 3.1.2.2 Distribution and Abundance

Field surveys conducted for EcoEléctrica (2001) reveal the presence of hawksbill sea turtles in the coastal waters between Ponce and Cabo Rojo. Offshore coral reefs and reef-like habitats in the vicinity of Guayanilla/Tallaboa bays and Ponce Bay represent potential foraging habitats for this species. Although hawksbill sea turtles are not known to nest in Ponce Bay, Guayanilla or Tallaboa bays, there is evidence that nesting occurs in neighboring areas. Nesting has been reported for Caja de Muertos Island and Cayo Berbería, about 15 km southeast of Ponce Bay, and also at Tamarindo Beach, about nine kilometers west of Guayanilla Bay (Diez, pers. com.). Most nesting occurs from August to November.

### 3.1.2.3 Summary of Impacts

The Project would not affect any known nesting habitat for Hawksbill Sea Turtle, since no known nesting habitat exists in the region.

The nearest known nesting area is Caja de Muertos Island, located about 8 miles (12.9 kilometers) from the Port of Ponce. There would be little or no impact on foraging habitats used by this species, which usually feeds on sponges and other marine invertebrates on coral reefs or reef-like habitats. No direct impacts to these types of habitats are anticipated as a result of the Project. There are no sightings of the hawksbill sea turtle reported in Ponce Bay, so it is unlikely that the activities such as construction or navigation would result in a direct impact or death of individuals of this species. Construction-related activities, equipment, and noise may cause any hawksbill sea turtles in the area to temporarily avoid the vicinity until all construction is terminated.

The expected increase in vessel traffic resulting from the Project at Ponce Bay could increase the potential for collisions with sea turtles, including Hawksbill Sea Turtle. However, with the implementation of the proposed conservation measures the probability of collisions would be reduced to less than significant levels.

### 3.1.2.4 Indirect, interdependent, interrelated and cumulative effects

No indirect, interdependent or interrelated effects on hawksbill sea turtles are anticipated as a result of the PTA. Existing nesting sites are far from the Project area and it is very unlikely that any port-related activity would have an effect on them.

According to the established significance criteria, the PTA would not have a significant adverse impact on this species. Hence, the cumulative impact of the Project combined with past, current and reasonably foreseeable future actions on hawksbill sea turtle would not be significant.

#### 3.1.2.5 Conservation Measures and Recommendations

The following conservation measures would be implemented to minimize or reduce potential impacts to hawksbill sea turtles:

- All construction vessels would be assigned a turtle spotter who would maintain an active and detailed log describing sightings, collisions or injuries to sea turtles. Any sightings of, collisions or injuries to sea turtles would be reported to the Project's environmental inspector and to the PTA authorities, the DNER and the USFWS.
- During operation, a designated turtle spotter would be present on all tugboats servicing the port and a similar log would be maintained with the same reporting requirements.

#### 3.1.2.6 Conclusion

According to the established significance criteria and the information and conservation measures described in the preceding sections, it is determined that the Project would not affect this species.

### **3.1.3 LEATHERBACK SEA TURTLE**

#### 3.1.3.1 General Species Biology

The leatherback sea turtle (*Dermochelys coriacea*) is the largest living turtle. It is a circumglobal species whose range includes almost all oceans of the world. The average carapace length for adults is about 5 feet and weight ranges from 440 to 1,540 pounds. The largest on record weighed slightly over 2,000 pounds. Current estimates are that 100,000 leatherback sea turtle exist worldwide. The number of females has been estimated to be about 20,000 to 30,000. The species was listed as endangered throughout its range on June 2, 1970.

Leatherback sea turtles nest on tropical beaches in the Atlantic, Indian and Pacific Oceans. In the Atlantic, its range extends from Cape Sable, Nova Scotia, south to Puerto Rico and the Virgin Islands. The largest nesting assemblages in US jurisdiction are found in the US Virgin Islands, Puerto Rico and Florida.

Critical habitat for the leatherback sea turtle includes the waters adjacent to Sandy Point, St. Croix, USVI. Sandy Point National Wildlife Refuge is the principal nesting beach

for the leatherback sea turtle in the northern Caribbean. In Puerto Rico, Resaca and Brava beaches, in Culebra, support the largest nesting colonies. As many as 184 leatherback sea turtle nests have been reported on Culebra in one single year (NMFS and USFWS, 1992).

On the main island of Puerto Rico, leatherback sea turtle nesting has been reported on Humacao, Luquillo-Fajardo (San Miguel, Las Paulinas, and El Convento) and Piñones beaches. Leatherback sea turtles also nest in Vieques. On the south coast of Puerto Rico, leatherback sea turtle nesting is rare (Diez, pers. com). Occasional nesting activity has been reported in the Guánica area.

Female leatherback sea turtles nest at an interval of 2 to 3 years. In the Caribbean, nesting takes place between March and July. Eggs are laid at night in clutches of 80 to 85, and as many as 11 clutches may be laid in one season. Incubation takes from 55 to 74 days, after which hatchlings emerge at night. Little is known about the pelagic distribution of hatchling or juvenile leatherback sea turtles.

Leatherback sea turtles feed mainly on jellyfish, although they would also eat fish, mollusks, squid, sea urchins and other marine organisms.

#### 3.1.3.2 Distribution and Abundance

Limited nesting by leatherback sea turtles have been reported for the south coast of Puerto Rico. Isolated nesting events in the Project's general region and vicinity have been reported on El Tuque beach in Ponce, Bahía Ballena in Guánica and near Combate beach in Cabo Rojo.

#### 3.1.3.3 Summary of Impacts

The leatherback sea turtle is known to occur sporadically along the south coast of Puerto Rico. However, as is the case for all sea turtles, the Project would not affect any known nesting areas for this species. No nesting habitat of this species is reported in the zone. The Project would have little or no impact on foraging habitats used by the leatherback sea turtle, which typically feeds on pelagic jellyfish.

#### 3.1.3.4 Indirect, interdependent, interrelated and cumulative impacts

No indirect, interdependent or interrelated effects on leatherback sea turtle are anticipated as a result of the PTA. Leatherback sea turtle nesting sites are not common in the south coast of Puerto Rico and none are present in the Project area.

According to the established significance criteria, the PTA would not have a significant adverse impact on this species. Hence, the cumulative impact of the Project combined

with past, current and reasonably foreseeable future actions on leatherback sea turtle would not be significant.

#### 3.1.3.5 Conservation Measures and Recommendations

No specific conservation measures are proposed for this species. However, as with the hawksbill and green sea turtles, turtle spotters on work vessels and tugboats would remain vigilant for any leatherback sea turtle activity in the port zones.

#### 3.1.3.6 Conclusion

Based on the significance criteria and other information contained herein, PAA has determined that the effects of the proposed PTA on the leatherback sea turtle would not affect this species.

