FINAL DRAFT

Environmental Assessment
Review of an Application from the Cruise Ship *Coral Princess* and Hyde Marine Technology for inclusion in the Shipboard Technology Evaluation Program

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Prepared by:
US Coast Guard

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1.0 PURPOSE AND NEED FOR ACTION

1.1 Introduction

The USCG established the Shipboard Technology Evaluation Program (STEP) in 2004 (USCG 2004). STEP was established to facilitate the testing of prototype ballast water treatment systems under operational conditions on board vessels. Under STEP, treatment system developers acquire increased access to ships for purposes of testing prototype treatment systems; vessel owners get assurances that prototype systems installed on their vessels will be deemed acceptable by the Coast Guard; and the Coast Guard and the public acquire rigorous and credible data on the actual performance of the prototype systems. While in STEP, owners are required to use the prototype treatment system as the primary method of Ballast Water Management (BWM) during the five year evaluation period. The applicants must monitor the engineering performance of the system, and in all years, submit detailed reports to the Coast Guard on the system performance and results of efficacy tests per the vessel's study plan. (USCG 2004). The USCG previously prepared a Programmatic Environmental Assessment (PEA) for the implementation of the USCG's Shipboard Technology Evaluation Program (STEP). The STEP PEA, along with the Finding of No Significant Impact, was published in the Federal Register on December 8, 2004. This Environmental Assessment for the review of the Princess Cruise lines application into STEP, is specific to the Coast Guard's consideration and acceptance of the Princess Cruise Lines (PCL) *Coral Princess* with the Hyde Marine Ballast Water Treatment System (HBWTS) and tiers from the PEA. The PEA should be consulted for much greater background information, legislative history and detail on the STEP goals and requirements as well as additional discussion of environmental and social impacts related to the Program as a whole.

This EA was prepared in accordance with the Council on Environmental Quality (CEQ) National Environmental Policy Act (NEPA) implementing regulations, the Department of Homeland Security Management Directive 5100.1 and the United States Coast Guard Commandant Instruction 16475.1D (COMDTINST 16475.1D). Specifically, the EA examined the probable impacts of accepting the PCL *Coral Princess* with the HBWTS into STEP, including the experimental test and evaluation of the routine operation of the filtration and ultraviolet treatment system described in the application.

1.2 Background

The PCL *Coral Princess* is a 266 m long, 91,000 gross tons ocean cruise ship. It has total accommodation for 3,200 passengers and crew. According to the application, the *Coral Princess* runs four regular cruising routes that include Alaska, California, the Panama Canal, the U.S. Virgin Islands and Florida (PCL 2006). The *Coral Princess'* has a maximum ballast water capacity of approximately 2,900 m^3 but under normal load configuration carries about 1,800 m^3 of ballast water which is used to aid with vessel trim and stability.

The HBWTS is a two step process that uses a filtration screen to remove particulates greater than 50 microns in diameter from the ballast water as it is pumped aboard. The filtration stage includes a back-flush process that returns all screened material back to the sea at the point of uptake. The filtered water is then exposed to ultraviolet (UV) light to kill or disable any organisms remaining after filtration. The treated water is transferred throughout the ship via the dedicated ballast water piping and storage system. Upon discharge, the water is re-exposed to UV energy and pumped out of the ship. The HBWTS is already installed on the Coral Princess, and is operated in conjunction with private testing efforts by the system developer and the vessel owner. The system is not used, nor has it been approved by the Coast Guard, for management of BW in compliance with current ballast water management requirements. The Coral Princess is designed not to

require ballasting under normal ship operations, however, the ships Captain may use ballast during the voyage to reduce weather, wave or current induced vessel trim or list, for the comfort of the passengers while underway. Thus virtually all ballasting and deballasting is conducted at sea, however some circumstances require that ballasting be conducted in port. This includes unusual tides that make boarding gangways too steep for passenger comfort. In these occasional circumstances the vessel may ballast or deballast to better align boarding accommodations. Thus the impacted environment for purposes of this EA will be the high seas (i.e.- waters outside of any state jurisdiction, but potentially within the US Exclusive Economic Zone), and US ports in Florida and Alaska that the *Coral Princess* calls upon and in which discharges of treated water might occur.

1.3 Purpose and Need

The purpose of the action considered within this EA (accepting the *Coral Princess* with the HBWTS into STEP) is to gain valuable scientific information on the system's efficacy.

The USCG is the lead agency to prevent the introduction and spread of Non-Indigenous Species (NIS) from ballast water discharges. The USCG has recognized that alternatives to the existing approved procedures of: 1) ballast water exchange (BWE) and 2) retention of ballast water, could be useful to prevent the introduction and spread of NIS.

Participants in STEP, such as the *Coral Princess* with the HBWTS, will aid in fulfilling the need of the Coast Guard to develop and implement a BWM Program as directed by the National Invasive Species Act of 1996.The development of effective ballast water treatment (BWT) technologies will create more options for vessel owners seeking to comply with NISA but having concerns about, or limitations in the practicability of BWE. The USCG believes that information gained through STEP will provide scientific validation for new systems and aid in the deployment and testing of effective and practicable BWT technologies which will result in reducing or eliminating ballast water as a source of further NIS invasions.

1.4 PEA for STEP

The PEA examined the reasonably foreseeable consequences that could result from the implementation of the program as a whole. It considered the potential environmental impacts for the vessels wishing to use unique experimental technologies to control ballast water mediated invasive species introductions.

The main conclusions of that analysis were STEP participation would not represent significant environmental impacts because:

- a very small number of ships relative to the total number calling on the US would be involved in STEP, so any possible impacts would be very small;
- a treatment system passing the STEP acceptance criteria would almost certainly provide greater protection of US waters from NIS than the current requirements for BWE which allows for discharge of ballast water with no treatment at all under frequent circumstances; and
- there is a positive benefit of having considerable data to validate and verify BWT system efficacy and impacts.

The PEA also found that any impacts abroad would also be less than significant, because the Coast Guard's primary interest with STEP is to enroll only those vessels that discharge ballast water in U.S. ports rather than foreign ports. Therefore an evaluation of the vessel applications is made to verify the ship's practices are such that they have routinely brought ballast water to US ports and discharge their ballast water in a US place coincident with cargo operations.

1.5 Scope and Related Activities

The STEP PEA established the need for site-specific analyses for each of the applicants to the program to ensure there would be no unacceptable significant localized impacts.

This analysis tiers off the STEP PEA, considering the potential resource issues pertinent to the technology and vessel routes being proposed.
There were several resources that were initially considered but dismissed from further analysis. After initial analysis it was determined that the following resources would not be impacted in a significant manner and thus were not considered further in this EA:

transportation,
infrastructure,
coastal barrier systems,
topography and floodplains,
geology and soil,
cultural and historic resources,
socioeconomic resources
air quality.

The *Coral Princess* is not expected to operate more frequently with the BWT system installed. Thus, the proposed action should not have any measurable effects on routes or frequency of transportation, or any relevant infrastructure. We expect the impact on coastal barriers to be minimal because the action does not involve increased vessel activity, and the treatment system is expected to have no impact on water quality, biological resources, currents, sediment transport, or other mechanisms that might affect such systems. As the Proposed Action deals solely with a vessel, no measurable effects on land resources, including floodplains or soils are expected. There are no vulnerable historic properties (e.g., shipwrecks) located in the potentially affected port areas. The technology examined involves one ship making infrequent (up to 10/year) port arrivals, therefore there is very minimal economic impact. The BWT system is not expected to have a measurable effect on the vessel's electrical service capacity and therefore will not engender any additional vessel emissions (see Appendix C). Additionally, there should be no emissions from the BWT system itself.

This EA is vessel, treatment technology, and route specific. Therefore any significant changes to operations (e.g., schedule changes involving new U. S. ports where treated ballast water would be discharged, or changes in the engineering and operation of the BWT system) would require revisions to the application, and a new review and approval decision by the USCG.

2.0 ALTERNATIVES

The USCG has received an application to STEP from PCL, and therefore must make a decision about whether to accept the vessel into STEP. For this decision, the USCG has two options to consider: grant or deny the *Coral Princess* acceptance to the program. This EA will examine these two alternatives and their associated potential impacts. In the PEA for STEP, the USCG assessed three options: no action, STEP as currently structured, and testing BWTS on federal vessels. Only the second option, STEP, was deemed appropriate for accomplishing the needed facilitation of technology development. At the current stage, the decision before the USCG is whether to accept a specific combination of vessel, route, BWTS, and test plan into STEP. At this stage, the only options are to accept or deny the application. If the test program proposed by the applicant were found to be unacceptable, the USCG would deny the application and inform the applicant of the reasons. The applicant would then have the option of revising the application to address the concerns or deficiencies, and/or submitting a new application with a different treatment option.

2.1 Alternative 1: No Action Alternative- Deny Application

Under the no action alternative, the *Coral Princess* with the HBWTS would continue to manage ballast water under the provisions of the current regulations. When transiting to U.S. ports from outside the exclusive economic zone (EEZ), the vessel would conduct BWE if safety and route permitted. If BWE were not possible due to safety or route constraints, the vessel is allowed to discharge sufficient un-exchanged (and untreated) water in order to conduct cargo operations. When moving between ports within the U.S. EEZ (as the Coral Princess often does), the current USCG regulation provides that vessels are not required to conduct BWE.

2.1.1 PROGRAMMATIC CONSEQUENCES

If the *Coral Princess* with the HBWTS is denied entrance into STEP, the USCG, would miss the opportunity to acquire novel scientific data on the performance of the prototype treatment system, and on the practicability of the test methods, under operational circumstances. This ground truth data, in advance of establishing and implementing a general program for the approval and required use of BWT systems would be of considerable benefit to the environmental protection goal of the NIS prevention laws, treaties and policies. With a denial of the application, the USCG would lose this opportunity to gain information that would be critically important for establishing discharge standards and procedures for BWT system testing and approval.

2.2 Alternative 2: Proposed Action Alternative- Accept application

Under the proposed Action Alternative, the Coast Guard would accept the vessel into STEP and the experimental treatment system on board would be used at all times as the primary form of Ballast Water Management. While participating in STEP, in addition to making the ship and BWT system available for initial and periodic physical inspections by USCG personnel, PCL would submit to the USCG detailed annual reports on the performance of the treatment system, including the results and interpretations of rigorous tests of system performance in reducing the concentration of living organisms in discharged ballast water. The USCG would take this information into consideration during the development or refinement of regulations, policies, and procedures related to BWM strategies, requirements, and the regulatory program procedures for treatment system approval and compliance testing.

Acceptance to STEP would grant the applicant equivalency to current (at the time of acceptance) and future BWM regulations regarding transportation of invasive species in ballast water. The period of equivalency for the *Coral Princess* with the HBWTS would be the life of the vessel or of the treatment system, whichever is shorter. Under this alternative, the vessel would be free to discharge ballast water treated by the experimental treatment system into U.S. waters as operations dictated. The actual amounts of ballast water taken on and treated and available for discharge would vary between zero and 2,900 m^3, but would usually be about1,800 m^3, depending on voyage-specific events.

2.2.1 Typical Vessel Activities

The Coral Princess does not usually take on or discharge ballast water in the manner typical of cargo ships. The ship is designed to operate safely under normal conditions without needing ballast. However it does use ballast when weather and sea conditions warrant to provide a more stable and comfortable ride for its passengers. Since port calls are in protected waters, it is very rare that the vessel is subjected to weather conditions sufficient to require ballast water compensation when near shore. Most ballasting is done at sea. In some cases, tides or other weather factors can change the alignment of ships gangways when mooring at a particular dock, under these circumstances the master may take on or discharge ballast water to facilitate passenger embarkation or debarkation.