### **3.1.4 LOGGERHEAD SEA TURTLE**

#### 3.1.4.1 General Species Biology

The loggerhead sea turtle (*Caretta caretta*) was listed as a threatened species in July 1978. Loggerhead sea turtles have large heads and blunt jaws, with reddish-brown flippers and carapace, and a yellow plastron. The average adult weight is about 200 pounds, although some individuals have been reported to weigh as much as 1,000 pounds. Loggerhead sea turtles feed mainly on mollusks, crustaceans and fish.

In the United States, the nesting season runs from May to November. Nesting occurs at night at 2 to 3-year intervals. Three or four clutches may be laid in one season at intervals of approximately 12 days. Each clutch averages about 115 eggs with an incubation period of 49 to 68 days. Hatchlings usually emerge at night.

#### 3.1.4.2 Distribution and Abundance

The loggerhead sea turtle is found worldwide in temperate and subtropical waters. Major nesting beaches are found in eastern Australia, Oman, and the southeastern United States, from North Carolina to Florida.

In Florida, the major nesting beaches are on the east coast between Cape Canaveral and Palm Beach. In Puerto Rico, loggerhead sea turtles nest in the Island of Culebra. Current nesting estimates range from 40,000 to 50,000 nests annually. Nesting occurs on open beaches or along narrow bays with suitable soils, often associated with nesting of other sea turtles.

Loggerhead sea turtles may be found hundreds of miles in the open sea, as well as in inshore bays, lagoons, marshes, creeks, and mouths of large rivers. Coral reefs, hard

bottoms and shipwrecks are often used as feeding areas. Hatchlings have been observed floating at sea in *Sargassum* mats. Loggerhead sea turtles migrate over long distances.

#### 3.1.4.3 Summary of Impacts

This marine turtle is rare in Puerto Rico and not known to nest in the area of the Project. It is unlikely that the construction of the docking channel and harbor would have a direct impact on this species, or even a significant impact according to the established criteria.

#### 3.1.4.4 Indirect, interdependent, interrelated and cumulative impacts

The proposed action would not have any indirect, interdependent, interrelated or cumulative impact on the species.

#### 3.1.4.5 Conservation Measures and Recommendations

No specific conservation measures are proposed for this species. However, as with the hawksbill and green sea turtles, turtle spotters on work vessels and tugboats would remain watchful for any loggerhead sea turtle activity in the port zones.

#### 3.1.4.6 Conclusion

Based on the significance criteria and other information contained herein, PAA has determined that the effects of the proposed PTA on the loggerhead sea turtle are insignificant and discountable and that the Project would not affect this species.

### **3.1.5 GREEN SEA TURTLE**

#### 3.1.5.1 General Species Biology

The green sea turtle (*Chelonia mydas*) is listed as threatened, except for breeding populations in Florida and on the Pacific coast of Mexico, where it is listed as endangered.

*Chelonia mydas* is the largest hard-shelled sea turtle. Adults commonly reach 3 feet in carapace length and weigh 330 pounds, with an average body mass of about 300 pounds. Hatchlings green turtles weigh about 25 g and have a carapace about 50 mm in length. Hatchlings are black on top and white underneath. With age the carapace changes color from black to various shades of gray, green and black, forming swirls and irregular patterns. Green sea turtles generally grow slowly, from 30 to 70 cm in 17 years (Bjorndal and Bolten, 1989). Females deposit egg clutches on high-energy beaches, usually on islands. Up to seven clutches are deposited at 12 to 14 day intervals. Hatchling success of undisturbed nests is usually high, although predators are known to destroy a high percentage of nests on some beaches. Hatchlings leave the

beach and move into the open ocean where they spend an undetermined length of time (Carr, 1986).

Post-hatchling, pelagic-stage green sea turtles are believed to be omnivorous. When they reach a carapace length of about 20 to 25 cm, they leave the pelagic habitat, become herbivores and enter benthic-feeding grounds. Most commonly of these foraging habitats consist of seagrass beds, although young adults can also be found feeding over coral reefs and other hard bottoms. Coral reefs, near seagrass beds, are often used as resting areas, both at night and during the day.

#### 3.1.5.2 Distribution and Abundance

The green sea turtle is found throughout the world in all tropical and sub-tropical oceans. In the US they can be found from Texas to Massachusetts and around the US Virgin Islands, Puerto Rico, where they nest in small numbers. Larger nesting colonies occur in Florida. The major green sea turtle nesting colonies are located in Ascención Island, Aves Island, Costa Rica and Suriname.

In the Caribbean, green sea turtles usually nest between April and October, with peak nesting occurring from June to September. Green sea turtles are known to nest in Caja de Muertos Island south of Ponce and occasionally on Mona Island. No green sea turtles nesting habitat is found within the proposed Project area.

#### 3.1.5.3 Summary of Impacts

No construction activities would take place within green sea turtle foraging habitat in the *action area*. Construction of the pier would not include linear barriers that would restrict the movement of individuals in the construction area. However, construction-related activities, including noise from the operation of equipment, could cause most green sea turtles to temporarily avoid shallow water and foraging areas near the construction sites.

Work vessels and additional shipping traffic may also affect green sea turtles during the construction and operation phases of the Project, respectively. The expected increase in ship operations resulting from the Project, about 3-4 ships per day in Ponce could increase the potential for collisions with green sea turtles. However, the probability of such collisions would remain at minimum levels given the relatively conservation measures that would be implemented to avoid them. Impacts related to work vessels would be temporary and would only occur during construction-related activities.

Since there are no green sea turtle nesting sites near the Project area in Ponce, the PTA would not adversely affect green sea turtles nesting habitat or nesting activities. Therefore, it is anticipated that the Project would not affect this species.

#### 3.1.5.4 Indirect, interdependent, interrelated and cumulative impacts

Most actions associated with the PTA would take place on land and should not affect the behavioral patterns of green sea turtles in the region other than the foreseeable increase in shipping traffic in the vicinity of Ponce Bay. Therefore, interdependent or interrelated effects on the green sea turtles are not anticipated.

#### 3.1.5.5 Conservation Measures and Recommendations

The PAA, pending the opinion of the concerned regulatory agencies, to minimize or reduce potential impacts to green sea turtles, would consider the following conservation measures for implementation:

- All construction vessels would be assigned a turtle spotter who would maintain an active and detailed log describing sightings, collisions or injuries to sea turtles. Any sightings of, collisions or injuries to sea turtles would be reported to the Project's environmental inspector and to the USFWS and DNER.
- During operation, a designated turtle spotter would be present on all tugboats servicing the port and a similar log would be maintained with the same reporting requirements.

#### 3.1.5.6 Conclusion

According to the established significance criteria and the information and conservation measures described in the preceding sections, it is determined that the Project would not affect the green sea turtle.

### **3.1.6 ROSEATE TERN**

#### 3.1.6.1 General Species Biology

The roseate tern (*Sterna dougallii*) occurs worldwide throughout tropical and subtropical seas. It is classified as a threatened species by the USFWS, and as an endangered species by the DNER.

The roseate tern is about 35-41 cm in length, with light-gray wings and back. A long deeply forked tail, pale gray mantle and primaries, and tail extending well beyond wing tips distinguish this species (Raffaele et al., 1998). It is a migratory species that visits the Caribbean during its breeding season. Breeding colonies are found from the Bahamas south through the Greater Antilles, principally off southwestern Puerto Rico and the Virgin Islands, where the species is most common. The Virgin Islands and the cays off southwestern Puerto Rico support the largest population of roseate terns in the Atlantic, totaling about 2,500 pairs (Raffaele et al., 1998).

Roseate terns breed primarily on small offshore islands and cays, and rarely do they breed on large islands. In general, roseate terns in the Caribbean begin egg laying in May, and have downy chicks by June, which fledge in July. They usually lay one or two eggs, and chicks fledge after about 25 days of birth. Roseate terns nest normally over scattered vegetation, in sand or corals rubble, or in rock depressions, usually in colonies, on offshore islets and small cays close to the coast. In Puerto Rico, they nest mostly in the south coast, particularly in the region of La Parguera, Guánica and Guayanilla, from May until September.

#### 3.1.6.2 Distribution and Abundance

The largest known roseate tern nesting area on Puerto Rico's south coast is on the offshore cays and reefs of La Parguera. Small colonies of roseate terns are also known to nest on the coral cays and islets off Guayanilla and Guánica.

#### 3.1.6.3 Summary of Impacts

The Project could have limited temporary effects on roseate terns. Roseate terns usually nest in a sand or coral scrape, or in rock depressions, usually in colonies on offshore cays. The nearest known nesting area is more than five miles (8 kilometers) west of Ponce Bay. During operation, ship traffic should not disrupt colony establishment early during colony-site selection. In addition, other non-port-related activities, such as increased small craft traffic around offshore keys and coral reefs, should concentrate near Ponce Bay, far from known nesting colonies. Disturbance of nesting colonies may result in the adults leaving their nests, making the eggs and chicks vulnerable to Ruddy Turnstones (*Arenaria interpres*), American Oystercatchers (*Haematopus palliatus*) and Laughing Gulls (*Larus atricilla*) (Raffaele, et al., 1998).

#### 3.1.6.4 Indirect, interdependent, interrelated and cumulative effects

The roseate tern is a migratory species common in southwestern Puerto Rico, particularly around small offshore cays and reefs, where they nest and breed. There are no records of roseate terns breeding on the proposed area for the PTA, and the *action area* does not have suitable breeding habitat. No indirect impacts related to the construction activities are likely to disrupt the normal behavioral patterns of the roseate terns in the area. It is unlikely that any interdependent, interrelated or cumulative effects on the roseate tern would occur as a result of the proposed action.

#### 3.1.6.5 Conservation Measures and Recommendations

No conservation measure associated to the PTA would be needed for the roseate tern.

### 3.1.6.6 Conclusions

Construction activities are unlikely to disrupt the normal behavioral patterns of roseate terns that may use Ponce Bay for feeding. Breeding colonies would not be affected by increased human activity, specifically around the offshore keys near Ponce. The activities related to the PTA would not affect the roseate tern population in the *action area*.

## 3.1.7 **PUERTO RICAN NIGHTJAR**

### 3.1.7.1 General Species Biology

The Puerto Rican nightjar (*Caprimulgus noctitherus*) is small (8.5”) a nocturnal bird with long bristles about the mouth with fluffy plumage mottled gray, brown and black. It feeds on flying insects and has been observed to have favorite perches, from which they sally to pursue nocturnal flying insects beneath the forest canopy. It calls throughout the year, particularly at dusk and before dawn, especially from November to May. Breeding and nesting is from late February through July, with a peak period from April to June.

The Puerto Rican nightjar is a, predominantly, understory bird of the dry southwestern forests (Kepler and Kepler, 1973). Seldom do they fly above the emergent trees, preferring to stay under the forest canopy. In this respect, open areas such as the proposed Project sites do not provide suitable habitat for this species, thus no direct impacts would be expected as a result of the PTA. Potential Puerto Rican nightjar habitat in southwestern Puerto Rico consists of mature undisturbed forests representative of the Subtropical Dry Forest Life Zone (Ewel and Whitmore, 1973), where the vegetation tends to form complete ground cover, and is almost entirely deciduous on most soils. Trees usually do not exceed 15 meters in height and their crowns are typically broad, spreading and flattened with sparse foliage.

Puerto Rican nightjars do not construct nests; they lay their eggs directly on the ground over leaf litter under scrub vegetation, where the forest canopy ranges from four to six meters, and never in open areas or clearings. The average clutch size is two eggs. Incubation is done by both the female and the male and lasts about 20 days. After hatching, the young are able to fly around the 14<sup>th</sup> day.

### 3.1.7.2 Distribution and Abundance

The Puerto Rican nightjar was considered extinct until G. B. Reynard rediscovered it in southwestern Puerto Rico in 1961 (Kepler and Kepler, 1973). The Puerto Rican nightjar is endemic to Puerto Rico, and is locally common only in or around the Guánica State Forest (Raffaele et al., 1998), where it is irregularly distributed.

In the Guánica State Forest the population centers on the higher semi-deciduous forests above 75 meters. Below that elevation the birds are rare or absent. Approximately 2,300 hectares of optimal habitat exists in the Guánica State Forest area, where there is an estimated breeding population of 400 pairs (Kepler and Kepler, 1973). The Puerto Rican nightjar also occurs sparingly in other localities in the dry limestone forests of the southwest coast of Puerto Rico, from Guayanilla to El Combate. Recent records indicate the presence of this species in the hills north of Guayanilla Bay and the Susúa State Forest. In Susúa, Puerto Rican nightjars occur primarily on the southern slopes, but can also be found in the mature lower cordillera forest at slightly higher elevations (USFWS, 1991). They are most common in the Guánica State Forest at elevations from sea level to about 700 feet.

The most recent surveys indicate stable populations of nightjars in the Guánica and Susúa State forests and the hills above Guayanilla. Recent estimates for all populations (Vilella, 1989) are 676 Puerto Rican nightjars on 9,838 hectares distributed as follows: Guánica (347), Guayanilla-Peñuelas (188) and Susúa-Maricao (141).

#### 3.1.7.3 Summary of Impacts

There is no reported potential habitat for this species within the Project area. The nearest documented occurrences of this species are the hills north of Highway PR-2 in Peñuelas-Guayanilla, approximately 5.0 kilometers to the northwest of the Project.