The waters potentially available for ballasting and transfer by the *Coral Princess* come from its cruising routes in the Caribbean Sea (fall and winter) and the Gulf of Alaska (spring and summer). The ship also makes transition cruises between the Atlantic and Pacific Oceans twice a year: Florida to Los Angeles, CA, to Vancouver, BC in May and Vancouver to San Francisco, CA to Florida in October. These routes cover many ports of call, ten of which are located within the United States or its territories.

PCL may, in the future develop new cruise routes for the *Coral Princess*. Should they do so, the USCG will execute an environmental review similar to this EA for the U.S. ports potentially affected.

Table 2-1. Typical *Coral Princess* Cruise Itineraries.

Fall/Winter			Spring/Summer	May & October
Caribbean - Panama Canal	Caribbean - Panama Canal	Caribbean	Alaskan	Transition
12 cruises	7 cruises	1 cruise	18 cruises	4 cruises
• Port Everglades (Fort Lauderdale), Florida • Montego Bay, Jamaica • Panama Canal • Cristobal, Panama • Limon, Costa Rica • Ocho Rios, Jamaica • Grand Cayman • Cozumel, Mexico • Port Everglades	• Port Everglades (Fort Lauderdale), Florida • Aruba • Cartagena, Colombia • Panama Canal • Cristobal, Panama • Limon, Costa Rica • Ocho Rios, Jamaica • Port Everglades	• St. Thomas, US Virgin Islands • St. Maarten, Northern Antilles • Princess Cays, Bahamas	• Vancouver, British Columbia • Ketchikan, Alaska • Juneau, Alaska • Skagway, Alaska • Glacier Bay, Alaska • College Fjord, Alaska • Whittier, Alaska	• Vancouver, British Columbia • Huatulco, Mexico • Acapulco, Mexico • Cabo San Lucas, Mexico • Curacao • Panama Canal • Aruba • Cartagena, Colombia • Puerto Amador. Panama • Puntarenas, Costa Rica • Ocho Rios, Jamaica • Los Angeles, California • San Francisco, California • Port Everglades, Florida

Because normal practice for the ship is only taking on or discharging ballast while at sea (which is in full accordance with existing BWM regulations) to facilitate sea keeping, for STEP purposes, the *Coral Princess* with the HBWTS will alter its typical ballasting operation during shipboard performance experiments to be conducted during Years 1 and 5 of the Experimental Phase. The need for biologically rich challenge water will require intentional ballast uptake from harbor or inshore locations three days before arriving at the final destination port of the experimental cruise. The uptake locations chosen for the experimental challenge are Cozumel, Mexico for the Caribbean cruise and Skagway, Alaska for the Alaska cruise (PCL 2006). In each of the tests the ship will carry 120 m^3 of treated water and 120 m^3 of untreated water in separate paired tanks. These experimental and control ballast water samples will be tested for living organisms and other water quality parameters (ex: DO, salinity, pH) according to the comprehensive test plan submitted to the Coast Guard, and then all ballast water will be discharged at sea well before arrival at the destination port.

2.2.2 Description of Technology

According to the application, the HBWTS consists of a combination of primary filtration and a secondary, non-chemical, UV disinfection processes. See figure 1 below. The ballast water is treated by in-line filtration and UV disinfection during uptake of ballast, and by UV disinfection alone upon discharge.

Filtration is provided by six auto-back flush disc filtration units fitted with 55-micron screens. An automatic filter backflush process ensures that no screened material remains to be discharged at another location. Backflushing occurs automatically when the differential pressure across the filter exceeds a preset value or at the end of ballasting. The ballast pump remains on during the backflush cycle. The six individual filter units are backflushed one at a time in succession. The backflush discharges captured sediment and biological material overboard in the ballasting location

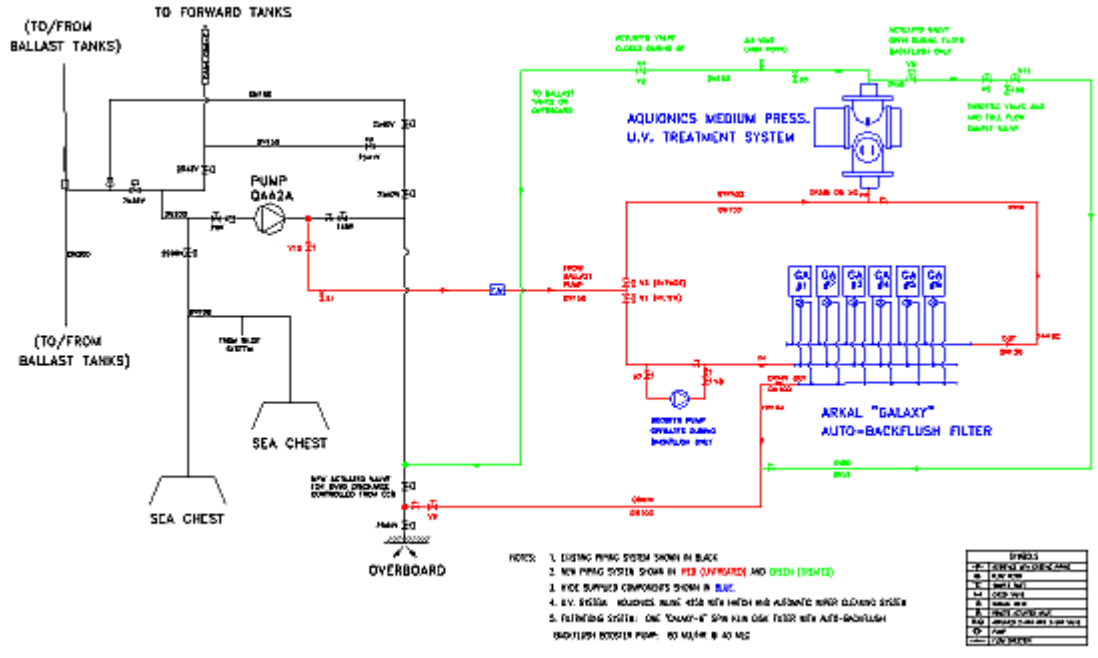
from which it originated. The small amount of backflush water remaining in the discharge pipe at the end of a ballast uplift operation is purged by filtered water. If a sufficient differential pressure is not reached during an uplift to initiate a back flush cycle, the system automatically conducts a back flush cycle at the end of ballasting, in order to ensure that no organic matter is kept onboard.

After filtration, the ballast water passes through a UV chamber containing medium pressure lamps designed to deliver a dose of at least an average of 200 milliJoules of UV energy per square centimeter at 90% UV transmittance in the water. The normal holding time in the ballast tanks is a minimum of 30 hours prior to deballasting. During discharge the ballast water bypasses the filters but is again treated by UV radiation. (PCL 2006).

Hyde Marine's prior experiments indicate that this filter media and disinfection target dose has the potential to achieve the goal of removing or inactivating (killing) 98 percent or more of organisms greater than 50 microns in shipboard service, as required for acceptance into STEP (PCL 2006).

The entire HBWTS is contained in a single compartment, in the same machinery space as the forward ballast pump. Three modifications of the ship's ballast water piping are required for the installation. A six-inch connection downstream of the ballast pump is used to deliver the ballast water from the sea (ballasting) or from the ballast tanks (deballasting) to the HBWTS. A six-inch connection into the same pump discharge line but downstream of an original butterfly valve (normally closed) is used to return the treated water to the ship's ballast system for discharge to the ballast tanks (ballasting) or overboard (deballasting). Lastly, a four-inch connection to the ballast overboard discharge line close to the ship's hull allows the filter backflush liquid to be discharged overboard as it is generated. A two-inch UV lamp cooling water line, used only while the filter is backwashing, also discharges into the four-inch filter backflush line and then overboard. (PCL 2006).

Figure 1. Schematic diagram of the Hyde Marine Ballast Water Treatment System



(Hyde 2007)

Conditioning of Treated Water Prior to Discharge, and Assessment of Discharge

The *Coral Princess's* treatment system subjects ballast water to filtration and UV disinfection during uptake and UV disinfection alone prior to discharge. This BWT system does not use chemicals to condition or treat ballast water. No chemical residual or disinfection byproduct is produced and the ballast tanks do not need to be treated or coated with chemicals, biocides, or corrosion inhibitors above or beyond that which is normally done therefore, there is no conditioning of treated water prior to discharge (PCL 2006).

Management of treatment waste streams

The only waste stream generated by this system is the back flushing of particles larger than 50 microns captured during ballast water uptake, by the filtration screens. These sediments and organisms segregated from the ballast water are immediately returned to their place of uptake. In some circumstances this could result in a turbidity plume. The ships crew will monitor and assess discharges from the back flush operation to ensure compliance with applicable state codes where they exist. See Appendix E for state codes. If the total volume of treated water is 120 m^3, then the amount of back flushed water will be significantly less. A typical back flush volume is 2 m^3 (2,000 liters or 528 gallons) of source water that is slightly more turbid than when it was pumped aboard, will be discharged.

During the back flushing portion of the Ballast water uptake operation no water is taken into the ballast tanks. In order to prevent overheating in the UV treatment cell a small amount of water is kept flowing and is routed directly back into the back flush discharge line. This "cooling water" is 2-4 ^oC warmer than the source water as a result of the UV energy absorbed. It is mixed in the discharge piping with the larger quantity back flush stream thus the overall thermal impact to the receiving water body is expected to be 1^oC or less for the duration of the back flushing operation.

The HBWTS overall has an indefinite service life if maintained iaw manufacturers service requirements. The UV bulbs have a useful service expectancy in excess of 8,000 hours however, the manufacturer recommends preventive maintenance replacement interval of two years to ensure uninterrupted operation. The manufacturer provides guidance on the safe disposal of spent UV bulbs (contain mercury).

3.0 AFFECTED ENVIRONMENT

To assist the USCG in understanding the potential environmental impacts of these alternatives, this chapter describes the potentially affected environmental resources in their current condition. Based on this description of affected aquatic ecosystems, the impacts of the alternatives is presented and compared in Chapter 4. Further detail on the broader programmatic scale is in the STEP PEA.

The affected environment for this project is based on the *Coral Princess'* five typical cruise itineraries, as described in Table 2-1: However, according to PCL, the *Coral Princess* does not deballast in the waters of California (Mackey and Laurenzana 2007). Therefore, since the affected environment is limited to U.S. locations where the *Coral Princess* discharges treated ballast water, the areas of interest analyzed in this EA are the marine ecosystems within the relevant ports of Alaska, Florida, and the USVI. Additionally, since the PCL does not typically deballast within the ports themselves, general descriptions of the surrounding areas are also included.

3.1 Biological Resources

This section presents information on the specific characteristics of the affected aquatic ecosystems, biological resources, threatened and endangered species, essential fish habitat, and open-ocean resources. For information on the general characteristics and biological organisms of U.S. aquatic ecosystems, general NIS impacts, and relevant regulatory background, refer to the STEP PEA. At sea, or open ocean for purposes of STEP is defined in Ballast Water Management for Control of Nonindigenous Species in the Waters of the United States regulation (33CFR151 part D) summarized here as waters greater than 200 miles from the U.S.

3.1.1 Alaska

The *Coral Princess* makes several stops along the coast of the Gulf of Alaska between Ketchikan and Whittier where treated BW could be discharged. Alaska has an arctic environment and holds over 50 percent of the nation's offshore waters, wetlands, and commercial fisheries. The waters associated with Alaska are considered highly productive and regarded as well managed through State policy which requires replenishable resources (e.g., fish and shellfish) to be harvested on a sustained yield principle (ADFG 2006a). Numerous areas of Alaska's waters are legally protected. Designations include Refuges, Sanctuaries, Critical Habitat Areas and Marine Protected Areas which were established to replenish declining commercial stocks and for the conservation of biodiversity. There are several of these special areas along the Coral Princess' route. Each has individual protection programs and different allowable activities (NMFS 2005a).