#### 3.1.7.4 Indirect, Interdependent, Interrelated and Cumulative Effects

It is anticipated that no port-related, or other construction related activities would take place within Puerto Rican nightjar habitat. Hence, no indirect, interdependent interrelated or cumulative effects to the Puerto Rican nightjar are expected.

#### 3.1.7.5 Conservation Measures and Recommendations

No conservation measures would be needed for the Puerto Rican nightjar since it does not occur within the *action area*.

#### 3.1.7.6 Conclusion

It is anticipated that development of the PTA would not have any direct effects on the Puerto Rican nightjar or its habitat. In view that that port-related activities are not anticipated to affect the Puerto Rican nightjar, it is determined that the proposed action would not affect Puerto Rican nightjar or its habitat.

### 3.1.8 YELLOW-SHOULDERED BLACKBIRD

#### 3.1.8.1 General Species Biology

The yellow-shouldered blackbird (*Agelaius xanthomus*) is a small (8-9") passerine, whose adults and juveniles of both sexes are glossy black with yellow shoulder epaulets. The only difference between males and females is their size. Males are significantly larger, about 17 percent by weight, than females. It is considered an arboreal insectivore, although it is known to feed on cooked rice, granulated sugar, fruit and other domestic foods. Moths and crickets are a major source of food. The yellow-shouldered blackbird was first listed as endangered on November 19, 1979.

The yellow-shouldered blackbird is endemic to Puerto Rico and Mona Island. Once widespread throughout the Island, the species distribution is now restricted to the coastal southwestern area; a small coastal eastern area; and Mona Island.

The yellow-shouldered blackbird nests from April to October in southwestern in Puerto Rico. The open, cup-shaped nests are usually constructed in trees. Post and Wiley (1976) indicated that during the nesting season, most of the birds of the southwestern population stayed either in mangrove forests or the arid coastal fringe. Nesting also occurs in mangroves along the coast and on small offshore islands. Other nesting habitat includes large deciduous trees like the Turpentine tree (*Bursera simaruba*), Coconut palms (*Cocos nucifera*) and Puerto Rican royal palms (*Roystonea borinquena*).

Yellow-shouldered blackbirds of the eastern population use cavities or hollows in dead mangroves, and those in Mona build their nests on the ledges or in crevices of the coastal cliffs. The average clutch size is 2-4 eggs. Nesting pairs often aggregate, and nests can be found as close as 20 feet from another. The female handles all incubation and breeding, while the male shares equally with feeding the young.

#### 3.1.8.2 Critical Habitat

Critical Habitat for the yellow-shouldered blackbird has been designated to include the following areas:

- Mona Island: The entire Island
- Puerto Rico: An area of land, water and airspace beginning at a point where Quebrada Boquerón meets Boquerón Bay; the proceeding southwesterly along the coast to Cabo Rojo; then eastward along the coast, including offshore cays, to the point where PR-332 meets Guánica Bay; then northward on PR-332 to its junction with PR-116; then westward on PR-116 to its junction with PR-305; the westward on PR-305 to its junction with PR-101 to the point where it crosses Quebrada Boquerón; then along Quebrada Boquerón to the point where it joins Boquerón Bay.

- A circular area of land, water and airspace with a 1-mile radius, the center being the junction of PR-360 and PR-102 in the town of San Germán.

#### 3.1.8.3 Distribution and Abundance

The yellow-shouldered blackbird was widespread and abundant in Puerto Rico and Mona Island until the 1940's (USFWS, 1996). The species had been reported from the interior mountains of Puerto Rico to the coastal lowlands.

Present distribution of the yellow-shouldered blackbird in Puerto Rico includes the Boquerón State Forest in the southwest, Roosevelt Roads Naval Station in the east, Salinas in the south, and Mona and Monito Islands (USFWS, 1996).

Estimated populations of the yellow-shouldered blackbird in 1976 were 200 in eastern Puerto Rico; 2,000 in southwestern Puerto Rico; and 200 in Mona Island. More recent estimates indicate that there are approximately 350 individuals in the southwest, less than 25 in eastern Puerto Rico and from 400 to 500 in Mona. This amounts to a total of about 825 yellow-shouldered blackbirds left in the world.

#### 3.1.8.4 Summary of Impacts

Development of the Project would not impact the yellow-shouldered blackbird. The nearest site with a record of occurrence of this species is about 10.0 kilometers of Ponce Bay. According to Ventosa (pers. comm.) there are no confirmed records of yellow-shouldered blackbirds in the Project area.

#### 3.1.8.5 Indirect, Interdependent, Interrelated and Cumulative Impacts

The yellow-shouldered blackbird has not been recorded for the *action area*, therefore there are no expected indirect, interdependent interrelated or cumulative effects on this species.

#### 3.1.8.6 Conservation Measures and Recommendations

No specific conservation measures are proposed for this species.

#### 3.1.8.7 Conclusion

Based on the significance criteria outlined in Section 3.0 of this BA, and the information contained herein, it has been determined that the proposed PTA would not affect the yellow-shouldered blackbird.

### **3.1.9 BROWN PELICAN**

#### **3.1.9.1 General Species Biology**

The brown pelican (*Pelecanus occidentalis*) is a large water bird (42-52”) with an unusual bill and dark gray-brown coloration with white about the head and neck. The Caribbean subspecies (*Pelecanus occidentalis occidentalis*), has a darker undersurface plumage during breeding than does the Eastern brown pelican (*Pelecanus occidentalis carolinensis*). Pelicans can reach up to 8 pounds in weight and the larger individuals have wingspans of more than 7 feet. The brown pelican is found along the coast in California and from North Carolina to Texas, Mexico, the West Indies, and many Caribbean islands, as far south to Guyana and Venezuela.

Brown pelicans nest in colonies on offshore cays and small islands. They usually build their nests on mangrove trees, but ground nesting may also occur. The nests in trees are firmly constructed of sticks, reeds, straws and grasses. Breeding may occur during any season and may vary from year to year (Raffaele et al., 1998). The Caribbean subspecies begins nesting around May and reaches its peak during September through November. The normal clutch size is 2-4 eggs. All courtship behavior is confined to the nest site, and both the female and male share in incubation and rearing duties.

Brown pelicans inhabit and feed in shallow estuarine waters, including bays, lagoons and other protected coastal areas and calm ocean waters. They seldom venture more than 20 miles out to sea. Sand spits and mangrove islets are used frequently as daily loafing and resting areas.

#### **3.1.9.2 Distribution and Abundance**

In Puerto Rico, brown pelicans are known to breed at three sites: Cayo Conejo, off Vieques southeastern coast; Añasco, on the west coast; and Montalva Bay, near La Parguera, on the southwestern coast. Nesting has also been attempted at Guánica Bay, Guanajibo and Aguadilla. Pelicans are frequent visitors to the proposed project site.

Brown pelicans reportedly roost on the María Langa and Palomas shoals in Guayanilla Bay (EcoEléctrica, 1996). Brown pelicans forage and roost throughout Ponce Bay.

#### **3.1.9.3 Summary of Impacts**

The Project would not significantly impact the local brown pelican population. There are no suitable nesting, or roosting, habitats within or near the Ponce Bay area.

Brown pelicans forage throughout Ponce Bay. No long-term impacts on the brown pelican’s foraging habitat are expected as a result of the proposed action at Ponce Bay.

It is anticipated that normal behavioral patterns of brown pelicans would be disrupted during construction. Construction equipment and associated noise would cause pelicans to temporarily avoid the project site and look for alternate sites for feeding and roosting. The birds are expected to renew their regular behavioral patterns once the construction activities are finished.

#### 3.1.9.4 Indirect, Interdependent, Interrelated and Cumulative Impacts

No indirect, interdependent, interrelated or cumulative impacts other than those expressed in Section 3.1.9.3 of this BA are anticipated for the brown pelican as a result of the proposed action.

#### 3.1.9.5 Conservation Measures and Recommendations

PAA would coordinate with the USACE and the USFWS the development of a Habitat Conservation Plan for the brown pelican. Construction workers and port operators would be advised of the existence of this endangered species in the Project's vicinity so that appropriate action be taken to avoid direct impacts.

#### 3.1.9.6 Conclusion

Because construction activities would temporarily disrupt normal behavioral patterns of brown pelicans, the Project may affect, not likely to adversely affect the brown pelican in the region.

### **3.1.10 VAHL'S BOXWOOD**

#### 3.1.10.1 General Species Biology

Vahl's boxwood (*Buxus vahlii*) is a small evergreen shrub or tree measuring up to 15 feet tall and 5 inches in diameter. The leaves are more or less oblong, simple, opposite and about 1.5 inches long and 0.75-inch wide. The flower cluster is small and is composed of a solitary female flower and several male flowers just below it. Flowering takes place from December to early April. This species does not reproduce vegetatively. It is found growing as an understory shrub in semi-shaded conditions in semi-evergreen seasonal limestone forests at elevations from 80 to 650 ft.

#### 3.1.10.2 Distribution and Abundance

Vahl's boxwood is only known from Puerto Rico, where it has been recorded at three locations, Punta Higüero in Rincón, Hato Tejas in Bayamón, and the Guayanilla hills located to the north of PR-2. In 1984, there were an estimated 16 plants at the Rincón

site and 24 plants at Hato Tejas. The Caribbean Field Office of the USFWS has confirmed the presence of this species in the Guayanilla hills.

#### 3.1.10.3 Summary of Impacts

This species does not occur within the Project site. Its presence in the region is most likely to occur in the hills north of Highway PR-2 in Guayanilla. No adverse significant impacts to this species are anticipated.

#### 3.1.10.4 Indirect, Interdependent, Interrelated and Cumulative Effects

No indirect, interdependent, interrelated or cumulative impacts are anticipated for Vahl's boxwood.

#### 3.1.10.5 Conservation Measures and Recommendations

No specific conservation measures are needed for Vahl's boxwood in the *action area*.

#### 3.1.10.6 Conclusions

The PTA would not have any direct effects on Vahl's boxwood or its habitat.

### **3.1.11 PALO DE ROSA**

#### 3.1.11.1 General Species Biology

Palo de rosa (*Ottoschulzia rhodoxylon*) is a small evergreen tree that reaches 15 feet in height and up to 16 inches in diameter. It has smooth alternate leaves with an elliptic to ovate shape. Flowers are bisexual and arranged singly or in clusters at the base of the leaf. The flowers' corolla is tubular with five lobes. The fruit is drupe with a thin covering. Its reddish heartwood is suitable for turnery articles.

#### 3.1.11.2 Distribution and Abundance

Palo de rosa is only known from a few locations in Puerto Rico. The species is also rare in the Dominican Republic. In Puerto Rico, palo de rosa has been reported for the northern limestone hills (mogotes), and the Guánica, Maricao, Susúa and Río Abajo State Forests.

### 3.1.11.3 Summary of Impacts

This species does not occur within the Project site. Its presence in the region is most likely to occur in the hills north of Highway PR-2 in Guayanilla. No adverse significant impacts to this species are anticipated.

### 3.1.11.4 Indirect, Interdependent, Interrelated and Cumulative Effects

No indirect, interdependent, interrelated or cumulative impacts are anticipated for palo de rosa.

### 3.1.11.5 Conservation Measures and Recommendations

No specific conservation measures are needed for palo de rosa in the *action area*.

### 3.1.11.6 Conclusions

The PTA would not have any direct effects on palo de rosa or its habitat.

## **3.1.12 BARIACO**

### 3.1.12.1 General Species Biology

Bariaco (*Trichilia triacantha*) is an evergreen shrub or small tree that may reach up to 30 feet in height and 3 inches in diameter. The alternate leaves are shiny dark green, leathery, and clustered at the ends of twigs. Each compound leaf is 3 to 7-parted with leaflets appearing to be arranged palmately and bearing 3 stiff, sharp spines at their apex. Its flowers are white, symmetrical and bisexual.

Bariaco has been observed too flower from January to March in the Guánica State Forest. Flower production is abundant but fruit set appears to be poor. Pollination mechanisms are not known, although other members of this genus are wind or insect pollinated.

### 3.1.12.2 Distribution and Abundance

Bariaco is endemic to Puerto Rico and is restricted to the dry limestone forests of the southwestern part of the Island. It can be found in the deciduous and the semi-evergreen seasonal forests of the Subtropical Dry Life Forest Zone at elevations of less than 300 feet. Approximately 40 individuals are known to exist in two populations located in the Guánica State Forest and Punta Guaniquilla near Boquerón. One population was reported from the Guayanilla hills near Peñuelas, but has apparently been eliminated by woodcutting and road construction.

Bariaco has been affected in the past by deforestation for urban development, agriculture, grazing, charcoal production and the cutting of wood for fence posts.

#### 3.1.12.3 Summary of Impacts

This species does not occur within the Project site. Its presence in the region is most likely to occur in the hills north of Highway PR-2 in Guayanilla. No adverse significant impacts to this species are anticipated.

#### 3.1.12.4 Indirect, Interdependent, Interrelated and Cumulative Effects

No indirect, interdependent, interrelated or cumulative impacts are anticipated for Bariaco.

#### 3.1.12.5 Conservation Measures and Recommendations

No specific conservation measures are needed for bariaco in the *action area*.