Plants and Wetlands

Alaskan wetland types include bogs, fens, and salt marshes. More so than in the rest of the U.S., on a state-wide basis Alaskan wetlands are largely intact and function with little degradation from human development activities. However, as with any developed area, the ports and harbors of Alaska exhibit variable but occasionally significant degradation of wetland quality.

Fish and Invertebrates

The Gulf of Alaska supports a diverse marine ecosystem that includes numerous commercially important fisheries such as shrimp, Pollock (*Gadidae family)*, cod (*Gadus Spp)*, mackerel (*Scombridae* family), salmon (*salmonidea* family), and halibut (Pleuronectidae family). Catch composition in the Gulf of Alaska is characterized by marine and diadromous species such as

salmon. The scallop *(Pectinidae family)*, Pacific salmon (*Oncorhynchus Spp)*, and groundfish all have designated essential fish habitat in the Gulf of Alaska (NMFS 2005b).

The Gulf of Alaska has many indigenous invertebrates. Several represent significant commercial fisheries, among these include the abalone (*Haliotis* sp.), Alaska king crab (*Paralithodes* spp.), the Korean hair crab (*Erimacrus isenbeckii*), Tanner crab (*Chionoecetes bairdi*), octopus (*Octopus dofleini*), razor clam (*Siliqua patula)*, sea cucumber(*Parastichopus californicus*), sea snails(*Littorina Spp*), sea urchins (*Strongylocentrotus Spp*), scallops (*Patinopecten Spp*), and shrimp (*Pandalus Spp*) (ADFG 2006b).

Wildlife

Potentially affected wildlife primarily includes waterfowl and marine mammals. Pelagic birds and shorebirds in the Gulf of Alaska include, among many others, albatrosses (*Phoebastria spp*), sooty shearwaters (*Puffinus griseus*), storm petrels(*Oceanodromo Spp*), plovers (*Pluvialus Spp*), and gulls (*Larus Spp*). There are many marine mammals common to the Gulf of Alaska, particularly pinnipeds and whales. Whale species include: right (*Eubalaena glacialis*), blue (*Balaenoptera musculus*), bowhead (*Balaena mysticetus*), grey (*Eschrichtius robustus*), killer (*Orcinus orca*), humpback (*Megaptera novaengliae);* sperm whale (*Physeter macrocephalus*), and sei whale (*Balaenoptera borealis*)**.** Common pinnipeds include harbor seals (*Phoca vitulina*), Arctic ice seals (*Phoca Spp* and *Erignathus barbatus*), northern fur seals (*Callorhinus ursinus*), and California sea lions (*Zalophus californianus*), and Steller sea lions (*Eumetopias jubatas*)] (NMFS 2006).

Threatened and Endangered Species

According to the U.S. Fish and Wildlife Service (USFWS) Threatened and Endangered Species System database, Alaskan waters have several known endangered or threatened species including: humpback whale, bowhead sperm, sei and finback whale (*Balaenoptera physalus*), and North Pacific right whales (*Eubalaena japonica*), as well as the Steller sea lion. Other protected species include the spectacled eider (*Somateria fischeri*), the Eskimo curlew (*Numenius borealis*), the Northern sea otter (*Enhydra lutris kenyoni*), and the leatherback sea turtle (*Dermochelys coriacea*) (USFWS 2006a). According to consultative correspondence with the local USFWS, the only protected species in the area where the *Coral Princess* may be expected to discharge treated ballast water is Kittlitz's murrelet (*Brachyramphus brevirostris*), a candidate species that may occur in the marine waters near Skagway (USWFS 2006b). Also the *Coral Princess* likely passes nearby Gran Point, which is designated critical habitat and is a common haul-out site for sea lion species.

Non-indigenous Species (NIS)

According to the Alaska Department of Fish and Game (ADFG), in 2002 impacts in Alaska from NIS were low. Nonetheless, sport and commercial fishing are a significant part of the local economy, and depend on the pristine quality of local aquatic and marine ecosystems. Alaska has identified itself as vulnerable to invasive species and currently manages several types of intentionally introduced NIS. These include the Atlantic salmon (*Salmo salar*), Northern pike (*Esox lucius*), and yellow perch (*Perca flavescens*). These species have already caused widespread and measurable damage (ADFG 2002). The ADFG is working to monitor and control further introduction and spread of invasive species. The Chinese mitten crab (*Eriocheir sinensis*), green crab (*Carcinus maenas*), signal crayfish (*Pacifastacus leniusculus*), New Zealand mudsnail (*Potamopyrgus antipodarum*), spiny water flea (*Bythotrephes longimanus*), zebra mussel (*Dreissena polymorpha*), along with the parasite that causes whirling disease are all NIS that have not yet been documented in Alaska but are of primary management concern (ADFG 2002a). To this end the Department has developed an "Aquatic Nuisance Species (ANS) Management Plan" (ADFG 2002a). Neither alternative considered in this EA conflict with the state plan.

3.1.2 Florida

Fort Lauderdale's port, Port Everglades, is a deep water harbor located on the lower Atlantic Coast of the Florida mainland. Despite the name, Port Everglades is not a part of the Everglades system that is protected within Everglades National Park.

Plants and Wetlands

Mangroves dominate the coastal wetlands within Port Everglades and include large red (*Rhizophora mangle*), white (*Laguncularia racemosa*), and black (*Avicennia germinans*) mangrove communities. Mangrove communities are important because they provide spawning and nursery areas for many ecologically and commercially important marine species of invertebrates and fish. Endemic and migrating birds also frequent mangrove communities. The mangrove communities within the port are designated as significant by the State and portions of them (specifically within the Turning Notch section of the port) lie within a State-protected mangrove preserve (UFL-IFAS 2007).

Seagrasses are important to southern Florida marine ecosystems in general, and to Port Everglades in particular. Common species include Johnson's grass (*Halophila johnsonii*), paddle grass (*H. decipiens*), and Cuban shoal grass (*Halodule wrightii*), and are typically found as patchy beds in otherwise unvegetated areas of sedimentary substrata (UFL-IFAS 2007). Seagrasses provide food and habitat to numerous marine species, stabilize the ocean bottom, and help maintain water quality. In particular, some marine animals, such as the endangered Florida manatee and green sea turtle, feed directly on sea grasses (FWRI 2006). Some of these areas may be designated as Essential Fish Habitat for certain species as outlined by management plans.

Fish and Invertebrates

There are over 1,250 freshwater and marine fish species found in Florida, as well as thousands of invertebrates (USFWS 2002-2006). The Welaka National Fish hatchery is part of a major national emphasis on restoring the Gulf Coast Striped Bass (*Morone saxatilis*) (USFWS undated).

Coral reefs are present off of the coast of Florida, the most prominent being the Florida Keys coral reef system. The Florida reef tract is the most extensive living coral reef system in North American waters and the third largest coral reef system in the world. Coral species are present within Port Everglades, and in particular along the outer entrance channel.

Wildlife

Broward County, where Port Everglades is located, has 83 confirmed breeding bird species (FLFWCC 2003). Typical birdlife associated with the coastal and marshy areas of Fort Lauderdale include laughing gulls (*Larus atricilla*), terns (*Sternidae* fam), teal (*Anas* spp.), mottled ducks (*Anas fulvigula*), common moorhens (*Gallinula chloropus*), pied-billed grebes (*Podilymbus podiceps*), great egrets (*Casmerodius albus*), great blue herons (*Ardea herodias*), little blue herons (*Egretta caerulea*), green herons (*Butorides virescens*), anhingas (*Anhinga anhinga*), and American coots (*Fulica americana*), white ibis (*Eudocimus albus*), night herons *(Nycticorax Spp)*, plovers (*Pluvialus Spp*), sandpipers(*Actitis Spp)*, brown pelicans (*Pelecanus occidentalis*), roseate spoonbills (*Ajaia ajaja*), ospreys (*Pandion haliaetus*) and kingfishers (*Ceryle alcyon*) (FLFWCC 2006a).

Marine mammals, amphibians, and reptiles are also common in southern Florida marine habitats. Manatees are known inhabitants of Port Everglades and its environs. A state manatee preserve is located within one of the canals adjacent to the main area of the port. Additionally, various species of frogs, turtles, and snakes are common. The American alligator (*Alligator mississippiensis*) and the American crocodile (*Crocodylus acutus*) are "reported in agency publications to be highly likely to occur at the Port" (Broward County 2007).

Threatened and Endangered Species

In the Port Everglades area, there are numerous federally or state listed Endangered and Threatened species and Species of concern that could be affected by this action. A detailed list can be found in the Florida-Atlantic section of the NMFS letter dated September 20, 2006 in appendix D of this EA.

Non-Indigenous Species

According to state and national web sites at least three plant species, 32 fish species, 37 invertebrate species and two disease organisms have been introduced into Florida's marine waters (USGS 2007 and FLFWCC 2007). However, ongoing work by the Smithsonian Environmental Research Center is providing strong indications that the number of introduced aquatic species is likely to be much greater (Ruiz, 2007). The introduction of non-indigenous species into southern Florida began in the late 1800s and has been an on-going problem since.

3.1.3 U.S. Virgin Islands

Plants and Wetlands

A diversity of ecosystems occur in the U.S. Virgin Islands (USVI), including sub-tropical forests, semi-arid scrublands, and swamps along the coastal areas. Some 800 species of plants inhabit these varied climates, including one native palm tree, the teyer palm (*Coccothrynax alta*), along with bay rum trees (*Pimenta racemosa*) and tropical orchids (NPS 2006b). Much of the vegetation on the islands is second generation growth. Some native species like the teyer palm remain, but many of the species making up the current vegetative community are introduced species.

Wetlands are an important feature of the area, and the islands have many different types including salt flats, mangrove wetlands, mangrove stands, and mixed swamp. (DPNR) 2005).

Fish and Invertebrates

Fishing is a major activity, both for recreation/tourism and commercial interest. The marine resources provide for significant recreational fishing, and also play a key role in the economy by providing employment opportunities and food. The USVI also have abundant invertebrate fauna, with marine species including snails, slugs, crabs, lobsters, and shrimp (DPNR 2005). The Caribbean has numerous areas designated as essential fish habitat for several economically important fish species.

Coral reefs in the USVI have been compromised by human activities, including ship groundings, anchoring of recreational boats, and increased pollution from sewage, agricultural and industrial runoff, and oil spills.

In 1962, Congress expanded the boundary of Virgin Islands National Park to include 5,650 acres of submerged lands to protect and preserve the rich coral gardens and seascapes. The need to protect reefs from further degradation led to a Presidential Proclamation establishing the Virgin Islands Coral Reef National Monument in January 1999 (NPS 2006b).

Wildlife

Birds area particularly prominent component of the USVI. Thirty-nine species of seabirds have been recorded, 15 of which breed in the USVI. These include the endangered brown pelican and the roseate tern (*Sterna dougallii*). Other seabirds known to occur in the USVI include sooty terns *(Onychoprion fuscatus)*, boobies (*Sula Spp*), pelicans (*Pelecanus Spp*), and frigatebirds (Fregata Spp). In addition to seabirds, there are 23 recorded species of waterfowl, including grebes *(Podicipedidae Gen, Spp)*, waders (order *Charadriiformes***)**, rails (family *Rallidae***)**, gallinules

(Porphyrio Spp), and coots *(Fulica Spp)*. Lastly, there are 37 known species of shorebirds. Bird life in the USVI is threatened by habitat loss, beach development, and recreational use of beaches (DPNR 2005).