#### 3.1.12.6 Conclusions

The PTA would not have any direct effects on bariaco or its habitat.

### **3.1.13 BLUE WHALE**

#### 3.1.13.1 General Species Biology

The blue whale (*Balaenoptera musculus*) is one of the rorquals, a family of whales that includes the humpback whale, the fin whale and the sei whale, among others. It is the largest mammal, possibly the largest animal to ever inhabit the earth. The average blue whale is between 75 and 80 feet long, and weighs about 110 tons. Females are larger than males of the same age, some weighing as much as 150 tons. Blue whales feed almost exclusively on small-like creatures called euphausiids or Krill.

During the summer feeding season blue whales can consume as much of 4 tons of krill in a day. Blue whales reach sexual maturity between the ages of 6-10 years, or when males average about 74 feet and females are about 79 feet in length. Calves are born at intervals of 2 to 3 years and a gestation period of 12 months. Calves nurse for 7 to 8 months and are weaned when they reach about 52 feet in length. Though blue whales may be found singly or in small groups, it is more common to see them in pairs. Loosely concentrations of 50 to 60 whales have been observed.

### 3.1.13.2 Distribution and Abundance

The blue whale is distributed worldwide and occurs primarily in cold open waters. They mate and calve in tropical-to-temperate waters during winter months and feed in polar waters during summer months. Its distribution in the Western Atlantic generally extends from the Arctic to mid latitudes. They can be found near the coast, usually along the edges of the continental shelf. The blue whale is best considered as an occasional visitor in the US Atlantic EEZ waters, which probably represents the current southern limit of its feeding range. Little is known about the population size of blue whales. Pre-whaling numbers have been estimated at 200,000, and though exact figures are not known, an estimated 5,000 survive today in three populations: North Atlantic, North Pacific, and the Southern Hemisphere. Its presence in the Project area is unlikely. It is anticipated that the Project would not have any adverse significant impacts on this species. Because its presence in the US EEZ is sporadic, it is also anticipated that any increase in marine traffic destined to the PTA would not result in an increased risk of collisions with these whales.

### 3.1.13.3 Summary of Impacts

No adverse impacts to blue whales are expected as a result of the development of the PTA.

### 3.1.13.4 Indirect, Interdependent, Interrelated and Cumulative Effects

No indirect, interdependent, interrelated or cumulative effects on the blue whale are anticipated.

### 3.1.13.5 Conservation Measures and Recommendations

No specific conservation measures are proposed for this species. Notwithstanding, PAA and the operators of the port would commit to report and document any sightings blue whales in the *action area*. Similarly, the PAA would make an effort to assure that ship operators using the PTA would report and document any sightings of whales while in the high seas.

### 3.1.13.6 Conclusion

Based on the significance criteria outlined in Section 3.0 of this BA, the PAA has determined that development of the PTA would not affect the blue whale.

### **3.1.14 FINBACK WHALE**

#### **3.1.14.1 General Species Biology**

Second in size only to the blue whale, the finback whale (*Balaenoptera physalus*) reaches about 70 feet in length and weighs up to 70 tons. The body is dark blue-gray above and whitish-yellow below, with a pointed head and a prominent back and dorsal fin, which are easy to see. Finback whales often feed by coursing through the water on their side, straining krill and small fish through their baleen plates (bony plates hanging from the upper jaw used to filter feed). The finback whale is one of the fastest of the large whales, capable of short bursts of speeds up to 35 miles per hour. This species also makes some of the deepest dives of the baleen whales, and has been recorded to remain submerged for as long as 50 minutes.

During the fall finback whales migrate several thousand miles to equatorial waters. In winter, they fast almost completely, living off their fat reserves. Mating occurs throughout the winter and the young are born a year later between December and April. Calves measure about 20 feet at birth and would nurse for about 7 months, reaching sexual maturity at the age of 5-6 years. Reproductively active females bear only one calf every 2-3 years.

#### **3.1.14.2 Distribution and Abundance**

Finback whales are distributed worldwide, mostly in temperate waters in the Southern Hemisphere. It is a deepwater species commonly observed within the EEZ north of Cape Hatteras. They are found mostly offshore and tend to be very nomadic. The waters off New England represent an important forage area for this species. In Puerto Rico, finback whales have only been observed in deep waters. Between 1984 and 1988, the NMFS reported only three deaths of finback whales attributed to collisions with ships, none of which occurred in Caribbean waters. As with other species of whales, finback whale populations have suffered from many years of hunting. The pre-hunting population has been estimated at about 30-50,000 in the North Atlantic Ocean. In 1977, the International Whaling Commission estimated only about 7,200 finback whales in Newfoundland and Nova Scotia. It is unlikely that finback whales may be found in the Project area, so no adverse significant impacts on this species are anticipated.

#### **3.1.14.3 Summary of Impacts**

No adverse impacts to finback whales are expected as a result of the development of the PTA.

#### 3.1.14.4 Indirect, Interdependent, Interrelated and Cumulative effects

No indirect, interdependent, interrelated or cumulative effects on the finback whale are anticipated.

#### 3.1.14.5 Conservation Measures and Recommendations

No specific conservation measures are proposed for this species. Notwithstanding, the PAA and the operators of the port would commit to report and document any sightings finback whales in the *action area*. Similarly, PAA would make an effort to assure that ship operators using the PTA would report and document any sightings of whales while in the high seas.

#### 3.1.14.6 Conclusion

Based on the significance criteria outlined in Section 3.0 of this BA, PAA has determined that development of the PTA would not affect the finback whale.

### **3.1.15 SPERM WHALE**

#### 3.1.15.1 General Species Biology

The sperm whale (*Physeter macrocephalus*) is the largest odontocete, or toothed whale. Adult males reach lengths of 50 feet and weigh up to 35-35 tons. Adult females are smaller, and grow to about 36 feet in length, reaching a maximum weight of 13-14 tons. Its head is blunt and squared off, with a small, under slung jaw. A single blowhole is located forward on the left side of the head. Sperm whales are usually dark, brownish gray with light streaks. The skin around its mouth is white. Sperm whales feed mainly on medium-sized deep-water squid, but also feed on fish, skate, octopus and smaller squid. A sperm whale consumes about one ton of food each day.

Males reach sexual maturity at approximately 35 feet, and 10 years or more of age, but don't appear to take an actual part in breeding until they reach their late 20's. Females reach sexual maturity at 27-29 feet, 7-13 years of age. The gestation period is 14 to 16 months. Newborn calves nurse for about 2 years, weigh about one ton, and are about 11-16 feet long. Large males only attend female groups a few hours at a time. Female groups may consist of up to 20 animals, where there appears to be communal care for the young. Sperm whales can descend to depths of over 3,000 feet and stay submerged for more than one hour.