The USVI are also a stopping ground for many migratory birds, moving between North and South America. In particular, the USFWS Buck Island National Wildlife Refuge has been set aside specifically for its value to migratory birds. This island, managed by the US Fish and Wildlife Service, is about two miles south of St. Thomas (USFWS 2006c).

At least 11 species of marine mammals are found in the USVI, including dolphins (family *Delphinidae***)**, seals (family *Pinnipedia***)**, and whales (*Cetaceans*) (USGS 2004). The diverse habitats also provide excellent sources of food for sea turtles in particular. The broad beaches on the island additionally provide favorable sea turtle breeding areas. Four species of sea turtles are known to nest and forage in the area, and all are federally protected. (DPNR 2005).

Threatened and Endangered Species

The *Coral Princess* calls on the port of St Thomas and St. Maarten. The ports and surrounding waters are home to 11 federally protected animals and four federally protected plants. These include the green sea turtle (*Chelonia mydas*), hawksbill sea turtle (*Eretmochelys imbricata*), Kemp's ridley sea turtle (*Lepidochelys kempii*), leatherback sea turtle (*D. coriacea*), loggerhead sea turtle (*Caretta. caretta*), Caribbean monk seal (*Monachus tropicalis*), roseate tern (*Sterna dougallii*), finback whale (*Balaenoptera physalus*), blue whale (*B. musculus*), humpback whale (*Megaptera novaengliae*) and sperm whale (*Physeter macrocephalus*) (USFWS 2006a). Additionally, the surrounding waters of the USVI are habitat for the endangered Antillean manatee (*Trichechus manatus manatus*), the threatened roseate tern, and the endangered brown pelican (*Pelecanus occidentalis*), and two threatened coral species — elkhorn coral (*Acropora palmata*) and staghorn coral (*Acropora cervicornis*).

Non-Indigenous Species

Current research shows at least 38 NIS present in the USVI including 7 marine/aquatic species: 3 plant, 2 amphibian and 2 fish species. (GISD 2007)

3.2 Water Quality

3.2.1 Alaska

The vast majority of Alaska's water resources are in pristine condition due to Alaska's size, sparse population, and the remote character of the state.

Much of the area identified as the *Coral Princess'* route has been assessed under the National Coastal Environmental Assessment Program guidelines and deemed in good condition.

Water clarity in Alaska estuaries is overall rated fair. Small percentages of estuarine areas in the ports of interest were rated "poor", due to light penetration at one meter was less than 10% of surface illumination. However this rating is based on suspended sediment derived entirely from glacial runoff rather than human activities or marine growth. During winter's low flows, suspended sediment loading significantly decreases due to greatly reduced discharges from glacial rivers (ADEC 2006).

3.2.2 Florida

Overall, most of Florida's watersheds have been determined to have acceptable surface water quality, although a number of problem areas exist across the state. The Florida Department of

Environmental Protection completed a surface water assessment, including 4,037 square miles of estuaries. The Port Everglades harbor is rated as impaired for one or more designated uses (FDEP 2006). Turbidity values were higher in Port Everglades than nearby Palm Beach waters with values of 0.75-2.5NTU, transmissivity is considered good (60-75%) and salinities ranging between 35.5-36.6ppt. (USACE 2006)

3.2.3 U.S. Virgin Islands

The U.S. Virgin Islands' marine and terrestrial ecosystems are closely inter-related and heavily impacted by a population of over 110,000 people residing on slightly more than 130 square miles. Increased conversion of forests and agricultural land to residential and commercial development has resulted in numerous environmental and public health problems, including: water quality impairment and coral reef degradation from sedimentation, which is the primary non-point source pollutant; increased storm water runoff volume, velocity, and contamination resulting from rapidly depleted forest habitat and increased impervious surface area; and surface and ground water contamination from failing septic systems.

The U.S. Virgin Islands assessed 202 (97 percent) of its 209 miles of coastal shoreline for its 2000 Water Quality Inventory 305(b) report (VI-DPNR, 2000). Eighty-six percent of assessed shoreline fully supports its designated uses, 10 percent is threatened for one or more uses, and the remaining 4 percent is impaired by some form of pollution or habitat degradation. Field station scientists have been collecting data on turbidity and other basic water quality parameters from 15 sites around St. John since 1988 and on nutrient levels since mid-1993 (VI-WRRI 2004). The bays with the worst water clarity are associated with developed watersheds.

Non-point source pollution is an important source of water quality impairment in streams, estuaries, and near coastal ocean waters throughout the Virgin Islands. Non-point source pollution of coastal bays resulting from runoff contamination, sediment deposition and the health hazards caused by dumping of unregulated human waste is a common problem in the Virgin Islands. The Coral Bay watershed on St. John, the island with the highest population growth rate in the Virgin Islands, is typical of many watersheds throughout the Virgin Islands having a large watershed to bay area ratio. Roads (especially those unpaved) and inappropriate land uses (land clearing and landscaping practices) cause runoff and sedimentation, leading to poor water quality and deterioration of marine resources in waters extending well offshore and into the benthic zone. (VIWRRI 2004). The recent Dissolved Oxygen Total Maximum Daily Load (TMDL) for Mangrove Lagoon and Brenner Bay, St. Thomas, U.S. Virgin Islands notes that reductions in Biological Oxygen Demand (BOD) loading from non-point sources within the Turpentine Run Gut system will be necessary to achieve the proposed TMDL BOD limits, important for water bodies used for fisheries and recreation in the islands. According to the TMDL, the Mangrove Lagoon is currently impaired for fecal coliform bacteria and dissolved oxygen. (VI-WRRI 2004)

Solid waste disposal has reached a crisis situation—the two landfills (on St. Thomas and St. Croix) are unlined, lack leachate collection systems, and are sited within the coastal zone (immediately adjacent to mangrove lagoons). Improper disposal of toxic, hazardous, and infectious material into these unsanitary landfills allows leachates to contaminate ground water supplies and coastal waters and fisheries. It is expected that future developments, as well as population growth, will further strain the islands' already inadequate and over-burdened infrastructure, potentially exacerbating water quality and other problems. (RWCP 2006)

3.3 Public Health and Safety

The relevant geographic scope of the Proposed Action, with regard to public health and safety is onboard the ship and within the port facilities and their immediate environs. It does not include surrounding public spaces and buildings, residential areas, or businesses. The ports themselves are industrialized areas, and only appropriately authorized and trained personnel have general

access. The treatment system is constructed in accordance with applicable codes for shipboard machinery, electrical installation and ultraviolet radiation shielding. It has been assessed by an independent classification society for conformance to these codes. Finally it is located in a normally unoccupied vessel space and operates autonomously. Therefore little crew contact with the equipment is likely during treatment, and when such proximity is required, the crew have the same level of safety as with all other ship's machinery installations.

3.4 Socioeconomic Resources

The activities evaluated under this EA involve a single system on a single ship making occasional visits (up to 10 per year) to any given U.S. port. Participation in STEP is not expected to affect the number or location of port visits by the vessel. Therefore there are no social or economic issues of significance to be addressed

3.5 Environmental Justice

Consideration of environmental justice is required under Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations", and Executive Order 13175, "Consultation and Coordination with Indian Tribal Governments". Low-income and minority populations may be present within the cities adjacent to these ports. Another impact of concern may be subsistence fishing. However there were no identified Native American subsistence fishing or traditional food gathering resources at the ports visited by the *Coral Princess*.

4.0 ENVIRONMENTAL CONSEQUENCES

Please see the PEA for further discussion of expected impacts from accepting vessels with experimental treatment technologies into STEP.

4.1 Biological Resources

4.1.1 No Action Alternative

Under the No Action Alternative, the *Coral Princess* with the HBWTS would not be admitted to the program. If the Coral Princess with the HBWTS is not accepted into STEP, and not granted an equivalency for using the HBWTS, the vessel would continue to manage ballast water as it does currently. As described in section 2.2, the ship operates routinely without having to uptake or discharge ballast water, on all cruise itineraries, but may ballast and deballast small amounts of water in unusual situations as safety, weather, loading, and regulatory restrictions dictate. The *Coral Princess* does not routinely conduct ballast water exchange, and usually discharges in deep water when the infrequent need to deballast arises.

Since the *Coral Princess* discharges ballast water in port or nearshore environments only rarely, it is likely that no significant adverse environmental impacts would result under the No Action Alternative.

4.1.2 Proposed Action Alternative

Under the Proposed Action, the *Coral Princess* with the HBWTS would be admitted to STEP, and the Coast Guard w acquire practical data on the effectiveness of the BW treatment system. Also, the *Coral Princess* with the HBWTS would be granted equivalency for applicable future USCG BWM regulations. The BWT system would process all ballast water taken on and discharged by the ship. The discharged water would be treated rather than untreated, would contain no chemical treatment agents or byproducts, and would contain some dead organic matter resulting from killed organisms. In most cases, the discharge of organic matter is likely not a concern since the ship normally uplifts ballast water when well offshore where organisms and suspended material are in relatively low concentrations, and the BWT system's filter would significantly reduce the amount of organic material taken into the ballast tanks. The organic content of the treated ballast water will most likely have no measurable adverse effects on local ecosystems where ballast is discharged.

With respect to NIS discharge, the Proposed Action alternative is expected to reduce the risk of release of non-indigenous organisms in ballast water discharge from the *Coral Princess* since the existing rules allow for the release of untreated unexchanged ballast water in port areas under certain circumstances. The proposed BWT system will subject larger organisms to removal or damage by the filter. Smaller organisms (less than 55 microns) that pass through the filter will be exposed to UV treatment during both the uptake and discharge, which is most effective against these sizes. This suggests that overall, use of the system will be more effective in reducing the delivery of healthy nonindigenous species relative to BWE, and thus also likely to reduce the probabilities of invasion. Given the current usual practice of infrequent, low-volume discharges, in deep off-shore water, treatment with the system approved under STEP will occasionally reduce NIS discharges close to shore where the risk is highest, during the infrequent events when the ship's operators deballast there.

Threatened and endangered species and their habitats have special protection under the Endangered Species Act (ESA) of 1973 (Public Law 93-205, as amended; 16 USC 1531 et seq.). In accordance with ESA, the USCG has initiated informal consultation with the USFWS and the NMFS to determine if any threatened and endangered species in the affected environments could

be affected by utilizing the subject BWTS on the *Coral Princess*. An initial consultation letter (see Appendix B) was sent to contacts at both agencies, which are listed in Section 8.0, "List of Agencies and Persons Consulted". Initial responses received from the consulted agencies were considered in this analysis and are included in Appendix D.

For example, the USFWS concludes that the proposed discharge of ballast water treated with the HBWTS would not likely affect ESA listed species in the USVI (USFWS 2006b). Since the *Coral Princess's* ballasting events are infrequent and involve small volumes of ballast water, and the treatment process does not involve the use of chemicals, it is highly unlikely that the Proposed Action will cause any significant adverse impact to ESA listed species in any of the affected port or transit areas.

4.2 Water Quality

4.2.1 No Action Alternative

Under the No Action Alternative, the practices of the *Coral Princess* would be expected to remain unchanged. The *Coral Princess* would only ballast as needed and would discharge untreated ballast water in port on rare occasions in accordance with existing regulations. Therefore no significant impacts to water quality would be expected as a result of this alternative.

4.2.2 Proposed Action Alternative

Accepting the *Coral Princess* with the HBWTS into STEP would ensure that any ballast water discharged from the vessel would be treated to reduce the concentration of organisms. Under most circumstances this would occur at sea- well offshore. There would be no chemicals used or produced in the treatment or byproducts in the discharged water. The amount of organic matter in the ballast water to be discharged would be very small because of the filtration function at the uptake. Thus, the treatment would likely not significantly affect organic loading or dissolved oxygen levels in the open ocean receiving waters. This is especially so, given the low frequency of ballasting operations and the small volumes of treated ballast water discharged ($120m^3$ at sea and $2m^3$ at source) for each of the challenge tests. All other ballasting and discharging will occur at sea. As for thermal Impacts, since back flushing only lasts up to 120 seconds and the resultant effluent is only heated up by 1 ^{o}C thermal impacts from discharging approximately 500 gallons of water used by the system are not deemed to be significant. Also this thermal impact only occurs during back flushing while taking on ballast. When discharging ballast, the system does not re-filter the water, therefore no back flushing is required and the system does not produce any measurable temperature rise in the discharged ballast water. Turbidity impacts from back flushing are expected to be minor and below state allowable levels.

4.3 Public Health and Safety

4.3.1 No Action Alternative

The No Action Alternative should have no effect on public health or safety. The vessel will continue to operate as allowed by current regulations.

4.3.2 Proposed Action Alternative

Under the Proposed Action, the vessel would be granted acceptance to STEP. The *Coral Princess* with the HBWTS would be responsible for maintaining the BWT system and ensuring that it works properly, and for using the system to treat all discharged ballast water. The installed BWT system would be required to meet vessel systems safety of design, construction and maintenance

standards through inspection by the vessel's crew, classification society and USCG inspectors. In addition, the STEP application review process scrutinizes the system design and installation for potential safety problems. Thus, the Proposed Action should not have significant impacts on safety.

4.4 Socioeconomics and Environmental Justice

4.4.1 No Action Alternative

Under existing regulations, the *Coral Princess* may discharge untreated, unexchanged ballast water with potential NIS into the identified locations if operational needs dictate. However, under normal operations, the vessel takes on and discharges BW at sea, rather than in port. The occasional discharges of relatively small volumes of BW into the visited ports entails a correspondingly small risk of introducing nonindigenous species which if successful in colonizing new areas could in some instances have an impact on low income and minority populations in the vicinity.

4.4.2 Proposed Action Alternative

Under the proposed alternative, the Coral Princess would be accepted in to STEP. The vessel would continue to operate as usual, with the exception that all discharged ballast water would be treated with the installed HBWTS to reduce the concentration of organisms. Although the frequency and volume of discharges into port waters is expected to be quite low, this treatment should marginally reduce the risk of introducing nonindigenous species, and subsequent potential impacts to low income and minority populations in the vicinity; for example change in or loss of subsistence fish species. This prototype BWTS installation will not be discharging chemical residuals of any type to the affected environment. The ship will not operate more or less frequently as a result of installing this system. The only foreseeable economic impact from this system being installed onboard is the possibility that some maintenance would be required which would be carried out by local vendor representatives- so a very low level of additional port area economic activity may be projected over the lifetime of the installation.

5.0 CUMULATIVE IMPACTS

The Council on Environmental Quality defines cumulative effects as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions" (40 CFR 1508.7).

5.1 Cumulative Impacts Associated with the Alternatives

This section summarizes the cumulative impacts of the NEPA alternatives analyzed in this EA. The potential impacts from the alternatives should be placed in the context of the impacts associated with other actions, in order to assess the total cumulative environmental changes, as well as which changes result from the alternatives and which result from other actions.

5.1.1 *No Action Alternative:*

Under the no action alternative, there will be continued discharge of NIS associated with the *Coral Princess*'s current BWM practice of infrequent, low-volume ballast water discharges, usually in deep water and well away from coastal areas, but also occasionally in port areas. These discharges may be treated by the experimental filtration-UV system, exchanged, or not managed to remove organisms at all, depending upon voyage circumstances and local requirements.

As described in section 3, marine and coastal resources in the affected environments are under increasing pressure from human activities, including coastal development, fishing, industrial processes, agriculture, resource exploitation, and biological invasions by nonindigenous species via numerous pathways including vessel operations. The cumulative effects of these activities are significant impacts to marine and coastal habitats, biodiversity, and resource sustainability. In the context of increasing rates of aquatic NIS invasions and consequences on marine and coastal resources, the incremental cumulative effect of the No Action alternative for a single specific ship would likely be negligible, although the potential for continued NIS introductions from the *Coral Princess* would remain the same.

5.1.2 Proposed Action Alternative:

Under the proposed action alternative, the Coral Princess would be accepted into STEP and would operate the HBWTS to treat all discharged ballast water, resulting in reduced concentrations of organisms. Given the low frequency and volumes of discharges in the ports, the primary impact of the proposed action will be the gathering of source data for development and refinement of a ballast water discharge standard and BWT testing procedures. Indirectly, this will lead to a net cumulative environmental benefit as a more robust and effective ballast water management regulatory regime will be promulgated.

6.0 COMPARISON OF THE ALTERNATIVES AND CONCLUSION

Table 6-1 compares the potential consequences of the Proposed Action Alternative and the No Action Alternative.

Table 6-1: Comparison of the Environmental Impacts Associated with the NEPA Alternatives

Category	No Action Alternative	Proposed Action Alternative
Biological Resources	No adverse impacts	Negligible adverse impacts; potential minor beneficial impacts
Water Quality	No adverse impacts	Negligible adverse impacts;
Air Quality	No adverse impacts	Negligible adverse impacts
Public Health and Safety	No adverse impacts	No adverse impacts
Socioeconomics and Environmental Justice	Negligible adverse impacts.	No adverse impacts

6.1 Conclusion

There is a long term, programmatic benefit of the Proposed Action alternative. By accepting the *Coral Princess* and the Hyde Marine BWT system into STEP, the USCG would acquire valuable information on the shipboard performance and treatment effectiveness of the filtration/UV BWT system. This information will be critical in the further development of effective ballast water treatment technologies and in the development of feasibly sound ballast water management policy and regulations as mandated by Congress. Such benefits would have wide geographic scope as prototype treatment technologies move to larger scale production and installation on larger numbers of ships as type approved systems.

The conclusion of the environmental consequences analysis is that negligible adverse impacts would result from the implementation of the Proposed Action. Additionally, as discussed in Sections 4 and 5, the Proposed Action should result in minor, beneficial impacts through the reduction of risk of the successful introduction of NIS from the operations of the *Coral Princess*.

7.0 LIST OF PREPARERS

7.1 United States Coast Guard

Richard A. Everett
Environmental Protection Specialist
B.A., Biology, University of California, Santa Cruz
Ph. D., Zoology, University of California, Berkeley

Ronald P. Jackson
Environmental Protection Specialist
B.A. Chemistry, LaSalle University
J.D. University of Baltimore School of Law

LCDR Brian Moore
Staff Officer
B.S. Secondary Education, Earth Sciences, University of Texas, Austin
M.S. Environmental Earth Science and Policy, Johns Hopkins University
M.S. Quality Systems Management, National Graduate School, Falmouth MA

7.2 Volpe National Transportation Systems Center

Nicole R. Grewell
Environmental Protection Specialist
B.S. Biology, Messiah College
M.S. Environmental Engineering and Urban and Environmental Policy, Tufts University

Amishi Joshi
Environmental Scientist
B.A. Geology, Pomona College
Ph.D. Earth and Environmental Science, University of Pennsylvania

Adam F. Klauber
Environmental Protection Specialist
B.A. Political Science, Hobart and William Smith Colleges
M.P.A. Environmental Science and Policy, Columbia University

José G. Mantilla
Environmental Engineer
B.S. Industrial Engineering and Operations Research, Universidad Javeriana
M.S. Environmental Engineering, Massachusetts Institute of Technology

Paul Valihura
Environmental Scientist
B.S. Industrial Management, Lowell Technological Institute
M.S. Environmental Studies, University of Lowell
Ph.D. Urban and Environmental Studies, Rensselaer Polytechnic Institute

8.0 LIST OF AGENCIES AND PERSONS CONSULTED

Kaja Brix, Director of Protected Resources
Alaska Region Division of Protected Resources
U.S. National Marine Fisheries Service

David Burnhard
South Eastern Regional Office
U.S. National Marine Fisheries Service

Deb Carter
Division of Endangered Species
U.S. Fish and Wildlife Service

Bob Hoffman
Office of Protected Resources, Long Beach California
U.S. National Marine Fisheries Service

Mi Ae Kim
Office of Protected Resources
U.S. National Marine Fisheries Service

Rod McKinnis
Office of Protected Resources, Long Beach California
U.S. National Marine Fisheries Service

Craig Wingert
Office of Protected Resources, Long Beach California
U.S. National Marine Fisheries Service

Patrick Sousa
Chief, Division of Endangered Species – Region 1
U.S. Fish and Wildlife Service

Gloria Bell
Chief, Division of Endangered Species – Region 4
U.S. Fish and Wildlife Service

Edwin Muniz
Field Supervisor, Boqueron, PR Field Office
U.S. Fish and Wildlife Service

Robert Mecum
Acting Administrator – Region 7
U.S. Fish and Wildlife Service

Bruce Halstead
Field Supervisor, Juneau Field Office
U.S. Fish and Wildlife Service

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10.0 APPENDICES

Appendix A. Acronyms and Abbreviations

ANS	Aquatic Nuisance Species
AQS	Air Quality System
BOD	Biological Oxygen Demand
BWE	Ballast Water Exchange
BWM	Ballast Water Management
BWT	Ballast Water Treatment
CAA	Clean Air Act of 1990
CBRA	Coastal Barrier Resource Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
$CaCO_3$	Calcium Carbonate
CO	Carbon Monoxide
CO_2	Carbon Dioxide
COTP	Captain of the Port
CZMA	Coastal Zone Management Act of 1972
CZMP	Coastal Zone Management Programs
DNA	Deoxyribonucleic Acid
DOD	U.S. Department of Defense
DOJ	U.S. Department of Justice
DOS	U.S. Department of State
DOT	U.S. Department of Transportation
EA	Environmental Assessment
E.O.	Executive Order
EEZ	Exclusive Economic Zone
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ESA	Endangered Species Act of 1973
FDA	U.S. Food and Drug Administration
FIP	Federal Implementation Plan
FONSI	Finding of No Significant Impact
FY	Fiscal Year
GAO	U.S. General Accounting Office
GDP	Gross Domestic Product
HAB	Harmful Algal Blooms
HBWTS	Hyde Marine Ballast Water Treatment System
HC	Hydrocarbons
IMO	International Maritime Organization
kW	Kilowatt
MARAD	U.S. Maritime Administration
MMPA	Marine Mammal Protection Act of 1972
MPA	Marine Protected Area
NAAQS	National Ambient Air Quality Standards
NANPCA	Non-indigenous Aquatic Nuisance Prevention and Control Act of 1990
NEPA	National Environmental Policy Act of 1969
NESHAPS	National Emission Standards for Hazardous Air Pollutants
NIS	Non-indigenous Species
NISA	National Invasive Species Act of 1996

NMFS	National Marine Fisheries Service
NO_2	Nitrogen Dioxide
NOAA	National Oceanic and Atmospheric Administration
NO_X	Nitrogen Oxides
NVIC	Navigation and Vessel Inspection Circular
O_3	Ozone
Pb	Lead
PEA	Programmatic Environmental Assessment
PM_{10}	Particulate Matter less than 10 microns
$PM_{2.5}$	Particulate Matter less than 2.5 microns
PPE	Personal Protective Equipment
ppm	Parts per million
SFA	Sustainable Fisheries Act of 1996
SIP	State Implementation Plan
SO_2	Sulfur Dioxide
SO_X	Sulfuric Oxides
STEP	Shipboard Technology Evaluation Program
SSDG	Ship service diesel generator
TMDL	Total Maximum Daily Load
U.S.	United States
USCG	U.S. Coast Guard
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
USVI	U.S. Virgin Islands
UV	Ultraviolet
VOCs	**Volatile Organic Compounds**

Appendix B. Example of Section 7 letter sent to resource agencies.