#### 3.1.15.2 Distribution and Abundance

Sperm whales are found in all oceans of the world. The males, alone or in groups, are found in higher latitudes during the summer. During the winter months, they migrate

toward lower latitudes, and only the physically mature appear to enter the breeding grounds close to the equator. Females, calves and juveniles remain in the warmer tropical waters of the Pacific, Atlantic and Indian Oceans. In the Caribbean, large and small adults, and calves and juveniles of different sizes have been reported (Watkins et al., 1985).

It is estimated that at one time there were two million sperm whales worldwide. Present population estimates are the subject of controversy, but most experts agree that there may be a minimum of 500,000.

Collisions with ships, although rare, are one source of human induced mortality among sperm whales. According to the NMFS (2000), only one accident was reported for the time period between 1994 and 1998. In May 1994 a ship-struck sperm whale was observed south of Nova Scotia. The presence of sperm whales in the Project's vicinity is unlikely, although possible. No adverse significant impacts on this species are anticipated as a result of the PTA.

#### 3.1.15.3 Summary of Impacts

No adverse impacts to sperm whales are expected as a result of the development of the PTA.

#### 3.1.15.4 Indirect, Interdependent, Interrelated and Cumulative Effects

No indirect, interdependent, interrelated or cumulative effects on the sperm whale are anticipated.

#### 3.1.15.5 Conservation Measures and Recommendations

No specific conservation measures are proposed for this species. Notwithstanding, PAA and the operators of the port would commit to report and document any sightings sperm whales in the *action area*. Similarly, the PAA would make an effort to assure that ship operators using the PTA would report and document any sightings of whales while in the high seas.

#### 3.1.15.6 Conclusion

Based on the significance criteria outlined in Section 3.0 of this BA, PAA has determined that development of the PTA would not affect the sperm whale.

### **3.1.16 SEI WHALE**

#### **3.1.16.1 General Species Biology**

The sei whale (*Balaenoptera borealis*) is the third largest baleen whale, behind the Blue and Finback whales. Sei whales measure 20-50 feet in length and weigh 40 tons. Sei whales are dark gray with variable white undersides, usually around the throat grooves. In the Antarctic and pacific populations, there are light-colored patches all over the upper body. Atlantic populations lack these patches and more uniformly dark. Sei whales resemble blue and finback whales, but have a smaller and more curved dorsal fin. This whale is probably the fastest of the large whales capable of cruising at 14 mph with a maximum speed of 40 miles per hour. Sei whales usually travel alone or in small groups of five or less.

During the fall, sei whales migrate thousands of miles to equatorial waters. The mating season occurs from December to April, during which time they usually fast, living off their fat reserves. Females bear single calves 15 feet in length after a gestation period of 10-12 months. Calves are weaned on the summer grounds at the age of 6-9 months. Females and males reach sexual maturity at 5-15 years of age, and females give birth to one calf every 2-3 years.

#### **3.1.16.2 Distribution and Abundance**

Sei whales are distributed worldwide in deep waters. They are found in the North Atlantic, from Iceland south to the northeastern Venezuelan coast, and northwest to the Gulf of Mexico. There are also records from Cuba and the Virgin Islands. This species thrives around islands but rarely close to shore. Its worldwide distribution is estimated at 54,000 individuals. Although its population size within the North Atlantic EEZ is not known, it is believed that it may reach 3,000 in the Western North Atlantic (NMFS, 1998).

No deaths or severe lesions to this species due to human actions, including collisions with ships, were reported between 1991 and 1997. The New England Aquarium documented a sei whale carcass hung on the bow of a container ship as it docked in Boston on November 17, 1994. The crew estimated that the whale hung from the bow for approximately four days prior to the ship's arrival into port. The presence of this species in the Project area is unlikely, but possible. No adverse significant impacts on this species are expected as a result of the Project.

#### **3.1.16.3 Summary of Impacts**

No adverse impacts to sei whales are expected as a result of the development of the PTA.

3.1.16.4 Indirect, Interdependent, Interrelated and Cumulative Effects

No indirect, interdependent, interrelated or cumulative effects on the sei whale are anticipated.

3.1.16.5 Conservation Measures and Recommendations

No specific conservation measures are proposed for this species. Notwithstanding, PAA and the operators of the port would commit to report and document any sightings sei whales in the *action area*. Similarly, the PAA would make an effort to assure that ship operators using the PTA would report and document any sightings of whales while in the high seas.

3.1.16.6 Conclusion

Based on the significance criteria outlined in Section 3.0 of this BA, the Applicant has determined that development of the PTA would not affect the sei whale.

**3.1.17 HUMPBACK WHALE**

3.1.17.1 General Species Biology

The humpback whale (*Megaptera novaeangliae*) is one of the best known of the 20 species of whales found in US waters. Humpback whales are born during the winter in warm tropical waters. They reach sexual maturity in four to six years. Adult males grow to an average length of 47 feet and females to 44 feet. The longest ever recorded was about 59 feet. They feed on fish, including Herring, Capelin, Sand Lance, Mackerel, Pollock, Haddock and Krill.

Humpback whales are known for its distinctive long front fins and contrasting white belly and dark upper side. They are famous for its haunting songs and great leaps from the sea before crashing again into the water amidst foaming waves.

3.1.17.2 Distribution and Abundance

During the spring, summer and fall, North Atlantic humpback whales feed over a vast area of ocean encompassing the west coast of the US (including the Gulf of Maine), the Gulf of St. Lawrence, Newfoundland/Labrador, and the west coast of Greenland. Other foraging areas in the North Atlantic include the waters off Iceland, north Norway and the islands of Bear and Jan Mayen (Christensen et al., 1992). During the summer, humpback whales from all six foraging areas migrate primarily to the Caribbean to breed and take care of their young.

In the Caribbean, most of these whales are found in waters off the Dominican Republic, particularly in Navidad and Silver Banks, and in Samaná Bay. They also are present, but to a lesser degree, along the entire Antillean Arc, from Puerto Rico to Venezuela. Most of the sightings of humpback whales in Puerto Rico have been along the north and west coasts, notably the area around Rincón and the Mona Passage. Sightings are less frequent along the south coast, where the proposed Project would be located. According to Mignucci (1989), humpback whales can be found occasionally in the Guayanilla-Peñuelas area.

The NMFS recently reported that during the period from 1994 to 1998, death and severe lesions to humpback whales (outside of the territorial waters surrounding Puerto Rico) due to human activity averaged 3.65 per year (NMFS, September 2000). The main causes for these incidents are collisions with ships and entanglements with pelagic fishing nets. The results of mortality and severe lesions reports on North Atlantic humpback whales during that period are presented in Table 5.

TABLE 5. SUMMARIZED RECORDS OF MORTALITY AND SERIOUS INJURY, NORTH ATLANTIC HUMPBACK WHALES, JANUARY 1994-DECEMBER 1998.