September 15, 2006

Contact Name, Title
Address

Dear [Title],

I am writing you on behalf of the United States Coast Guard (USCG), who is currently using the NEPA process to evaluate the impacts of a proposed project under the USCG's Shipboard Technology Evaluation Program (STEP). STEP is a voluntary program through which vessel owners can apply for acceptance of experimental ballast water treatment (BWT) systems installed and tested on board their operating vessels. STEP is available to all vessels subject to the USCG Ballast Water Management (BWM) regulations (33 CFR § 151 Subparts C and D). The USCG prepared a Draft Programmatic Environmental Assessment (PEA) for the implementation of the Shipboard Technology Evaluation Program (STEP) in April 2004.
The program is designed to provide incentive to ship owners and operators to install experimental treatment systems with demonstrated potential for effective removal or destruction of non-indigenous species (NIS) in ballast water. The USCG and the applicant enter into an agreement where the applicant's vessel is accepted into the STEP for a specific period of time, whereby valuable experimental data accrues to the Federal government and, during which operation of the

experimental system is considered equivalent to meeting applicable regulatory requirements for ballast water management.

In order to be accepted into the STEP, each application must undergo an associated environmental review. Princess Cruise Lines has applied to the STEP, thereby initiating a review for acceptance to the program. Princess plans to utilize a combination filtration/ultraviolet technology to remove the NIS from the ballast water taken from and dispelled during operations. According to their application, Princess' vessel operates a Caribbean cruise route with typical U.S. ports of call in the Virgin Islands, Puerto Rico, and Fort Lauderdale during the winter months. During the summer months, the vessel is rerouted via the Panama Canal and the Los Angeles area to an Alaskan tour route. Typically, the vessel only ballasts in Cozumel, Mexico, and Skagway Alaska during both of these operations.

The USCG is proposing to grant Princess acceptance to the program, and will be evaluating the impacts of the proposed action in an Environmental Assessment. A concerning issue to be examined in the EA is the treated ballast water discharged from the system and any potential impacts associated with those discharges.

The purpose of this letter is to notify you that concurrent with the NEPA process, the USCG intends to meet its obligations under the Endangered Species Act (ESA) of 1973. In accordance with Section 7c(1) of the ESA, the Migratory Bird Treaty Act, and any other pertinent legislation, regulations, or treaties regarding the protection of endangered species, I am writing to officially request information on whether any species, or their critical habitats, which are listed, proposed to be listed, candidates to be listed, or otherwise protection may be present within the potential study areas. The USCG will use this information to determine potential effects of the proposed action on those identified species and habitats.

We will be sending you a copy of the Draft EA shortly. Please advise us of any environmental concerns that you feel should be addressed. Should you have any questions, please feel free to contact me.

Sincerely,

Nicole R. Grewell
Environmental Protection Specialist
USDOT Volpe Center
55 Broadway
Cambridge, MA 02142
617-494-2494
617-494-2789 (f)

Appendix C. Air Quality Analysis

C.1 Environmental Consequences

No Action Alternative, the air quality impacts associated with the current practices of ballast water management (i.e., mid-ocean ballast water exchange, retaining ballast water onboard the vessel while in U.S. waters, and discharging ballast water to an approved reception facility) would remain the same.

At some point in the future, once the Coast Guard approves and puts forth requirements for the use of a yet-unknown BWT technology, the *Coral Princess* would presumably be subject to those requirements. It can be assumed that any approved treatment method would, at minimum, require the use of some energy which may have air quality impacts; without knowing what type of treatment method would become mandated, it is impossible to gage the potential and level of air quality impact of that treatment method. However, the Coast Guard would be required to conduct an analysis of environmental impacts of any BWT technology prior to its approval, and it is likely that any potential air quality impacts would be mitigated.

It can be concluded that the No Action Alternative will not result in any new air quality impacts.

Proposed Action Alternative, air quality impacts associated with the BWT technology being evaluated in this EA may arise from one source: the emissions from the SSDG that powers the HBWTS. Such emissions are particularly of concern at the ports of Anchorage/Whittier and Juneau in Alaska, and Los Angeles and San Francisco in California, as these are located in nonattainment or maintenance areas for at least one pollutant.

As mentioned above, the *Coral Princess* uses an SSDG to generate shipboard electrical power, and this electricity powers the HWBTS. In general, vessels such as the *Coral Princess* would have 2-3 SSDGs sized between 2000 and 5000 kW on board. Thus, during ballasting and deballasting operations (when the HBWTS is in use), there would be some incremental added loading of the SSDG – the HWBTS system uses a maximum of 27 kilowatts (kW) of the ship's electrical power. The HWBTS technology would likely be activated for less than a total of 200 hours annually.

A preliminary emissions inventory, using emissions factors (for stationary internal combustion sources) found in AP 42 (EPA 1995), indicated that 27 kW of energy supplied by a large stationary diesel-fuel engine for 200 hours annually would result in annual emissions of each pollutant of far less than one ton. If an emissions amount of one ton were put into a screening model (e.g. SCREEN3 (EPA's air pollution screening model)), using conservative inputs for characteristics from a vessel such as the *Coral Princess*, then the ground level concentrations of that pollutant would be negligible to immeasurable (Noel 2006). Furthermore, it is unlikely that an SSDG would be activated solely for the purposes of operating the BWT system; in other words, the BWT system would simply draw more current from an SSDG that is running regardless.

Finally, no additional sources of electrical power would be installed onboard to accommodate the BWT system. Therefore, using the HWBTS would not result in any new emissions, as it is no additional electrical power sources are being installed or operated. As emissions from the operation of the HWBTS are negligible, local or regional levels of pollutants will not be affected, including levels in the areas of concern in Alaska and California.

It can be concluded that the Proposed Action Alternative will have negligible impacts on air quality.

Appendix D. Correspondence received via agency consultation.

United States Department of the Interior
FISH AND WILDLIFE SERVICE
Juneau Fish & Wildlife Field Office
3000 Vintage Blvd., Suite 201
Juneau, Alaska 99801-7100
(907) 780-1160

Nicole R. Grewell
USDOT Volpe Center
55 Broadway
Cambridge, MA 02142

October 3, 2006

Subject: Endangered Species Consultation
USCG Shipboard Technology Evaluation Program
Consultation No. 06-46W

Dear Ms. Grewell,

We have reviewed your letter concerning experimental treatment of ballast water onboard Princess Cruise Line ships. We understand that the ships will take on or discharge ballast water only in Cozumel, Mexico, and Skagway, Alaska.

One candidate species, the Kittlitz's murrelet (*Brachyramphus brevirostre*) may occur in marine waters near Skagway or elsewhere in Southeast Alaska north of Wrangell. No other listed species are likely within the Alaska portion of the project area. We did not evaluate the presence of listed species outside Alaska.

Future correspondence on this project should be directed to Bruce Halstead, Field Supervisor, at the letterhead address. If you have any questions concerning content of the letter, please contact Steve Brockmann at the letterhead address, or (907) 780-1181. Thank you for contacting the U.S. Fish and Wildlife Service.

Sincerely,

Bruce Halstead
Field Supervisor

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
P.O. Box 21668
Juneau, Alaska 99802-1668

November 6, 2006

Nicole R. Grewell
Environmental Protection Specialist
USDOT Volpe Center
55 Broadway
Cambridge, MA 02142

Dear Ms. Grewell:

Thank you for your letter to the National Marine Fisheries Service (NOAA Fisheries) requesting information on marine species and critical habitat in Alaska listed under the Endangered Species Act (ESA), as it pertains to the United States Coast Guard's (USCG) Shipboard Technology Evaluation Program (STEP). We understand that Princess Cruise Lines has applied to the STEP, thereby initiating an environmental review for acceptance into the program. Specifically, this review will be an Environmental Assessment (EA) prepared under the National Environmental Policy Act (NEPA) to examine potential impacts associated with treated ballast water discharged from their systems.

From your letter, it appears that Princess Cruise Lines only ballasts in the port of Skagway while in Alaska. However, in your communications with Protected Resources staff by phone, you also requested information on listed species and critical habitat for all of Southeast Alaska. The two primary listed species widely dispersed throughout this region are the endangered humpback whale (*Megaptera novaeangliae*) and the threatened Steller sea lion (*Eumetopias jubatus*).

Humpback whales forage throughout the waters of Southeast Alaska during summer months; most return to Hawaii to breed during the winter. Typically, concentrations of feeding humpback whales are found in the waters of Frederick Sound, Point Adolphus, Glacier Bay National Park, Chatham Strait, Sitka Sound, and Lynn Canal north of Juneau. It is unusual to find large concentrations of humpback whales near Skagway. There is no designated critical habitat under the ESA for humpback whales.

Other large whale species listed under the ESA are found intermittently throughout Southeast Alaska. These species include fin, sei, and sperm whales. Generally, these species are found along the Outer Coast and Gulf of Alaska; more rarely are they encountered along the Inside Passage.

The threatened population of Steller sea lions ranges throughout Southeast Alaska. All major haulouts and rookeries in this region are designated as critical habitat, which includes air, land and sea surrounding these sites to 3,000 ft. in all directions. Extra caution should be taken in these areas to prevent harassment of sea lions. Gran Point,

along the eastern shore of Lynn Canal, is the closest critical habitat to the Princess Cruise Lines' ballast port of Skagway, and is a significant haulout site for sea lions in northern Southeast Alaska. Benjamin Island is another nearby critical habitat site in Lynn Canal, about 14 miles south of Berners Bay. A map of sea lion critical habitat in Southeast Alaska can be found on NOAA Fisheries' Alaska Regional website at http://www.fakr.noaa.gov/protectedresources/stellers/maps/se_ssl_ch.pdf.

We look forward to receiving a copy of the Draft EA when it is complete. As you have requested, at that time, we will review the document and address any additional environmental concerns regarding the discharge of ballast water. Please send the EA directly to our Protected Resources' staff, Aleria Jensen, who can be reached at (907) 586-7248. Please do not hesitate to contact us if you have further questions.

Sincerely,

Robert D. Mecum
Acting Administrator, Alaska Region

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Boqueron Field Office
P.O. Box 491
Boqueron, Puerto Rico 00622

NOV 06 2006

Ms. Nicole R. Grewell
Environmental Protection Specialist
U.S. Department of Transportation
Volpe National Transportation Systems Center
55 Broadway
Cambridge, Massachusetts 02142

Re: USCG Shipboard Technology Evaluation Program (STEP)

Dear Ms. Grewell:

Thank you for your letter of September 14, 2006, received in this office on September 19, 2006, concerning the potential effect on threatened and endangered species of the above referenced voluntary program for experimental ballast water treatment systems installed and tested on cruise ships with typical U.S. ports of call in the U.S. Virgin Islands and Puerto Rico. The purpose of STEP is to provide for removal or destruction of non-indigenous species of organisms in ballast waters using a combination filtration/ultraviolet technology. Our comments are issued in accordance with the Endangered Species Act of 1973 (16 U.S.C. 1531 *et seq.*, as amended). We have assigned Identification Number **FWS-MM-236** to this project, and we will appreciate it if you refer to this number in future correspondence regarding this project.