Date	Report Type	ID	Location	Collision	Entang.	Notes
7/14/94	Serious injury	Unknown	15 mi SE of Cape Elizabeth, Maine		X	Gillnet wrapped around head.
2/28/95	Mortality	Unknown	Cape Hatteras, NC		X	Stranded dead with gear wrapped around tail.
5//2695	Serious injury	10 m	Great South Channel		X	Net and monofilament around tail region.
6/4/95	Mortality	8.9 m male	Virginia Beach, VA	X		Lacerations along peduncle, probable ship strike.
1/30/96	Serious injury	Juvenile	Georges Bank		X	Gear wrapped on body.
2/22/96	Serious injury	8 m	Florida Keys		X	Heavy line extending along maximum girth, pinning both pectorals.
4/2/96	Mortality	7.2 m female	Cape Story, Virginia Beach, VA	X		Fractured left mandible.
5/9/96	Mortality	6.7 m female	Mouth of Delaware Bay	X		Propeller cuts behind blowhole; ship strike.
7/18/96	Serious injury	10 m	South of Bar Harbor, Maine		X	Weighted gear wrapped around tailstock.
7/28/96	Serious injury	10 m	Stellwagen Bank, MA		X	Entanglement involved mouth or flipper and line over tail.
10/7/96	Serious injury	Unknown	Great South Channel		X	Gear wrapped around tail and trailing 30 m behind whale.
10/18/96	Serious injury	Unknown	Great South Channel		X	Whale entangled in steel cable.
11/3/96	Mortality	8.4 m male	Carrituck, North Carolina	X		Acute trauma to skull found by necropsy.
12/10/97	Mortality	9.0 m male	Beaufort Inlet, NC	X		Massive hemorrhage consistent with blunt trauma.
3/4/98	Mortality	8.6.m female	Orkacoke Island, NC		X	Whale drowned entangled in croaker gillnet gear.
8/23/98	Serious injury	Adult, sex unknown	Montauk Pt., NY		X	Whale anchored by offshore lobster gear.
11/5/98	Mortality	8.9 m male	Nags Head, NC		X	Deep abrasions around tail stock with subdermal hemorrhaging.

Source: NMFS (2000)

There are approximately 10,000 humpback whales found in the oceans worldwide. This represents about eight percent of estimated historic populations. Approximately 7,000 of these whales live in US waters at some point in their yearly migration cycle.

### 3.1.17.3 Summary of Impacts

From the point of entanglements with pelagic fishing nets, the Project is not expected to have any direct impacts on humpback whales, since this risk is not related to the Project. However, the projected increase in marine traffic to and from the PTA could potentially represent a higher risk of collisions between ships and whales, particularly during the winter months when the whales are more frequent in the Caribbean. This potential impact would not be a direct result of the Project, but rather an indirect one, since the Project would not determine the volume of maritime traffic in the Northern Atlantic, the Mona Passage or the Caribbean Sea at any given moment.

Hence, the Project by itself does not determine or controls the number of ships that would be visiting the PTA. This determination is a function of the future demand for the port and the number of ships currently sailing the Atlantic Ocean that would be re-routed to Puerto Rico. This change in marine traffic would be attained once the Project is in operation. Still, it is anticipated that about 600 to 1,000 ships would be using the PTA every year. However, this increase in marine port operations does not necessarily represent a similar increase in the number of ships that currently sail within geographical distribution limits of the humpback whale. Therefore, it is not expected that the PTA would have an adverse significant impact on this species.

### 3.1.17.4 Indirect, Interdependent, Interrelated and Cumulative Effects

The establishment of a deep-draft port in southern Puerto Rico would result in an increase in local ship traffic of the order of 600 to 1,000 vessels per year. This port-related increment in maritime traffic could potentially have an indirect effect on humpback whales that migrate to the Caribbean during the winter. The potential effects to these whales relate to the risk of collisions with ships, as the regional sea-lanes become more crowded.

### 3.1.17.5 Conservation Measures and Recommendations

No specific conservation measures are proposed for this species. Notwithstanding, PAA and the operators of the Port would commit to report and document any sightings of humpback whales in the *action area*. Similarly, the PAA would make an effort to assure that ship operators using the PTA would report and document any sightings of whales while in the high seas.

### 3.1.17.6 Conclusion

Based on the significance criteria outlined in Section 3.0 of this BA, the PAA has determined that development of the PTA would not affect the humpback whale.

## **3.1.18 CARIBBEAN MONK SEAL**

### 3.1.18.1 General Species Biology

The Caribbean monk seal (*Monachus tropicalis*) was formally declared extinct in the 1996 International Union for the Conservation of Nature (IUCN) Red List of Threatened Animals. The last reported sighting occurred in 1952 off Seranilla Bank between Jamaica and Honduras. The Caribbean monk seal was hunted for its blubber, to make oil, and for its meat ever since the days of Columbus, whose crew was ordered to kill eight “sea wolves” for food off the coast of Santo Domingo in 1494. This slaughter continued up into the 20<sup>th</sup> century, with hunters killing as many as one hundred seals in one night. Caribbean monk seals were also killed by museum collectors and displayed in zoos.

Very little is known about the general biology of this species. Males are thought to have reached a length of about 6 to 7 feet, while females may have been slightly smaller. The back of adult seals was black with a gray tinge. The underside and muzzle was pale yellow. Caribbean monk seal pups were born at the beginning of December, possessing a black fur coat like newborns of other monk seal species and probably measuring about 3 feet in length.

### 3.1.18.2 Distribution and Abundance

The Caribbean monk seal inhabited the Caribbean Sea, northwest to the Gulf of Mexico, and from the Bahamas to the Yucatán Peninsula, south along the coast of Central America and east to the northern Antilles. There have been no confirmed sightings since 1952. Since 1964 there have been several sightings by fishermen of a seal-like animal in Puerto Rican waters, along the north coast of Haiti and the Dominican Republic, and in the eastern Bahamas. The most recent of these sightings was in 1984. This has led some to believe that remnants of the original population still exist, although most scientists believe this is not the case. A 6,377 km aerial survey of the former range of this species in 1973 yielded no evidence of the presence of monk seals, and similar

searches, such as one conducted in the Gulf of Mexico and the Mexican Caribbean in 1984, have also proved unsuccessful.

3.1.18.3 Summary of Impacts

In view of its present status, it is improbable that the proposed PTA could have any impacts on the “continued existence” of this species.

3.1.18.4 Indirect, Interdependent, Interrelated and Cumulative Effects

None.

3.1.18.5 Conservation Measures and Recommendations

Not necessary.

3.1.18.6 Conclusion

The development of the PTA cannot affect an extinct species, such as the Caribbean monk seal.

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