The proposed action lies within the habitat of the endangered Antillean manatee (*Trichechus manatus*), threatened roseate tern (*Sterna dougallii*), and endangered brown pelican (*Pelecanus occidentalis*); however, we believe that the proposed discharge of treated ballast water is not likely to affect these listed species. Therefore, no further consultation is required. Nevertheless, if information on impacts to listed species becomes available; this office should be contacted concerning the need for reinitiation of consultation under section 7 of the Act.

Thank you for the opportunity to comment on this project, and please do not hesitate to contact Dr. Jorge E. Saliva of our staff at 787 851-7297, extension 224, should you have any questions or need additional information.

Sincerely yours,

Edwin E. Muñiz
Field Supervisor

jes
cc: EPA, San Juan
NMFS, Lajas
EQB, San Juan
COE, San Juan
DNER, San Juan

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Pacific Regional Office
911 NE 11th Avenue
Portland, Oregon 97232-

In Reply Refer to:
AES/Consultation

NOV 30 2006

Nicole R. Grewell
Environmental Protection Specialist
U.S. Department of Transportation - Volpe Center
55 Broadway
Cambridge, Massachusetts 02142

Dear Ms. Grewell:

This letter is in response to your September 14, 2006, request for a list of endangered, threatened, proposed, and candidate species, and their designated or proposed critical habitat, and any Migratory Bird Treaty Act (MBTA) concerns that may be present where the United States Coast Guard's (USCG's) Shipboard Technology Evaluation Program (STEP) will be implemented. STEP is a voluntary, experimental, onboard ballast water treatment program available to all vessels subject to the USCG Ballast Water Management (BWM) regulations.

We received two separate requests for which we are providing a combined response. The two projects referenced in your requests are as follows: (1) Princess Cruise Lines' summer operations with ballasts in Cozumel, Mexico, and Skagway, Alaska; and (2) Matson Navigation Company's (Matson) summer and fall operations with ballasts in San Francisco Bay, California, and Maui (Kahului) and Kauai (Nawiliwili), Hawaii. Based on your letter, we are assuming the Princess Cruise Lines application is for ballast transfer only in Mexico and Alaska; these States fall outside of the jurisdiction of the U.S. Fish and Wildlife Service's (Service's) Pacific Region and California/Nevada Operations offices. Therefore, we are providing no information for the proposed Princess Cruise Lines project. We understand that you have contacted our Alaska Region for information relative to this proposed action.

Based on your letter, we are assuming that the Matson application is for ballast transfer only in San Francisco Bay, Maui, and Kauai during the summer and fall. There are no listed or proposed aquatic or aquatic dependent species under the jurisdiction of the Service in the Maui and Kauai area likely to be affected by the Matson project. Enclosed is a list of federally endangered, threatened, proposed, and candidate species, and designated or proposed critical habitat under the Service's jurisdiction known to occur in the San Francisco Bay area; as well as a list of migratory birds that are designated as Birds of Concern in the San Francisco Bay area and Hawaii. Please contact Penny Ruvelas at the National Marine Fisheries Service (NMFS) Southwest Region at (562) 980-4197 for a list of species and critical habitat under NMFS' jurisdiction that may occur at these locations.

TAKE PRIDE IN AMERICA

Ms. Grewell 2

Your letter mentioned that an environmental assessment (EA) would be sent to us shortly. Please send your draft EA to Ryan Olah (916-414-6725), Coast Bay-Delta Branch Chief, and Daniel Russell (916-414-6636), Section 7 Branch Chief, 2800 Cottage Way, W-2605, Sacramento Fish and Wildlife Office, Sacramento, California, 95825; Michael Molina (808-792-9400), Environmental Review Coordinator, Pacific Islands Fish and Wildlife Office, P.O. Box 50088, 300 Ala Moana Blvd., Room 3-122, Honolulu, Hawaii, 96850; and Brad Bortner, Migratory Birds and Habitat Programs, 911 NE 11th Avenue, Portland, Oregon, 97232. For further assistance with section 7 consultation needs, please coordinate with Daniel Russell.

As for the Service's concerns relative to migratory birds, we remind you of your responsibilities under Executive Order 13186, which requires Federal agencies to "support the migratory bird conventions by integrating bird conservation principles, measures, and practices into agency activities and by avoiding or minimizing, to the maximum extent practicable, adverse impacts on migratory bird resources when conducting agency actions." Additionally, we recommend that your National Environmental Policy Act (NEPA) review address the effects of chlorine dioxide on the marine environment, which in turn would potentially affect migratory seabirds and their prey. This would presumably depend upon where the ballast materials were discharged, the amount discharged, and the toxicological potential of chlorine and its breakdown products at the concentrations being proposed. It will be important at the Pacific Islands and San Francisco Bay area locations to demonstrate that the chlorine dioxide in the vessel discharge will dissipate fast enough to not cause significant impacts to sensitive marine life. The Service intends to coordinate with NMFS and the Environmental Protection Agency in providing a separate response on the forthcoming NEPA review.

This response partially fulfills our requirements under section 7(c) of the Endangered Species Act of 1973, as amended. If you have any questions regarding this response, please contact Daniel Brown (telephone: 503-231-6281). We look forward to assisting you further with this effort.

Sincerely,

Assistant Regional Director
Ecological Services

Enclosure

cc:
Vicki Campbell, Jim Haas, California Nevada Operations Office
Susan Moore, Dan Welsh, Ryan Olah, Sacramento Fish and Wildlife Office
Patrick Leonard, Michael Molina, Pacific Islands Fish and Wildlife Office

List of Federally Endangered, Threatened, Proposed, and Candidate Species, and Designated or Proposed Critical Habitat Known to Occur in the San Francisco Bay Area and Birds of Conservation Concern Known to Occur in the San Francisco Bay Area and Hawaii

Scientific Name	Common Name	Status
Brachyramphus marmoratus	marbled murrelet	T
Brachyramphus marmoratus	Critical habitat, marbled murrelet	CH
Charadrius alexandrinus nivosus	western snowy plover	T
Charadrius alexandrinus nivosus	Critical habitat, western snowy plover	CH
Coccyzus americanus occidentalis	Western yellow-billed cuckoo	C
Diomedea albatrus	short-tailed albatross	E
Eucyclogobius newberryi	tidewater goby	E
Haliaeetus leucocephalus	bald eagle	T
Hypomesus transpacificus	delta smelt	T
Hypomesus transpacificus	Critical habitat, delta smelt	CH
Pelecanus occidentalis californicus	California brown pelican	E
Rallus longirostris obsoletus	California clapper rail	E
Reithrodontomys raviventris	salt marsh harvest mouse	E
Sternula antillarum browni	California least tern	E
Cirsium hydrophilum var. *hydrophilum*	Suisun thistle	E
Cirsium hydrophilum var. *hydrophilum*	Critical habitat, Suisun thistle	PCH
Cordylanthus mollis ssp. *mollis*	soft bird's-beak	E
Cordylanthus mollis ssp. *mollis*	Critical habitat, soft bird's-beak	PCH
Lasthenia conjugens	Critical habitat, Contra Costa goldfields	CH
Lasthenia conjugens	Contra Costa goldfields	E
Suaeda californica	California sea blite	E
Phoebastria immutabilis	Laysan albatross	BCC
Phoebastra nigripes	Black-footed albatross	BCC
Puffinus nativitatis	Christmas shearwater	BCC
Oceanodroma castro	Band-rumped stormpetrel	BCC
Oceanodroma tristrami	Tristam's stormpetrel	BCC
Oceanodroma homochroa	Ashy Stormpetrel	BCC
Synthliboramphus hypoleucus	Xantus's Murrelet	BCC
Ptychoramphus aleuticus	Cassin's Auklet	BCC
Haematopus bachmani	Black Oystercatcher	BCC
Numenius phaeopus	Whimbrel	BCC
Numenius americanus	Long-billed Curlew	BCC
Limosa fedoa	Marbled Godwit	BCC
Arenaria melanocephala	Black Turnstone	BCC
Calidris canutus	Red Knot	BCC
Limnodromus griseus	Short-billed Dowitcher	BCC

Key: Species Status: E – Endangered; T – Threatened; C – Candidate; P – Proposed, CH – Critical Habitat; PCH – Proposed Critical Habitat, BCC – Birds of Conservation Concern

1

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE

Southeast Regional Office
263 13th Avenue South
St. Petersburg, FL 33701
(727) 824-5312, Fax 824-5309
http://sero.nmfs.noaa.gov

SEP 20 2006

Dear Colleague:

Pursuant to section 7(a)(2) of the Endangered Species Act (ESA), the Protected Resources Division of NOAA's National Marine Fisheries Service (NMFS) has reviewed your letter concerning the Princess Cruise Lines and its acceptance into the USCG's Shipboard Technology Evaluation Program.

___ **There are no ESA-listed species** or designated critical habitat under our purview in the action area.

___**We cannot determine** impacts to threatened or endangered species, or designated critical habitat, under NOAA Fisheries purview because the letter lacks sufficient information to evaluate the project.
Enclosed are guidelines to conduct a proper biological evaluation.

___**Please provide a letter** from the lead federal action agency designating you to conduct ESA section 7 consultation with this office.

_X_**Enclosed is a list** of federally-protected species under the jurisdiction of NMFS for the states of Florida, Puerto Rico, and the U.S. Virgin Islands. Biological information on federally-protected species and candidate species can be found at the following website addresses: http://www.nmfs.noaa.gov/prot_res/prot_res.html; http://www.cccturtle.org;. http://noflorida.fws.gov/SeaTurtles/seaturtle-info.htm); http://endangered.fws.gov/wildlife.html#Species; http://www.cmc-ocean.org/main.php3; http://floridaconservation.org/psm/turtles/turtle.htm; http://obis.env.duke.edu/data/sp_profiles.php; www.mote.org/~colins/Sawfish/SawfishHomePage.html; www.floridasawfish.com; www.flmnh.ufl.edu/fish/sharks/InNews/sawprop.htm;.Gulf sturgeon critical habitat rule and maps (http://alabama.fws.gov/gs/).

___ **It is NMFS' opinion that the project will have no effect** on listed species or critical habitat protected by the ESA under NOAA Fisheries purview. No further consultation with NOAA Fisheries pursuant to section 7(a)(2) of the ESA is required unless the project description changes.

Consultation with NMFS' Habitat Conservation Division (HCD), pursuant to the Magnuson-Stevens Fishery Conservation and Management Acts requirements for essential fish habitat consultation, may be required. Please contact HCD at (727) 824-5317. If you have any ESA questions, please contact our ESA section 7 Coordinator, Eric Hawk, at (727) 824-5312 or by e-mail at eric.hawk@noaa.gov.

Sincerely,

Teletha Mincey

Teletha Mincey
Administrative Support Assistant
Protected Resources Division

Enclosures

File: 1514-22.H

Endangered and Threatened Species and Critical Habitats
under the Jurisdiction of the NOAA Fisheries Service

Puerto Rico

Listed Species	Scientific Name	Status	Date Listed
Marine Mammals			
blue whale	*Balaenoptera musculus*	Endangered	12/02/70
Caribbean monk seal	*Monachus tropicalis*	Endangered	3/11/67
finback whale	*Balaenoptera physalus*	Endangered	12/02/70
humpback whale	*Megaptera novaengliae*	Endangered	12/02/70
sei whale	*Balaenoptera borealis*	Endangered	12/02/70
sperm whale	*Physeter macrocephalus*	Endangered	12/02/70
Turtles			
green sea turtle	*Chelonia mydas*	Threatened[1]	07/28/78
hawksbill sea turtle	*Eretmochelys imbricata*	Endangered	06/02/70
Kemp's ridley sea turtle	*Lepidochelys kempii*	Endangered	12/02/70
leatherback sea turtle	*Dermochelys coriacea*	Endangered	06/02/70
loggerhead sea turtle	*Caretta caretta*	Threatened	07/28/78
Invertebrates			
elkhorn coral	*Acropora palmata*	Threatened	5/9/06
staghorn coral	*Acropora cervicornis*	Threatened	5/9/06

Designated Critical Habitat
Green sea turtle: The waters extending seaward 3 nautical miles (5.6 km) from the mean high water line of Culebra Island, Puerto Rico.

Hawksbill sea turtle: The waters extending seaward 3 nautical miles (5.6 km) from the mean high water line of Mona and Monito Islands, Puerto Rico

Species Proposed for Listing
None

Proposed Critical Habitat
None

[1] Green turtles are listed as threatened, except for breeding populations of green turtles in Florida and on the Pacific Coast of Mexico, which are listed as endangered

Puerto Rico

Candidate Species[2]	Scientific Name
none	

Species of Concern[3]	Scientific Name
Fish	
dusky shark	*Carcharhinus obscurus*
mangrove rivulus	*Rivulus marmoratus*
night shark	*Carcharinus signatus*
sand tiger shark	*Carcharias taurus*
speckled hind	*Epinephelus drummondhayi*
striped croaker	*Bairdiella sanctaeluciae*
Warsaw grouper	*Epinephelus nigritus*
white marlin	*Tetrapturus albidus*
Invertebrates	
ivory bush coral	*Oculina varicosa*

[2] The Candidate Species List has been renamed the Species of Concern List. The term "candidate species" is limited to species that are the subject of a petition to list and for which NOAA Fisheries Service has determined that listing may be warranted (69 FR 19975).

[3] Species of Concern are not protected under the Endangered Species Act, but concerns about their status indicate that they may warrant listing in the future. Federal agencies and the public are encouraged to consider these species during project planning so that future listings may be avoided.

USVI

Candidate Species[2]	Scientific Name
none	

Species of Concern[3]	Scientific Name
Fish	
dusky shark	*Carcharhinus obscurus*
mangrove rivulus	*Rivulus marmoratus*
night shark	*Carcharhinus signatus*
sand tiger shark	*Carcharias taurus*
speckled hind	*Epinephelus drummondhayi*
striped croaker	*Bairdiella sanctaeluciae*
Warsaw grouper	*Epinephelus nigritus*
white marlin	*Tetrapturus albidus*
Invertebrates	
ivory bush coral	*Oculina varicosa*

[2] The Candidate Species List has been renamed the Species of Concern List. The term "candidate species" is limited to species that are the subject of a petition to list and for which NOAA Fisheries Service has determined that listing may be warranted (69 FR 19975).

[3] Species of Concern are not protected under the Endangered Species Act, but concerns about their status indicate that they may warrant listing in the future. Federal agencies and the public are encouraged to consider these species during project planning so that future listings may be avoided.

Endangered and Threatened Species and Critical Habitats
under the Jurisdiction of the NOAA Fisheries Service

USVI

Listed Species	Scientific Name	Status	Date Listed
Marine Mammals			
blue whale	*Balaenoptera musculus*	Endangered	12/02/70
Caribbean monk seal	*Monachus tropicalis*	Endangered	3/11/67
finback whale	*Balaenoptera physalus*	Endangered	12/02/70
humpback whale	*Megaptera novaeangliae*	Endangered	12/02/70
sei whale	*Balaenoptera borealis*	Endangered	12/02/70
sperm whale	*Physeter macrocephalus*	Endangered	12/02/70
Turtles			
green sea turtle	*Chelonia mydas*	Threatened[1]	07/28/78
hawksbill sea turtle	*Eretmochelys imbricata*	Endangered	06/02/70
Kemp's ridley sea turtle	*Lepidochelys kempii*	Endangered	12/02/70
leatherback sea turtle	*Dermochelys coriacea*	Endangered	06/02/70
loggerhead sea turtle	*Caretta caretta*	Threatened	07/28/78
Invertebrates			
elkhorn coral	*Acropora palmata*	Threatened	5/9/06
staghorn coral	*Acropora cervicornis*	Threatened	5/9/06

Designated Critical Habitat
Leatherback sea turtle: The waters adjacent to Sandy Point, U.S. Virgin Islands, up to and inclusive of the waters from the hundred fathom curve shoreward to the level of mean high tide with boundaries at 17°42'12"N and 64°50'00"W.

Species Proposed for Listing
None

Proposed Critical Habitat
None

[1] Green turtles are listed as threatened, except for breeding populations of green turtles in Florida and on the Pacific Coast of Mexico, which are listed as endangered

Endangered and Threatened Species and Critical Habitats
under the Jurisdiction of the NOAA Fisheries Service

Florida-Gulf

Listed Species	Scientific Name	Status	Date Listed
Marine Mammals			
blue whale	*Balaenoptera musculus*	Endangered	12/02/70
finback whale	*Balaenoptera physalus*	Endangered	12/02/70
humpback whale	*Megaptera novaeangliae*	Endangered	12/02/70
sei whale	*Balaenoptera borealis*	Endangered	12/02/70
sperm whale	*Physeter macrocephalus*	Endangered	12/02/70
Turtles			
green sea turtle	*Chelonia mydas*	Threatened[1]	07/28/78
hawksbill sea turtle	*Eretmochelys imbricata*	Endangered	06/02/70
Kemp's ridley sea turtle	*Lepidochelys kempii*	Endangered	12/02/70
leatherback sea turtle	*Dermochelys coriacea*	Endangered	06/02/70
loggerhead sea turtle	*Caretta caretta*	Threatened	07/28/78
Fish			
Gulf sturgeon	*Acipenser oxyrinchus desotoi*	Threatened	09/30/91
smalltooth sawfish	*Pristis pectinata*	Endangered	04/01/03
Invertebrates			
elkhorn coral	*Acropora palmata*	Threatened	5/9/06
staghorn coral	*Acropora cervicornis*	Threatened	5/9/06

Designated Critical Habitat
Gulf Sturgeon: A final rule designating Gulf sturgeon critical habitat was published on March 19, 2003 (68 FR 13370) and 14 geographic areas (units) among the Gulf of Mexico Rivers and tributaries were identified. Maps and details regarding the final rule can be found at alabama.fws.gov/gs

Species Proposed for Listing
None

Proposed Critical Habitat
None

[1] Green turtles are listed as threatened, except for breeding populations of green turtles in Florida and on the Pacific Coast of Mexico, which are listed as endangered.

Florida-Gulf

Candidate Species[2]	Scientific Name
None	

Species of Concern[3]	Scientific Name
Fish	
Alabama shad	*Alosa alabamae*
dusky shark	*Carcharhinus obscurus*
largetooth sawfish	*Pristis pristis*
night shark	*Carcharinus signatus*
saltmarsh topminnow	*Fundulus jenkinsi*
sand tiger shark	*Carcharias taurus*
speckled hind	*Epinephelus drummondhayi*
Warsaw grouper	*Epinephelus nigritus*
white marlin	*Tetrapturus albidus*
Invertebrates	
ivory bush coral	*Oculina varicosa*

[2] The Candidate Species List has been renamed the Species of Concern List. The term "candidate species" is limited to species that are the subject of a petition to list and for which NOAA Fisheries Service has determined that listing may be warranted (69 FR 19975).

[3] Species of Concern are not protected under the Endangered Species Act, but concerns about their status indicate that they may warrant listing in the future. Federal agencies and the public are encouraged to consider these species during project planning so that future listings may be avoided.

Endangered and Threatened Species and Critical Habitats
under the Jurisdiction of the NOAA Fisheries Service

Florida-Atlantic

Listed Species	Scientific Name	Status	Date Listed
Marine Mammals			
blue whale	*Balaenoptera musculus*	Endangered	12/02/70
finback whale	*Balaenoptera physalus*	Endangered	12/02/70
humpback whale	*Megaptera novaeangliae*	Endangered	12/02/70
right whale	*Eubalaena glacialis*	Endangered	12/02/70
sei whale	*Balaenoptera borealis*	Endangered	12/02/70
sperm whale	*Physeter macrocephalus*	Endangered	12/02/70
Turtles			
green sea turtle	*Chelonia mydas*	Threatened[1]	07/28/78
hawksbill sea turtle	*Eretmochelys imbricata*	Endangered	06/02/70
Kemp's ridley sea turtle	*Lepidochelys kempii*	Endangered	12/02/70
leatherback sea turtle	*Dermochelys coriacea*	Endangered	06/02/70
loggerhead sea turtle	*Caretta caretta*	Threatened	07/28/78
Fish			
shortnose sturgeon	*Acipenser brevirostrum*	Endangered	03/11/67
smalltooth sawfish	*Pristis pectinata*	Endangered	04/01/03
Invertebrates			
elkhorn coral	*Acropora palmata*	Threatened	5/9/06
staghorn coral	*Acropora cervicornis*	Threatened	5/9/06
Seagrasses			
Johnson's seagrass	*Halophila johnsonii*	Threatened	09/14/98

Designated Critical Habitat
Right whale: Between 31°15'N (approximately the mouth of the Altamaha River, Georgia) and 30°15'N (approximately Jacksonville, Florida) from the coast out to 15 nautical miles offshore; the coastal waters between 30°15'N and 28°00'N (approximately Sebastian Inlet, Florida) from the coast out to 5 nautical miles.

Johnson's seagrass: A final rule designating Johnson's seagrass critical habitat was published on April 5, 2000 (65 FR 17786) and 10 geographic areas (units) within the range of the species were identified along the east coast of Florida.

[1] Green turtles are listed as threatened, except for breeding populations of green turtles in Florida and on the Pacific Coast of Mexico, which are listed as endangered

Florida-Atlantic

Species Proposed for Listing	Proposed Critical Habitat
None	None

Candidate Species[2]	Scientific Name
None	

Species of Concern[3]	Scientific Name
Fish	
Atlantic sturgeon	*Acipenser oxyrhynchus oxyrhynchus*
dusky shark	*Carcharhinus obscurus*
key silverside	*Menidia conchorum*
largetooth sawfish	*Pristis pristis*
mangrove rivulus	*Rivulus marmoratus*
Nassau grouper	*Epinephelus striatus*
night shark	*Carcharinus signatus*
opossum pipefish	*Microphis brachyurus lineatus*
saltmarsh topminnow	*Fundulus jenkinsi*
sand tiger shark	*Carcharias taurus*
speckled hind	*Epinephelus drummondhayi*
striped croaker	*Bairdiella sanctaeluciae*
Warsaw grouper	*Epinephelus nigritus*
white marlin	*Tetrapturus albidus*
Invertebrates	
ivory bush coral	*Oculina varicosa*

[2] The Candidate Species List has been renamed the Species of Concern List. The term "candidate species" is limited to species that are the subject of a petition to list and for which NOAA Fisheries Service has determined that listing may be warranted (69 FR 19975).

[3] Species of Concern are not protected under the Endangered Species Act, but concerns about their status indicate that they may warrant listing in the future. Federal agencies and the public are encouraged to consider these species during project planning so that future listings may be avoided.

Appendix E Sources of State Water Quality Discharge Standards for Turbidity:

Alaska

18AAC70

California

www.epa.gov/waterscience/standards/wqslibrary/ca/ca_9_wqcp_waters.pdf

Florida

www.dep.state.fl.us/legal/Rules/shared/62-302/62-302.pdf

U.S. Virgin Islands

http://www.dpnr.gov.vi/dep/pubs/draftfinalwqsrevised.pdf